

2021 Product and Resource Catalog



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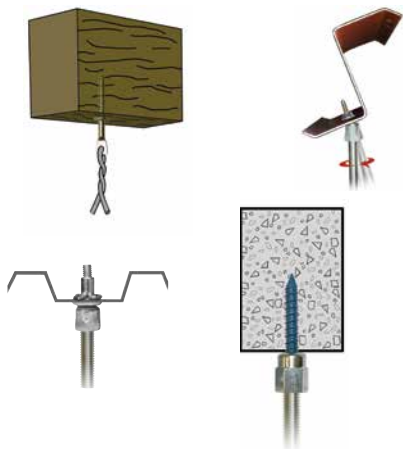
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Fastening Applications Guide

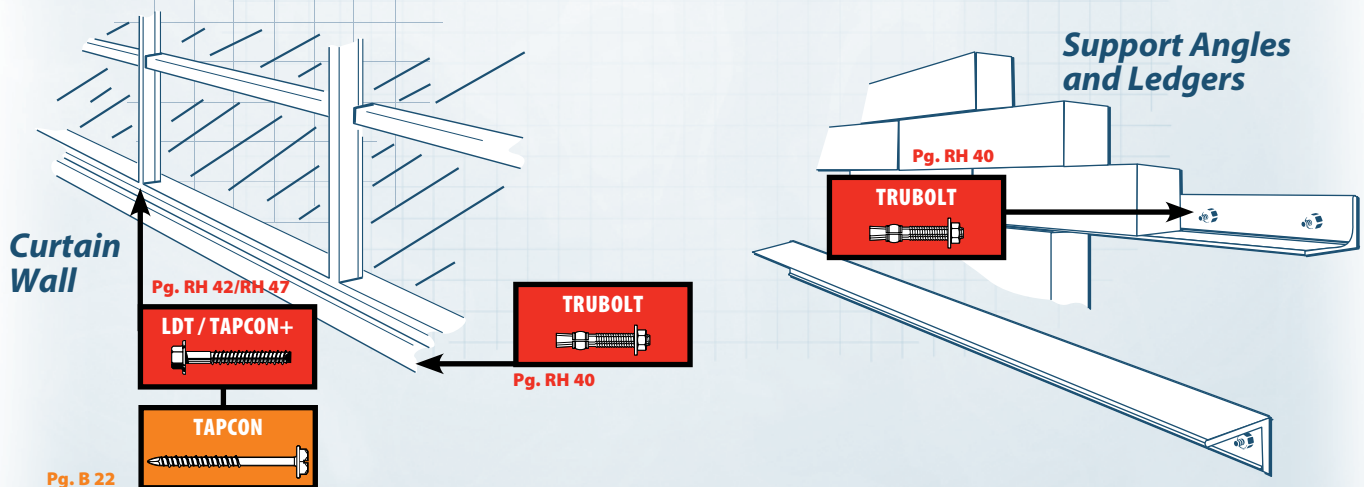
This section highlights a variety of trade applications and provides information that will assist you in selecting the best fastening system for your application.

While these are not to be considered complete, they will give you an idea of how contractors use our products.

For example, on the Electrical Contractor page, you will find applications, such as junction box/

panel boards and suspended lighting. Next to the diagrams are the product name(s) and page number in this catalog where you will find complete information on these products needed for that particular application.

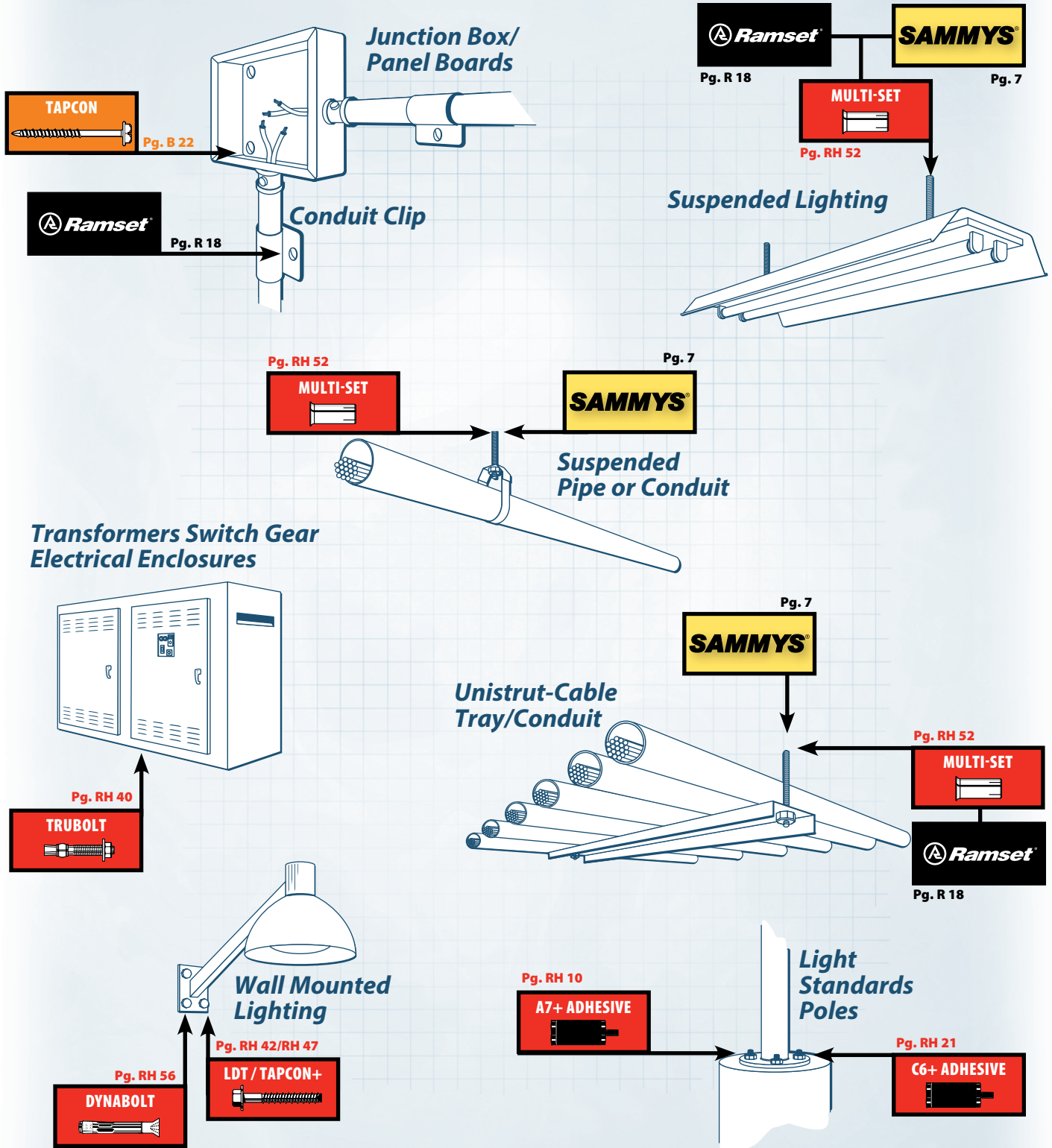
Curtain Wall Applications



For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Electrical Contractor Applications

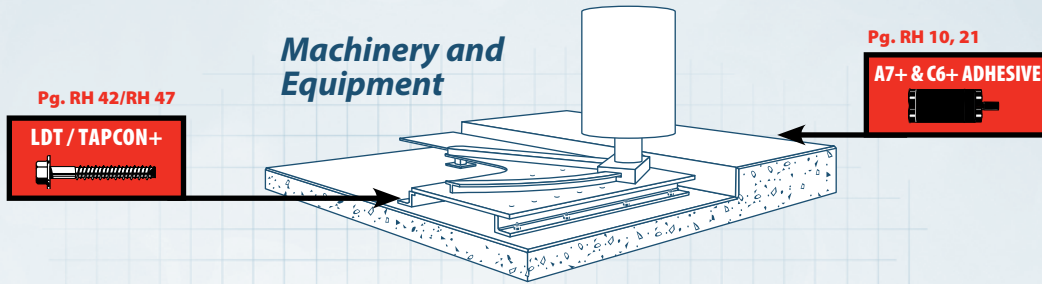


For seismic recognition, see ICC-ES evaluation reports.

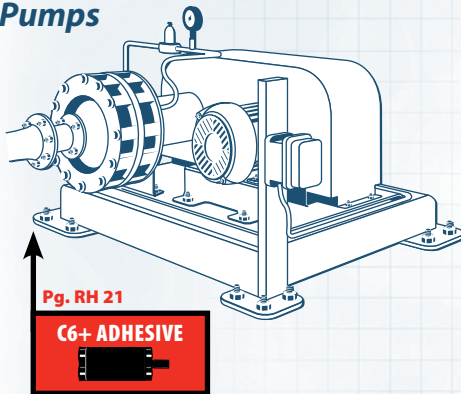
For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Mechanical Contractor Applications

Machinery and Equipment



Pumps



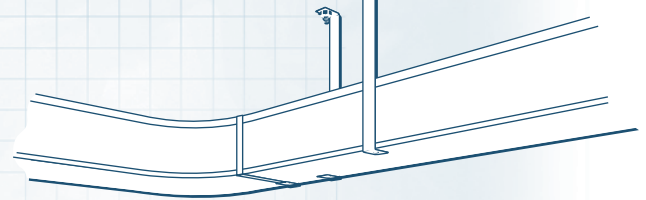
NOTE:

C6+ can be used for oversized holes when repairing pumps and machinery anchoring.

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Ductwork/HVAC

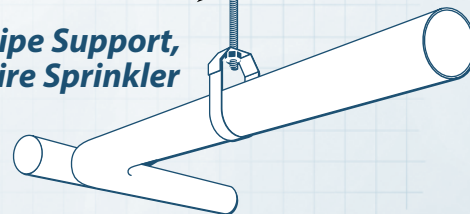


Pg. 7

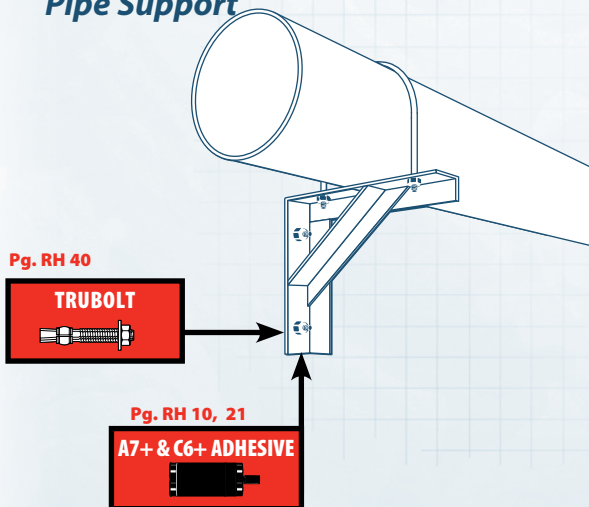


Pg. RH 52

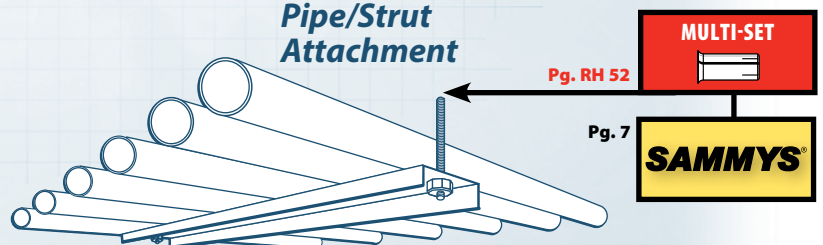
Pipe Support, Fire Sprinkler



Heavy-Duty Pipe Support



Pipe/Strut Attachment



For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Drywall Contractor & Carpenter Applications

Window and Door Frames



Drywall Track

Ceiling Track

Floor Track



Pg. R 8, 10



Pg. B 22

Pg. R 8, 10



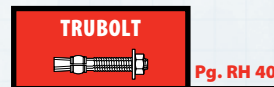
Furring Strips

Pg. R 27



Pg. RH 42/RH 47

Framing/
Sill Plating



Pg. RH 40



Pg. B 22

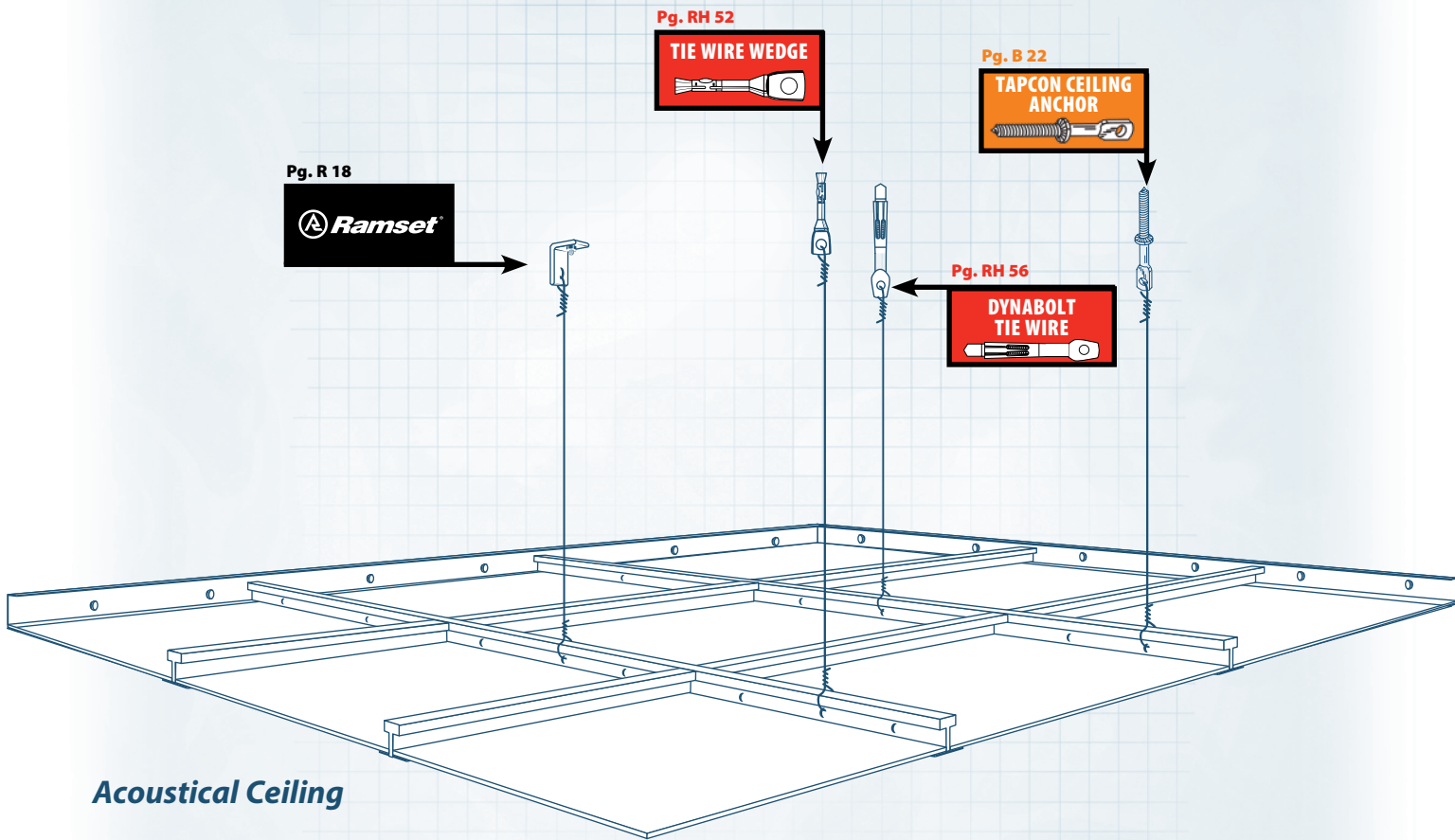
Pg. RH 10



For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Acoustical Ceiling Installer Applications

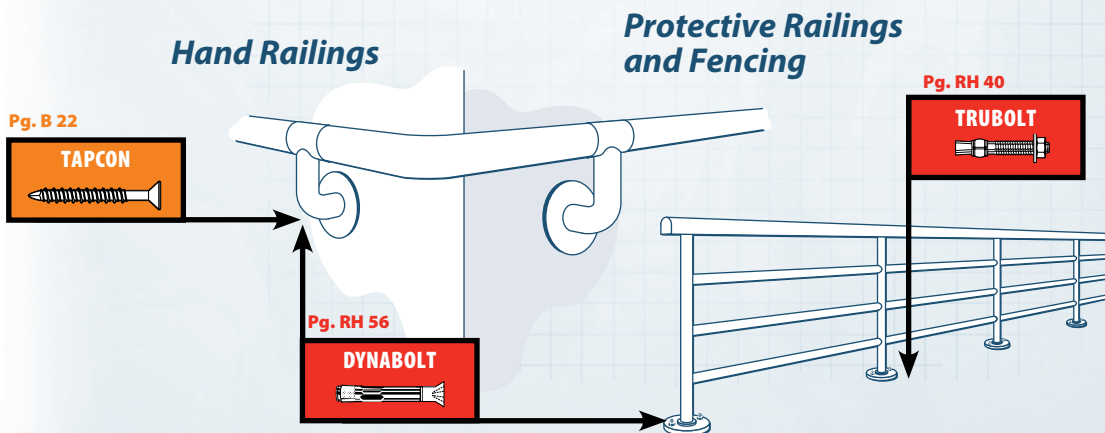
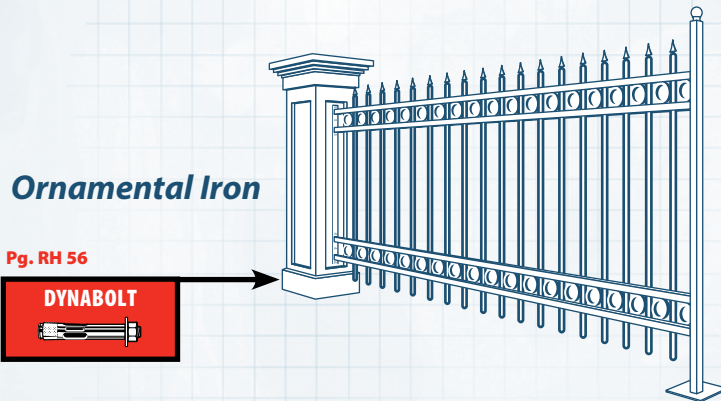
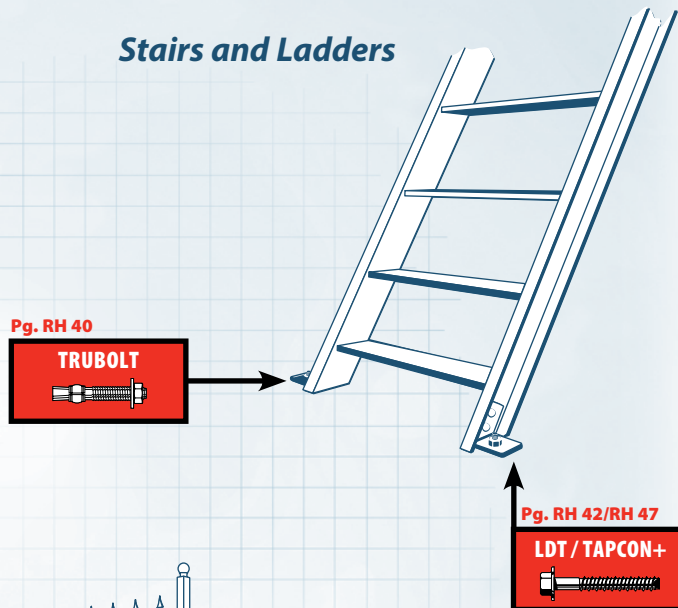
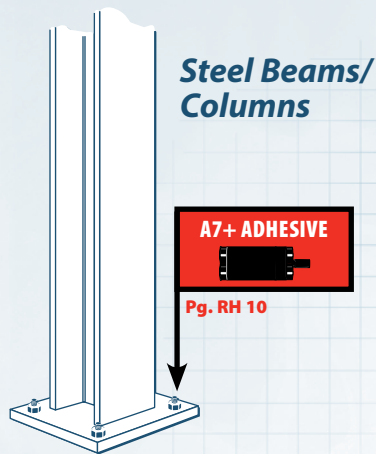


Acoustical Ceiling

For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Steel Erector Applications

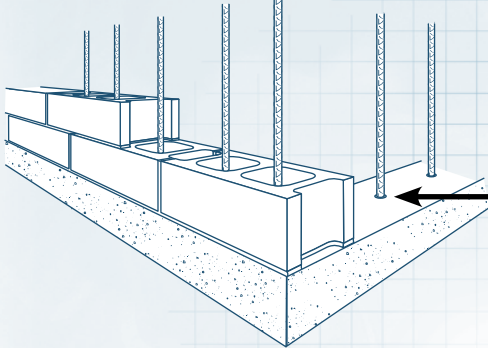


For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Concrete & Masonry Contractor Applications

Concrete Block Reinforcement

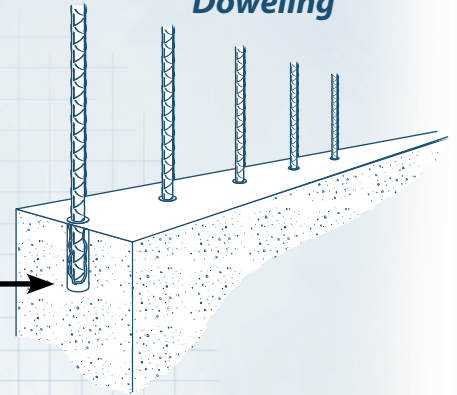


Pg. RH 21

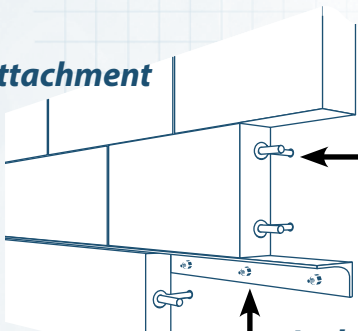


Pg. RH 10

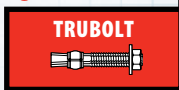
Rebar Doweling



Stone Attachment



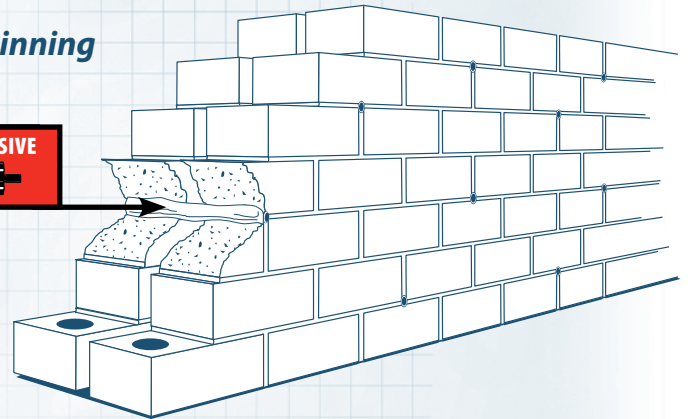
Pg. RH 40



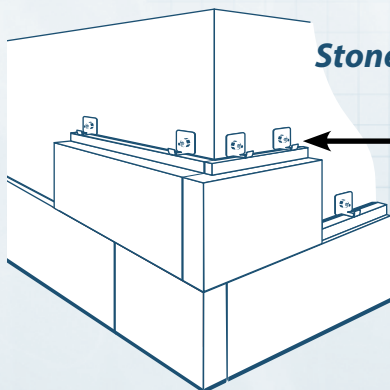
Ledger Angle Attachment

Brick Pinning

Pg. RH 10



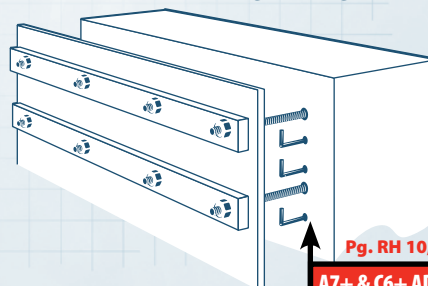
Stone Attachment



Pg. RH 10



Concrete Formwork



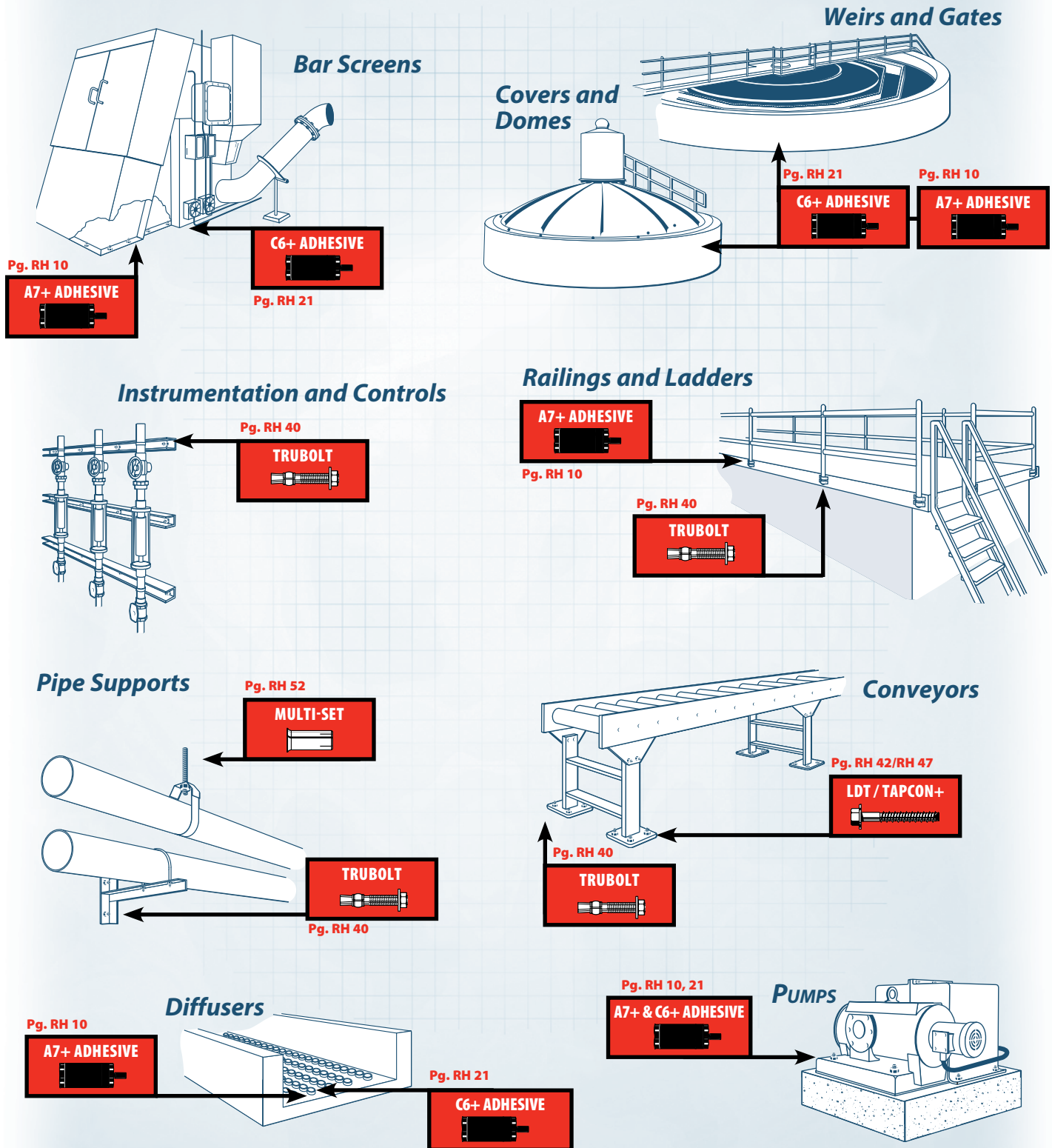
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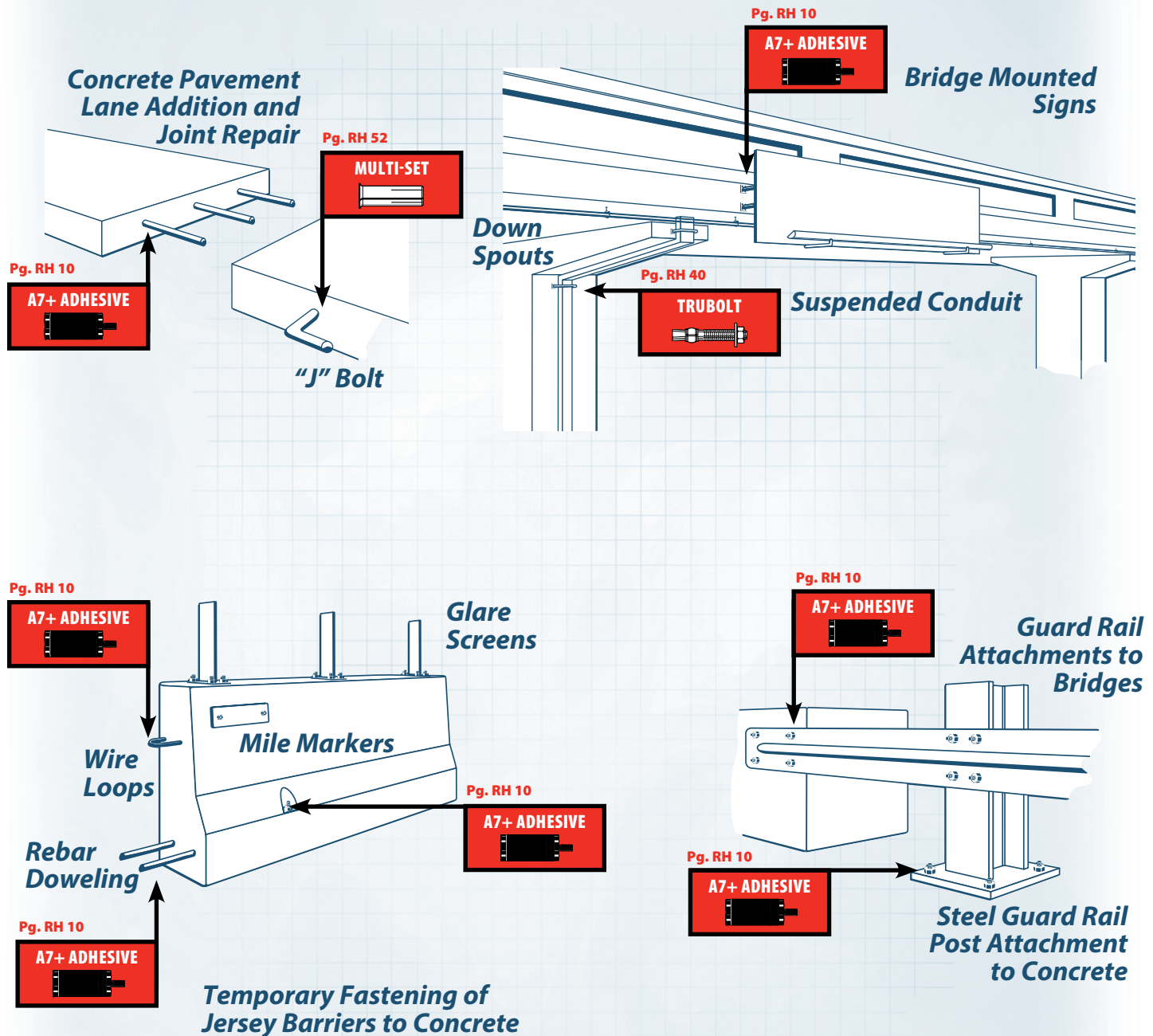
Water & Waste Water Treatment Applications



For seismic recognition, see ICC-ES evaluation reports.

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Highway & Bridge Contractor Applications



For seismic recognition, see ICC-ES evaluation reports.

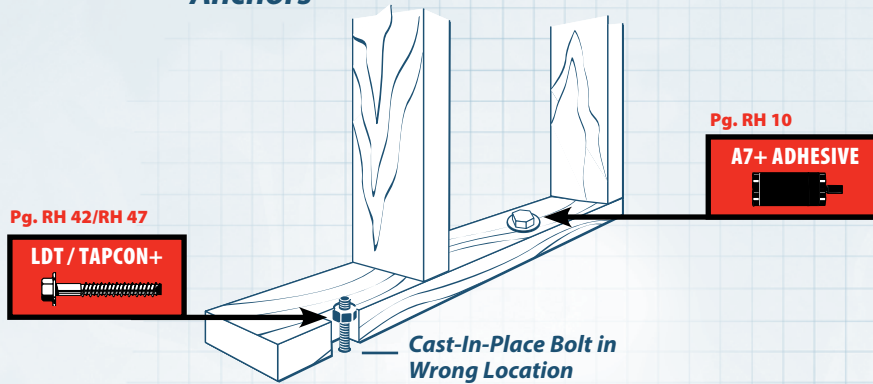
For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Department of Transportation Approvals & Listings

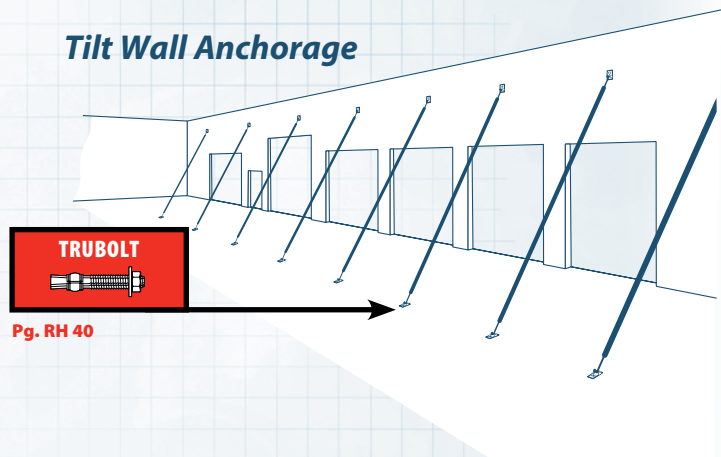
For approvals contact local engineering on a per project basis. Call your local RED HEAD sales person for more information.

General Contractor Applications

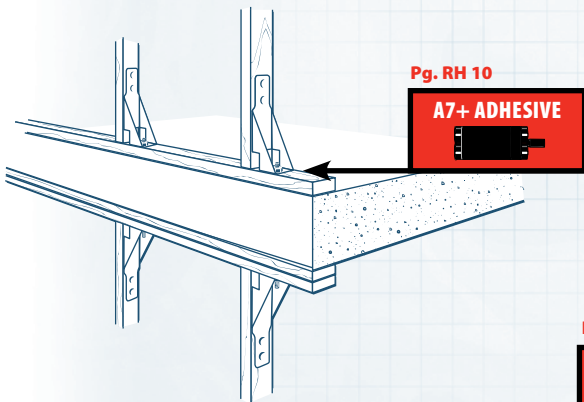
Replacement of Misplaced Anchors



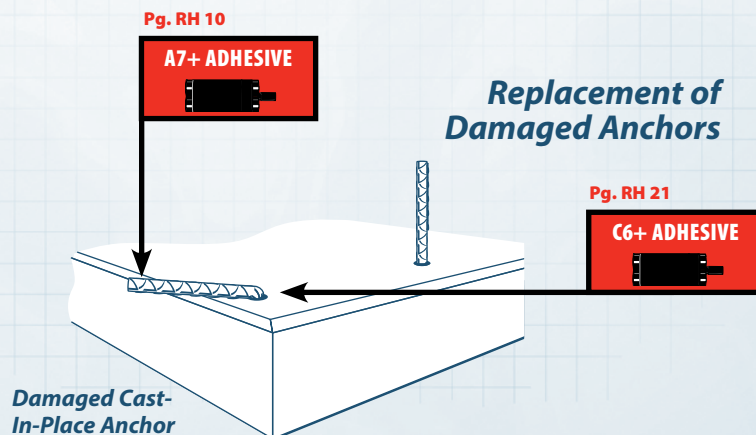
Tilt Wall Anchorage



Seismic Hold Downs



Replacement of Damaged Anchors

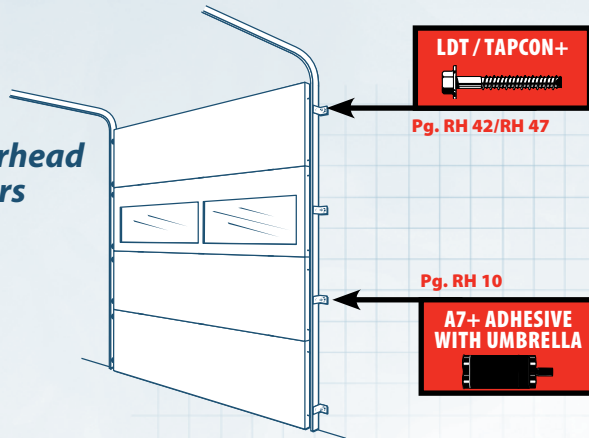


For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Material Handling Applications

Overhead Doors



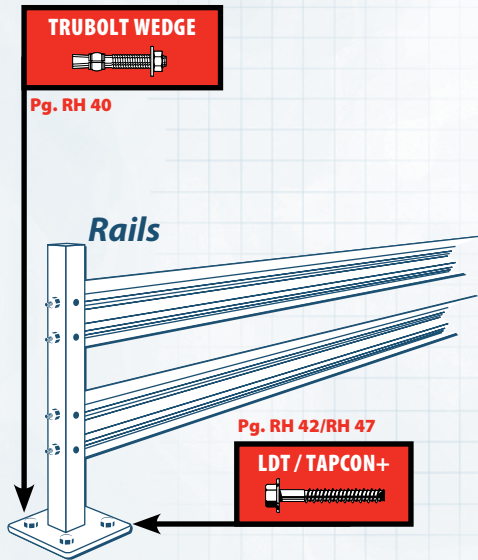
Shelving



TRUBOLT WEDGE

Pg. RH 40

Rails



Conveyors

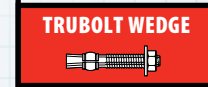
Pg. RH 42/RH 47

LDT / TAPCON+



Pg. RH 40

TRUBOLT WEDGE



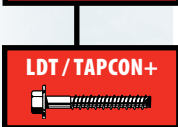
Pg. RH 10

A7+ ADHESIVE

Pg. RH 10

A7+ ADHESIVE

LDT / TAPCON+

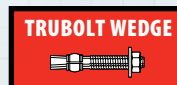


Pg. RH 42/RH 47

Dock Bumpers

Pg. RH 40

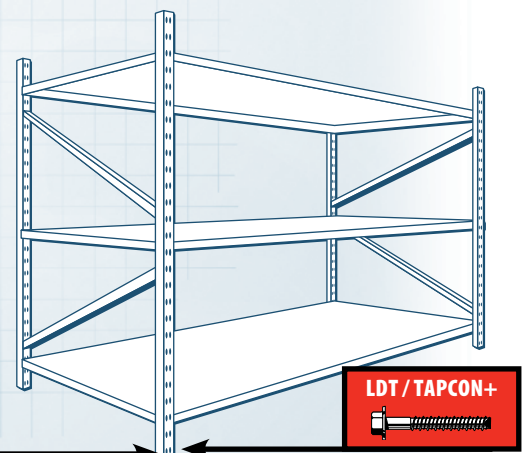
TRUBOLT WEDGE



Racks

LDT / TAPCON+

Pg. RH 42/RH 47

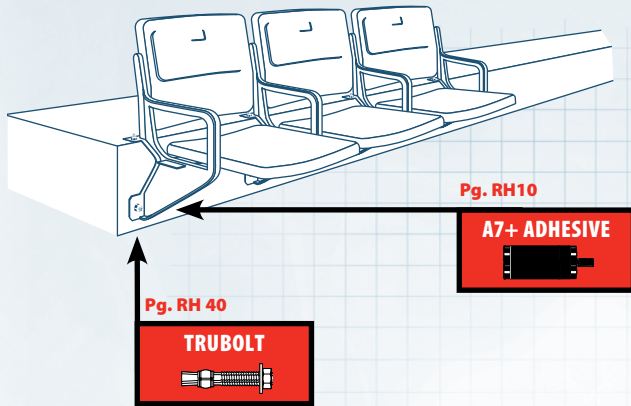


For seismic recognition, see ICC-ES evaluation reports.

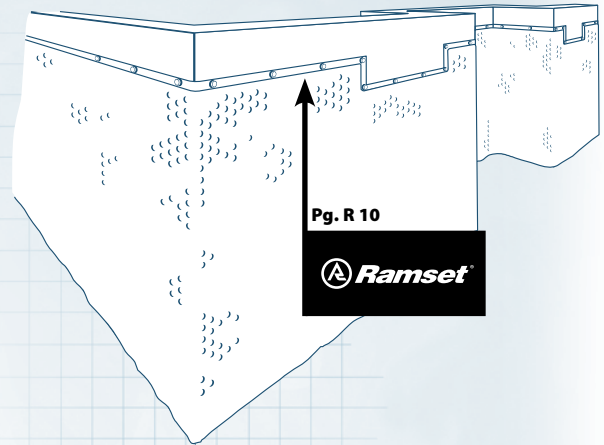
For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.

Specialty Applications

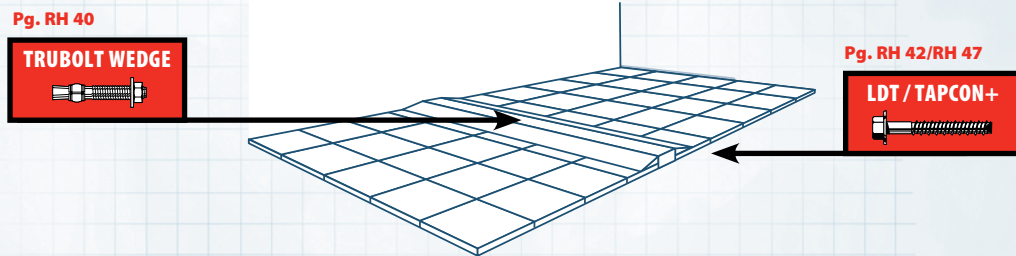
Stadium Seating



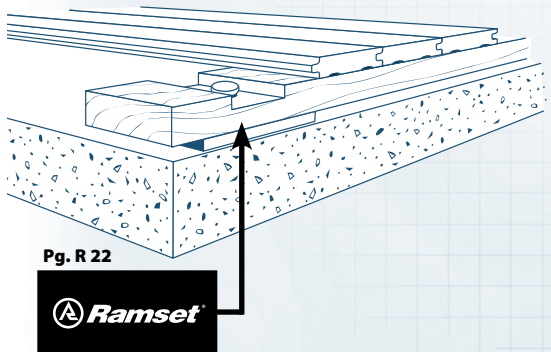
Basement Wrap



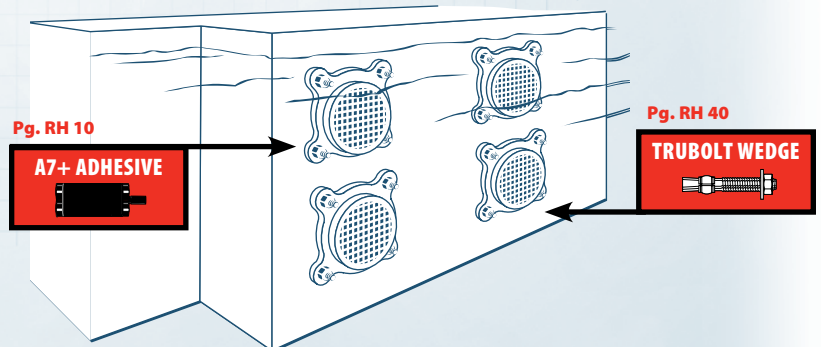
Expansion Joints



Flooring Systems

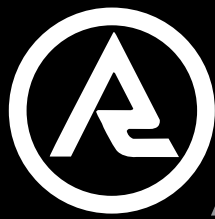


Underwater Installation

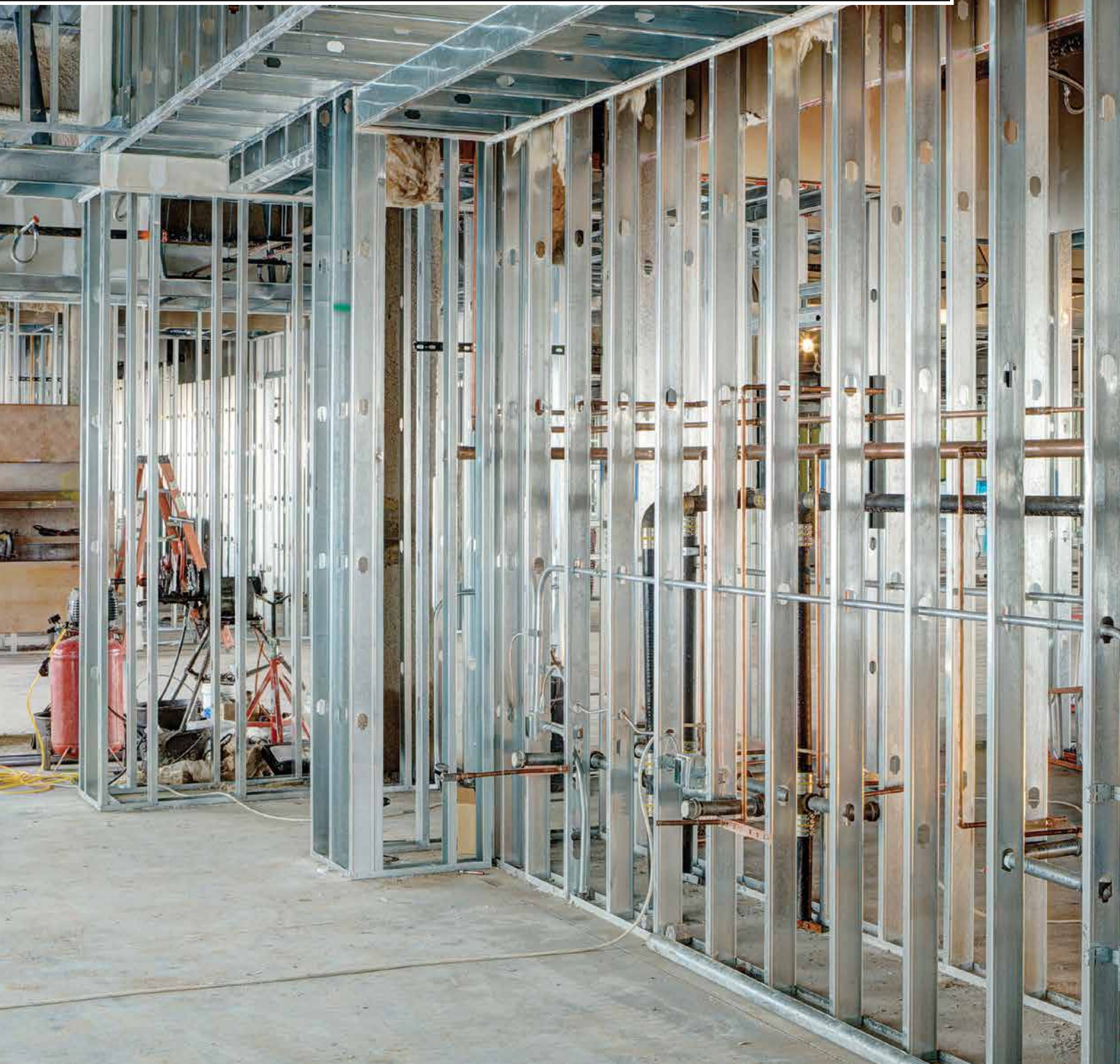


For seismic recognition, see ICC-ES evaluation reports.

For installation guidelines for your application, please contact our Technical Services Department at 1-800-387-9692.



Ramset[®]
DRIVING JOBSITE SPEED



Notes

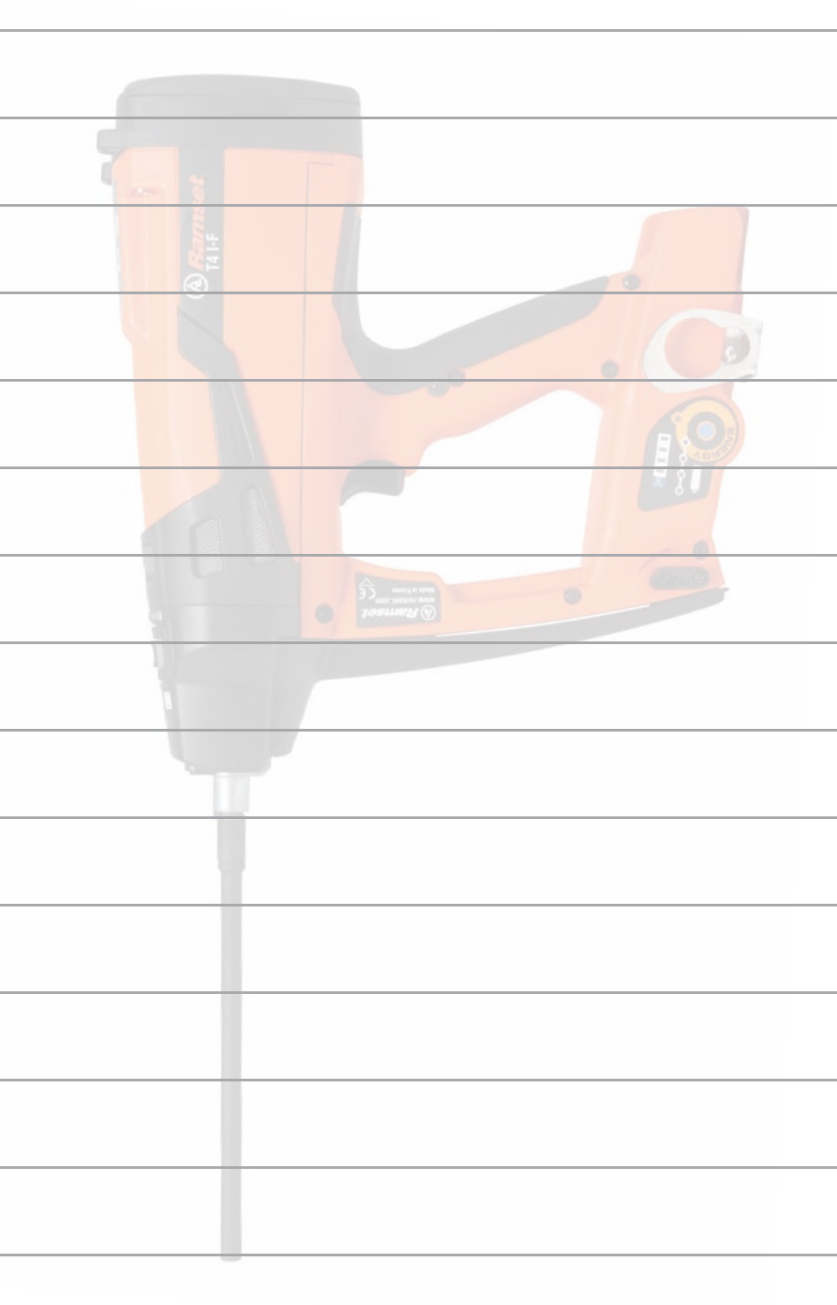











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Tools at a Glance

GAS POWERED TOOLS	TOOL	DESCRIPTION	TYPICAL BUILDING TRADE
	 (see page R 8)	T3MAG 45-Pin Magazine One Step Fuel Injection Cross Over Technology 2 Year Warranty Length: 18-1/2" Height: 15" Weight: 9.2 lbs. Maximum Pin Length: 1"	WALLS & CEILINGS
	 (see page R 10)	TF1200 Fully Automatic 42-Pin Magazine 1-1/2" Pin Capacity 2 Year Warranty Length: 17" Height: 15-1/2" Weight: 8.375 lbs. Maximum Pin Length: 1-1/2"	WATERPROOFING WALLS & CEILINGS
	 (see page R 14)	T4 I-F Automatic Power Adjustment Single Pin Gas Tool Fuel Injection 2 Year Warranty Length: 21" Height: 12" Weight: 7.9 lbs.	INSULATION INSTALLATION FOR WALLS & CEILINGS FOUNDATION & WATER PROOFING
	 (see page R 18)	T3SS Single Pin Gas Tool Fuel Injection Cross Over Technology 2 Year Warranty Length: 13-1/2" Height: 15" Weight: 7.0 lbs. Maximum Pin Length: 1-1/2"	ELECTRICAL/MECHANICAL

	TOOL	DESCRIPTION	TYPICAL BUILDING TRADE
.27 CAL STRIP TOOL	 RA27 Fully Automatic Low Velocity Piston Type Fastening Tool 3 Year Warranty (see page R 23)	Part No. RA27 Length: 15" Weight: 5.3 lbs. Muzzle Bushing O.D.: 9/16" Maximum Pin Length: 1-1/2" (2" w/washer)	WALLS & CEILINGS
	 COBRA+ Semi-Automatic Economical 1 Year Warranty (see page R 24)	Part No. COBRA+ Length: 15" Weight: 5.25 lbs. Muzzle Bushing O.D.: 9/16" Maximum Pin Length: 2-1/2" (3" w/Washer)	WALLS & CEILINGS
	 COBRA+ INSULFAST Accessory for Converting Cobra+ into Insulation Fastening Tool (see page R 25)	Part No. COBRAIFKIT Length: 19" Weight: 5.25 lbs. Insulation thickness range: 1" - 2" *Other sizes available on special request	INSULATION INSTALLATION FOR WALLS & CEILINGS FOUNDATION & WATER PROOFING

.22 CAL SINGLE SHOT TOOLS	Hammer Shot  Part No. 45000 Application: Basement renovations Maximum Pin Length: 2-1/2" .22 caliber single shot loads: 2, 3, 4 (see page R 26)	Master Shot  Part No. 45100 Application: Basement renovations applications in concrete and steel Maximum Pin Length: 2-1/2" (3" w/washer) .22 caliber single shot loads: 2, 3, 4 (see page R 26)	Trigger Shot  Part No. 45200 Application: Basement renovations Maximum Pin Length: 2-1/2" .22 caliber single shot loads: 2, 3, 4 (see page R 26)
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Intro to Gas Technology

ITW saw a challenge: how to create a portable tool that delivered the power of pneumatic tools without the hoses and compressors. In 1991, ITW Paslode conquered the challenge with the revolution of gas-powered technology. The cordless Impulse Finish Nailer delivered the power of pneumatic tools without cluttering job sites.

With the thought of Driving Jobsite Speed while creating a safer work environment, ITW Ramset built upon the Paslode technology and in 1992 introduced the TrakFast to the drywall trade. It forever changed the way the world worked. In 2003, ITW Ramset followed up on the success of the TrakFast with the T3SS which is setting the standard for electrical and mechanical contractors.



Drywall



Electrical



Mechanical

- No Licensing Required
- Fast and Easy to Use
- Quiet—No Recoil
- No Cords or Hoses
- Long Fuel Cell & Battery Life

Gas significantly lowers cost-in-place, reduces stress on the employee, and it's much quieter to use than drilling or powder actuated tools (PATs), so you can work in occupied buildings. There are times when you need the power and accuracy of our PATs—like the speed of our fully automatic RA27 tool, or the work horse, nearly maintenance-free Cobra+ semi-automatic PAT. But constant use of these tools can be noisy and overly jarring on the body.

When the conditions are right, gas is the right choice.

Problem:
"My guys work on block all day long—from electrical boxes to furring. I've tried powder tools and they blow holes in block. What makes the Ramset technology different?"

Solution:
Ramset technology has patented overdrive technology built in to every gas-powered tool. The tool works under the same principal as a combustion engine. A little gas, a little spark and a powerful shot, without the recoil associated with powder.



The industry transitions to gas technology



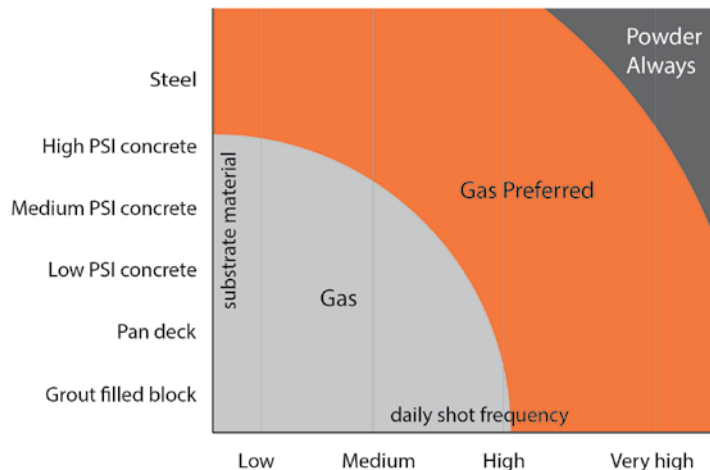
Problem:

"I don't want to have to re-license my guys to work with gas technology"

Solution:

Since there are no loads, there's no licensing needed. In fact, Union Trainers have begun including the Ramset Gas Tools in training classes, and students can't believe how easy the tools are to work with.

In addition, the gas powered tools are totally portable and can be used for almost all your jobs—without the worry of having unspent loads on your jobsite.

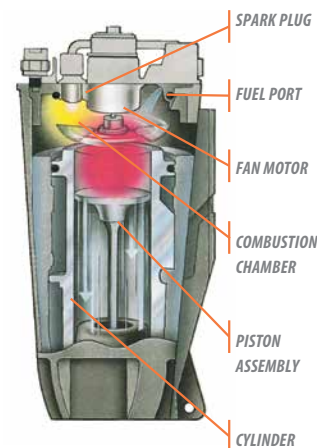


The Inside Story

The patented Ramset technology delivers precisely balanced power eliminating the damage caused by overdrive in PATs.

How it works: As the nosepiece is depressed, a rechargeable battery turns on the fan motor. In less than a second, a precise amount of fuel is injected into the combustion chamber. When the trigger is pulled, a spark creates an explosion that drives the piston into the fastener, and the fastener in the work surface. The action creates a vacuum that pulls the piston back to the start position.

In fact the technology is so precise it won't blow through a pop can.



T3MAG

Gas Powered Tool

Gas Technology
45 Pin Magazine
One Step Fuel Injection



SPECIFICATIONS

Part No. T3MAG

Length: 18-1/2"

Height: 15"

Weight: 9.2 lbs.

Pin Guide O.D.: 590

Fuel cell: 1000 shots

Battery (charged): 3000 shots

DESCRIPTION/SUGGESTED SPECIFICATIONS

Automatic Fastening System—

THE PREMIER FASTENING SYSTEM FOR THE COMMERCIAL DRYWALL CONTRACTOR

The nose of the T3 has been specifically engineered to allow the tool to easily reach into 1-5/8" x 2" deep track at any angle. The newly designed nosepiece, point collation, and patented pin-feed mechanism allows for easy fastening without jamming.



Point Collation virtually eliminates jams.

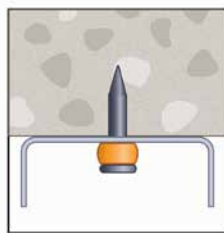
The T3 is ergonomically balanced for less operator fatigue. No more fumbling to get the tool into position with the "grip it & flip it" design.

ADVANTAGES

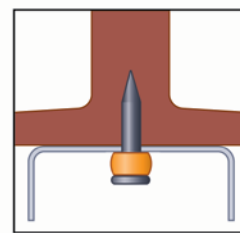
- Higher stick rate (.125 diameter)
- 25% more power
- Easy push down force
- Deep leg track capability
- 45-pin magazine capability
- Newly designed fitted dust shield
- Battery charger provides constant charging even with low voltage drops
- 2 Year Warranty (6 months on wearable parts).

T3MAG Increase Your Range with Overhead Power

The Power of the T3MAG allows you to consistently shoot where no other gas tool has gone before. The .125 diameter pin is specifically engineered to work in the toughest concrete and steel where other pins cannot perform. The new T3MAG system delivers power that rivals other gas and powder systems.



Setting aggregate is the biggest reason for overhead pin failure.

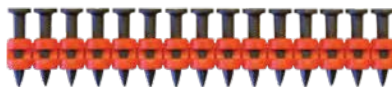


With the T3's 1/2 steel pin you can even shoot into the web of steel.

SELECTION CHART

T3MAG Fuel/Pin Pack

1,000 PINS AND 1 FUEL CELL PER BOX.



PART NUMBER	SHANK LENGTH IN.	SHANK LENGTH (mm)	DESCRIPTION (comes with T3 fuel cell)
T3012S	1/2	(12.7)	1/2" Plated premium steel pin
T3034B	3/4	(19.1)	3/4" Black concrete pin
T3034S*	3/4	(19.1)	3/4" Plated step shank pin
T3100	1	(25.4)	1" Plated concrete pin=

Shank diameter = .125
 Head diameter = .250

*Shank diameter = .104 / .125

APPLICATIONS



Perfect for top track and deep leg track applications.



Shoot directly into the web of steel effortlessly.



Even though the T3 has enough power to fasten into hard concrete and steel it still will not blow through hollow block.



Perfect for hat channel applications.

PERFORMANCE TABLE

Gas Fasteners in Steel

PART NUMBER	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL – STEEL THICKNESS INCHES							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			3/16 (.1875)		1/4 (.250)		3/8 (.375)			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
T3012S	0.125	TAPER SMOOTH	-----	-----	237	1184	356	1782	189	943 ¹⁰
									392	1960 ⁷

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fasteners that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is .31" minimum. **Note 8:** Fastener penetration is .29" minimum. **Note 9:** Fastener penetration is .27" minimum. **Note 10:** Fastener penetration is .25" minimum. **Note 11:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

Collated Gas Fasteners in Concrete

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE – CONCRETE COMPRESSIVE STRENGTH							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			2000 PSI		3000 PSI		4000 PSI			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
T3 Straight Shank	0.125	5/8	83	414	109	611	-----	-----	78	426
		3/4	107	541	156	855	-----	-----	104	593
									195	977
PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE – CONCRETE COMPRESSIVE STRENGTH							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			3000 PSI LIGHT WEIGHT CONCRETE		3000 PSI LIGHT WEIGHT CONCRETE WITH METAL DECK		HOLLOW CONCRETE MASONRY UNITS (CMU) ANY LOCATION			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
T3 Straight Shank	0.125	5/8	84	418	108	540	72	361	242	1210
		3/4	108	540	173	864	93	470	288	1442
									-----	-----

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance in concrete is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa. **Note 9:** T3 straight shank allowable tension value in face shell of hollow CMU is 133 lbs.

APPROVALS/LISTING

ICC ESR 1955 - Fasteners

COLA RR-22668 - Fasteners

TOOL ACCESSORIES



Part No. T3FUEL
Fuel Cell—T3SS
Qty: 12 (6–2 packs)



Part No. B0092
Battery—T3SS
Qty: 1



Part No. 906001 (T3MAG v2)
Part No. B0237 (T3MAG)
Magnetic Disc Probe
Qty: 1

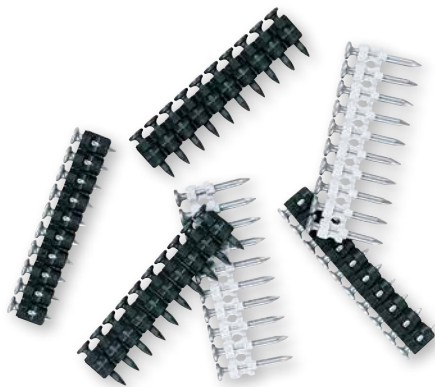


Part No. B0022
Battery Charger—T3SS
Qty: 1

TrakFast

TF1200 Gas Powered Tool

Fully Automatic
1-1/2" Pin Capacity
42 Pin Magazine
Capacity



DESCRIPTION/SUGGESTED SPECIFICATIONS

Automatic Fastening System—

Since its introduction in 1991, TrakFast has been the tool of choice for both interior and exterior contractors. The TrakFast Automatic Fastening System fastens all types of track, from standard track to hat channel, deep leg, Z, and J channel. Contractors continue to report tremendous savings when using TrakFast for high production fastening. They have learned that TrakFast's actual cost in place beats all other systems. The



Fastening System Productivity

In the time it takes
you to drive two pins
with a powder tool,
you can drive up to
10 pins with TrakFast!

increased speed and productivity of TrakFast allows the contractor to bid more competitively, complete the job sooner and move on to the next job. Anyone can use TrakFast—just load the pins and fire. It's that easy!

ADVANTAGES

- **SPEED** Three to five times faster than powder tools. 42-pin magazine reduces loading time.
- **EASY TO USE** Tool automatically resets piston. No recoil, tool absorbs shock resulting in less operator fatigue.
- **NO LICENSING REQUIRED** Unlike powder-actuated tools, no licensing is needed.
- **NO CHANGING LOADS** TrakFast uses a fuel cell, not a load. No need to inventory different colored loads.
- **NARROW NOSE AND PROFILE** Allows tool to reach inside deep leg track (1-5/8" wide x 2" high).
- **2 Year Warranty** (6 months on wearable parts).

TrakFast's power comes from the battery and fuel cell

The 6-volt rechargeable Ni-CD battery can drive approximately 3000 shots per charge. The clean burning fuel cell can drive over 1000 pins and keeps the tool cleaner than powder actuated tools.



MOST COMMON FASTENERS

PIN #	PIN LENGTH		MOST COMMON APPLICATION
	IN.	MM	
FPPSP916	9/16	14.3	Track to steel
FPP034B	3/4	19.1	Track to concrete
FPP114	1-1/4	31.8	Membering to concrete

See page R 12 for all fasteners.

APPLICATIONS



Waterproofing to concrete



Track to concrete



Track to steel

APPROVALS/LISTING

ICC ESR-2579 - TrakFast Fasteners (Note: This report replaces ER-5001)

COLA RR-25264 - TrakFast Fasteners (City of LA)



TrakFast ICC (ICBO) ER-5001 is the only approval that allows you to fasten into any location on a hollow block wall and won't blow away block like a powder tool.

TOOL ACCESSORIES



Part No. 4821
Fuel Cell—TrakFast



Part No. B0092
Battery—T3SS
Qty: 1



Part No. LD100
Plated 1" Lathing Disc 22g
Qty: 1,000 per box

SPECIFICATIONS

Part No. TF1200

Length: 17"

Height: 15-1/2"

Weight: 8.375 lbs.

Maximum Capacity: 42 pins

Maximum cycles/second: 2

Fuel cell: 1000 shots

Battery (charged): 3000 shots



SLIP-OVER CUP
Part No. 7405161
For Cosella Dorken
(DELTA-MS) Plugs
Qty: 1



Part No. 100041LA
Disc Holding Probe
(for TF1200 Telescoping Nose)
Qty: 1



Part No. B0022
Battery Charger—TF1200
Qty: 1

TRAKFAST GAS TOOL FASTENERS

Ramset collated Gas Tool Fasteners are specifically engineered for optimal performance in Ramset Gas Power Tools using fastener magazines

SELECTION CHART

TrakFast Standard Fuel /Pin Pack

STRAIGHT SHANK



For high volume, repetitive fastenings to concrete and steel such as drywall track to concrete. 1,000 pins and 1 fuel cell per box.

PART NUMBER	SHANK LENGTH IN. (mm)	DESCRIPTION
FPP034B	3/4 (19.1)	3/4" Black pin
FPP114	1-1/4 (31.8)	1-1/4" Plated pin

Shank diameter = .109 Head diameter = .250

TrakFast Premium Fuel /Pin Pack

STEP SHANK



For high volume, repetitive fastenings to hard concrete and hard steel such as drywall track to hard concrete and steel. 1,000 pins and 1 fuel cell per box.

PART NUMBER	SHANK LENGTH IN. (mm)	DESCRIPTION
FPPSP916	9/16 (14.3)	9/16" Gold pin

Shank diameter = .104 / .118 Head diameter = .250

TrakFast Breakaway Strip Fuel/Pin

STRAIGHT SHANK



For high volume, repetitive fastenings to concrete such as wood furring to concrete. 1,000 pins and 1 fuel cell per box.

PART NUMBER	SHANK LENGTH IN. (mm)	DESCRIPTION
FPP112T	1-1/2 (38.1)	1-1/2" Plated pin

Shank diameter = .109 Head diameter = .250

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
 Typical tensile strength: 270,000 psi
 Typical shear strength: 162,000 psi
 Standard finishes
 - Proprietary black
 - Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695
 - Electroplated zinc with yellow chromate

APPROVALS/LISTING

ICC Evaluation Service, Inc.

#ESR-2579 TrakFast Pins

City of Los Angeles

#RR-25264 TrakFast pins

PERFORMANCE TABLES
Collated Gas Fasteners in Concrete

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE – CONCRETE COMPRESSIVE STRENGTH							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			2000 PSI		3000 PSI		4000 PSI			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)		
FPP - Straight Shank	0.109	5/8	60 434	55 546	55 453	75 615	55 472	95 685		
		3/4	60 595	80 650	55 583	95 699	55 571	115 749		
FPPSP - Step Shank	0.104/0.118	3/4	-----	-----	-----	-----	51 256	83 418		

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE – CONCRETE COMPRESSIVE STRENGTH							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			3000 PSI LIGHT WEIGHT CONCRETE		3000 PSI LIGHT WEIGHT CONCRETE WITH METAL DECK		HOLLOW CONCRETE MASONRY UNITS (CMU) ANY LOCATION			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)		
FPP - Straight Shank	0.109	5/8	35 234	55 403	30 239	205 1025	35 347	50 435		
		3/4	80 630	115 756	40 330	235 1284	-----	-----	-----	-----
FPPSP - Step Shank	0.104/0.118	3/4	-----	-----	-----	-----	36 184	58 290		

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance in concrete is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa.

Gas Fasteners in Steel

PART NUMBER	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL – STEEL THICKNESS INCHES							
			ALLOWABLE LOAD – <i>Ultimate Load</i>							
			3/16 (.1875)		1/4 (.250)		3/8 (.375)			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)		
FPPSP916	0.104/.118	SMOOTH	-----	-----	148 744	157 787	166 832 ¹	157 787 ¹		

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is .31" minimum. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

T4 I-F Gas Powered Tool

Cordless Gas Nailer for Insulation



SPECIFICATIONS

Part No. T4 IF

Length: 21"

Height: 12"

Weight: 7.9 lbs.

Pin Guide O.D.: 590

Fuel cell: 500 shots

Battery (charged): 3000 shots

DESCRIPTION/SUGGESTED SPECIFICATIONS

Fully Automatic Fastening System—

IMPROVE YOUR PRODUCTIVITY - WORK FASTER THAN EVER BEFORE

The T4 I-F is a fully automatic tool that shoots up to 1000 shots per hour. With low push down force (4.5kg)- allows users to work faster, easier and with less fatigue. The Start & Go System provides energy saving with "self cut-off" when not used for 1 minute.

ADVANTAGES

- Cordless technology – 6 x faster than anchoring & 2 x faster than PAT
- Wide range of fasteners for 1"- 6" insulation thickness
- Low noise & vibration level
- Low thermal bridge – no spot stains or dimples
- Low actuation force – work faster, easier & less fatigue
- LED display showing remaining fuel & battery power
- Start & Go System allows for 3000 shots per charge

APPLICATIONS



Exterior Walls - Insulation to steel

Exterior Walls - Insulation to concrete

Foundation Walls

Parking Garages

Heated Floors

Balcony Insulation

Block Walls

Ceiling Acoustical Insulation



PERFORMANCE TABLE

STEEL STUDS

FASTENERS	ALLOWABLE/ULTIMATE PULLOUT LOAD LBS (kN)			
Steel Gauge	22GA	20GA	18GA	16GA
T4IFS-100 - T4IFS-600	20/120 (0.09/0.53)	33/200 (0.15/0.89)	46/280 (0.20/1.25)	60/360 (0.27/1.60)

CONCRETE

FASTENERS	CONCRETE STRENGTH PSI (Mpa)	ALLOWABLE/ULTIMATE TENSION LOADS Lbs (kN)
T4IFC-100 - T4IFC-600	3600-6500 (25-45)	35/211 (0.15/0.94)

HOLLOW CONCRETE BLOCK

FASTENERS	ALLOWABLE/ULTIMATE TENSION LOADS Lbs (kN)
T4IFC-100 - T4IFC-600	35/184 (0.15/0.82)

TOOL ACCESSORIES



Part No. 018581
Battery-T4IF
Qty: 1



Part No. 018582
Battery Charger - T4IF
Qty: 1

Part No. T4FUEL
Fuel Cell - T4IF
Qty: 12 (6-2 packs)

Insulation Fastening System

FASTEN INSULATION IN ONE STEP

The T4 I-F System is 4 times faster than the traditional stick pin installation method. It allows the installer to attach insulation in one simple step without the use of adhesives or cutting spindle insulation anchors anymore.

ADVANTAGES

- Saving time and labour cost over the traditional insulation fastening method.
- Fasten the insulation directly to concrete, hollow block and steel studs. No need to glue and stick pin insulation anchors anymore.
- The fastening is constant and clean looking.
- Light weight of 3.6kg means slower operator fatigue.
- The tool allows you to fasten the insulation in tight spaces through pipes and sprinkler systems.
- The T4FUEL can shoot approx. 500-750 shots before replacing.
- The system can be used year round; unlike stick pins, you won't be restricted by cold temperature or wet surfaces.
- Operating temperature from -15 C to 50 C
- Thermal bridging: 99.5% efficiency.
- 1" - 6" insulation pin capacity.
- Depth of drive adjuster.
- Fuel and battery gauges.
- Compact and lightweight lithium ion battery provides 3,000 shots per charge.

T4 I-F FASTENERS

INTEGRATED THERMAL CAP

For improved thermal efficiency and aesthetics

FLANGES to ensure the insulation remains perfectly in place, the insulation panel won't flip around during the fastening process

SPECIALLY SHAPED SHAFT – Reduces friction and force required to insert fastener into insulation

POINT designed to pierce most difficult insulation material with little effort



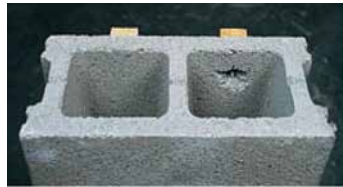
Rockwool / Fiberglass



Expanded Polystyrene



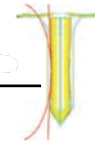
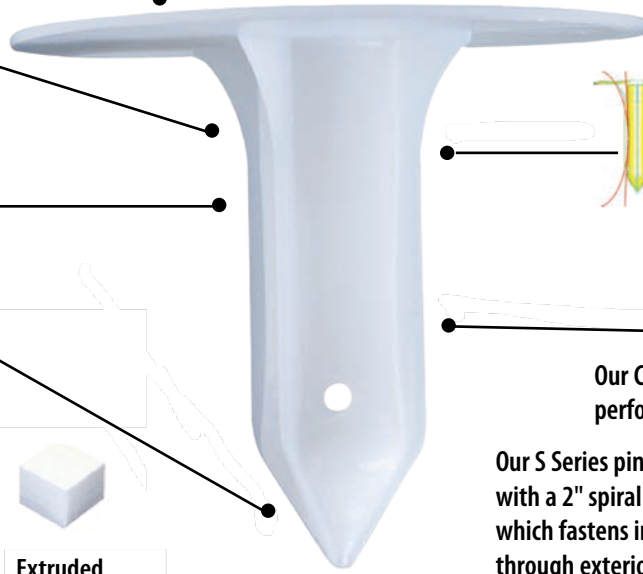
Extruded Polystyrene



The T4 I-F Fastener™ will not spall the hollow block like powder actuated fasteners.



Damaged insulation by wind loads using stick pin fasteners. T4 I-F Fasteners™ eliminate this problem.



Engineered curved design limits insulation compression which enables full thermal efficiency



Our C Series pin provides exceptional performance in the hardest concrete.

Our S Series pin is equipped with a 2" spiral steel stud pin which fastens insulation through exterior gypsum sheathing to exterior steel studs in one simple action.



FASTENER SPECIFICATIONS

- Pin Material: Heat treated carbon steel
- Pin Finish: Mechanical Zinc Plated
- Washer Material: High Density Polyethylene (HDPE)
- 2-3/8" Holding Diameter
- Made in Canada
- The fastener assembly is clearly branded Ramset along with the length of the fastener assembly



SELECTION CHART

FASTENERS FOR STEEL STUDS

PART NUMBER	DESCRIPTION	INSULATION THICKNESS	BOX QTY
T4IFS-100	1" Insulation Fastener w/fuel	1" (25 mm)	500
T4IFS-112	1-1/2" Insulation Fastener w/fuel	1-1/2" (38 mm)	500
T4IFS-200	2" Insulation Fastener w/fuel	2" (50 mm)	500
T4IFS-212	2-1/2" Insulation Fastener w/fuel	2-1/2" (63 mm)	500
T4IFS-300	3" Insulation Fastener w/fuel	3" (75 mm)	500
T4IFS-312	3-1/2" Insulation Fastener w/fuel	3-1/2" (89 mm)	500
T4IFS-400	4" Insulation Fastener w/fuel	4" (100 mm)	500
T4IFS-500	5" Insulation Fastener w/fuel	5" (125 mm)	500
T4IFS-600	6" Insulation Fastener w/fuel	6" (150 mm)	400
T4IF	T4 I-F Insulation Tool (6" Capacity)		1

FASTENERS FOR CONCRETE AND CMU

PART NUMBER	DESCRIPTION	INSULATION THICKNESS	BOX QTY
T4IFC-100	1" Insulation Fastener w/fuel	1" (25 mm)	500
T4IFC-112	1-1/2" Insulation Fastener w/fuel	1-1/2" (38 mm)	500
T4IFC-200	2" Insulation Fastener w/fuel	2" (50 mm)	500
T4IFC-212	2-1/2" Insulation Fastener w/fuel	2-1/2" (63 mm)	500
T4IFC-300	3" Insulation Fastener w/fuel	3" (75 mm)	500
T4IFC-312	3-1/2" Insulation Fastener w/fuel	3-1/2" (89 mm)	500
T4IFC-400	4" Insulation Fastener w/fuel	4" (100 mm)	500
T4IFC-412	4-1/2" Insulation Fastener w/fuel	4-1/2" (114 mm)	500
T4IFC-500	5" Insulation Fastener w/fuel	5" (125 mm)	500
T4IFC-600	6" Insulation Fastener w/fuel	6" (150 mm)	400
T4IF	T4 I-F Insulation Tool (6" Capacity)		1

THERMO BRIDGING

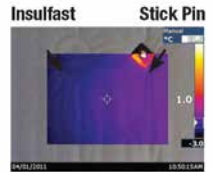
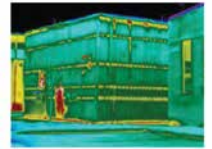
Thermal Performance of Building Envelope Assemblies

In buildings, when insulating material is interrupted by a highly conductive material, thermal bridging takes place. Examples of thermal bridges include steel pins that interrupt the continuity of batt insulation and go through heavily insulated exterior walls. Simply put, thermal bridges occur where differences in material thermal conductivities result in significant lateral heat flow; e.g. heat flowing along the surface of a wall and then flowing through the wall via a steel pin.

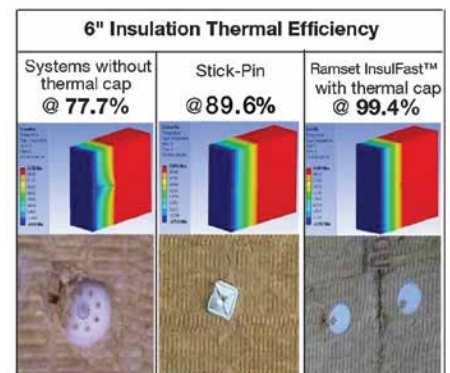
The Calculations performed by the Advanced Thermal/Fluids Optimization, Modeling and Simulation (ATOMS) Laboratory, Department of Mechanical & Industrial Engineering, University of Toronto show that the Ramset T4 I-F is over 99% efficient whereas the stick pins can downgrade the efficiency by more than 10%.

Suggested Specification

The fasteners used to attach Insulation (Rockwool, Expanded Polystyrene and Extruded Polystyrene) into Solid Masonry, Hollow Concrete Block and Steel Studs shall be a Ramset T4 I-F Fastener. The T4 I-F Fastener shall be fastened using the Ramset T4 I-F Gas Tool. The T4 I-F Fastener is made from High Density Polyethylene (HDPE) plastic and has a holding diameter of 2-3/8" (60mm) with the Ramset logo marking.



		Insulation Thickness					
		1 in	2 in	3 in	4 in	5 in	6 in
Reference	U – Factor (W/m ² °C)	1.1786	0.7122	0.5103	0.3976	0.3257	0.2758
	Efficiency (%)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Stick Pin	U – Factor (W/m ² °C)	1.2422	0.7706	0.5597	0.4397	0.3621	0.3078
	Efficiency (%)	94.88%	92.42%	91.17%	90.43%	89.94%	89.59%
InsulFast™	U – Factor (W/m ² °C)	1.1845	0.7162	0.5132	0.3999	0.3276	0.2773
	Efficiency (%)	99.50%	99.45%	99.44%	99.43%	99.42%	99.42%



These thermal bridges contribute to a multitude of problems, including, but not limited to:

- Added energy use during heating and cooling seasons
- Interior surface condensation which leads to:
 - ° High humidity levels that can lead to unusual concentrations of airborne contaminants and microbial growth
 - ° Rusting issues that can damage the structure

Ramset T4 I-F Overview



Operating temp.: -15 C to 50 C

Light-weight: Only 3.6 Kg

Compact & light-weight lithium battery provides 3,000 shots per charge

Compact fuel cell (T4FUEL) provides approx. 500 - 750 shots

T3 Single Shot Gas Powered Tool

Gas Technology
Single Pin Gas Tool
Fuel Injection
Cross Over
Technology



DESCRIPTION/SUGGESTED SPECIFICATIONS

Crossing Over from Powder to Gas— THE PREMIER FASTENING SYSTEM FOR THE ELECTRICAL CONTRACTOR

Ramset is serious when it comes to driving job speed by creating the T3SS—the single shot tool that will help move/contractors from powder to gas.



Easy battery loading.

Battery rest position allows you to turn off the tool without fully removing the battery.

The T3SS provides the benefits of shooting a gas tool, including reduced installation time and operator fatigue for the contractor who normally shoots a muzzle loaded powder tool.

To make the T3SS the most versatile gas tool in the industry, Ramset uses the newly developed Cross Over technology that allows users to change out nosepieces to accommodate any fastening need. From metal-to-concrete, hard concrete or steel, pan deck, block and just about surface you can think of the T3SS works for you.

ADVANTAGES

- Sets the standard for single shot applications
- 5 times faster than traditional drill and anchor methods
- Replaces the need for tools like the DX35
- Reduced operator fatigue
- Reduced installation costs—up to 75%
- Quiet enough to work in tenant occupied buildings
- Removable rear foot
- 2 Year Warranty (6 months on wearable parts).

Versatile! Safe! Fast! Quiet!

Safety Managers recommend the T3 because there's no licensing required.

- Lower Recoil Reduces Operator Fatigue
- Quieter than Drilling & Anchoring or Powder
- Eliminates Exposure to Concrete Dust (Silicosis)



No more fines for unspent loads on the jobsite.

MOST COMMON FASTENERS

PIN #	MOST COMMON APPLICATION
12HSMPO34	1/2" One hole strap with 3/4" pin
MP034TH	3/4" Plated pin with top hat

See pages R 20 for all fasteners.

APPLICATIONS



12HSMP034 clip assembly
used to secure conduit



MP034TH fastener used to
attach a junction box

SPECIFICATIONS

Part No. T3SS

Length: 13-1/2"

Height: 15"

Weight: 7.0 lbs.

Pin Guide O.D.: 1/2" Standard, 7/8" Magnetic

Maximum Pin Length: 1-1/2"

Fuel cell: 1000 shots

Battery (charged): 3000 shots

APPROVALS/LISTING

ICC ESR-1799 - Fasteners

COLA RR-22668 - Fasteners

TOOL ACCESSORIES



Part No. T3FUEL
Fuel Cell—T3SS
Qty: 12 (6—2 packs)



Part No. B0092
Battery—T3SS
Qty: 1



Part No. M150200
Magnetic nose Piece
Qty: 1



Part No. B0022
Battery Charger—T3SS
Qty: 1

SELECTION CHART

One Hole Strap



Used to attach conduit or armored cable to concrete. Fastener pre-assembled to a 16 gage conduit strap. 100 per jar, 3/8" 200 per jar and 1-1/4" 25 per jar.

PART NUMBER	SHANK DIAMETER	HEAD DIAMETER	DESCRIPTION
38HSMP034	.104/.125	.300	3/8" Hole strap with 3/4" plated pin
12HSMP034	.104/.125	.300	1/2" Hole strap with 3/4" plated pin
34HSMP034	.104/.125	.300	3/4" Hole strap with 3/4" plated pin

Ceiling Clip Assembly



Pre-assembled Ceiling Clip. Plated 14 gage clip. 100 per jar.

PART NUMBER	SHANK DIAMETER	HEAD DIAMETER	DESCRIPTION
34CLIP	.104/.125	.300	3/4" Ceiling Clip Assembly

Selection Chart continued on R20

T3SS PERFORMANCE/SUBMITTAL

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

SELECTION CHART

Tie Strap Holder



Used to install temporary lighting and secure low voltage cable to concrete, uses a standard cable tie up to 3/8" in width. Fastener pre-assembled to an 22 gage tie strap holder. 50 per jar.

PART NUMBER	SHANK DIAMETER	HEAD DIAMETER	DESCRIPTION
TSHMP034	.104/.125	.300	Tie strap holder with 3/4" plated pin

Top Hat Pin



Used for general purpose fastening to concrete. Plated pin with top hat. 200 per jar.

PART NUMBER	SHANK DIAMETER	HEAD DIAMETER	DESCRIPTION
MP034TH	.125	.300	3/4" Plated pin with top hat

PIN SPECIFICATIONS

Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc

Typical tensile strength: 270,000 psi

Typical shear strength: 162,000 psi

Standard finish

- Proprietary black
- Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695
- Electroplated zinc with yellow chromate

APPROVALS/LISTING

ICC Evaluation Service, Inc.

#ESR-1955 T3 Fasteners

Fasteners in Concrete

FASTENER PART NUMBER	SHANK DIA. (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD – <i>Ultimate Load</i>						HOLLOW BLOCK Grade N, Type 1	
			4000 PSI		6000 PSI		3000 PSI Lightweight LOWER FLUTE		FACE SHELL Min 1-1/4" face thickness	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
GAS ASSEMBLIES	MP034TH*	5/8	78 426	80 574	62 308	----	72 361	242 1210	133 691	----
		3/4	104 593	195 977	132 658	206 1057	93 470	288 1442	84 444	87 446
	34CLIP	0.104/.125	62 310	----	106 528	----	44 220	----	----	----
	38HSMP034, 12HSMP034 34HSMP034, TSHMP034	0.104/.125	60 357	117 587	107 533	191 957	54 269	230 1150	71 357	123 613

* ESR-1955 pin data applies. **Note 1:** ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190
Note 3: Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads and other design criteria may require a different safety factor. **Note 6:** Job-site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. In hollow block applications, no more than one fastener per cell. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa.

Intro to Powder Fastening Systems

Over a half century of leadership in powder actuated tools and fasteners

The first powder actuated tools (PATs) were used for repairing damaged ship hulls during World War I. This application continued through World War II, when the son of the original inventor, Stanley Temple, developed and implemented the technology for commercial use. In 1947, the "Tempotool" was introduced to the construction industry.

Ramset Fasteners was founded in 1948 to handle distribution and sales for the construction trades. In 1949, Ramset's accredited Operator Program was officially launched. Today this highly successful training program has instructed over 1,000,000 trades people in the safe use of PATs.

Today, Ramset continues to bring the industry the products, service and innovation that they have come to expect from the leader in powder fastening. All geared to help contractors do their job faster, more safely and more productively.



Training and Certification

DESCRIPTION

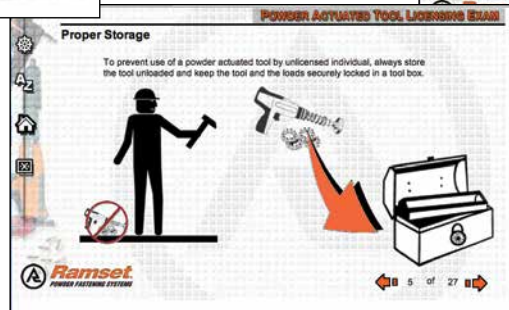
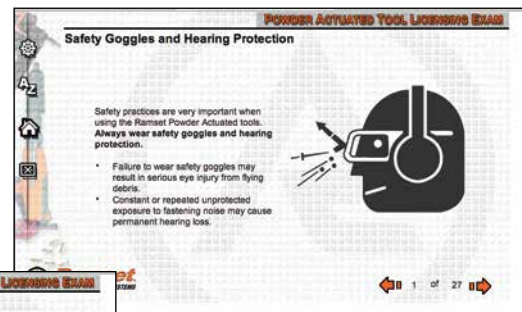
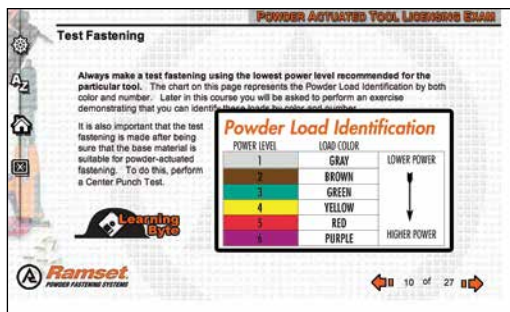
Ramset has designed and engineered the right powder actuated tool for your applications. To ensure you use a powder actuated tool correctly, please take the time to review the Operator's Safety and Operating Instruction Manual packaged with each tool. These manuals are also available for download on the Ramset website.

To assure safety on the jobsite, OSHA and ANSI require that all powder actuated tool users become trained and certified for the particular tool being used. One way Ramset enables you to receive this training is through our website training program. This innovative approach to education combines interactive web-based training techniques and online testing with immediate feedback to provide you a rich learning environment.

The course consists of approximately 30 pages of usage, safety and troubleshooting material.

Upon completion of this brief course you will have the opportunity to take an online exam. Instructions for taking these exams are provided at the end of the course. With successful completion of the exam, you have the opportunity to print a certification card.

As an industry leader in powder actuated fastening systems, Ramset continues to provide the most effective and comprehensive instructor and operator training programs available.



Visit ramset.ca for online PAT licensing

RA27

Fully Automatic P.A.T.

.27 Caliber Strip Tool
Semi-Automatic
1-1/2" Pin Capacity
(2" w/washer)



DESCRIPTION/SUGGESTED SPECIFICATIONS

Fully-Automatic Strip Tool—

MOST COMMON APPLICATION DRYWALL TRACK TO CONCRETE!

Ramset's fully automatic RA27 powder-actuated tool, lowering downtime and fatigue on commercial job sites. The RA27 stands up to the toughest use for interior and exterior applications

ADVANTAGES

- Lower pushdown force reduces fatigue
- Long-lasting piston reduces downtime
- Collar requires only ¼ turn for quicker cleaning
- More power load-for-load provides flexibility in a wide range of applications
- Power adjust dial provides the ability to dial down power for ideal pin embedment
- Patented RBC (Residue Build-up Channel) allows user to work longer between cleanings
- Back end padding absorbs recoil, reducing fatigue
- Belt/tether clip for safety
- Swivel lift/scaffold hook keeps the tool within reach at all times

MOST COMMON FASTENERS

PIN #	PIN LENGTH		MOST COMMON APPLICATION
	IN.	MM	
1512SD	1-1/2	38.1	2" x 4" to concrete
SP12	1/2	12.7	2" x 4" to concrete
1506	3/4	19.1	Drywall track to concrete

See pages R 31 - R 32 for all fasteners.

SPECIFICATIONS

Part No. RA27

.27 caliber 10-shot strip loads 3, 4, 5

Weight: 5.3 pounds

Length: 15"

Muzzle Bushing O.D.: 9/16"

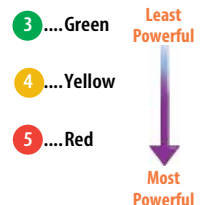
Maximum Pin Length: 1-1/2" (2" w/washer)

3 year warranty

POWER LEVEL GUIDE FOR LOADS

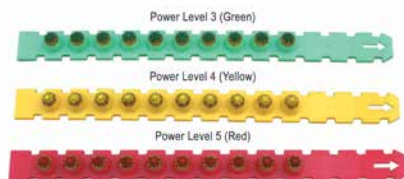
All loads are color coded and load level numbered. As the number increases, the power level increases.

Always start with the lightest load. If the fastener does not set completely, use the next higher load and repeat the process.



Cobra+

.27 Caliber Strip Tool
Semi-Automatic
2-1/2" Pin Capacity
(3" w/washer)



DESCRIPTION/SUGGESTED SPECIFICATIONS

Semi-Automatic Strip Tool—

MOST COMMON APPLICATION DRYWALL TRACK TO CONCRETE!

The Cobra+ can be used in different applications, a few are electrical junction boxes to steel or concrete, door and window frames to concrete, HVAC duct straps and forming work.

ADVANTAGES

- Semi-automatic .27-caliber tool —uses strip loads
- Padded recoil-absorbing handle—for greater operator comfort
- Power adjustable for maximum efficiency
- Silencer that reduces noises by 30%
- Ergonomic handle maximizes user comfort
- Fastens up to 3" standard Ramset drive pins and threaded studs—ideal for general construction applications
- Full one-year warranty

MOST COMMON FASTENERS

PIN #	PIN LENGTH		MOST COMMON APPLICATION
	IN.	MM	
1524SDP (washered)	3	76.2	2" x 4" to concrete
1516SDC (washered)	2-1/2	63.5	2" x 4" to concrete
1506	3/4	19.1	Drywall track to concrete

See pages R 31 - R 32 for all fasteners.

SPECIFICATIONS

Part No. COBRA+

.27 caliber 10-shot strip loads 2, 3, 4, 5

Weight: 5.25 pounds

Length: 15"

Muzzle Bushing O.D.: 9/16"

Maximum Pin Length: 3"

POWER LEVEL GUIDE FOR LOADS

All loads are color coded and load level numbered. As the number increases, the power level increases.

Always start with the lightest load. If the fastener does not set completely, use the next higher load and repeat the process.



Cobra+ InsulFast with Cobra+ conversion kit

Ramset's Semi-Automatic Powder Actuated Option for Insulation Fastening

Easy and Convenient Kit to Maximize Productivity



COBRAIFKIT Conversion Kit



DESCRIPTION/SUGGESTED SPECIFICATIONS

Semi-Automatic Strip Tool for Fastening Insulation to Concrete

MAXIMIZE YOUR PRODUCTIVITY AND COVER 2 APPLICATIONS WITH THE SAME TOOL!

The Cobra+ InsulFast Conversion Kit allows for an easy and convenient way to tackle 2 applications with the same great Cobra+ tool. Used it for your typical PAT application as well as for fastening rigid and semi-rigid insulation to concrete.

ADVANTAGES

- Fasten insulation to concrete up to 4X faster than traditional methods
- Convert your tool back and forth in less than 5 minutes
- Reduce heat loss/thermal bridging of common metal fasteners with InsulFast fasteners. See page R 16 for more info



SELECTION CHART

PART NUMBER	DESCRIPTION	INSULATION THICKNESS	QUANTITY PER BOX
COBRA+	Semi Automatic Strip Tool, 27 CAL	-	1
COBRAIFKIT	Cobra+ IF Conversion Kit	-	1
IG625PAT*	1" InsulFast Fasteners with Green Powder Loads Incl.	1" (25 mm)	100
IG638PAT*	1-1/2" InsulFast Fasteners with Green Powder Loads Incl.	1-1/2" (38 mm)	100
IG650PAT*	2" InsulFast Fasteners with Green Powder Loads Incl.	2" (50 mm)	100

* Other fastener lengths available on special request

* For more information on InsulFast fasteners see page R 16 and R 17, for more information on Cobra+ tool see page R 24

SPECIFICATIONS

Part No. COBRA+

.27 caliber 10-shot strip loads 2, 3, 4, 5

Weight: 5.25 pounds

Length: 15"

Part No. COBRAIFKIT

Includes: Piston assembly (P/N 585810), Pin guide (P/N 585821), Buffer (P/N 585822), and detailed installation instructions.

.22 Cal Single Shot Tools

Hammer Shot 22 Cal



Master Shot 22 Cal



TriggerShot 22 Cal



DESCRIPTION/SUGGESTED SPECIFICATIONS

Single Shot - Hammer Activation Tool—

The Ramset Hammer Shot .22 Caliber Single Shot Tool is a hammer-actuated tool utilizing .22 caliber loads. This tool is great for small DIY projects. The Hammer Shot can easily fasten up to 2-1/2 in. drive pins.

ADVANTAGES

- For small DIY projects, such as fastening two by fours and furring strips to concrete in basements or room additions
- Hammer-actuated tool with a barrel design that allows for easy horizontal and overhead fastening, up to 2-1/2 in. drive pins

SPECIFICATIONS

Part No. 45000
 .22 caliber single shot loads 2,3,4
 Actuated Tool Type: Load/Booster

DESCRIPTION/SUGGESTED SPECIFICATIONS

Single Shot Tool - Sound Suppression Technology

CAN FASTEN UP TO 3 INCH DRIVE PINS WITH WASHER

Designed for frequent use providing fastening results in a variety of concrete, masonry or steel applications.

- Noise-reducing design up to 30% quieter
- Powder load automatically ejects after each use.

ADVANTAGES

- For light and medium duty applications in concrete and steel
- Ideal for attaching 2 x 4s, furring strips and electrical boxes
- 90 Day Warranty
- Heavy-duty all-steel construction

SPECIFICATIONS

Part No. 45100
 .22 caliber single shot loads 2,3,4
 Weight: 4.1 pounds
 Maximum Pin Length: 2-1/2" (3" w/washer)

DESCRIPTION/SUGGESTED SPECIFICATIONS

Single Shot - Trigger Activation —

For small DIY projects, such as fastening two by fours and furring strips to concrete in basements or room additions.

ADVANTAGES

- Trigger Actuated, No Hammer Required!
- For fastening to concrete, masonry or steel

SPECIFICATIONS

Part No. 45200
 .22 caliber single shot loads 2,3,4
 Weight: 3.7 pounds
 Maximum Pin Length: 2-1/2" (3" w/washer)

FASTENERS – HOW THEY WORK

DESCRIPTION

■ FASTENING TO CONCRETE

As the fastener enters the concrete, extreme pressures and heat are created. This creates a bond that provides high loading strength in concrete.

■ FASTENING TO STEEL

The resilience of steel provides a clamping effect to the fastener. This combined with the tremendous heat that is created, provides a welding and clamping effect to give maximum holding power.

FASTENING PLACEMENT AND PENETRATION

The following represents the minimum edge and spacing requirements, plus base material thickness requirements:

CONCRETE

- Edge distance.** Do not fasten closer than 3 inches from the edge of concrete. If the concrete cracks, the fastener may not hold and may allow the fastener to ricochet, causing serious injury or death to the operator or bystanders.
- Recommended minimum fastener spacing.** Setting fasteners too close together can cause the concrete to crack. The recommended MINIMUM DISTANCE between fastening is three (3) inches. Never attempt a fastener application too close to another previously inserted fastener to prevent the second fastener from ricocheting off the previously installed fastener. A ricochet can result in serious injury or death to the operator or bystanders.

- Concrete thickness.** It is important that the concrete be at least three (3) times as thick as the fastener penetration. If the concrete is too thin, the compressive forces forming at the fastener's point can cause the free face of the concrete to break away. This creates a dangerous condition from flying concrete and/or the fastener and also results in a reduction of fastener holding power.

STEEL

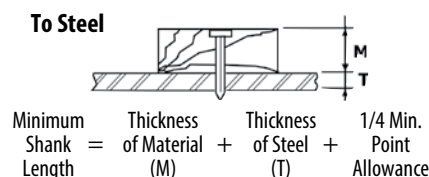
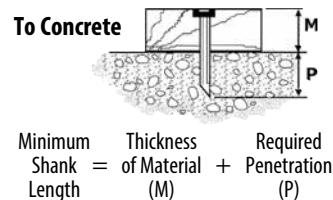
- Edge distance.** The recommended edge distance for a fastener to the edge of steel is 1/2 inch. Never fire the tool within 1/2 inch of the edge of a steel base material because the steel may bend or break off, allowing the fastener to ricochet, causing serious injury or death to the operator or bystanders.
- Recommended minimum fastener spacing.** The recommended minimum distance between fastening is 1 inch. Never attempt a fastening application too close to another previously inserted fastener to prevent the second fastener from ricocheting off the previously installed fastener. A ricochet can result in serious injury or death to the operator or bystanders.
- Steel thickness.** Do not fasten into steel base material thinner than the fastener shank diameter. Holding power will be reduced and the fastener may be over-driven, creating a dangerous situation to the operator or bystanders due to a free-flying fastener.

HOW TO SELECT A POWDER ACTUATED FASTENER

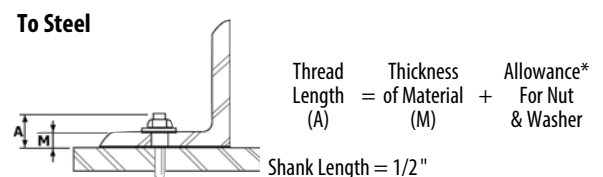
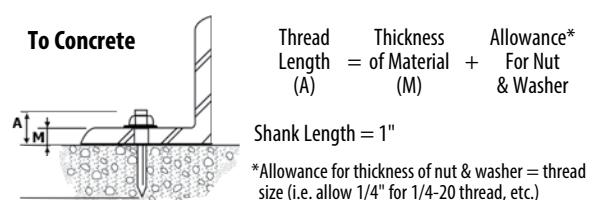
Drive pins are used to directly fasten an object (permanent installation). **Threaded studs** are used where the object fastened is to be removed or where shimming is required. The following shows how to determine shank and thread length. Required penetration is determined by load requirement (illustrated in the following examples).

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

Permanent Installation

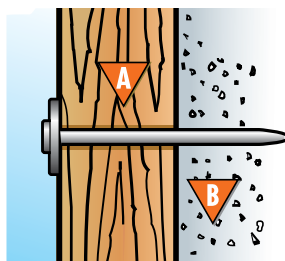


Removable Installation



Fasteners – How They Work

SELECTING THE CORRECT FASTENER LENGTH



High quality fasteners provide consistent and reliable performance in concrete, block, masonry, and steel applications. Choosing the correct fastener for the job will assure professional results.

- A** Determine thickness of material being attached.
- B** Fastener must be long enough to drive approximately 1" into concrete, cement block or penetrate thickness of steel.

POWER LEVEL GUIDE FOR LOADS

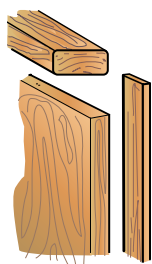
All loads are color coded and load level numbered. As the number increases, the power level increases.

Always start with the lightest load. If the fastener does not set completely, use the next higher load and repeat the process.



TYPICAL USES

WOOD ATTACHMENT*



CONCRETE BASE MATERIAL

COMMONLY USED FASTENER **COMMONLY USED LOAD**

2 X 4	1516	(2-1/2")	YELLOW #4
3/4" Plywood for furring strip	1512	(1-1/2")	GREEN #3
1/4" – 1/2" Plywood	1512	(1-1/2")	GREEN #3

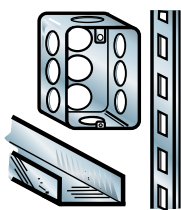
* USE RAMGUARD PIN FOR TREATED LUMBER. SEE PAGE 32.

STRUCTURAL STEEL BASE MATERIAL

COMMONLY USED FASTENER **COMMONLY USED LOAD**

SP178	(1-7/8")	RED #5
1510	(1-1/4")	YELLOW #4
1506	(3/4")	YELLOW #4

THIN GAGE STEEL



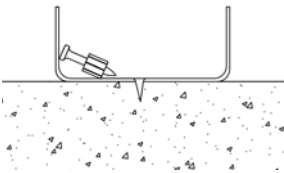
Electrical						
Junction Boxes	1508	(1")	GREEN #3	SP58TH	(5/8")	YELLOW #4
Shelf Brackets	1508	(1")	GREEN #3	1506	(3/4")	YELLOW #4
Interior						
Drywall Track	1506	(3/4")	BROWN #2	1503K	(1/2")	YELLOW #4
Perimeter						
Track	1510	(1-1/4")	YELLOW #4	1503K	(1/2")	YELLOW #4

NOTE This chart is presented as a guide only. Start with the lightest load. If the fastener does not set completely, use the next higher load and repeat the process. Product suggestions may not be suitable for all types of base materials. Contact Technical Services if you have further questions.

Troubleshooting

CONCRETE SYMPTOM

**FASTENER DOES NOT HOLD
IN BASE MATERIAL OR BASE
MATERIAL SPALLS**



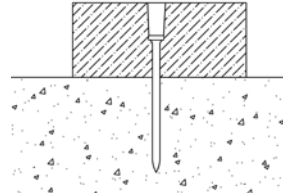
CAUSE

- | High strength concrete
- | Hard or large aggregate in concrete

ACTION

- | Use shorter fastener
- | Use PowerPoint pin
- | Use load with a different power level

**FASTENER PENETRATES
TOO DEEP**



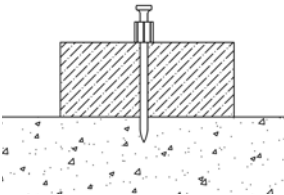
CAUSE

- | Fastener too short for application
- | Tool power level too high

ACTION

- | Use longer fastener
- | Use a lighter powder load

**FASTENER DOES NOT
PENETRATE DEEP ENOUGH**



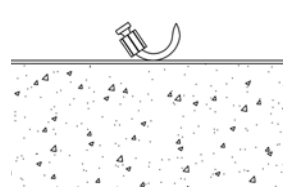
CAUSE

- | Fastener too long
- | Tool power level too low

ACTION

- | Use a shorter fastener
- | Use a stronger powder load

FASTENER BENDS



CAUSE

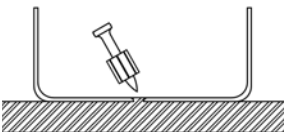
- | Fastener hit large aggregate on entry
- | Concrete too hard
- | Fastener hit rebar just under the surface

ACTION

- | Use shorter fastener
- | Use PowerPoint pin
- | Make sure tool is perpendicular to the work surface
- | Move over 3 inches, try to fasten again

STEEL SYMPTOM

**FASTENER DOES NOT
PENETRATE THE SURFACE**



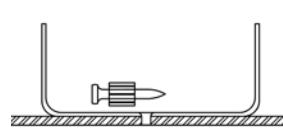
CAUSE

- | Driving power too low
- | Material may be too hard for forced entry fastener

ACTION

- | Increase powder load level
- | Use PowerPoint pin

**FASTENER DOES NOT HOLD
IN BASE MATERIAL**



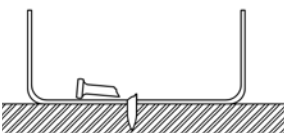
CAUSE

- | Steel base material is too thin

ACTION

- | Use gas system tools with smaller Shank pin or Tek pin

**FASTENER BREAKS
OR BENDS**



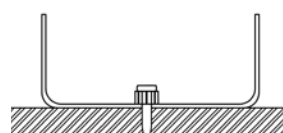
CAUSE

- | Driving power is too low
- | Fastener is too long
- | Material may be too hard for forced entry fastener

ACTION

- | Increase powder load level
- | Reduce fastener length

**FASTENER DOES NOT
FULLY PENETRATE STEEL**



CAUSE

- | Driving power too low
- | Steel base material too thick
- | Application limit may have been reached

ACTION

- | Increase powder load level
- | Use PowerPoint pin

Problem Solving Pins

PowerPoint Pins for Hard Concrete & Steel Fastening



DESCRIPTION/SUGGESTED SPECIFICATIONS

Use Ramset's exclusive PowerPoint pins for your advanced fastening applications. They provide easier penetration into hard steel and concrete. That means reduced pin failures and increased holding values to make your jobs more productive.

ADVANTAGES

Consistent Performance, in Hard Steel and Hard Concrete

Standard powder actuated pins fasten inconsistently in steel. Frequently the steel is just too hard for conventional pins. Steel is also inconsistent because hardness varies. According to the steel industry's accepted Rockwell Hardness Scale (Rb), steel strength can vary from a relatively soft 54 Rb to an extremely hard 88 Rb or higher. Standard pins typically begin to fail in the upper 70s Rb. Tests, however, have proven that PowerPoint consistently performs, even as steel approaches 90 Rb!

AVERAGE IN PLACE FASTENER COSTS

\$0.92 PowerPoint
\$2.10 Drill & Tap

Notice in the photographs below how typical manufacturing processes can cause inconsistency in a pin's finish, increasing its likelihood of failure. And see the difference with Ramset's process! Which pin would you want to use?



Ramset's unique manufacturing process results in uniform shape and finish for more consistent performance.



Typical cut-point finish resulting from manufacturing process will increase pin failure



Typical swage-ballistic point finish results in potential failure of pin

SELECTION CHART

MATERIAL	BASE STEEL THICKNESS				
	3/16"	1/4"	3/8"	1/2"	3/4"
2' x 4' Plate	SP178	SP178	SP178	SP178	SP178
13 Ga. to 17 Ga.	SP12				
18 Ga. to 25 Ga.	SP12				



See page R 35 for fastener selection.

Ramguard™ Drive Pins for ACQ Pressure Treated Lumber!

As many of you know, there have been changes to the regulations affecting pressure treated lumber. The industry standard CCA treated wood is no longer being produced for residential use. Most new pressure treated wood is utilizing Alkaline Copper Quaternary (ACQ) treatment. It has been confirmed that ACQ corrodes steel 2 to 4 times faster than the old CCA treated lumber. This means that our standard drive pins are not recommended for use in ACQ treated lumber.

Ramset has developed a coating called Ramguard™ for use in all pressure treated wood including the new ACQ treated wood. The Ramguard coating offers excellent corrosion resistance that rivals hot dipped galvanized and stainless steel. Washered versions of these pins utilize a Ramguard coated pin and a washer with a G185 coating. This combination was developed to withstand the increased corrosion rate that sometimes occurs when using fasteners in the new treated lumber.

FASTENER TERMINOLOGY SUFFIX

K = Knurled
 B = Black
 E = Ramguard
 X = Collated
 SD = Washer
 C = 100 count
 M = 1000 count

POWDER FASTENERS

DESCRIPTION

We maintain only the highest standards in the materials, production techniques and quality control measures used to manufacture our fasteners, assuring consistent, optimum quality in every fastener.

ADVANTAGES

BLACK PINS

The special black coating improves pin penetration into difficult base material (i.e. hard concrete). We offer this black coating on all of our fasteners manufactured for the attachment of drywall track and channel to concrete and steel.

PINS

ITW Ramset powder actuated fasteners are specifically fabricated to meet the exacting requirements of toughness and durability that enable them to penetrate dense concrete and structural quality steel.

Plated Drive Pins

Designed for use in concrete and structural steel applications.
100 per box.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	ROCKET	XT540	SA270/TS750P	RA27	COBRA	D45/D45A	D60	721	RS22/HD22	DX 351	DX 36	DX 350	DX 460	DX A40	DX A41	DX 35	DX E72
1503K	1/2 Knurled (12.7)	50																	
1506	3/4 (19.1)	12																	
1508	1 (25.4)	12																	
1510	1-1/4 (31.8)	10																	
1512	1-1/2 (38.1)	12																	
1514	2 (50.8)	8																	
1516	2-1/2 (63.5)	8																	
1524	3 (76.2)	6																	

Shank diameter = .145 Head diameter = .300

Plated Drive Pins (25 Packs)

Designed for use in concrete and structural steel applications.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	MASTER CASE QTY	ROCKET	XT540	SA270/TS750P	RA27	COBRA	D45/D45A	D60	721	RS22/HD22	DX 351	DX 36	DX 350	DX 460	DX A40	DX A41	DX 35	DX E72
R50122	1-1/2 (38.1)	25	125																	
R50124	2 (50.8)	25	125																	
R50126	2-1/2 (63.5)	25	125																	
R50128	Multi Pack	200	1,000																	

Shank diameter = .145 Head diameter = .300

Plated Drive Pins with 7/8" Washer

Washer increases bearing surface against the material to be fastened. 100 per box. 16 gage metal washer.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	ROCKET	XT540	SA270/TS750P	RA27	COBRA	D45/D45A	D60	721	RS22/HD22	DX 351	DX 36	DX 350	DX 460	DX A40	DX A41	DX 35	DX E72
1508SD	1 (25.4)	10																	
1510SD	1-1/4 (31.8)	10																	
1512SD	1-1/2 (38.1)	10																	
1516SDC	2-1/2 (63.5)	6																	
1524SDP*	3 (76.2)	6																	

Shank diameter = .145 Head diameter = .300 * Square washer indicates 3" pin has been installed.

Powder Fasteners

PowerPoint Step Shank Pins

Used for fastening into hard concrete and steel. Premium hard concrete and steel pin. 100 per box.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	ROCKET	XT540	SA270/ TS750P	RA27	COBRA	D45/ D45A	D60	721	RS22/ HD22	DX351	DX36	DX350	DX460	DX440	DX441	DX35	DXE72
SP12*	1/2 (12.7)	12																	
SP178	1-7/8 (47.6)	10																	

Shank diameter = .150/.180

Head diameter = .300

* Shank diameter = .145, Regular PowerPoint pin without Step Shank.

Top Hat Drive Pins

Increases bearing surface against material to be fastened for improved attachment to inconsistent base materials. 100 per box.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	MASTER CASE QTY	ROCKET	XT540	SA270/ TS750P	RA27	COBRA	D45/ D45A	D60	721	RS22/ HD22	DX351	DX36	DX350	DX460	DX440	DX441	DX35	DXE72
SP58TH	5/8 (15.9)	50	5,000																	

Shank diameter SP58TH and SP34TH = .150

1906 and 1908 = .145

Head diameter = .300

Ramguard Pins

Coated to improve corrosion resistance in treated lumber and other applications. 100 per box.



PART NUMBER	SHANK LENGTH IN. (MM)	BOX QTY	MASTER CASE QTY	ROCKET	XT540	SA270/ TS750P	COBRA	D45/ D45A	D60	721	RS22/ HD22	DX351	DX36	DX350	DX460	DX440	DX441	DX35	DXE72
1516E	2-1/2 (63.5)	8	800																
1524SDE*	3 (76.2)	6	600																

Shank diameter = .145 * .150/.180

Head diameter = .300

Fastener Ceiling Clips

14 gage angle clip.
100 clips per box.



PART NUMBER	DESCRIPTION
1202CF	Angle clip (no pin)

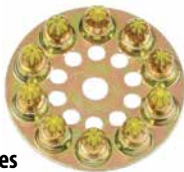
Hole diameter: 5/16" & 14/64"

Powder Loads

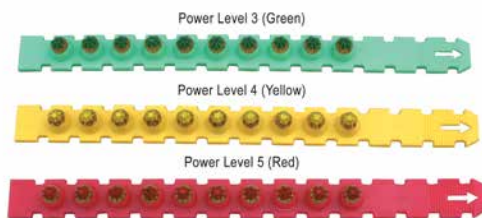
High Quality and Dependability



CW Series



Disc Series



RS27 Series

DESCRIPTION/SUGGESTED SPECIFICATIONS

ITW Ramset powder loads and tools match tolerances to provide optimum power within recognized national velocity standards. Available in color-coded 10-load discs, 10-load strips and 100-load boxes.

Caution: Always test-fasten with the lowest power level for your tool. If more power is necessary, use the next highest power level until proper level and fastening is achieved. Refer to the operator's manual for more specific details. Observe all safety reminders. Tool operators must be trained and qualified as required by federal law. Failure to use properly can result in serious injury or death to users or bystanders.

Advantages Powder Guide

Power level is designated by the load level number marked on each box and by the color of the box and each powder load. As the number increases, the power level increases.

POWER LEVEL GUIDE FOR LOADS

All loads are color coded and load level numbered. As the number increases, the power level increases.

Always start with the lightest load. If the fastener does not set completely, use the next higher load and repeat the process.



SELECTION CHART

0.22 CALIBER, SINGLE SHOT LOAD

PART NUMBER	POWER LEVEL-COLOR	721	M70	HD22 RS22	DXE37	DXE72	BOX QTY WT (LBS)	CASE QTY WT (LBS)
C22CW	2 - Brown	■	■	■	■	■	100/0.2	1,200/2.4
C32CW	3 - Green	■	■	■	■	■	100/0.2	1,200/2.4
C42CW	4 - Yellow	■	■	■	■	■	100/0.2	1,200/2.4

0.22 CALIBER, SINGLE SHOT LOAD (25 PACKS)

PART NUMBER	POWER LEVEL-COLOR	721	M70	HD22 RS22	DXE37	DXE72	BOX QTY WT	CASE QTY WT
R50116	3 - Green	■	■	■	■	■	25	125
R50118	4 - Yellow	■	■	■	■	■	25	125

10-SHOT, 0.25 CALIBER, DISC LOAD

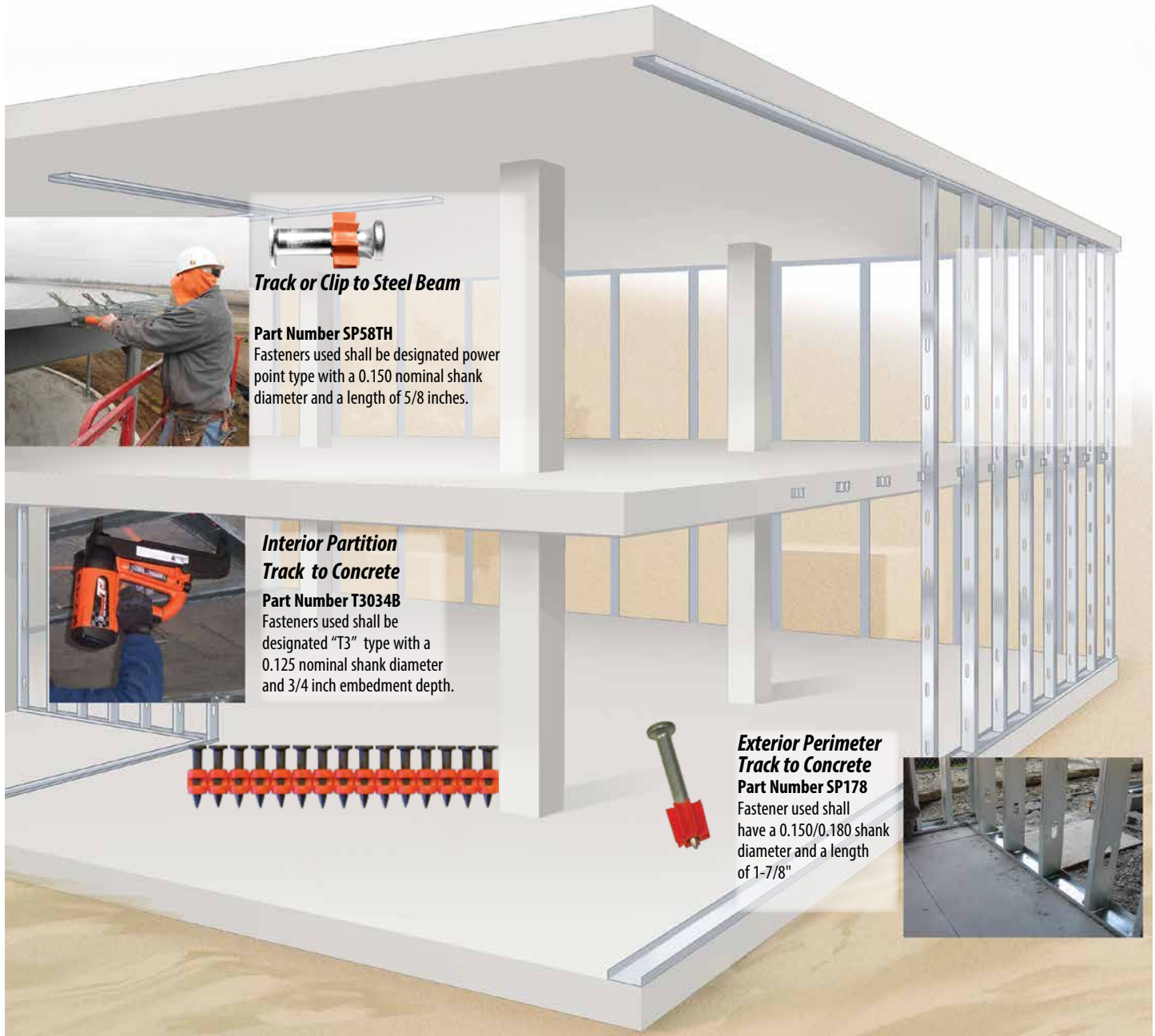
PART NUMBER	POWER LEVEL-COLOR	P370	D45/ A	D60	D200	BOX QTY WT (LBS)	CASE QTY WT (LBS)
D621	4 - Yellow	■	■	■	■	100/0.3	10,000/30

10-SHOT, 0.27 CALIBER, STRIP LOAD

PART NUMBER	POWER LEVEL-COLOR	ROCKET	RAZ7	COBRA+	COBRA III	SA270 TS750P	XT540	DX 36M	DX 350	DX 351	DX 450	DX460	DX A40	DX A41	BOX QTY WT (LBS)	CASE QTY WT (LBS)
C3RS27	3 - Green	■	■	■	■	■	■	■	■	■	■	■	■	■	100/0.3	600/1.8
C4RS27	4 - Yellow	■	■	■	■	■	■	■	■	■	■	■	■	■	100/0.3	600/1.8
C5RS27	5 - Red	■	■	■	■	■	■	■	■	■	■	■	■	■	100/0.3	600/1.8

SUGGESTED SPECIFICATIONS

Ramset provides the architect and engineer, the following suggested language and helpful information for the purpose of fastening specifications.



For assistance with specifications and/or substitutions, contact Technical Service at 800-387-9692.

POWDER PERFORMANCE/SUBMITTAL

Ramset fasteners may be specified by their type or catalog number to satisfy fastening requirements.

PIN SPECIFICATIONS

Made from AISI 1060-1065 steel. Austempered to a core hardness of 52-56 Rc
 Typical tensile strength: 270,000 psi
 Typical shear strength: 162,000 psi
 Standard finishe
 - Proprietary black
 - Mechanical zinc plate to a minimum thickness of .0002 meets requirements of ASTM B695

APPROVALS/LISTING

ICC Evaluation Service, Inc.

#ER-1147 Sill Plate

#ESR-1799 Powder Pins & Clips

City of Los Angeles

#RR-22668 Powder pins

PERFORMANCE TABLES

Fasteners in Normal Weight Concrete

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	INSTALLED IN STONE AGGREGATE CONCRETE CONCRETE COMPRESSIVE STRENGTH ALLOWABLE LOAD – <i>Ultimate Load</i>							
			2000 PSI		4000 PSI		6000 PSI			
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)		
1500/ 1600 SERIES	0.145	3/4	50 655	66 739	100 511	104 552	-----	-----		
		1	152 943	166 1229	157 937	182 1342	-----	-----		
		1-1/4	159 1078	265 1665	179 1043	267 1538	-----	-----		
		1-1/2	154 1450	340 2027	209 1357	342 1712	-----	-----		
SP	0.150	3/4	-----	-----	150 803	105 786	81 493	82 454		
SP SERIES	.150/.180	1	154 1043	200 1173	243 1307	175 1037	189 1125	210 1177		
		1-1/4	207 1553	230 1636	298 1749	218 1471	213 1568	305 1780		
		1-1/2	-----	-----	384 2126	391 1957	239 1886	594 2968		
3300 SERIES	0.180	1	196 1084	100 1328	255 1504	284 1557	-----	-----		
		1-1/4	241 1207	329 1710	294 1574	373 2104	-----	-----		
		1-1/2	254 1601	379 1971	419 2239	501 2505	-----	-----		
1900	0.145	3/4	105 694	71 458	101 685	99 627	-----	-----		
9100 STUD	0.205	1	187 988	212 1385	186 1070	303 1618	-----	-----		
		1-1/4	262 1450	304 1674	335 2161	400 2000	-----	-----		

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** Minimum edge distance is 3 inches unless otherwise approved. **Note 8:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

PERFORMANCE TABLES

Fasteners in Steel

PART NUMBER SERIES	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A36 STRUCTURAL STEEL—STEEL THICKNESS (INCHES)									
			ALLOWABLE LOAD — <i>Ultimate Load</i>									
			3/16		1/4		3/8		1/2		3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
1500/ 1600	0.145	SMOOTH	81 <i>790</i>	373 <i>2039</i>	181 <i>1269</i>	273 <i>1642</i>	397 <i>2169</i>	489 <i>2771</i>	243 <i>1328⁸</i>	277 <i>1514⁸</i>	----	----
		KNURLED	296 <i>1633</i>	636 <i>3516</i>	584 <i>3384</i>	659 <i>3822</i>	680 <i>3755</i>	730 <i>4030</i>	253 <i>1459⁸</i>	293 <i>1632⁸</i>	----	----
SP	0.150	SMOOTH	385 <i>2107</i>	662 <i>3618</i>	445 <i>2549</i>	477 <i>2736</i>	393 <i>2145</i>	574 <i>3137</i>	948 <i>5180</i>	597 <i>3500</i>	234 <i>1244⁸</i>	356 <i>1895⁸</i>
3300	0.180	SMOOTH	281 <i>1536</i>	580 <i>3169</i>	385 <i>2212</i>	507 <i>2931</i>	460 <i>2631</i>	644 <i>3518</i>	641 <i>3499</i>	684 <i>3739</i>	----	----
9100	0.205	KNURLED	160 <i>1469</i>	931 <i>5084</i>	350 <i>3115</i>	617 <i>3542</i>	843 <i>4605</i>	803 <i>4391</i>	565 <i>3086⁹</i>	547 <i>3373⁹</i>	----	----

PART NUMBER SERIES	SHANK DIA. (INCH)	TYPE OF SHANK	INSTALLED IN A572 GRADE 50 STRUCTURAL STEEL—STEEL THICKNESS (INCHES)									
			ALLOWABLE LOAD — <i>Ultimate Load</i>									
			3/16		1/4		3/8		1/2		3/4	
			TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
1500/ 1600	0.145	SMOOTH	----	----	----	----	----	----	----	----	----	----
		KNURLED	260 <i>1609</i>	499 <i>3182</i>	579 <i>3411</i>	725 <i>4272</i>	383 <i>2216⁷</i>	595 <i>3431⁷</i>	----	----	----	----
SP	0.150	SMOOTH	356 <i>2123</i>	569 <i>3394</i>	554 <i>3232</i>	637 <i>3710</i>	604 <i>3447</i>	602 <i>3437</i>	814 <i>4473⁹</i>	820 <i>4503⁹</i>	243 <i>1362⁸</i>	381 <i>2141⁸</i>
3300	0.180	SMOOTH	----	----	----	----	----	----	----	----	----	----
9100	0.205	KNURLED	365 <i>2175</i>	903 <i>5385</i>	697 <i>4061</i>	907 <i>5285</i>	155 <i>842⁷</i>	376 <i>2143⁷</i>	----	----	----	----

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 5:** Job site testing may be required to determine actual job site values. **Note 6:** Values shown are for fastenings that have the entire pointed end of the fastener driven through the steel plate; except as noted below. **Note 7:** Fastener penetration is 3/8" minimum. **Note 8:** Fastener penetration is 7/16" minimum. **Note 9:** Fastener penetration is 1/2" minimum. **Note 10:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa

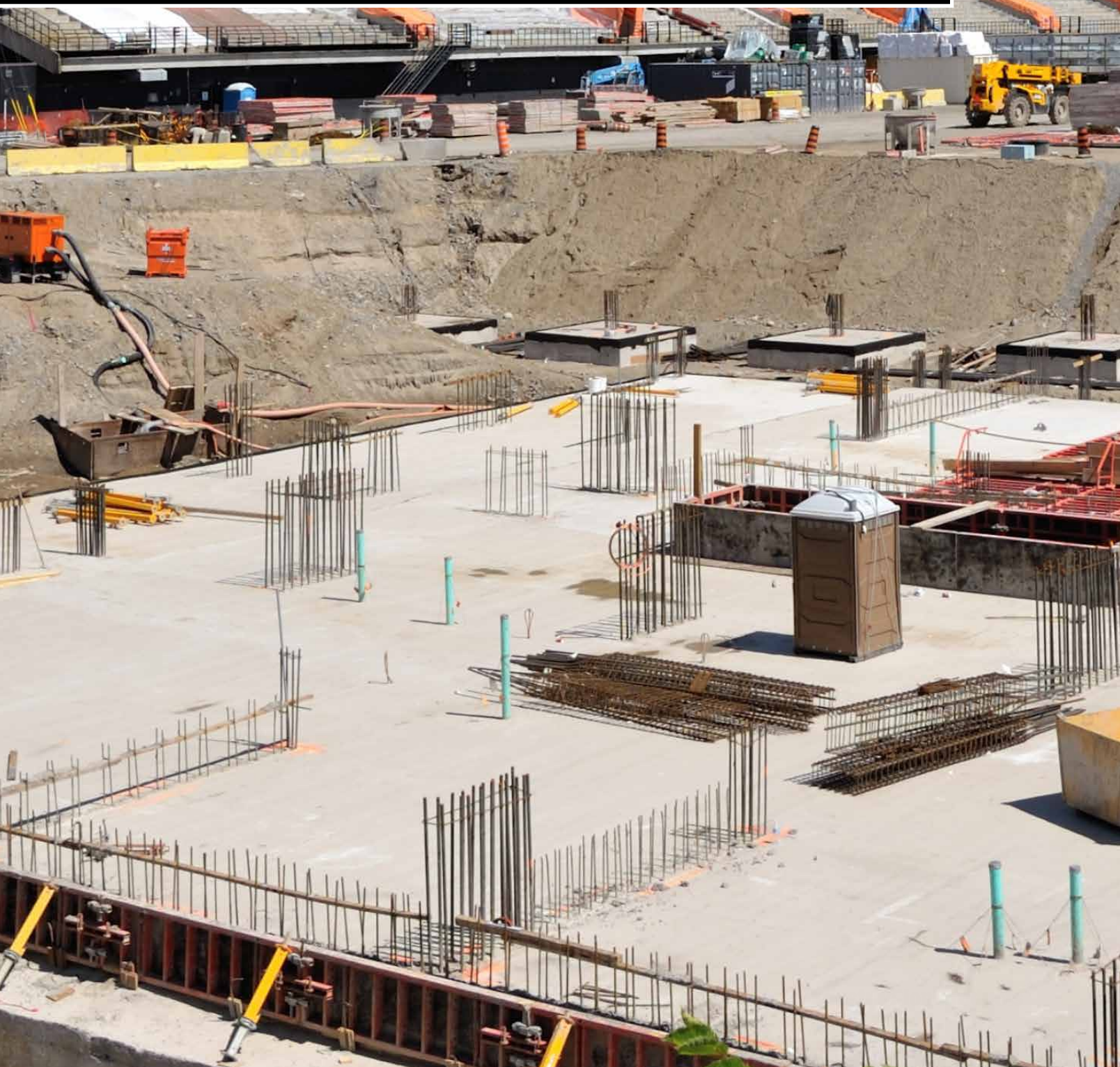
Fasteners in Lightweight Concrete

PART NUMBER SERIES	SHANK DIAMETER (INCH)	MINIMUM PENETRATION (INCH)	ALLOWABLE WORKING VALUES INSTALLED IN 3000 PSI LIGHTWEIGHT CONCRETE							
			ALLOWABLE LOAD — <i>Ultimate Load</i>							
			3000 PSI LIGHTWEIGHT W/DECKING				3000 PSI LIGHTWEIGHT			
			LOWER FLUTE TENSION		LOWER FLUTE SHEAR		TENSION		SHEAR	
1500 SERIES	0.145	3/4	76	395	260	1409	167	837	179	894
		1	134	668	265	1505	200	998	228	1141
		1-1/4	157	784	269	1344	333	1664	400	2090
		1-1/2	233	1163	346	1728	391	1957	410	2050
SP SERIES	.150/.180	1	119	593	336	1679	226	1129	250	1249
		1-1/4	175	957	372	1860	329	1644	377	1885
		1-1/2	179	1055	426	2128	406	2030	380	1900
9100 SERIES	0.205	3/4	70	351	277	1386	-----	-----	-----	-----
		1	112	559	378	1891	-----	-----	-----	-----
		1-1/4	118	689	-----	-----	-----	-----	-----	-----

Note 1: ALLOWABLE loads are shown in the **LARGE BOLD** font, *Ultimate* loads are shown in *smaller italic* font. **Note 2:** Testing conducted in accordance with ICC AC70 & ASTM E1190. **Note 3:** Safety factors are based on coefficient of variation. In accordance with ICC AC70, the safety factor will be no less than 5. **Note 4:** Values shown in concrete are for the fastener only. Connected members must be investigated separately. **Note 5:** Cyclic, fatigue, shock loads, and other design criteria may require a different safety factor. **Note 6:** Job site testing may be required to determine actual job site values. **Note 7:** For SI: 1 lbf = 4.448 N, 1 inch = 25.4 mm, 1 ksi = 6.89MPa



RED HEAD[®]
CONCRETE ANCHORING SYSTEMS



Notes

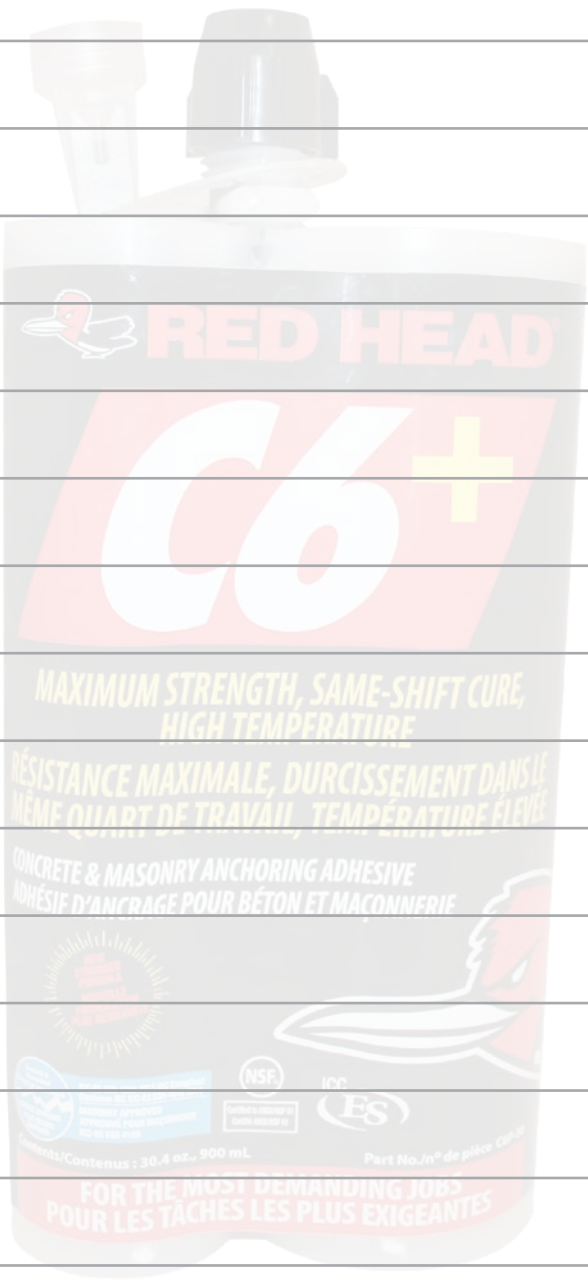




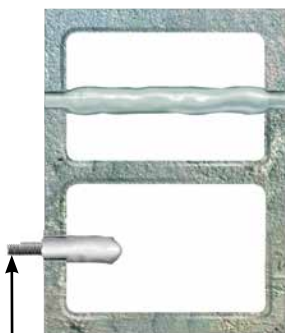
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The Inside Story About Mechanical and Adhesive Anchors

Types, Base Materials,
Installation Procedures
and More



Top View

For attachments to single face of block, see page RH 29 for information on “umbrella anchors” and “stubby screens”

HOLLOW CONCRETE BLOCK

Maximum holding strength in concrete block can be obtained by fastening to both the front and back of the block using an adhesive screen tube and threaded rod.

TYPES OF ANCHORS



Expansion Type—

Tension loads are transferred to the base material through a portion of the anchor that is expanded inside the drill hole.

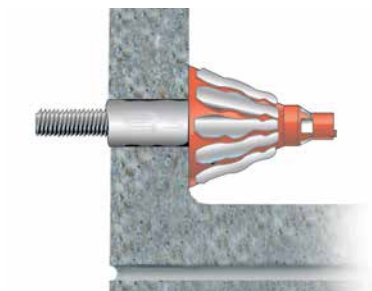
Examples: Red Head Trubolts, Dynabolts, Multi-Set II Anchors and Hammer-Sets



Adhesive Type—

Resistance to tension loads is provided by the presence of an adhesive between the threaded rod (or rebar) and the inside walls of the drill hole.

Examples: A7+ and C6+ Adhesives



Keying Type—

Holding strength comes from a portion of an anchor that is expanded into a hollow space in a base material that contains voids such as concrete block or brick.

Examples: Adhesives used in screen tubes or umbrella insert

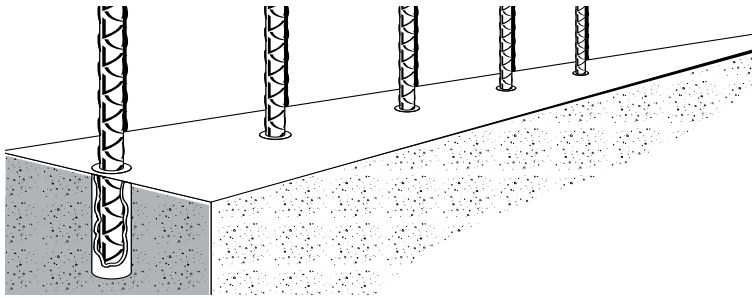


Mechanical Interlocking Type—

Tension loads are resisted by threads on the fastener engaging with threads cut into the base material.

Examples: LDT, Tapcon and E-Z Anchors

BASE MATERIALS



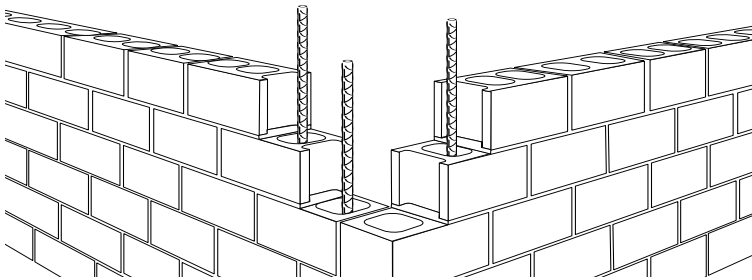
Concrete

Normal Weight Concrete is made from Portland cement, coarse and fine aggregates, water and various admixtures. The proportioning of these components controls the strength of the concrete. In North America, concrete strength is specified by the compressive strength* of concrete test cylinders. These test cylinders measure six inches in diameter by 12 inches in length and are tested on the 28th day after they are produced.

Lightweight Concrete consists of the same components (cement, coarse and fine aggregates, water and admixtures) as normal weight concrete, except it is made with lightweight aggregate. One of the most common uses of lightweight concrete has been as a structural fill of steel decking in the construction of strong, yet light floor systems.

Typical fasteners for both normal weight and lightweight concrete include Trubolt Wedge Anchors, LDT Self-Threading Anchors, Dynabolt Sleeve Anchors, Multi-Set II Drop-In Anchors, Stud Anchors and Adhesive Anchoring Systems.

* Compressive strengths shown in this catalog were the actual strengths at the time of testing. The load values listed were determined by testing in un-reinforced concrete.



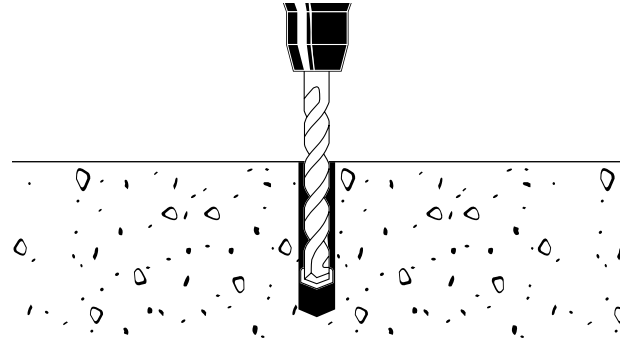
Masonry

Grout-Filled Concrete Block consists of three components: concrete, mortar and grout. The mortar is designed to join the units into an integral structure with predictable performance properties. Typical fasteners for grout-filled block include Dynabolt Sleeve Anchors, and A7+ Adhesive Anchoring Systems.

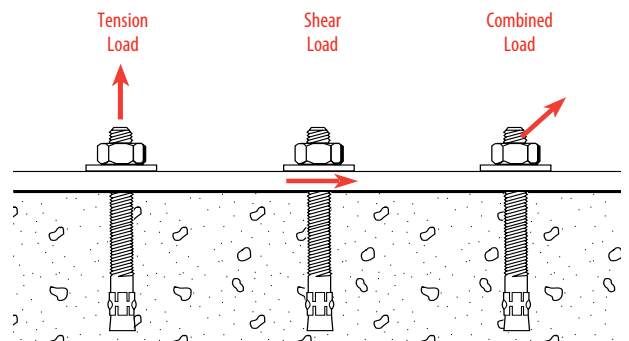
Hollow Concrete Block, Brick and Clay Tile are grouped together because they require special anchoring products that can be installed into a substrate that contains voids and still provide reliable holding values. Typical fasteners used in hollow block, brick and clay tile include Dynabolt Sleeve Anchors, Tapcon Self-Tapping Concrete Anchors, Adhesives with Screen Tubes and Adhesives used with the Umbrella Insert.

INSTALLATION PROCEDURES

Anchor drill holes are typically produced using carbide tipped drill bits and rotary hammer drills. Look at the product sections of this catalog for the correct drill hole diameter and depth of each type of anchoring system.



Careful cleaning of the anchor drill hole is important in order to obtain the best possible functioning of the anchor system. For each product in this catalog, detailed installation instructions are provided. Suggested clamping torques and curing times (for adhesive anchors) are also provided.



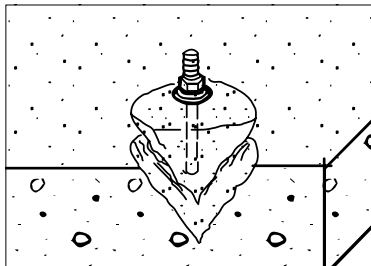
Loading

Holding values for the following types of loading are provided in this catalog:

- **Tension loads—**
when load is applied along the axis of the anchor
- **Shear loads—**
when the loads are applied perpendicular to the axis of the anchor
- **Combined loads—**
when both tension and shear loads are applied to an anchor, a combined loading equation is provided to determine the maximum loads that can be applied to the anchor at the same time

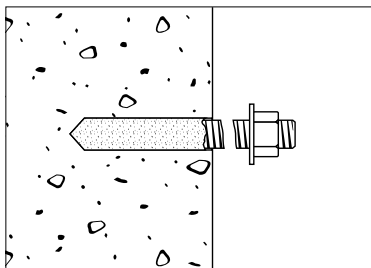
MODES OF FAILURE

When anchors are loaded to their maximum capacity, several different types (modes) of failure are possible depending on the type of anchor, strength of the base material, embedment depth, location of the anchor, etc. Common modes of failure include:



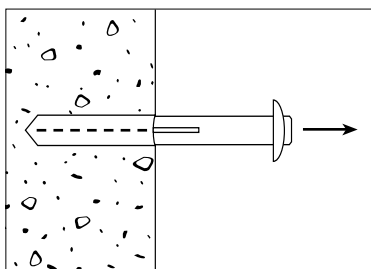
Concrete Spall Cone—

Usually occurs at shallow embedments where the resistance of the base material is less than the resistance of the anchor and the base material fails.



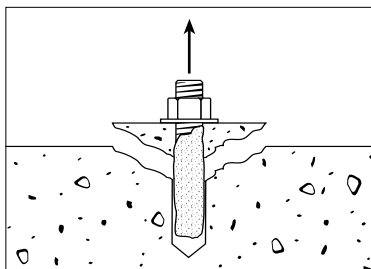
Steel Breakage—

The capacity of the anchorage exceeds the tensile or shear strength of the steel anchor or rod material.



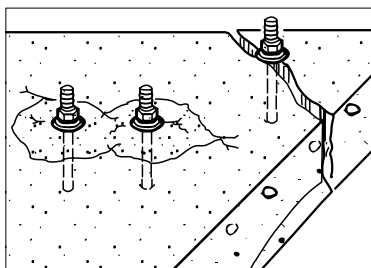
Anchor Pullout—

Base material adjacent to the extension portion of an anchor crushes, resulting in the anchor pulling out of the hole until the capacity of the spall cone is reached, at which point the concrete will spall. This type of failure happens more commonly when anchors are set with deep embedment depths.



Bond Failure—

Shear failure of the adhesive at rod-adhesive interface or adhesive-base material interface. Occurs more commonly in deep embedments using high strength steel rods.



Edge Distance and Spacing Reduction—

Reduces the holding values, when anchors are placed too close to the edge. This also occurs when two or more anchors are spaced closely together. See suggested edge distance, anchor spacing distances and reduction values in the product sections.

Because applications vary, ITW RED HEAD cannot guarantee the performance of this product. Each customer assumes all responsibility and risk for the use of this product. The safe handling and the suitability of this product for use is the sole responsibility of the customer. Specific job site conditions should be considered when selecting the proper product. Should you have any questions, please call the Technical Assistance Department at 800-899-7890.



*Engineered to provide
consistently strong
holding power for superior
anchoring in solid concrete
and hollow masonry*

The RED HEAD Adhesive Anchoring System includes a complete family of quality products and accessories designed to work in a variety of fastening applications. Get maximum anchoring performance with:

Epoxy Systems—Epoxyes are very strong (1-1/2 times stronger than mechanical anchors) and insensitive to moisture. Mix ratio and thorough blending of the hardener and resin are important with epoxyes. Maximum performance of RED HEAD epoxyes is achieved by accurate proportions and mixing provided by our highly engineered cartridges, mixing nozzles, and dispensing tools.

Hybrid Systems—Combine an excellent mixing ability and chain reaction curing mechanism with a tough, hybrid adhesive. Our hybrid chemistry is ideal for anchoring because it dispenses fast, is not mix ratio sensitive, provides ample working time, and cures extremely fast in small and large diameter holes. Rods are easier and faster to insert in acrylic adhesives than epoxy adhesives at all temperatures.



Adhesive Anchoring Selection Guide

Solid Concrete Applications

COLD WEATHER USE

and lower -10°C -7°C 10°C

A7+ – BEST FORMULA

C6+

HOT WEATHER USE

27°C 32°C 38°C and higher

C6+ – BEST FORMULA

A7+



Doweling into Concrete with Rebar



Fastening to Concrete with Threaded Rod

truSpec
ANCHOR CALCULATION SOFTWARE 3.0

PRODUCT SYSTEMS

KEY FEATURES

PROPERTIES

40 MPa UNCRACKED FACTORED RESISTANCE IN TENSION (lbf)

A7+

**Fast Dispensing, Fast Curing
Adhesive for All Conditions**

Most versatile quick cure solution

NSF®

Certified to
ANSI/NSF 61



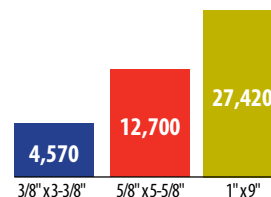
10 fluid oz. (275 ml)
and 28 fluid oz. (825 ml)
cartridges
(see page RH 10)

- All weather formula for for both hollow and solid base material
- Great performance in damp holes and underwater applications
- Applicable for both structural and non-structural anchoring
- Fast curing time, 45 minutes at 21°C
- No drip, no sag, easy clean up, low odor
- Rods are easier to insert into the hole with A7+ compared with other adhesives
- Hole only needs to be 1/16" larger than the stud (competition requires 1/8" larger)
- Approved for cracked, uncracked, seismic, masonry
- NFS 61 approved



BASE MATERIAL (F°/C°)	WORKING TIME	FULL CURE TIME
110°/ 43°	1.5 minutes	45 minutes
90°/ 32°	2.5 minutes	45 minutes
70°/ 21°	5 minutes	45 minutes
50°/ 10°	16 minutes	90 minutes
32°/ 0°	35 minutes	4 hours
14°/ -10°	35 minutes	24 hours

Adhesive must be a minimum temperature of 32°F (0°C) for proper installation



C6+

**For the Most
Demanding Jobs**
Red Head's highest
strength adhesive

NSF®

Certified to
ANSI/NSF 61



30.4 fluid oz. (900 ml)
cartridges
(see page RH 21)

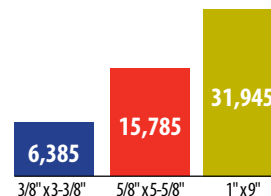
- At least 25% stronger than the old C6+ formulation for threaded rod in cracked concrete and with seismic conditions
- Fastest Cure time in its class, curing in just 2.75 hours at 90°F and in only 2 hours at 110°F!
- ICC-ES approvals for concrete (uncracked and cracked concrete, and seismic conditions) and masonry
- ICC-ES Approved for use in core-drill holes, even in cracked concrete
- Can be used in oversized holes
- 24 month shelf life
- NSF/ANSI 61



BASE MATERIAL (F°/C°)	GEL/WORKING TIME ²	FULL CURE TIME
110°/ 43°	10 minutes	2 hours
90°/ 32°	14 minutes	2.75 hours
70°/ 21°	16 minutes	6.5 hours
50°/ 10°	30 minutes	24 hours
40°/ 4°	46 minutes	48 hours

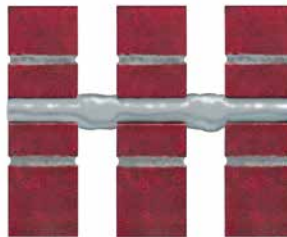
¹ For concrete temperatures between 4°C - 10°C adhesive must be maintained at a minimum of 13°C during installation.

² Gel time is max time from the end of mixing to when the insertion of the threaded rod or rebar into the adhesive shall be completed

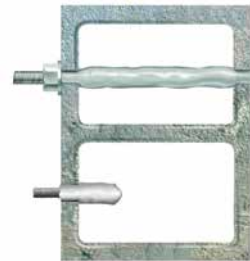


Hollow Base Material Applications


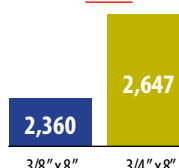

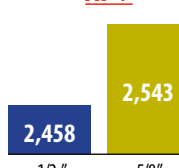

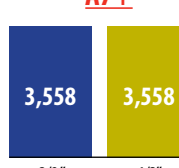
Use the following accessories with the A7+ adhesive anchoring systems for all of your hollow base material applications.



Brick
Pinning



Fastening
to hollow
concrete block

SYSTEM ACCESSORIES	KEY FEATURES	ULTIMATE TENSILE ^{1,2} PERFORMANCE (LBS)						
<h2>Nylon Screens</h2>  <p>Makes it possible to use adhesive for fastening to hollow block or brick walls (see page RH 32)</p>	<ul style="list-style-type: none">■ 3/8" to 3/4" diameter sizes■ 30%-50% lower cost than stainless screens■ Special design makes screens easier to insert through block or brick■ Does not get bent or crushed■ Corrosion resistant	<p>A7+</p>  <table><tr><th>Size</th><th>Ultimate Tensile (LBS)</th></tr><tr><td>3/8" x 8"</td><td>2,360</td></tr><tr><td>3/4" x 8"</td><td>2,647</td></tr></table>	Size	Ultimate Tensile (LBS)	3/8" x 8"	2,360	3/4" x 8"	2,647
Size	Ultimate Tensile (LBS)							
3/8" x 8"	2,360							
3/4" x 8"	2,647							
<h2>Stubby Screens</h2>  <p>Makes it possible to use adhesive for fastening to the face of hollow block or tile (see page RH 29)</p>	<ul style="list-style-type: none">■ 3/8", 1/2", 5/8" diameter sizes■ Fasten to front face of block■ Anchor remains perpendicular in wall	<p>A7+</p>  <table><tr><th>Size</th><th>Ultimate Tensile (LBS)</th></tr><tr><td>1/2"</td><td>2,458</td></tr><tr><td>5/8"</td><td>2,543</td></tr></table>	Size	Ultimate Tensile (LBS)	1/2"	2,458	5/8"	2,543
Size	Ultimate Tensile (LBS)							
1/2"	2,458							
5/8"	2,543							
<h2>Umbrella and Umbrella Inserts</h2>  <p>Umbrella Insert</p> <p>Makes it possible to use adhesive for fastening to the face of hollow block or tile (see page RH 29)</p>	<ul style="list-style-type: none">■ For 3/8" rods■ 3/8" internal inserts■ Fasten to front face of blocks■ Creates large bearing surface inside block to achieve high loads	<p>A7+</p>  <table><tr><th>Size</th><th>Ultimate Tensile (LBS)</th></tr><tr><td>3/8"</td><td>3,558</td></tr><tr><td>1/2"</td><td>3,558</td></tr></table>	Size	Ultimate Tensile (LBS)	3/8"	3,558	1/2"	3,558
Size	Ultimate Tensile (LBS)							
3/8"	3,558							
1/2"	3,558							

¹ Testing performed in hollow concrete block.

² Diameter x Embedment.

A7+

**Most versatile
quick cure adhesive
solution for light,
medium, and heavy
duty concrete
anchoring that
meets code approval**



A7P-10

A7P28



A100

DESCRIPTION/SUGGESTED SPECIFICATIONS*

*Suggested Specifications see pages RH 13

Fast Dispensing, Fast Curing Hybrid Adhesive

This hybrid adhesive is dispensed from a dual cartridge through a static mixing nozzle, directly into the anchor hole. A7+ is a quick cure adhesive specifically designed for both structural and non-structural anchoring applications. It comes in both 10 oz and 28 oz.

ADVANTAGES

- All weather formula for for both hollow and solid base material
- Great performance in damp holes and underwater applications
- Applicable for both structural and non-structural anchoring
- Fast curing time, 45 minutes at 21°C
- No drip, no sag, easy clean up, low odor
- Rods are easier to insert into the hole with A7+ compared with other adhesives
- Hole only needs to be 1/16" larger than the stud (competition requires 1/8" larger)
- Approved for cracked, uncracked, seismic, masonry
- NFS 61 approved

Spacing and Edge Distance

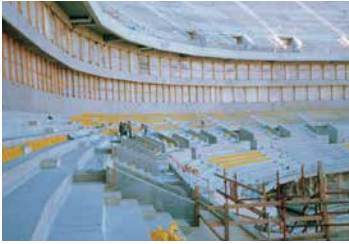
NOMINAL ANCHOR DIAMETER (IN.)	MINIMUM SPACING (IN.)	MINIMUM EDGE DISTANCE (IN.)
3/8	1	1
1/2	1-1/2	1-1/2
5/8	2-1/2	2-1/2
3/4	3	3
7/8	3-1/2	3-1/2
1	4	4
1-1/4	5	5

Curing Times

BASE MATERIAL (F°/C°)	WORKING TIME	FULL CURE TIME
110°/ 43°	1.5 minutes	45 minutes
90°/ 32°	2.5 minutes	45 minutes
70°/ 21°	5 minutes	45 minutes
50°/ 10°	16 minutes	90 minutes
32°/ 0°	35 minutes	4 hours
14°/ -10°	35 minutes	24 hours

*Adhesive must be a minimum temperature of 32°F (0°C) for proper installation

APPLICATIONS



Stadium Seating

The fast dispensing, fast curing properties of A7+ made it ideal for installing over 70,000 seats in this NFL football stadium and many others.



Roadway Doweling

A7+ dispenses so quickly and rebar inserts so easily that contractors find installed costs are lower than many other products including grout for doweling.



Water Treatment Facilities

The fast dispensing, fast curing properties of A7+ make it ideal for repetitive installation processes.

FEATURES



ANCHORAGE TO SOLID CONCRETE

Threaded Rod (Carbon or Stainless Steel) or Rebar supplied by contractor; rod does not need to be chisel pointed

A7+ adhesive completely fills area between rod and hole creating a stress free, high load anchorage

Pre-drilled hole in concrete; see performance tables for suggested hole sizes

APPROVALS/LISTINGS

ASTM C881 Type I, II, IV & V; Grade 3, Class A, B, & C with the exception of gel time (Class C only)

ICC ESR-3903 for concrete and ICC ESR-3951 for masonry

MTQ Approval

MTQ Approval

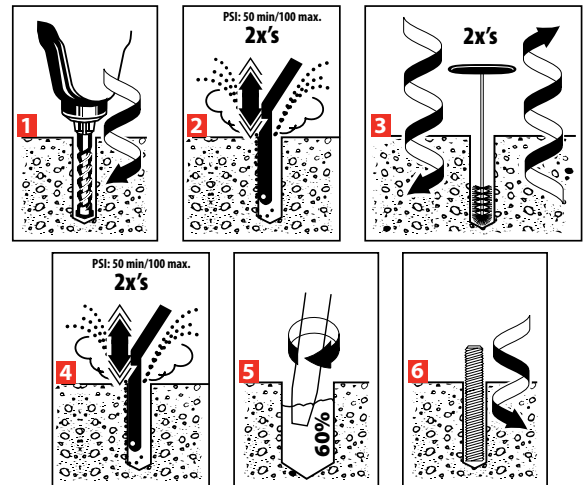
BC MoTI Approval

NSF 61 Compliant






Certified to
ANSI/NSF 61




INSTALLATION STEPS



1. Use a rotary hammer drill or pneumatic air drill with a carbide drill bit complying with ANSI B212.15. Drill hole to the required embedment depth. For installation of 3/8" – 1-1/4" anchors, see www.itwredhead.com for a bit diameters and min/max embedment depths.
2. Starting at the bottom of the hole, move a clean air nozzle in and out of the hole, cleaning with compressed air. Repeat until free of debris.**
3. Select appropriately sized Red Head brush based on anchor diameter and depth of hole. See www.itwredhead.com for brush specifications, including minimum diameter. Check brush for wear before use. Insert the brush into the hole with a clockwise motion until the bottom of hole is reached. Pull brush out of hole and repeat at least one additional time. For faster cleaning, attach the brush to a drill/drive.
4. Repeat Step 2
5. Place the cartridge/nozzle assembly into the dispensing tool. Note: Do not modify or remove mixing elements in nozzle. Review the gel time/cure time chart, based on the temperature at time of installation, in order to determine tool, cartridge and nozzle requirements. Dispense mixed adhesive outside of hole until uniform color is achieved. Insert the nozzle to the bottom of the hole and dispense adhesive until hole is 2/3 full. If nozzle does not reach the bottom of the hole, use Red Head extension tubing positioned on the end of the nozzle. For holes that contain water, keep dispensing adhesive below water in order to displace the water upward.
6. Immediately insert the rod/rebar assembly to the required embedment depth using a slow rotating motion. The anchor rod/rebar must be marked with the required embedment depth. Ensure the adhesive fills all voids and uniformly covers rod/concrete. Do not disturb anchor or apply load/torque until adhesive is fully cured.

A7P-28 fl. oz. Ordering Information

PART NUMBER	DESCRIPTION	BOX QTY
 A7P-28	28 Fluid Ounce Cartridge A7+ with nozzle	4
 S55	Mixing Nozzle for A7P-28 Cartridge Nozzle diameter fits holes for 3/8" diameter & larger anchors (overall length of nozzle 10")	24
 S75	High Flow Mixing Nozzle for A7P-28 Cartridge Nozzle diameter fits holes for 5/8" diameter & larger anchors (overall length of nozzle 9-1/4")	24

PART NUMBER	DESCRIPTION	BOX QTY
 A102-V3	Largest hand dispensable cartridge— still easy to dispense Hand Dispenser for A7P-28 Cartridge	1
 A200	Pneumatic Dispenser for A7P-28	1
 A300	Cordless Battery Dispenser for A7P-28 and C6P-30 Cartridge. Includes one battery and charger. Works with all Milwaukee® M18™ batteries	1

Refer to page RH 34 for ordering information on wire brushes, brush extensions, and blow pump for deep holes.

ESTIMATING TABLE

A7+

28 Fluid Ounce Cartridge

Number of Anchoring Installations per Cartridge*

Using Reinforcing Bar with A7+ Adhesive in Solid Concrete

REBAR	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
#3	7/16	560.3	280.2	186.8	140.1	112.1	93.4	80.0	70.0	62.3	56.0	50.9	46.7	43.1	40.0	37.4
10M	9/16	339.0	169.5	113.0	84.7	67.8	56.5	48.4	42.4	37.7	33.9	30.8	28.2	26.1	24.2	22.6
#4	5/8	274.6	137.3	91.5	68.6	54.9	45.8	39.2	34.3	30.5	27.5	25.0	22.9	21.1	19.6	18.3
#5 or 15M	3/4	190.7	95.3	63.6	47.7	38.1	31.8	27.2	23.8	21.2	19.1	17.3	15.9	14.7	13.6	12.7
#6 or 20M	7/8	140.1	70.0	46.7	35.0	28.0	23.3	20.0	17.5	15.6	14.0	12.7	11.7	10.8	10.0	9.3
#7	1	107.2	53.6	35.7	26.8	21.4	17.9	15.3	13.4	11.9	10.7	9.7	8.9	8.2	7.7	7.1
#8 or 25M	1 1/8	84.7	42.4	28.2	21.2	16.9	14.1	12.1	10.6	9.4	8.5	7.7	7.1	6.5	6.1	5.6
#9	1 1/4	68.6	34.3	22.9	17.2	13.7	11.4	9.8	8.6	7.6	6.9	6.2	5.7	5.3	4.9	4.6
#10 or 30M	1 3/8	56.7	28.4	18.9	14.2	11.3	9.5	8.1	7.1	6.3	5.7	5.2	4.7	4.4	4.1	3.8
#11	1 3/4	35.0	17.5	11.7	8.8	7.0	5.8	5.0	4.4	3.9	3.5	3.2	2.9	2.7	2.5	2.3

* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.

ESTIMATING TABLE

A7+

28 Fluid Ounce Cartridge




Number of Anchoring Installations per Cartridge*

Using Threaded Rod with A7+ Adhesive in Solid Concrete

THREADED ROD	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
1/4	5/16	1098.2	549.1	366.1	274.6	219.6	183.0	156.9	137.3	122.0	109.8	99.8	91.5	84.5	78.4	73.2
3/8	7/16	560.3	280.2	186.8	140.1	112.1	93.4	80.0	70.0	62.3	56.0	50.9	46.7	43.1	40.0	37.4
1/2	9/16	339.0	169.5	113.0	84.7	67.8	56.5	48.4	42.4	37.7	33.9	30.8	28.2	26.1	24.2	22.6
5/8	11/16	226.9	113.5	75.6	56.7	45.4	37.8	32.4	28.4	25.2	22.7	20.6	18.9	17.5	16.2	15.1
	3/4	190.7	95.3	63.6	47.7	38.1	31.8	27.2	23.8	21.2	19.1	17.3	15.9	14.7	13.6	12.7
3/4	13/16	162.5	81.2	54.2	40.6	32.5	27.1	23.2	20.3	18.1	16.2	14.8	13.5	12.5	11.6	10.8
	7/8	140.1	70.0	46.7	35.0	28.0	23.3	20.0	17.5	15.6	14.0	12.7	11.7	10.8	10.0	9.3
7/8	15/16	122.0	61.0	40.7	30.5	24.4	20.3	17.4	15.3	13.6	12.2	11.1	10.2	9.4	8.7	8.1
	1	107.2	53.6	35.7	26.8	21.4	17.9	15.3	13.4	11.9	10.7	9.7	8.9	8.2	7.7	7.1
1	1-1/16	95.0	47.5	31.7	23.8	19.0	15.8	13.6	11.9	10.6	9.5	8.6	7.9	7.3	6.8	6.3
	1-1/8	84.7	42.4	28.2	21.2	16.9	14.1	12.1	10.6	9.4	8.5	7.7	7.1	6.5	6.1	5.6
1-1/4	1-1/3	62.3	31.1	20.8	15.6	12.5	10.4	8.9	7.8	6.9	6.2	5.7	5.2	4.8	4.4	4.2
	1-3/8	56.7	28.4	18.9	14.2	11.3	9.5	8.1	7.1	6.3	5.7	5.2	4.7	4.4	4.1	3.8

* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.

A7P-10 fl. oz. Ordering Information

PART NUMBER	DESCRIPTION	BOX QTY
 A7P-10	9.5 Fluid Ounce Cartridge with nozzle	6
 A24S	Mixing Nozzle for A7P-10 Cartridge Nozzle diameter fits 3/8" to 5/8" holes (overall length of nozzle 6-3/8")	24
 A100	Hand Dispenser for A7P-10 Cartridge (26:1 Thrust Ratio)	1

Refer to page RH 34 for ordering information on wire brushes, brush extensions, and blow pump for deep holes.

PACKAGING

1. Disposable, self-contained cartridge system capable of dispensing both components in the proper mixing ratio
2. The two components are dispensed through a static mixing nozzle that thoroughly mixes the material and places the material at the base of the pre-drilled hole
3. Cartridge markings: Include manufacturer's name, batch number and best-used-by date, mix ratio by volume, ANSI hazard classification, and appropriate ANSI handling precautions

SUGGESTED SPECIFICATIONS

HYBRID ADHESIVE:

High Strength HYBRID ADHESIVE: ARRA Certified

1. Two component vinyl ester adhesive, non-sag paste, moisture insensitive when cured, dark gray in color, fast cure times.
2. Meets NSF Standard 61, certified for use in conjunction with drinking water systems.
3. Works in wet, damp, submerged holes.
4. Shelf life: Best if used within 18 months.
5. All weather, cure time (45 min. at 21°C).
6. Dispenses easier and faster.
7. Dispenses and cures faster in hot weather, but works in cold weather.
8. Pumpable at -10°C without preheating.
9. Formula for use in solid and hollow base materials.
10. Suitable for oversized and diamond cored holes with increased depths.
11. Quick insertion time = less labor cost.

ESTIMATING TABLES

<div> A7+ 10 Fluid Ounce Cartridge </div>		Number of Anchoring Installations per Cartridge* Using Reinforcing Bar and Threaded Rod with A7+ Adhesive in Solid Concrete			
		EMBEDMENT DEPTH IN INCHES (mm)			
REBAR	DRILL HOLE DIA. INCHES	2 (50.8)	4 (101.6)	6 (152.4)	8 (203.2)
# 3	7/16	100.1	50.0	33.4	25.0
# 4	5/8	49.0	24.5	16.3	12.3
# 5	3/4	34.0	17.0	11.3	8.5
# 6	7/8	25.0	12.5	8.3	6.3
# 7	1	19.2	9.6	6.4	4.8
# 8	1-1/8	15.1	7.6	5.0	3.8

* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.

Rod In. (mm)	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)			
		2 (50.8)	4 (101.6)	6 (152.4)	8 (203.2)
3/8 (9.5)	7/16	100.1	50.0	33.4	25.0
1/2 (12.7)	9/16	60.5	30.3	20.2	15.1
5/8 (15.9)	11/16	40.5	20.3	13.5	10.1
	3/4	34.0	17.0	11.3	8.5
3/4 (19.1)	13/16	29.0	14.5	9.7	7.3
	7/8	25.0	12.5	8.3	6.3
7/8 (22.2)	15/16	21.8	10.9	7.3	5.4
	1	19.2	9.6	6.4	4.8
1 (25.4)	1-1/16	17.0	8.5	5.7	4.2
	1-1/8	15.1	7.6	5.0	3.8

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Factored Steel Strength for Threaded Rod

Threaded Rod Dia. In. (mm)	Tension kN (lb), Nsar ³			Shear kN (lb) Vsar ⁴			Seismic Shear kN (lb), Vsar,seismic ⁵		
	Carbon Steel A36 ¹	Carbon Steel A193 B7 ¹	Stainless F593 ²	Carbon Steel A36 ¹	Carbon Steel A193 B7 ¹	Stainless F593 ²	Carbon Steel A36 ¹	Carbon Steel A193 B7 ¹	Stainless F593 ²
3/8 (9.5)	14 (3,060)	29 (6,589)	19 (4,382)	6 (1,434)	14 (3,089)	9 (2,033)	4 (1,004)	10 (2,162)	6 (1,423)
1/2 (12.7)	25 (5,596)	54 (12,063)	36 (8,021)	14 (3,149)	30 (6,783)	17 (3,724)	10 (2,204)	21 (4,748)	12 (2,607)
5/8 (15.9)	40 (8,915)	85 (19,210)	57 (12,775)	22 (5,017)	48 (10,806)	26 (5,931)	16 (3,512)	34 (7,564)	18 (4,152)
3/4 (19.1)	59 (13,192)	126 (28,431)	67 (15,104)	33 (7,421)	71 (15,995)	31 (7,011)	23 (5,194)	50 (11,196)	22 (4,908)
7/8 (22.2)	81 (18,210)	175 (39,243)	93 (20,890)	46 (10,245)	98 (22,077)	43 (9,699)	32 (7,171)	69 (15,454)	30 (6,789)
1 (25.4)	106 (23,888)	229 (51,483)	122 (27,403)	60 (13,439)	129 (28,962)	57 (12,724)	42 (9,407)	90 (20,273)	40 (8,907)
1-1/4 (31.8)	170 (38,223)	366 (82,375)	195 (43,819)	96 (21,503)	206 (46,334)	90 (20,343)	67 (15,052)	144 (32,433)	63 (14,240)

1 Values correspond to a ductile steel element

3 Tension values calculated according to Cl. D6.1.2 in CSA A23.3-14 Annex D

5 Seismic shear was calculated according to Vsar*aV,seis

2 Values correspond to a brittle steel element

4 Shear values calculated according to Cl. D7.1.2 in CSA A23.3-14 Annex D

A7+ Hybrid Adhesive

Concrete Breakout and Bond Strength for Threaded Rod

	Symbol	Units	Nominal Rod Diameter In. (mm)							
Nominal Anchor Diameter	do		3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)	1 (25.4)	1-1/4 (31.8)	
Concrete Breakout										
Effectiveness factor for uncracked concrete	k _{uncr}	—	10							
Effectiveness factor for cracked concrete	k _{cr}	—	7							
Modification factor for cracked and uncracked	ψ _{c,N}	—	1							
Minimum concrete thickness	h _{min}	mm	h _{ef} + 31.75			h _{ef} + 2d				
Anchor embedment depth – minimum	h _{ef,min}	mm	60.3	69.9	79.4	88.9	88.9	101.6	127.0	
Minimum spacing	s _{min}	mm	23.8	38.1	63.5	76.2	88.9	101.6	127.0	
Minimum edge distance	c _{min}	mm	23.8	38.1	63.5	76.2	88.9	101.6	127.0	
Critical edge distance	c _{ac}	mm	See Section 4.1.10 of the evaluation report ESR 3903							
Material resistance factor for concrete	Φ _c	—	0.65							
Strength reduction factor for tension, concrete failure modes ^{3,4}	R	Cond. A	1.15							
	R	Cond. B	1							
Strength reduction factor for shear, concrete failure modes ^{3,4}	R	Cond. A	1.15							
	R	Cond. B	1							
Modification Factor for concrete density	λ	—	1							
Bond Strength										
Nominal Rod Diameter In. (mm)			3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)	1 (25.4)	1-1/4 (31.8)	
Temperature Range A ¹	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	12.2 (1770)	12.2 (1770)	12.2 (1770)	12.2 (1770)	10.3 (1490)	10.3 (1490)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	7.3 (1060)	5.4 (790)	5.9 (860)	6.1 (885)	4.8 (695)	4.5 (655)
Temperature Range B ²	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	8.8 (1275)	8.8 (1275)	8.8 (1275)	8.8 (1275)	7.4 (1080)	7.4 (1080)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	5.3 (1080)	3.9 (570)	4.3 (620)	4.4 (640)	3.4 (500)	3.3 (475)
Continuous Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Submerged Concrete		Φ _{sub,ci}	—	0.65	0.55	0.55	0.65	0.65	0.65
Periodic Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry,pi}	—	0.55	0.55	0.55	0.55	0.55	0.65
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat,pi}	—	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf,pi}	—	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Submerged Concrete		Φ _{sub,pi}	—	0.65	0.45	0.45	0.65	0.55	0.65
Reduction factor for seismic tension			a _{N,seis}	—	0.89	0.75	0.76	0.66	0.77	0.80

1 Temperature Range A: Max short term temperature = 130°F (55°C), max long term temperature = 110°F (43°C)

2 Temperature Range B: Max short term temperature = 176°F (80°C), max long term temperature = 110°F (43°C)

3 Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member except where pullout or pryout resistance governs

4 Condition B applies where supplementary reinforcement is not provided or where pullout or pryout strength governs

PERFORMANCE TABLES

A7+ Hybrid Adhesive Factored Steel Strength for Reinforcing Bars, kN (lbf)

US Rebar Size	ASTM A615 Grade 60 Rebar			CA Rebar Size	CSA G30.18 Grade 400		
	Tension In. (mm)	Shear In. (mm)	Seismic Shear In. (mm)		Tension In. (mm)	Shear In. (mm)	Seismic Shear In. (mm)
No. 3	29.9 (6,732)	16.8 (3,787)	135.6 (3,446)	10M	37 (8,255)	21 (4,643)	14 (3,250)
No. 4	54.4 (12,240)	30.6 (6,885)	28.0 (6,265)	15M	73 (16,510)	41 (9,287)	29 (6,501)
No. 5	84.4 (18,972)	47.5 (10,672)	43.0 (9,711)	20M	110 (24,765)	62 (13,930)	43 (9,751)
No. 6	119.8 (26,928)	67.4 (15,147)	61.0 (13,632)	25M	184 (41,275)	103 (23,217)	72 (16,252)
No. 7	163.3 (36,720)	91.9 (20,655)	83.0 (18,590)	30M	257 (57,785)	145 (32,504)	101 (22,753)
No. 8	215.1 (48,348)	121.0 (27,196)	86.0 (19,309)	1 Values correspond to a ductile steel element per standards above 2 Tension values calculated according to Cl. D6.1.2 in CSA A23.3-14 Annex D 3 Shear values calculated according to Cl. D7.1.2 in CSA A23.3-14 Annex D 4 Seismic shear was calculated according to $V_{sar} = aV_{seis}$			
No. 9	272.2 (61,200)	153.1 (34,425)	109.0 (24,442)				
No. 10	345.7 (77,724)	194.5 (43,720)	138.0 (31,041)				

A7+ Hybrid Adhesive Concrete Breakout and Bond Strength for Rebar

		Symbol	Units	Reinforcing Steel Bar Size								
Nominal Anchor Size		do		No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 9	
Concrete Breakout												
Effectiveness factor for uncracked concrete		k_{uncr}	—	10								
Effectiveness factor for cracked concrete		k_{cr}	—	7								
Minimum concrete thickness		h_{min}	mm	$h_{ef} + 31.75$			$h_{ef} + 2do$					
Anchor embedment depth – minimum		$h_{ef,min}$	mm	60.3	69.9	79.4	88.9	88.9	101.6	114.3	127.0	
Minimum spacing		s_{min}	mm	23.8	38.1	63.5	76.2	88.9	101.6	114.3	127.0	
Minimum edge distance		c_{min}	mm	23.8	38.1	63.5	76.2	88.9	101.6	114.3	127.0	
Critical edge distance		c_{ac}	mm	See Section 4.1.10 of the evaluation report ESR 3903								
Material resistance factor for concrete		Φ_c	—	0.65								
Strength reduction factor for tension, concrete failure modes ^{3,4}		R	Cond. A	1.15								
		R	Cond. B	1								
Strength reduction factor for shear, concrete failure modes ^{3,4}		R	Cond. A	1.15								
		R	Cond. B	1								
Modification Factor for concrete density		λ	—	1								
Bond Strength												
Nominal Anchor Size				No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	
Temperature Range A ²	Characteristic Bond Strength for Uncracked Concrete		$T_{k,uncr}$	MPa (psi)	11.5 (1675)	13.3 (1935)	13.1 (1900)	11.7 (1700)	11.3 (1635)	11.1 (1615)	10.9 (1585)	10.7 (1550)
	Characteristic Bond Strength for Cracked Concrete		$T_{k,cr}$	MPa (psi)	5.2 (755)	5.2 (755)	5.2 (755)	4.0 (585)	4.0 (585)	4.0 (585)	4.0 (585)	4.2 (605)
Temperature Range B ^{2,4}	Characteristic Bond Strength for Uncracked Concrete		$T_{k,uncr}$	MPa (psi)	8.3 (1210)	9.6 (1395)	9.5 (1210)	8.5 (1230)	8.1 (1180)	8.0 (1165)	7.9 (1145)	7.7 (1120)
	Characteristic Bond Strength for Cracked Concrete		$T_{k,cr}$	MPa (psi)	3.8 (545)	3.8 (545)	3.8 (545)	2.9 (420)	2.9 (420)	2.9 (420)	2.9 (420)	3.0 (435)
Continuous Inspection	Strength Reduction Factor – Dry Concrete		$\Phi_{dry, ci}$	—	0.65	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	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	0.65
	Strength Reduction Factor – Submerged Concrete		$\Phi_{sub, ci}$	—	0.65	0.55	0.55	0.65	0.65	0.55	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	0.55	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	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	0.65
	Strength Reduction Factor – Submerged Concrete		$\Phi_{sub, pi}$	—	0.65	0.45	0.45	0.65	0.55	0.45	0.45	0.65
Reduction factor for seismic tension			$a_{N,seis}$	—	0.92	0.92	0.92	0.82	0.82	0.82	0.82	0.83

1 Temperature Range A: Max short term temperature = 130°F (55°C), max long term temperature = 110°F (43°C)

2 Temperature Range B: Max short term temperature = 176°F (80°C), max long term temperature = 110°F (43°C)

3 Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member except where pullout or pryout resistance governs

4 Condition B applies where supplementary reinforcement is not provided or where pullout or pryout strength governs

Combined Tension and Shear Loading—for A7+ Adhesive Anchors

Allowable loads for anchors under tension and shear loading at the same time (combined loading) will be lower than the allowable loads for anchors subjected to 100% tension or 100% shear. For combined tension and shear loading, please see Section 4.2.2 of ICC ESR 3903

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Factored Concrete Breakout/Bond Failure Strength for Threaded Rod Tension, kN (lbf)

Nominal anchor diameter In. (mm)	Effective Embedment In. (mm)	UNCRACKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
3/8 (9.5)	2-3/8 (60)	13.6 (3,060)	14.3 (3,215)	14.3 (3,215)	8.6 (1,925)	8.6 (1,925)	8.6 (1,925)
	3-3/8 (86)	20.3 (4,570)	20.3 (4,570)	20.3 (4,570)	12.2 (2,735)	12.2 (2,735)	12.2 (2,735)
	4-1/2 (114)	27.1 (6,095)	27.1 (6,095)	27.1 (6,095)	16.2 (3,645)	16.2 (3,645)	16.2 (3,645)
	7-1/2 (191)	45.2 (10,160)	45.2 (10,160)	45.2 (10,160)	27.0 (6,075)	27.0 (6,075)	27.0 (6,075)
1/2 (12.7)	2-3/4 (70)	17.0 (3,815)	20.8 (4,670)	22.1 (4,965)	9.9 (2,220)	9.9 (2,220)	9.9 (2,220)
	4-1/2 (114)	35.5 (7,985)	36.2 (8,130)	36.2 (8,130)	16.1 (3,630)	16.1 (3,630)	16.1 (3,630)
	6 (152)	48.2 (10,835)	48.2 (10,835)	48.2 (10,835)	21.5 (4,840)	21.5 (4,840)	21.5 (4,840)
	10 (254)	80.3 (18,060)	80.3 (18,060)	80.3 (18,060)	35.9 (8,065)	35.9 (8,065)	35.9 (8,065)
5/8 (15.9)	3-1/8 (79)	20.6 (4,620)	25.2 (5,660)	29.1 (6,535)	14.4 (3,235)	15.2 (3,425)	15.2 (3,425)
	5-5/8 (143)	49.6 (11,160)	56.5 (12,700)	56.5 (12,700)	27.4 (6,165)	27.4 (6,165)	27.4 (6,165)
	7-1/2 (191)	75.3 (16,935)	75.3 (16,935)	75.3 (16,935)	36.6 (8,220)	36.6 (8,220)	36.6 (8,220)
	12-1/2 (318)	125.5 (28,220)	125.5 (28,220)	125.5 (28,220)	61.0 (13,705)	61.0 (13,705)	61.0 (13,705)
3/4 (19.1)	3-1/2 (89)	24.4 (5,480)	29.8 (6,710)	34.5 (7,745)	17.1 (3,835)	20.9 (4,695)	21.1 (4,755)
	6-3/4 (171)	65.3 (14,670)	79.9 (17,970)	81.3 (18,290)	40.8 (9,170)	40.8 (9,170)	40.8 (9,170)
	9 (229)	100.5 (22,585)	108.5 (24,385)	108.5 (24,385)	54.4 (12,225)	54.4 (12,225)	54.4 (12,225)
	15 (381)	180.8 (40,640)	180.8 (40,640)	180.8 (40,640)	90.6 (20,375)	90.6 (20,375)	90.6 (20,375)
7/8 (22.2)	3-1/2 (89)	24.4 (5,480)	29.8 (6,710)	34.5 (7,745)	17.1 (3,835)	19.3 (4,335)	19.3 (4,335)
	7-7/8 (200)	82.2 (18,485)	93.4 (20,995)	93.4 (20,995)	43.4 (9,750)	43.4 (9,750)	43.4 (9,750)
	10-1/2 (267)	124.5 (27,990)	124.5 (27,990)	124.5 (27,990)	57.8 (13,000)	57.8 (13,000)	57.8 (13,000)
	17-1/2 (445)	207.5 (46,655)	207.5 (46,655)	207.5 (46,655)	96.4 (21,670)	96.4 (21,670)	96.4 (21,670)
1 (25.4)	4 (102)	29.8 (6,690)	36.5 (8,195)	42.1 (9,465)	20.8 (4,685)	23.8 (5,350)	23.8 (5,350)
	9 (229)	100.5 (22,585)	122.0 (27,420)	122.0 (27,420)	53.5 (12,040)	53.5 (12,040)	53.5 (12,040)
	12 (305)	154.7 (34,775)	162.6 (36,560)	162.6 (36,560)	71.4 (16,050)	71.4 (16,050)	71.4 (16,050)
	20 (508)	271.0 (60,935)	271.0 (60,935)	271.0 (60,935)	119.0 (26,750)	119.0 (26,750)	119.0 (26,750)
1-1/4 (31.8)	5 (127)	41.6 (9,355)	51.0 (11,455)	58.8 (13,225)	29.1 (6,545)	33.1 (7,440)	33.1 (7,440)
	11-1/4 (286)	140.4 (31,565)	172.0 (38,660)	190.6 (42,845)	74.5 (16,740)	74.5 (16,740)	74.5 (16,740)
	15 (381)	216.2 (48,600)	254.1 (57,125)	254.1 (57,125)	99.3 (22,320)	99.3 (22,320)	99.3 (22,320)
	25 (635)	423.5 (95,210)	423.5 (95,210)	423.5 (95,210)	165.5 (37,205)	165.5 (37,205)	165.5 (37,205)

A7+ Hybrid Adhesive

Factored Concrete Breakout/Bond Failure Strength for Threaded Rod Shear, kN (lbf)

Nominal anchor diameter In. (mm)	Effective Embedment In. (mm)	UNCRACKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
3/8 (9.5)	2-3/8 (60)	13.6 (3,060)	14.3 (3,215)	14.3 (3,215)	8.6 (1,925)	8.6 (1,925)	8.6 (1,925)
	3-3/8 (86)	40.7 (9,145)	40.7 (9,145)	40.7 (9,145)	24.3 (5,470)	24.3 (5,470)	24.3 (5,470)
	4-1/2 (114)	54.2 (12,190)	54.2 (12,190)	54.2 (12,190)	32.4 (7,290)	32.4 (7,290)	32.4 (7,290)
	7-1/2 (191)	90.4 (20,320)	90.4 (20,320)	90.4 (20,320)	54.1 (12,155)	54.1 (12,155)	54.1 (12,155)
1/2 (12.7)	2-3/4 (70)	33.9 (7,630)	41.6 (9,345)	44.2 (9,935)	19.7 (4,435)	19.7 (4,435)	19.7 (4,435)
	4-1/2 (114)	71.0 (15,970)	72.3 (16,255)	72.3 (16,255)	32.3 (7,260)	32.3 (7,260)	32.3 (7,260)
	6 (152)	96.4 (21,675)	96.4 (21,675)	96.4 (21,675)	43.1 (9,680)	43.1 (9,680)	43.1 (9,680)
	10 (254)	160.7 (36,125)	160.7 (36,125)	160.7 (36,125)	71.8 (16,130)	71.8 (16,130)	71.8 (16,130)
5/8 (15.9)	3-1/8 (79)	41.1 (9,245)	50.4 (11,320)	58.1 (13,070)	28.8 (6,470)	30.5 (6,855)	30.5 (6,855)
	5-5/8 (143)	99.3 (22,320)	113.0 (25,400)	113.0 (25,400)	54.9 (12,335)	54.9 (12,335)	54.9 (12,335)
	7-1/2 (191)	150.6 (33,865)	150.6 (33,865)	150.6 (33,865)	73.1 (16,445)	73.1 (16,445)	73.1 (16,445)
	12-1/2 (318)	251.1 (56,445)	251.1 (56,445)	251.1 (56,445)	121.9 (27,410)	121.9 (27,410)	121.9 (27,410)
3/4 (19.1)	3-1/2 (89)	48.7 (10,955)	59.7 (13,420)	68.9 (15,495)	34.1 (7,670)	41.8 (9,390)	42.3 (9,510)
	6-3/4 (171)	130.5 (29,340)	159.8 (35,935)	162.7 (36,575)	81.6 (18,340)	81.6 (18,340)	81.6 (18,340)
	9 (229)	200.9 (45,175)	216.9 (48,765)	216.9 (48,765)	108.8 (24,450)	108.8 (24,450)	108.8 (24,450)
	15 (381)	361.5 (81,280)	361.5 (81,280)	361.5 (81,280)	181.3 (40,755)	181.3 (40,755)	181.3 (40,755)
7/8 (22.2)	3-1/2 (89)	48.7 (10,955)	59.7 (13,420)	68.9 (15,495)	34.1 (7,670)	38.6 (8,670)	38.6 (8,670)
	7-7/8 (200)	164.5 (36,975)	186.8 (41,990)	186.8 (41,990)	86.8 (19,500)	86.8 (19,500)	86.8 (19,500)
	10-1/2 (267)	249.0 (55,985)	249.0 (55,985)	249.0 (55,985)	115.7 (26,005)	115.7 (26,005)	115.7 (26,005)
	17-1/2 (445)	415.0 (93,305)	415.0 (93,305)	415.0 (93,305)	192.8 (43,340)	192.8 (43,340)	192.8 (43,340)
1 (25.4)	4 (102)	59.5 (13,385)	72.9 (16,395)	84.2 (18,930)	41.7 (9,370)	47.6 (10,700)	47.6 (10,700)
	9 (229)	200.9 (45,175)	243.9 (54,840)	243.9 (54,840)	107.1 (24,075)	107.1 (24,075)	107.1 (24,075)
	12 (305)	309.4 (69,550)	325.3 (73,120)	325.3 (73,120)	142.8 (32,100)	142.8 (32,100)	142.8 (32,100)
	20 (508)	542.1 (121,870)	542.1 (121,870)	542.1 (121,870)	238.0 (53,500)	238.0 (53,500)	238.0 (53,500)
1-1/4 (31.8)	5 (127)	83.2 (18,705)	101.9 (22,910)	117.7 (26,455)	58.2 (13,095)	66.2 (14,880)	66.2 (14,880)
	11-1/4 (286)	280.8 (63,135)	343.9 (77,320)	381.2 (85,690)	148.9 (33,485)	148.9 (33,485)	148.9 (33,485)
	15 (381)	432.4 (97,200)	508.2 (114,250)	508.2 (114,250)	198.6 (44,645)	198.6 (44,645)	198.6 (44,645)
	25 (635)	847.0 (190,420)	847.0 (190,420)	847.0 (190,420)	331.0 (74,405)	331.0 (74,405)	331.0 (74,405)

- These load values are for the purposes of estimation only and should not be used in design.
- Assuming single anchor with no edge or spacing distances, nor environmental factors that would reduce the load.
- Design loads include their respective ϕ_c and ϕ_s material resistance factors for concrete and steel from CSA A23.3-14 Cl. 8.4.2 and 8.4.3
- Design loads include their respective strength reduction factor for dry, water saturated and water filled hole conditions. Refer to design information table for threaded rod for submerged conditions (ϕ_{sub}).

- All design loads are calculated according to Condition B for concrete failure mode factor R
- Temperature Range A (long term temperature 43°C, short term temperature 55°C)
- Temperature Range B (long term temperature 43°C, short term temperature 80°C)
- Values for continuous inspection with dry, water saturated or water filled concrete

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Factored Concrete Breakout/Bond Failure Strength for Reinforcing Bars Tension, kN (lbf)

US Rebar Size (mm)	Effective Embedment In. (mm)	UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
# 3 (9.5)	3-1/2 (89)	20.0 (4,490)	20.0 (4,490)	20.0 (4,490)	9.0 (2,020)	9.0 (2,020)	9.0 (2,020)
	4-1/2 (114)	25.7 (5,770)	25.7 (5,770)	25.7 (5,770)	11.5 (2,595)	11.5 (2,595)	11.5 (2,595)
	7-1/2 (191)	42.8 (9,620)	42.8 (9,620)	42.8 (9,620)	19.2 (4,325)	19.2 (4,325)	19.2 (4,325)
# 4 (12.7)	4-1/2 (114)	35.5 (7,985)	39.5 (8,885)	39.5 (8,885)	15.4 (3,460)	15.4 (3,460)	15.4 (3,460)
	6 (152)	52.7 (11,850)	52.7 (11,850)	52.7 (11,850)	20.5 (4,615)	20.5 (4,615)	20.5 (4,615)
	10 (254)	87.8 (19,745)	87.8 (19,745)	87.8 (19,745)	34.2 (7,690)	34.2 (7,690)	34.2 (7,690)
# 5 (15.9)	5-3/4 (146)	51.3 (11,535)	62.0 (13,930)	62.0 (13,930)	24.6 (5,525)	24.6 (5,525)	24.6 (5,525)
	7-1/2 (191)	76.4 (17,185)	80.8 (18,170)	80.8 (18,170)	32.1 (7,210)	32.1 (7,210)	32.1 (7,210)
	12-1/2 (318)	134.7 (30,280)	134.7 (30,280)	134.7 (30,280)	53.4 (12,015)	53.4 (12,015)	53.4 (12,015)
# 6 (19.1)	6-3/4 (171)	65.3 (14,670)	78.2 (17,575)	78.2 (17,575)	26.9 (6,050)	26.9 (6,050)	26.9 (6,050)
	9 (229)	100.5 (22,585)	104.2 (23,430)	104.2 (23,430)	35.9 (8,065)	35.9 (8,065)	35.9 (8,065)
	15 (381)	173.7 (39,055)	173.7 (39,055)	173.7 (39,055)	59.8 (13,440)	59.8 (13,440)	59.8 (13,440)
# 7 (22.2)	8 (203)	84.2 (18,930)	103.1 (23,185)	104.0 (23,370)	37.2 (8,360)	37.2 (8,360)	37.2 (8,360)
	10-1/2 (267)	126.6 (28,465)	136.4 (30,675)	136.4 (30,675)	48.8 (10,975)	48.8 (10,975)	48.8 (10,975)
	17-1/2 (445)	227.4 (51,125)	227.4 (51,125)	227.4 (51,125)	81.4 (18,290)	81.4 (18,290)	81.4 (18,290)
# 8 (25.4)	9 (229)	100.5 (22,585)	123.1 (27,665)	131.9 (29,645)	47.8 (10,750)	47.8 (10,750)	47.8 (10,750)
	13 (330)	174.4 (39,210)	190.5 (42,820)	190.5 (42,820)	69.1 (15,530)	69.1 (15,530)	69.1 (15,530)
	20 (508)	293.0 (65,875)	293.0 (65,875)	293.0 (65,875)	106.3 (23,890)	106.3 (23,890)	106.3 (23,890)
# 9 (28.6)	10-1/2 (267)	126.6 (28,465)	155.1 (34,860)	170.1 (38,235)	62.8 (14,110)	62.8 (14,110)	62.8 (14,110)
	13-1/2 (343)	184.6 (41,495)	218.7 (49,155)	218.7 (49,155)	80.7 (18,145)	80.7 (18,145)	80.7 (18,145)
	20 (508)	323.9 (72,825)	323.9 (72,825)	323.9 (72,825)	119.6 (26,880)	119.6 (26,880)	119.6 (26,880)
# 10 (32.2)	12 (305)	154.7 (34,775)	189.5 (42,590)	211.1 (47,445)	82.2 (18,470)	82.2 (18,470)	82.2 (18,470)
	15 (381)	216.2 (48,600)	263.8 (59,310)	263.8 (59,310)	102.7 (23,090)	102.7 (23,090)	102.7 (23,090)
	25 (635)	439.7 (98,850)	439.7 (98,850)	439.7 (98,850)	171.2 (38,480)	171.2 (38,480)	171.2 (38,480)

A7+ Hybrid Adhesive

Factored Concrete Breakout/Bond Failure Strength for Reinforcing Bars Shear, kN (lbf)

US Rebar Size (mm)	Effective Embedment In. (mm)	UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
# 3 (9.5)	3-1/2 (89)	39.9 (8,980)	39.9 (8,980)	39.9 (8,980)	18.0 (4,035)	18.0 (4,035)	18.0 (4,035)
	4-1/2 (114)	51.3 (11,545)	51.3 (11,545)	51.3 (11,545)	23.1 (5,190)	23.1 (5,190)	23.1 (5,190)
	7-1/2 (191)	85.6 (19,240)	85.6 (19,240)	85.6 (19,240)	38.5 (8,650)	38.5 (8,650)	38.5 (8,650)
# 4 (12.7)	4-1/2 (114)	71.0 (15,970)	79.1 (17,770)	79.1 (17,770)	30.8 (6,920)	30.8 (6,920)	30.8 (6,920)
	6 (152)	105.4 (23,695)	105.4 (23,695)	105.4 (23,695)	41.0 (9,225)	41.0 (9,225)	41.0 (9,225)
	10 (254)	175.7 (39,495)	175.7 (39,495)	175.7 (39,495)	68.4 (15,375)	68.4 (15,375)	68.4 (15,375)
# 5 (15.9)	5-3/4 (146)	102.6 (23,070)	123.9 (27,855)	123.9 (27,855)	49.2 (11,050)	49.2 (11,050)	49.2 (11,050)
	7-1/2 (191)	152.9 (34,365)	161.6 (36,335)	161.6 (36,335)	64.1 (14,415)	64.1 (14,415)	64.1 (14,415)
	12-1/2 (318)	269.4 (60,560)	269.4 (60,560)	269.4 (60,560)	106.9 (24,025)	106.9 (24,025)	106.9 (24,025)
# 6 (19.1)	6-3/4 (171)	130.5 (29,340)	156.3 (35,150)	156.3 (35,150)	53.8 (12,095)	53.8 (12,095)	53.8 (12,095)
	9 (229)	200.9 (45,175)	208.5 (46,865)	208.5 (46,865)	71.7 (16,125)	71.7 (16,125)	71.7 (16,125)
	15 (381)	347.4 (78,110)	347.4 (78,110)	347.4 (78,110)	119.6 (26,880)	119.6 (26,880)	119.6 (26,880)
# 7 (22.2)	8 (203)	168.4 (37,860)	206.2 (46,365)	207.9 (46,740)	74.4 (16,725)	74.4 (16,725)	74.4 (16,725)
	10-1/2 (267)	253.2 (56,925)	272.9 (61,350)	272.9 (61,350)	97.6 (21,950)	97.6 (21,950)	97.6 (21,950)
	17-1/2 (445)	454.8 (102,250)	454.8 (102,250)	454.8 (102,250)	162.7 (36,585)	162.7 (36,585)	162.7 (36,585)
# 8 (25.4)	9 (229)	200.9 (45,175)	246.1 (55,325)	263.7 (59,290)	95.6 (21,505)	95.6 (21,505)	95.6 (21,505)
	13 (330)	348.8 (78,420)	380.9 (85,640)	380.9 (85,640)	138.2 (31,060)	138.2 (31,060)	138.2 (31,060)
	20 (508)	586.1 (131,755)	586.1 (131,755)	586.1 (131,755)	212.6 (47,785)	212.6 (47,785)	212.6 (47,785)
# 9 (28.6)	10-1/2 (267)	253.2 (56,925)	310.1 (69,720)	310.1 (69,720)	125.5 (28,220)	125.5 (28,220)	125.5 (28,220)
	13-1/2 (343)	369.2 (82,990)	437.3 (98,315)	437.3 (98,315)	161.4 (36,285)	161.4 (36,285)	161.4 (36,285)
	20 (508)	647.9 (145,650)	647.9 (145,650)	647.9 (145,650)	239.1 (53,755)	239.1 (53,755)	239.1 (53,755)
# 10 (32.2)	12 (305)	309.4 (69,550)	378.9 (85,180)	422.1 (94,895)	164.3 (36,940)	164.3 (36,940)	164.3 (36,940)
	15 (381)	432.4 (97,200)	527.6 (118,615)	527.6 (118,615)	205.4 (46,175)	205.4 (46,175)	205.4 (46,175)
	25 (635)	879.4 (197,695)	879.4 (197,695)	879.4 (197,695)	342.3 (76,960)	342.3 (76,960)	342.3 (76,960)

1 These load values are for the purposes of estimation only and should not be used in design

2 Assuming single anchor with no edge or spacing distances, nor environmental factors that would reduce the load.

3 Design loads include their respective ϕ_c and ϕ_s material resistance factors for concrete and steel from CSA A23.3-14 Cl. 8.4.2 and 8.4.3

4 Design loads include their respective strength reduction factor for dry, water saturated and water filled hole conditions. Refer to design information table for threaded rod for submerged conditions (ϕ_{sub}).

5 All design loads are calculated according to Condition B for concrete failure mode factor R

6 Temperature Range A (long term temperature 43°C, short term temperature 55°C)

7 Temperature Range B (long term temperature 43°C, short term temperature 80°C)

8 Values for continuous inspection with dry, water saturated or water filled concrete

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Recommended Edge Distance Requirements for Shear Loads Installed in Solid Concrete

ANCHOR DIAMETER In. (mm)	EMBEDMENT DEPTH In. (mm)	CRITICAL EDGE DISTANCE In. (mm) (100% LOAD CAPACITY)	INTERPOLATED EDGE DISTANCE In. (mm) (80% LOAD CAPACITY)	INTERPOLATED EDGE DISTANCE In. (mm) (50% LOAD CAPACITY)	MINIMUM EDGE DISTANCE In. (mm) (10% LOAD CAPACITY)
3/8 (9.5)	3-3/8 (85.7)	4-3/16 (106.4)	3-7/16 (87.3)	2-5/16 (58.7)	13/16 (20.6)
1/2 (12.7)	4-1/2 (114.3)	5-5/8 (142.9)	4-5/8 (117.5)	3-1/8 (79.4)	1-1/8 (28.6)
5/8 (15.9)	5-5/8 (142.9)	7 (177.8)	5-3/4 (146.1)	3-1/8 (79.4)	1-3/8 (34.9)
3/4 (19.1)	6-3/4 (171.5)	8-7/16 (214.2)	6-15/16 (176.2)	4-5/8 (117.5)	1-5/8 (41.3)
1 (25.4)	9 (228.6)	11-1/4 (285.8)	9-1/4 (235.0)	6-1/4 (158.8)	2-1/4 (57.2)
1-1/4 (31.8)	11-1/4 (285.8)	14-1/16 (357.2)	11-5/8 (295.3)	7-7/8 (200.0)	2-7/8 (73.0)

A7+ Hybrid Adhesive

Recommended Edge Distance Requirements for Tension Loads Installed in Solid Concrete

ANCHOR DIAMETER In. (mm)	EMBEDMENT DEPTH In. (mm)	CRITICAL EDGE DISTANCE In. (mm) (100% LOAD CAPACITY)	INTERPOLATED EDGE DISTANCE In. (mm) (90% LOAD CAPACITY)	INTERPOLATED EDGE DISTANCE In. (mm) (80% LOAD CAPACITY)	MINIMUM EDGE DISTANCE In. (mm) (70% LOAD CAPACITY)
3/8 (9.5)	3-3/8 (85.7)	2-1/2 (63.5)	1-15/16 (49.2)	1-3/8 (34.9)	13/16 (26.2)
	4-1/2 (114.3)	3-3/8 (85.7)	2-5/8 (66.7)	1-7/8 (47.6)	1-1/8 (28.6)
1/2 (12.7)	4-1/2 (114.3)	3-3/8 (85.7)	2-5/8 (66.7)	1-7/8 (47.6)	1-1/8 (28.6)
	6 (152.4)	4-1/2 (114.3)	3-1/2 (88.9)	2-1/2 (63.5)	1-1/2 (38.1)
5/8 (15.9)	5-5/8 (142.9)	4-3/16 (106.4)	3-1/4 (82.6)	2-5/16 (58.7)	1-3/8 (34.9)
	7-1/2 (190.5)	5-5/8 (142.9)	4-3/8 (111.1)	3-1/8 (79.4)	1-7/8 (47.6)
3/4 (19.1)	6-3/4 (171.5)	5-1/16 (128.6)	3-15/16 (100.0)	2-13/16 (71.4)	1-5/8 (15.9)
	9 (228.6)	6-3/4 (171.5)	5-1/4 (133.4)	3-3/4 (95.3)	2-1/4 (57.2)
1 (25.4)	9 (228.6)	6-3/4 (171.5)	5-1/4 (133.4)	3-3/4 (95.3)	2-1/4 (57.2)
	12 (304.8)	9 (228.6)	7 (177.8)	5 (127.0)	3 (76.2)
1-1/4 (31.8)	11-1/4 (285.8)	8-7/16 (214.3)	6-9/16 (166.7)	4-3/4 (120.7)	2-7/8 (73.0)
	15 (381.0)	11-1/4 (285.8)	8-3/4 (222.2)	6-1/4 (158.8)	3-3/4 (95.3)

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Tension and Shear Loads based on Steel Design Information for U.S. Customary Unit Threaded Rod ^{1, 2, 3}

Anchor Diameter (in.)	Tension (lb)			Shear (lb)		
	ASTM A307 F _u = 60 ksi	ASTM A193 Grade B7 F _u = 125 ksi	ASTM F593 SS 304 F _u = 100 ksi	ASTM A307 F _u = 60 ksi	ASTM A193 Grade B7 F _u = 125 ksi	ASTM F593 SS 304 F _u = 100 ksi
3/8	2,185	4,555	3,645	1,125	2,345	1,875
1/2	3,885	8,100	6,480	2,000	4,170	3,335
5/8	6,075	12,655	10,125	3,130	6,520	5,215
3/4	8,750	18,225	12,390	4,505	9,390	6,385

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

1 Allowable load used in the design must be the lesser of bond values and tabulated steel element values.

2 Allowable tension and shear loads for threaded rods to resist short term loads, such as wind or seismic, must be calculated in accordance with Section 4.1 as applicable.

3 Allowable steel loads are based on allowable tension and shear stresses equal to 0.33X F_u and 0.17X F_u, respectively.

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Tension Loads for Threaded Rod ^{1, 2, 3, 4, 7, 9, 10, 11, 12}

Anchor Diameter (in.)	Minimum Embedment (inches)	Load at s _{cr} and c _{cr} (lb)	Spacing ⁵			Edge Distance ⁶		
			Critical s _{cr} (inches)	Minimum s _{min} (inches)	Load reduction factor for s _{min} ⁸	Critical c _{cr} (inches)	Minimum c _{min} (inches)	Load reduction factor for c _{min} ⁸
3/8	3-3/8	1,125	13.5	4	1.00	12	4	1.00
1/2	4-1/2	1,695	18	4	0.60	20	4	0.90
5/8	5-5/8	2,015	22.5	4	0.60	20	4	0.90
3/4	6-3/4	3,145	27	4	0.60	20	4	0.63

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Shear Loads for Threaded Rod ^{1, 2, 3, 4, 7, 9, 10, 11, 12}

Anchor Diameter (in.)	Minimum Embedment (inches)	Load at s _{cr} and c _{cr} (lb)	Spacing ⁵			Edge Distance ⁶		
			Critical s _{cr} (inches)	Minimum s _{min} (inches)	Load reduction factor for s _{min} ⁸	Critical c _{cr} (inches)	Minimum c _{min} (inches)	Load reduction factor for c _{min} ⁸
3/8	3-3/8	750	13.5	4	0.50	12	4	0.95
1/2	4-1/2	1,520	18	4	0.50	20	4	.044
5/8	5-5/8	2,285	22.5	4	0.50	22	4	0.26
3/4	6-3/4	2,345	27	4	0.50	20	4	0.26

For SI: 1 inch = 25.4mm, 1 lbf = 0.0044 kN, 1 ksi = 6.894 MPa. (Refer to Table 4 for footnotes)

- All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium-, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.
- Anchors may be installed in any location in the face of the masonry wall (cell, web, bed joint) as shown in Figure 2.
- A maximum of two anchors may be installed in a single masonry cell in accordance with the spacing and edge or end distance requirements. Embedment is measured from the outside surface of the concrete masonry unit to the embedded end of the anchor. See Figure 2 of this report.
- The critical spacing distance, s_{cr}, is the anchor spacing where full load values in the table may be used. The minimum spacing distance, s_{min}, is the minimum anchor spacing for which values are available and installation is permitted. Spacing distance is measured from the centerline to centerline between two anchors.
- The critical edge or end distance, c_{cr}, is the distance where full load values in the table may be used. The minimum edge or end distance, c_{min}, is the minimum distance for which values are available and installation is permitted. Edge or end distance is measured from anchor centerline to the closest unrestrained edge.
- The tabulated values are applicable for anchors in the ends of grout-filled concrete masonry units where minimum edge distances are maintained.
- Load values for anchors installed less than s_{cr} and c_{cr} must be multiplied by the appropriate load reduction factor based on actual spacing (s) or edge distance (c). Load factors are multiplicative; both spacing and edge reduction factors must be considered.
- Linear interpolation of load values between minimum spacing (s_{min}) and critical spacing (s_{cr}) and between minimum edge or end distance (c_{min}) and critical edge or end distance (c_{cr}) is permitted.
- Concrete masonry width (wall thickness) must be equal to or greater than 1.5 times the anchor embedment depth (e.g. 3/8-inch- and 1/2-inch-diameter anchors are permitted in minimum nominally 8-inch-thick concrete masonry). The 5/8- and 3/4-inch-diameter anchors must be installed in minimum nominally 8-inch-thick concrete masonry.
- Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 2.
- Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

PERFORMANCE TABLES

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Tension and Shear Loads for Rebar^{1, 2, 3}

Rebar Size	Tension (lb)	Shear (lb)
	ASTM A615, Grade 60	ASTM A615, Grade 60
No. 3	3,270	1,685
No. 4	5,940	3,060
No. 5	9,205	4,745
No. 6	13,070	6,730

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

1 Allowable load used in the design must be the lesser of bond values and tabulated steel element values.

2 Allowable tension and shear loads for threaded rods to resist short term loads, such as wind or seismic, must be calculated in accordance with Section 4.1 as applicable.

3 Allowable steel loads are based on allowable tension and shear stresses equal to 0.33X Fu and 0.17Xfu, respectively.

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Tension Loads for Rebar^{1, 2, 3, 4, 7, 9, 10, 11, 12}

Anchor Diameter (in.)	Minimum Embedment (inches)	Load at s_{cr} and c_{cr} (lb)	Spacing ⁵			Edge Distance ⁶		
			Critical s_{cr} (inches)	Minimum s_{min} (inches)	Load reduction factor for s_{min} ⁸	Critical c_{cr} (inches)	Minimum c_{min} (inches)	Load reduction factor for c_{min} ⁸
3/8	3-3/8	1,530	13.5	4	1.00	12	4	1.00
1/2	4-1/2	1,845	18	4	0.60	20	4	0.90
5/8	5-5/8	2,465	22.5	4	0.60	20	4	0.90
3/4	6-3/4	2,380	27	4	0.60	20	4	0.63

A7+ Hybrid Adhesive

Grout-filled Concrete Block: Allowable Shear Loads for Rebar^{1, 2, 3, 4, 7, 9, 10, 11, 12}

Anchor Diameter (in.)	Minimum Embedment (inches)	Load at s_{cr} and c_{cr} (lb)	Spacing ⁵			Edge Distance ⁶		
			Critical s_{cr} (inches)	Minimum s_{min} (inches)	Load reduction factor for s_{min} ⁸	Critical c_{cr} (inches)	Minimum c_{min} (inches)	Load reduction factor for c_{min} ⁸
3/8	3-3/8	1,410	13.5	4	0.50	12	4	0.95
1/2	4-1/2	1,680	18	4	0.50	20	4	0.44
5/8	5-5/8	3,245	22.5	4	0.50	12	4	0.26
3/4	6-3/4	4,000	27	4	0.50	20	4	0.26

For SI: 1 inch = 25.4 mm; 1 lbf = 0.0044 kN, 1 ksi = 6.894 MPa.

(The following footnotes apply to both Tables 6 and 7)

- All values are for anchors installed in fully grouted concrete masonry with minimum masonry strength of 1500 psi (10.3 MPa). Concrete masonry units must be light-, medium, or normal-weight conforming to ASTM C 90. Allowable loads have been calculated using a safety factor of 5.0.
- Anchors may be installed in any location in the face of the masonry wall (cell, web, bed joint) as shown in figure 2.
- A maximum of two anchors may be installed in a single masonry cell in accordance with the spacing and edge or end distance requirements. Embedment is measured from the outside surface of the concrete masonry unit to the embedded end of the anchor. See Figure 2 of this report.
- The critical spacing distance, s_{cr} , is the anchor spacing where full load values in the table may be used. The minimum spacing distance, s_{min} , is the minimum anchor spacing for which values are available and installation is permitted. Spacing distance is measured from the centerline to centerline between two anchors.
- The critical edge or end distance, c_{cr} , is the distance where full load values in the table may be used. The minimum edge or end distance, c_{min} , is the minimum distance for which values are available and installation is permitted. Edge or end distance is measured from anchor centerline to the closest unrestrained edge.
- The tabulated values are applicable for anchors in the ends of grout-filled concrete masonry units where minimum edge distances are maintained.
- Load values for anchors installed less than s_{cr} and c_{cr} must be multiplied by the appropriate load reduction factor based on actual spacing (s) or edge distance (c). Load factors are multiplicative; both spacing and edge reduction factors must be considered.
- Linear interpolation of load values between minimum spacing (s_{min}) and critical spacing (s_{cr}) and between minimum edge or end distance (c_{min}) and critical edge or end distance (c_{cr}) is permitted.
- Concrete masonry width (wall thickness) must be equal to or greater than 1.5 times the anchor embedment depth (e.g. No. 3 and No. 4 reinforcing bars are permitted in minimum nominally 6-inch-thick concrete masonry). No. 5 and No. 6 reinforcing bars must be installed in minimum nominally 8-inch-thick concrete masonry.
- Allowable loads must be the lesser of the adjusted masonry or bond values tabulated above and the steel strength values given in Table 4.
- Tabulated allowable bond loads must be adjusted for increased in-service base material temperatures in accordance with Figure 1, as applicable.

New Formulation C6+

**For the Most
Demanding Jobs**



DESCRIPTION

Suggested Specifications see page RH 24

Maximum strength epoxy for your most heavy-duty and specialty applications

Red Head C6+ is the highest strength adhesive in all of ITW's adhesive anchor products. Designed for use in the most demanding anchoring applications, the maximum strength of Red Head C6+ is backed by ICC-ES (AC308, AC58) approvals for both concrete and masonry. It is also the only adhesive approved for core-drilled holes in cracked concrete without the use of a roughening tool.

ADVANTAGES

- At least 25% stronger than the old C6+ formulation for threaded rod in cracked concrete with seismic conditions
- Fastest cure time in its class, curing in just 2.75 hours at 32°C and in only 2 hours at 43°C!
- ICC-ES approved for cracked concrete and seismic applications (ICC-ES ESR 4046)
- ICC-ES approved for masonry applications (ICC-ES ESR 4109)
- ICC-ES Approved for use in core-drill holes, even in cracked concrete
- At least 10 minutes of nozzle life at 43°C
- Can be used down to 4°C and up to 43°C
- Can be used in oversized holes
- Rugged cartridges resist breakage due to rough handling or cold temperatures
- The industry's first adhesive to be approved for use in core-drilled holes in cracked concrete without the need for a roughening tool
- Install Red Head C6+ and apply the load in the same work shift! (in 21°C and above)
- ICC-ES approved for all wet conditions, including underwater
- More safe and durable on job sites than sausage packs
- Can use in both concrete and masonry substrates, including hollow and solid base materials
- 24-month shelf life
- Store between 13°C and 35°C in a cool, dry place.

Curing Times

BASE MATERIAL (F°/C°)	GEL/WORKING TIME ²	FULL CURE TIME
110°/ 43°	10 minutes	2 hours
90°/ 32°	14 minutes	2.75 hours
70°/ 21°	16 minutes	6.5 hours
50°/ 10°	30 minutes	24 hours
40°/ 4°	46 minutes	48 hours

¹ For concrete temperatures between 4°C - 10°C adhesive must be maintained at a minimum of 13°C during installation.

² Gel time is max time from the end of mixing to when the insertion of the threaded rod or rebar into the adhesive shall be completed

Spacing and Edge Distance

NOMINAL ANCHOR DIAMETER (IN.)	MINIMUM SPACING (IN.)	MINIMUM EDGE DISTANCE (IN.)
3/8	1-1/2	1-1/2
1/2	1-1/2	1-1/2
5/8	1-3/4	1-3/4
3/4	1-7/8	1-7/8
7/8	2	2
1	2	2
1-1/4	2-1/2	2-1/2

APPLICATIONS



Gene Leahy Mall Renovation

Anchors were installed with no concerns with the environment using ITW Epcon C6+.



Boston, San Diego, Evanston

Contractors enjoy the easy pump, easy storage and superior performance for rebar dowling and brick tie application.



Anchoring a concrete traffic barrier wall to concrete bridge deck.



Doweling rebar into bridge deck and forming to pour new barrier wall using ITW Epcon C6+.



Doweling rebar into concrete foundation wall prior to building concrete block wall using ITW Epcon C6+.

FEATURES



ANCHORAGE TO SOLID CONCRETE

Threaded Rod (Carbon or Stainless Steel) or Rebar supplied by contractor; rod does not need to be chisel pointed

C6+ adhesive completely fills area between rod and hole creating a stress-free, high load anchorage

Pre-drilled hole in concrete; see performance tables for suggested hole sizes

APPROVALS/LISTINGS

ICC-ES ESR 4046 (Concrete Report)

ICC-ES ESR 4109 (Masonry Report)

2015, 2012, 2009, 2006 International Building Code (IBC) Compliant

Florida Building Code (FBC)

City of Los Angeles (COLA)

Department of Transportation (DOT) Listings

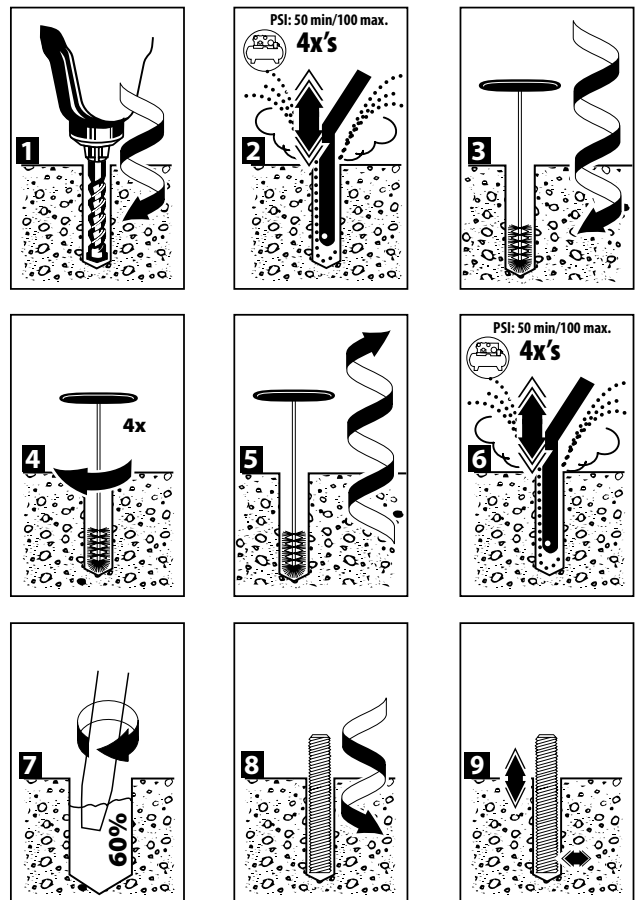
NSF/ANSI 61 Approval for use in Drinking Water System Components

ASTM C881, Types I, II, IV, and V, Grade 3, Classes B & C











Certified to
ANSI/NSF 61

INSTALLATION STEPS



C6P – 30.4 fl. oz. Ordering Information

PART NUMBER	DESCRIPTION	BOX QTY	PART NUMBER	DESCRIPTION	BOX QTY
 C6P-30	30.4 Fluid Ounce Red Head C6+ Cartridge with S55 nozzle	4	 D202	Pneumatic Dispenser for C6P-30 cartridges	1
 D102	Heavy-Duty 34:1 thrust ratio hand dispenser for C6P-30 cartridges	1	 A300	Cordless Battery Dispenser for A7P-28 and C6P-30 Cartridge. Includes one battery and charger. Works with all Milwaukee® M18™ batteries	1
 S55	Standard Mixing Nozzle, fits holes for 3/8" diameter anchors and larger. 3-1/2" inch usable length for 3/8" and 1/2" anchors, 8-1/4" usable length for 5/8" anchors and above	24	 S75	High Flow Mixing Nozzle, fits holes for 3/4" diameter anchors and larger. 7-3/8" usable length	24
 E55*	Long Mixing Nozzle, fits holes for 3/8" diameter anchors and larger. 5-3/4" inch usable length for 3/8" and 1/2" anchors, 12-5/8" usable length for 5/8" anchors and above	24	 S75EXT	Extension for High Flow Mixing Nozzle for 3/4" diameter anchors and larger. 15-5/8" usable length when attached to S75	24

* E55 is only recommended with pneumatic or battery dispensers. For manual dispensing and deep embedment holes, use S55 with extension tubing on page RH34
Refer to page RH 34 for ordering information on wire brushes, brush extensions, and blow pump for deep holes.

ESTIMATING TABLES

<div>C6+</div> <div>30.4 Fluid Ounce Cartridge</div>		Number of Anchoring Installations per Cartridge* Using Reinforcing Bar with C6+ Adhesive in Solid Concrete														
REBAR	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
#3	7/16	608.4	304.2	202.8	152.1	121.7	101.4	86.9	76.0	67.6	60.8	55.3	50.7	46.8	43.5	40.6
10M	9/16	368.0	184.0	122.7	92.0	73.6	61.3	52.6	46.0	40.9	36.8	33.5	30.7	28.3	26.3	24.5
#4	5/8	298.1	149.0	99.4	74.5	59.6	49.7	42.6	37.3	33.1	29.8	27.1	24.8	22.9	21.3	19.9
#5 or 15M	3/4	207.0	103.5	69.0	51.8	41.4	34.5	29.6	25.9	23.0	20.7	18.8	17.3	15.9	14.8	13.8
#6 or 20M	7/8	152.1	76.0	50.7	38.0	30.4	25.3	21.7	19.0	16.9	15.2	13.8	12.7	11.7	10.9	10.1
#7	1	116.4	58.2	38.8	29.1	23.3	19.4	16.6	14.6	12.9	11.6	10.6	9.7	9.0	8.3	7.8
#8 or 25M	1 1/8	92.0	46.0	30.7	23.0	18.4	15.3	13.1	11.5	10.2	9.2	8.4	7.7	7.1	6.6	6.1
#9	1 1/4	74.5	37.3	24.8	18.6	14.9	12.4	10.6	9.3	8.3	7.5	6.8	6.2	5.7	5.3	5.0
#10 or 30M	1 3/8	61.6	30.8	20.5	15.4	12.3	10.3	8.8	7.7	6.8	6.2	5.6	5.1	4.7	4.4	4.1
#11	1 3/4	38.0	19.0	12.7	9.5	7.6	6.3	5.4	4.8	4.2	3.8	3.5	3.2	2.9	2.7	2.5

* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.

C6+ 30.4 Fluid Ounce Cartridge		Number of Anchoring Installations per Cartridge* Using Threaded Rod with C6+ Adhesive in Solid Concrete														
		EMBEDMENT DEPTH IN INCHES (mm)														
THREADED ROD	DRILL HOLE DIA. INCHES	1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
1/4	5/16	1192.4	596.2	397.5	298.1	238.5	198.7	170.3	149.0	132.5	119.2	108.4	99.4	91.7	85.2	79.5
3/8	7/16	608.4	304.2	202.8	152.1	121.7	101.4	86.9	76.0	67.6	60.8	55.3	50.7	46.8	43.5	40.6
1/2	9/16	368.0	184.0	122.7	92.0	73.6	61.3	52.6	46.0	40.9	36.8	33.5	30.7	28.3	26.3	24.5
5/8	11/16	246.4	123.2	82.1	61.6	49.3	41.1	35.2	30.8	27.4	24.6	22.4	20.5	19.0	17.6	16.4
	3/4	207.0	103.5	69.0	51.8	41.4	34.5	29.6	25.9	23.0	20.7	18.8	17.3	15.9	14.8	13.8
3/4	13/16	176.4	88.2	58.8	44.1	35.3	29.4	25.2	22.0	19.6	17.6	16.0	14.7	13.6	12.6	11.8
	7/8	152.1	76.0	50.7	38.0	30.4	25.3	21.7	19.0	16.9	15.2	13.8	12.7	11.7	10.9	10.1
7/8	15/16	132.5	66.2	44.2	33.1	26.5	22.1	18.9	16.6	14.7	13.2	12.0	11.0	10.2	9.5	8.8
	1	116.4	58.2	38.8	29.1	23.3	19.4	16.6	14.6	12.9	11.6	10.6	9.7	9.0	8.3	7.8
1	1-1/16	103.1	51.6	34.4	25.8	20.6	17.2	14.7	12.9	11.5	10.3	9.4	8.6	7.9	7.4	6.9
	1-1/8	92.0	46.0	30.7	23.0	18.4	15.3	13.1	11.5	10.2	9.2	8.4	7.7	7.1	6.6	6.1
1-1/4	1-1/3	67.6	33.8	22.5	16.9	13.5	11.3	9.7	8.4	7.5	6.8	6.1	5.6	5.2	4.8	4.5
	1-3/8	61.6	30.8	20.5	15.4	12.3	10.3	8.8	7.7	6.8	6.2	5.6	5.1	4.7	4.4	4.1

* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.

PACKAGING

1. Disposable, self-contained cartridge system capable of dispensing both epoxy components in the proper mixing ratio
2. Epoxy components dispensed through a static mixing nozzle that thoroughly mixes the material and places the epoxy at the base of the pre-drilled hole
3. Cartridge markings: Include manufacturer's name, batch number and best-used-by date, mix ratio by volume, ANSI hazard classification, and appropriate ANSI handling precautions

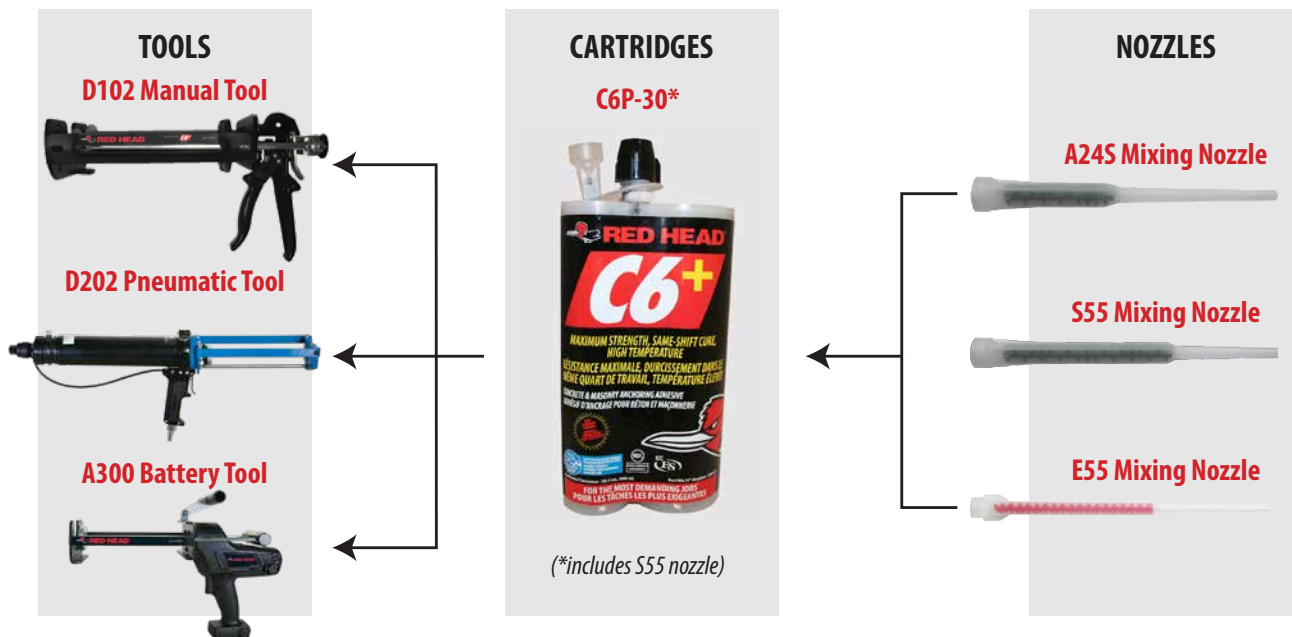
SUGGESTED SPECIFICATIONS

EPOXY ADHESIVE:

High Strength EPOXY ADHESIVE: USA Made, ARRA Certified

1. Two component resin and hardener, 100% solids (containing no solvents or VOC's), non-sag paste, insensitive to moisture, grey in color, early working time and gel time appropriate for sever installation conditions, suitable for extreme temperature ranges, for all conditions or substrate materials.
2. Meets NSF Standard 61, certified for use in conjunction with drinking water systems.
3. Works in wet, damp, submerged holes.
4. Conforms to ASTM C881-02; Type I & IV; Grade 3; Class A, B, and C; with exceptions.
5. Compressive strength, ASTM D695-02: 12,090 psi minimum.
6. Heat deflection temperature: 60°C minimum.
7. Extended Shelf life: Best if used within 2 years.
8. Reliable performance in solid or hollow base materials.
9. Oversized and/or diamond cored holes permitted.

Selection Guide



* E55 is only recommended with pneumatic or battery dispensers. For manual dispensing and deep embedment holes, use S55 with extension tubing on page RH34

PERFORMANCE TABLES

C6+ Epoxy Adhesive Factored Steel Strength for Threaded Rod, kN (lbf)

Nominal anchor Dia. In (mm)	Tension kN (lb), Nsar			Shear kN (lb) Vsar			Seismic Shear kN (lb), Vsar, seismic		
	Carbon Steel A36	Carbon Steel A193 B7	Stainless F593	Carbon Steel A36	Carbon Steel A193 B7	Stainless F593	Carbon Steel A36	Carbon Steel A193 B7	Stainless F593
3/8 (9.5)	13.6 (3,060)	29.3 (6,589)	19.5 (4,382)	7.7 (1,721)	16.5 (3,704)	9.0 (2,033)	5.4 (1,205)	11.5 (2,593)	6.3 (1,423)
1/2 (12.7)	24.9 (5,596)	53.7 (12,063)	35.7 (8,021)	14.0 (3,149)	30.2 (6,783)	16.6 (3,724)	9.8 (2,204)	21.1 (4,748)	11.6 (2,607)
5/8 (15.9)	39.7 (8,915)	85.5 (19,210)	56.8 (12,775)	22.3 (5,017)	48.1 (10,806)	26.4 (5,931)	15.6 (3,512)	33.6 (7,564)	18.5 (4,152)
3/4 (19.1)	58.7 (13,192)	126.5 (28,431)	67.2 (15,104)	33.0 (7,421)	71.1 (15,995)	31.2 (7,011)	23.1 (5,194)	49.8 (11,196)	21.8 (4,908)
7/8 (22.2)	81.0 (18,210)	174.6 (39,243)	92.9 (20,891)	45.6 (10,245)	98.2 (22,077)	43.1 (9,699)	31.9 (7,171)	58.7 (13,196)	30.2 (6,789)
1 (25.4)	106.3 (23,889)	229.0 (51,483)	121.9 (27,403)	59.8 (13,439)	128.8 (28,962)	56.6 (12,724)	41.8 (9,407)	90.2 (20,273)	39.6 (8,907)
1-1/4 (31.8)	170.0 (38,223)	366.4 (82,376)	194.9 (43,819)	95.6 (21,503)	206.1 (46,334)	90.5 (20,343)	67.0 (15,052)	144.3 (32,433)	63.3 (14,240)

1 Values correspond to a ductile steel element

3 Tension values calculated according to Cl. D6.1.2 in CSA A23.3-14 Annex D

5 Seismic shear was calculated according to Vsar*aV,seis

2 Values correspond to a brittle steel element

4 Shear values calculated according to Cl. D7.1.2 in CSA A23.3-14 Annex D

PERFORMANCE TABLES

C6+ Epoxy Adhesive

Concrete Breakout and Bond Strength for Threaded Rod

Characteristic		Symbol	Units	Nominal Rod Diameter In. (mm)							
Nominal Anchor Diameter		do	In. (mm)	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)	1 (25.4)	1-1/4 (31.8)	
Concrete Breakout											
Effectiveness factor for uncracked concrete		k _{uncr}	—	10							
Effectiveness factor for cracked concrete		k _{cr}	—	7							
Modification factor for resistance in tension to account for uncracked concrete		ψ _{c, N}	—	1							
Minimum concrete thickness		h _{min}	mm	h _{ef} + 32			h _{ef} + 2do				
Anchor embedment depth – minimum		h _{ef,min}	In. (mm)	1.5 (38)	2.0 (51)	2.5 (64)	3.0 (76)	3.5 (89)	4.0 (102)	5.0 (127.0)	
Minimum spacing		s _{min}	In. (mm)	0.9 (24)	1.5 (38)	2.5 (64)	3.0 (76)	3.5 (89)	4.0 (102)	5.0 (127.0)	
Minimum edge distance		c _{min}	In. (mm)	0.9 (24)	1.5 (38)	2.5 (64)	3.0 (76)	3.5 (89)	4.0 (102)	5.0 (127.0)	
Critical edge distance		c _{ac}	In.	See Section 4.1.10 of the evaluation report							
Material resistance factor for concrete		Φ _c	—	0.65							
Strength reduction factor for tension, concrete failure modes		R	Cond. A	1.15							
		R	Cond. B	1							
Strength reduction factor for shear, concrete failure modes		R	Cond. A	1.15							
		R	Cond. B	1							
Modification Factor for concrete density		λ	—	1							
Bond Strength											
Nominal Rod Diameter In. (mm)			d _o	In.	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)	7/8 (22.2)	1 (25.4)	1-1/4 (31.8)
Temperature Range A ²	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	17.0 (2,470)	16.5 (2,390)	16.0 (2,315)	15.4 (2,240)	14.9 (2,160)	14.4 (2,085)	13.3 (1,930)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	7.8 (1,125)	7.8 (1,125)	7.8 (1,125)	8.7 (1,255)	8.7 (1,255)	8.7 (1,255)	9.4 (1,370)
Temperature Range B ^{3,4}	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	14.5 (2,110)	14.1 (2,040)	13.6 (1,975)	13.2 (1,910)	12.7 (1,845)	12.3 (1,780)	11.3 (1,645)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	6.6 (960)	6.6 (960)	6.6 (960)	7.4 (1,070)	7.4 (1,070)	7.4 (1,070)	8.1 (1,170)
Continuous Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry, ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat, ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf, ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Submerged Concrete		Φ _{sub, ci}	—	0.65	0.65	0.55	0.55	0.55	0.55	0.55
Periodic Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry, pi}	—	0.65	0.65	0.65	0.55	0.55	0.55	0.55
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat, pi}	—	0.65	0.65	0.65	0.55	0.55	0.55	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf, pi}	—	0.55	0.55	0.55	0.55	0.55	0.55	0.55
	Strength Reduction Factor – Submerged Concrete		Φ _{sub, pi}	—	0.55	0.55	0.55	0.45	0.45	0.45	0.45
Submerged installation reduction factor				—	1.00	1.00	1.00	1.00	1.00	0.81	1.00
Reduction factor for seismic tension			a _{N,seis}	—	0.95	0.98	0.96	0.96	0.94	0.94	0.94

1 Bond strength values correspond to concrete compressive strengths ranging from 17.2 Mpa (2,500 psi) to 55.2 Mpa (8,000psi).

2 Temperature range A: Maximum short term temperature of 61°C (142°F) and maximum long term temperature of 43°C (110°F).

3 Temperature range B: Maximum short term temperature of 74°C (165°F) and maximum long term temperature of 43°C (110°F).

4 For structures assigned to IBC or IRC Seismic Design Category C, D, E, or F, bond strength values must be multiplied by $a_{N,seis}$.

5 Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member except where pullout or pryout resistance governs

6 Condition B applies where supplementary reinforcement is not provided or where pullout or pryout strength governs

7 Bond strength values correspond to anchors installed in holes drilled with a hammer drill and carbide bit

Combined Tension and Shear Loading—for C6+ Adhesive Anchors

Allowable loads for anchors under tension and shear loading at the same time (combined loading) will be lower than the allowable loads for anchors subjected to 100% tension or 100% shear. For combined tension and shear loading, please see Section 4.2.2 of ICC ESR 4046

PERFORMANCE TABLES

C6+ Epoxy Adhesive Factored Steel Strength for Reinforcing Bars, kN (lbf)

US Rebar Size	ASTM A615 Grade 60 Rebar			CA Rebar Size	CSA G30.18 Grade 400		
	Tension In. (mm)	Shear In. (mm)	Seismic Shear In. (mm)		Tension In. (mm)	Shear In. (mm)	Seismic Shear In. (mm)
No. 3	29.9 (6,732)	16.8 (3,787)	135.6 (3,446)	10M	37 (8,255)	21 (4,643)	14 (3,250)
No. 4	54.4 (12,240)	30.6 (6,885)	28.0 (6,265)	15M	73 (16,510)	41 (9,287)	29 (6,501)
No. 5	84.4 (18,972)	47.5 (10,672)	43.0 (9,711)	20M	110 (24,765)	62 (13,930)	43 (9,751)
No. 6	119.8 (26,928)	67.4 (15,147)	61.0 (13,632)	25M	184 (41,275)	103 (23,217)	72 (16,252)
No. 7	163.3 (36,720)	91.9 (20,655)	83.0 (18,590)	30M	257 (57,785)	145 (32,504)	101 (22,753)
No. 8	215.1 (48,348)	121.0 (27,196)	86.0 (19,309)	1 Values correspond to a ductile steel element per standards above 2 Tension values calculated according to Cl. D6.1.2 in CSA A23.3-14 Annex D 3 Shear values calculated according to Cl. D7.1.2 in CSA A23.3-14 Annex D 4 Seismic shear was calculated according to $V_{sar} \cdot a_{V,seis}$			
No. 9	272.2 (61,200)	153.1 (34,425)	109.0 (24,442)				
No. 10	345.7 (77,724)	194.5 (43,720)	138.0 (31,041)				

C6+ Epoxy Adhesive Concrete Breakout and Bond Strength for Reinforcing Bars, kN (lbf)

Nominal Anchor Size		Symbol	Units	Nominal Rod Diameter								
		do		No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	
Concrete Breakout												
Effectiveness factor for uncracked concrete		k _{uncr}	—	10								
Effectiveness factor for cracked concrete		k _{cr}	—	7								
Minimum concrete thickness		h _{min}	mm	h _{ef} + 32			h _{ef} + 2do					
Modification factor for resistance in tension to account for uncracked concrete		h _{ef,min}	In. (mm)	2.4 (60.3)	2.8 (69.9)	3.1 (79.4)	3.5 (88.9)	3.5 (88.9)	4.0 (101.6)	4.5 (114.3)	5.0 (127.0)	
Minimum spacing		s _{min}	In. (mm)	0.9 (23.8)	1.5 (38.1)	25 (63.5)	3.0 (76.2)	3.5 (88.9)	4.0 (101.6)	4.5 (114.3)	5.0 (127.0)	
Minimum edge distance		c _{min}	In. (mm)	0.9 (23.8)	1.5 (38.1)	25 (63.5)	3.0 (76.2)	3.5 (88.9)	4.0 (101.6)	4.5 (114.3)	5.0 (127.0)	
Critical edge distance		c _{ac}	In. (mm)	See Section 4.1.10 of the evaluation report								
Material resistance factor for concrete		Φ _c	—	0.65								
Strength reduction factor for tension, concrete failure modes		R	Cond. A	1.15								
		R	Cond. B	1								
Strength reduction factor for shear, concrete failure modes		R	Cond. A	1.15								
		R	Cond. B	1								
Modification Factor for concrete density		λ	—	1								
Bond Strength												
Nominal Anchor Size					No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10
Temperature Range A ²	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	16.3 (2,365)	15.7 (2,275)	15.0 (2,180)	14.4 (2,085)	13.7 (1,990)	13.1 (1,895)	12.4 (1,805)	11.8 (1,710)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	7.8 (1,125)	7.8 (1,125)	7.7 (1,110)	8.2 (1,190)	7.9 (1,140)	7.5 (1,090)	7.2 (1,040)	7.4 (1,080)
Temperature Range B ^{3,4}	Characteristic Bond Strength for Uncracked Concrete		T _{k,uncr}	MPa (psi)	13.9 (2,020)	13.4 (1,940)	12.8 (1,860)	12.3 (1,780)	11.7 (1,700)	11.2 (1,620)	10.6 (1,540)	10.1 (1,460)
	Characteristic Bond Strength for Cracked Concrete		T _{k,cr}	MPa (psi)	6.6 (960)	6.6 (960)	6.5 (945)	7.0 (1,015)	6.7 (975)	6.4 (930)	6.1 (890)	6.4 (930)
Continuous Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf,ci}	—	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Strength Reduction Factor – Submerged Concrete		Φ _{sub,ci}	—	0.65	0.65	0.65	0.55	0.55	0.55	0.55	0.55
Periodic Inspection	Strength Reduction Factor – Dry Concrete		Φ _{dry,pi}	—	0.65	0.65	0.65	0.55	0.55	0.55	0.55	0.55
	Strength Reduction Factor – Water-Saturated Concrete		Φ _{sat,pi}	—	0.65	0.65	0.65	0.55	0.55	0.55	0.55	0.65
	Strength Reduction Factor – Water-Filled Holes		Φ _{wf,pi}	—	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
	Strength Reduction Factor – Submerged Concrete		Φ _{sub,pi}	—	0.55	0.65	0.55	0.45	0.45	0.45	0.45	0.45
Submerged installation reduction factor					1.00	1.00	1.00	1.00	1.00	0.81	0.81	1.00
Reduction factor for seismic tension			a _{N,seis}	—	0.88	0.88	0.88	0.84	0.84	0.84	0.84	0.95

1 Bond strength values correspond to concrete compressive strengths ranging from 17.2 Mpa (2,500 psi) to 55.2 Mpa (8,000 psi).

2 Temperature range A: Maximum short term temperature of 61°C (142°F) and maximum long term temperature of 43°C (110°F).

3 Temperature range B: Maximum short term temperature of 74°C (165°F) and maximum long term temperature of 43°C (110°F).

4 For structures assigned to IBC or IRC Seismic Design Category C, D, E, or F, bond strength values must be multiplied by $a_{N,seis}$.

5 Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member except where pullout or pryout resistance governs

6 Condition B applies where supplementary reinforcement is not provided or where pullout or pryout strength governs

7 Bond strength values correspond to anchors installed in holes drilled with a hammer drill and carbide bit

PERFORMANCE TABLES

C6+ Epoxy Adhesive

Factored Concrete Breakout/Bond Failure Strength for Threaded Rod Installed in Holes Drilled with a Hammer Drill and a Carbide Bit

Nominal anchor diameter In. (mm)	Effective Embedment In. (mm)	Tension, kn (lbf)					
		UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
3/8 (9.5)	2-3/8 (60)	13.6 (3,060)	16.7 (3,750)	19.3 (4,330)	9.1 (2,045)	9.1 (2,045)	9.1 (2,045)
	3-3/8 (86)	23.1 (5,185)	28.3 (6,355)	28.4 (6,385)	12.9 (2,910)	12.9 (2,910)	12.9 (2,910)
	4-1/2 (114)	35.5 (7,985)	37.9 (8,510)	37.9 (8,510)	17.2 (3,875)	17.2 (3,875)	17.2 (3,875)
	7-1/2 (191)	63.1 (14,185)	63.1 (14,185)	63.1 (14,185)	28.7 (6,460)	28.7 (6,460)	28.7 (6,460)
1/2 (12.7)	2-3/4 (70)	17.0 (3,815)	20.8 (4,670)	24.0 (5,395)	11.9 (2,670)	14.1 (3,160)	14.1 (3,170)
	4-1/2 (114)	35.5 (7,985)	43.5 (9,780)	48.8 (10,980)	23.0 (5,170)	23.0 (5,170)	23.0 (5,170)
	6 (152)	54.7 (12,295)	65.1 (14,640)	65.1 (14,640)	30.7 (6,890)	30.7 (6,890)	30.7 (6,890)
	10 (254)	108.5 (24,400)	108.5 (24,400)	108.5 (24,400)	51.1 (11,485)	51.1 (11,485)	51.1 (11,485)
5/8 (15.9)	3-1/8 (79)	20.6 (4,620)	25.2 (5,660)	29.1 (6,535)	14.4 (3,235)	17.6 (3,960)	20.0 (4,485)
	5-5/8 (143)	49.6 (11,160)	60.8 (13,670)	70.2 (15,785)	34.8 (7,810)	35.9 (7,810)	35.9 (7,810)
	7-1/2 (191)	76.4 (17,185)	93.6 (21,045)	98.6 (22,160)	47.9 (10,770)	47.9 (10,770)	47.9 (10,770)
	12-1/2 (318)	164.3 (36,930)	164.3 (36,930)	164.3 (36,930)	79.8 (17,950)	79.8 (17,950)	79.8 (17,950)
3/4 (19.1)	3-1/2 (89)	24.4 (5,480)	29.8 (6,710)	34.5 (7,745)	17.1 (3,835)	20.9 (4,695)	24.1 (5,425)
	6-3/4 (171)	65.3 (14,670)	79.9 (17,970)	92.3 (20,745)	45.7 (10,270)	55.9 (12,575)	57.7 (12,975)
	9 (229)	100.5 (22,585)	123.1 (27,665)	137.3 (30,875)	70.3 (15,810)	76.9 (17,300)	76.9 (17,300)
	15 (381)	216.2 (48,600)	228.9 (51,460)	228.9 (51,460)	128.2 (28,830)	128.2 (28,830)	128.2 (28,830)
7/8 (22.2)	3-1/2 (89)	24.4 (5,480)	29.8 (6,710)	34.5 (7,745)	17.1 (3,835)	20.9 (4,635)	24.1 (5,425)
	7-7/8 (200)	82.2 (18,485)	100.7 (22,640)	116.3 (26,145)	57.6 (12,940)	70.5 (15,850)	78.6 (17,660)
	10-1/2 (267)	126.6 (28,465)	155.1 (34,860)	179.1 (40,255)	88.6 (19,925)	104.7 (23,545)	104.7 (23,545)
	17-1/2 (445)	272.4 (61,240)	300.4 (67,540)	300.4 (67,540)	174.6 (39,240)	174.6 (39,240)	174.6 (39,240)
1 (25.4)	4 (102)	29.8 (6,690)	36.5 (8,195)	42.1 (9,465)	20.8 (4,685)	25.5 (5,740)	29.5 (6,625)
	9 (229)	100.5 (22,585)	123.1 (27,665)	142.1 (31,945)	70.3 (15,810)	86.1 (19,365)	99.5 (22,360)
	12 (305)	154.7 (34,775)	189.5 (45,590)	218.8 (49,180)	108.3 (24,340)	132.6 (29,815)	136.8 (30,755)
	20 (508)	332.8 (78,825)	378.8 (85,155)	378.8 (85,155)	228.0 (51,255)	228.0 (51,255)	228.0 (51,255)
1-1/4 (31.8)	5 (127)	41.6 (9,355)	51.0 (11,455)	58.8 (13,225)	29.1 (6,545)	35.7 (8,020)	41.2 (9,260)
	11-1/4 (286)	140.4 (31,565)	172.0 (38,660)	198.6 (44,640)	98.3 (22,095)	120.4 (27,060)	139.0 (31,250)
	15 (381)	216.2 (48,600)	264.8 (59,520)	305.7 (68,730)	151.3 (34,020)	185.3 (41,665)	214.0 (48,110)
	25 (635)	465.1 (104,570)	547.8 (123,160)	547.8 (123,160)	325.6 (73,200)	388.9 (87,425)	388.9 (87,425)

Nominal anchor diameter In. (mm)	Effective Embedment In. (mm)	Shear, kn (lbf)					
		UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
3/8 (9.5)	2-3/8 (60)	13.6 (3,060)	16.7 (3,750)	19.3 (4,330)	9.1 (2,045)	9.1 (2,045)	9.1 (2,045)
	3-3/8 (86)	46.1 (10,375)	56.5 (12,705)	56.8 (12,765)	25.9 (5,815)	25.9 (5,815)	25.9 (5,815)
	4-1/2 (114)	71.0 (15,970)	75.7 (17,025)	75.7 (17,025)	34.5 (7,755)	34.5 (7,755)	34.5 (7,755)
	7-1/2 (191)	126.2 (28,370)	126.2 (28,370)	126.2 (28,370)	57.5 (12,980)	57.5 (12,980)	57.5 (12,980)
1/2 (12.7)	2-3/4 (70)	33.9 (7,630)	41.6 (9,345)	48.0 (10,790)	23.8 (5,340)	28.1 (6,320)	28.1 (6,320)
	4-1/2 (114)	71.0 (15,970)	87.0 (19,560)	97.7 (21,960)	46.0 (10,340)	46.0 (10,340)	46.0 (10,340)
	6 (152)	109.4 (24,590)	130.3 (29,285)	130.3 (29,285)	61.3 (13,785)	61.3 (13,785)	61.3 (13,785)
	10 (254)	217.1 (48,805)	217.1 (48,805)	217.1 (48,805)	102.2 (22,975)	102.2 (22,975)	102.2 (22,975)
5/8 (15.9)	3-1/8 (79)	41.1 (9,245)	50.4 (11,320)	58.1 (13,070)	28.8 (6,470)	35.2 (7,925)	39.9 (8,975)
	5-5/8 (143)	99.3 (22,320)	121.6 (27,335)	140.4 (31,565)	69.5 (15,625)	71.9 (16,155)	71.9 (16,155)
	7-1/2 (191)	152.9 (34,365)	187.2 (42,090)	197.1 (44,320)	95.8 (21,535)	95.8 (21,535)	95.8 (21,535)
	12-1/2 (318)	328.6 (73,865)	328.6 (73,865)	328.6 (73,865)	159.7 (35,895)	159.7 (35,895)	159.7 (35,895)
3/4 (19.1)	3-1/2 (89)	48.7 (10,955)	59.7 (13,420)	68.9 (15,495)	34.1 (7,670)	41.8 (9,390)	48.2 (10,845)
	6-3/4 (171)	130.5 (29,340)	159.8 (35,935)	184.6 (41,495)	91.4 (20,540)	111.9 (25,155)	115.4 (25,950)
	9 (229)	200.9 (45,175)	246.1 (55,325)	274.7 (61,750)	140.7 (31,620)	153.9 (34,595)	153.9 (34,595)
	15 (381)	432.4 (97,200)	457.8 (102,920)	457.8 (102,920)	256.5 (57,660)	256.5 (57,660)	256.5 (57,660)
7/8 (22.2)	3-1/2 (89)	48.7 (10,955)	59.7 (13,420)	68.9 (15,495)	34.1 (7,670)	41.8 (9,390)	48.2 (10,845)
	7-7/8 (200)	164.5 (36,975)	201.4 (45,285)	232.6 (52,290)	115.1 (25,880)	141.0 (31,700)	157.1 (35,320)
	10-1/2 (267)	253.2 (56,925)	310.1 (69,720)	358.1 (80,505)	177.3 (39,850)	209.5 (47,090)	209.5 (47,090)
	17-1/2 (445)	544.8 (122,485)	600.9 (135,080)	600.9 (135,080)	349.1 (78,485)	349.1 (78,485)	349.1 (78,485)
1 (25.4)	4 (102)	59.5 (13,385)	72.9 (16,395)	84.2 (18,930)	41.7 (9,370)	51.0 (11,475)	58.9 (13,250)
	9 (229)	200.9 (45,175)	246.1 (55,325)	285.4 (63,885)	140.7 (31,620)	172.3 (38,730)	198.9 (44,720)
	12 (305)	309.4 (69,550)	378.9 (85,180)	437.5 (98,360)	216.6 (48,685)	265.2 (59,625)	273.6 (61,505)
	20 (508)	665.7 (149,650)	757.6 (170,305)	757.6 (170,305)	456.0 (102,510)	456.0 (102,510)	456.0 (102,510)
1-1/4 (31.8)	5 (127)	83.2 (18,705)	101.9 (22,910)	117.7 (26,455)	58.2 (13,095)	71.3 (16,035)	82.4 (18,520)
	11-1/4 (286)	280.8 (63,135)	343.9 (77,320)	397.1 (89,285)	196.6 (44,195)	240.8 (54,125)	278.0 (62,500)
	15 (381)	432.4 (97,200)	529.5 (119,045)	611.4 (137,460)	302.7 (68,040)	370.7 (83,330)	428.0 (96,220)
	25 (635)	930.3 (209,140)	1095.7 (246,320)	1095.7 (246,320)	651.2 (146,395)	777.8 (174,850)	777.8 (174,850)

1 These load values are for the purposes of estimation only and should not be used in design

2 Assuming single anchor with no edge or spacing distances, nor environmental factors that would reduce the load.

3 Design loads include their respective Φ_c and Φ_s material resistance factors for concrete and steel from CSA A23.3-14 Cl. 8.4.2 and 8.4.3

4 Design loads include their respective strength reduction factor for dry, water saturated and water filled hole conditions. Refer to design information table for threaded rod for submerged conditions (Φ_{sub}).

5 All design loads are calculated according to Condition B for concrete failure mode factor R

6 Bond strength values used in these calculations correspond to temperature Range A (long term temperature 43°C, short term temperature 61°C)

7 Values for continuous inspection with dry, water saturated or water filled concrete installed in holes drilled with a hammer drill and carbide bit

PERFORMANCE TABLES

C6+ Epoxy Adhesive

Factored Concrete Breakout/Bond Failure Strength for Reinforcing Bars Installed in Holes Drilled with a Hammer Drill and a Carbide Bit

US Rebar Size (mm)	Effective Embedment In. (mm)	Tension, kn (lbf)					
		UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
# 3 (9.5)	3-1/2 (89)	24.4 (5,480)	28.2 (6,340)	28.2 (6,340)	13.4 (3,015)	13.4 (3,015)	13.4 (3,015)
	4-1/2 (114)	35.5 (7,985)	36.3 (8,150)	36.3 (8,150)	17.2 (3,875)	17.2 (3,875)	17.2 (3,875)
	7-1/2 (191)	60.4 (13,585)	60.4 (13,585)	60.4 (13,585)	28.7 (6,460)	28.7 (6,460)	28.7 (6,460)
# 4 (12.7)	4-1/2 (114)	35.5 (7,985)	43.5 (9,780)	46.5 (10,455)	23.0 (5,170)	23.0 (5,170)	23.0 (5,170)
	6 (152)	54.7 (12,295)	62.0 (13,935)	62.0 (13,935)	30.7 (6,890)	30.7 (6,890)	30.7 (6,890)
	10 (254)	103.3 (23,230)	103.3 (23,230)	103.3 (23,230)	51.1 (11,485)	51.1 (11,485)	51.1 (11,485)
# 5 (15.9)	5-3/4 (146)	51.3 (11,535)	62.8 (14,125)	71.2 (16,000)	36.2 (8,145)	36.2 (8,145)	36.2 (8,145)
	7-1/2 (191)	76.4 (17,185)	92.8 (20,865)	92.8 (20,865)	47.3 (10,625)	47.3 (10,625)	47.3 (10,625)
	12-1/2 (318)	154.7 (34,780)	154.7 (34,780)	154.7 (34,780)	78.8 (17,710)	78.8 (17,710)	78.8 (17,710)
# 6 (19.1)	6-3/4 (171)	65.3 (14,670)	79.9 (17,970)	92.3 (20,745)	54.7 (12,300)	54.7 (12,300)	54.7 (12,300)
	9 (229)	100.5 (22,585)	123.1 (27,665)	127.8 (28,740)	73.0 (16,405)	73.0 (16,405)	73.0 (16,405)
	15 (381)	213.1 (47,900)	213.1 (47,900)	213.1 (47,900)	121.6 (27,340)	121.6 (27,340)	121.6 (27,340)
# 7 (22.2)	8 (203)	84.2 (18,930)	103.1 (23,185)	119.1 (26,770)	72.5 (16,295)	72.5 (16,295)	72.5 (16,295)
	10-1/2 (267)	126.6 (28,465)	155.1 (34,860)	166.1 (37,335)	95.1 (21,390)	95.1 (21,390)	95.1 (21,390)
	17-1/2 (445)	272.4 (61,240)	276.8 (62,225)	276.8 (62,225)	158.6 (35,645)	158.6 (35,645)	158.6 (35,645)
# 8 (25.4)	9 (229)	100.5 (22,585)	123.1 (27,665)	142.1 (31,945)	89.1 (20,030)	89.1 (20,030)	89.1 (20,030)
	13 (330)	174.4 (39,210)	213.6 (48,025)	223.8 (50,305)	128.7 (28,935)	128.7 (28,935)	128.7 (28,935)
	20 (508)	332.8 (74,825)	344.3 (77,395)	344.3 (77,395)	198.0 (44,515)	198.0 (44,515)	198.0 (44,515)
# 9 (28.6)	10-1/2 (267)	126.6 (28,465)	155.1 (34,860)	179.1 (40,255)	111.6 (24,110)	111.6 (24,110)	111.6 (24,110)
	13-1/2 (343)	184.6 (41,495)	226.1 (50,820)	249.0 (55,980)	143.5 (32,145)	143.5 (32,145)	143.5 (32,145)
	20 (508)	332.8 (74,825)	368.9 (82,935)	368.9 (82,935)	212.6 (47,785)	212.6 (47,785)	212.6 (47,785)
# 10 (32.2)	12 (305)	154.7 (34,775)	189.5 (42,590)	218.8 (49,180)	147.2 (33,080)	147.2 (33,080)	147.2 (33,080)
	15 (381)	216.2 (48,600)	264.8 (59,520)	291.2 (65,475)	183.9 (41,350)	183.9 (41,350)	183.9 (41,350)
	25 (635)	465.1 (104,570)	485.4 (109,120)	485.4 (109,120)	306.6 (68,920)	306.6 (68,920)	306.6 (68,920)

C6+ Epoxy Adhesive

Factored Concrete Breakout/Bond Failure Strength for Reinforcing Bars Installed in Holes Drilled with a Hammer Drill and a Carbide Bit

US Rebar Size (mm)	Effective Embedment In. (mm)	Shear, kn (lbf)					
		UNCRAKED			CRACKED		
		f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)	f'c = 20 Mpa (2900 psi)	f'c = 30 Mpa (4350 psi)	f'c = 40 Mpa (5800 psi)
# 3 (9.5)	3-1/2 (89)	48.7 (10,955)	56.4 (12,675)	56.4 (12,675)	26.8 (6,030)	26.8 (6,030)	26.8 (6,030)
	4-1/2 (114)	71.0 (15,970)	72.5 (16,300)	72.5 (16,300)	34.5 (7,755)	34.5 (7,755)	34.5 (7,755)
	7-1/2 (191)	120.8 (27,165)	120.8 (27,165)	120.8 (27,165)	57.5 (12,920)	57.5 (12,920)	57.5 (12,920)
# 4 (12.7)	4-1/2 (114)	71.0 (15,970)	87.0 (19,560)	93.0 (20,905)	46.0 (10,340)	46.0 (10,340)	46.0 (10,340)
	6 (152)	109.4 (24,590)	124.0 (27,875)	124.0 (27,875)	61.3 (13,785)	61.3 (13,785)	61.3 (13,785)
	10 (254)	206.6 (46,455)	206.6 (46,455)	206.6 (46,455)	102.2 (22,975)	102.2 (22,975)	102.2 (22,975)
# 5 (15.9)	5-3/4 (146)	102.6 (23,070)	125.7 (28,255)	142.3 (31,995)	71.8 (16,150)	72.5 (16,290)	72.5 (16,290)
	7-1/2 (191)	152.9 (34,365)	185.6 (41,735)	185.6 (41,735)	94.5 (21,250)	94.5 (21,250)	94.5 (21,250)
	12-1/2 (318)	309.4 (69,555)	309.4 (69,555)	309.4 (69,555)	157.5 (35,415)	157.5 (35,415)	157.5 (35,415)
# 6 (19.1)	6-3/4 (171)	130.5 (29,340)	159.8 (35,935)	184.6 (41,495)	91.4 (20,540)	109.4 (24,605)	109.4 (24,605)
	9 (229)	200.9 (45,175)	246.1 (55,325)	255.7 (57,480)	140.7 (31,620)	145.9 (32,805)	145.9 (32,805)
	15 (381)	426.1 (95,795)	426.1 (95,795)	426.1 (95,795)	243.2 (54,675)	243.2 (54,675)	243.2 (54,675)
# 7 (22.2)	8 (203)	168.4 (37,860)	206.2 (46,365)	238.2 (53,540)	117.9 (26,500)	144.4 (32,455)	145.0 (32,590)
	10-1/2 (267)	253.2 (56,925)	310.1 (69,720)	332.1 (74,670)	177.3 (39,850)	190.3 (42,775)	190.3 (42,775)
	17-1/2 (445)	544.8 (122,485)	553.6 (124,450)	553.6 (124,450)	317.1 (71,295)	317.1 (71,295)	317.1 (71,295)
# 8 (25.4)	9 (229)	200.9 (45,175)	246.1 (55,325)	284.2 (63,885)	140.7 (31,620)	172.3 (38,730)	178.2 (40,065)
	13 (330)	348.8 (78,420)	427.2 (96,045)	447.5 (100,610)	244.2 (54,895)	257.4 (57,870)	257.4 (57,870)
	20 (508)	665.7 (149,650)	688.5 (154,785)	688.5 (154,785)	396.0 (89,035)	396.0 (89,035)	396.0 (89,035)
# 9 (28.6)	10-1/2 (267)	253.2 (56,925)	310.1 (69,720)	358.1 (80,505)	177.3 (39,850)	217.1 (48,805)	223.2 (50,175)
	13-1/2 (343)	369.2 (82,990)	452.1 (101,640)	498.0 (111,960)	258.4 (58,095)	286.9 (64,510)	286.9 (64,510)
	20 (508)	665.7 (149,650)	737.8 (165,865)	737.8 (165,865)	425.1 (95,570)	425.1 (95,570)	425.1 (95,570)
# 10 (32.2)	12 (305)	309.4 (69,550)	378.9 (85,180)	437.5 (98,360)	216.6 (48,685)	265.2 (59,625)	294.3 (66,160)
	15 (381)	432.4 (97,200)	529.5 (119,045)	582.5 (130,945)	302.7 (68,040)	367.9 (82,705)	367.9 (82,705)
	25 (635)	930.3 (209,140)	970.8 (218,245)	970.8 (218,245)	613.1 (137,840)	613.1 (137,840)	613.1 (137,840)

1 These load values are for the purposes of estimation only and should not be used in design

2 Submerged installation reduction factor

3 Design loads include their respective ϕ_c and ϕ_s material resistance factors for concrete and steel from CSA A23.3-14 Cl. 8.4.2 and 8.4.3

4 Design loads include their respective strength reduction factor for dry, water saturated and water filled hole conditions. Refer to design information table for threaded rod for submerged conditions (ϕ_{sub}).

5 All design loads are calculated according to Condition B for concrete failure mode factor R

6 Bond strength values used in these calculations correspond to temperature Range A (long term temperature 43°C, short term temperature 61°C)

7 Values for continuous inspection with dry, water saturated or water filled concrete installed in holes drilled with a hammer drill and carbide bit

Umbrella Inserts and Stubby Screens

High Performance Adhesive Systems for Fastening to Hollow Base Materials



A7P-10

9200

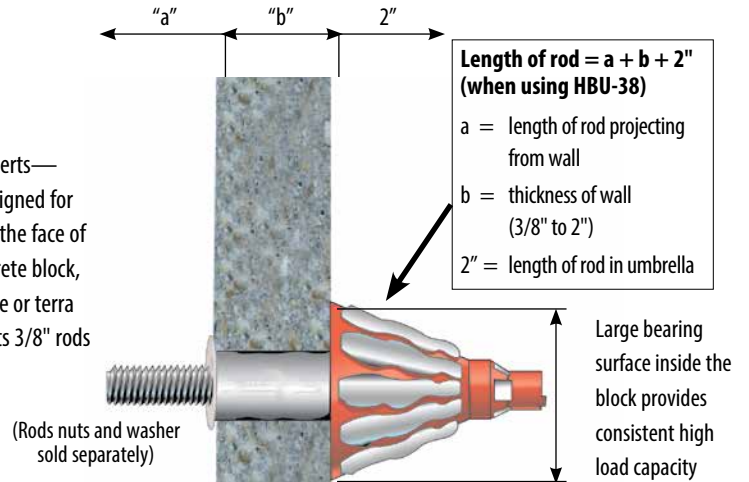


DESCRIPTION/ADVANTAGES

Hollow Block Fastening with A7+ Adhesive

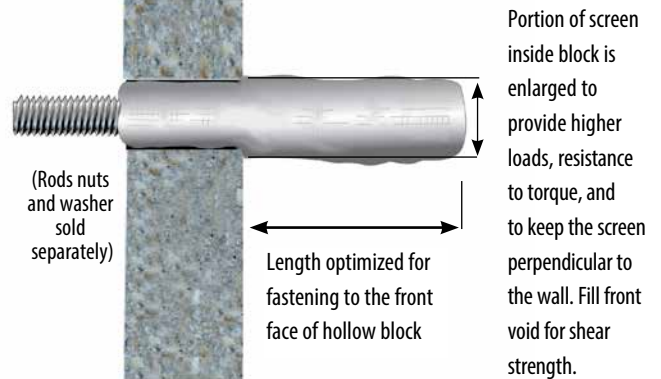
9200

Umbrella Inserts—specially designed for fastening to the face of hollow concrete block, brick, clay tile or terra cotta. Accepts 3/8" rods



STUBBY SCREENS

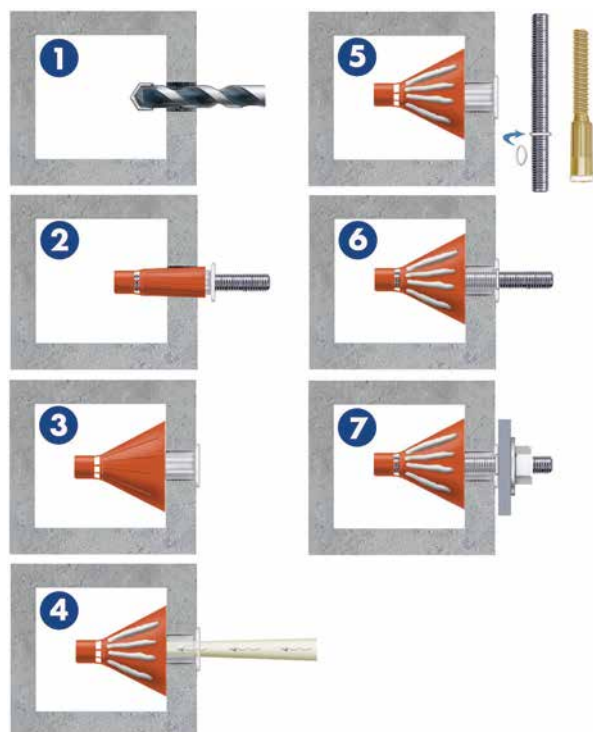
Specially designed stainless steel screens provide maximum performance for a screen in the front face of hollow concrete block. Screens available for rods 1/4" to 5/8"



Section View—Concrete Block

Umbrella Inserts and Screens

INSTALLATION STEPS




1. Drill 3/4" diameter hole, 3-3/4" deep using rotation only drilling mode and carbide tipped drill bit. Clean out hole with forced air. Complete hole preparation with use of a brush and repeat cleaning with compressed air (leave no dust or slurry).
2. Place umbrella on piece of threaded rod, stretch umbrella over the rod by pulling the white collar back approximately 1". Squeeze orange portion of umbrella and push umbrella into hole.
3. Push umbrella body through the hole and completely into void. Remove threaded rod. (Do not use in solid base materials. For anchoring into block web, ends and mortar joints, use screens.) View and verify umbrella wings expanded behind wall.
4. Dispense and discard a sufficient amount of adhesive from new cartridge until a uniform adhesive mix is achieved. Inject approximately 1-1/2 fl. oz. of adhesive into umbrella (7 to 8 pumps using manual dispenser) to completely fill umbrella.
5. 3/8" rod uses a centering ring (supplied with inserts) to keep rod perpendicular to the wall.
6. Insert rod into the filled umbrella using a slow, soft twisting motion until it contacts the back of umbrella.
7. Wait for appropriate temperature/cure time before tightening fixture to the recommended torque of 10 ft./lbs.

Installation instructions for stubby screens provided on page RH 32.

SELECTION CHART

Umbrella Inserts



DESCRIPTION	PART NO.	BOX CONTENTS
Umbrella Anchor 	9200	20 Umbrellas 20 Centering Rings

SELECTION CHART

Stubby Screens



PART NO.	DESCRIPTION	QTY/BOX
HB 38-312	3/8" x 3-1/2" Stainless Screen	100
HB 12-312	1/2" x 3-1/2" Stainless Screen	50
HB 58-412	5/8" x 4-1/2" Stainless Screen	50

ESTIMATING TABLE

Umbrella Inserts

**Number of Anchoring Installations Per Cartridge*
Using Threaded Rod and Umbrella Inserts with A7+
Adhesives in Hollow Base Material**

ROD In (mm)	DRILL HOLE DIA. INCHES	VOLUME OF CARTRIDGE	UMBRELLA INSERT WITH EMBEDMENT OF 3-3/4"
3/8 (9.5)	3/4	A7+ 10 fluid oz.	6
		A7+ 28 fluid oz.	17

* These estimates do not account for waste.



ESTIMATING TABLE

Stubby Screens

Number of Anchoring Installations Per Cartridge* Using Threaded Rod and Stubby Screens with A7+ Adhesives in Hollow Base Material

ROD In (mm)	DRILL HOLE DIA. INCHES	VOLUME OF CARTRIDGE	SCREEN LENGTH PLUS 1 DIAMETER (INCHES)		
			2"	3-1/2"	4-1/2"
3/8 (9.5)	1/2	A7+ 10 fluid oz.		21	
		A7+ 28 fluid oz.		62	
1/2 (12.7)	5/8	A7+ 10 fluid oz.		15	
		A7+ 28 fluid oz.		43	
5/8 (15.9)	3/4	A7+ 10 fluid oz.			11
		A7+ 28 fluid oz.			24

* These estimates do not account for waste.

PERFORMANCE TABLE

Load Values^{1, 2}

Using A7+ in Hollow Concrete Block

	ROD DIA. In. (mm)	MAX CLAMPING FORCE AFTER PROPER CURE Ft.-Lbs. (Nm)	DRILL HOLE DIA. In. (mm)	EMBEDMENT (SCREEN LENGTH) In. (mm)	ULTIMATE TENSION Lbs. (Kn)	ULTIMATE SHEAR Lbs. (Kn)
Umbrella	3/8 (9.5)	10 (13)	3/4 (19.1)	3-3/4 (95.3)	3,558 (15.8)	3,109 (13.8)
Stubby Screens	3/8 (9.5)	7 (9)	1/2 (12.7)	3-7/8 (98.4)	1,661 (7.4)	2,071 (9.2)
	1/2 (12.7)	10 (13)	5/8 (15.9)	4 (101.6)	2,458 (10.9)	4,467 (19.9)
	5/8 (15.9)	13 (17)	3/4 (19.1)	5-1/8 (130.2)	2,543 (10.9)	5,047 (22.4)

¹ Allowable working loads should not exceed 25% ultimate capacity. Based upon testing using ASTM A193, Grade B7 rod.

² The tabulated values are for anchors installed at a minimum 12 inch edge distance and minimum 8 inch spacing.

Screen Tubes

Quality Adhesive Systems for Fastening Through Block and for Brick Pinning Applications



A7P-10

Nylon Screens



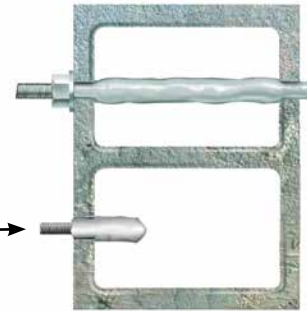
DESCRIPTION/SUGGESTED SPECIFICATIONS

Screens Used with A7+

HOLLOW CONCRETE BLOCK

Maximum holding strength in concrete block can be obtained by fastening to both the front and back of the block using an adhesive screen tube and threaded rod.

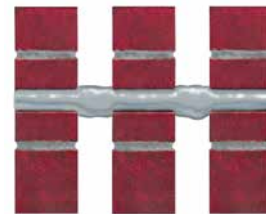
For attachments to single face of block, see page RH 29 for information on "umbrella anchors" and "stubby screens"



Top View

BRICK WALL

Systems designed for Seismic Retrofit, Brick Pinning or fastening to brick— various lengths and diameters available to accommodate site conditions.



Section

The no-drip feature of A7+ adhesive makes it particularly well suited for brick pinning applications.

ADVANTAGES

HBP SERIES—NYLON SCREENS

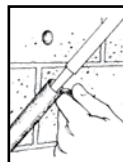
- 30%-50% savings from stainless steel screens
- Comparable performance values
- Easier to insert and span across voids
- Flexible material is less susceptible to damage from crushing

INSTALLATION STEPS



Hollow Base Material Screens

1. Drill hole to the length of the screen plus 1 diameter, using rotation-only drilling mode. Clean out hole with forced air. Complete hole preparation with use of a brush and repeat cleaning with forced air (leave no dust or slurry).



2. When starting new cartridge or new nozzle, dispense and discard enough adhesive until uniform adhesive mix is achieved. Insert the nozzle into the bottom of the screen and **fill screen completely full** (use extension tube if needed to reach bottom of screen).



3. Insert the filled screen completely into the hole (subflush).



4. While holding the tab of the screen against the wall, hand insert the selected rod slowly into the screen tube with a slow twisting motion. Pull screen flush to face and coat with adhesive. Wait for appropriate cure time before torquing fixture in place.

ESTIMATING TABLE

Screen Tubes

Number of Anchoring Installations Per Cartridge* Using Threaded Rod and Screen Tubes with A7+ Adhesives in Hollow Base Material

ROD In (mm)	DRILL HOLE DIA. INCHES	VOLUME OF CARTRIDGE	SCREEN LENGTH (INCHES)			
			6"	8"	10"	13"
3/8 (9.5)	1/2	A7+ 10 fluid oz.	12	10	7.5	
		A7+ 28 fluid oz.	37	29	23	
1/2 (12.7)	5/8	A7+ 10 fluid oz.	9	6	5	
		A7+ 28 fluid oz.	26	18	14	
5/8 (15.9)	3/4	A7+ 10 fluid oz.	6	5	4	
		A7+ 28 fluid oz.	18	14	10	
3/4 (19.1)	7/8	A7+ 10 fluid oz.			2.5	1.75
		A7+ 28 fluid oz.			6	5

* These estimates do not account for waste.

SELECTION CHART

Screen Tubes



HBP Nylon Screen

ROD DIA. In. (mm)	SCREEN LENGTH In. (mm)	NYLON SCREENS		
		PART NO.	QTY/BOX	QTY/MASTER
3/8 (9.5)	6 (152.4)	HBP 38-6	50	100
3/8 (9.5)	10 (254.0)	HBP 38-10	25	50
1/2 (12.7)	6 (152.4)	HBP 12-6	50	100
1/2 (12.7)	10 (254.0)	HBP 12-10	25	50
5/8 (15.9)	6 (152.4)	HBP 58-6	40	---
5/8 (15.9)	10 (254.0)	HBP 58-10	40	---
3/4 (19.1)	8 (203.2)	*	*	*
3/4 (19.1)	10 (254.0)	HBP 34-10	20	---

* Not available in standard strength nylon screens. Longer screens available through specials.

PERFORMANCE TABLE

Load Values

Average Ultimate Loads for HBP (nylon) Screens Used with A7+ in Hollow Concrete Block¹



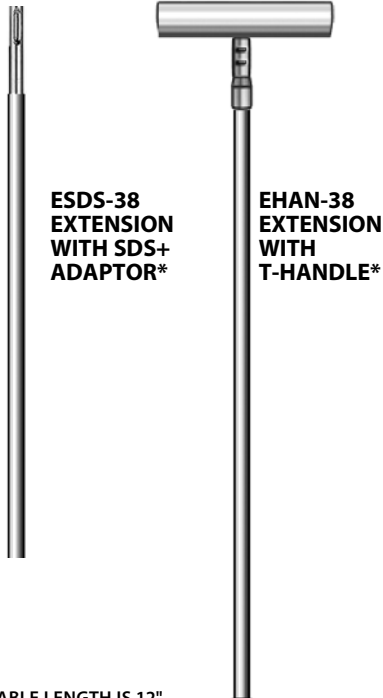
ROD DIA. In. (mm)	DRILL HOLE DIA. In. (mm)	MAX CLAMPING FORCE AFTER PROPER CURE Ft.-Lbs. (Nm)	SCREEN EMBEDMENT (LENGTH) In. (mm)	ULTIMATE TENSION Lbs. (kN)	ULTIMATE SHEAR Lbs. (kN)
1/4 (6.4)	3/8 (9.5)	5 (6)	8 (203.2)	2,072 (9.2)	2,264 (10.1)
3/8 (9.5)	1/2 (12.7)	12 (16)	8 (203.2)	2,360 (10.5)	2,668 (11.9)
1/2 (12.7)	5/8 (15.9)	19 (25)	8 (203.2)	2,647 (11.8)	2,668 (11.9)
5/8 (15.9)	3/4 (19.1)	26 (35)	8 (203.2)	2,647 (11.8)	3,578 (15.9)
3/4 (19.1)	7/8 (22.2)	28 (37)	8 (203.2)	2,647 (11.8)	4,573 (20.3)

¹ Allowable working loads should not exceed 25% of ultimate capacity. Loads based upon testing with ASTM A193, Grade B7 rods.

Accessories



Wire Brush Extensions



ESDS-38
EXTENSION
WITH SDS+
ADAPTOR*

EHAN-38
EXTENSION
WITH
T-HANDLE*

* USABLE LENGTH IS 12",
GOOD FOR ALL HOLES EXCEPT 7/16" DIAMETER

DESCRIPTION/ADVANTAGES

Piston Plugs



DESCRIPTION	PART #	QTY/BAG
Piston Plug for 5/8" and 3/4" diameter anchors	PL-5834	10
Piston Plug for 7/8" and 1" diameter anchors	PL-7810	10
Piston Plug for 1-1/4" diameter anchors	PL-1250	10

Wire Brushes



1/8" NPT
(National Pipe
Thread Taper)

Proper hole cleaning using a brush is essential to achieve optimum performance

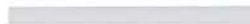
PART #	ANCHOR DIA.	REBAR	DRILL BIT DIA.	BRUSH DIA.	QTY/BAG
WB-038	3/8"	No. 3	7/16"	5/8"	10
WB-012	1/2"	No. 4	5/8"	3/4"	10
WB-058	5/8"	No. 5	3/4"	1"	10
WB-034	3/4"	No. 6	7/8"	1-1/4"	10
WB-078	7/8"	—	1"	1-1/2"	10
WB-100	1"	No. 8	1-1/8"	1-5/8"	10
WB-125	1-1/4"	—	1-3/8"	1-3/4"	10
B012	1/2" Diameter Nylon Brush (Soft enough for Masonry)				1
ESDS-38	Wire brush 12" usable extension with SDS+ adaptor				1
EHAN-38	Wire brush 12" usable extension with T-Handle				1

* Proper hole cleaning using a wire brush is essential to achieve optimum performance.

Brush may be used up to 50 holes depending on concrete strength.

Brushes required for installation of No. 4, No. 8 rebar and larger are available with lead time.

Plastic Extension Tubing



DESCRIPTION	PART #	QTY/BAG
6-Foot Straight Tubing Can cut to proper size (.39 in. I.D. x .43 in. O.D.)	E25-6	5
Heavy Duty 6' Extension Tube (Fits Piston Plugs)	E916-6	5

Blow Pump



DESCRIPTION	PART #	QTY/BAG
Blow Pump	065990	1



Since 1910, the brand trusted by the construction industry for quality, innovation and engineering support

The RED HEAD product line has long been respected by both contractors and specifiers in the construction industry. Because ITW RED HEAD proactively gets RED HEAD products specified before the job starts, contractors save time and money, plus the hassle of getting products approved. We will continue to pursue code approvals for specific anchor usages.

RED HEAD has also been on the forefront of concrete anchoring industry innovation and development.

For example, we

- | developed the first anchor (the Self-Drill in 1910)
- | developed the full threaded Trubolt® Wedge anchor with a stainless steel clip
- | developed the lipped Multi-Set II® Drop-In anchor
- | helped develop (as part of ITW) markets for the Tapcon® and E-Z Anchor™

RED HEAD is committed to providing contractors with quality products and developing new products to meet the demand of contractors worldwide.



Selection Guide

Anchors for Concrete Applications

truSpec
ANCHOR CALCULATION SOFTWARE 3.0

ANCHOR TYPE

KEY FEATURES

SIZE RANGE (Inches)



Trubolt®

Wedge Anchors

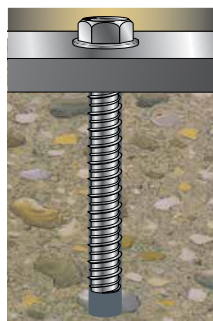


(see page RH 40)

- Seismic zone (A-B) approved
- Fully-threaded
- Length ID head stamped
- Through-fixture fastening

Diameter: 1/4 – 3/4

Length: 2-1/4 – 7



Large Diameter Tapcon (LDT)

Self-Threading Anchor

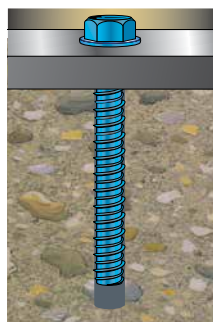


(see page RH 42)

- 2x faster installation than wedge anchor
- Anti-rotation serrated washer
- Extra large hex washer head
- Length ID head stamped
- Through-fixture fastening

Diameter: 3/8 and 5/8

Length: 1-3/4 – 6



Tapcon+®

Self-Threading Anchors
with Climaseal Coating



(see page RH 47)

- 2x faster installation than wedge anchor
- Anti-rotation serrated washer
- Extra large hex washer head
- Length ID head stamped
- Through-fixture fastening
- Climaseal coating for high corrosion-resistance
- Approved for cracked, uncracked, and seismic applications
- 20% more holding power than wedge or sleeve anchors

Diameter: 1/4, 3/8, 1/2

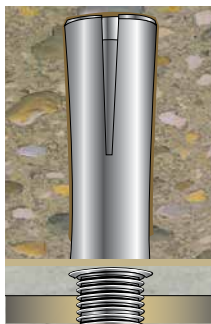




Length: 2-1/4 – 6

	CORROSION RESISTANCE	PERFORMANCE	HEAD STYLES	APPROVALS/LISTINGS
Trubolt cont'd	<ul style="list-style-type: none"> Zinc-Plated Carbon Steel 	Ultimate Pullout Performance in 4000 psi Concrete up to 26,540 lbs. (1" diameter)	Hex nut Tie-Wire version	Underwriters Laboratories Factory Mutual Listed for use in seismic zones A & B
LDT cont'd	<ul style="list-style-type: none"> Zinc-plated carbon steel to ASTM B695 & B633 	Ultimate Pullout Performance in 4,000 psi Concrete up to 23,266 lbs. (3/4" diameter)	Finished bolt style	Miami-Dade County – #04-1025.08 Florida Building Code
Tapcon+® cont'd	<ul style="list-style-type: none"> Blue Climaseal Coating Approved for use in ACQ and MCQ lumber 	Factored Pullout Performance in 4000 PSI Concrete up to 6,720 LBF (1/2" Diameter)	Finished bolt style	ICC ESR-3699 – Cracked & Uncracked and Seismic approved City of Los Angeles (1/4" & 3/8" diameters) Florida Building Code Compliant 720 hours salt* spray ASTM B117

continued on next page

Anchors for Concrete Applications

continued from pages RH 36-37

ANCHOR TYPE	KEY FEATURES	SIZE RANGE (Inches)
<div data-bbox="60 212 268 537">  </div> <div data-bbox="284 212 794 537"> <p>Multi-Set II® Drop-In Anchors</p> <div data-bbox="512 279 730 464">  <div> <div>RM</div> <div>RL</div> <div>RX</div> </div> </div> <p>(see page RH 52)</p> </div>	<ul style="list-style-type: none"> ■ RM: Flanged body to keep anchor flush with surface of concrete ■ RL: Non-flanged body for recessed setting ■ RX: Designed for hollow core and post tension concrete 	<p>Diameter: 1/4 – 3/4 Length: 1 – 3-3/16</p> <hr/> <p>Diameter: 1/4 – 3/4 Length: 1 – 3-3/16</p> <hr/> <p>Diameter: 3/8 & 1/2 Length: 3/4</p>
<div data-bbox="60 590 268 915">  </div> <div data-bbox="284 590 794 915"> <p>Dynabolt® Masonry Sleeve Anchors</p> <div data-bbox="341 674 778 810">  </div> <p>For both Hollow and Solid Concrete Applications</p> <p>(see page RH 56)</p> </div>	<ul style="list-style-type: none"> ■ Concrete, block and brick ■ Many choices of head styles ■ Through-fixture fastening ■ Available in 304 stainless steel 	<p>Diameter: 1/4 – 3/4 Length: 1-3/8 – 6-1/4</p>
<div data-bbox="60 957 268 1146"> <p>Hammer-Set™ Nail-drive Anchors</p> <p>(see page RH 59)</p> </div> <div data-bbox="284 957 794 1146"> <div data-bbox="421 1010 719 1083">  </div> </div>	<ul style="list-style-type: none"> ■ Easy installation ■ Low profile head ■ Through-fixture fastening 	<p>Diameter: 3/16 & 1/4 Length: 7/8 – 2</p>

	CORROSION RESISTANCE	PERFORMANCE	HEAD STYLES	APPROVALS/LISTINGS
Multi-Set II Drop-In <i>cont'd</i>	<ul style="list-style-type: none"> ■ Zinc-plated carbon steel to ASTM B633, SC1, Type III ■ Type 18-8 and 316 stainless steel 	Ultimate Pullout Performance in 4000 psi Concrete up to 9,480 lbs. (3/4" diameter)	RM: Flanged body RL: Non-flanged body Use any bolt or threaded rod	GSA: A-A-55614 Type 1 (Formerly GSA: FF-S-325 Group VIII) Underwriters Laboratories Factory Mutual City of Los Angeles – #RR2748 California State Fire Marshal Caltrans
Dynabolt <i>cont'd</i>	<ul style="list-style-type: none"> ■ Zinc-plated carbon steel to ASTM B633, SC1, Type III ■ Type 304 stainless steel 	Ultimate Pullout Performance in 4000 psi Concrete up to 8,900 lbs. (3/4" diameter)	Flat head Hex nut Tie-Wire	GSA: A-A-1922A (Formerly GSA: FF-S-325 Group II, Type 3, Class 3) Factory Mutual California State Fire Marshal
Hammer-Set <i>cont'd</i>	<ul style="list-style-type: none"> ■ Zinc alloy 	Ultimate Pullout Performance in 4000 psi Concrete up to 793 lbs.	Mushroom head	GSA: A-A-1925A Type 1 (zinc mushroom) (Formerly GSA: FF-S-325 Group V, Type 2, Class 3)

Because applications vary, ITW RED HEAD cannot guarantee the performance of this product. Each customer assumes all responsibility and risk for the use of this product. The safe handling and the suitability of this product for use is the sole responsibility of the customer. Specific job site conditions should be considered when selecting the proper product. Should you have any questions, please call the Technical Assistance Department at 800-899-7890.

Trubolt® Stainless Steel Wedge Anchors

*Dependable,
Inspectable,
Wedge Type
Expansion Anchor*



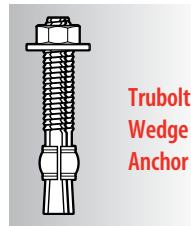
Trubolt®
Wedge Anchors

APPROVALS/LISTINGS

Underwriters Laboratories
Factory Mutual
Listed for use in seismic zones A & B

DESCRIPTION/SUGGESTED SPECIFICATIONS

Wedge Type Anchors— SPECIFIED FOR ANCHORAGE INTO CONCRETE



Trubolt Wedge Stainless Steel anchors feature an expansion clip, threaded stud body, nut and washer. Anchor bodies are made of type 304 stainless steel as identified in the drawings or other notations. The exposed end of the anchor is stamped to identify anchor length. Stampings should be preserved during installation for any subsequent embedment verification.

APPLICATIONS

Designed for both, indoor and outdoor applications



Anchoring machinery and conveyors is a common wedge anchor application. The Trubolt is fully threaded to allow a large range of embedment and fixture thickness.



Stainless steel Trubolt wedge anchors provide higher corrosion resistance allowing anchoring in tougher environments.

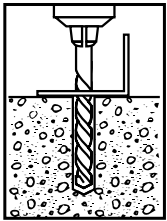


LENGTH INDICATOR CODE*

CODE	LENGTH OF ANCHOR		CODE	LENGTH OF ANCHOR	
A	1-1/2 < 2	(38.1 < 50.8)	K	6-1/2 < 7	(165.1 < 177.8)
B	2 < 2-1/2	(50.8 < 63.5)	L	7 < 7-1/2	(177.8 < 190.5)
C	2-1/2 < 3	(63.5 < 76.2)	M	7-1/2 < 8	(190.5 < 203.2)
D	3 < 3-1/2	(76.2 < 88.9)	N	8 < 8-1/2	(203.2 < 215.9)
E	3-1/2 < 4	(88.9 < 101.6)	O	8-1/2 < 9	(215.9 < 228.6)
F	4 < 4-1/2	(101.6 < 114.3)	P	9 < 9-1/2	(228.6 < 241.3)
G	4-1/2 < 5	(114.3 < 127.0)	Q	9-1/2 < 10	(241.3 < 254.0)
H	5 < 5-1/2	(127.0 < 139.7)	R	10 < 11	(254.0 < 279.4)
I	5-1/2 < 6	(139.7 < 152.4)	S	11 < 12	(279.4 < 304.8)
J	6 < 6-1/2	(152.4 < 165.1)	T	12 < 13	(304.8 < 330.2)

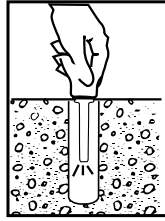
* Located on top of anchor for easy inspection.

INSTALLATION STEPS



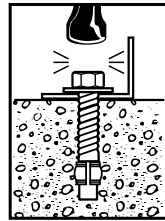
1.

Select a carbide drill bit with a diameter equal to the anchor diameter. Drill hole at least 1/4" deeper than normal anchor embedment.



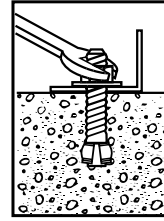
2.

Clean hole with pressurized air or vacuum to remove any excess dust/debris.



3.

Using the washer and nut provided, assemble the anchor, leaving nut one half turn from the end of the anchor to protect threads. Drive anchor through fixture to the specified embedment. Fasten nut and washer flush to surface of fixture.



4.

Expand anchor by tightening nut 3-5 to the specified setting torque.

SELECTION CHARTS

Trubolt Type 304 Stainless Steel

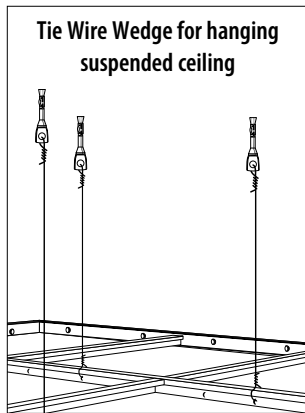
Serves many applications well. It withstands rusting in architectural and food processing environments and resists organic chemicals, dye stuffs and many inorganic chemicals.



Typical Applications—
Cladding, Stadium Seating, etc.

Environment—Urban
(slight to moderate
degree of pollution)

Level of Corrosion—Medium



Tie Wire Wedge for hanging
suspended ceiling

PART NUMBER	THREAD LENGTH In. (mm)	ANCHOR DIA. & DRILL BIT SIZE (THREADS) PER INCH	OVERALL LENGTH In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
WW-1422	1-1/4 (31.8)	1/4" - 20	2-1/4 (57.2)	7/8 (22.2)	100/ 3.7	1000/ 37
WW-1432	2-1/4 (57.2)		3-1/4 (82.6)	1-7/8 (47.6)	100/ 4.8	800/ 39
WW-3822*+	1-1/8 (28.6)	3/8" - 16	2-1/4 (57.2)	3/8 (9.5)	50/ 4.1	500/ 41
WW-3826*+	1-5/8 (41.3)		2-3/4 (69.9)	7/8 (22.2)	50/ 4.8	400/ 39
WW-3830*+	1-3/4 (44.5)		3 (76.2)	1-1/8 (28.6)	50/ 5.1	400/ 42
WW-3836*+	2-1/2 (63.5)		3-3/4 (95.3)	1-7/8 (47.6)	50/ 6.0	300/ 37
WW-3850*+	3-3/4 (95.3)		5 (127.0)	3-1/8 (79.4)	50/ 7.5	250/ 39
WW-1236*+	2-1/4 (57.2)	1/2" - 13	3-3/4 (95.3)	1 (25.4)	25/ 5.8	150/ 36
WW-1242*+	2-3/4 (69.9)		4-1/4 (108.0)	1-1/2 (38.1)	25/ 6.3	150/ 39
WW-1254*+	3 (76.2)		5-1/2 (139.7)	2-3/4 (69.9)	25/ 7.7	150/ 47
WW-1270*+	3-1/2 (88.9)		7 (177.8)	4-1/4 (108.0)	25/ 9.4	150/ 57
WW-5850*+	3-1/4 (82.6)	5/8" - 11	5 (127.0)	1-5/8 (41.3)	10/ 4.8	100/ 49
WW-5860*+	4-1/4 (107.9)		6 (152.4)	2-5/8 (66.7)	10/ 5.5	50/ 28
WW-3446*+	2-7/8 (73.0)	3/4" - 10	4-3/4 (120.7)	3/4 (19.1)	10/ 6.7	60/ 41
WW-3454*+	3-5/8 (92.1)		5-1/2 (139.7)	1-1/2 (38.1)	10/ 7.5	50/ 38
WW-3470*+	3-1/2 (88.9)		7 (177.8)	3 (76.2)	10/ 9.2	30/ 28
TIE WIRE						
TW-1400	N/A	1/4"	2-1/8 (54.0)	9/32-hole (7.1)	100/ 3.6	1000/ 36

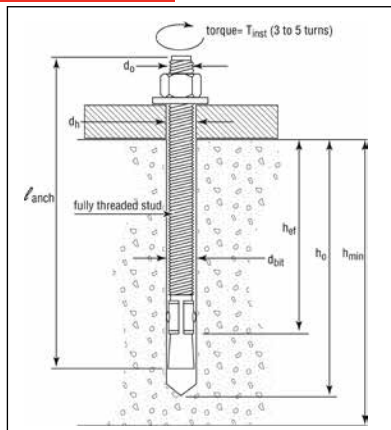
* FM Approved

+ UL Approved

For continuous extreme low temperature applications, use stainless steel.

INSTALLATION TABLE

TRUBOLT WEDGE ANCHOR (INSTALLED)



TRUBOLT WEDGE INSTALLATION INFORMATION

	Symbol	Units	Nominal Anchor Diameter (in.)									
			1/4"		3/8"		1/2"		5/8"		3/4"	
Anchor outer diameter	d ₀	in	0.25		0.375		0.5		0.625		0.750	
Nominal carbide bit diameter	d _{bit}	in	1/4		3/8		1/2		5/8		3/4	
Effective embedment depth	h _{ef}	in	1-1/2	2	1-3/4	2-5/8	1-7/8	3-3/8	2-1/2	4	3-1/2	4-3/4
Min hole depth	h ₀	in	2	2-1/2	2-1/2	3-3/8	2-3/4	4-1/4	3-3/4	5-1/4	4-3/4	6
Min slab thickness	h _{min}	in	4		4	5	5	6	5	8	6	8
Installation torque	T _{inst}	ft-lb	4		25		55		90		110	
Min hole diameter in fixture	d _h	in	5/16		7/16		9/16		11/16		13/16	

For performance data, please visit www.itwredhead.ca

Large Diameter Tapcon (LDT) Anchors

Finished Head, Removable Anchor



LDT
Sawtooth™

Uses standard drill bits—
no special drill bits to
purchase or lose!

DESCRIPTION/SUGGESTED SPECIFICATIONS

Self-threading Anchors—

SPECIFIED FOR ANCHORAGE INTO CONCRETE



LDT
Self-threading
Anchor

The LDT anchor is a high performance anchor that cuts its own threads into concrete.

Anchor bodies are made of hardened carbon steel and zinc plated.

The anchors shall have a finished hex washer head with anti-rotation serrations to prevent anchor back-out. The head of the anchor is stamped with a length identification code for easy inspection.

The anchor shall be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994.

ADVANTAGES

SAVE TIME

EASILY INSTALLED

- Installs in less than half the time of wedge anchors or adhesive anchors
- Simply drill a pilot hole and drive the LDT anchor by hand or impact

EASILY REMOVED

- No torching or grinding required to remove anchors

SAVE MONEY

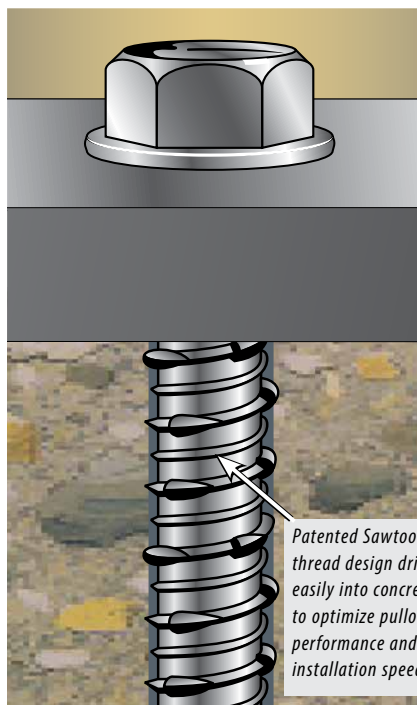
LOWER DRILL BIT COSTS

- Use standard ANSI bits instead of proprietary bits
- Single piece design, no nut and washer to assemble

USE STANDARD ANSI BITS

- No special proprietary bits to purchase or lose
- Reduce chances for anchor failure due to incorrect bit usage

Sawtooth Threads™



IMPROVED PERFORMANCE IN LARGE DIAMETER HOLES

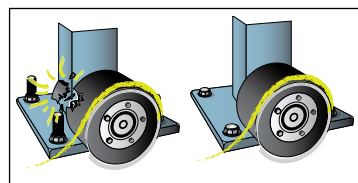
- Superior performance to wedge anchor
- Higher loads in shallow embedments
- Closer edge/spacing distance than mechanical anchors
- More threads for better thread engagement and higher pullout resistance
- Durable induction-hardened tip

EASY INSTALLATION

- Easy 2-step installation, simply drill a pilot hole and drive
- Installs in less than half the time of a wedge anchor
- Efficient thread cutting
- Use standard drill bit sizes
- Single piece design—no nut and washer assembly
- Easily removed



APPLICATIONS

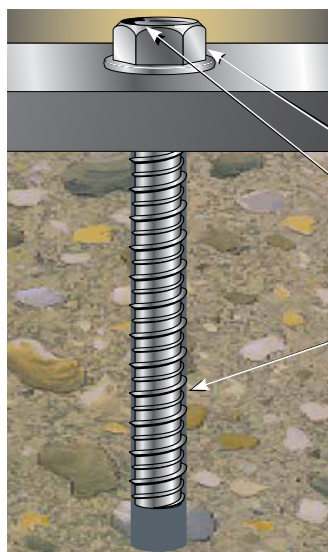


Racking, shelving and conveyors are just a few high volume applications ideal for Large Diameter Tapcon (LDT™). The ease and speed of installation of the LDT can reduce installation time to less than half the time of typical systems used today.

For installation speed, high performance and easy removability, LDT is the anchor of choice.

The LDT's finished head and lack of exposed threads virtually eliminates tire damage on fork lift trucks.

FEATURES



Easy Installation

Installs into concrete by hand or impact wrench

Anti-rotation Serrated Washer

— Prevents anchor back-out

Extra Large Hex Washer Head

— With increased bearing surface

Length Identification Head Stamp

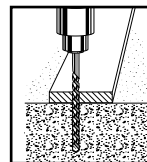
— For embedment inspection after installation

Hi-Lo Threads

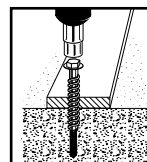
— Cuts its own threads into concrete for greater pull-out resistance

INSTALLATION STEPS

Installation Steps for Concrete, Lightweight Concrete and Metal Deck



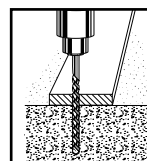
1. Using the proper size carbide bit (see chart) drill "a pilot hole at least 1" deeper than anchor embedment.



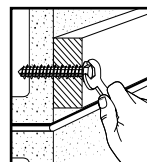
2. Using an electric impact wrench, or socket wrench (hand install) insert anchor into hole and tighten anchor until fully seated. (see chart for socket size) (do not over tighten).

Installation Steps for Hollow or Grout-Filled CMU

(3/8" and 1/2" diameter)



1. Using a 5/16" (for 3/8" LDT) or 7/16" (for 1/2" LDT) carbide tipped bit, drill a pilot hole at least 1" deeper than anchor embedment.



2. Using a socket wrench insert anchor into hole and hand tighten anchor until fully seated. (9/16" socket for 3/8" and 3/4" socket for 1/2") (do not over tighten).



LDT's can be installed by hand or with an impact wrench

Installation by hand—is easy, simply using a socket wrench



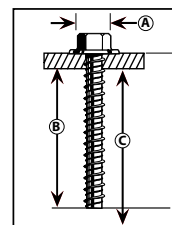
Installation by impact wrench—is recommended for faster installations or for high volume projects. Installation with impact wrench—is **not** recommended for hollow block.

INSTALLATION GUIDE

LDT Size	ANSI Standard Drill Bit Diameter	Ⓐ Anchor Head (Socket Size) Diameter	Washer Diameter	Ⓑ Minimum Embedment	Ⓒ Hole Depth	USE IN		
						Concrete	CMU	
							Hollow	Grout-filled*
LDT 3/8"	5/16"	9/16"	13/16"	1-1/2"	2-1/2"	YES	YES	YES

Ⓒ See catalog for effective lengths and length indication code.

*please call technical service for grout-filled instructions.



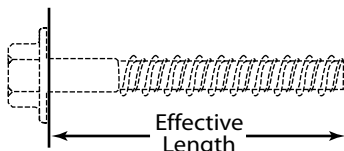
SELECTION CHART

LDT Carbon Steel with Zinc Plating

Meets ASTM B695 and B633 specifications for zinc plating of 5um = .0002" thickness.
This material is well suited for non-corrosive interior environments.



PART NUMBER FOR CARBON STEEL	ANCHOR DIA. In. (mm)	DRILL BIT DIA. In. (mm)	EFFECTIVE LENGTH In. (mm) (see detail on left)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
LDT-3816	3/8 (9.5)	5/16 (7.9)	1-3/4 (44.5)	1/4 (6.4)	50/ 3.0	400/ 24.0
LDT-3824	3/8 (9.5)	5/16 (7.9)	2-1/2 (63.5)	1 (25.4)	50/ 4.5	400/ 34.0
LDT-3840	3/8 (9.5)	5/16 (7.9)	4 (101.6)	2-1/2 (63.5)	50/ 6.5	400/ 52.0
LDT-5840	5/8 (15.9)	1/2 (12.7)	4 (101.6)	1-1/4 (31.8)	10/ 4.0	100/ 40.0
LDT-5860	5/8 (15.9)	1/2 (12.7)	6 (152.4)	3-1/4 (82.6)	10/ 5.4	50/ 27.0



DESIGN GUIDE

For proper selection of anchor diameters based upon predrilled holes in base plates and fixtures.

HOLE DIAMETER IN FIXTURE In. (mm)	SUGGESTED LDT DIAMETER In. (mm)
7/16 (11.1)	3/8 (9.5)
1/2 (12.7)	3/8 (9.5)
3/4 (19.1)	5/8 (15.9)

LENGTH INDICATION CODE*



CODE	LENGTH OF ANCHOR In. (mm)
A	1-1/2 < 2 (38.1 < 50.8)
B	2 < 2-1/2 (50.8 < 63.5)
C	2-1/2 < 3 (63.5 < 76.2)
D	3 < 3-1/2 (76.2 < 88.9)
E	3-1/2 < 4 (88.9 < 101.6)
F	4 < 4-1/2 (101.6 < 114.3)
G	4-1/2 < 5 (114.3 < 127.0)
H	5 < 5-1/2 (127.0 < 139.7)
I	5-1/2 < 6 (139.7 < 152.4)
J	6 < 6-1/2 (152.4 < 165.1)

*Located on top of anchor for easy inspection.

PERFORMANCE TABLE

LDT Anchors Ultimate Tension and Shear Values (Lbs/kN) in Concrete

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	f _c = 2000 PSI (13.8 MPa)		f _c = 3000 PSI (20.7 MPa)		f _c = 4000 PSI (27.6 MPa)	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1-1/2 (38.1)	1,336 (5.9)	2,108 (9.4)	1,652 (7.3)	2,764 (12.3)	1,968 (8.8)	3,416 (15.2)
	2 (50.8)	1,492 (6.6)	3,036 (13.5)	2,024 (9.0)	3,228 (14.4)	2,552 (11.4)	3,420 (15.2)
	2-1/2 (63.5)	3,732 (16.6)	3,312 (14.7)	3,748 (16.7)	3,364 (15.0)	3,760 (16.7)	3,424 (15.2)
	3-1/2 (88.9)	5,396 (24.0)	3,312 (14.7)	6,624 (29.5)	3,368 (15.0)	7,852 (34.9)	3,428 (15.2)
5/8 (15.9)	2-3/4 (69.9)	5,276 (23.5)	8,656 (38.5)	6,560 (29.2)	11,064 (49.2)	7,844 (34.8)	13,476 (59.9)
	3-1/2 (88.9)	7,972 (35.5)	10,224 (45.5)	9,848 (43.8)	12,144 (54.0)	11,724 (52.2)	14,060 (62.5)

For allowable values use a 4 to 1 safety factor (Ultimate/4 or Ultimate*0.25)"

PERFORMANCE TABLE

LDT Anchors Recommended Edge & Spacing Requirements for Tension Loads* Carbon Steel

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	LOAD FACTOR APPLIED AT MIN. EDGE DISTANCE 1-3/4 Inches (44mm)	SPACING DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	LOAD FACTOR APPLIED AT MIN. SPACING DISTANCE 3 Inches (76mm)
3/8 (9.5)	1-1/2 (38.1)	2 (50.8)	70%	6 (152.4)	44%
	2 (50.8)	2 (50.8)	70%	6 (152.4)	44%
	2-1/2 (63.5)	3 (76.2)	70%	6 (152.4)	44%
	3-1/2 (88.9)	4 (101.6)	70%	6 (152.4)	44%
5/8 (15.9)	2-3/4 (69.9)	6-1/4 (158.8)	65%	10 (254.0)	50%
	3-1/2 (88.9)	6-1/4 (158.8)	65%	10 (254.0)	50%

* Edge and spacing distance shall be divided by .75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

For 5/8" and 3/4" LDT Anchors, the critical edge distance for these anchors is 10 times the anchor diameter. The edge distance of these anchors may be reduced to 1-3/4" provided a 0.65 load factor is used for tension loads, a 0.15 load factor is used for shear loads applied perpendicular to the edge, or a 0.60 load factor is used for shear loads applied parallel to the edge. Linear interpolation may be used for intermediate edge distances.

LDT Anchors Recommended Edge & Spacing Requirements for Shear Loads* Carbon Steel

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	LOAD FACTOR APPLIED AT MIN. EDGE DISTANCE 1-3/4 Inches (44mm)	SPACING DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	LOAD FACTOR APPLIED AT MIN. SPACING DISTANCE 3 Inches (76mm)
3/8 (9.5)	1-1/2 (38.1)	3 (76.2)	25%	6 (152.4)	57%
	2 (50.8)	4 (101.6)	25%	6 (152.4)	57%
	2-1/2 (63.5)	5 (127.0)	25%	6 (152.4)	57%
	3-1/2 (88.9)	5 (127.0)	25%	6 (152.4)	57%
5/8 (15.9)	2-3/4 (69.9)	6-1/4 (158.8)	15%** / 60%***	10 (254.0)	75%
	3-1/2 (88.9)	6-1/4 (158.8)	15%** / 60%***	10 (254.0)	75%

* Edge and spacing distances shall be divided by .75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

** 15% = shear load applied perpendicular to the edge

*** 60% = shear load applied parallel to the edge

LDT Anchors Ultimate Tension Load (Lbs/kN) in Concrete Block (anchors should be installed by hand in hollow block)

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	HOLLOW CONCRETE BLOCK		GROUT FILLED CONCRETE BLOCK	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1-1/2 (38.1)	916 (4.1)	3,176 (14.1)	1,592 (7.1)	3,900 (17.3)

PERFORMANCE TABLE

LDT Anchors

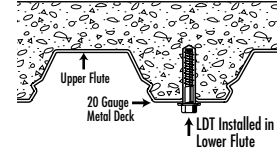
Allowable Tension and Shear* (Lbs/kN) in Concrete Block
(anchors should be installed by hand in hollow block)

ANCHOR DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	HOLLOW CONCRETE BLOCK		GROUT FILLED CONCRETE BLOCK	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1-1/2 (38.1)	229 (1.0)	794 (3.5)	398 (1.8)	975 (4.3)

* Allowable values are based upon a 4 to 1 safety factor. (Ultimate/4)

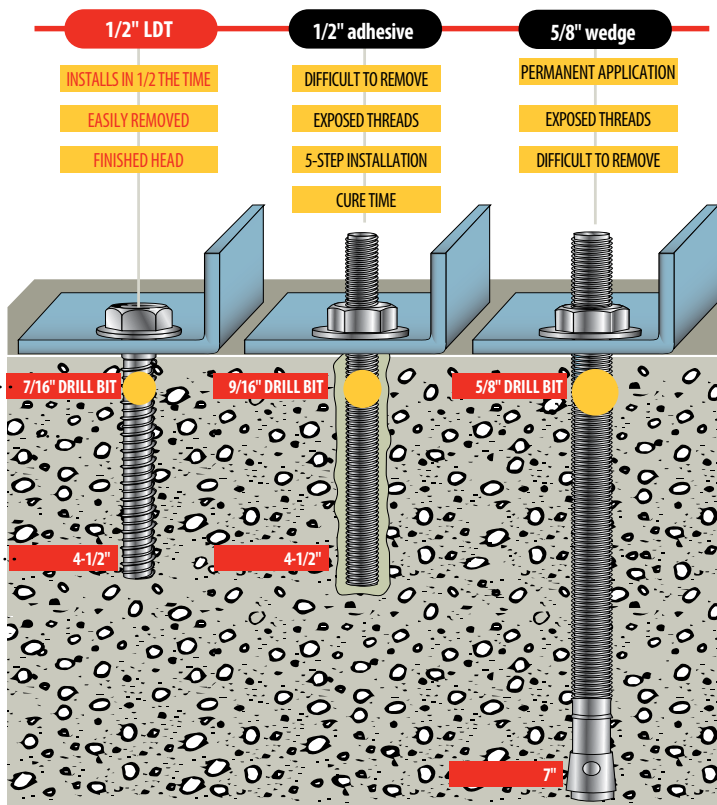
LDT Anchors

Anchoring Overhead in 3000 PSI Lightweight Concrete On Metal Deck



ANCHOR	DRILL HOLE DIAMETER In. (mm)	EMBEDMENT In. (mm)	3000PSI (20.7 MPa) CONCRETE			
			ULTIMATE TENSION LOAD Lbs. (kN)		ALLOWABLE WORKING LOAD Lbs. (kN)	
3/8" LDT	5/16 (7.9)	1-1/2 (38.1)	Upper Flute	2,889 (12.9)	722 (3.2)	
			Lower Flute	1,862 (8.3)	465 (2.1)	

The Easy, Fast, High Performing, Removable Tapcon Anchor, Available in 3/8" and 5/8" Diameter



Tapcon+®

**Seismic and Cracked
Concrete Screw Anchors**

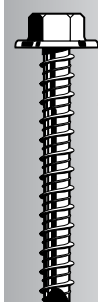
**Finished Head,
Removable Anchor**



DESCRIPTION/SUGGESTED SPECIFICATIONS

Self-threading Anchors—

SPECIFIED FOR ANCHORAGE INTO CONCRETE REQUIRING CRACKED AND SEISMIC



Tapcon+
Self-threading
Anchor

APPROVALS

Tapcon+ out performs traditional wedge anchor products, providing greater load capacity while reducing installation time by up to 50%, offering significant cost-in-place savings on the job site.

Tapcon+ is available with International Building Code (IBC) compliance and other third party listings for use in cracked concrete and seismic applications.

ADVANTAGES

In the Engineering Office:

- Leading steel strength in tension, shear, and seismic shear
- Outperforms wedge anchors in tension, shear, and anchor spacing
- 20% more holding power than wedge or sleeve anchors
- Approved for concrete in cracked, uncracked, and seismic conditions
- Simplicity of installation improves "buildability" on the job site
- Corrosion-resistance and long-lasting performance due to the innovative Blue Climaseal® coating

On the Job:

- More than 2x faster installation than wedge or sleeve anchors
- The ability to drive close to the edge with confidence
- Removable for temporary fixing
- Installs without hammering and precision torque wrench
- One fastening solution for multiple applications and materials

SELECTION CHART

DRILL BIT DIA. mm (in.)	ANCHOR OUTSIDE THREAD DIA. mm (in.)	EFFECTIVE LENGTH mm (in.)	ANCHOR HEAD (SOCKET SIZE) DIA. In.	MAX. THICKNESS MATERIAL TO BE FASTENED mm (in.)	PART NUMBER	QTY/ BOX	PART NUMBER BULK	QTY BULK BOX
6.4 (1/4)	7.9 (5/16)	57.2 (2-1/4)	3/8	6.4 (1/4)	---	---	3511407	600
6.4 (1/4)	7.9 (5/16)	76.2 (3)	3/8	25.4 (1)	---	---	3507407	100
9.5 (3/8)	11.7 (0.46)	76.2 (3)	9/16	12.7 (1/2)	11413C	10	3508407	300
9.5 (3/8)	11.7 (0.46)	101.6 (4)	9/16	38.1 (1-1/2)	11414C	10	3509407	200
12.7 (1/2)	14.0 (0.59)	101.6 (4)	3/4	50.8 (2)	11420C	10	3510207	100
12.7 (1/2)	14.0 (0.59)	152.4 (6)	3/4	101.6 (4)	11421C	10	3510407	100

APPLICATIONS

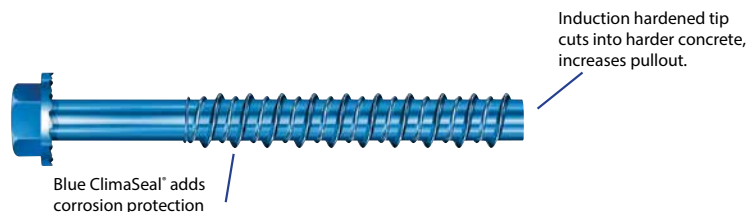


Racking, shelving, conveyors, railing, and drywall are just a few high volume applications ideal for Tapcon+. The ease and speed of installation of the Tapcon+ can reduce installation time to less than half the time of typical systems used today.

With cracked concrete and seismic approvals, the versatility of Tapcon+ is significantly broadened versus traditional larger diameter concrete screws.

The Tapcon+'s finished head and lack of exposed threads virtually eliminates tire damage on fork lift trucks.

FEATURES



Consult ICC-ESR 3699 for a full technical report. Available at www.itwredhead.ca

ACCESSORIES

PART NUMBER	DESCRIPTION	BOX QTY
11493C	1/4 x 7 SDS Plus Tapcon Drill Bit	10
11494C	3/8 x 8 SDS Plus Tapcon Drill Bit	10
11495C	1/2 x 10 SDS Plus Tapcon Drill Bit	10

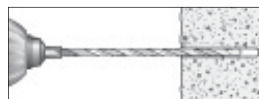
APPROVALS/LISTINGS

ICC ESR-3699 – Cracked & Uncracked and Seismic approved

City of Los Angeles (1/4" & 3/8" diameters)

Florida Building Code Compliant

INSTALLATION STEPS



1. Drill a hole that is at least a 1/4" deeper than the anchor embedment.

Using

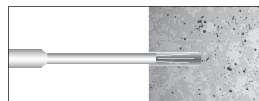
Variable Speed Concrete Hammer Drill & Carbide Drill Bit

1/4 x 7" Tapcon SDS+ Drill Bit (11493C) or

3/8 x 8" Tapcon SDS+ Drill Bit (11494C) or

1/2 x 10" Tapcon SDS+ Drill Bit (11495C) or

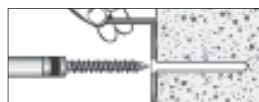
Equivalent size ANSI Drill Bit



2. Using pressurized air or a vacuum, remove the drilling debris from the hole.

Using

Air Compressor or Standard Vacuum Cleaner



3. Drive Tapcon+ screw anchor through fixture (bracket, or attachment plate), until fully seated.

Using

Six Point Impact Socket

3/8" Socket for 1/4" Anchors

9/16" Socket for 3/8" Anchors

3/4" Socket for 1/2" Anchors

Impact Wrench

115 Max ft-lbf for 1/4" Anchors

200 Max ft-lbf for 3/8" Anchors

345 Max ft-lbf for 1/2" Anchors

Strength Design Performance Values in Accordance to CSA 23.3-14

ITW RED HEAD TAPCON+ SCREW ANCHOR

DESIGN INFORMATION TESTED TO ICC-ES AC193 AND ACI 355.2, DEFINED IN ICC ESR-3699



TAPCON+ DESIGN INFORMATION

PARAMETER	Symbol	Units	Nominal Anchor Diameter				
			1/4"		3/8"	1/2"	
Anchor outer diameter	$d_a[d_o]^2$	mm.	6.4		9.5	12.7	
Drill bit specification		in	1/4" Tapcon+ bit	1/4" ANSI bit	3/8" ANSI bit	1/2" ANSI bit	
Minimum specified yield strength	f_y	MPa	689		689	689	
Minimum specified ultimate strength	f_{uta}	MPa	862		862	862	
Effective tensile stress area	$A_{se,N} [A_{se}]^6$	mm ²	30		63	119	
Effective shear stress area	$A_{se,V} [A_{se}]^6$	mm ²	30		63	119	CSA 23.3-14
Resistance modification factor, tension, steel failure modes	R	—	0.70				D5.3
Resistance modification factor, shear, steel failure modes	R	—	0.65				D5.3
Resistance factor for steel anchors	Φ_s	—	0.85				8.4.3
Factored steel resistance, tension	N_{sar}	kN	15.5		32.4	61.2	D.6.1.2
Factored steel resistance, shear	V_{sar}	kN	14.4		30.1	56.8	D.7.1.2
Factored steel resistance, seismic shear	$V_{sar,eq}$	kN	9.5		24.3	41.9	
Effectiveness factor for uncracked concrete	k_{uncr}	—	10		11.25	12.5	D.6.2.2
Effectiveness factor for cracked concrete	k_{cr}	—	7				D.6.2.2
Modification factor for resistance in tension to account for uncracked concrete	Ψ_c, N	—	1				D.6.2.6
Anchor category	—	—	1	2	1		
Material resistance factor for concrete	Φ_c	—	0.65				8.4.2
Strength reduction factor for tension and shear, concrete failure modes	R	Cond. A	1.15	1.00	1.15		D.5.3c
	R	Cond. B	1.00	0.85	1.00		D.5.3c
Modification Factor for concrete density	λ	—	1				8.6.5
Factored pullout resistance in 20 MPa uncracked concrete	$N_{pr, uncr}$	kN	6.6	5.6	Pullout does not control	Pullout does not control	D.6.3.2
Factored pullout resistance in 20 MPa cracked concrete	$N_{pr, cr}$	kN	2.7	2.3	5.4	Pullout does not control	D.6.3.3
Factored seismic pullout resistance in 20 MPa cracked concrete	$N_{pr, cr}$	kN	2.7	2.3	4.9	Pullout does not control	D.6.3.3

1. The data in this table was taken from ICC ESR-3699 and converted to be used in conjunction with the design provisions of CSA 23.3-14 or CSA 23.3-04, Chapter 8 and Annex D, as applicable.
2. Installation must comply with the manufacturers printed installation instructions and details described in the ICC ESR-3699 and this ITW Red Head catalog
3. The 1/4", 3/8", and 1/2" Tapcon+ carbon steel anchors are considered brittle steel elements
4. For all design cases, $\Psi_c, N = 1$. The appropriate effectiveness factor for cracked (k_{cr}) or uncracked concrete (k_{uncr}) must be used.
5. Condition B was assumed for the strength reduction factor for tension and shear (concrete failure modes). For cases where the presence of supplementary reinforcement in conformance with CSA 23.3-14 D.5.3 can be verified, the modification factor for condition A may be used
6. Where Pullout strength does not control anchor design, determine steel and concrete breakout capacities only.

PERFORMANCE TABLE

Strength Design Performance Values in Accordance to CSA 23.3-14

ITW RED HEAD TAPCON+ SCREW ANCHOR



TAPCON+ INSTALLATION INFORMATION

PARAMETER	SYMBOL	UNITS	Nominal Anchor Diameter				
			1/4"	3/8"	1/2"		
Head Style	-	-	Hex Head	Hex Head	Hex Head		
Anchor Outer Diameter (Shank)	$d_a[d_o]^{1/2}$	mm. (in.)	6.4 (0.25)	9.7 (0.38)	12.7 (0.50)		
Nominal carbide bit diameter	d_{bit}	in.	1/4" Tapcon+ or 1/4" ANSI Bit	3/8" ANSI Bit	1/2" ANSI Bit		
Minimum base plate clearance hole diameter	d_h	mm. (in.)	9.7 (0.38)	12.7 (0.50)	16.0 (0.63)		
Effective embedment depth	h_{ef}	mm. (in.)	36.8 (1.45)	45.2 (1.78)	33.5 (1.32)	55.1 (2.17)	76.7 (3.02)
Minimum nominal embedment depth	h_{nom}	mm. (in.)	50.8 (2)	63.5 (2-1/2)	50.8 (2)	76.2 (3)	101.6 (4)
Minimum hole depth	h_o	mm. (in.)	57.2 (2-1/4)	69.9 (2-3/4)	57.2 (2-1/4)	82.6 (3-1/4)	108 (4-1/4)
Minimum concrete member thickness	h_{min}	mm. (in.)	101.6 (4)	101.6 (4)	101.6 (4)	152.4 (6)	
Critical edge distance	c_{ac}	mm. (in.)	63.5 (2-1/2)	114.3 (4-1/2)	76.2 (3)	101.6 (4)	127.0 (5)
Minimum anchor spacing	s_{min}	mm. (in.)	76.2 (3)	76.2 (3)	76.2 (3)	88.9 (3-1/2)	76.2 (3)
Minimum edge distance	c_{min}	mm. (in.)	38.1 (1-1/2)	38.1 (1-1/2)	63.5 (2-1/2)	44.5 (1-3/4)	63.5 (2-1/2)
Maximum installation torque	$T_{inst, max}$	ft-lb	20	50	70		
Maximum installation torque	$T_{impact, max}$	ft-lb	115	200	345		

1. Use ANSI carbide tipped hammer drill bits made in accordance with ANSI B212.15-1994 to install anchors.

2. $T_{inst, max}$ applies to installations using a calibrated torque wrench

FACTORED STEEL RESISTANCE FOR TAPCON+ CARBON STEEL ANCHORS

Nominal Anchor Diameter	Effective Emb. Depth mm. (in.)	Tensile, kN (lbf)	Shear, kN (lbf)	Seismic shear, kN (lbf)
1/4	37 (1-4/9)	15.5 (3495)	14.4 (3245)	9.5 (2145)
3/8	45 (1-7/9)	32.4 (7290)	30.1 (6770)	24.3 (5460)
1/2	34 (1-1/3)	61.2 (13760)	56.8 (12775)	41.9 (9425)
	55 (2-1/6)			
	77 (3)			

1. The 1/4", 3/8", and 1/2" Tapcon+ carbon steel anchors are considered brittle steel elements

2. Tension values calculated according to Clause D6.1.2 in CSA A23.3-14 Annex D

3. Shear values calculated according to Clause D7.1.2 in CSA A23.3-14 Annex D

4. Seismic shear was calculated by reducing V_{sar} based on correlation between V_{sa} and V_{eq} from the ICC ESR-3699



Strength Design Performance Values in Accordance to CSA 23.3-14

ITW RED HEAD TAPCON+ SCREW ANCHOR



FACTORED CONCRETE BREAKOUT/PULLOUT, TENSION kN (lbf)

Nominal Anchor Diameter (in.)	Effective Embedment Depth (in.)	Nominal Embedment Depth mm. (in.)	Concrete Compressive Strength (Uncracked)					Concrete Compressive Strength (Cracked)				
			20 MPa (2900)	25 MPa (3625)	30 MPa (4350)	40 MPa (5800)	50 MPa (7250)	20 MPa (2900)	25 MPa (3625)	30 MPa (4350)	40 MPa (5800)	50 MPa (7250)
1/4	37 (1-4/9)	51 (2)	5.6 (1250)	6.2 (1395)	6.8 (1530)	7.9 (1765)	8.8 (1975)	2.3 (510)	2.5 (570)	2.8 (625)	3.2 (720)	3.6 (805)
3/8	45 (1-7/9)	64 (2-1/2)	9.9 (2235)	11.1 (2500)	12.2 (2735)	14.1 (3160)	15.7 (3535)	5.4 (1215)	6.0 (1360)	6.6 (1490)	7.6 (1720)	8.6 (1920)
1/2	34 (1-1/3)	51 (2)	7.1 (1585)	7.9 (1775)	8.6 (1940)	10.0 (2245)	11.2 (2505)	4.0 (890)	4.4 (995)	4.8 (1090)	5.6 (1255)	6.2 (1405)
	55 (2-1/6)	76 (3)	14.9 (3345)	16.6 (3735)	18.2 (4095)	21.0 (4725)	23.5 (5285)	8.3 (1870)	9.3 (2095)	10.2 (2295)	11.8 (2645)	13.2 (2960)
	77 (3)	102 (4)	24.4 (5490)	27.3 (6135)	29.9 (6720)	34.5 (7760)	38.6 (8675)	13.7 (3075)	15.3 (3435)	16.7 (3765)	19.3 (4345)	21.6 (4860)

1. Linear interpolation between embedment depths and concrete compressive strength is not permitted.
2. Single anchor with no spacing, edge distance, and concrete thickness factors included. Apply these factor according to project condition and compare to steel values to determine anchor strength for design.
3. Tabular values are for normal weight concrete only. For different concrete densities, apply modification factors according to CSA 23.3-14 8.6.5
4. Tabular values are for static loads only. For seismic tension refer to section 4.1.8 of the ICC ESR-3699.
5. Values are for Condition B in conformance with CSA 23.3-14 D.5.3
6. ANSI carbide bit drilling was assumed for all diameters. If using a 1/4" Tapcon+ drill bit, cracked and uncracked pullout of 1/4" Tapcon+ can be multiplied by 1.18

FACTORED CONCRETE PRYOUT/STEEL, RESISTANCE, SHEAR kN (lbf)

Nominal Anchor Diameter (in.)	Effective Embedment Depth mm. (in.)	Nominal Embedment Depth mm. (in.)	Concrete Compressive Strength (Uncracked)					Concrete Compressive Strength (Cracked)				
			20 MPa (2900)	25 MPa (3625)	30 MPa (4350)	40 MPa (5800)	50 MPa (7250)	20 MPa (2900)	25 MPa (3625)	30 MPa (4350)	40 MPa (5800)	50 MPa (7250)
1/4	37 (1-4/9)	51 (2)	5.5 (1240)	6.2 (1395)	6.8 (1530)	7.8 (1755)	8.7 (1965)	2.3 (870)	4.3 (970)	4.7 (1065)	5.5 (1230)	6.1 (1375)
3/8	45 (1-7/9)	64 (2-1/2)	9.9 (2235)	11.1 (2500)	12.2 (2735)	14.1 (3160)	15.7 (3535)	6.2 (1390)	6.9 (1555)	7.6 (1705)	8.7 (1965)	9.5 (2200)
1/2	34 (1-1/3)	51 (2)	7.1 (1585)	7.9 (1775)	8.6 (1940)	10.0 (2245)	11.2 (2505)	4.0 (890)	4.4 (995)	4.8 (1090)	5.6 (1255)	6.2 (1405)
	55 (2-1/6)	76 (3)	14.9 (3345)	16.6 (3735)	18.2 (4095)	21.0 (4725)	23.5 (5285)	8.3 (1870)	9.3 (2095)	10.2 (2295)	11.8 (2645)	13.2 (2960)
	77 (3)	102 (4)	48.8 (10975)	54.6 (12270)	56.8 (12775)	56.8 (12775)	56.8 (12775)	27.3 (6145)	30.6 (6870)	33.5 (7530)	38.7 (8695)	43.2 (9720)

1. Linear interpolation between embedment depths and concrete compressive strength is not permitted.
2. Single anchor with no spacing, edge distance, and concrete thickness factors included. Apply these factor according to project condition and compare to steel strength values to determine anchor strength for design.
3. Tabular values are for normal weight concrete only. For different concrete densities, apply modification factors according to CSA 23.3-14 8.6.5
4. Tabular values are for static loads only. For seismic shear compare values in this table with steel strength values.
5. Values are for Condition B in conformance with CSA 23.3-14 D.5.3

Multi-Set II Drop-In Anchors

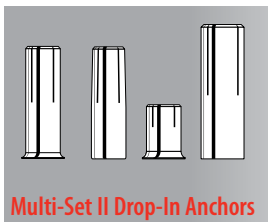
Internally Threaded Heavy- Duty Anchoring Systems

DESCRIPTION/SUGGESTED SPECIFICATIONS

Drop-In, Shell-Type Anchors—

SPECIFIED FOR ANCHORAGE INTO CONCRETE

Drop-In, shell-type anchors feature an internally threaded, all-steel shell with expansion cone insert and flush embedment lip. Anchors are manufactured from zinc-plated carbon steel, 18-8 stainless steel.



Multi-Set II Drop-In Anchors

Anchors should be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994 specifications.

Anchors should be tested to ASTM E488 criteria. Anchors should also be listed by the following agencies as required by the local building code: UL, FM, City of Los Angeles, California State Fire Marshal and Caltrans.

ADVANTAGE

Depth Charge Stop Drill Anchors



- Shoulder prevents over drilling
- Less likely to hit reinforcing steel or post-tension cable in concrete
- No lost time or energy drilling farther than necessary
- Anchor is set at a specified depth, does not drop too far into hole

RM Drop-In Anchor



- Lipped anchor body keeps anchor flush
- Easy installation
- Keeps all rods same length
- Easy inspection
- Available in carbon steel, 18-8

RX Drop-In Anchor



- Optimized for use in hollow-core, pre-cast plank and post-tension slabs
- Lip keeps anchor flush during installation
- Shallow drilling—fast installation

RL Drop-In Anchor



- Below surface setting for easy patch work
- Higher performance potential with deep embedment setting

APPLICATIONS



Pumps and heavy piping are common applications for larger diameter Multi-Set Drop-In Anchors.

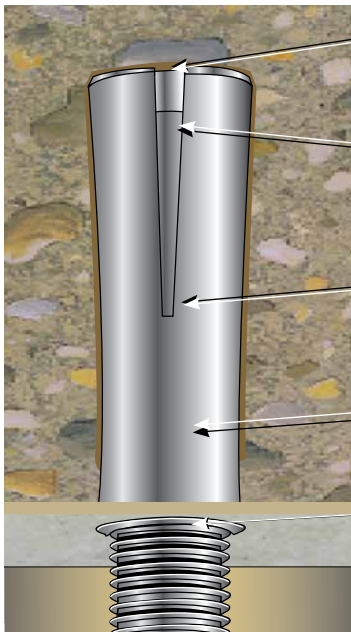


Cable tray and strut suspended from concrete ceilings are ideal Multi-Set applications. In post-tension or hollow-core slabs use the RX-38.



The Multi-Set Anchor is the standard for pipe-hanging. The RM version has a retainer lip to keep all anchors flush at the surface, keeping all your threaded rod the same length.

FEATURES



Expander Slots—allow for easy setting and superior performance

Cone Insert—that expands the anchor when driven with setting tool and hammer

Body—available in zinc-plated steel, 18-8 stainless steel

Easy Depth Inspection—keeps threaded rod drop lengths consistent

Retainer Lip—to keep anchor flush with surface

For use with threaded rods or headed bolts (supplied by contractor)



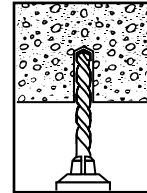
PART NUMBER RT-138

1 setting tool per master carton
(See page RH 54 for part numbers.)

APPROVALS/LISTINGS

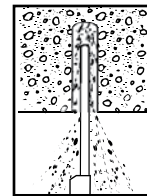
Underwriters Laboratories
Factory Mutual

INSTALLATION STEPS

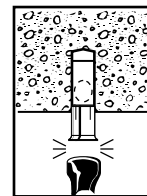


To set anchor flush with surface:

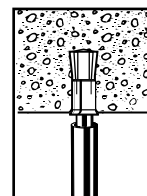
1. Drill hole to required embedment
(see Table on page RH 63).



2. Clean hole with pressurized air.



3. Drive anchor flush with surface of concrete.



4. Expand anchor with setting tool provided
(see chart on page RH 61). Anchor is properly expanded when shoulder of setting tool is flush with top of anchor.

To set anchor below surface:

Drill hole deeper than anchor length. Thread bolt into anchor.
Hammer anchor into hole until bolt head is at desired depth.
Remove bolt and set anchor with setting tool.



PART NUMBER RTX-138

For use with RX-38 only.











PART NUMBER RTX-112

For use with RX-12 only.

SELECTION CHART

Multi-Set II Drop-In Anchors

One setting tool per master carton.
For continuous extreme low temperature, use stainless steel.

USER TYPE	APPLICATION	BASE MATERIAL	CORROSION RESISTANCE LEVEL	DROP-IN ANCHOR TYPE	PART NUMBER	SETTING TOOL PART NUMBER	BOLT SIZE-THREADS PER INCH	DRILL BIT DIA. In. (mm)	THREAD DEPTH In. (mm)	EMBEDMENT MIN. HOLE DEPTH In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CTN lbs.
	HVAC/Fire Sprinkler	Solid concrete/lightweight fill deck	Low		RM-38* +	RT-138	3/8" - 16	1/2 (12.7)	1/2 (12.7)	1-5/8 (41.3)	50/ 3.4	500/ 36
					RM-12* +	RT-112	1/2" - 13	5/8 (15.9)	3/4 (19.1)	2 (50.8)	50/ 5.8	400/ 49
	Hollow-core pre-cast or Post-tension	Solid concrete/lightweight fill deck	Low		RX-38*	RTX-138	3/8" - 16	1/2 (12.7)	3/8 (9.5)	3/4 (19.1)	100/ 3.5	1000/ 36
					RX-12	RTX-112	1/2" - 13	5/8 (15.9)	1/2 (12.7)	1 (25.4)	50/ 3.0	500/ 31
	Concrete Cutting/Sawing Contractor/Misc. Metal	Solid concrete/lightweight fill deck	Medium		SRM-38* +	RT-138	3/8" - 16	1/2 (12.7)	1/2 (12.7)	1 - 5/8 (41.3)	50/ 3.4	500/ 36
					SRM-12* +	RT-112	1/2" - 13	5/8 (15.9)	3/4 (19.1)	2 (50.8)	50/ 6.0	400/ 50
	Concrete Cutting/Sawing Contractor/Misc. Metal	Solid concrete/lightweight fill deck	Low		RL-14	RT-114	1/4" - 20	3/8 (9.5)	3/8 (9.5)	1 (25.4)	100/ 2.6	1000/ 28
					RL-38	RT-138	3/8" - 16	1/2 (12.7)	1/2 (12.7)	1 - 5/8 (41.3)	50/ 3.4	500/ 36
					RL-12	RT-112	1/2" - 13	5/8 (15.9)	3/4 (19.1)	2 (50.8)	50/ 5.8	400/ 49
					RL-58	RT-158	5/8" - 11	7/8 (22.2)	1 (25.4)	2 - 1/2 (63.5)	25/ 7.8	125/ 41
					RL-34	RT-134	3/4" - 10	1 (25.4)	1-1/4 (31.8)	3-3/16 (81.0)	25/11.9	100/ 49

* FM Approved

+ UL Approved

Multi-Set II Depth Charge Anchors

PART NUMBER	DESCRIPTION	DRILL DEPTH
DC-38	1/2" x 1-11/6" CARBIDE DRILL BIT FOR 3/8" DROP-IN	1-11/16"
DC-12	5/8" x 2-1/6" CARBIDE DRILL BIT FOR 1/2" DROP-IN	2-1/6"
DCX-138	1/2" x 13/16" CARBIDE DRILL BIT FOR 3/8" STUBBY DROP-IN	13/16"

DepthCharge™
Stop Drill



- Shoulder prevents over drilling
- Less likely to hit reinforcing steel or post-tension cable in concrete

- No lost time or energy drilling farther than necessary
- Anchor is set at a specified depth, does not drop too far into hole

PERFORMANCE TABLES

Multi-Set II Drop-In Anchors

Ultimate Tension and Shear Values (Lbs/kN) in Concrete*

BOLT DIA. In. (mm)	ANCHOR DIA. In. (mm)	MIN. EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	TENSION Lbs. (kN)			SHEAR Lbs. (kN)
				f'c = 2000 PSI (13.8 MPa)	f'c = 4000 PSI (27.6 MPa)	f'c = 6000 PSI (41.4 MPa)	f'c > 2000 PSI (13.8 MPa)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S.	1,680 (7.5)	2,360 (10.5)	2,980 (13.3)	1,080 (4.8)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2,980 (13.3)	3,800 (16.9)	6,240 (27.8)	3,160 (14.1)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3,300 (14.7)	5,840 (26.0)	8,300 (36.9)	4,580 (20.4)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		5,500 (24.5)	8,640 (38.4)	11,020 (49.0)	7,440 (33.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		8,280 (36.8)	9,480 (42.2)	12,260 (54.5)	10,480 (46.6)

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

* For continuous extreme low temperature applications, use stainless steel.

PERFORMANCE TABLES

Multi-Set II Drop-In Anchors

Ultimate Tension and Shear Values (Lbs/kN) in Lightweight Concrete*

BOLT DIA. In. (mm)	ANCHOR DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	LIGHTWEIGHT CONCRETE f'c = 3000 PSI (20.7 MPa)		LOWER FLUTE OF STEEL DECK WITH LIGHTWEIGHT CONCRETE FILL f'c = 3000 PSI (20.7 MPa)	
				TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	1-5/8 (39.7)	RM, RL or CL-Carbon or SRM-18-8 S.S	3,860 (17.2)	4,420 (19.6)	3,340 (14.9)	4,420 (19.6)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		4,080 (18.1)	5,640 (25.1)	3,200 (14.2)	4,940 (22.0)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		6,280 (27.9)	10,440 (46.4)	5,960 (26.5)	5,840 (26.0)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		11,000 (48.9)	15,780 (70.2)	8,180 (36.4)	9,120 (40.6)

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

Multi-Set II Drop-In Anchors

Recommended Edge and Spacing Distance Requirements*

BOLT DIA. In. (mm)	DRILL BIT SIZE In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE	EDGE DISTANCE REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. EDGE DISTANCE AT WHICH LOAD FACTOR APPLIED =.80 FOR TENSION =.70 FOR SHEAR In. (mm)	SPACING REQUIRED TO OBTAIN MAX. WORKING LOAD In. (mm)	MIN. ALLOWABLE SPACING BETWEEN ANCHORS LOAD FACTOR APPLIED =.80 FOR TENSION =.55 FOR SHEAR In. (mm)
1/4 (6.4)	3/8 (9.5)	1 (25.4)	RM, RL or CL-Carbon or SRM-18-8 S.S.	1-3/4 (44.5)	7/8 (22.2)	3-1/2 (88.9)	1-3/4 (44.5)
3/8 (9.5)	1/2 (12.7)	1-5/8 (41.3)		2-7/8 (73.0)	1-7/16 (36.5)	5-11/16 (144.5)	2-7/8 (73.0)
1/2 (12.7)	5/8 (15.9)	2 (50.8)		3-1/2 (88.9)	1-3/4 (44.5)	7 (177.8)	3-1/2 (88.9)
5/8 (15.9)	7/8 (22.2)	2-1/2 (63.5)		4-3/8 (111.1)	2-3/16 (55.6)	8-3/4 (222.3)	4-3/8 (111.1)
3/4 (19.1)	1 (25.4)	3-3/16 (81.0)		5-5/8 (142.9)	2-13/16 (71.4)	11-3/16 (284.2)	5-5/8 (142.9)

* Spacing and edge distances shall be divided by 0.75 when anchors are placed in structural lightweight concrete. Linear interpolation may be used for intermediate spacing and edge distances.

Multi-Set II Drop-In Anchors

Ultimate Tension and Shear Values (Lbs/kN) for RX-series (3/4" and 1" Embedment)*

BOLT DIA. In. (mm)	DRILL BIT SIZE In. (mm)	EMBEDMENT In. (mm)	2500 PSI (17.2 MPa) CONCRETE		4000 PSI (27.6 MPa) CONCRETE		HOLLOW CORE	
			TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	1/2 (12.7)	3/4 (19.1)	1,571 (7.0)	2,295 (10.2)	1,987 (8.8)	2,903 (12.9)	1,908 (8.5)	2,401 (10.7)
1/2 (12.7)	5/8 (15.9)	1 (25.4)	2,113 (9.4)	2,585 (11.5)	2,673 (11.9)	3,270 (14.5)	2,462 (11.0)	2,401 (10.7)

* The tabulated values are for RX anchors installed at a minimum of 12 diameters on center and minimum edge distance of 6 diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to 6 diameters spacing and 3 diameter edge distance provided the values are reduced 50 percent. Linear Interpolation may be used for intermediate spacings and edge margins.

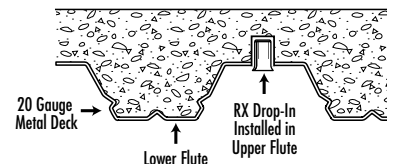
* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.

Multi-Set II Drop-In Anchors

Anchoring Overhead in 3000 PSI Lightweight Concrete On Metal Deck

ANCHOR	DRILL HOLE DIAMETER In. (mm)	EMBEDMENT In. (mm)	3000PSI (20.7 MPa) CONCRETE			
			ULTIMATE TENSION LOAD Lbs. (kN)		ALLOWABLE WORKING LOAD Lbs. (kN)	
RX-38 Drop-In	1/2 (12.7)	3/4 (19.1)	Upper Flute	1,410 (6.3)	353 (1.6)	
			Lower Flute	1,206 (5.4)	301 (1.3)	

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values.



Combined Tension and Shear Loading—for Multi-Set Anchors

Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation:

$$(P_s/P_t)^{2/3} + (V_s/V_t)^{2/3} \leq 1$$

P_s = Applied tension load

V_s = Applied shear load

P_t = Allowable tension load

V_t = Allowable shear load

Dynabolt® Sleeve Anchors

**Versatile,
Medium-Duty
Sleeve Anchor**



**Dynabolt
Hex Nut Sleeve Anchor**

DESCRIPTION/SUGGESTED SPECIFICATIONS

Sleeve Type Anchors—

SPECIFIED FOR ANCHORAGE INTO CONCRETE, MASONRY, GROUT-FILLED BLOCK AND HOLLOW BLOCK



**Dynabolt
Masonry
Sleeve
Anchor**

Sleeve type anchors feature a split expansion sleeve over a threaded stud bolt body and integral expander, nut and washer.

Anchors are made of Plated Carbon Steel.

Anchors should be installed with carbide tipped hammer drill bits made in accordance to ANSI B212.15-1994.

Anchors are tested to ASTM E488 criteria.

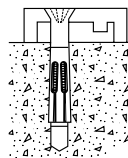
ADVANTAGES

- Anchor diameter equals hole diameter
- Available in Hex head and Phillips Flat head
- Available 5/16 - 5/8" diameter up to 6-1/4" length
- Zinc plated carbon steel
- Provides full 360° hole contact over large area and reduces concrete stress
- Heavy-loading capacity
- Preamsembled for faster, easier installations
- Dynabolt can be installed through object to be fastened
- Sleeve design improves holding power
- No pre-spotting of holes necessary

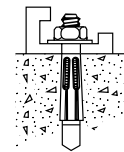
Available Head Styles

Full range of head style, corrosion protection, and sizes makes the Dynabolt Sleeve the right product for almost any application.

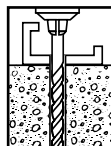
Phillips
Flat Head
(FS)



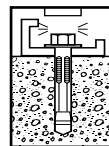
Hex Nut
(HN)



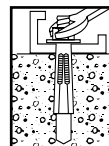
INSTALLATION STEPS



1. Use a bit with a diameter equal to the anchor. See selection chart to determine proper size bit for anchor used. Drill hole to any depth exceeding minimum embedment. Clean hole.



2. Insert assembled anchor into hole, so that washer or head is flush with materials to be fastened.



3. Expand anchor by tightening nut or head 2 to 3 turns.

APPLICATIONS



Electrical junction boxes are common applications for the Dynabolt Sleeve anchor because it works well in solid concrete, concrete block, and brick. It is also available in several finished head styles.



The Dynabolt Sleeve anchor works well in hollow materials like brick and block. It is available in zinc-plated carbon steel.



Door and window frames are commonly attached to the structure with Dynabolt Sleeve anchors because of their finished & threshold head styles and performance in block & brick.

APPROVALS/LISTINGS

Meets or exceeds U.S. Government G.S.A. Specification A-A-1922A
(Formerly GSA: FF-S-325 Group II, Type 3, Class 3)

Factory Mutual

California State Fire Marshal

SELECTION CHART

Dynabolt Carbon Steel with Zinc Plating

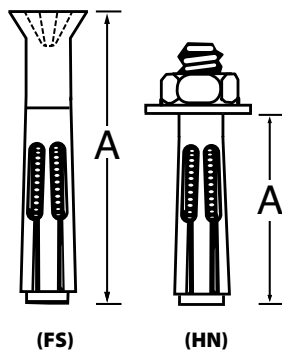


Typical Applications—
Shelf ledgers, electrical boxes, conduit

Environment—Interior
(non-corrosive)

Level of Corrosion—Low

* Effective Anchor Length



HEAD STYLE	PART NUMBER	ANCHOR DIA. & DRILL BIT SIZE	EFFECTIVE ANCHOR LENGTH* In. (mm)	BOLT DIA./ THREADS PER INCH	MIN. EMBEDMENT In. (mm)	MAX. THICKNESS OF MATERIAL TO BE FASTENED In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CARTON lbs.
HEX NUT	HN-1614	5/16"	1-1/2 (38.1)	1/4" /20	1-1/4 (31.8)	1/4 (6.4)	100/ 4.0	1000/ 41
	HN-3817*	3/8"	1-7/8 (47.6)	5/16" /18	1-1/2 (38.1)	3/8 (9.5)	50/ 3.5	500/ 36
	HN-3830*		3 (76.2)	5/16" /18	1-1/2 (38.1)	1-1/2 (38.1)	50/ 4.9	400/ 40
	HN-1222*	1/2"	2-1/4 (57.2)	3/8" /16	1-7/8 (47.6)	3/8 (9.5)	25/ 3.3	250/ 34
	HN-1230*		3 (76.2)	3/8" /16	1-7/8 (47.6)	1-1/8 (28.6)	25/ 4.0	200/ 33
	HN-1240*		4 (101.6)	3/8" /16	1-7/8 (47.6)	2-1/8 (54.0)	25/ 5.3	200/ 44
	HN-1260*		6 (152.4)	3/8" /16	1-7/8 (47.6)	4-1/8 (104.8)	20/ 5.6	200/ 56
	HN-5842*	5/8"	4-1/4 (108.0)	1/2" /13	2 (50.8)	2-1/4 (57.2)	10/ 3.9	100/ 41
PHILLIPS FLAT HEAD	FS-3850	3/8"	5 (127.0)	5/16" /18	1-1/2 (38.1)	3-1/2 (88.9)	50/ 5.6	300/ 40

* FM Approved

Phillips flat head uses a standard 80°–82° counter sink.

PERFORMANCE TABLE

Dynabolt Sleeve Anchors

Ultimate Tension and Shear Values in Concrete (Lbs/kN)*

ANCHOR DIA. In. (mm)	INSTALLATION TORQUE Ft. Lbs. (Nm)	BOLT DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE (STEEL)	f'c = 2000 PSI (13.8 MPa)		f'c = 3000 PSI (20.7 MPa)		f'c = 4000 PSI (27.6 MPa)	
					TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
5/16 (7.9)	8 (10.8)	1/4 (6.4)	1-1/4 (31.8)	Carbon	1,400 (6.2)	2,040 (9.1)	1,920 (8.5)	2,220 (9.9)	2,600 (11.6)	2,400 (10.7)
3/8 (9.5)	14 (19.0)	5/16 (7.9)	1-1/2 (38.1)		1,620 (7.2)	2,560 (11.4)	2,240 (10.0)	2,800 (12.5)	3,100 (13.8)	3,040 (13.5)
1/2 (12.7)	20 (27.1)	3/8 (9.5)	1-7/8 (47.6)		2,220 (9.9)	4,000 (17.8)	3,140 (14.0)	4,500 (20.0)	4,400 (19.6)	5,000 (22.2)
5/8 (15.9)	48 (65.1)	1/2 (12.7)	2 (50.8)		3,080 (13.7)	6,440 (28.6)	4,400 (19.6)	7,240 (32.2)	6,120 (27.2)	8,080 (35.9)
3/4 (19.1)	90 (122.0)	5/8 (15.9)	2-1/4 (57.2)		4,200 (18.7)	10,200 (45.4)	6,060 (27.0)	11,600 (51.6)	8,900 (39.6)	13,100 (58.3)

* For continuous extreme low temperature applications, use stainless steel.

Dynabolt Sleeve Anchors

Ultimate Tension and Shear Values in Lightweight Concrete (Lbs/kN)*

ANCHOR DIA. In. (mm)	INSTALLATION TORQUE Ft. Lbs. (Nm)	BOLT DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE (STEEL)	f'c = 4000 PSI (27.6 MPa)		f'c = 6000 PSI (41.4 MPa)	
					TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
5/16 (7.9)	8 (10.8)	1/4 (6.4)	1-1/4 (31.8)	Carbon	1,260 (5.6)	1,680 (7.5)	1,440 (6.4)	2,220 (9.9)
3/8 (9.5)	14 (19.0)	5/16 (7.9)	1-1/2 (38.1)		1,620 (7.2)	2,300 (10.2)	2,240 (10.0)	2,800 (12.5)
1/2 (12.7)	25 (33.9)	3/8 (9.5)	1-7/8 (47.6)		2,600 (11.6)	3,920 (17.4)	3,160 (14.1)	4,840 (21.5)
5/8 (15.9)	48 (65.1)	1/2 (12.7)	2 (50.8)		3,240 (14.4)	5,600 (24.9)	4,300 (19.1)	7,840 (34.9)
3/4 (19.1)	90 (122.0)	5/8 (15.9)	2-1/4 (57.2)		3,640 (16.2)	8,640 (38.4)	5,800 (25.8)	12,480 (55.5)

Dynabolt Sleeve Anchors

Ultimate Tension and Shear Values in Masonry Units (Lbs/kN)*

ANCHOR DIA. In. (mm)	INSTALLATION TORQUE Ft. Lbs. (Nm)	BOLT DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ANCHOR TYPE (STEEL)	LIGHTWEIGHT				MEDIUM WEIGHT			
					HOLLOW CORE		GROUT FILLED		HOLLOW CORE		GROUT FILLED	
					TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)	TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/8 (9.5)	15 (20.3)	5/16 (7.9)	1-1/2 (38.1)	Carbon	1,360 (6.0)	2,560 (11.4)	1,360 (6.0)	2,560 (11.4)	1,360 (6.0)	2,560 (11.4)	1,360 (6.0)	2,560 (11.4)
1/2 (12.7)	25 (33.9)	3/8 (9.5)	1-7/8 (47.6)	Carbon	---	---	2,220 (9.9)	4,000 (17.8)	---	---	2,220 (9.9)	4,000 (17.8)
5/8 (15.9)	55 (74.6)	1/2 (12.7)	2 (50.8)	Carbon	---	---	3,080 (13.7)	6,440 (28.6)	---	---	3,080 (13.7)	6,440 (28.6)
3/4 (19.1)	90 (122.0)	5/8 (15.9)	2-1/2 (63.5)	Carbon	---	---	4,200 (18.7)	10,200 (45.4)	---	---	4,200 (18.7)	10,200 (45.4)

* Allowable values are based upon a 4 to 1 safety factor. Divide by 4 for allowable load values. The tabulated values are for anchors installed in a minimum of 12 diameters on center and a minimum edge distance of 6 diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to 6 diameter spacing and 3 diameter edge distance, provided the values are reduced 50 percent. Linear interpolation may be used for intermediate spacings and edge distances.

Combined Tension and Shear Loading—for Dynabolt Anchors

Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation: $(P_s/P_t) + (V_s/V_t) \leq 1$

P_s = Applied tension load

V_s = Applied shear load

P_t = Allowable tension load

V_t = Allowable shear load

Hammer-Set™ Anchors

Nail-Drive Anchors



APPLICATIONS



NOT FOR USE IN OVERHEAD APPLICATIONS*

- Electrical boxes
- Conduit clips
- Drywall track
- Roof flashing

DESCRIPTION/SUGGESTED SPECIFICATIONS

Hammer-Set Nail Drive Anchors— SPECIFIED FOR ANCHORAGE INTO CONCRETE, BLOCK AND BRICK



Hammer-Set
Nail-Drive
Anchor

The Hammer-Set one-piece zinc plated steel anchor consists of an expansion body and expander drive pin. Anchors meet or exceed GSA specification A-A-1925A Type 1. (Formerly GSA: FF-S-325 Group V, Type 2, Class 3)

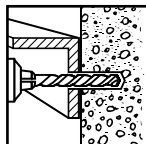
ADVANTAGES

- Fast, easy installation
- Works in concrete, block and brick
- Install through material to be fastened
- Low profile mushroom head style

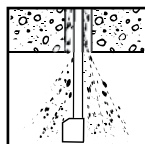
APPROVALS/LISTINGS

Meets or exceeds GSA specification A-A-1925A Type 1 (Formerly GSA: FF-S-325 Group V, Type 2, Class 3)

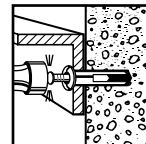
INSTALLATION STEPS



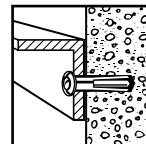
1.



2.



3.



4.

1. Drill proper size hole through material to be fastened into base material. (See Chart for bit size).
2. Clean hole.
3. Insert Hammer-Set into hole until head of anchor body is flush with material to be fastened. Tap the nail until flush with head of anchor. Ensure minimum embedment is 1/4" deeper than anchor embedment. Be sure head is firmly against fixture
4. Anchor is now set. ** NOT RECOMMENDED FOR OVERHEAD **

SELECTION CHART

Hammer-Set

PART NUMBER	DESCRIPTION In. (mm)	DRILL SIZE In. (mm)	MAX. FIXTURE THICKNESS In. (mm)	MIN. EMBEDMENT In. (mm)	MIN. HOLE DEPTH In. (mm)	QTY/WT PER BOX lbs.	QTY/WT PER MASTER CTN-lbs.
HS-1607	3/16 x 7/8 (4.8 x 22.2)	3/16 (4.8)	1/4 (6.4)	5/8 (15.9)	1-1/8 (28.6)	100/ 2.0	1000/ 20
HS-1412	1/4 x 1-1/4 (6.4 x 31.8)	1/4 (6.4)	1/2 (12.7)	3/4 (19.1)	1-1/2 (38.1)	100/ 2.6	1000/ 26
HS-1414	1/4 x 1-1/2 (6.4 x 38.1)	1/4 (6.4)	3/4 (19.1)	3/4 (19.1)	1-3/4 (44.5)	100/ 2.8	1000/ 28
HS-1420	1/4 x 2 (6.4 x 50.8)	1/4 (6.4)	1-1/4 (31.8)	3/4 (19.1)	2-1/4 (57.2)	100/ 3.5	1000/ 35

PERFORMANCE TABLE

Hammer-Set

**Ultimate Tension and Shear
Values in Concrete (Lbs/kN)***

ANCHOR DIA. In. (mm)	EMBEDMENT In. (mm)	4000 PSI (27.6 MPa)	
		TENSION Lbs. (kN)	SHEAR Lbs. (kN)
3/16" (4.8)	5/8" (15.9)	640 (2.8)	810 (3.6)
1/4" (6.4)	3/4" (19.1)	880 (3.9)	970 (4.3)
1/4" (6.4)	1" (25.4)	950 (4.2)	970 (4.3)
1/4" (6.4)	1-1/4" (31.8)	1,025 (4.6)	970 (4.3)

Safe working loads for single installations under static loading conditions should not exceed 25% of the ultimate capacity.

FREE SOFTWARE

Canadian Design Standard – CSA A23.3-14

AVAILABLE IN ENGLISH AND FRENCH CANDIAN



The most user-friendly anchor design software is now even better, allowing you to do more types of anchor designs from anywhere, be that in the office or out on the jobsite.

NEW! Access cloud-based Truspec v3 via web browser from your computer or mobile device.

- Cloud-based version means users always have access to the latest features, without the hassle of installing updates.
- Can access from 4G mobile devices even without wi-fi internet connection.

Versatile – do everything in one package

- **NEW** Supports cast-in as well as post-installed anchor design
- **NEW** Supports anchoring to masonry (available Q1 2020) as well as concrete substrates
- **NEW** Allows you to customize base plate shapes and anchor layouts



Customize base plate shapes and anchor layouts

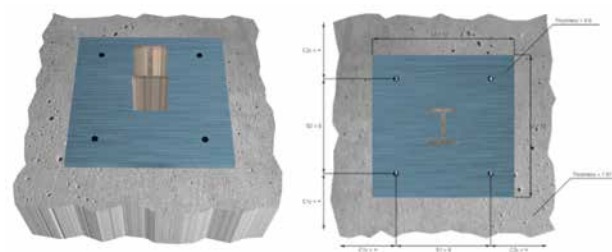
Accurate, reliable, Canadian code-compliant anchor designs (CSA A23.3-14)

- **NEW** Supports ACI318 Strength Design method for concrete and Allowable Stress Design (ASD) for masonry.
- **NEW** Truspec v3 lets you enter multiple load combinations and calculates the worst-case controlling combination for you.
- **NEW** Truspec v3 checks your base plate design using finite element analysis to ensure adequate rigidity

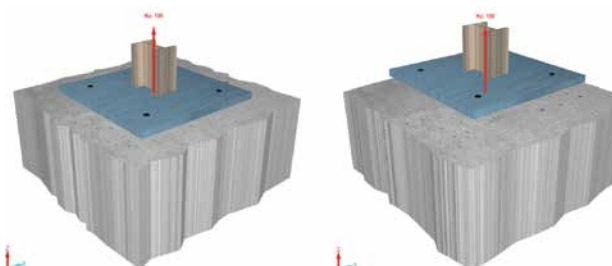
Intuitive, easy to use

- Consistently ranked by designers as one of the simplest anchor design software to learn and use, Truspec v3 walks you through the anchor design and selection process in six easy steps – saving time and preventing errors.
- Customizable templates are provided for common anchoring applications like base plates, end plates and safety railings.
- Graphical user interface provides 2D and 3D design views making it easy to visualize all design elements at a glance.
- Tooltip messages provide helpful information whenever the cursor is positioned over an element on the user interface.
- Animated indicators simplify and speed the input of tensile, shear and moment load values
- Truspec allows you to filter anchor recommendations by type, diameter, steel grade, etc. Truspec also ranks the viable options to show which are the most efficient from a capacity utilization perspective.

Load Combs	Unit	N	V _{ux}	V _{uy}	M _{ux}	M _{uy}
1.0 DL + 1.25 D + 1.0 L + 0.5 (W + F)	standard	400	0	0	0	0
1.0 DL + 0.75 D + 1.0 W	standard	0	0	1440	0	0
1.0 DL + 1.25 D + 1.0 E + 1.0 L + 0.25 W	seismic	0	510	0	0	1230
1.0 DL + 1.25 D + 1.0 W + 1.0 L + 0.5 (W + F)	standard	0	0	0	1000	0
1.0 DL + 0.75 D + 1.0 E	seismic	0	0	0	0	1010



View anchor designs in 2D or 3D perspective



Animated display graphically shows load direction

The NEW, enhanced design report shows all inputs, formulas, and calculations with relevant standards citations, plus complete anchor product info and installation instructions.

USE TRUSPEC V3 SOFTWARE WITH THE FOLLOWING POPULAR ANCHORING PRODUCTS:

CHEMICAL ANCHORING ADHESIVES

- **Red Head A7+ Adhesive**
The most versatile quick cure
Fast-curing, all-weather hybrid adhesive
- **Red Head C6+ Adhesive**
For the most demanding applications
Maximum strength epoxy adhesive
- **Red Head G5+ Adhesive**
General-purpose epoxy
Long working time suitable for hot climates

POST-INSTALLED MECHANICAL ANCHORS

- **Trubolt Wedge Anchors**
Dependable, heavy-duty expansion anchor
- **Tapcon and Tapcon+ Screw Anchors**
Fast installation with reliable holding power
- **Sammys Threaded Rod Hangers**
Accommodates vertical, horizontal and angled attachments

CAST-IN ANCHORS

- **Hex and heavy hex head bolts**
- **Square and heavy square head bolts**

Notes



Notes



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A photograph of two screws against a white background. On the left is a long screw with a hexagonal head. On the right is a shorter screw with a flat, conical head. Both screws have a double-flute design on the shank and a sharp point.

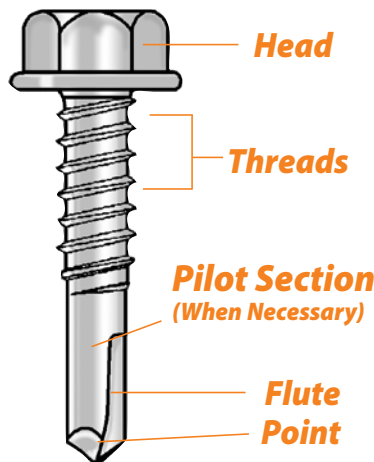


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TEKS® Fastening Features

FEATURES



HEAD

Proper head style choice will ensure stability during driving, proper clamping and desired finished appearance.

THREAD FORM AND DIAMETER

The correct choice of thread form and diameter optimizes low installation torque with high pullout strength.

PILOT SECTION

The unthreaded portion of the point assures the drilling of the steel is completed before the threads begin tapping into the drilled hole.

POINT

The point is designed to efficiently remove material and precisely size the hole for the thread.

FINISH

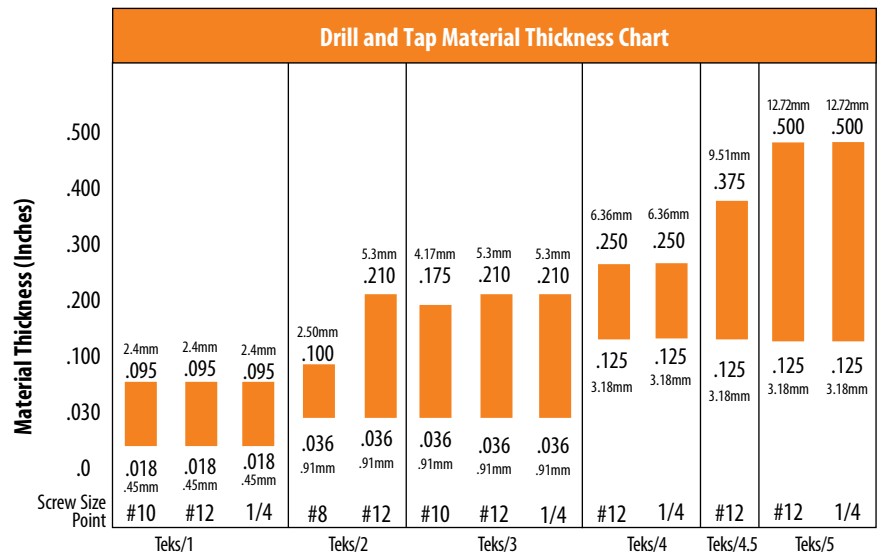
Platings and coatings provide lubricity during drilling and tapping as well as corrosion resistance.

FASTENER DESCRIPTION AND BREAKDOWN — EXAMPLE

10 - **16** x **3/4"** **HWH** **Teks/3**
Nominal Screw Size Threads Per Inch Screw Length Head Style Drill Point Type

Nominal Screw Sizes	
Thread Diameter	Decimal Equivalent
#6	.140
#7	.150
#8	.160
#9	.180
#10	.190
#11	.200
#12	.210
#13	.230
#14	.240
1/4	.250
#17	.286

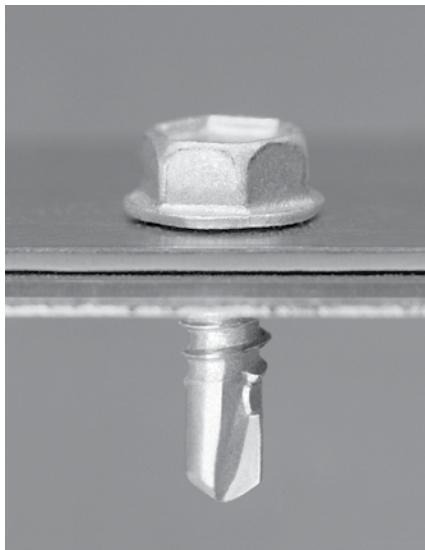
Steel Gauge Chart		
Common Sheet Steel Gauges	Decimal Eq.	
	Inches	MM
30	.012	.30
28	.015	.38
26	.018	.45
24	.024	.61
22	.030	.76
20	.036	.91
18	.048	1.21
16	.060	1.52
14	.075	1.90
12	.105	2.65
1/8	.125	3.18
10	.134	3.42
3/16	.187	4.77
1/4	.250	6.36
1/2	.500	12.72



*Drill & tap capacities may vary with special feature designs.
Refer to product reports for specifics.

TEKS® Self-Drilling Fasteners

*Preferred Most
by Electrical,
Decking, HVAC
and Metal
Building
Contractors*



DESCRIPTION/ADVANTAGES

Light Duty Steel-To-Steel Applications—



- Sharp convex drill point has precise cutting edges to improve drill performance with less effort.
- Non-walking point provides fast material engagement.
- Unique point to thread design extrudes the metal preventing stripout.
- Point to thread design maximizes pullout performance and minimizes backout.
- Three head styles available to handle various applications.
- Climaseal® finish provides excellent corrosion resistance

SPECIFICATIONS

Diameter / Thread Form

8-18 and 10-16

Head Styles



Hex Washer Head
(HWH)



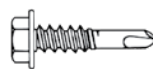
Socket Pan Head
(SP)



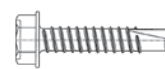
Modified Truss Head
(MTH)

Drill Point

Teks 2



Teks 3



Finish

Type

Electro-zinc (EZ)

Climaseal® Coating (CL)

Climaseal®+ Coating (CL+)

Kesternich Results (DIN 50018, 2.0L)

3 cycles - 5% or less red rust

30 cycles - 10% or less red rust

Meets or exceeds Kesternich and Salt Spray Results of Climaseal® Coating (CL)

Salt Spray Results (ASTM B117)

48 hours - 5% or less red rust

1000 hours - 10% or less red rust

INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install Teks. For optimal fastener performance, the screwgun should be a minimum of 4 amps and have a RPM range of 0-2000.
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. New magnetic sockets must be correctly set before use. Remove chip build-up as needed.
4. The fastener is fully seated when the head is flush with the work surface.
5. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
6. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.

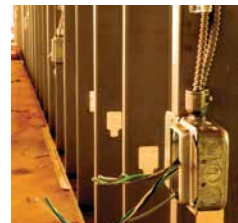
TEKS Light Duty Steel-To-Steel Applications

APPLICATIONS

Stitch roof deck and wall panel sidelaps.
HVAC, electrical trim accessories to steel framing.
Residential steel frame construction.
Brick ties to steel framing.
Track to stud and stud splicing.
Hat channel to stud.

APPROVALS/LISTINGS

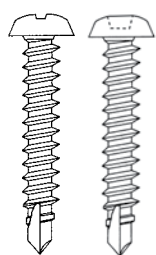
Factory Mutual (J.I. 2 X 9A2 AM)
ICC - ESR 1976



SELECTION CHART

TEKS® Fasteners

Finish: Electro-Zinc Plating.



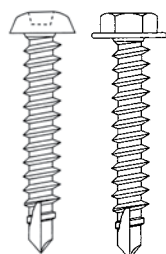
PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	"X" PAK QTY	APPLICATIONS
2240	2240	8-18 x 1/2"	#2 SP	#2	.036-.100	.205	10,000		<ul style="list-style-type: none"> - HVAC, electrical trim accessories to steel framing - Residential steel frame construction - Track to stud - Hat channel to stud - Stud splicing
2250	2250	8-18 x 1/2"	MTH	#2	.036-.100	.205	10,000		
2280 ^x	2280	8-18 x 5/8"	#2 SP	#2	.036-.100	.330	10,000		
2330 ^x	2330 ^x	8-18 x 3/4"	#2 SP	#2	.036-.100	.455	10,000	1,000	
2360 ^x	2360 ^{xA}	8-18 x 1"	#2 SP	#2	.036-.100	.705	8,000	500	
2220	2220	8-18 x 1/2"	1/4" HWH	#2	.036-.100	.205	10,000		
2310 ^x	2310 ^{xA}	8-18 x 3/4"	1/4" HWH	#2	.036-.100	.455	10,000	1,000	
2365	2365 ^A	8-18 x 1"	1/4" HWH	#2	.036-.100	.705	8,000		

^P Available in P/A PAK

^x Available in X PAK

TEKS® Fasteners

Finish: Electro-Zinc Plating.



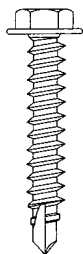
PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	"X" PAK QTY	APPLICATIONS
2480	2480	10-16 x 3/4"	#2 SP	#3	.036-.175	.325	6,000		<ul style="list-style-type: none"> - Clips, duct straps, brick ties or accessories to steel framing
2490 ^x	2490 ^x	10-16 x 1"	#2 SP	#3	.036-.175	.575	5,000	500	
2495 ^x	2495 ^x	10-16 x 1-1/4"	#2 SP	#3	.036-.175	.825	4,000	250	
2400	2400	10-16 x 1/2"	5/16" HWH	#3	.036-.175	.150	6,000		
2460 ^x	2460 ^x	10-16 x 3/4"	5/16" HWH	#3	.036-.175	.325	6,000	500	
2510	2510	10-16 x 1"	5/16" HWH	#3	.036-.175	.575	5,000		

^P Available in P/A PAK

^x Available in X PAK

TEKS® Fasteners

Finish: Climaseal Coating.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	APPLICATIONS
1100 +	1128000	10-16 x 3/4"	5/16" HWH	#3	.036-.175	.325	5,000	<ul style="list-style-type: none"> - Clips, duct straps, brick ties or accessories to steel framing
1131000 +	1131000	10-16 x 1-1/2"	5/16" HWH	#3	.036-.175	.1075	3,000	
2220CL	2220CL	8-18 X 1/2"	1/4" HWH	#2	.036-.100	.205	10,000	

+ (CL+) Coating

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lbs.)							
DIA.	PT	26	24	22	20	18	16	14	12
#8	2	119	193	265	298	491	703	959	-----
#10-16	1	148	241	311	357	565	826	1111	1796
	3	124	208	266	299	499	708	967	1474
1/4	1	208	329	428	562	800	1151	-----	-----

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)						
DIA.	PT	26	24	22	20	18	16	14
#8	2	294	496	560	740	1060	-----	-----
#10	1	398	584	659	884	1374	-----	-----
	3	-----	455	526	728	1266	1540	1552
1/4	1	511	849	885	1244	1764	-----	-----

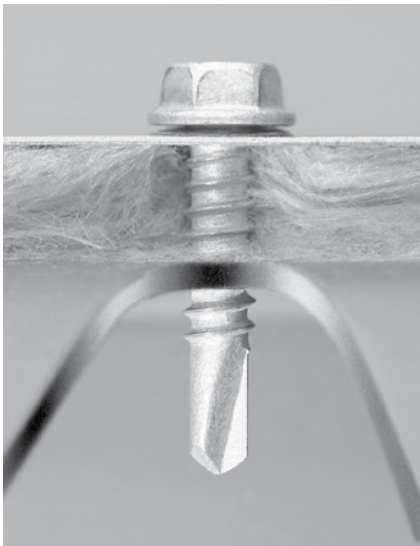
Fastener Values

FASTENER (Dia-TPI)	TENSILE (Lbs. Min)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
8-18	1545	1000	42
10-16	1936	1400	61
10-24	2702	1500	65
12-14	2778	2000	92

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

TEKS® Self-Drilling Fasteners

*The Best Point
Ever for Speed
and Consistency*



DESCRIPTION/ADVANTAGES

Medium Duty Steel-To-Steel Applications—



- Point has precise cutting edges to improve drill performance with less effort.
- Non-walking point provides fast material engagement.
- Point to thread design maximizes pullout performance and minimizes backout.
- Drills and taps in the broadest range of applications.
- Climaseal® finish provides excellent corrosion resistance and lower tapping torque.

SPECIFICATIONS

Diameter / Thread Form

10-16
12-14
1/4-14

Head Style



Hex Washer Head
(HWH)

Drill Point

Teks 2



Teks 3



Finish

Type

Electro-zinc (EZ)
Climaseal® Coating (CL)
Climaseal®+ Coating (CL+)

Kesternich Results (DIN 50018, 2.0L)

3 cycles - 5% or less red rust
30 cycles - 10% or less red rust

Salt Spray Results (ASTM B117)

48 hours - 5% or less red rust
1000 hours - 10% or less red rust

Meets or exceeds Kesternich and Salt Spray Results of Climaseal® Coating (CL)

INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install Teks. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have a RPM range of 0-2500.
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. New magnetic sockets must be correctly set before use. Remove chip build-up as needed.
4. The fastener is fully seated when the head is flush with the work surface.
5. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
6. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.

TEKS Medium Duty Steel-To-Steel Applications

APPLICATIONS



Roof deck to steel framing.
Wall panel to girt.
Duct work to steel framing.
Accessories to steel framing
Clip to steel framing.
Retrofit framing.

APPROVALS/LISTINGS

Factory Mutual (J.I. 2 X 9A2 AM)
ICC - ESR 1976

DRILL POINTS

Teks 2



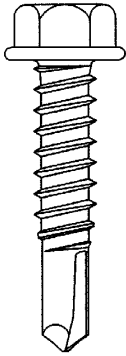
Teks 3



SELECTION CHART

TEKS® Fasteners

Finish: Climaseal Coating.

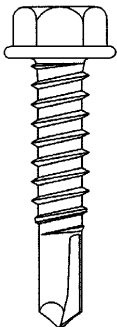


PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	APPLICATIONS
1420	1134000	12-14 x 3/4"	5/16" HWH	#3	.036-.210	.270	5,000	- Duct work to steel framing - Accessories to steel framing - Clip to steel framing
1136000	1136000 ^P	12-14 x 1"	5/16" HWH	#3	.036-.210	.520	4,000	
1590 +	1123000	12-14 x 1-1/2"	5/16" HWH	#2	.036-.210	.800	2,500	
1620 +	1140000	12-14 x 2"	5/16" HWH	#3	.036-.210	1.450	2,000	
1820 +	1147000	1/4-14 x 3/4"	3/8" HWH	#3	.036-.210	.270	3,000	- Duct work to steel framing - Accessories to steel framing - Clip to steel framing
1850 +	1149000	1/4-14 x 1"	3/8" HWH	#3	.036-.210	.520	2,500	
1150000 +	1150000	1/4-14 x 1-1/4"	3/8" HWH	#3	.036-.210	.550	2,000	
1890 +	1152000	1/4-14 x 1-1/2"	3/8" HWH	#3	.036-.210	.800	2,000	
1920	1155000 ^P	1/4-14 x 2"	3/8" HWH	#3	.036-.210	1.450	1,500	
1950 +	1157000	1/4-14 x 3"	3/8" HWH	#3	.036-.210	2.450	1,000	
1304000	1304000	1/4-14 x 4"	3/8" HWH	#3	.036-.210	3.450	500	

+ (CL+) Coating

TEKS® Fasteners

Finish: Electro-zinc Plating.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	"A" PAK QTY	APPLICATIONS
113601	113601	12-14 x 1"	5/16" HWH	#3	.036-.210	.520	4,000		- Duct work to steel framing - Accessories to steel framing - Clip to steel framing
112301	112301	12-14 x 1-1/2"	5/16" HWH	#3	.036-.210	.800	2,500		
114001	114001	12-14 x 2"	5/16" HWH	#3	.036-.210	1.450	2,000		
114701	114701	1/4-14 x 3/4"	3/8" HWH	#3	.036-.210	.210	3,000		
114901 ^A	114901 ^A	1/4-14 x 1"	3/8" HWH	#3	.036-.210	.400		100	
115001	115001	1/4-14 x 1-1/4"	3/8" HWH	#3	.036-.210	.650	2,000		
115201 ^A	115201 ^A	1/4-14 x 1-1/2"	3/8" HWH	#3	.036-.210	.900		100	
115701	115701	1/4-14 x 3"	3/8" HWH	#3	.036-.210	2.400	1,000		

^A Available in A PAK

TEKS Medium Duty Steel-To-Steel Applications

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lbs.)								
DIA.	PT	26	24	22	20	18	16	14	12	3/16
#12	2	156	243	283	375	605	848	1181	1856	3520
	3	142	211	289	341	551	757	1063	1631	2998
1/4	3	141	231	293	346	613	880	1145	1858	4550

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)							
DIA.	PT	26	24	22	20	18	16	14	12
#12	2	365	600	623	898	1370	1758	2138	2202
	3	-----	-----	-----	769	1358	1620	1970	1986
1/4	3	-----	-----	-----	930	1442	2100	2584	2650

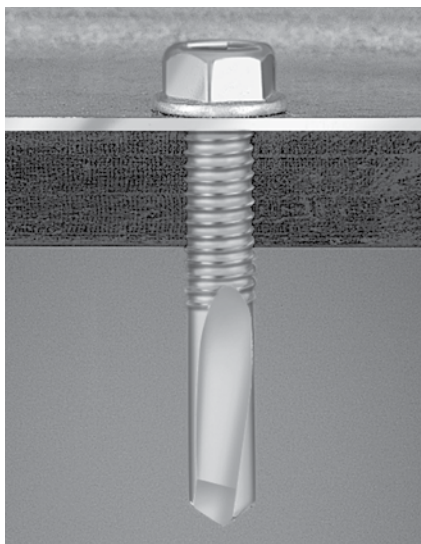
Fastener Values

FASTENER (Dia-TPI)	TENSILE (Lbs. Min)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
12-14	2778	2000	92
1/4-14	4060	2600	150

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

TEKS® Self-Drilling Fasteners

*First in
Performance!!
Over 30 Years of
Consistent Drilling*



DESCRIPTION/ADVANTAGES

Heavy Duty Steel-To-Steel Applications— THE ORIGINAL SELF-DRILLERS FOR HEAVY DUTY APPLICATIONS



- Unique double fluted point has precise cutting edges to improve drill performance in 1/4" thru 1/2" steel.
- Engineered for fast drilling and smooth tapping with less effort.
- Climaseal® finish provides excellent corrosion resistance and lower tapping torque.
- Attachments up to 7.2" of material including 1/2" steel.
- 1/4" Diameter has notched threads to reduce tapping torque.

SPECIFICATIONS

Diameter / Thread Form

12-24
1/4-28

Head Styles



Hex Washer Head
(HWH)

Drill Point

Teks 4



Teks 5



Finish Type

Climaseal® Coating (CL)

**Kesternich Results
(DIN 50018, 2.0L)**

30 cycles - 10% or less red rust

**Salt Spray Results
(ASTM B117)**

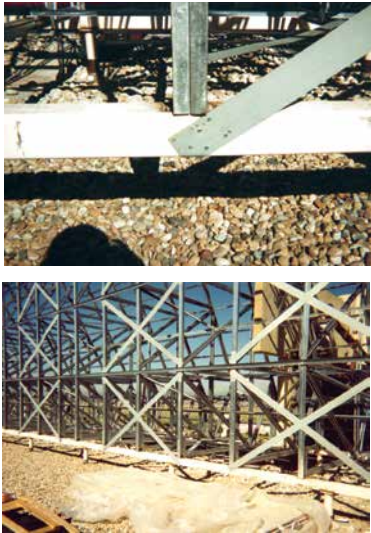
1000 hours - 10% or less red rust

INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install Teks. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have a RPM range of 0-2500. (Maximum 1800 RPM is recommended for Teks 5 fasteners)
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. New magnetic sockets must be correctly set before use. Remove chip build-up as needed.
4. The fastener is fully seated when the head is flush with the work surface.
5. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
6. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.

TEKS Heavy Duty Steel-To-Steel Applications

APPLICATIONS



Metal deck to structural steel or bar joist.

Clips to structural steel or bar joist.

Liner panels to structural steel or bar joist.

Accessories to structural steel or bar joist.

Longer length fasteners can be used in retrofit clip and sheet applications.

APPROVALS/LISTINGS

Factory Mutual (J.I. 2 X 9A2 AM)

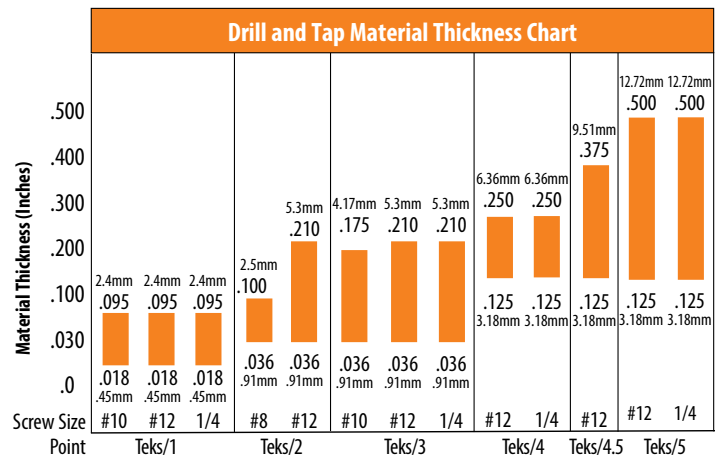
ICC - ESR 1976

DRILL POINTS

Teks 4



Teks 5

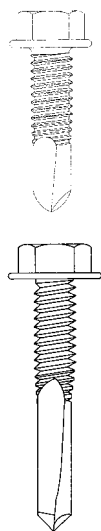


*Drill & tap capacities may vary with special feature designs. Refer to product reports for specifics.

SELECTION CHART

TEKS® Fasteners

Finish: Climaseal Coating.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	"P/X" PAK QTY	APPLICATIONS
1070057	1070057	12-24 x 1-1/2"	5/16" HWH	#5	.125-.500	.625	2,000		- Metal deck, clips, linear panels or accessories to structural steel or bar joist
1650 ^P	1088000 ^P	12-24 x 7/8"	5/16" HWH	#4	.125-.250	.325	5,000	100	
1670 ^P	1006000 ^P	12-24 x 1-1/4"	5/16" HWH	#5	.125-.500	.375	4,000	100	
1680 ^X	1070000 ^X	12-24 x 1-1/2"	5/16" HWH	#5	.125-.500	.625	2,500	100	
1690 ^P	1072000 ^P	12-24 x 2"	5/16" HWH	#5	.125-.500	1.125	2,000	100	
1006057	1006057	12-24 x 1-1/4"	5/16" HWH	#5	.125-.500	.375	2,000		
1074000	1074000	1/4-28 x 3"	5/16" HWH	#5	.125-.500	2.150	1,000		- Retrofit clip and sheet applications
1075000	1075000	1/4-28 x 4"	5/16" HWH	#5	.125-.500	3.150	500		
1641000	1641000	1/4-28 x 5"	3/8" HWH	#5	.125-.500	4.150	250		
1431000	1431000	1/4-28 x 6"	3/8" HWH	#5	.125-.500	5.150	250		
1590000	1590000	1/4-28 x 8"	3/8" HWH	#5	.125-.500	7.150	150		

^P Available in P PAK

^X Available in X PAK

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lbs.)				
DIA.	PT	16	14	12	3/16	1/4
#12	4	-----	-----	1532	3485	4013
	4.5	-----	-----	1508	3865	4101
	5	-----	-----	1527	3701	3999
1/4	5	-----	-----	1507	3300	5059

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)				
DIA.	PT	16	14	12	1/8	1/4
#12	4	-----	-----	2048	2030	-----
	4.5	-----	-----	2641	2887	2897
	5	-----	-----	2650	2700	2762
1/4	5	1597	2005	2350	2792	3310

Fastener Values

FASTENER (Dia-TPI)	PT	TENSILE (Lbs. Min.)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
12-24	4	3020	2100	100
12-24	4.5	3165	2200	150
12-24	5	3020	2100	150
1/4-28	5	5577	3310	234

NOTE: Tek fasteners are not categorized as structural bolts. Proper design criteria and strengths must be used for satisfactory application. The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

TEKS® Self-Drilling Fasteners

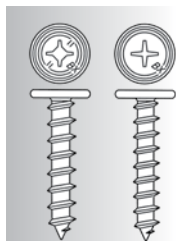
Low Profile Architectural Metal Roof Clip Fasteners



DESCRIPTION/ADVANTAGES

Low Profile Architectural Metal Roof Clip Fastener—

INCORPORATES THE ITW EXCLUSIVE PHILLIPS SQUARE-DRIV® ANTI-CAM-OUT SYSTEM



- #12 diameter utilizes the ITW exclusive Phillips Square-Drive® with patented interlocking components system.
 - Excellent installation stability.
 - Extended bit driver life.
 - Keeps the driver securely mated to the fastener during installation.
 - Hands-free installation.

- Fasteners are finished with a corrosion resistant coating. Teks 3 fasteners are available with Gray Spex™ coating.
- Sharp convex drill point has precise cutting edges to improve drill performance with less effort.
- Low profile pancake head style ensures proper installation of metal roof panels.

SPECIFICATIONS

Diameter / Thread Form

12-14

Head Styles



Phillips Square-Drive
Pancake (PSP)

Drill Point

Teks 3



Finish

Type

Grey Spex

Kesternich Results (DIN 50018, 2.0L)

15 cycles - 5% or less red rust

Salt Spray Results (ASTM B117)

300 hours - 10% or less red rust

APPLICATIONS



Low profile architectural metal roof clips to steel purlin.

Low profile architectural metal roof clips to wood supports.

INSTALLATION INSTRUCTIONS

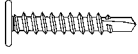
1. A standard screwgun with a depth sensitive nosepiece should be used to install Teks. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have a RPM range of 0-2500.
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. The fastener is fully seated when the head is flush with the work surface.
4. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
5. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.
6. New magnetic sockets must be correctly set before use. Remove chip build-up as needed.

TEKS Low Profile Architectural Metal Roof Clip Fastener

SELECTION CHART

TEKS® Fasteners

Finish: Gray Spex Coating.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	APPLICATIONS
1575553	1575553	12-14 x 1"	#2 PSD	#3	.036-210	.550	4,000	- Low profile architectural metal roof clip to steel purlin

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lbs.)							
DIA.	PT	26	24	22	20	18	16	14	12
#12	3	139	194	250	369	450	598	915	1500

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)			
DIA.	PT	20 GAUGE	18 GAUGE	16 GAUGE	14 GAUGE
#12	3	923	1279	1657	1933

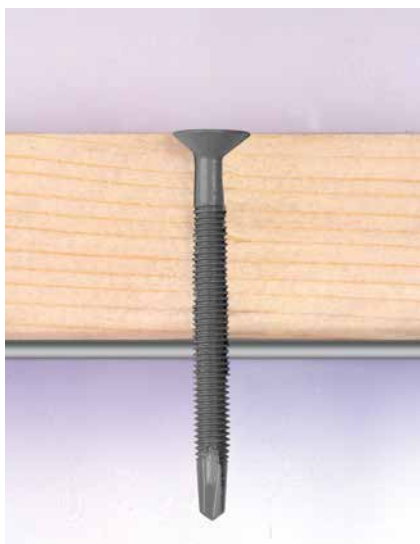
Fastener Values

FASTENER (Dia-TPI)	PT	TENSILE (Lbs. Min.)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
12-14	3	2652	2000	92

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

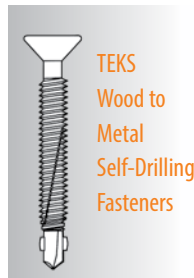
TEKS® Wood to Metal Fasteners

**No Pre-Drilling,
Fast, Efficient
Attachment of
Wood-To-Metal**



DESCRIPTION/ADVANTAGES

Wood-To-Metal Applications—



- Point has precise cutting edges to improve drill performance with less effort.
- Special winged fasteners ream a hole in wood preventing thread engagement during drilling.
- Wafer head design has a large bearing surface ideal for plywood.
- Flat head design countersinks and seats flush in wood.
- Gray Spex™ finish provides excellent corrosion resistance and lower tapping torque.
- Compatible with ACQ treated wood.

SPECIFICATIONS

Diameter / Thread Form

10-24
12-14
1/4-20

Head Styles



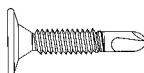
Socket Wafer
Head (SW)



Philips Flat Head
(PFH)

Drill Point

Teks 3



Teks 4



Finish

Type

Electro-zinc (EZ)
Grey Spex

Kesternich Results (DIN 50018, 2.0L)

3 cycles - 5% or less red rust
15 cycles - 5% or less red rust

Salt Spray Results (ASTM B117)

48 hours - 5% or less red rust
300 hours - 10% or less red rust

INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install Teks. For optimal fastener performance, the screwgun should be a minimum of 6 amps and have an RPM range of 0-2500.
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. Worn or damaged bit tip should be replaced.
4. The fastener is fully seated when the head is flush with the work surface.
5. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
6. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.
7. All #10 diameter "Winged" parts must be driven into a minimum of 16 GA steel thickness.
8. All 1/4 and #12 diameter "Winged" parts must be driven into a minimum of 1/8" steel in order to break the wings consistently.

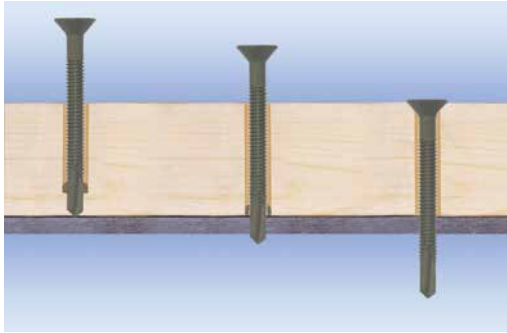
APPLICATIONS



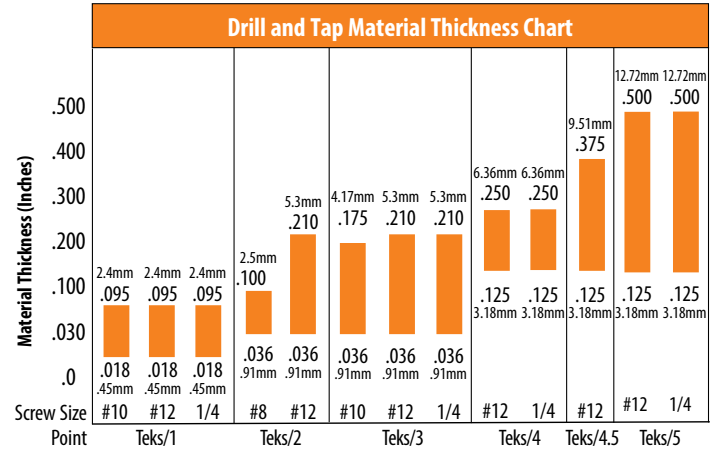
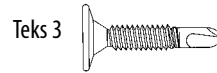
Plywood roof and floor sheet to steel frames.

2 x 4 headers to steel frames.

Plywood fascia to steel frames.



DRILL POINTS



*Drill & tap capacities may vary with special feature designs. Refer to product reports for specifics.

SELECTION CHART

TEKS® Fasteners

Finish: Electro-zinc Plating. With Wings.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	WOOD ATTACHMENT RANGE	BOX QTY	"P" PAK QTY	"X" PAK QTY	APPLICATIONS
21730 ^P	21730 ^P	12-24 x 2"	#3 SW	#4	.125-.250	1/4" - 1"	2,000	100		- Plywood, 2 x 4's to steel framing
21750	21750 ^P	12-24 x 2-1/2"	#3 SW	#4	.125-.250	1/4"-1-1/2"	1,500		100	
21751 ^P	21751 ^P	12-24 x 3"	#3 SW	#4	.125-.250	1/4"-2"	1,000		100	

^P Available in P PAK

^X Available in X PAK

TEKS® Fasteners

Finish: Gray Spex Coating. With Wings.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	DRILL POINT	DRILL & TAP CAPACITY	WOOD ATTACHMENT RANGE	BOX QTY	APPLICATIONS
1980	1096000	1/4-20 x 3"	#3 PFH	#4	.125-.250	3/4"-2"	1,000	- Plywood, 2 x 4's to steel framing
1092057	1092057	12-24 x 2-1/4"	#3 PFH	#4	.125-.250	3/4"- 1-3/8"	2,000	
1094056	1094056	12-24 x 2-3/4"	#3 PFH	#4	.125-.250	3/4"-2-5/8"	1,600	

TEKS Wood-To-Metal Applications

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE Lbs.)									
DIA.	PT	26	24	22	20	18	16	14	12	3/16	1/4
#10-16	3	-----	208	266	299	499	708	967	1474	-----	-----
#10-24	3	-----	-----	-----	334	495	702	900	1570	3865	4101
#12	4	-----	-----	-----	-----	-----	-----	-----	1508	4297	-----
1/4	4	-----	-----	-----	-----	-----	-----	-----	1803	-----	-----

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)					
DIA.	PT	20	18	16	14	12	1/8
#10	3	728	1266	1540	1522	-----	-----
#12	4	-----	-----	-----	-----	2048	2030
1/4	4	-----	-----	-----	-----	2650	2820

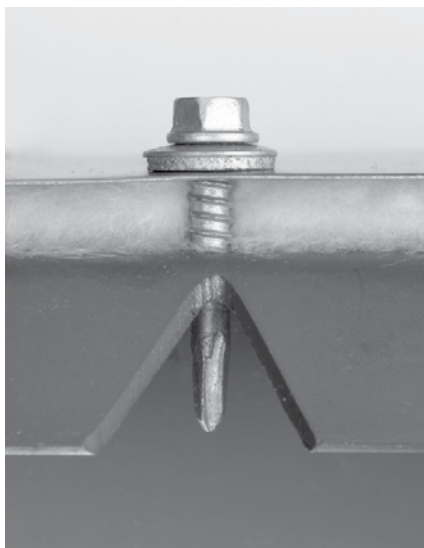
Fastener Values

FASTENER (Dia-TPI)	TENSILE (Lbs. Min)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
10-16	1936	1400	61
10-24	2702	1500	65
12-24	3165	2200	150
1/4-20	3860	2700	168

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

TEKS[®] with Bonded Washer

**For Weather-Tight
Sealing of Roof and
Wall Applications**



DESCRIPTION/ADVANTAGES

Metal Roof and Wall Applications—



- Vulcanized bonding of washer eliminates separation of EPDM from the metal backing.
- Dual sealing bonded washer prevents leaks.
- Climaseal[®] finish provides excellent corrosion resistance and lower tapping torque.
- Point has precise cutting edges to improve drill performance with less effort.
- Point to thread design maximizes pullout performance and minimizes backout.

SPECIFICATIONS

Diameter / Thread Form

10-16
12-14
12-24
1/4-14
1/4-28

Head Styles



Hex Washer Head with
Bonded Washer(HWH)

Washer Style Galvanized (G-90)

Drill Point

Teks 1



Teks 2



Teks 3



Teks 5



Finish

Type

Climaseal[®] Coating (CL)
Climaseal[®]+ Coating (CL+)

Kesternich Results (DIN 50018, 2.0L)

30 cycles - 10% or less red rust
Meets or exceeds Kesternich and Salt Spray Results of Climaseal[®] Coating (CL)

Salt Spray Results (ASTM B117)

1000 hours - 10% or less red rust

INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install Tek. For optimal fastener performance, the screw gun should be a minimum of 6 amps and have an RPM range of 0-2500.
2. New magnetic sockets must be correctly set before use Remove chip build-up as needed.
3. Adjust the screwgun nosepiece to properly seat the fastener.
4. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
5. The fastener must penetrate beyond the metal structure a minimum of 3 pitches of thread.

TEKS Metal Roof and Wall Applications

APPLICATIONS



Roof panels to purlin or bar joist.

Wall panels to girt.

Mansard panel to structural.

PROPERLY SEATED WASHERS



Underdriven

Correctly Driven

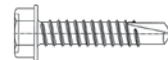
Overdriven

DRILL POINTS

Teks 1



Teks 3



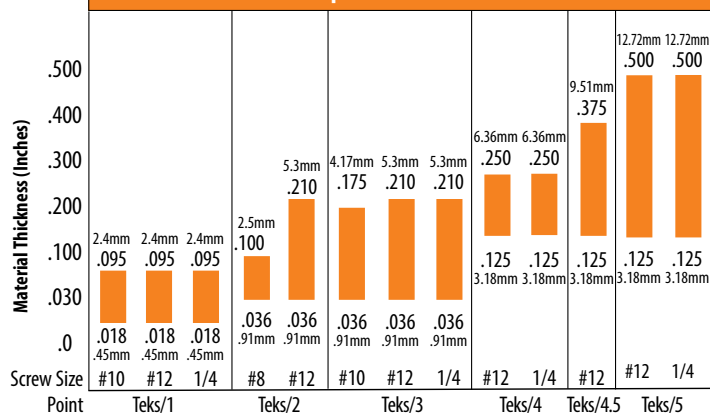
Teks 2



Teks 5



Drill and Tap Material Thickness Chart

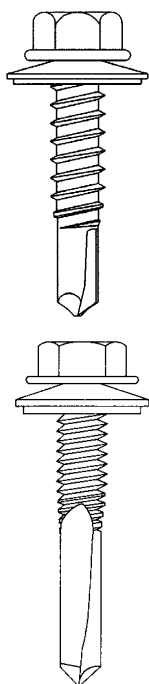


*Drill & tap capacities may vary with special feature designs. Refer to product reports for specifics.

SELECTION CHART

TEKS® w/Bonded Washer

Finish: Climaseal Coating.



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HEAD STYLE	WASHER DIAMETER	DRILL POINT	DRILL & TAP CAPACITY	MAX. MATERIAL ATTACHMENTS	BOX QTY	APPLICATIONS
1005000 +	1005000	10-16 x 3/4"	5/16" HWH	9/16"	#3	.036-.175	.205	3,000	<ul style="list-style-type: none"> - Brick tie to steel framing - Mansard panel to steel framing - Roof panel to purlin - Stitch roof
1420W +	1009000	12-14 x 3/4"	5/16" HWH	9/16"	#3	.036-.210	.150	3,000	
1490W +	1011000	12-14 x 1"	5/16" HWH	9/16"	#3	.036-.210	.400	3,000	
1590W +	1404000	12-14 x 1-1/2"	5/16" HWH	9/16"	#2	.036-.210	.680	2,000	
1620W +	1016000	12-14 x 2"	5/16" HWH	9/16"	#3	.036-.210	1.330	1,500	
1790W +	1416000	1/4-14 x 7/8"	5/16" HWH	9/16"	#1	.018-.095	.260	3,000	
1850W +	1160000	1/4-14 x 1"	3/8" HWH	9/16"	#3	.036-.210	.280	2,500	
1890W		1/4-14 x 1-1/2"	3/8" HWH	9/16"	#3	.036-.210	.800	1,500	
1920W	1021000	1/4-14 x 2"	3/8" HWH	9/16"	#3	.036-.210	1.280	1,000	
1670W	1000000	12-24 x 1-1/4"	5/16" HWH	9/16"	#5	.125-.500	.255	2,500	
1680W	1001000	12-24 x 1-1/2"	5/16" HWH	9/16"	#5	.125-.500	.505	2,000	
1690W	1002000	12-24 x 2"	5/16" HWH	9/16"	#5	.125-.500	1.005	1,500	
1003000	1003000	1/4-28 x 3"	5/16" HWH	9/16"	#5	.125-.500	2.030	1,000	
1647000	1647000	1/4-28 x 5"	3/8" HWH	3/4"	#5	.125-.500	4.030	250	

+ (CL+) Coating

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lbs.)									
DIA.	PT	26	24	22	20	18	16	14	12	3/16	1/4
#10	3	124	208	266	299	499	708	967	1474	-----	-----
#12	2	156	243	283	375	605	848	1181	1856	3520	-----
	3	142	211	289	341	551	757	1063	1631	2998	-----
#12	4	-----	-----	-----	-----	-----	-----	-----	1532	3485	3844
	4.5	-----	-----	-----	-----	-----	-----	-----	1508	3865	4104
	5	-----	-----	-----	-----	-----	-----	-----	1527	3701	3999
1/4	1	208	329	428	562	800	1151	-----	-----	-----	-----
	3	141	231	293	346	613	880	1145	1877	4550	-----
	5	-----	-----	-----	-----	-----	607	918	1507	3300	5059

Shear Values (Average Lbs. Ultimate)

FASTENER		STEEL GAUGE (Lapped)									
DIA.	PT	26	24	22	20	18	16	14	12	1/8	1/4
#10	3	-----	445	526	728	1266	1540	1552	-----	-----	-----
#12	2	365	600	623	898	1370	1758	2138	-----	-----	-----
	3	-----	-----	-----	769	1358	1620	1970	1986	-----	-----
#12	4	-----	-----	-----	-----	-----	-----	-----	2048	2030	-----
	4.5	-----	-----	-----	-----	-----	-----	-----	2641	2887	-----
	5	-----	-----	-----	-----	-----	-----	-----	2650	2700	-----
1/4	1	511	849	885	1244	1764	-----	-----	-----	-----	-----
	3	-----	-----	-----	930	1442	2100	2584	2650	-----	-----
	5	-----	-----	-----	-----	-----	1597	2005	2350	2792	3310

Fastener Values

FASTENER (Dia-TPI)	TENSILE (Lbs. Min.)	SHEAR (Avg. Lbs. Ultimate)	TORQUE (Min. in Lbs.)
10-16	1936	1400	61
12-14	2778	2000	92
12-24	3020	2100	100
1/4-14	4060	2600	150
1/4-28	5577	3310	234

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

TAPCON®

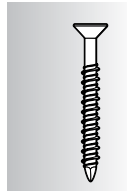
Concrete and Masonry Anchors

Tapcon®



DESCRIPTION/ADVANTAGES

Light-To-Medium Duty Masonry Applications—



The "original masonry" anchor that cuts its own threads into concrete, brick, or block. Maximum performance is achieved because the Tapcon Anchor, the Condrive Installation Tool, and the carbide-tipped Tapcon Drill Bits are designed to work as a system. It is essential to use the Condrive tool and the correct drill bit to assure consistent anchor performance.

ADVANTAGES

- Fast installation ... drill a hole ... drive an anchor.
- Replaces small diameter expansion anchors, plugs and screws in light to medium duty applications.
- Packaged with one Tapcon "close tolerance" masonry drill bit per 100 anchors. Also available in bulk packaging.
- No need to pre-spot holes ... and no inserts are required.
- Available in 3/16" diameter up to 4" in length and 1/4" diameter up to 6" in length.
- Reversible and removable ... can be installed close to an edge.
- Compatible for use in ACQ treated wood.

Tapcon Anchors



Hex Head style on Tapcon Anchors is available for majority of fixture anchoring needs

Climaseal® Coating is standard on all Tapcon anchors to provide extended corrosion resistance

Phillips Flat Head style is available when flush seating is necessary in countersink applications

Advanced Threadform cuts into masonry materials for greater pullout values

Lengths of Tapcon Anchors range from 1-1/4" to 4" in 3/16" and up to 6" in 1/4" diameters.

Nail-Type Point guides the anchor into the pre-drilled hole. Excellent for wood to concrete applications

SPECIFICATIONS

Diameter 3/16" and 1/4"

Thread Form Advanced Threadform Technology®

Head Style Flat and Hex Head

Point Type Nail

Finish Blue Climaseal®

APPLICATIONS



Electrical junction boxes and conduit clips to masonry.

Wood headers and furring strips to masonry

HVAC strapping to masonry.

Plywood backer boards to masonry.

Exterior insulation systems to masonry.



INSTALLATION TOOL GUIDELINES

Tapcon Condrive Pro Installation Kit – A one-tool system engineered to work with all impact drivers, rotary hammers and hammer drills, the Tapcon Pro Installation Kit can drill and drive. The Condrive is designed to speed up anchor installation and enhance jobsite productivity. It features recessed hex drivers designed to significantly reduce over-torquing, head snapping and strip outs, allowing PROs to anchor with confidence and efficiency the first time, every time.

PREPARATION

1. Place correct Tapcon® drill bit in drill adapter and tighten set screw with hex key (included). For rotary hammer begin at Step 3.
2. Secure drill adapter into 3/8" – 1/2" chuck of hammer drill or into 1/4" impact hammer
3. Attach appropriate hex driver or Phillips bit to end of sleeve.

DRILL

4. Drill hole 1/4" deeper than depth of anchor embedment. (Min. embedment 1"). Remove dust from hole.

SLIDE

5. Slide sleeve over drill bit and snap into drill adapter

DRIVE

6. Insert anchor into the end of the sleeve, position fixture to be fastened and drive the Tapcon®

Buildex Condrive Tools are designed to specifically install Tapcon Anchors and to fit standard hammer drills.

APPROVALS/LISTINGS

ICC-ESR 1671 Masonry

ICC-ESR 2202 Concrete

INSTALLATION STEPS

Read instructions before using (installation)!



WARNING:

If there are any questions concerning proper installation, applications or appropriate use of this product, please call our Technical Services Department at 1-800-899-7890. Failure to follow these instructions can result in serious personal injury.

1. Select proper fastener – diameter / head style / length
 - a) Use selection chart to choose proper length.
2. Drill Hole – use selection chart to determine drill bit length and depth of hole
 - a) Choose appropriate drill bit based upon diameter of Tapcon Anchor.
 - b) Drill hole minimum 1/4" deeper than Tapcon Anchor to be embedded.

Minimum anchor embedment: 1"

Maximum anchor embedment: 1-3/4"
3. Drive Anchor



WARNING:

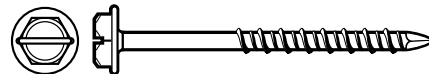
Failure to wear safety glasses with side shields can result in serious personal injury. Always wear ANSI compliant eye protection (ANSI Z87.1-2003).



WARNING:

Using the wrong size drill bit will affect performance values and may cause failure.

HEAD STYLES



3/16" diameter has a 1/4" slotted hex washer head (HWH)

1/4" diameter has a 5/16" slotted hex washer head (HWH)



3/16" diameter uses a #2 Phillips flat head (PFH)

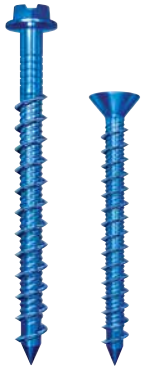
1/4" diameter uses a #3 Phillips flat head (PFH)

Tapcon Concrete and Masonry Anchors

SELECTION CHART

Tapcon Anchors

3/16" Diameter



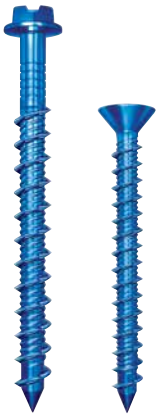
PART NUMBER 1/4" HWH	PART NUMBER #2 PFH	DESCRIPTION	FIXTURE THICKNESS	STRAIGHT SHANK DRILL BIT PART NUMBER	DRILL BIT DESCRIPTION	BOX QTY	CASE QTY	BULK QTY
3010 ^{BK}	3110 ^{BK}	3/16" x 1-1/4"	0 - 1/4"	7200	5/32" x 3-1/2"	100	1000	3,000
3020 ^{BK}	3120 ^{BK}	3/16" x 1-3/4"	0 - 3/4"	7200	5/32" x 3-1/2"	100	1000	3,000
3030 ^{BK}	3130 ^{BK}	3/16" x 2-1/4"	1/2" - 1-1/4"	7210	5/32" x 4-1/2"	100	1000	2,000
3040 ^{BK}	3140 ^{BK}	3/16" x 2-3/4"	1" - 1-3/4"	7210	5/32" x 4-1/2"	100	1000	1,500
3060 ^{BK}	3160 ^{BK}	3/16" x 3-1/4"	1-1/2" - 2-1/4"	7220	5/32" x 5-1/2"	100	1000	1,000

Tapcon Anchors must be installed using all Buildex system components (Tapcon Anchors, Condrive Tools and Tapcon Drill Bits) in order to qualify for ITW Buildex system support.

^{BK} Available in Bulk Pack Qty

Tapcon Anchors

1/4" Diameter



PART NUMBER 5/16" HWH	PART NUMBER #3 PFH	DESCRIPTION	FIXTURE THICKNESS	STRAIGHT SHANK DRILL BIT PART NUMBER	DRILL BIT DESCRIPTION	BOX QTY	CASE QTY	BULK QTY
3210 ^{BK}	3310 ^{BK}	1/4" x 1-1/4"	0 - 1/4"	7230	3/16" x 3-1/2"	100	1000	3,000
3220 ^{BK}	3320 ^{BK}	1/4" x 1-3/4"	0 - 3/4"	7230	3/16" x 3-1/2"	100	1000	2,000
3230 ^{BK}	3330 ^{BK}	1/4" x 2-1/4"	1/2" - 1-1/4"	7240	3/16" x 4-1/2"	100	1000	1,000
3240 ^{BK}	3340 ^{BK}	1/4" x 2-3/4"	1" - 1-3/4"	7240	3/16" x 4-1/2"	100	1000	1,000
3250 ^{BK}	3350 ^{BK}	1/4" x 3-1/4"	1-1/2" - 2-1/4"	7250	3/16" x 5-1/2"	100	1000	750
3270 ^{BK}		1/4" x 4"	2-1/4" - 3"	7250	3/16" x 5-1/2"	100	500	750
3280 ^{BK}	3380	1/4" x 5"	3-1/4" - 4"	7260	3/16" x 6-1/2"	100	500	500
3290 ^{BK}	3390	1/4" x 6"	4-1/4" - 5"	7270	3/16" x 7-1/2"	100	100	250

Tapcon Anchors must be installed using all Buildex system components (Tapcon Anchors, Condrive Tools and Tapcon Drill Bits) in order to qualify for ITW Buildex system support.

^{BK} Available in Bulk Pack Qty

Accessories

PART NUMBER	DESCRIPTION	BOX QTY
7001	Condrive Pro Installation Kit	4
BX51902	5/32 x 4-1/2 Tapcon Drill Bit	10
BX51906	3/16 x 4-1/2 Tapcon Drill Bit	10
BX51910	5/32 x 3-1/2 Tapcon Drill Bit	10
BX51912	3/16 x 3-1/2 Tapcon Drill Bit	10
BX51914	3/16 x 5-1/2 Tapcon Drill Bit	10
BX51916	5/32 x 5-1/2 Tapcon Drill Bit	10
11491C	3/16 x 7 SDS Plus Tapcon Drill Bit	10
11492C	5/32 x 7 SDS Plus Tapcon Drill Bit	10

Tapcon SDS Plus Drill Bits are specially designed to be compatible with Condrive Pro Installation Kit. Use the Tapcon bits and Condrive Pro together to install Tapcon anchors for optimal performance.

CONDRIVE PRO ADVANTAGES



- Works with all Impact Drivers, Rotary Hammers, Hammer Drills, Tapcon SDS and Carbide Straight Shank Bits.
- Fast and Easy: only one tool needed to drill and drive
- Recessed Hex Driver reduces overtightening, head snapping, and spinouts
- Fits fully assembled in carrying pouch for easy storage

PERFORMANCE TABLES

Tension Values

(In Normal-Weight Concrete Lbs.)

ANCHOR DIAMETER	EMBEDMENT DEPTH	CONCRETE STRENGTH		
		2000 PSI	4000 PSI	5000 PSI
3/16	1"	600	650	800
	1-1/2"	1090	1090	1220
	1-3/4"	1450	1460	1730
1/4	1"	750	800	950
	1-1/2"	1380	1820	2170
	1-3/4"	2020	2380	2770

Tension and Shear Values

(In CMU 1" Embedment)

ANCHOR DIAMETER	TENSION (Lbs.)		SHEAR (Lbs.)	
	LIGHT WEIGHT	MEDIUM WEIGHT	LIGHT WEIGHT	MEDIUM WEIGHT
3/16	220	340	400	730
1/4	250	500	620	1000

For minimum edge distance and spacing distance, please refer to the ICC-ES report or Miami-Dade report for this product. Lightweight and medium-weight Concrete Masonry Units (CMU) were defined by ASTM C 90.

Shear Values

(In Normal-Weight Concrete Lbs.)

ANCHOR DIAMETER	EMBEDMENT DEPTH	CONCRETE STRENGTH		
		2000 PSI	4000 PSI	5000 PSI
3/16	1"	720	720	860
	1-1/2"	860	860	860
	1-3/4"	870	990	990
1/4	1"	900	1360	1440
	1-1/2"	1200	1380	1670
	1-3/4"	1670	1670	1670

NOTE: Indicated tension and shear failure values were obtained in tests conducted at CEL Consulting. Designated holding power depends on the quality of the masonry material, depth of embedment and proper hole size. These figures are offered only as a guide and are not guaranteed in any way by Illinois Tool Works Inc. The figures indicate **average ultimate tension and shear failure values**. A safety factor of 4:1 or 25% of ultimate value is generally accepted as a safe working load. However, reference should always be made to applicable codes for the specific safe working ratio. All values are based on close tolerance holes drilled with Buildex Tapcon® carbide drill bits. Performance of the Tapcon anchor may vary in extremely hard concrete aggregates. Consult your Buildex representative for further information.

As in the case with all applications, Buildex can only suggest typical fasteners for typical applications and that the connection design is the sole responsibility of the Building Design Engineer, Architect or otherwise responsible person charged with the design of the connection. For further product information, please contact the nearest Authorized Buildex Distributor or the Buildex Technical Service Department at 1-800-323-0720.

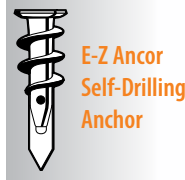
E-Z Drywall Anchors

*The Original!
Fast and Easy
Self-Drilling
Anchors*



DESCRIPTION/SUGGESTED SPECIFICATIONS

Drywall Anchor Applications—



The E-Z Ancor is a one-piece self-drilling anchor designed for optimal holding performance in gypsum wallboard. Available in zinc or high strength engineered plastic (non-conductive). Ideal anchor for 3/8", 1/2" and 5/8" gypsum wallboard.

ADVANTAGES

- No hole preparation necessary; pre-drills own small precise hole in gypsum wallboard.
- Replaces plastic plugs and toggles.
- Deep thread design provides strong engagement in 3/8" 1/2" and 5/8" gypsum wallboard.
- Installs quickly and easily with a phillips screw-driver or square drive bit.
- Full range of anchors to cover all wall fastening applications.
- Available in corrosion resistant, non-conductive white nylon.
- Can be easily backed-out.
- Low profile head.
- Single point designs for clean cutting installation.

E-Z Ancors



E-Z Mini Mini Twist-N-Lock Stud Solver E-Z Ancor E-Z Twist-N-Lock E-Z Toggle

APPLICATIONS

Electrical Fixtures	Plaques and Awards	Smoke Detectors
Thermostats	Closet Organizers	Clocks
HVAC Fixtures	Coat Racks	Kitchen Accessories
Plumbing Fixtures	Curtain Rods	Doorbells
Bathroom Accessories	Signs	Telecommunications Equipment
Shelving and Supports	Bulletin Boards	Chalk Boards
Mirrors	Control Systems	Remote Control Boxes
Picture Frames	Decorative Wall Hangings	
Brackets	Office Material Holders	

SPECIFICATIONS

Material	Zinc and Nylon
Drilling Capacity	3/8", 1/2" and 5/8" gypsum wallboard

PERFORMANCE TABLE

E-Z Ancors

DRYWALL THICKNESS	HOLDING WEIGHT (lbs.) Gypsum Board Thickness		
	3/8"	1/2"	5/8"
EZ Mini and Mini Twist-N-Lock	30	40	50
E-Z Anchor and EZ Stud Solver	40	50	75
Twist-N-Lock	65	75	80
E-Z Toggle	70	85	150

These performance values are averages obtained under laboratory conditions. Note that these values will change depending on age, moisture content and surface treatment of the drywall (gypsum) material. Appropriate safety factors should be applied to these values for design purposes.

SELECTION CHART

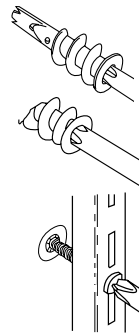
E-Z Ancors

PART NUMBER WITH SCREWS	PART NUMBER WITHOUT SCREWS	DESCRIPTION	MATERIAL	MAXIMUM FIXTURE THICKNESS	ACCOMMODATES SHEETS METAL SCREW SIZE	BOX QTY	CASE QTY	BULK QTY
6411L	6400L ⁵	Mini Twist-N-Lock	Nylon	3/4"	#6	100	1000	10,000
6411M	6400M	E-Z Mini	Zinc	3/4"	#6, #7, #8	100	1000	
6411	6400	E-Z Ancor	Zinc	3/4"	#6, #7, #8	100	1000	
6511	6500	EZ Stud Solver	Zinc	3/4"	#8	100	1000	
6411P	6400P ⁵	E-Z Twist N Lock	Nylon	3/4"	#8	100	1000	4,500
6401 ⁵	-	E-Z Toggle	Zinc	1/2"	#8	100	1000	

⁵ Available in Bulk Pack Qty

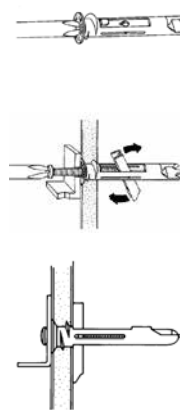
INSTALLATION INSTRUCTIONS

LIGHT DUTY & MEDIUM DUTY E-Z ANCORS



1. Place #2 Phillips screwdriver into recess of E-Z Zinc, E-Z Lite, E-Z Mini, E-Z Stud Solver, Twist-N-Lock, or E-Z Plastic Plus.
2. Press into drywall while turning the anchor clockwise until it is seated flush with wall.
3. Place fixture in position over installed E-Z Zinc, E-Z Lite, E-Z Mini, E-Z Stud Solver, Twist-N-Lock, or Plastic Plus. Insert screw with screw driver. Tighten fixture in place.

HEAVY DUTY E-Z TOGGLE



1. Using a #2 Phillips screwdriver, drill the E-Z Toggle Anchor into drywall until the head of the anchor is seated flush.
2. To "set" the clamp behind the drywall, place the mounting screw into the anchor and push or tap firmly until approximately 1" of screw is protruding (do not rotate). Then remove the screw.
3. Place fixture over E-Z Toggle, insert screw and continue to turn until fastened tightly (for example when attaching a 1/2" thick fixture, it will require approx. 23 full rotations of the screwdriver to fully tighten the fixture).



Cement Board and Fiber Cement Backerboard Fasteners



DESCRIPTION

Patented Cement Boards Screws with Serrated Head for Flush Seating

Backer-On® cement screws are designed for attaching Hardie-Backer® cement board and Rock-On® cement board screws are designed for attaching Durock® cement board to wood or light gauge steel studs. Patented design and ANSI compliant making these perfect for use in high moisture areas such as bathrooms and kitchen.

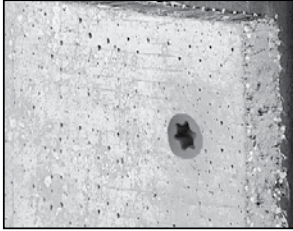
ADVANTAGES

- Serrated head designed to drive flush even at an angle
- Star drive with T-25 bit and Stikfit™ for easy one-handed installation and eliminates cam-outs
- Hi-Lo threads for Rock-On and Single Threads for Backer-On are designed for quick and smooth drives into cement boards
- Sharp points offer immediate pick-up and eliminates pre-drilling
- Patented design allows attaching close to edge on cement board, drastically reducing fractures or blow outs
- Corrosion resistance with Climacoat finish will prevent rust from bleeding into tile
- Comply with ANSI A108.11 standards as specified by cement board manufacturers – alternative options such as roofing nails and generic drywall screws are typically not specified by manufacturers nor are they ANSI compliant

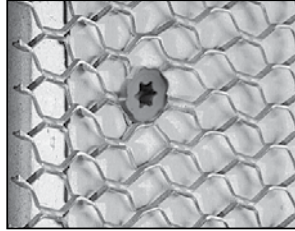
INSTALLATION INSTRUCTIONS

1. A standard screwgun with a depth sensitive nosepiece should be used to install cement board fasteners. For optimal fastener performance, use a screwgun with adjustable depth of drive and variable RPM (0-2000).
2. Adjust the screwgun nosepiece to properly seat the fastener.
3. Use enclosed T-25 Star Drive bit to drive in the cement board - worn or damaged bit tips should be replaced.
4. The fastener is fully seated when the head is flush with the work surface.
5. Overdriving may result in torsional failure of the fastener or stripout of the substrate.
6. Steel stud attachment - Fastener must penetrate a minimum 3/8" beyond steel for optimal performance"
7. Wood stud attachment - Fastener must penetrate 1" into wood stud or beyond plywood for optimal performance"

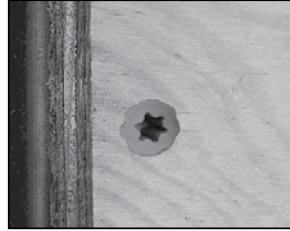
APPLICATIONS



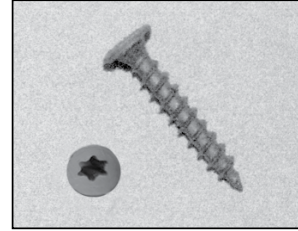
Cement-type boards or any dense sheathings to steel or wood studs.



Wire lath to steel or wood studs.



Plywood to steel or wood studs.



Hardie Fiber Cement Backerboard

SELECTION CHART

Hi-Lo Rock-On Fasteners



PART NUMBER	LENGTH	HEAD STYLE	MATERIAL THICKNESS	BOX QTY	APPLICATIONS
23301C	1-1/4"	T-25 (Bit Included)	1/4" Cement Board	185	- Cement Board to wood or light gauge steel 26-20 gauge
23306C	1-1/4"	T-25 (Bit Included)	1/4" Cement Board	750	
23311C	1-5/8"	T-25 (Bit Included)	1/2" Cement Board	140	

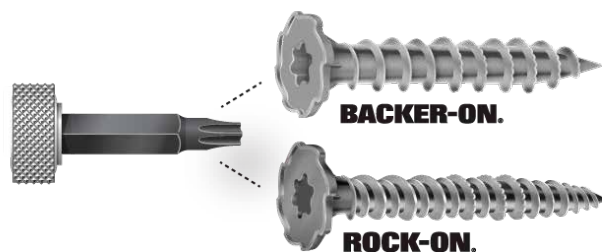
Backer-On Fasteners



PART NUMBER	LENGTH	HEAD STYLE	MATERIAL THICKNESS	BOX QTY	APPLICATIONS
23401C	1-1/4"	T-25 (Bit Included)	1/4" Cement Board	185	- Backer Board to wood or light gauge steel 26-20 gauge
23406C	1-1/4"	T-25 (Bit Included)	1/4" Cement Board	750	
23411C	1-5/8"	T-25 (Bit Included)	1/2" Cement Board	140	

Accessories

PART NUMBER	DESCRIPTION	BOX QTY
24000C	T-25 Stikfit Bit (2/PK)	12 Packs



Rock-On, Backer-On Fasteners

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	12	14	16	18	20	22	24	26
Nominal Decimal Equivalent (Inch)	.105	.075	.060	.048	.036	.030	.024	.018

Pullout Values

FASTENER	STEEL GAUGE (Lbs.)							
	26	24	22	20	18	16	14	12
Hi-Lo	163	242	314	370	-----	-----	-----	-----
Backer-On	271	371	457	615	-----	-----	-----	-----

Wood Embedment

#2 SPF 2 x 4	1/2"	3/4"	1"	1-1/4"
Hi-Lo	223	312	555	676
Backer-On	-----	436	780	-----

The values listed are ultimate averages achieved under laboratory conditions and apply to Buildex manufactured fasteners only. Appropriate safety factors should be applied to these values for design purposes.

Gridmate® BR

Plastic Insulation Fasteners



DESCRIPTION/ADVANTAGES

Fastening Insulation To Concrete—

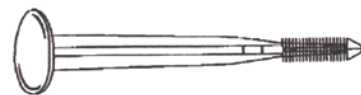
- Textured head allows for coverage of stucco.
- Non cold-conductive.
- Made from strong Polypropylene.
- Fins provided high holding power.
- Non Corrosive.
- Easy to install.

APPLICATIONS

- All Polymer Modified (PM) Systems.
- Modified Stucco Systems.
- Exapnded lath over EPS, XPS or ISO rigid insulation.
- Fiberglass fabric over rigid insulation.
- Wire mesh over rigid insulation.
- Attaching rigid insulation to masonry or concrete.

SELECTION CHART

Gridmate BR Anchor



PART NUMBER	REFERENCE NUMBER	DESCRIPTION	HOLE DIAMETER	MAXIMUM GRIP	BOX QTY
56040	56040	2-3/4"	5/16"	1-1/2"	250
56050	56050	3-1/2"	5/16"	2-1/2"	200
56060	56060	4-3/8"	5/16"	3-1/4"	200
56070	56070	5-1/4"	5/16"	4"	100

Washer diameter is 1-3/8"

PERFORMANCE TABLE

Gridmate BR

BASE MATERIAL	EMBEDMENT	ULTIMATE PULLOUT
25 MPA Concrete	1-1/8"	113 lbs.
Concrete Block	1-1/8"	113 lbs.
Brick	1-1/8"	113 lbs.

8 fasteners per 4' x 8' sheet required.

The image shows the interior of a large-scale construction project, likely a warehouse or industrial facility. The most prominent feature is the intricate steel truss system that supports the roof. These trusses are made of heavy-duty steel beams, some of which are painted a dark color, while others are the natural metallic silver. They are arranged in a complex, interconnected web that spans the width of the building. Below the trusses, there are several vertical steel columns that support the structure. The floor appears to be a concrete slab, and there are various construction materials and equipment scattered around, indicating an active work site. In the background, through the open sides of the building, an outdoor area with some trees and other structures is visible. The lighting is bright, suggesting a sunny day. The overall impression is one of a massive, modern industrial structure in the process of being built.

SAMMYS®

Notes

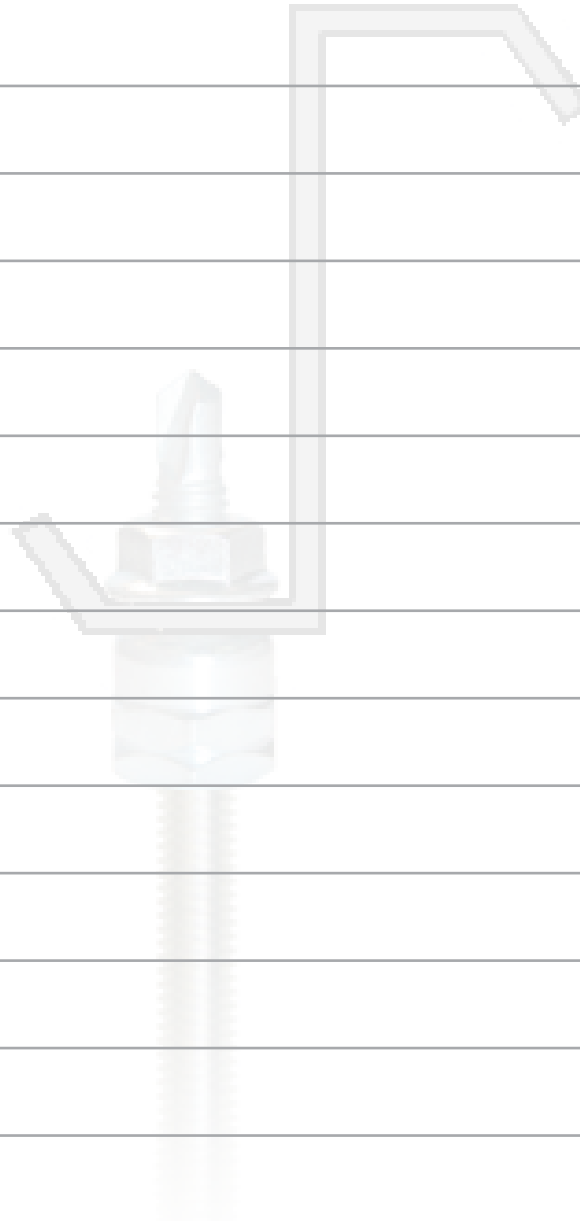
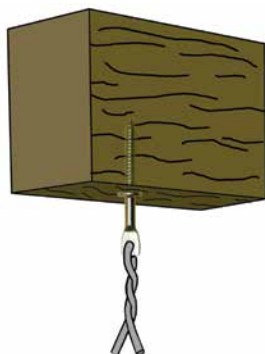


TABLE OF CONTENTS

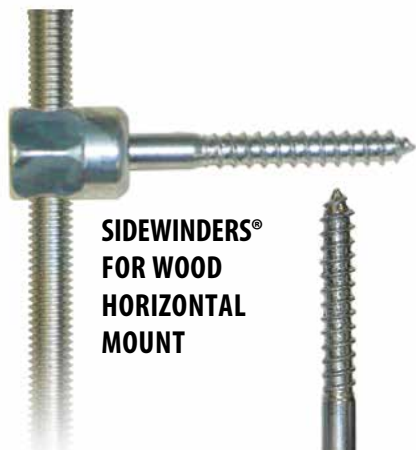
Sammys® for Wood	S 4
Sammys® for Wood Seismic Restraint	S 6
Sammys® for Steel	S 7
Sammys® for Steel Seismic Restraint	S 10
Sammy X-Press®	S 11
Sammy X-Press® for Seismic Restraint	S 14
Sammys® for Concrete	S 16
Sammys® Speedy Pole Tool	S 18



Anchors for Wood

**Installs into Wood
Structures Easily
and Quickly!**

**Available
in Vertical
and Horizontal**



**SIDEWINDERS®
FOR WOOD
HORIZONTAL
MOUNT**

VERTICAL MOUNT

DESCRIPTION/SUGGESTED SPECIFICATIONS

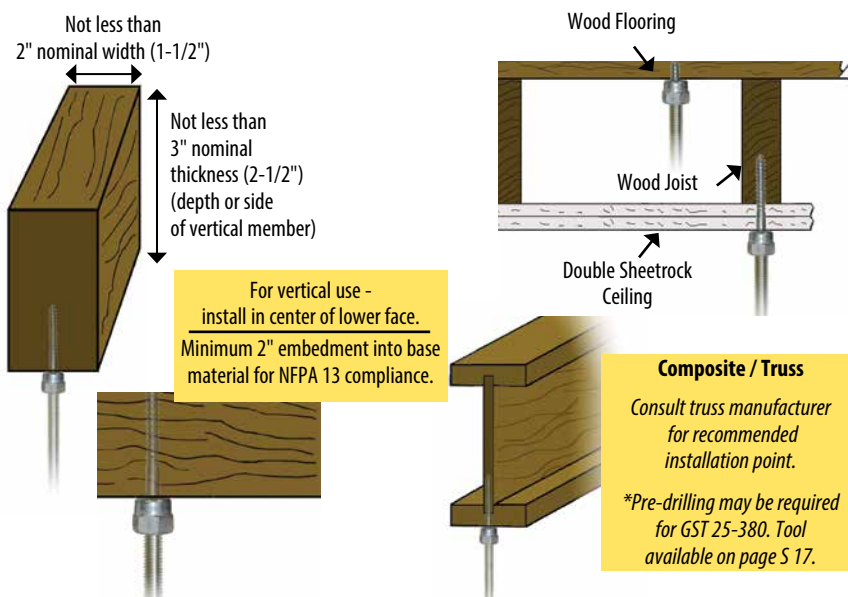
Self drilling & self-tapping into wood—

The Wood Sammy is perfect for Hanging Sprinklers, Pipes, Electrical Fixture or HVAC Equipment to wood joist, 2x4, OSB, plywood and wood beams. It is available in 1/4", 3/8" and 1/2" threaded coupling. The Wood Sammy is available in vertical mount, horizontal mount, and Swivel mount to accommodate all fastening situations.

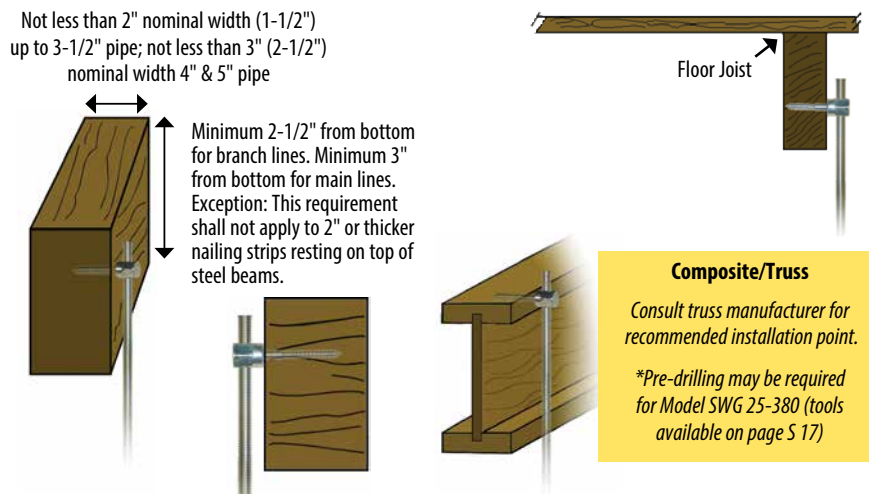
ADVANTAGES

- No pre-drilling required.
- Quick to install using the Sammy Nut Driver with no load speed 2000-2500 rpm, minimum 6 amps drill/driver.
- Saves time from traditional methods.
- Reduces installation cost.
- Made in the U.S.A.

Sammy's Vertical Mount Product Features



Sammy's Sidewinder® Product Features



APPLICATIONS

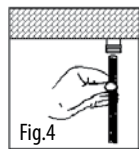
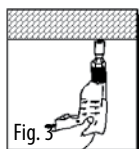
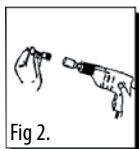
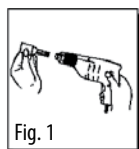


Sprinkler Systems
Pipes/Plumbing
Electrical Lighting and Fixtures
HVAC Equipment and Fixtures

APPROVALS

See Selection Chart for items with approvals.

INSTALLATION INSTRUCTIONS VERTICAL MOUNT

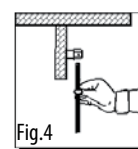
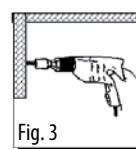
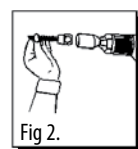
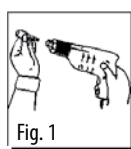


1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.
3. Push the face of the nut driver tight to the member. When the nut driver spins freely on the SAMMYS, stop drill and remove.
4. The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)

Important Vertical Installation Notes

Warranty requires the use of appropriate nut drivers for installation.
Model #14 Nut Driver Item No: 100 Color: Black Use With Sammys for 1/4" and 3/8" Rod PN 8113910
Eye protection should be worn at all times when installing this product.

INSTALLATION INSTRUCTIONS HORIZONTAL MOUNT



1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14W (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.
3. When the nut driver spins free on the SAMMYS, stop drill and remove.
4. The unit is now ready to receive 1/4", 3/8", or metric all thread rod, bolt stock.

Important Horizontal Installation Notes

Warranty requires the use of appropriate nut drivers for installation. Sidewinders must be installed using Model #14SW (Red) nut driver only. Item No: 101 PN: 8114910
Eye protection should be worn at all times when installing this product.

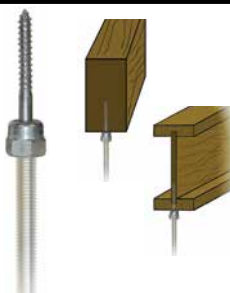


■ Part # 8113910

■ Part # 8114910

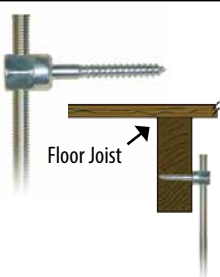
SELECTION CHART

SAMMYS Vertical Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	FM APPROVED	TEST LOAD (LBS)	BOX QTY	CASE QTY	NUT DRIVER
3/8"	8008957	GST 20	1/4 x 2"	1760 (Fir)		850		1475	25	125	Part # 8113910
3/8"	8010957	GST 30	1/4 x 3"	2060 (Fir)		1500		1475	25	125	

SAMMYS Horizontal Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	BOX QTY	CASE QTY	NUT DRIVER
3/8"	8021957	SWG 20	1/4 x 2"	1725 (Fir)		1050	25	125	Part # 8114910

SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

SAMMYS for Wood – Seismic Restraint



SIDEWINDER FOR 3/8" RODS

SWG 20 FOR 3/8" ROD



Structural attachment fitting for installation of branch/end of line restraint using 3/8" threaded rod. Designed for use in wood structural member with a minimum thickness of 2" (nominal 1-1/2"). Can be used in composite wood joists; consult manufacturer for recommended installation point. These fastening systems provide a secure and economical attachment to the structure.

The SWG 20 model provide a one-piece upper structural attachment in a wide range of wood thicknesses.

SPECIFICATIONS

Restrained Pipe Size:	Up to Schedule 40 pipe 2" or less
Max Length of Restraint Material:	See Maximum Horizontal Load Tables below.
Maximum Angle:	45° from horizontal
Material:	Carbon Steel
Screw Description:	(SWG 20): 1/4"-10 x 2" wood screw
Finish (both):	Electro-zinc (cap & fastener)
Testing:	BX Report # R-1362
Listing:	UL 203 as a pipe hanger UL 203A pending
Installation:	Must be installed with #14 SW Red Nut Driver (Part No. 8114910)



SELECTION CHART

SAMMYS for Wood – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	APPLICATION	BOX QTY	CASE QTY
3/8"	8021957	SWG 20	1-1/2"	Wood, Dim. Lumber, TGI/TJI Joist	25	125

PERFORMANCE TABLES

Maximum Rod Length for I/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in. ²)	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR I/r (ft)			
				I/r = 100	I/r = 200	I/r = 300	I/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007)

* Reference: NFPA 13, (2010)

SAMMYS®

Anchors for Steel

*Installs into Steel
Structures Easily
and Quickly!*

*Available
in Vertical
and Horizontal*



VERTICAL MOUNT



SIDEWINDERS®
FOR STEEL
HORIZONTAL MOUNT



DESCRIPTION/SUGGESTED SPECIFICATIONS

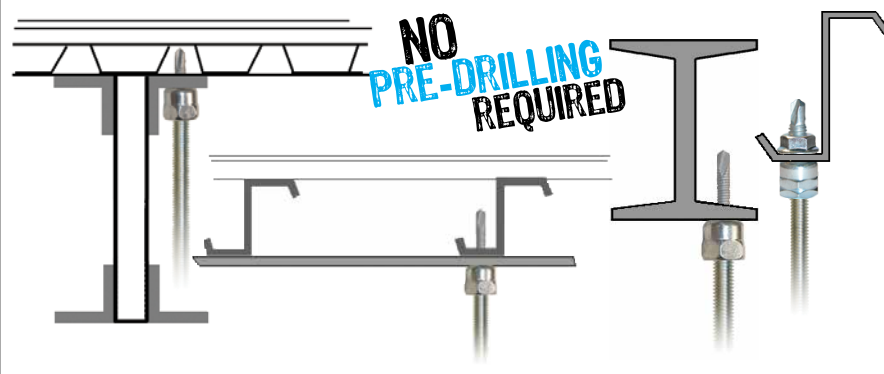
Self drilling & self tapping into steel up to 1/2" thick—

The Steel Sammy is made using Tek® self-drilling fasteners, perfect for Hanging Sprinklers, Pipes, Electrical Fixture or HVAC Equipment to steel purlin, structural beams, and open web joist. The Steel Sammy is available in vertical mount, horizontal mount, and Swivel mount to accommodate all fastening situations.

ADVANTAGES

- Made with Tek® self-drilling fasteners – no pre-drilling required.
- Install into steel range from 22 gauge – 1/2" thickness
- Saves time from traditional methods.
- Reduces installation cost.
- Quick to install using the Sammy Nut Driver with a no load speed 2000-2500 rpm, minimum 6 amps drill/driver.

Sammy's Vertical Mount Product Features



Sammy's Sidewinder® Product Features



**NO
PRE-DRILLING
REQUIRED**

APPLICATIONS



Sprinkler Systems
Pipes/Plumbing
Electrical Lighting and Fixtures
HVAC Equipment and Fixtures



APPROVALS

See Selection Chart for items with approvals.

INSTALLATION INSTRUCTIONS VERTICAL MOUNT

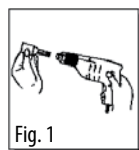


Fig. 1

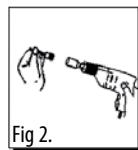


Fig. 2.

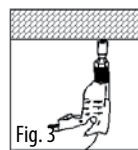


Fig. 3

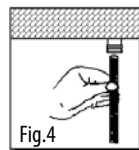


Fig. 4

1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.
3. Push the face of the nut driver tight to the member. When the nut driver spins freely on the SAMMYS, stop drill and remove.
4. The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)

Important Vertical Installation Notes

Warranty requires the use of appropriate nut drivers for installation.

Model #14 Nut Driver Item No: 100 Color: Black

Use With Sammys for 1/4" and 3/8" Rod PN 8113910

Eye protection should be worn at all times when installing this product.

INSTALLATION INSTRUCTIONS HORIZONTAL MOUNT

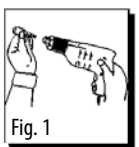


Fig. 1

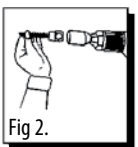


Fig. 2.

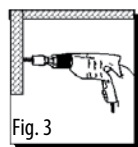


Fig. 3

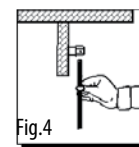


Fig. 4

1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14W (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.
3. When the nut driver spins free on the SAMMYS, stop drill and remove.
4. The unit is now ready to receive 1/4", 3/8", or metric all thread rod, bolt stock.

Important Horizontal Installation Notes

Warranty requires the use of appropriate nut drivers for installation. Sidewinders must be

installed using Model #14SW (Red) nut driver only. Item No: 101 PN: 8114910

Eye protection should be worn at all times when installing this product.



■ Part # 8113910

■ Part # 8114910

SELECTION CHART

SAMMYS Vertical Mount

	ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	FM APPROVED	TEST LOAD (LBS)	MIN THICKNESS	MAX THICKNESS	BOX QTY	CASE QTY	NUT DRIVER
	3/8"	8040957	DST 10	1/4-14 x 1" TEKS 3	446 (20 ga.) 970 (16 ga.)					.036"-20 ga	3/16"	25	125	Part # 8113910
	3/8"	8041957	DST 15	1/4-14 x 1-1/2" TEKS 3	446 (20 ga.) 970 (16 ga.)					.036"-20 ga	3/16"	25	125	

SAMMYS Horizontal Mount

3/8"	8055957	SWDR 1 *	1/4-20 x 1" TEKS 3	1900 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125	Part # 8114910
3/8"	8056957	SWDR 516 *	5/16-18 x 1-1/4" TEKS 3	2480 (20 ga.)	1500	1475	.036"-20 ga	1/8"	25	125	

*Includes retaining nut

SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	26	24	22	20	18	16	14	12	3/16"	1/4"
Nominal Decimal Equivalent	.018	.024	.030	.036	.048	.060	.075	.105	.188	.250

Ultimate Pullout Values (Avg. Lbs. Ultimate) – SAMMYS

FASTENER			STEEL GAUGE (Lbs.)						
MODEL	DIA.	PT	20	18	16	14	12	3/16"	1/4"
DST 516	5/16"	#3	457	568	1209	1712	2422	-----	-----

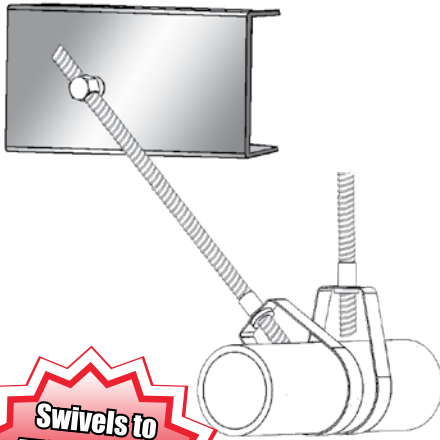
Aluminum Curtain Wall Extrusion Ultimate Pullout Values

(AVERAGE LBS. ULTIMATE)						
FASTENER			THICKNESS			
MODEL	DIA.	PT.	.114	.092	.365	.132
DST 10	1/4	#3	1265	-----	2750	-----

Ultimate Pullout Values (Avg. Lbs. Ultimate) – SIDEWINDERS

FASTENER			STEEL GAUGE (LBS.)						
MODEL	DIA.	PT	20	18	16	14	12	3/16"	1/4"
SWDR 1"	1/4"	#3	1900	-----	-----	1900	-----	-----	-----
SWDR 516	5/16"	#3	2480	-----	-----	2480	-----	-----	-----

SAMMYS for Steel –Seismic Restraint



**Swivels to
45° to ensure
proper
installation!**

DESCRIPTION (SIDEWINDER)

SWDR 516 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" threaded rod. Used primarily in purlin, bar joist, or other steel structural members. These fastening systems provide a secure and economical attachment to the structure.

The **SWDR 516** model provides upper structural attachment in a range of steel thicknesses, from 20 ga. through 1/8". A retaining nut is included with each fastener.

SPECIFICATIONS

Restrained Pipe Size:	Up to Schedule 40 pipe 2" or less
Max Length of Restraint Material:	See Maximum Horizontal Load Tables below.
Maximum Angle:	45° from horizontal
Material:	Carbon Steel
Screw Description:	(SWDR 1-1/2): 12-24 X 1-1/2" Teks® 5 (SWDR 516): 5/16"-18 X 1-1/4" Teks® 3
Finish (both):	Electro-Zinc (cap) Silver Climaseal® (screw)
Testing:	BX Report # R-1362
Listing:	UL 203 as a pipe hanger UL 203A pending



SELECTION CHART

SAMMYS Sidewinders for Steel – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8056957	SWDR 516	16 ga.	1/8"	Steel Purlin or Bar Joist	25	125	SWDR 516 must be installed with #14 SW Red Nut Driver (Part No. 8114910). No pre-drilling required.

PERFORMANCE TABLES

Maximum Horizontal Loads for Restraint with I/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in. ²)	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR I/r (ft)			
				I/r = 100	I/r = 200	I/r = 300	I/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007)

* Reference: NFPA 13, (2010)

SAMMYS®

Sammy X-Press®

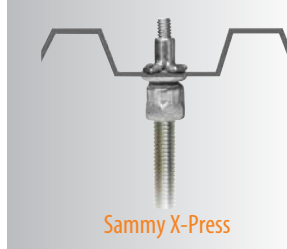
**Installs into
Metal Deck,
Purlin, or
Tubular Steel**



DESCRIPTION/SUGGESTED SPECIFICATIONS

Sammy X-Press Revolutionizes The Pipe Hanging Trades—

The Sammy X-Press® System is designed to provide direct attachment of threaded rod in metal deck (22-16 gauge) and thin gauge purlin (18-16 gauge), while providing reduced installation costs in terms of time and materials. The X-Press Anchors eliminate the need for costly "armovers" in pipe hanging installations. Current methods offered for thin gauge purlin require use of a time-consuming retaining



Sammy X-Press

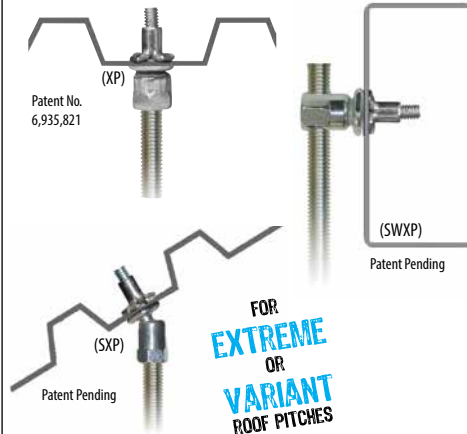
nut on the threaded portion of the fastener to prevent pullout and are not designed for use in metal deck. In many instances, access to the backside of the installed fastener is prohibited by panel liner or roofing insulation. Sammy X-Press® anchors deliver the performance installers require without the use of a retaining nut!

The patent-pending X-Press Anchors consist of a threaded fastener and expandable sleeve. The X-Press System features an easy-to-install anchor with expanding anchoring strips that collapse to prevent pullout after installation. The Sammy X-Press® It Installation Tool assures a perfect installation every time offering the added convenience of one-tool efficiency – just drill and drive in seconds! SECONDS!

ADVANTAGES

- Installs in seconds, saving time & installation costs.
- Use in applications where access to the back of the installed fastener is prohibited. ie. metal roof deck, tubular steel, or vapor barrier fabric.
- Less jobsite material needed.
- No retaining nut required.
- Provides design flexibility.

Sammy's X-Press, Swivel and Sidewinder



The **Sammy X-Press** expands to provide direct vertical attachment in:

- Metal Deck (22-16 gauge)
- Z-Purlin (18-16 gauge)

The **Sammy X-Press Swivel** allows you to hang plumb in extreme roof pitches:

- 89° in Z-Purlin
- 45° in metal deck for 12/12 pitch

The **Sammy X-Press Sidewinder** expands to provide horizontal attachment in:

- 16 ga - 3/16" steel - purlin, tubular steel.

APPLICATIONS



- Sprinkler Systems
- Pipes/Plumbing
- Electrical Lighting and Fixtures
- HVAC Equipment and Fixtures



INSTALLATION INSTRUCTIONS



1. Pre-Drill.



2. Insert Anchor.



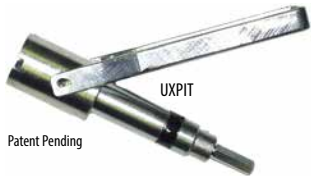
3. Install.

APPROVALS

The X-Press System has earned the 9R21 and 25ES UL Listing.

INSTALLATION TOOL

SAMMY X-PRESS IT® INSTALLATION TOOL

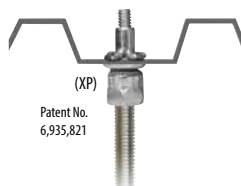


PART NUMBER	MODEL	DESCRIPTION	EACH QTY
8194910	UXPIT*	Universal X-Press It Tool	1
8152910	XPDB	25/64" Drill Bit	1

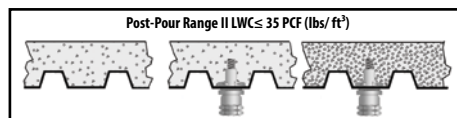
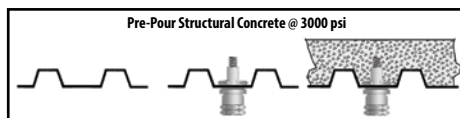
*Tool Includes: Sleeve, Bit Receiver, Hex Wrench, and 25/64" Drill Bit.

SELECTION CHART

SAMMYS X-Press Vertical Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	UL MIN THICK	FM APPROVED	TEST LOAD (LBS)	FM MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
1/4"	8181922	XP 200	X-Press 200	1146 (22 ga)	185 (Luminaire) 250 (Luminaire)	.027" .056"					.125"	25	125	Metal Deck
3/8"	8150922	XP 20	X-Press 20	1146 (22 ga)	850 (2½" Pipe) 185 (Luminaire) 250 (Luminaire) 283 (Conduit & Cable)	.027" .027" .056" .029"		940 (2" Pipe) 1475 (4" Pipe)	.029" .104"		.125"	25	125	Metal Deck
3/8"	8153922	XP 35	X-Press 35	1783 (16 ga)	1500 (4" Pipe) 85 (Luminaire) 250 (Luminaire) 416 (Conduit & Cable)	.060" .029" .056" .059"		940 (2" Pipe) 1475 (4" Pipe)	.029" .104"		.125"	25	125	Purlin
3/8"	8150922	XP 20	X-Press 20	1146 (22 ga)	850 (2½" Pipe)			Pre-Pour Structural Concrete @ 3000 psi Post-Pour Range II LWC ≤ 35 PCF (lbs/ft³)				25	125	Metal Deck (Pre-Pour) Metal Deck (Post-Pour)

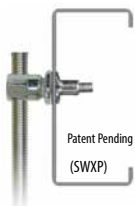


SAMMYS X-Press Swivel Head®



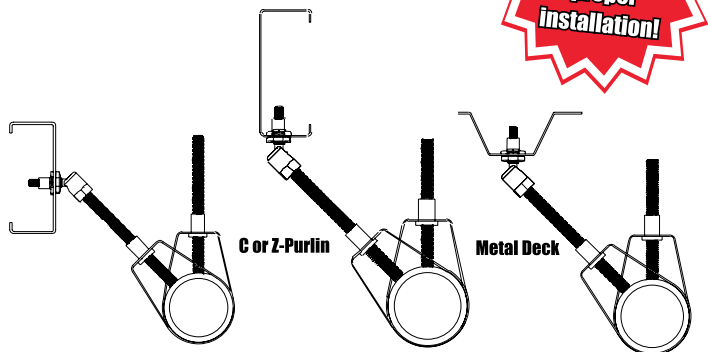
ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	UL MIN THICK	FM APPROVED	TEST LOAD (LBS)	FM MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
3/8"	8295922	SXP 35	Swivel X-Press 35	1675 (16 ga Vertical) 1558 (89° Off Vertical)	1250 (3-1/2" Pipe) 250 vertical (Luminaire) 80 @ 90° (Luminaire) 500 vertical (Conduit & Cable) 333 @ 89° (Conduit & Cable)	.059"		635 (2" Pipe)	.029"		.125"	25	125	Purlin

SAMMYS X-Press Horizontal Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	UL LISTED	TEST LOAD (LBS)	FM APPROVED	TEST LOAD (LBS)	MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
3/8"	8293957	SWXP 35	Sidewinder X-Press 35	1798 (16 ga)	1250 (3½" Pipe) 80 (Luminaire) 416 (Conduit & Cable)				.060"	.125"	25	125	Purlin

SAMMYS X-Press for Seismic Restraint



FOR 3/8" AND 1/2" RODS

SXP 35 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" all thread (.299" OD) or end thread rod (.374" OD).

SXP 35 for 3/8" Rod: Designed for use in steel purlin ranging from 16 ga. through 1/8" in low slope or pitched roof designs (12/12).

The Swivels may be used to attach short length of rod to eliminate lateral sway bracing per NFPA 13, 9.3.5.3.8, (2007).

DESCRIPTION

FEATURES

- Structural attachment and restraint component combined; ready for selected rod.
- Access to the back of fastener not required.
- Does not require use of a retaining nut.
- Quick and easy installation.

BENEFITS

- Reduced installation cost.
- Design flexibility.
- Less on site material (GO GREEN).
- Less material coordination.
- Aesthetically pleasing.

SPECIFICATIONS

FOR 3/8" ROD

Restrained Pipe Size: Up to Schedule 40 pipe 2" or less

Max Length of

Restraint Material: See Maximum Horizontal Load Tables below.

Maximum Angle: 45° from horizontal

Material: Carbon Steel

Screw Description: 1/4"-20 x 1-1/8" with expandable sleeve

Finish: Electro-Zinc

Testing: Tested to GR-63-CORE Standard for performance in structural steel in seismic restraint applications as outlined for use in NFPA 13 (2007), 9.3 at an independent test lab. The calculated force used for the testing was equal to that found in a Zone 4 and an 8.4 Richter scale seismic event.

Listing for 3/8" Rod: UL 203 listed as pipe hanger File EX 5098
- SXP 35 (16 ga.) 0-90° from horizontal - 3-1/2" Schedule 40 pipe
UL 203A File EX 15565



SELECTION CHART

SAMMYS X-Press Swivels – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8295922	SXP 35	16 ga	1/8"	Purlin	25	125	The SWXP 35 must be installed with UXPIT Tool (Part No. 8194910); pre-drilling required.

PERFORMANCE TABLES

Maximum Rod Length for I/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in. ²)	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR I/r (ft)			
				I/r = 100	I/r = 200	I/r = 300	I/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007)

* Reference: NFPA 13, (2010)

DESCRIPTION (SIDEWINDER)

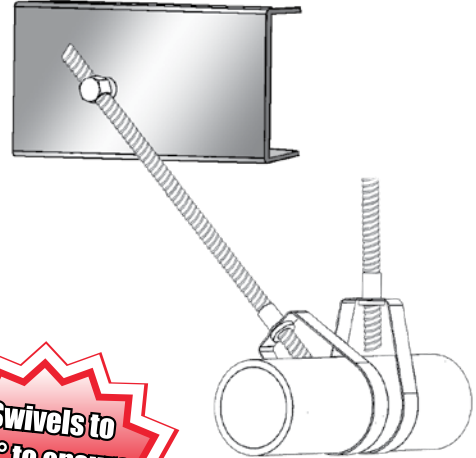
SWXP 35 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" threaded rod. Used primarily in purlin, bar joist, or other steel structural members. These fastening systems provide a secure and economical attachment to the structure.

The SWXP 35 model provides upper structural attachment in a range of steel thicknesses, from 16 ga. through 1/8". An expandable sleeve is included with each fastener, eliminating need for retaining nut.

SPECIFICATIONS

Restrained Pipe Size:	Up to Schedule 40 pipe 2" or less
Max Length of Restraint Material:	See Maximum Horizontal Load Tables below.
Maximum Angle:	45° from horizontal
Material:	Carbon Steel
Screw Description:	1/4"-20 X 1-1/8" with expandable sleeve
Finish:	Electro-Zinc (cap & screw)
Testing:	BX Report # R-1362
Listing:	UL 203 as a pipe hanger UL 203A pending



SELECTION CHART

SAMMYS Sidewinders for Steel – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8293957	SWXP 35	16 ga.	1/8"	Steel Purlin or Bar Joist	25	125	The SWXP 35 must be installed with UXFIT Tool (Part No. 8194910); pre-drilling required.

PERFORMANCE TABLES

Maximum Horizontal Loads for Restraint with $l/r=100, 200, 300, \text{ and } 400$

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in. ²)	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR l/r (ft)			
				$l/r = 100$	$l/r = 200$	$l/r = 300$	$l/r = 400^*$
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007)

* Reference: NFPA 13, (2010)

Anchors for Concrete

*Installs into
Concrete Structures
Easily and Quickly!*

*Available
in Vertical*



VERTICAL MOUNT

DESCRIPTION/SUGGESTED SPECIFICATIONS

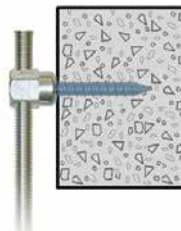
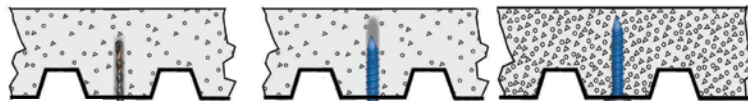
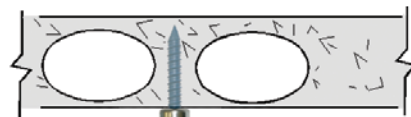
Tapcon Sammy Screw—

The Concrete Sammy is made using 5/16" Tapcon® Concrete Screws, perfect for Hanging Sprinklers, Pipes, Electrical Fixture or HVAC Equipment to cast in place concrete, precast concrete, and open web joist. The Concrete Sammy is available in vertical mount to accommodate all fastening situations.

ADVANTAGES

Sammy's for Concrete Product Features

- Easy two step process (Drill hole & drive Sammy concrete anchor).
- 1/4" pre-drilled pilot hole required.
- Concrete Installation Tool available for a one tool installation process.



APPLICATIONS



Sprinkler Systems
Pipes/Plumbing
Electrical Lighting and Fixtures
HVAC Equipment and Fixtures



APPROVALS

See Selection Chart for items with approvals.

INSTALLATION INSTRUCTIONS VERTICAL MOUNT



1. Using an SDS 250 carbide tip bit or a HEX RECEIVER with a #250 carbide tip bit, pre-drill the concrete member to a depth of 2" with an electric impact/drill set on impact mode.
2. After pre-drilling has been completed, install the SLEEVE TOOL over the bit (the bit should remain in the drill), and insert the #14 (black) nut driver (p/n 8113910) into the opposite end.
3. Insert the concrete screw into the nut driver.
4. Place tip of screw into the pre-drilled hole, turn impact/drill unit to drill mode and begin insertion. When the nut driver spins free on the screw, installation is complete. Stop and remove drill.
5. The concrete screw is ready to receive 1/4", 3/8", 1/2", or metric all thread rod or bolt stock. (#14SW red nut driver used with 1/2" screw)

NOTE: Use a 1200 maximum RPM drill for installation.

NOTE: Do not install concrete screws while the drill unit is in impact mode — doing so will destroy the pullout factor of the screw.

SELECTION CHART

SAMMYS Vertical Mount



■ Part # 8113910

■ Part # 8114910



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	<div><div>FM</div><div>APPROVED</div></div>	TEST LOAD (LBS)	BOX QTY	CASE QTY	NUT DRIVE
3/8"	8059957	CST 20	5/16 x 1-3/4"	2400	1475		25	125	Part # 8113910

SAMMYS®

Speedy Pole Tool™

For Ceiling Wire Applications

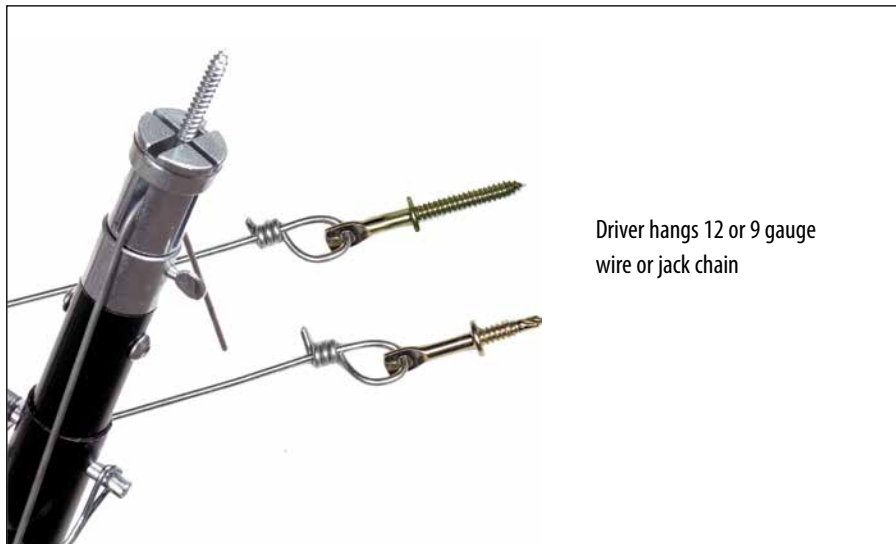


PRODUCT FEATURES

Speed your labor by 25%
Work from the ground up
No scaffolding, ladders, or lifts

Perfect for working in tight spaces, thorough ceiling grid, and high value ceilings
Works with any Vertical SAMMYS: Wood, Steel, or Concrete

ADVANTAGES



Driver hangs 12 or 9 gauge wire or jack chain

INSTALLATION INSTRUCTIONS



1. Adjust the Pole Tool to length. The adjusting pin must be 18" below the base of the pin may interfere with the rod.
2. Load rod and SAMMYS into the Pole Tool.
3. The socket will spin free when the screw is completely installed. Pull down to remove the Pole Tool

SELECTION CHART

PART NUMBER	DESCRIPTION	BOX QTY
SP4	Speedy Pole 4' - 12'	1

This image shows a full page of white paper with horizontal grey ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings on the page.



THERE'S A REASON THEY
— call it “building” —
A REPUTATION.



Notes





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CORDLESS FRAMING



(see page P 8 for more details)

TOOL

CORDLESS IMPULSE XP 30° FRAMING NAILER

Drive 1200 nails per fuel cell
Drive 9000 nails per battery charge
Proven for over 25 years
Durable. Lightweight. Balanced.

PART #: 905800

DESCRIPTION

Weight: 7.2 lbs
Height: 14-1/2"
Length: 12"
Nail Capacity: 40
Range: 2" – 3-1/4"
Shank: .113 - .131

APPLICATIONS

FRAMING, JOISTS,
RAFTERS, SOFFITS,
STAIRS, SHEATHING,
CRATING, FENCES
AND DECKS

**DESIGNED FOR:
FRAMERS & RENOVATORS**

PNEUMATIC STRIP FRAMING NAILERS



(see page P 10 for more details)

F350-S POWER MASTER+™

Durable construction requires less maintenance.
Proven performer for tough job site work with less jams or misfires
Powerful. Enduring. Reliable.

PART #: 501000

Weight: 8.4 lbs
Height: 13-3/10"
Length: 18"
Nail Capacity: (2 strips) 84
Range: 2" – 3-1/2"
Shank: .113 - .131

FRAMING, JOISTS,
RAFTERS, SOFFITS,
STAIRS, SHEATHING,
CRATING, FENCES
AND DECKS

**DESIGNED FOR:
PROFESSIONAL FRAMERS**



(see page P 11 for more details)

F325R COMPACT FRAMER™

Lightest-framing nailer ever (Only 5.9 lbs)
Smallest Framer Ever (Only 12' long)
Remodel interiors easier
Compact. Lightweight

PART #: 513000

Weight: 5.9 lbs
Height: 12-9/10"
Length: 12-3/10"
Range: 2" – 3-1/4"
Shank: .113 - .131
Magazine Capacity: 44

FRAMING, JOISTS,
RAFTERS, SOFFITS,
STAIRS, SHEATHING,
CRATING, FENCES
AND DECKS

**DESIGNED FOR:
PROFESSIONAL RENOVATORS**



(see page P 12 for more details)

PSN100.1 – 4" FRAMING NAILER 30°

Designed to drive 4" nails
Powerful to drive into engineered lumber
Powerful. Fast. Durable.






PART #: 502900

Weight: 8.9 lbs
Height: 14-1/2"
Length: 19"
Nail Capacity: 84
Range: 2" – 4"
Shank: .113 - .131

LSL, LVL, PSL, AND OSB,
ENGINEERED LUMBER
FOR FRAMING

**DESIGNED FOR:
PROFESSIONAL FRAMERS**

	TOOL	DESCRIPTION	APPLICATIONS
FRAMING STAPLERS	 <p>(see page P 14 for more details)</p>	<p>SCS200 16GA. STANDARD 1/2" CROWN STAPLER</p> <p>Heavy-duty all metal magazine design for increased durability</p> <p>PART #: 515700</p>	<p>Weight: 5.6 lbs Height: 11.7" Length: 15.1" Staple Capacity: 150 Range: 3/4" – 2" Staple Type: 1/2" crown</p> <p>ROOF DECKING, SOFFITS AND FASCIA BOARDS, SHEATHING</p>
	 <p>(see page P 15 for more details)</p>	<p>WCS200 16GA. WIDE 15/16" CROWN STAPLER</p> <p>Drives staples flush in all materials</p> <p>PART #: 515800</p>	<p>Weight: 5.9 lbs Height: 11.7" Length: 15.1" Staple Capacity: 150 Range: 3/4" – 2" Staple Type: 15/16" Crown</p> <p>SOFFITS AND FASCIA BOARDS, SUBFLOOR, SHEATHING, CRATES AND PALLETS</p>
CORDLESS TRIM NAILERS	 <p>(see page P 16 for more details)</p>	<p>IMLi200 – 18GA. BRAD NAILER</p> <p>Drive 1200 nails per fuel cell Drive 12,000 nails per battery charge Proven for over 25 years Durable. Lightweight. Balanced.</p> <p>PART #: 903700</p>	<p>Weight: 4.5 lbs Height: 11-1/2" Length: 11" Nail Capacity: 100 Range: 3/4" – 2" Shank: 18 Gauge</p> <p>CROWN, BASEBOARD MOULDINGS, PANELLING AND CARPENTRY</p>
	 <p>(see page P 17 for more details)</p>	<p>IMLi200 18 GA. SHORT MAG BRAD NAILER</p> <p>Drive 1200 nails per fuel cell Drive 12,000 nails per battery charge Proven for over 25 years Durable. Lightweight. Balanced.</p> <p>PART #: 918150</p>	<p>Weight: 4.25 lbs Height: 11-1/2" Length: 11" Nail Capacity: 70 Range: 5/8" – 2" Shank: 18 Gauge</p> <p>CROWN, BASEBOARD MOULDINGS, PANELLING AND CARPENTRY</p>
	 <p>(see page P 18 for more details)</p>	<p>IMLi250 16GA. STRAIGHT FINISH NAILER</p> <p>Drive 1200 nails per fuel cell Drive 12,000 nails per battery charge Proven for over 25 years Durable. Lightweight. Balanced.</p> <p>PART #: 903800</p>	<p>Weight: 4.6 lbs Height: 11-3/4" Length: 10-1/2" Nail Capacity: 100 Range: 1-1/4" – 2-1/2" Shank: 16 ga. Straight</p> <p>DOOR AND WINDOW TRIM, CASING, CROWN AND BASEBOARD MOULDING</p>

PNEUMATIC TRIM NAILERS	TOOL	DESCRIPTION	APPLICATIONS
	 <p>(see page P 19 for more details)</p>	<p>T250S F16P - 16GA. STRAIGHT FINISH NAILER</p> <p>Best in class ergonomics Reliable and Durable Low Maintenance</p> <p>PART #: 515500</p>	<p>Weight: 3.90 lbs Height: 11.6" Length: 12.3" Nail Capacity: 100 (2 strips) Range: 1" – 2-1/2" Nail Type: 16 Ga. (Smooth/Galvanized)</p> <p>RESIDENTIAL: WINDOW AND DOOR TRIM/FINISH APPLICATIONS, CARPENTRY, AND PANELLING</p>
	 <p>(see page P 21 for more details)</p>	<p>P18-200 18 GA. BRAD NAILER</p> <p>Lightweight and well balanced No mar tip Easy to access corners</p> <p>PART #: P18-200</p>	<p>Weight: 2.9 lbs. Height: 9-1/2" Length: 10-1/4" Nail Capacity: 100 Range: 5/8" – 2" Nail Type: 18 ga. – Smooth, Galvanized Type: 18 ga.</p> <p>WINDOWS, DOORS, FURNITURE, TRIM APPLICATIONS</p>
	 <p>(see page P 22 for more details)</p>	<p>P18-FS200 18 GA. BRAD NAILER/STAPLER</p> <p>Lightweight and well balanced No mar tip Easy to access corners</p> <p>PART #: P18-FS200</p>	<p>Weight: 2.9 lbs. Height: 9-1/2" Length: 10-1/4" Nail Capacity: 100 Range: 5/8" – 2" brad nails and 5/8" – 1-1/2" staples (3/16" crown) Type: 18 ga. & 3/16</p> <p>WINDOWS, DOORS, FURNITURE, TRIM APPLICATIONS</p>
18 GAUGE STAPLERS	 <p>(see page P 24 for more details)</p>	<p>N18-125 – 1-1/4" NARROW SOFFIT STAPLER</p> <p>Specifically designed for soffit installation with long narrow nosepiece for tight spots.</p> <p>PART #: N18-125</p>	<p>Weight: 2.5 lbs. Height: 9" Length: 9-1/4" Staple Capacity: 100 Range: 3/4" – 1 1/4" Staple Type: 3/16" crown GSN18</p> <p>TRIM/FINISH, PLYWOOD, SOFFITS/FACIAS, UNDERLAYMENT APPLICATIONS</p>
	 <p>(see page P 25 for more details)</p>	<p>N18 150 – 1-1/2" NARROW CROWN FINISH STAPLER</p> <p>Heavy Duty for long life 4000 Shots per batt. charge</p> <p>PART #: N18-150</p>	<p>Weight: 2.8 lbs. Height: 9-3/4" Length: 11-1/2" Staple Capacity: 100 Range: 3/4" – 1 1/2" Staple Type: 3/16" crown GSN18</p> <p>TRIM/FINISH, PLYWOOD, SOFFITS/FACIAS, UNDERLAYMENT APPLICATIONS</p>

	TOOL	DESCRIPTION	APPLICATIONS
LITE GAUGE FASTENING STAPLERS	 <p>(see page P 26 for more details)</p>	US-100 – UPHOLSTERY/ CRAFT STAPLER Easy load magazine 5 Staples/second PART #: US-100	Weight: 2.00 lbs. Height: 9-1/2" Length: 12-1/2" Staple Capacity: 100 Range: 3/8" – 9/16" Staple Type: 22 ga. Upholstery UPHOLSTERY, CRAFTS, LIGHT PANELING AND HOME PROJECT APPLICATIONS
	 <p>(see page P 27 for more details)</p>	23GA HEADLESS PIN NAILER Lightweight and compact No mar tip and nail lock out PART #: HP100	Weight: 1.20 lbs. Height: 9-1/4" Length: 7-3/4" Staple Capacity: 100 Range: 1/2" – 1-1/2" Staple Type: 23 ga. FINE WOODWORKING AND TRIM WORK
JOIST HANGERS	 <p>(see page P 28 for more details)</p>	2.5" POSITIVE PLACEMENT® METAL CONNECTOR NAILER PF250S Dependable, Lightweight, Compact and Accurate PART #: 511800	Weight: 7.8 IBS Height: 14" Length: 17.4" Nail Capacity: 55-60 Nails (2 strips) Nail Range: .131" to .162" (Shank) Magazine Angle: 30 Degrees Nail Type: 1-1/2" to 2-1/2" Positive Placement Hanger Nails – Brite and Galvanized Air req: 80-120 PSI JOIST HANGERS
FLOORING	 <p>(see page P 29 for more details)</p>	FLOORMASTER PLUS™ 2 IN 1 FLOORING NAILER/ STAPLER Drives staples and cleats to meet flooring manufacturers fastening specifications PART #: F2N1-200	Weight: 10.4 lbs Height: 18" Length: 16" Flooring Fasteners: 15ga staples & 16ga L-cleats Fastener Lengths: 2", 1-3/4, 1-1/2" 3/4" HARDWOOD FLOORING
	 <p>(see page P 30 for more details)</p>	FLOORMASTER PRO™ NAILER/STAPLER 2 IN 1 COMBO Professional Grade Durability & Performance PART #: FNS-200	Weight: 11 lbs Height: 21-5/8" Length: 18" Flooring Fasteners: 15-1/2ga staples & 16ga L-Cleats Fastener Lengths: 2", 1-3/4, 1-1/2" 3/4" SOLID AND ENGINEERED FLOORING



IM325XP Cordless Impulse XP Framing Nailer

*Portable freedom
on the jobsite
without hoses or
compressors*



INCLUDES

Cordless Li-ion Framing Nailer, Model IM325XP
Rechargeable 7.4V Li-ion battery
Li-ion battery charger
Rugged carrying case
Owner's manual
Safety glasses
5/32" Hex Wrench

DESCRIPTION/SUGGESTED SPECIFICATIONS

Cordless Impulse XP Framing Nailer—

IT'S MORE THAN A NAILER, IT'S A NAILING SYSTEM THAT GETS THE JOB DONE RIGHT.

The Paslode Lithium Ion cordless Impulse nailer has provided framers and renovators the ability to wood frame without air hoses for over 25 years. New Li-ion battery technology drives 50% more nails per charge. 2-times faster charge time; 2 minute quick charge drives up to 200 nails. Tool free depth of drive adjustment, non slip grip, dual position utility hook, sequential operation triggers.

LIGHTWEIGHT



QUICK LOADING



EASY ACCESS



ADVANTAGES

- Portable, freedom on the jobsite without hoses or compressors
- Heavy-duty rafter/belt hook for taking jobsite abuse
- Non-slip grip provides comfort and reduces hand fatigue
- Tool free depth-of-drive nail adjustment changes nail depth in an instant – even while wearing gloves
- Nail lockout feature prevents blank driving
- Compact size fits between 16" o.c. studs, joists and roof trusses
- Li-ion battery – provides 50% longer run time (up to 9,000 nails per charge) than NiCd battery
- 1-hour Full Charge; 2-minute Quick Charge for Up to 200 shots
- Lightweight – 7.2 lbs. including battery for better comfort and control
- Works in cold temperature down to -10°C

SPECIFICATIONS

Part No. 905800

Weight: 7.2 lbs
Height: 14-1/2"
Length: 12"
Width: 4"
Speed: 2-3 nails per second
Nail Capacity: 40

Range: 2" – 3-1/4"

Shank: .113 – .131

Nail Angle: 30°

Fuel Type: Spare Framing Fuel

Nails per Fuel Cell: Approximately 1200

Fuel life: 21 months from date of manufacture

Battery Life: 9000 nails per charge

ONE-YEAR LIMITED WARRANTY A one-year warranty will apply to all parts, except those listed below as normal wearing parts, or parts which are specifically covered by an extended warranty.

FIVE-YEAR EXTENDED LIMITED WARRANTY A five-year warranty will apply to all molded nylon parts: • Motor Housing, Cap and Grille • Trigger • Handle Halves and Actuator • Magazine Parts

90-DAY LIMITED WARRANTY A 90-day warranty applies to the following parts, which are considered normal wearing parts: • Bumper • O-Rings • Driver Blades • Seal Rings

SELECTION CHART

Pro-Strip RoundDrive Nails

LENGTH	SHANK DIAMETER	SHANK TYPE	HEAD STYLE	COATING	PRODUCT NUMBER	NAILS PER PACK	QUANTITY PER MASTER	QUANTITY PER SKID
COATING TYPE: BRITE								
2"	0.113	Smooth	Rounddrive	Brite	097385	6,500	1	80
2"	0.113	Ring	Rounddrive	Brite	650273	5,500	1	80
2-3/8"	0.113	Smooth	Rounddrive	Brite	50238	5 Strips	10	-
2-3/8"	0.113	Smooth	Rounddrive	Brite	404238	1,000	4	-
2-3/8"	0.113	Smooth	Rounddrive	Brite	097394	5,000	1	96
2-3/8"	0.113	Ring	Rounddrive	Brite	097397	5,000	1	96
3"	0.120	Smooth	Rounddrive	Brite	097971	3,000	1	96
3"	0.120	Ring	Rounddrive	Brite	097973	3,000	1	96
3-1/4"	0.120	Smooth	Rounddrive	Brite	50314	5 Strips	1	125
3-1/4"	0.120	Smooth	Rounddrive	Brite	404314	1,000	4	-
3-1/4"	0.120	Smooth	Rounddrive	Brite	404058	3,000	1	96
3-1/4"	0.131	Smooth	Rounddrive	Brite	650839	2,500	1	96
3-1/4"	0.131	Ring	Rounddrive	Brite	097978	2,500	1	96
3-1/2"	0.120	Smooth	Rounddrive	Brite	404855	2,500	1	96
3-1/2"	0.131	Smooth	Rounddrive	Brite	097987	2,500	1	96
4"	0.131	Smooth	Rounddrive	Brite	2X0788	2,500	1	96
COATING TYPE: HOT DIPPED								
2"	0.113	Ring	Offset Oval	Hot Dipped	403389	2,500	1	150
2-3/8"	0.113	Ring	Offset Oval	Hot Dipped	404856	2,500	1	150
3"	0.120	Ring	Offset Oval	Hot Dipped	404857	1,500	1	150
3-1/4"	0.120	Ring	Offset Oval	Hot Dipped	50314G	5 Strips	6	-
3-1/4"	0.120	Ring	Offset Oval	Hot Dipped	404858	1,500	1	150

Pro-Strip RoundDrive Fuel/Nail Packs

LENGTH	SHANK DIAMETER	SHANK TYPE	HEAD STYLE	COATING	PRODUCT NUMBER	NAILS PER PACK	FUEL CELLS PER PACK
2-3/8"	0.113	Smooth	Rounddrive	Brite	1238FN	1,000	1
2-3/8"	0.113	Smooth	Rounddrive	Brite	3238FN	3,000	3
3"	0.120	Smooth	Rounddrive	Brite	3300FN	3,000	3
3-1/4"	0.120	Smooth	Rounddrive	Brite	1325FN	1,000	1
3-1/4"	0.120	Smooth	Rounddrive	Brite	3325FN	3,000	3

See Page P 13 for additional framing nails that work with this tool.

- ICC-ES Recognized, ESR-3072
- Approved for use in all pressure treated lumber such as ACQ and MCQ
- Polymer coating on nail head reduces staining and streaking by 80% compared to traditional hot dipped galvanized nails
- IRC R319.3 code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



Framing
Joists and rafters
Soffits
Stairs
Sheathing
Crating
Fences and decks

TOOL ACCESSORIES



Part No. 902513
All Season Orange Fuel Cell



Part No. 902654C
Li Ion Battery



Part No. 902667C
Lithium Battery Charger



Part No. 901252
Cordless No mar tip



Part No. 401482
Impulse Oil



Part No. 219086
Degreaser



PF-350S PowerMaster Plus Framing Nailer

*Durability,
Balance and
Versatility
for all jobs*



SEE PAGE P 13 FOR
FRAMING NAILS SELECTION CHART

INCLUDES

- PowerMaster™ Plus Pneumatic Framing Nailer
- Bump fire trigger
- Hex wrench (on tool)
- Safety glasses
- Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

PowerMaster Plus Framing Nailer—

DESIGNED FOR PROFESSIONAL FRAMERS

Heavy-duty jobs require a heavy-duty nailer. That's why the pros turn to the proven performance, durability and driving power, only a Paslode pneumatic framing nailer can provide. When used with Paslode nails, this nailing system can help you drive jobs home on time, every time.

POWERFUL



FAST



DEPENDABLE



ADVANTAGES

- Frame full walls faster. Heavy duty power.
- Reliable performance that saves time with less maintenance.
 - Durable construction requires less maintenance.
 - Proven performer for tough job site work with less jams or misfires
 - Compact size fits between 16" o.c. studs, joists and rafters.
- Soft grip handle for comfort
- Bolt-on end plug for easier service
- Depth of drive on the tool rather than the compressor saves time and energy
- Rafter hook, moves out of the way when not in need
- Adjustable air deflector cap

APPLICATIONS



- | | |
|--------------------|------------------|
| Framing | Sheathing |
| Joists and rafters | Crating |
| Soffits | Fences and decks |
| Stairs | |

SPECIFICATIONS

Part No. 501000

- Weight: 8.4 lbs
- Height: 13-3/10"
- Length: 18"
- Speed: 12 nails per second*, sequential or selectable operation
- Nail Capacity: 2 strips (up to 84)
- Nail Range: 2" – 3.5" in length, .113" – .131" shank diameters

- Nail Angle: 30°
- Nail Type: Paslode RoundDrive® Offset Full Head
- Air Req./100p.s.i. (6.9 bar): .082/cycle
- Op. Pres. p.s.i (bar): 80 – 120 (5.5 – 8.3)
- Warranty: 90-day limited on wear parts, 1-year limited on magazine parts, 5-year limited on housing and cap parts



F325R Compact Framing Nailer

*Lightest weight
framer ever*



SEE PAGE P 13 FOR
FRAMING NAILS SELECTION CHART

INCLUDES

Compact 30° Framing Nailer
Safety glasses
Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

Compact Framing Nailer—

DESIGNED FOR RENOVATORS

With this nailing system, you'll have any interior remodeling job done in no time. Get the access and maneuverability you need in tight spaces with this lightweight yet powerful pneumatic nailing system. When used with Paslode nails, this nailing system can help you drive jobs home on time, every time.

PROFESSIONAL



LIGHTWEIGHT



EASY ACCESS



ADVANTAGES

- Remodel interiors easier. Lightest weight framer ever.
 - Remodel Interiors Easier
 - First pneumatic nailer made especially with remodeler's needs in mind
 - Fits easily into the tightest spaces such as between 16" o.c. studs
- Great maneuverability to work comfortably overhead
- Lightest-framing nailer ever made: 5.9 lbs
- Quick 2-step nail strip reload
- Soft grip handle for comfort
- Works in bump mode for speed on jobsite

APPLICATIONS



Framing

Joists and rafters

Soffits

Stairs

Sheathing

Crating

Fences and decks

SPECIFICATIONS

Part No. 513000

Weight: 5.9 Pounds

Height: 12-9/10"

Width: 4-3/10"

Length: 12-3/10"

Fastener Range: 2" – 3 1/4"

Shank: .113 - .131

Magazine Capacity: 44

Op. Pres. p.s.i (bar): 90 – 120



PowerMaster Plus 4" Framing Nailer

Proven durability and reliability



SEE PAGE P 13 FOR FRAMING NAILS SELECTION CHART

INCLUDES

- PowerMaster Plus 4" Framing Nailer
- Safety glasses
- Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

PowerMaster Plus 4" —

DESIGNED FOR TIMBER FRAMERS

The F400S is the PowerMaster Plus framing nailer with an extended power and driver blade for 4" applications.

POWERFUL



FAST



DEPENDABLE



ADVANTAGES

- PowerMaster Plus Design - Proven durability and reliability
- Ergonomic Design - Centre of gravity is closer to the trigger, providing better balance.
- Versatile - Drives a variety of nails from 1-1/2" to 4" in length.
- Durable And Reliable - Rugged design will stand up to the demands of the job in any kind of weather.

APPLICATIONS



LSL, LVL, PSL, and OSB

Wall Sheathing

Framing

Floor Decking

Roof

SPECIFICATIONS

Part No. 502900

Weight: 8.9 lbs

Height: 14-1/2"

Length: 19"

Nail Capacity: 84

Range: 2" — 4"

Shank: .113 — .131

Back of tool to Nosepiece: 14.5"

Magazine Angle: 30°

Nail Type: 30° Paper Tape, full head/clipped

OP. Pres. p.s.i. (bar): 80 — 120 (5.5 — 8.3)

Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.

SELECTION CHART

Pro-Strip RoundDrive Nails

LENGTH	SHANK DIAMETER	SHANK TYPE	HEAD STYLE	COATING	PRODUCT NUMBER	NAILS PER PACK	QUANTITY PER MASTER	QUANTITY PER SKID
COATING TYPE: BRITE								
2"	0.113	Smooth	Roundrive	Brite	097385	6,500	1	80
2"	0.113	Ring	Roundrive	Brite	650273	5,500	1	80
2-3/8"	0.113	Smooth	Roundrive	Brite	50238	5 Strips	10	-
2-3/8"	0.113	Smooth	Roundrive	Brite	404238	1,000	4	-
2-3/8"	0.113	Smooth	Roundrive	Brite	097394	5,000	1	96
2-3/8"	0.113	Ring	Roundrive	Brite	097397	5,000	1	96
3"	0.120	Smooth	Roundrive	Brite	097971	3,000	1	96
3"	0.120	Ring	Roundrive	Brite	097973	3,000	1	96
3-1/4"	0.120	Smooth	Roundrive	Brite	50314	5 Strips	1	125
3-1/4"	0.120	Smooth	Roundrive	Brite	404314	1,000	4	-
3-1/4"	0.120	Smooth	Roundrive	Brite	404058	3,000	1	96
3-1/4"	0.131	Smooth	Roundrive	Brite	650839	2,500	1	96
3-1/4"	0.131	Ring	Roundrive	Brite	097978	2,500	1	96
3-1/2"	0.120	Smooth	Roundrive	Brite	404855	2,500	1	96
3-1/2"	0.131	Smooth	Roundrive	Brite	097987	2,500	1	96
4"	0.131	Smooth	Roundrive	Brite	2X0788	2,500	1	96
COATING TYPE: HOT DIPPED								
2"	0.113	Ring	Offset Oval	Hot Dipped	403389	2,500	1	150
2-3/8"	0.113	Ring	Offset Oval	Hot Dipped	404856	2,500	1	150
3"	0.120	Ring	Offset Oval	Hot Dipped	404857	1,500	1	150
3 1/4"	0.120	Ring	Offset Oval	Hot Dipped	50314G	5 Strips	6	-
3-1/4"	0.120	Ring	Offset Oval	Hot Dipped	404858	1,500	1	150

Also works with Cordless Impulse Framing Nailer (see page P 8)

- ICC-ES Recognized, ESR-3072
- Approved for use in all pressure treated lumber such as ACQ and MCQ
- Polymer coating on nail head reduces staining and streaking by 80% compared to traditional hot dipped galvanized nails
- IRC R319.3 code approved for use in pressure treated lumber in accordance with ASTM A 153

PRO-STRIP ROUNDRIE NAILS FOR USE WITH



POWERMASTER PLUS



COMPACT FRAMER



POWERMASTER PLUS 4" FRAMER



CORDLESS IMPULSE XP
FRAMING NAILER





SCS200 16 Ga. Standard 1/2" Crown Stapler

Heavy-duty all metal magazine design for increased durability



INCLUDES

- SCS200 Crown Stapler
- Pneumatic Lubricating Oil
- Safety glasses
- Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

SCS200 16Ga. Standard 1/2" Crown Stapler

WITH THE RIGHT STAPLER AND STAPLES, YOU'LL HAVE THE JOB DONE IN NO TIME.

The new Paslode 16ga standard crown stapler is built for professional framers with speed and power that will increase jobsite productivity by allowing you to work quickly, never having to pull out your hammer to finish off staples. this durable stapler will hold up to any jobsite conditions or high volume industrial usage..

POWERFUL



FAST



DEPENDABLE



ADVANTAGES

- Lightweight: Only 5.6 lbs
- Quick-Clear Nose: For easy jam clearance
- Quick Release Follower Tab: Makes reloading fast
- Staple Capacity: Up to 150 staples
- Staple Range: 3/4" – 2"

SELECTION CHART

16 Gauge Standard Crown Staples

LENGTH	CROWN SIZE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
1"	1/2"	Chisel	16	Galvanized	OT5242	16,500
1-1/4"	1/2"	Chisel	16	Galvanized	OT5238	13,500
1-1/2"	1/2"	Chisel	16	Galvanized	OT2695	10,500
1-3/4"	1/2"	Chisel	16	Galvanized	OT2250	9,000
2"	1/2"	Chisel	16	Galvanized	OT2258	7,500

APPLICATIONS



- Roof Decking
- Soffits and Fascia Boards
- Sheathing

SPECIFICATIONS

Part No. 515700

Weight: 5.6 lbs

Height: 11.7"

Width: 3/4"

Length: 15.1"

Op. Pres. 80 to 120 p.s.i. (5.5 to 8.3 bars)

Staple Length: 3/4" – 2"

Staple Diameter: 16 gauge

ONE-YEAR FULL WARRANTY A one-year warranty will apply to all parts, except those which are specifically covered by an extended warranty.

FIVE-YEAR EXTENDED LIMITED WARRANTY A five-year warranty will apply to all housing and cap assembly castings.



WCS200 16 Ga. Wide 15/16" Crown Stapler

*Drives staples flush
in all materials*



INCLUDES

WCS200 Wide 15/16" Crown Stapler
Pneumatic Lubricating Oil
Safety glasses
Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

WCS200 16Ga. Wide 15/16" Crown Stapler

RELIABLE. DURABLE. POWERFUL.

Tested and proven to reliably hold up to any application on most extreme jobsites. By using Paslode staples, you'll have fewer jams, fewer misfires and faster loading, only a Paslode stapling system can deliver.

POWERFUL



FAST



DEPENDABLE



ADVANTAGES

- **Lightweight:** only 5.9 lbs
- **Quick-Clear Nose:** For easy jam clearance
- **Quick Release Follower Tab:** Makes reloading fast
- **Staple Capacity:** Up to 150 staples
- **Staple Range:** 3/4" – 2"
- **Tool-free Adjustable Depth of Drive:** Easily adjust depth for consistency in any material

SELECTION CHART

16 Gauge Wide Crown Staples

LENGTH	CROWN SIZE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
7/8"	15/16"	Chisel	16	Galvanized	404069	9,000
1-1/2"	15/16"	Chisel	16	Galvanized	0T2855	10,500

APPLICATIONS



Soffits and Fascia Boards
Subfloor
Sheathing
Crates and Pallets

SPECIFICATIONS

Part No. 515800

Weight: 5.9 lbs

Height: 11.7"

Width: 3/4"

Length: 15.1"

Op. Pres. 80 to 120 p.s.i. (5.5 to 8.3 bars)

Staple Length: 3/4" – 2"

Staple Diameter: 16 gauge

ONE-YEAR FULL WARRANTY A one-year warranty will apply to all parts, except those which are specifically covered by an extended warranty.

FIVE-YEAR EXTENDED LIMITED WARRANTY A five-year warranty will apply to all housing and cap assembly castings.

IMLi200 18 Gauge Brad Nailer

*Lightweight and
well balanced*



TOOL ACCESSORIES

- Part No. 902654C** Lithium Ion 7.4v battery
- Part No. 902667C** Lithium Ion Battery Charger
- Part No. 219236** 3 Pack of No Mar Tips
- Part No. 219086** Degreaser Cleaner
- Part No. 401482** Impulse Oil
- Part No. 650039** Universal Trim Fuel Cell (4 pk)

INCLUDES

- IMLi200 18 Ga Brad Nailer
- Rugged Carrying Case
- Rechargeable Battery with Charger
- Safety glasses
- Owner's manual

DESCRIPTION/SUGGESTED SPECIFICATIONS

18 Gauge Brad Nailer—

WE'VE GOT THE FACTS NAILED.

When you need precision in tight spaces, reach for the lightweight Paslode Cordless Finishing Nailing System. It gives great maneuverability to place the nail exactly where you want it wherever you're working: overhead, on ladders or on your knees. Our portable finish nailer, finish nails and fuel cells are designed to work in tandem so you get the job done right, right away

POWERFUL



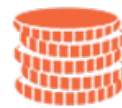
PRECISE



PRODUCTIVE



PENNIES PER SHOT



ADVANTAGES

- Li-Ion for 50% more shots (12,000) per charge
- Quick charge to 80% in 30 minutes
- New battery standby position conserves charge
- New easier depth of drive thumbwheel
- New reversible belt hook
- 8% lighter — 4.5 lbs with battery (compared with Ni-Cad battery)

SELECTION CHART

18 Gauge Fuel and Finish Nail Packs

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
1-1/2"	0.048	Chisel	18	Galvanized	FFP-118112	1,000
2"	0.048	Chisel	18	Galvanized	FFP-118002	1,000

See Page P 23 for additional finish nails that work with this tool.

APPLICATIONS



Crown and baseboard
mouldings
Panelling
Carpentry

SPECIFICATIONS

Part No. 903700

Weight: 4.5 lbs
Height: 11-1/2"
Length: 11"

Nail Capacity: 100
Nail Range: 5/8" — 2"
Nail Type: 18 ga

ONE-YEAR LIMITED WARRANTY A one-year warranty will apply to all parts, except those listed below as normal wearing parts, or parts which are specifically covered by an extended warranty.

FIVE-YEAR EXTENDED LIMITED WARRANTY A five-year warranty will apply to all molded nylon parts:

• Motor Housing, Cap and Grille • Handle Halves and Actuator • Trigger • Magazine Parts

90-DAY LIMITED WARRANTY A 90-day warranty applies to the following parts, which are considered normal wearing parts: • Bumper • Driver Blades • O-Rings • Seal Rings



IMLi200 18 Ga. Short Mag Brad Nailer

*Made to Fit in
Tight Spaces*



TOOL ACCESSORIES

- Part No. 902654C** Lithium Ion 7.4v battery
- Part No. 902667C** Lithium Ion Battery Charger
- Part No. 219236** 3 Pack of No Mar Tips
- Part No. 219086** Degreaser Cleaner
- Part No. 401482** Impulse Oil
- Part No. 650039** Yellow Trim Fuel Cell (4 pk)

INCLUDES

- IMLi200 18 Ga Short Mag Brad Nailer
- Rugged Carrying Case
- Rechargeable Battery with Charger
- Safety glasses
- Owner's manual

DESCRIPTION/SUGGESTED SPECIFICATIONS

18 Ga. Cordless Li-ion Brad Nailer - 1 Strip

MANEUVERABLE. PRECISE. LIGHTWEIGHT.

The NEW Paslode 18 Ga. Cordless Li-ion Brad Nailer is the ideal nailer for all of your trim projects. This tool has superior access to tight spaces so you are able to fasten in areas that aren't easily accessible. This consistent nailer makes your job easier than ever, driving each nail flush into all types of trim. Finally, weighing 4.25 lbs., this is the lightest Cordless Brad Nailer on the market.

POWERFUL



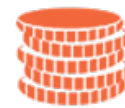
PRECISE



PRODUCTIVE



PENNIES PER SHOT



ADVANTAGES

- 7.4-volt Li-ion battery drives up to 12,000 s/b nails per charge
- 1-1/2 hour full charge; 2-minute quick charge for up to 200 extra shots
- Battery stand-by position secures battery in off position to conserve battery power
- Reversible belt hook – Easily adjusts and keeps both hands free
- Tool free depth of drive is easy to adjust, even with gloves on

SELECTION CHART

18 Gauge Fuel and Finish Nail Packs

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
1-1/2"	0.048	Chisel	18	Galvanized	FFP-118112	1,000
2"	0.048	Chisel	18	Galvanized	FFP-118002	1,000

See Page P 23 for additional finish nails that work with this tool.

APPLICATIONS



- Window Castings
- Baseboards moldings
- Decorative trim

SPECIFICATIONS

Part No. 918150

- Weight: 4.25 lbs
- Height: 11-1/2"
- Length: 11"
- Nail Capacity: 70

- Nail Range: 5/8" – 2"
- Nail Type: 18 ga
- Warranty: 1-year limited

IMLi250 16 Gauge Finish Nailer

*Lightweight and
well balanced*



TOOL ACCESSORIES

- Part No. 902654C Lithium Ion 7.4v battery
- Part No. 902667C Lithium Ion Battery Charger
- Part No. 219236 3 Pack of No Mar Tips
- Part No. 219086 Degreaser Cleaner
- Part No. 401482 Impulse Oil
- Part No. 650039 Universal Trim Fuel Cell (4 pk)

INCLUDES

- IMLi250 16 Ga Straight Finish Nailer
- Rugged Carrying Case
- Rechargeable Battery with Charger
- Safety Glasses
- Owner's Manual

DESCRIPTION/SUGGESTED SPECIFICATIONS

16 Gauge Straight Cordless Finish Nailer— GREAT MANEUVERABILITY.

It gives great maneuverability to place the nail exactly where you want it wherever you're working: overhead, on ladders or on your knees. Our portable finish nailer, finish nails and fuel cells are designed to work in tandem so you get the job done right, right away.

POWERFUL



PRECISE



PRODUCTIVE



PENNIES PER SHOT



ADVANTAGES

- Powerful precision – Finish right the first time.
- Li-ion Battery – Drives up to 12,000 nails per charge
- Lightweight – Only 4.6 pounds for added comfort and control
- Use Paslode Universal Trim Fuel – Drives approx. 1,000 nails
- Battery Standby Position – Conserves battery power
- 1 Hour Rapid Charger – 80% charge in 20 min

SELECTION CHART

16 Gauge Fuel and Finish Nail Packs

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
1 1/2"	0.063	Chisel	16	Galvanized	FFP-116112	1,000
2"	0.063	Chisel	16	Galvanized	FFP-116002	1,000

See Page P 20 for additional finish nails that work with this tool.

APPLICATIONS



- Door and window trim
- Casing
- Crown and baseboard moulding

SPECIFICATIONS

Part No. 903800

- Weight: 4.6 lbs
- Height: 11-3/4"
- Length: 10-1/2"
- Nail Capacity: 100
- Nail Range: 1" - 2-1/2"
- Nail Type: 16 ga Straight

ONE-YEAR LIMITED WARRANTY A one-year warranty will apply to all parts, except those listed below as normal wearing parts, or parts which are specifically covered by an extended warranty.

FIVE-YEAR EXTENDED LIMITED WARRANTY A five-year warranty will apply to all molded nylon parts:

- Motor Housing, Cap and Grille
- Handle Halves and Actuator
- Trigger
- Magazine Parts

90-DAY LIMITED WARRANTY A 90-day warranty applies to the following parts, which are considered normal wearing parts:

- Bumper
- Driver Blades
- O-Rings
- Seal Rings

T250S F16P 16 Gauge Finish Nailer

*Best in Class
Ergonomics*



INCLUDES

T250S F16P – 16 Gauge Finish Nailer
1/4" air fitting
Rugged Carrying Case
Owner's Manual
Safety Glasses

DESCRIPTION/SUGGESTED SPECIFICATIONS

T250S F16P – 16 Gauge Finish Nailer—

LIGHTWEIGHT. HIGH PERFORMANCE. LOW MAINTENANCE.

The Paslode 16 Ga. Pneumatic Finish Nailer has a best-in-class design that allows for comfort in all applications. This is a reliable and durable tool you can trust to keep up with you. The oil-free design allows for long term, maintenance-free operation which reduces cleanup time and associated costs.

LIGHTWEIGHT



DEPENDABLE



OIL FREE



ADVANTAGES

- Best in class ergonomics – Designed with enhanced features to optimize balance, maximize comfort, reduce fatigue and increase productivity
- Reliability and durability – Proven performance that saves you time and can keep up with you
- Low maintenance – Oil-free design allows for long term, maintenance-free operation which reduces cleanup time and associated costs

APPLICATIONS



Window and door trim/finish applications
Carpentry
Panelling

SPECIFICATIONS

Part No. 515500

Weight: 3.9 lbs
Height: 11.6"
Length: 12.3"
Nail Capacity: 100 (2 strips)

Nail Range: 1" – 2-1/2"

Magazine Angle: Straight Collation
Nail Type: 16 Ga. (Smooth/Galvanized)
Op. Pressure P.S.I (Bar): 80-120 p.s.i
Warranty: 5 Year limited warranty

16 Gauge Straight Finish Nailer

SELECTION CHART

16 Gauge Finish Nails

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
1"	0.063	Chisel	16	Galvanized	095203	5,000
1-1/4"	0.063	Chisel	16	Galvanized	095205	5,000
1-1/2"	0.063	Chisel	16	Galvanized	095257	4,000
1-3/4"	0.063	Chisel	16	Galvanized	095435	2,500
2"	0.063	Chisel	16	Galvanized	095436	2,500
2-1/2"	0.063	Chisel	16	Galvanized	090025	2,500
MULTI	0.063	Chisel	16	Galvanized	116000	2,000
1"	0.063	Chisel	16	Galvanized	116001	1,000
1-1/4"	0.063	Chisel	16	Galvanized	116114	1,000
1-1/2"	0.063	Chisel	16	Galvanized	116112	1,000
1-3/4"	0.063	Chisel	16	Galvanized	116134	1,000
2"	0.063	Chisel	16	Galvanized	116002	1,000
2-1/4"	0.063	Chisel	16	Galvanized	400601	2,500
2-1/2"	0.063	Chisel	16	Galvanized	116025	1,000

- ICC-ES Recognized, ESR-3072
- Approved for use in all pressure treated lumber such as ACQ and MCQ
- Polymer coating on nail head reduces staining and streaking by 80% compared to traditional hot dipped galvanized nails
- IRC R319.3 code approved for use in pressure treated lumber in accordance with ASTM A 153



16 GAUGE FINISH NAILS FOR USE WITH



T250S F16P – 16 GAUGE FINISH NAILER



IMLi250 – 16 GAUGE FINISH NAILER

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/
Antifreeze



Part No. 650039
Universal Trim Fuel Cell
(4 Pk)

P18-200 18 Gauge Brad Nailer

*Jobsite tough
all metal housing
and magazine*



SEE PAGE P 22 FOR
18 GAUGE NAILS SELECTION CHART

INCLUDES

P18-200 18 Gauge Brad Nailer
3 no mar tips
Air fitting
Oil
Safety glasses
Allen wrenches

DESCRIPTION/SUGGESTED SPECIFICATIONS

P18-200 18 Gauge Brad Nailer —

BUILT-IN SIGHT LINE ON HOUSING AND NOSE TO ENSURE ACCURATE NAILING.

Paslode driving power with the features contractors demand: depth of drive guide, dual action trigger, dry fire lockout, magazine gauge, easy jam clearing, no slip rubber handle, extra no mar tips and 360° adjustable exhaust. Actuation tip behind nose piece for clear view of work surface. Built-in sight line on housing and nose to ensure accurate nailing.

LIGHTWEIGHT



PRECISE



EASY ACCESS



ADVANTAGES

- All metal housing & magazine
- Adjustable drive depth
- Bump & sequential fire switch
- Last nail lockout
- Quick-release nose
- 360° adjustable exhaust
- 5/8" to 2" nails

APPLICATIONS

Windows
Doors
Furniture
Trim applications

SPECIFICATIONS

Part No. P18-200

Weight: 2.9 lbs
Height: 9.5"
Length: 10.25"
Nail Capacity: 100
Nail Range: 5/8" – 2"
Magazine Angle: Straight

Nail Type: 18 Gauge - Smooth, Galvanized
OP. Pres. p.s.i. (bar): 80-120
Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts



P18-FS200 18 Gauge Brad Nailer/ Stapler

*Paslode driving
power with
the features
contractors
demand*



SEE PAGE P 24 FOR
18 GA. 1/4" CROWN STAPLES

INCLUDES

P18-FS200 18 Gauge Brad Nailer/Stapler
3 no mar tips
Air fitting
Oil
Safety glasses
Allen wrenches

DESCRIPTION/SUGGESTED SPECIFICATIONS

P18-FS200 18 Gauge Brad Nailer/Stapler — BUILT-IN SIGHT LINE ON HOUSING AND NOSE TO ENSURE ACCURATE NAILING.

Paslode driving power with the features contractors demand: depth of drive guide, dual action trigger, dry fire lockout, magazine gauge, easy jam clearing, no slip rubber handle, extra no mar tips and 360° adjustable exhaust. Actuation tip behind nose piece for clear view of work surface. Built-in sight line on housing and nose to ensure accurate nailing.

LIGHTWEIGHT



PRECISE



EASY ACCESS



ADVANTAGES

- All metal housing & magazine
- Adjustable drive depth
- Bump & sequential fire switch
- Last nail lockout
- Quick-release nose
- 360° adjustable exhaust
- 5/8" to 2" Nails, 5/8" to 1-1/2" staples

APPLICATIONS

Windows
Doors
Furniture
Trim applications

SPECIFICATIONS

Part No. P18-FS200

Weight: 2.9 lbs
Height: 9.5"
Length: 10.25"
Nail Capacity: 100
Nail Range: 5/8" – 2" brad nails and
5/8" – 1-1/2" staples (1/4" crown)
Magazine Angle: Straight

Nail Type: 18 Gauge - Smooth,
Galvanized Nails and 1/4" Crown Staples
OP. Pres. p.s.i. (bar): 80-120
Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.

SELECTION CHART

18 Gauge Finish Nails

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
MULTI	0.048	Chisel	18	Galvanized	118000	2,000
1"	0.048	Chisel	18	Galvanized	118001	1,000
2"	0.048	Chisel	18	Galvanized	118002	1,000
3/4"	0.048	Chisel	18	Galvanized	118034	1,000
5/8"	0.048	Chisel	18	Galvanized	118058	1,000
1-1/2"	0.048	Chisel	18	Galvanized	118112	1,000
1-1/4"	0.048	Chisel	18	Galvanized	118114	1,000
1-3/4"	0.048	Chisel	18	Galvanized	118134	1,000
1"	0.048	Chisel	18	Galvanized	950001	3,000
2"	0.048	Chisel	18	Galvanized	950002	3,000
3/4"	0.048	Chisel	18	Galvanized	950034	6,000
1-1/2"	0.048	Chisel	18	Galvanized	950112	3,000
1-1/4"	0.048	Chisel	18	Galvanized	950114	3,000
1-3/4"	0.048	Chisel	18	Galvanized	950134	3,000

- ICC-ES Recognized, ESR-3072
- Approved for use in all pressure treated lumber such as ACQ and MCQ
- Polymer coating on nail head reduces staining and streaking by 80% compared to traditional hot dipped galvanized nails
- IRC R319.3 code approved for use in pressure treated lumber in accordance with ASTM A 153



18 GAUGE FINISH NAILS FOR USE WITH



P18-200 –
18 GAUGE BRAD NAILER



P18-FS200 –
18 GAUGE BRAD NAILER/STAPLER



IML1200 – 18 GAUGE
FINISH NAILER

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/
Antifreeze



Part No. 650039
Universal Trim Fuel Cell
(4 Pk)

N18-125 1-1/4" Narrow Soffit Stapler

**Adjustable Exhaust
– Maintains a
Cleaner Working
Environment**



INCLUDES

N18-125 – 1-1/4" Narrow Soffit Stapler

Safety glasses

Carrying case

Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

N18-125 – 1-1/4" Narrow Soffit Stapler—

POWERFUL – MOTOR DRIVES INTO THE HARDEST OF WOODS.

Precision pneumatic trim tools to do the job right. Whether you're a professional contractor or a "week-end" craftsman, the compact and durable. Lite Line series has the right tool for any trim or hobby application. Featuring the same rugged quality as our other heavy duty professional tools.

POWERFUL



EASY ACCESS



PROFESSIONAL



ADVANTAGES

- Ergonomically Balanced and Lightweight – To reduce arm fatigue.
- Quick Clear Nose Piece – to reduce down time on the job if a jam should occur.
- Narrow Nose Piece – Allows the tool to fit into tight corners.
- Magnesium Metal Housing – Durable and provides longer tool life.

SELECTION CHART

18 Gauge 1/4" Crown Staples

LENGTH	CROWN SIZE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
1/2"	1/4"	Chisel	18	Galvanized	180121	1,000
3/4"	1/4"	Chisel	18	Galvanized	180341	1,000
1"	1/4"	Chisel	18	Galvanized	180011	1,000
1"	1/4"	Chisel	18	Galvanized	140015	5,000
1-1/4"	1/4"	Chisel	18	Galvanized	181141	1,000
1-1/4"	1/4"	Chisel	18	Galvanized	141145	5,000

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



Trim/Finish

Plywood

Soffits/facias

Underlayment Applications

SPECIFICATIONS

Part No. N18-125

Weight: 2.5 lbs

Height: 9"

Length: 9-1/4"

Nail Capacity: 100

Nail Range: 3/4" - 1-1/4"

Nail Type: GSN 18, 3/16 inch (1/4" crown)

OP. Pres. p.s.i. (bar): 80-120 (5.5-8.3)

Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.



1-1/2" Narrow Crown Finish Stapler

*Ergonomically
Balanced and
Lightweight –
To Reduce
Arm Fatigue*



INCLUDES

N18-150 – 1-1/2" Narrow Crown Finish Stapler

Safety glasses

Carrying case

Owner's manual

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

DESCRIPTION/SUGGESTED SPECIFICATIONS

N18-150 - 1-1/2" Narrow Crown Finish Stapler—

POWERFUL – MOTOR DRIVES INTO THE HARDEST OF WOODS.

Precision pneumatic trim tools to do the job right. Whether you're a professional contractor or a "week-end" craftsman, the compact and durable. Lite Line series has the right tool for any trim or hobby application. Featuring the same rugged quality as our other heavy duty professional tools.

POWERFUL



PRECISE



PROFESSIONAL



ADVANTAGES

- Adjustable Exhaust – Maintains a cleaner working environment.
- Quick Clear Nose Piece – to reduce down time on the job if a jam should occur.
- Narrow Nose Piece – Allows the tool to fit into tight corners.
- Magnesium Metal Housing – Durable and provides longer tool life.

SELECTION CHART

18 Gauge 1/4" Crown Staples

LENGTH	CROWN SIZE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
1/2"	1/4"	Chisel	18	Galvanized	180121	1,000
3/4"	1/4"	Chisel	18	Galvanized	180341	1,000
1"	1/4"	Chisel	18	Galvanized	180011	1,000
1"	1/4"	Chisel	18	Galvanized	140015	5,000
1 1/4"	1/4"	Chisel	18	Galvanized	181141	1,000
1 1/4"	1/4"	Chisel	18	Galvanized	141145	5,000
1 1/2"	1/4"	Chisel	18	Galvanized	141125	5,000

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



Trim/Finish

Plywood

Soffits/facias

Underlayment Applications

SPECIFICATIONS

Part No. N18-150

Weight: 2.8 lbs

Height: 9-3/4"

Length: 11-1/2"

Nail Capacity: 100

Nail Range: 3/4" - 1-1/2"

Nail Type: GSN 18, 3/16 inch (1/4" crown)

OP. Pres. p.s.i. (bar): 80-120 (5.5-8.3)

Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.



US-100 Upholstery/ Craft Stapler

Easy-load
Magazine



DESCRIPTION/SUGGESTED SPECIFICATIONS

US-100 Upholstery/Craft Stapler—

LONG NARROW NOSEPIECE FOR TIGHT SPOTS

Lightweight - At only 2 lbs this tool is very easy to handle and decreases operator fatigue. Heavy-duty driver blade.

FAST



PRECISE



QUICK LOAD



ADVANTAGES

- Drives 3/8" - 9/16" upholstery staples.
- Fast - Shoots 5 staples per second

SELECTION CHART

22 Gauge Upholstery Staples

LENGTH	CROWN SIZE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
3/8"	3/8"	Chisel	22	Galvanized	422038	4,000

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



Upholstery
Crafts
Light paneling
Home project applications

INCLUDES

US100 Upholstery/Craft Stapler

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

SPECIFICATIONS

Part No. US-100

Weight: 2.8 lbs

Height: 9-1/2"

Length: 12-1/2"

Nail Capacity: 100

Nail Range: 3/8" - 9/16"

Nail Type: 22 Gauge Upholstery

OP. Pres. p.s.i. (bar): 80-120 (5.5-8.3)

Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.

HP100 Headless Pin Nailer

Compact
lightweight
design



DESCRIPTION/SUGGESTED SPECIFICATIONS

HP100 Headless Pin Nailer—

COMPACT – LIGHTWEIGHT.

Multi-directional exhaust port. Pin nails leave a very small hole for easy finishing and painting.

FAST



LIGHTWEIGHT



PROFESSIONAL



ADVANTAGES

■ Quick release nose piece

■ Drives 1/2" to 1-1/2" pin nails

SELECTION CHART

23 Gauge Pin Nails

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK
1"	0.025	Chisel	23	Brite	323001	3,000
3/4"	0.025	Chisel	23	Brite	323034	3,000
1-1/2"	0.025	Chisel	23	Brite	323112	3,000
1-3/8"	0.025	Chisel	23	Brite	323138	3,000

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



Fine woodworking and trim work

INCLUDES

- HP100 Headless Pin Nailer
- Safety glasses
- Tool case
- Allen wrench and oil

TOOL ACCESSORIES



Part No. 403720
Pneumatic Oil



Part No. 219090
Pneumatic Oil w/ Antifreeze

SPECIFICATIONS

Part No. HP100

Weight: 1.2 lbs

Height: 9-1/4"

Length: 7-3/4"

Nail Capacity: 100

Nail Range: 1/2" - 1-1/2"

Magazine Angle: Straight

Nail Type: 23 Gauge - Smooth,
Galvanized Pin Nails

OP. Pres. p.s.i. (bar): 80-120

Warranty: 90-day limited on wear parts,
6-month limited on magazine parts,
1-year limited on housing and cap parts.

Positive Placement PF250S

**Dependable,
Lightweight,
Compact and
Accurate**



APPLICATIONS



Joist Hangers

INCLUDES

Positive Placement PF250S
Safety Glasses
Owner's Manual

DESCRIPTION/SUGGESTED SPECIFICATIONS

Positive Placement Tool—

DESIGNED FOR PROFESSIONAL FRAMERS

Paslode is proud to introduce the latest customer-backed innovation. The Paslode® 21Ž2" Positive Placement® Metal Connecting System is designed to provide installers the optimal way for fastening structural hardware to wood structures. The pneumatic system significantly reduces installation time, allowing jobs to be completed faster and reducing the need for additional labour.

POWERFUL



FAST



DEPENDABLE



ADVANTAGES

- Versatile: Drives 1 1/2" and 2 1/2" nails.
- Dependable: Drive nails consistently to maximize productivity and efficiency.
- Lightweight and Compact: Reduces fatigue and increases maneuverability.
- Accurate: Probing tip guides nails into hardware holes.

SELECTION CHART

30 Degree Positive Placement Nails

LENGTH	SHANK DIAMETER	SHANK	DEGREE	COATING	PRODUCT NUMBER	NAILS PER PACK
1-1/2"	0.148	Smooth	30	Galvanized	650014	3,000
1-1/2"	0.148	Smooth	30	Brite	650646	1,000
2-1/2"	0.148	Smooth	30	Brite	650027	2,500

- Mechanically Galvanized, premium corrosion protection with code recognition. Recognized for use in ACQ, MCQ and all pressure treated lumber.
- Heat Treated nails to improve drive performance and reduce bending
- ICC-ES Recognized, ESR-2126, ESR-3326, Galvanization meets ASTM B695 Class 55
- Patented Paper Tape Collation formula provides clean shear for consistent drive performance. Maintains Strip integrity when in contact with moisture and will not fall apart when dropped

SPECIFICATIONS

Part No. 511800

Weight: 7.8 lbs
Height: 14"
Length: 17.4"
Nail Capacity: 55-60 Nails (2 strips)
Nail Range: .131" to .162" (Shank)

Magazine Angle: 30 Degrees

Nail Type: 1-1/2" to 2-1/2" Positive Placement Hanger Nails – Brite and Galvanized

Air req: 80-120 PSI

Warranty: 90-day limited on wear parts, 1-year limited on magazine parts, 5-year limited on housing and cap parts

Floormaster Plus™

Floormaster Plus™ 2 in 1 Flooring Nailer/Stapler



DESCRIPTION/SUGGESTED SPECIFICATIONS

2 in 1 Flooring Nailer/Stapler—

THE PROFESSIONAL GRADE 2 IN 1 FLOORING TOOL.

Optimal performance and solid reliability. Easy maintenance and low cost of ownership. Lightweight – 10.4 lbs

PRECISE



FAST



POWERFUL



ADVANTAGES

■ Easy Actuation

- Only 4 lbs of pressure anywhere on poppet valve
- Compact all-around striking surface to avoid marking/damaging walls

■ Industry-Best Design & Ergonomics

- Reverse handle with foam grip for reduced fatigue
- Compact size for nailing boards closer to the end walls

SELECTION CHART

Flooring Staples and Cleats

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK	NAILS PER BOX
1-3/4"	Staple	Chisel	15	Brite	151134	1,000	5,000
2"	Staple	Chisel	15	Brite	151002	1,000	5,000
2"	Cleat	Cleat	16	Brite	100002	1,000	

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS



3/4" Hardwood flooring



INCLUDES

Tool & Mallet

SPECIFICATIONS

Part No. F2N1-200

Weight: 10.4 lbs

Height: 18"

Length: 16"

Flooring Fasteners: 15GA staples & 16GA L-cleats

Fastener Lengths: 1-3/4", 2" 15GA staples & 2" 16 GA L-cleats

FloorMaster Pro™

Floormaster Pro™ Nailer/Stapler 2 in 1 Combo



INCLUDES

Tool & Mallet

DESCRIPTION/SUGGESTED SPECIFICATIONS

Nailer/Stapler 2 in 1 Combo—

THE PROFESSIONAL GRADE 2 IN 1 FLOORING TOOL.

Optimal performance, unfailing reliability. Ideal for flooring professionals, small contractors and self-employed installers.

PRECISE



SPEED



POWERFUL



ADVANTAGES

- Easy firing pneumatic valve
- Long lasting valve inside
- Light impact all-around striking cap
- Requires only a few drops of non-detergent oil weekly for lubrication

SELECTION CHART

Flooring Staples and Cleats

LENGTH	SHANK DIAMETER	SHANK TYPE	GAUGE	COATING	PRODUCT NUMBER	NAILS PER PACK	NAILS PER BOX
1-3/4"	Staple	Chisel	15	Brite	151134	1,000	5,000
2"	Staple	Chisel	15	Brite	151002	1,000	5,000
2"	Cleat	Cleat	16	Brite	100002	1,000	

- ICC-ES Recognized, ESR-1539
- Code approved for use in pressure treated lumber in accordance with ASTM A 153

APPLICATIONS

1/2" to 3/4" Solid and Engineered Flooring



SPECIFICATIONS

Part No. FNS-200

Weight: 11 lbs

Height: 21-5/8"

Length: 18"

Flooring Fasteners: 15-1/2ga staples
& 16ga L-Cleats

Fastener Lengths: 2", 1-3/4", 1-1/2"

Miscellaneous Fasteners

SELECTION CHART

MISCELLANEOUS FASTENERS

18 Gauge Flooring Cleats

LENGTH	TYPE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	CLEATS PER PACK
2"	Cleat	Chisel	18	Brite	150018	1,000

15 Degree Coil Nails

LENGTH	SHANK DIAMETER	SHANK	DEGREE	COATING	PRODUCT NUMBER	NAILS PER PACK
2"	0.099	Spiral	15	Brite	404582	4,500
2-1/4"	0.099	Spiral	15	Brite	404583	4,500
2-1/2"	0.099	Spiral	15	Brite	404584	4,500
3"	0.12	Spiral	15	Brite	404508	4,500
3-1/4"	0.12	Spiral	15	Brite	404510	4,500

18 Gauge GEN-ER-X 7/32" Crown Staples

LENGTH	TYPE	STAPLE POINT	GAUGE	COATING	PRODUCT NUMBER	STAPLES PER PACK
5/8"	7/32"	Chisel	18	Galvanized	732058	5,000
1"	7/32"	Chisel	18	Galvanized	732001	5,000
1-3/8"	7/32"	Chisel	18	Galvanized	732138	5,000



CANADA
FULL LINE CATALOGUE

Framing • Structural • Cabinetry • Finishing • Specialty

GRK
FASTENERS™
ÜberGrade®



Drive with Speed, Quality and Confidence

What Makes Us ÜberGrade?



**RECESSED
STAR DRIVE**

Drive with Speed, Quality and Confidence



Zero Stripping, with (6) points of contact

CEE THREAD™

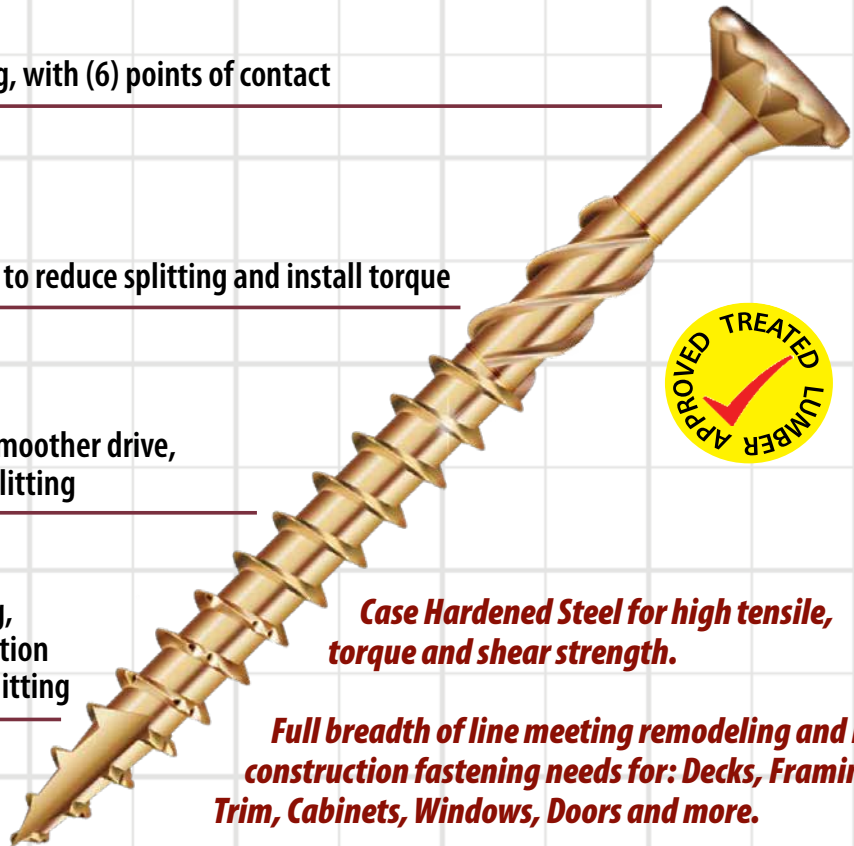
Enlarges hole to reduce splitting and install torque

W-CUT™

Low torque, smoother drive,
and reduce splitting

ZIP-TIP™

No pre-drilling,
faster penetration
and reduce splitting



**Case Hardened Steel for high tensile,
torque and shear strength.**

**Full breadth of line meeting remodeling and new
construction fastening needs for: Decks, Framing,
Trim, Cabinets, Windows, Doors and more.**

BUILDING CODE APPROVED—for structural use in treated lumber. GRK screws have been evaluated for structural and AC257 corrosion resistance to be in compliance with IBC/IRC specifications. That's why all our fasteners come with a limited lifetime warranty, so you can rest assured your installations will last the life of your project.



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Selection Guide

Fastener Selection Guide and Quick Reference Product Locator

Always build your project according to current ICC (International Code Council) specifications. GRK's Climatek™ coating meets or exceeds standards, including AC257, for use in various type of preservative treated wood.

Please view ICC Report #ESR-2442, ESR-3201 and ESR-3251 for more details. Visit <http://www.grkfasteners.com/index.php/en/techdata/code-approvals>.

No pre-drilling required for most GRK products, unless required or specified by building material. Always place deck boards with outer edge of growth rings facing up (bark side up). Do not use deck cleaners which contain bleach with coated metals. Consult building material supplier's/manufacturer's recommendations for exact instructions. Decking screws should be countersunk 1/8".



DECK ELITE

GRK's newest product, Deck Elite™ was designed with the Pro in mind and for high volume deck building for ACQ Material. The Fast Bite Tip allows for immediate engagement with deck boards. The W-Cut reduces torque for faster drive and ease of install. The tan colour matches perfectly with most commonly used deck boards, resulting in a clean finish.

Deck Elite™ screws feature a corrosion resistant coating that is backed by its lifetime guarantee against rust. Generic Screws will not come anywhere close to the Deck Elite™ coating.

Not approved by AC257 nor ICC.



R4™ MULTI-PURPOSE FRAMING SCREWS:

Frame with ease and confidence. Multi-use screw for wood, particle board, sheet metal, cement fibre board, laminate and wood decking and melamine. They are self tapping eliminating pre-drilling featuring a countersinking head with cutting teeth, W-Cut™ for reducing splitting, CEE Thread™ for no splitting, reducing install torque and our Climatek™ AC257 code approved coating.

For Southern Yellow Pine use #10. For use in all applications including pressure treated lumber.

They are ESR code approved under ICC Report ESR-3201.



RSS™ RUGGED STRUCTURAL SCREWS:

Speedy lag bolt alternative with Immense drawing power. Ideal for use anywhere you would use a traditional lag screw and more, but with no pre-drilling required. For use in all applications including pressure treated lumber. They are self tapping eliminating pre-drilling featuring a washer head with cutting teeth, W-Cut™ for reducing torque, CEE Thread™ for no splitting, reducing install torque and our Climatek™ AC257 code approved coating. They are ESR code approved under ICC Report ESR-2442.

RSS™ JTS: Joist & Truss Fastener: Used for joists and trusses.

RSS™ LTF: Timber Frame Fastener: Designed specifically for the Log Home & Timber frame market.



KAMELEON™ COMPOSITE DECK SCREWS:

Heads blend in with decking with no mushrooming effect. Use in plastic or composite decking. They come in a variety of deck matching colours of which Grey, Brown and Tan are approved for use with Trex Select™ deck boards.

The Kameleon screws are self tapping featuring fibre trapping rings, a countersinking head with cutting teeth, CEE Thread™, W-Cut™ threads for reduced torque and our Climatek™ AC257 code approved coating. They are ESR code approved under ICC Report ESR-3201.

FIN/TRIM™ TRIM HEAD SCREWS:

Smallest head on the market for a clean finish. Perfect for all interior and exterior finishing applications including deck rails, exterior wood trim, stairs, banisters, window and door trim, base boards, crown moulding and joining cabinets. For use in all applications including pressure treated lumber.

They are self-tapping eliminating pre-drilling featuring the W-Cut™ threads for reduced torque, and our Climatek™ AC257 code approved coating. They are ESR code approved under ICC Report ESR-3201.



RT COMPOSITE™ TRIM HEAD SCREWS:

Reverse thread design prevent mushrooming for a clean finish. Engineered for use in exterior applications including classic composite trim and decking, cPVC trim and moulding. For use in all applications including pressure treated lumber. RT™ Composite Trim screws are self-tapping eliminating pre-drilling featuring the W-Cut™ threads for reduced torque, and our Climatek™ AC257 code approved coating. They are ESR code approved under ICC Report ESR-3201.



LOW PROFILE CABINET™ SCREWS:

Built in washer head presses in flush against any material. Used for cabinet and vinyl siding installation. These unique screws are thin enough to prevent most material splitting, while providing sufficient strength to guarantee a secure installation.

They are self tapping eliminating pre-drilling featuring the W-Cut™ threads for reduced torque and our Climatek™ AC257 code approved coating.



TOP STAR™ SHIM SCREWS:

For plumb installation of wooden door and window frames. No more shims! Other uses include cabinets, insulation, paneling and built-in-wall units.

The two-piece "unique screw within a screw" design reduces labour when installing wooden doors or windows. A unique 2 piece crown/bit allows for quick and easy driving.



CALIBURN™ SCREWS:

Heavy duty concrete and masonry fastener. For attaching a variety of materials and fixtures to concrete. Easy driving high carbon steel allows the screws to create threads while being driven into the concrete. Proper pre-drilling with correct drill bit required. Caliburn™ screws are Climatek™ AC257 code approved coating.

Caliburn Screw: Tapered concrete screw for securing wood.

Caliburn™ PH Screw: Pan head concrete screw for a more aesthetic look

Caliburn™ XL Screws: Washer head style concrete screw for strong connections



Deck Elite™

Decking Screws

*Fast Start, Fast
Drive, Ideal Finish*



DESCRIPTION/SUGGESTED SPECIFICATIONS

Decking Screws—

GRK's newest product, Deck Elite™ was designed with the Pro in mind and for high volume deck building for ACQ Material. The Fast Bite Tip allows for immediate engagement with deck boards. The W-Cut reduces torque for faster drive and ease of install. The tan colour matches perfectly with most commonly used deck boards, resulting in a clean finish.

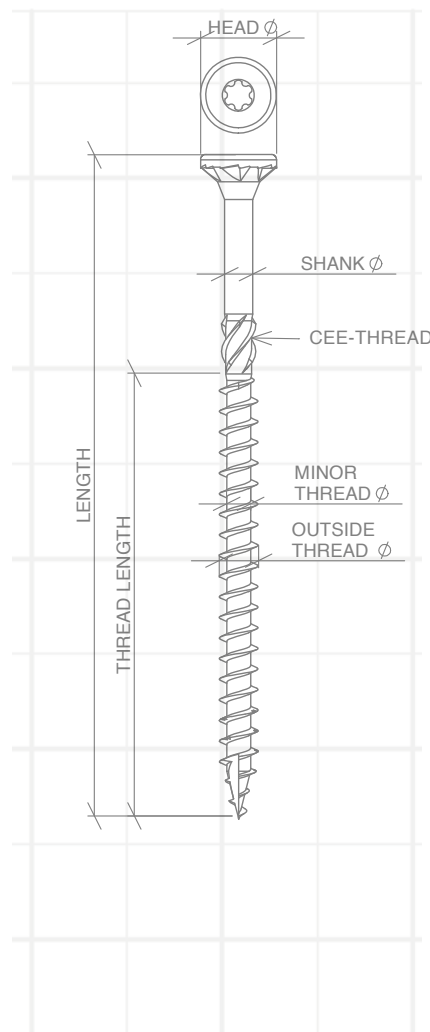
ÜberGrade™



Deck Elite™ screws feature a corrosion resistant coating that is backed by its lifetime guarantee against rust. Generic Screws will not come anywhere close to the Deck Elite™ coating.

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **CEE Thread:** Enlarges hole to reduce splitting, install torque.
- **W-Cut™:** Low torque, smoother drive, reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration, reduce splitting.
- **Cutting Pockets:** provide a clean hole, reduces splitting, and bore with precision.
- **Case Hardened Steel:** for high tensile, torque and shear strength.
- For interior/exterior use in; wood, plastic, cement fibre board, particle board, sheet metal, wood decking and melamine.



APPLICATIONS



SELECTION CHART



T-15



T-25

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC SIZE (DIA. X LENGTH)	PAIL PART NO.	PAIL QTY.	PRO-PAK PART NO.	PRO-PAK PAIL QTY.
#8 X 1-1/2	4.0 x 40	20073	2700	21073	850
#8 X 2-1/2	4.0 x 63	20079	1600	21079	600
#8 X 3	4.0 X 76	20080	1300	21080	450
#10 X 2-1/2	4.5 X 63	20133	1000	21133	400
#10 X 3	4.5 X 76	20136	1000	21136	350
#10 X 3-1/2	4.5 X 90	20139	1000	21139	300

Driver bit included in Pro-Paks and Pail.

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

R4™

Multi-Purpose Framing Screws Frame with Ease and Confidence



DESCRIPTION/SUGGESTED SPECIFICATIONS

Multi-Purpose Framing Screws—

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.

ÜberGrade™

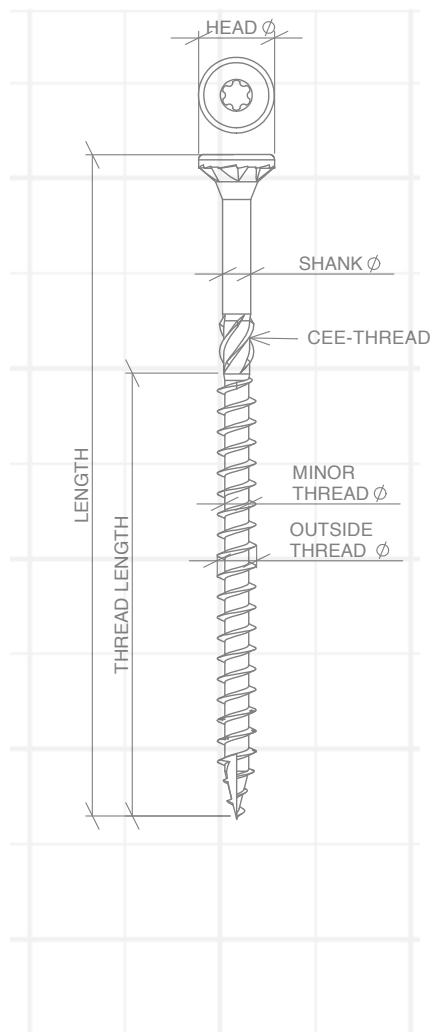


This design enhances the R4™'s versatility by allowing the fastener to countersink into even the hardest woods. The head of the screw closes the hole off with precision, leaving no damaged fibres around the head.

R4™ screws 2" 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.

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **CEE Thread:** Enlarges hole to reduce splitting, install torque.
- **W-Cut™:** Low torque, smoother drive, reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration, reduce splitting.
- **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 fibre board, particle board, sheet metal, wood decking and melamine.



APPROVALS/LISTING



APPLICATIONS



SELECTION CHART



T-15



T-25



T-25



T-25

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC 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 1-1/2"	4.0 x 40			01073	1,000		
#8 x 2"	4.0 x 50			01077	850	02077	S/100
#9 x 1-3/4"	4.5 x 45					02097	S/100
#9 x 2"	4.5 x 50	00099	3,700	01099	690		
#9 x 2-1/2"	4.5 x 63	00101	2,900	01101	575	02101	M/100
#9 x 2-3/4"	4.5 x 70			01103	480		M/100
#9 x 3-1/8"	4.5 x 80	00105	1,900	01105	425	02105	M/100
#10 x 2-1/2"	5.0 x 63	00133	2,500	01133	470		
#10 x 2-3/4"	5.0 x 70	00135	2,000				
#10 x 3-1/8"	5.0 x 80	00137	1,500	01137	350	02137	M/100
#10 x 3-1/2"	5.0 x 90	00139	1,200	01139	300	02139	M/50
#10 x 4"	5.0 x 100	00141	1,000	01141	270	02141	M/50
#10 x 4-3/4"	5.0 x 120	00143	800	01143	230	02143	M/50
#12/14 x 4"	6.0 x 100	00165	800				
#12/14 x 5-5/8"	6.0 x 140	00173	600			02173	M/50
#12/14 x 6-3/8"	6.0 x 160	00177	1,000			02177	M/9
#12/14 x 7-1/4"	6.0 x 180	00179	1,000			02179	M/9
#12/14 x 8"	6.0 x 200	00181	500			02181	M/9
#12/14 x 10"	6.0 x 250					02187	M/12
#12/14 x 12"	6.0 x 300					02193	M/12

2" bit included in Pro-Paks, 1" bits in Handy-Paks.

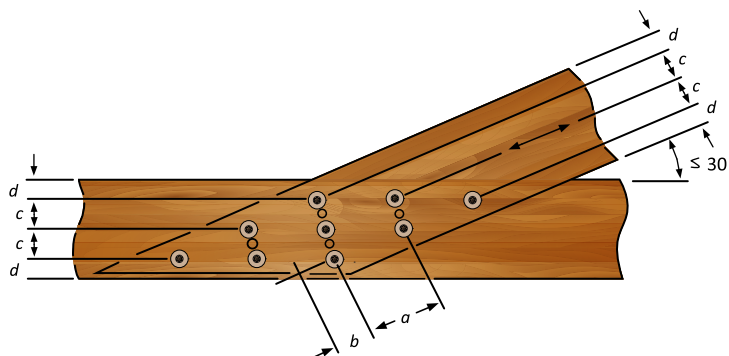
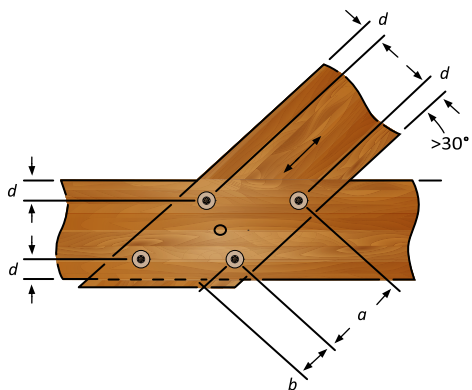
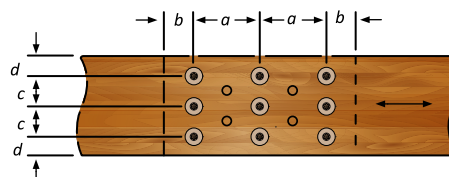
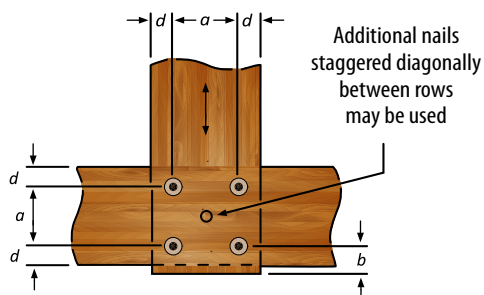
*Does not come with the Zip-Tip™ feature. **NOTE:** Pro-Paks need to be ordered in multiples of two.

Technical Data

GRK R4 Spacings

MINIMUM ROW SPACING, SPACING IN ROW AND EDGE DISTANCES AS SPECIFIED IN CLAUSE 12.11 CSA 086-14

R4 NOMINAL DIA.	OUTSIDE THREAD DIA. (IN.)	DIMENSION (SEE FIGURE)	POINT SIDE MEMBER SPECIES	
			D. FIR-L	S-P-F
			MINIMUM DIMENSIONS (in)	
9 x L	0.173	a - Spacing parallel to grain	3.5	2.8
		b - End distance parallel to grain	2.6	2.1
		c - Spacing perpendicular to grain	1.7	1.4
		d - Edge distance perpendicular to grain	0.9	0.7
10 x L	0.193	a - Spacing parallel to grain	3.9	3.1
		b - End distance parallel to grain	2.9	2.3
		c - Spacing perpendicular to grain	1.9	1.5
		d - Edge distance perpendicular to grain	1.0	0.8
12 x L	0.234	a - Spacing parallel to grain	4.7	3.7
		b - End distance parallel to grain	3.5	2.8
		c - Spacing perpendicular to grain	2.3	1.9
		d - Edge distance perpendicular to grain	1.2	0.9



GRK R4 9 x L SAWN LUMBER SIDE PL

MODEL/BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER			
							SIDE MEMBER: D.FIR-L SAWN LUMBER			
							THICKNESS OF SIDE MEMBER (in.)			
							1.5	2	1.5	2
							LATERAL RESISTANCE		WITHDRAWAL RESISTANCE	
							LB.	LB.	LB.	LB.
							kN	kN	kN	kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	---	---	---	---
00101	9 x 2-1/2"		2.375			1.625	155	---	168	---
01103	9 x 2-3/4"		2.75			1.875	181	146	223	144
00105	9 x 3-1/8"		3.125			1.625	186	172	223	217
00105	9 x 3-1/8"		3.125			2.125	186	172	223	217
							0.69	---	0.75	---
							0.81	0.65	0.99	0.64
							0.83	0.77	0.99	0.96
							0.83	0.77	0.99	0.96
							0.83	0.77	0.99	0.96

MODEL/BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER			
							SIDE MEMBER: S-P-F SAWN LUMBER			
							THICKNESS OF SIDE MEMBER (in.)			
							1.5	2	1.5	2
							LATERAL RESISTANCE		WITHDRAWAL RESISTANCE	
							LB.	LB.	LB.	LB.
							kN	kN	kN	kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	---	---	---	---
00101	9 x 2-1/2"		2.375			1.625	137	---	128	---
01103	9 x 2-3/4"		2.75			1.875	159	129	183	110
00105	9 x 3-1/8"		3.125			1.625	168	152	223	165
00105	9 x 3-1/8"		3.125			2.125	168	152	223	165
							0.61	---	0.57	---
							0.71	0.57	0.81	0.49
							0.75	0.67	0.99	0.73
							0.75	0.67	0.99	0.73
							0.75	0.67	0.99	0.73

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

R4™ Multi-Purpose Framing Screws

GRK R4 9 x L PLYWOOD SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER							
							SIDE MEMBER: DFP PANEL THICKNESS OF SIDE MEMBER (in.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	141	153	161	165	56	74	93	111
							0.63	0.68	0.71	0.73	0.25	0.33	0.41	0.50
00101	9 x 2-1/2"		2.375			1.625	141	153	166	179	56	74	93	111
							0.63	0.68	0.74	0.80	0.25	0.33	0.41	0.50
01103	9 x 2-3/4"		2.75			1.875	141	153	166	179	56	74	93	111
							0.63	0.68	0.74	0.80	0.25	0.33	0.41	0.50
00105	9 x 3-1/8"		3.125			1.625	141	153	166	179	56	74	93	111
							0.63	0.68	0.74	0.80	0.25	0.33	0.41	0.50
00105	9 x 3-1/8"		3.125			2.125	141	153	166	179	56	74	93	111
							0.63	0.68	0.74	0.80	0.25	0.33	0.41	0.50

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER							
							SIDE MEMBER: CSP PLYWOOD THICKNESS OF SIDE MEMBER (IN.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	124	134	138	141	56	74	93	111
							0.55	0.60	0.61	0.63	0.25	0.33	0.41	0.50
00101	9 x 2-1/2"		2.375			1.625	124	135	146	157	56	74	93	111
							0.55	0.60	0.65	0.70	0.25	0.33	0.41	0.50
01103	9 x 2-3/4"		2.75			1.875	124	135	146	157	56	74	93	111
							0.55	0.60	0.65	0.70	0.25	0.33	0.41	0.50
00105	9 x 3-1/8"		3.125			1.625	124	135	146	157	56	74	93	111
							0.55	0.60	0.65	0.70	0.25	0.33	0.41	0.50
00105	9 x 3-1/8"		3.125			2.125	124	135	146	157	56	74	93	111
							0.55	0.60	0.65	0.70	0.25	0.33	0.41	0.50

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 9 x L COLD-FORMED STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	180	194	209	228	264	241	241	241	241	241
							0.80	0.86	0.93	1.01	1.17	1.07	1.07	1.07	1.07	1.07
00101	9 x 2-1/2"		2.375			1.625	180	194	209	228	265	313	313	313	313	313
							0.80	0.86	0.93	1.01	1.18	1.39	1.39	1.39	1.39	1.39
01103	9 x 2-3/4"		2.75			1.875	180	194	209	228	265	320	361	361	361	361
							0.80	0.86	0.93	1.01	1.18	1.42	1.61	1.61	1.61	1.61
00105	9 x 3-1/8"		3.125			1.625	180	194	209	228	265	313	313	313	313	313
							0.80	0.86	0.93	1.01	1.18	1.39	1.39	1.39	1.39	1.39
00105	9 x 3-1/8"		3.125			2.125	180	194	209	228	265	320	409	409	409	409
							0.80	0.86	0.93	1.01	1.18	1.42	1.82	1.82	1.82	1.82

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00099	9 x 2"	0.128	2	0.329	0.173	1.25	163	177	192	209	236	183	183	183	183	183
							0.73	0.79	0.85	0.93	1.05	0.81	0.81	0.81	0.81	0.81
00101	9 x 2-1/2"		2.375			1.625	163	178	193	211	236	238	238	238	238	238
							0.73	0.79	0.86	0.94	1.05	1.06	1.06	1.06	1.06	1.06
01103	9 x 2-3/4"		2.75			1.875	163	178	193	211	236	275	275	275	275	275
							0.73	0.79	0.86	0.94	1.05	1.22	1.22	1.22	1.22	1.22
00105	9 x 3-1/8"		3.125			1.625	163	178	193	211	236	238	238	238	238	238
							0.73	0.79	0.86	0.94	1.05	1.06	1.06	1.06	1.06	1.06
00105	9 x 3-1/8"		3.125			2.125	163	178	193	211	236	311	311	311	311	311
							0.73	0.79	0.86	0.94	1.05	1.39	1.39	1.39	1.39	1.39

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 9xL MILD STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D-FIR-L SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
							kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
00099	9 x 2"	0.128	2	0.173	0.329	1.25	275	275	275	275	275	241	241	241	241	241
							1.23	1.23	1.23	1.23	1.23	1.07	1.07	1.07	1.07	1.07
00101	9 x 2-1/2"		2.375			1.625	275	275	275	275	275	313	313	313	313	313
							1.23	1.23	1.23	1.23	1.23	1.39	1.39	1.39	1.39	1.39
01103	9 x 2-3/4"		2.75			1.875	275	275	275	275	275	361	361	361	361	361
							1.23	1.23	1.23	1.23	1.23	1.61	1.61	1.61	1.61	1.61
00105	9 x 3-1/8"		3.125			1.625	275	275	275	275	275	313	313	313	313	313
							1.23	1.23	1.23	1.23	1.23	1.39	1.39	1.39	1.39	1.39
00105	9 x 3-1/8"		3.125			2.125	275	275	275	275	275	409	409	409	409	409
							1.23	1.23	1.23	1.23	1.23	1.82	1.82	1.82	1.82	1.82

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
							kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
00099	9 x 2"	0.128	2	0.173	0.329	1.25	240	240	240	240	240	183	183	183	183	183
							1.07	1.07	1.07	1.07	1.07	0.81	0.81	0.81	0.81	0.81
00101	9 x 2-1/2"		2.375			1.625	240	240	240	240	240	238	238	238	238	238
							1.07	1.07	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06
01103	9 x 2-3/4"		2.75			1.875	240	240	240	240	240	275	275	275	275	275
							1.07	1.07	1.07	1.07	1.07	1.22	1.22	1.22	1.22	1.22
00105	9 x 3-1/8"		3.125			1.625	240	240	240	240	240	238	238	238	238	238
							1.07	1.07	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06
00105	9 x 3-1/8"		3.125			2.125	240	240	240	240	240	311	311	311	311	311
							1.07	1.07	1.07	1.07	1.07	1.39	1.39	1.39	1.39	1.39

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 10xL SAWN LUMBER SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: D.FIR-L SAWN LUMBER THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	1.5	2	2.5	3	3.5
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN						
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	177	---	---	---	---	184	---	---	---	---
							0.79	---	---	---	---	0.82	---	---	---	---
00135	10 x 2-3/4"		2.75			1.875	206	167	---	---	---	223	158	---	---	---
							0.92	0.74	---	---	---	0.99	0.70	---	---	---
00137	10 x 3-1/8"		3.125			1.625	217	196	---	---	---	223	237	---	---	---
							0.97	0.87	---	---	---	0.99	1.05	---	---	---
00139	10 x 3-1/2"		3.5			2	217	217	187	---	---	223	297	211	---	---
							0.97	0.97	0.83	---	---	0.99	1.32	0.94	---	---
00141	10 x 4"		3.875			2.625	217	217	216	177	---	223	297	290	184	---
							0.97	0.97	0.96	0.79	---	0.99	1.32	1.29	0.82	---
00143	10 x 4-3/4"		4.625			3	217	217	217	217	196	223	297	371	342	237
							0.97	0.97	0.97	0.97	0.87	0.99	1.32	1.65	1.52	1.05

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: S-P-F SAWN LUMBER THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	1.5	2	2.5	3	3.5
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN						
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	156	---	---	---	---	140	---	---	---	---
							0.69	---	---	---	---	0.62	---	---	---	---
00135	10 x 2-3/4"		2.75			1.875	181	148	---	---	---	200	120	---	---	---
							0.81	0.66	---	---	---	0.89	0.53	---	---	---
00137	10 x 3-1/8"		3.125			1.625	196	173	---	---	---	223	180	---	---	---
							0.87	0.77	---	---	---	0.99	0.80	---	---	---
00139	10 x 3-1/2"		3.5			2	196	196	165	---	---	223	240	160	---	---
							0.87	0.87	0.73	---	---	0.99	1.07	0.71	---	---
00141	10 x 4"		3.875			2.625	196	196	156	156	---	223	297	220	140	---
							0.87	0.87	0.69	0.69	---	0.99	1.32	0.98	0.62	---
00143	10 x 4-3/4"		4.625			3	196	196	196	196	173	223	297	371	260	180
							0.87	0.87	0.87	0.87	0.77	0.99	1.32	1.65	1.16	0.80

- Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.
- ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.
- Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.
- Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.
- '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.
- Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).
- Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

R4™ Multi-Purpose Framing Screws

GRK R4 10xL PLYWOOD SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER							
							SIDE MEMBER: DFP PANEL THICKNESS OF SIDE MEMBER (in.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50
00135	10 x 2-3/4"		2.75			1.875	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50
00137	10 x 3-1/8"		3.125			1.625	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50
00139	10 x 3-1/2"		3.5			2	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50
00141	10 x 4"		3.875			2.625	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50
00143	10 x 4-3/4"		4.625			3	158	172	185	199	56	74	93	111
							0.70	0.76	0.82	0.88	0.25	0.33	0.41	0.50

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER							
							SIDE MEMBER: CSP PLYWOOD THICKNESS OF SIDE MEMBER (IN.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50
00135	10 x 2-3/4"		2.75			1.875	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50
00137	10 x 3-1/8"		3.125			1.625	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50
00139	10 x 3-1/2"		3.5			2	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50
00141	10 x 4"		3.875			2.625	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50
00143	10 x 4-3/4"		4.625			3	140	152	163	175	56	74	93	111
							0.62	0.68	0.73	0.78	0.25	0.33	0.41	0.50

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 10xL COLD-FORMED STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER SPECIES: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	207	224	240	261	302	342	342	342	342	342
							0.92	0.99	1.07	1.16	1.34	1.52	1.52	1.52	1.52	1.52
00135	10 x 2-3/4"		2.75			1.875	207	224	240	261	302	357	395	395	395	395
							0.92	0.99	1.07	1.16	1.34	1.59	1.76	1.76	1.76	1.76
00137	10 x 3-1/8"		3.125			1.625	207	224	240	261	302	342	342	342	342	342
							0.92	0.99	1.07	1.16	1.34	1.52	1.52	1.52	1.52	1.52
00139	10 x 3-1/2"		3.5			2	207	224	240	261	302	357	421	421	421	421
							0.92	0.99	1.07	1.16	1.34	1.59	1.87	1.87	1.87	1.87
00141	10 x 4"		3.875			2.625	207	224	240	261	302	357	477	553	553	553
							0.92	0.99	1.07	1.16	1.34	1.59	2.12	2.46	2.46	2.46
00143	10 x 4-3/4"		4.625			3	207	224	240	261	302	357	477	596	632	632
							0.92	0.99	1.07	1.16	1.34	1.59	2.12	2.65	2.81	2.81

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER SPECIES: S-P-F SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	188	204	221	242	276	260	260	260	260	260
							0.84	0.91	0.98	1.07	1.23	1.16	1.16	1.16	1.16	1.16
00135	10 x 2-3/4"		2.75			1.875	188	204	221	242	276	301	301	301	301	301
							0.84	0.91	0.98	1.07	1.23	1.34	1.34	1.34	1.34	1.34
00137	10 x 3-1/8"		3.125			1.625	188	204	221	242	276	260	260	260	260	260
							0.84	0.91	0.98	1.07	1.23	1.16	1.16	1.16	1.16	1.16
00139	10 x 3-1/2"		3.5			2	188	204	221	242	276	321	321	421	321	321
							0.84	0.91	0.98	1.07	1.23	1.43	1.43	1.43	1.43	1.43
00141	10 x 4"		3.875			2.625	188	204	221	242	276	357	421	421	421	421
							0.84	0.91	0.98	1.07	1.23	1.59	1.87	1.87	1.87	1.87
00143	10 x 4-3/4"		4.625			3	188	204	221	242	276	357	477	481	481	481
							0.84	0.91	0.98	1.07	1.23	1.59	2.12	2.14	2.14	2.14

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

R4™ Multi-Purpose Framing Screws

GRK R4 10xL MILD STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER SPECIES: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	322 1.43	322 1.43	322 1.43	322 1.43	322 1.43	342 1.52	342 1.52	342 1.52	342 1.52	342 1.52
00135	10 x 2-3/4"		2.75			1.875	322 1.43	322 1.43	322 1.43	322 1.43	315 1.43	395 1.76	395 1.76	395 1.76	395 1.76	395 1.76
00137	10 x 3-1/8"		3.125			1.625	322 1.43	322 1.43	322 1.43	322 1.43	322 1.43	342 1.52	342 1.52	342 1.52	342 1.52	342 1.52
00139	10 x 3-1/2"		3.5			2	322 1.43	322 1.43	322 1.43	322 1.43	322 1.43	421 1.87	421 1.87	421 1.87	421 1.87	421 1.87
00141	10 x 4"		3.875			2.625	322 1.43	322 1.43	322 1.43	322 1.43	322 1.43	553 2.46	553 2.46	553 2.46	553 2.46	553 2.46
00143	10 x 4-3/4"		4.625			3	322 1.43	322 1.43	322 1.43	322 1.43	322 1.43	632 2.81	632 2.81	632 2.81	632 2.81	632 2.81

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER SPECIES: S-P-F SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00133	10 x 2-1/2"	0.142	2.375	0.368	0.193	1.625	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	260 1.16	260 1.16	260 1.16	260 1.16	260 1.16
00135	10 x 2-3/4"		2.75			1.875	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	301 1.34	301 1.34	301 1.34	301 1.34	301 1.34
00137	10 x 3-1/8"		3.125			1.625	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	260 1.16	260 1.16	260 1.16	260 1.16	260 1.16
00139	10 x 3-1/2"		3.5			2	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	321 1.43	321 1.43	321 1.43	321 1.43	321 1.43
00141	10 x 4"		3.875			2.625	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	421 1.87	421 1.87	421 1.87	421 1.87	421 1.87
00143	10 x 4-3/4"		4.625			3	281 1.25	281 1.25	281 1.25	281 1.25	281 1.25	481 2.14	481 2.14	481 2.14	481 2.14	481 2.14

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 12xL D.FIR-L SAWN LUMBER SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: D.FIR-L SAWN LUMBER									
							THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	4	4.5	5	6	8
							LATERAL RESISTANCE									
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	291	304	304	303	257	---	---	---	---	---
							1.30	1.35	1.35	1.35	1.14	---	---	---	---	---
00173	12 x 5-5/8"		5.5			3	291	304	304	304	304	291	245	---	---	---
							1.30	1.35	1.35	1.35	1.35	1.30	1.09	---	---	---
00177	12 x 6-3/8"		6.25			3	291	304	304	304	304	304	304	268	---	---
							1.30	1.35	1.35	1.35	1.35	1.35	1.35	1.19	---	---
00179	12 x 7-1/4"		7			3	291	304	304	304	304	304	304	304	245	---
							1.30	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.09	---
00181	12 x 8"		7.875			3	291	304	304	304	304	304	304	304	304	---
							1.30	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	---
02187	12 x 10"		9.75			3	291	304	304	304	304	304	304	304	304	304
							1.30	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
02193	12 x 12"		11.75			3	291	304	304	304	304	304	304	304	304	304
							1.30	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: D.FIR-L SAWN LUMBER									
							THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	4	4.5	5	6	8
							WITHDRAWAL RESISTANCE									
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	223	297	371	401	277	---	---	---	---	---
							0.99	1.32	1.65	1.78	1.23	---	---	---	---	---
00173	12 x 5-5/8"		5.5			3	223	297	371	445	493	370	247	---	---	---
							0.99	1.32	1.65	1.98	2.19	1.65	1.10	---	---	---
00177	12 x 6-3/8"		6.25			3	223	297	371	445	520	555	432	308	---	---
							0.99	1.32	1.65	1.98	2.31	2.47	1.92	1.37	---	---
00179	12 x 7-1/4"		7			3	223	297	371	445	520	594	617	493	247	---
							0.99	1.32	1.65	1.98	2.31	2.64	2.74	2.19	1.10	---
00181	12 x 8"		7.875			3	223	297	371	445	520	594	668	709	462	---
							0.99	1.32	1.65	1.98	2.31	2.64	2.97	3.15	2.06	---
02187	12 x 10"		9.75			3	223	297	371	445	520	594	668	740	740	432
							0.99	1.32	1.65	1.98	2.31	2.64	2.97	3.29	3.29	1.92
02193	12 x 12"		11.75			3	223	297	371	445	520	594	668	740	740	740
							0.99	1.32	1.65	1.98	2.31	2.64	2.97	3.29	3.29	3.29

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 12xL SPF SAWN LUMBER SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: S-P-F SAWN LUMBER THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	4	4.5	5	6	8
							LATERAL RESISTANCE									
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	256	273	273	266	226	---	---	---	---	---
							1.14	1.22	1.22	1.18	1.01	---	---	---	---	---
00173	12 x 5-5/8"		5.5			3	256	273	273	273	273	256	216	---	---	---
							1.14	1.22	1.22	1.22	1.22	1.14	0.96	---	---	---
00177	12 x 6-3/8"		6.25			3	256	273	273	273	273	273	273	236	---	---
							1.14	1.22	1.22	1.22	1.22	1.22	1.22	1.05	---	---
00179	12 x 7-1/4"		7			3	256	273	273	273	273	273	273	273	216	---
							1.14	1.22	1.22	1.22	1.22	1.22	1.22	1.22	0.96	---
00181	12 x 8"		7.875			3	256	273	273	273	273	273	273	273	273	---
							1.14	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	---
02187	12 x 10"		9.75			3	256	273	273	273	273	273	273	273	273	273
							1.14	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
02193	12 x 12"		11.75			3	256	273	273	273	273	273	273	273	273	273
							1.14	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: S-P-F SAWN LUMBER THICKNESS OF SIDE MEMBER (in.)									
							1.5	2	2.5	3	3.5	4	4.5	5	6	8
							WITHDRAWAL RESISTANCE									
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	223	297	371	305	211	---	---	---	---	---
							0.99	1.32	1.65	1.36	0.94	---	---	---	---	---
00173	12 x 5-5/8"		5.5			3	223	297	371	445	375	282	188	---	---	---
							0.99	1.32	1.65	1.98	1.67	1.25	0.84	---	---	---
00177	12 x 6-3/8"		6.25			3	223	297	371	445	516	422	329	235	---	---
							0.99	1.32	1.65	1.98	2.30	1.88	1.46	1.04	---	---
00179	12 x 7-1/4"		7			3	223	297	371	445	520	563	469	375	188	---
							0.99	1.32	1.65	1.98	2.31	2.51	2.09	1.67	0.84	---
00181	12 x 8"		7.875			3	223	297	371	445	520	563	563	540	352	---
							0.99	1.32	1.65	1.98	2.31	2.51	2.51	2.40	1.57	---
02187	12 x 10"		9.75			3	223	297	371	445	520	563	563	563	563	329
							0.99	1.32	1.65	1.98	2.31	2.51	2.51	2.51	2.51	1.46
02193	12 x 12"		11.75			3	223	297	371	445	520	563	563	563	563	563
							0.99	1.32	1.65	1.98	2.31	2.51	2.51	2.51	2.51	2.51

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 12xL PLYWOOD SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER							
							SIDE MEMBER: DFP PANEL							
							THICKNESS OF SIDE MEMBER (in.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
kN	kN	kN	kN	kN	kN	kN	kN							
00165	12 x 4"	0.171	4.625	0.439	0.234	3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
00173	12 x 5-5/8"		5.5			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
00177	12 x 6-3/8"		6.25			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
00179	12 x 7-1/4"		7			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
00181	12 x 8"		7.875			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
02187	12 x 10"		9.75			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50
02193	12 x 12"		11.75			3	203	218	232	246	56	74	93	111
							0.90	0.97	1.03	1.10	0.25	0.33	0.41	0.50

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER							
							SIDE MEMBER: CSP PLYWOOD THICKNESS OF SIDE MEMBER (in.)							
							3/8	1/2	5/8	3/4	3/8	1/2	5/8	3/4
							LATERAL RESISTANCE				WITHDRAWAL RESISTANCE			
							LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
							kN	kN	kN	kN	kN	kN	kN	kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
00173	12 x 5-5/8"		5.5			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
00177	12 x 6-3/8"		6.25			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
00179	12 x 7-1/4"		7			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
00181	12 x 8"		7.875			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
02187	12 x 10"		9.75			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50
02193	12 x 12"		11.75			3	181	193	205	217	56	74	93	111
							0.80	0.86	0.91	0.97	0.25	0.33	0.41	0.50

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 12xL COLD-FORMED STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
00173	12 x 5-5/8"		5.5			3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
00177	12 x 6-3/8"		6.25			3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
00179	12 x 7-1/4"		7			3	280	307	320	345	394	426	568	711	740	740
							1.24	1.37	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
00181	12 x 8"		7.875			3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
02187	12 x 10"		9.75			3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29
02193	12 x 12"		11.75			3	280	300	320	345	394	426	568	711	740	740
							1.24	1.33	1.42	1.53	1.75	1.90	2.53	3.16	3.29	3.29

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: COLD-FORMED STEEL THICKNESS OF SIDE MEMBER (in.)									
							20 GA.	18 GA.	16 GA.	14 GA.	12 GA.	20 GA.	18 GA.	16 GA.	14 GA.	12 GA.
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
00173	12 x 5-5/8"		5.5			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
00177	12 x 6-3/8"		6.25			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
00179	12 x 7-1/4"		7			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
00181	12 x 8"		7.875			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
02187	12 x 10"		9.75			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51
02193	12 x 12"		11.75			3	253	273	293	318	367	426	563	563	563	563
							1.12	1.21	1.30	1.41	1.63	1.90	2.51	2.51	2.51	2.51

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

GRK R4 12xL MILD STEEL SIDE PL

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: D.FIR-L SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
00173	12 x 5-5/8"		5.5			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
00177	12 x 6-3/8"		6.25			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
00179	12 x 7-1/4"		7			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
00181	12 x 8"		7.875			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
02187	12 x 10"		9.75			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29
02193	12 x 12"		11.75			3	450	450	450	450	450	740	740	740	740	740
							2.00	2.00	2.00	2.00	2.00	3.29	3.29	3.29	3.29	3.29

MODEL/ BULK PART NO.	R4 NOMINAL DIA.	SHANK DIAMETER (in.)	SCREW LENGTH (in.)	HEAD DIAMETER (in.)	OUTSIDE THREAD DIAMETER (in.)	THREAD LENGTH (in.)	POINT-SIDE MEMBER: S-P-F SAWN LUMBER									
							SIDE MEMBER: MILD STEEL THICKNESS OF SIDE MEMBER (in.)									
							1/8	9/64	3/16	1/4	1/2	1/8	9/64	3/16	1/4	1/2
							LATERAL RESISTANCE					WITHDRAWAL RESISTANCE				
							LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN	LB. kN
00165	12 x 4"	0.171	4.625	0.439	0.234	3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
00173	12 x 5-5/8"		5.5			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
00177	12 x 6-3/8"		6.25			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
00179	12 x 7-1/4"		7			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
00181	12 x 8"		7.875			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
02187	12 x 10"		9.75			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51
02193	12 x 12"		11.75			3	368	392	392	392	392	550	563	563	563	563
							1.64	1.75	1.75	1.75	1.75	2.45	2.51	2.51	2.51	2.51

¹ Resistance values have been developed in accordance with Clause 12.11 "Wood Screws" CSA 086-14 and have been factored with the material resistance factor (ϕ). No other modification factors affecting resistance have been applied. Values must be multiplied by all applicable modification factors as specified for wood screws in accordance with CSA 086-14.

² ICC ESR-3201 report can be referred to for information not provided in this table. Note that resistance values of GRK R4 screw connections with cold-formed steel, mild steel and plywood side members have not been developed in the ICC ESR-3201 report.

³ Multiply lateral resistance values by 0.83 for toe-screw installation and by 0.67 for end-grain installation. Toe-screw and end-grain installations are not permitted for screws loaded in withdrawal.

⁴ Minimum row spacing, spacing in row and edge distances, penetration lengths, and member thicknesses shall be as specified in Clause 12.11.2 CSA 086-14. The minimum spacing table provided in this catalogue can be used for reference.

⁵ '---' indicates the screw cannot be used for the resistance due to the screw length not meeting the minimum penetration length into the point-side member. Resistance values have been developed assuming the screw is fully penetrated into the point-side member.

⁶ Resistance values with mild steel side member have been developed for mild steel referenced in CSA S16 (ASTM A36/A36M steel; $f_u = 400$ MPa). Resistance values with cold-formed steel side member have been developed for cold-formed steel light gauge steel referenced in CSA S136 (Grade SS 230; $f_u = 310$ MPa).

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

RSS™

**Rugged Structural
Screws**

**Speedy Lag Bolt
Alternative with
Immense Drawing
Power**



DESCRIPTION/SUGGESTED SPECIFICATIONS

Rugged Structural Screws—

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.

ÜberGrade™



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.

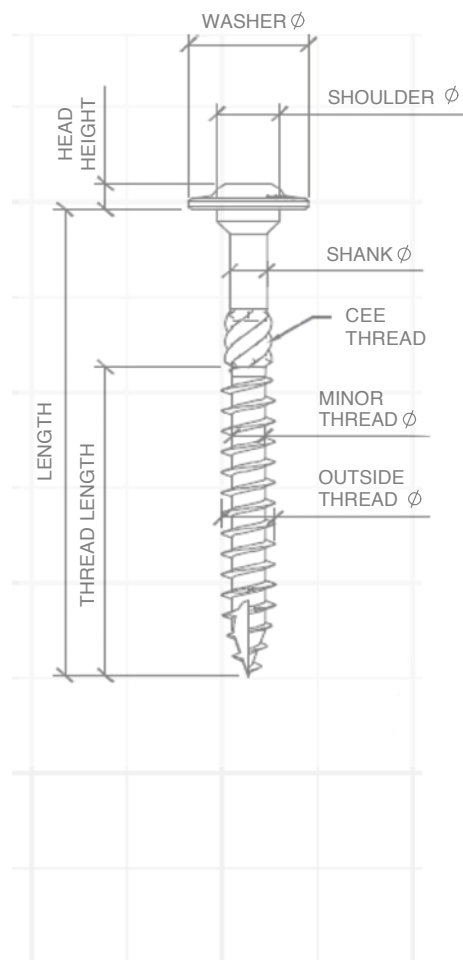
RSS™ JTS - Used for joists and trusses

RSS™ LTF - Designed for log home and timber frame

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **CEE Thread:** Enlarges hole to reduce splitting, install torque.
- **W-Cut™:** Low torque, smoother drive, reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration, reduce splitting.
- **Washer Head:** for immense holding power.
- **Cutting Pockets:** provide a clean hole, 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.
- **Advantages:** Factored Resistances as per

CSA 086-14



APPROVALS/LISTING



SELECTION CHART



T-25



T-25



T-30



T-40



T-25



T-40

SHANK DIAMETER	THREAD DIAMETER	LENGTH	BULK PART NO.	BULK BOX QTY.	PRO-PAK PART NO.	PRO-PAK PAIL QTY.	HANDY-PAK PART NO.	HANDY-PAK CTN. SIZE/QTY.
0.138	0.194 (#10)	1-1/2"	10127*	2,300				
		2-3/4"	10135	1,000				
		3-1/8"	10137	800			12137	M/50
0.169	0.25 (1/4)	1-1/2"	10151*	1,000			12151	M/50
		2"	10155*	800			12155	M/50
		2-1/2"	10157	700			12157	M/50
		3-1/8"	10161	500			12161	M/50
		3-1/2"	10163	400			12163	M/50
0.1988	0.3125 (5/16)	2-1/2"	10217	600	12217	100		
		2-3/4"	10219	500	12219	100		
		3-1/8"	10221	500	12221	100		
		3-1/2"	10223	500	12223	100		
		4"	10225	400	12225	100		
		5-1/8"	10231	300	12231	50		
		6"	10235	300	12235	50		
0.2228	0.375 (3/8")	3-1/8"	10273	400	12273	50		
		4"	10275	400	12275	50		
		5-1/8"	10278	300	12278	50		
		6"	10281	300	12281	50		
		7-1/4"	10285	200	12285	50		
		8"	10287	300	12287	50		
		10"	10293	300	12293	50		
		12"	10299	300	12299	50		
		14-1/8"	10307	200	12307	50		
	16"	10311	100	12311	50			
RSS™ JTS – JOIST AND TRUSS SCREW								
0.173	0.25 (1/4)	3-3/8"	91727†	400				
		5"	91735	300				
RSS™ LTF – TIMBER FRAME SCREW								
0.22	0.31 (3/8)	8"	91287	300			93287	M/50
		10"	91293	300			93293	M/50
		12"	91299	300			93299	M/50
		15"	91308	300			93308	M/50
		20"					93323	M/25

RSS™ BLISTER-PAK				
SHANK DIAMETER	THREAD DIAMETER	LENGTH	Part No.	QTY
0.1988	0.3125 (5/16)	3-1/8"	13221	15
		4"	13225	12
		5-1/8"	13231	10
		6"	13235	8

RSS™ SMALLER HANDY-PAK				
SHANK DIAMETER	THREAD DIAMETER	LENGTH	Part No.	QTY
0.1988	0.3125 (5/16)	3-1/8"	14221	M/25
		4"	14225	M/25
		5-1/8"	14231	M/20
		6"	14235	M/20

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" bits in Handy-Paks.

Conversion Guide

GRK RSS vs. Lag Bolt

**No more
pre-drilling...
Just grab a screw
and drill!!**

Convert from a lag screw to GRK RSS Fasteners

PERFORMANCE DATA

(Compliant for use with Canadian National Building Code)

FACTORED RESISTANCES PERFORMANCE COMPARISON FOR D.FIR MEMBERS^(1,2,3,4,5)

APPLICATION: 2" LEDGER BOARD TO 2" RIM BOARD (LBS)

LAG SCREWS				GRK SCREWS		
LAG SIZE	LENGTH	SHEAR RESISTANCE	PULL-OUT	TYPE OF SCREW	SHEAR RESISTANCE	PULL-OUT
1/4"	3	171	360	GRK RSS (3") (10273)	366	517
1/4"	4	200	360	GRK RSS (4") (10275)	466	517
3/8"	3	249	618	GRK RSS (3") (10273)	366	517
3/8"	4	322	618	GRK RSS (4") (10275)	466	517
1/2"	3	320	779	GRK RSS (3") (10273)	366	517
1/2"	4	427	779	GRK RSS (4") (10275)	466	517
5/8"	3	385	920	GRK RSS (3") (10273)	366	517
5/8"	4	513	920	GRK RSS (4") (10275)	466	517

¹ Lag Screw Factored Resistances have been developed in accordance with 12.6 CSA 086-14. Apply adjustment factors where applicable.

² Factored withdrawn resistance shown assume the entire threaded portion of the screw is installed in to the main member

³ Minimum spacing, edge and end distances shall be in accordance with 12.6 .2 CSA 086-14

⁴ GRK RSS Screw spacing must comply with 12.11.5 CSA 086-14 (See Spacing Tables)

⁵ Dimensions of Lag screw based on Table 15 & 16 ASME B18.2.1-2012

EXAMPLE DECK DESIGN: ATTACHING LEDGER BOARD TO YOUR HOUSE!

Assumptions:

- Deck Span = 8' out from the house
- 10' Wide
- LL = 40 PSF; DL = 10 PSF

Total lateral resistance required = 2900 lbs

Possible Solutions:

Using 1/4" by 3" Lag Bolts = $2900 / 242 = 12$ lags

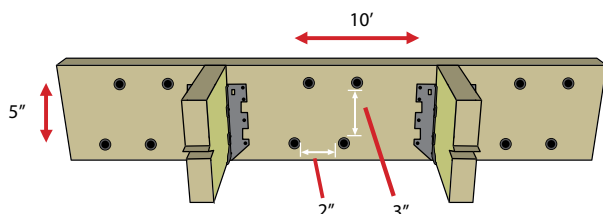
Using 3/8" by 3" Lag Bolts = $2900 / 249 = 12$ Lags (see example below)

Using 1/2" by 3" Lag Bolts = $2900 / 320 = 9$

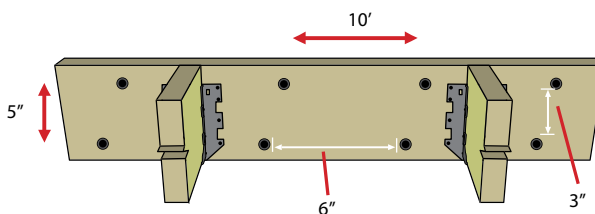
Using 5/8" by 3" Lag Bolts = $2900 / 385 = 8$

Using 3/8" * 3.125 RSS = $2900 / 366 = 8$ screws (see example below)

LAG SOLUTION: 12 LAG SCREWS



RSS SOLUTION: 8 RSS SCREWS¹ NO PRE-DRILLING



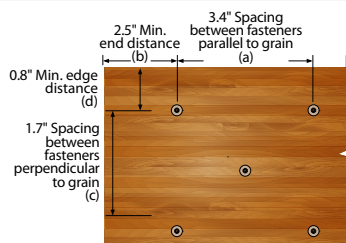
¹ RSS Spacing must comply with 12.11.5 CSA 086-14

Technical Data

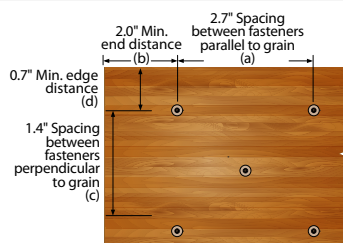
GRK RSS Spacings

MINIMUM ROW SPACING, SPACING IN ROW AND EDGE DISTANCES AS SPECIFIED IN CLAUSE 12.11.2 CSA 086 2016.

SCREW THREAD DIAMETER (IN.)	SCREW SHANK DIAMETER (IN.)	GEOMETRY	MINIMUM DIMENSIONS (in)	
			D. FIR-L	S-P-F
1/4	0.169	a - Spacing parallel to grain	3.4	2.7
		b - End distance parallel to grain	2.5	2.0
		c - Spacing perpendicular to grain	1.7	1.4
		d - Edge distance perpendicular to grain	0.8	0.7

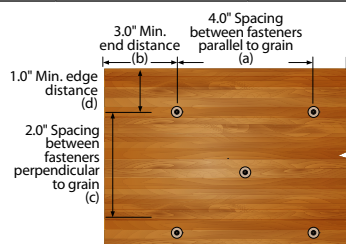


D-Fir Larch Spacing Requirements

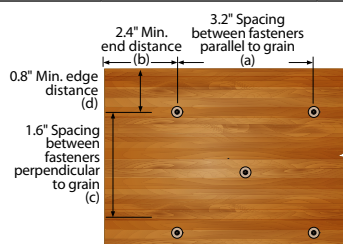


S-P-F Spacing Requirements

SCREW THREAD DIAMETER (IN.)	SCREW SHANK DIAMETER (IN.)	GEOMETRY	MINIMUM DIMENSIONS (in)	
			D. FIR-L	S-P-F
5/16	0.1988	a - Spacing parallel to grain	4.0	3.2
		b - End distance parallel to grain	3.0	2.4
		c - Spacing perpendicular to grain	2.0	1.6
		d - Edge distance perpendicular to grain	1.0	0.8

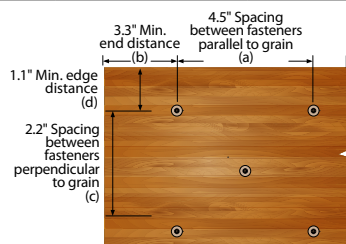


D-Fir Larch Spacing Requirements

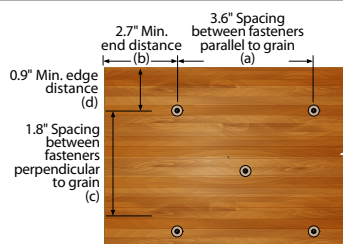


S-P-F Spacing Requirements

SCREW THREAD DIAMETER (IN.)	SCREW SHANK DIAMETER (IN.)	GEOMETRY	MINIMUM DIMENSIONS (in)	
			D. FIR-L	S-P-F
3/8	0.2228	a - Spacing parallel to grain	4.5	3.6
		b - End distance parallel to grain	3.3	2.7
		c - Spacing perpendicular to grain	2.2	1.8
		d - Edge distance perpendicular to grain	1.1	0.9



D-Fir Larch Spacing Requirements



S-P-F Spacing Requirements

1. Table values have been developed in accordance to Clause 12.6.2.6 CSA 086 2016. Designer to note additional provision in Clause 12 in CSA 086 2016 for service conditions and other factors affecting connection layout and capacity.

RSS™ Rugged Structural Screws

Factored Resistances (RSS 1/4")

FACTORED RESISTANCES FOR D-FIR MEMBERS

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	D-FIR-L											
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)										FACTORED WITHDRAWAL	
					1.5	2	2.5	3	3.5	4	4.5	5	6	8		
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		LB.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN		kN
10217	1/4	2.5	0.169	1.5	230*	---	---	---	---	---	---	---	---	---	332	
22400		3.125		2	287	259	---	---	---	---	---	---	---	---	457	
10163		3.5		2.75	305	305	230*	---	---	---	---	---	---	---	646	
					1.36	1.36	1.02*	---	---	---	---	---	---	---	2.87	

FACTORED RESISTANCES FOR S-P-F MEMBERS (LBS)

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	SPF												
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)										FACTORED WITHDRAWAL		
					1.5	2	2.5	3	3.5	4	4.5	5	6	8			
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		LB.	
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN		kN	kN
10217	1/4	2.5	0.169	1.5	197*	---	---	---	---	---	---	---	---	---	253		
					0.88*	---	---	---	---	---	---	---	---	---	---	1.12	
22400		3.125		2	246	222	---	---	---	---	---	---	---	---	---	348	
					1.10	0.99	---	---	---	---	---	---	---	---	---	1.55	
10163		3.5		2.75	268	268	197*	---	---	---	---	---	---	---	---	---	491
					1.19	1.19	0.88*	---	---	---	---	---	---	---	---	---	2.19

¹ End-grain installation is not permitted.

² Factored lateral resistances shown have been developed in accordance with Clause 12.11 CSA 086 2016 **Wood Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **wood screws** in accordance with CSA 086 2016.

³ Factored lateral resistances according to Clause 12.6 CSA 086 2016 **Lag Screw** provisions can be obtained upon request. Please contact ITW Canada for more information. Designer to note provisions for net area and group of fasteners per Clause 12 in CSA 086 2016.

⁴ Factored withdrawal resistances shown have been developed in accordance with Clause 12.6 CSA 086 2016 **Lag Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **lag screws** in accordance with CSA 086 2016.

⁵ Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. This accounts for the tip length reduction as per 12.6 CSA 086 2016 **Lag Screw** provisions.

⁶ Minimum row spacing, spacing in row and edge distances shall be as specified in Clause 12.6.2.6 CSA 086 2016. Designer to note additional provision in Clause 12 in CSA 086 2016 for service conditions and other factors affecting connection layout and capacity. The minimum spacing table can be used for reference.

*The penetration length is less than the minimum as per Lag Screw provision but it meets the penetration length according to the Wood Screw provision on Clause 12 of CSA 086 2016. See footnote 6.

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

Factored Resistances (RSS 5/16")

FACTORED RESISTANCES FOR D-FIR MEMBERS

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	D-FIR-L											
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)										FACTORED WITHDRAWAL	
					1.5	2	2.5	3	3.5	4	4.5	5	6	8		
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN		
10217	5/16	2.5	0.1988	1.5	268*	---	---	---	---	---	---	---	---	---	378	
					1.19*	---	---	---	---	---	---	---	---	---	1.68	
10219		2.75		1.75	295	---	---	---	---	---	---	---	---	---	449	
					1.31	---	---	---	---	---	---	---	---	---	2.00	
10221		3.125		2.125	335	302*	---	---	---	---	---	---	---	---	556	
					1.49	1.34*	---	---	---	---	---	---	---	---	2.47	
10223		3.5		2.5	376	376	268*	---	---	---	---	---	---	---	664	
					1.67	1.67	1.19*	---	---	---	---	---	---	---	2.95	
10225		4		2.75	404	429	402	268*	---	---	---	---	---	---	---	735
					1.80	1.91	1.79	1.19*	---	---	---	---	---	---	3.27	
10231		5.125		3.5	404	459	488	472	418	302*	---	---	---	---	---	949
					1.80	2.04	2.17	2.10	1.86	1.34*	---	---	---	---	4.22	
10235		6		3.875	404	459	488	488	488	459	402	268*	---	---	---	1056
					1.80	2.04	2.17	2.17	2.17	2.04	1.79	1.19*	---	---	---	4.70

FACTORED RESISTANCES FOR S-P-F MEMBERS (LBS)

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	SPF											
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)										FACTORED WITHDRAWAL	
					1.5	2	2.5	3	3.5	4	4.5	5	6	8		
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		LB.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN		kN
10217	5/16	2.5	0.1988	1.5	230*	---	---	---	---	---	---	---	---	---	288	
					1.02*	---	---	---	---	---	---	---	---	---	---	1.28
10219		2.75		1.75	253	---	---	---	---	---	---	---	---	---	342	
					1.13	---	---	---	---	---	---	---	---	---	---	1.52
10221		3.125		2.125	287	259*	---	---	---	---	---	---	---	---	454	
					1.28	1.15*	---	---	---	---	---	---	---	---	---	1.88
10223		3.5		2.5	322	322	230*	---	---	---	---	---	---	---	505	
					1.43	1.43	1.02*	---	---	---	---	---	---	---	---	2.25
10225		4		2.75	357	368	345	230*	---	---	---	---	---	---	559	
					1.59	1.64	1.53	1.02*	---	---	---	---	---	---	---	2.49
10231		5.125		3.5	357	403	439	415	369	259*	---	---	---	---	723	
					1.59	1.79	1.95	1.85	1.64	1.15*	---	---	---	---	---	3.21
10235		6		3.875	357	403	439	439	439	403	345	230*	---	---	804	
					1.59	1.79	1.95	1.95	1.95	1.79	1.53	1.02*	---	---	---	3.58

¹ End-grain installation is not permitted.

² Factored lateral resistances shown have been developed in accordance with Clause 12.11 CSA 086 2016 **Wood Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **wood screws** in accordance with CSA 086 2016.

³ Factored lateral resistances according to Clause 12.6 CSA 086 2016 **Lag Screw** provisions can be obtained upon request. Please contact ITW Canada for more information. Designer to note provisions for net area and group of fasteners per Clause 12 in CSA 086 2016.

⁴ Factored withdrawal resistances shown have been developed in accordance with Clause 12.6 CSA 086 2016 **Lag Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **lag screws** in accordance with CSA 086 2016.

⁵ Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. This accounts for the tip length reduction as per 12.6 CSA 086 2016 **Lag Screw** provisions.

⁶ Minimum row spacing, spacing in row and edge distances shall be as specified in Clause 12.6.2.6 CSA 086 2016. Designer to note additional provision in Clause 12 in CSA 086 2016 for service conditions and other factors affecting connection layout and capacity. The minimum spacing table can be used for reference.

*The penetration length is less than the minimum as per Lag Screw provision but it meets the penetration length according to the Wood Screw provision on Clause 12 of CSA 086 2016. See footnote 6.

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

Factored Resistances (RSS 3/8")

FACTORED RESISTANCES FOR D.FIR MEMBERS

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	D-FIR-L											
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)											FACTORED WITHDRAWAL
					1.5	2	2.5	3	3.5	4	4.5	5	6	8		
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	
10273	3/8	3.125	0.2228	1.5	373	336*	---	---	---	---	---	---	---	---	403	
		1.66			1.50*	---	---	---	---	---	---	---	---	---	1.79	
10275		4		2.75	474	478	448	---	---	---	---	---	---	---	---	791
					2.11	2.13	1.99	---	---	---	---	---	---	---	---	3.52
10278		5.125		3.5	474	534	590	549	486	336*	---	---	---	---	---	1024
					2.11	2.37	2.62	2.44	2.16	1.50*	---	---	---	---	---	4.56
10281		6		4	474	534	590	590	590	534	448	---	---	---	---	1180
					2.11	2.37	2.62	2.62	2.62	2.37	1.99	---	---	---	---	5.25
10285		7.25		4.5	474	534	590	590	590	590	590	564	373*	---	---	1335
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.51	1.66*	---	---	5.94
10287		8		4.375	474	534	590	590	590	590	590	590	534	---	---	1335
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.37	---	---
10293		10		5	474	534	590	590	590	590	590	590	590	534	---	1490
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.37	---
10299		12		5.875	474	534	590	590	590	590	590	590	590	590	590	1762
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
10307		14.125		5.875	474	534	590	590	590	590	590	590	590	590	590	1762
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
10311		16		5.75	474	534	590	590	590	590	590	590	590	590	590	1762
					2.11	2.37	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62

¹ End-grain installation is not permitted.

² Factored lateral resistances shown have been developed in accordance with Clause 12.11 CSA 086 2016 **Wood Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **wood screws** in accordance with CSA 086 2016.

³ Factored lateral resistances according to Clause 12.6 CSA 086 2016 **Lag Screw** provisions can be obtained upon request. Please contact ITW Canada for more information. Designer to note provisions for net area and group of fasteners per Clause 12 in CSA 086 2016.

⁴ Factored withdrawal resistances shown have been developed in accordance with Clause 12.6 CSA 086 2016 **Lag Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **lag screws** in accordance with CSA 086 2016.

⁵ Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. This accounts for the tip length reduction as per 12.6 CSA 086 2016 **Lag Screw** provisions.

⁶ Minimum row spacing, spacing in row and edge distances shall be as specified in Clause 12.6.2.6 CSA 086 2016. Designer to note additional provision in Clause 12 in CSA 086 2016 for service conditions and other factors affecting connection layout and capacity. The minimum spacing table can be used for reference.

*The penetration length is less than the minimum as per Lag Screw provision but it meets the penetration length according to the Wood Screw provision on Clause 12 of CSA 086 2016. See footnote 6.

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

Factored Resistances (RSS 3/8") continued on page G 15

Factored Resistances (RSS 3/8")

FACTORED RESISTANCES FOR S-P-F MEMBERS (LBS)

MODEL/ BULK PART NO.	SIZE		SHANK DIAMETER	THREADED LENGTH (in)	SPF											
	THREAD DIA (in)	LENGTH (in)			FACTORED LATERAL RESISTANCE WOOD SIDE MEMBER THICKNESS (in)										FACTORED WITHDRAWAL	
					1.5	2	2.5	3	3.5	4	4.5	5	6	8		
					LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN		kN
10273	3/8	3.125	0.2228	1.5	320	288*	---	---	---	---	---	---	---	---	307	
					1.42	1.28*	---	---	---	---	---	---	---	---	1.37	
10275		4		2.75	410	410	410	---	---	---	---	---	---	---	602	
					1.82	1.82	1.82	---	---	---	---	---	---	---	2.68	
10278		5.125		3.5	419	470	521	483	416	288*	---	---	---	---	780	
					1.86	2.09	2.32	2.15	1.85	1.28*	---	---	---	---	3.47	
10281		6		4	419	470	521	531	521	470	384	---	---	---	---	898
					1.86	2.09	2.32	2.36	2.32	2.09	1.71	---	---	---	---	3.99
10285		7.25		4.5	419	470	521	531	531	531	531	496	320*	---	---	1016
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.21	1.42*	---	---	4.52
10287		8		4.375	419	470	521	531	531	531	531	531	470	---	---	1016
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.36	2.36	2.09	---	---
10293		10		5	419	470	521	531	531	531	531	531	531	470	---	1134
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.09	---
10299		12		5.875	419	470	521	531	531	531	531	531	531	531	531	1341
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	---
10307		14.125		5.875	419	470	521	531	531	531	531	531	531	531	531	1341
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	---
10311		16		5.75	419	470	521	531	531	531	531	531	531	531	531	1341
					1.86	2.09	2.32	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	---

¹ End-grain installation is not permitted.

² Factored lateral resistances shown have been developed in accordance with Clause 12.11 CSA 086 2016 **Wood Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **wood screws** in accordance with CSA 086 2016.

³ Factored lateral resistances according to Clause 12.6 CSA 086 2016 **Lag Screw** provisions can be obtained upon request. Please contact ITW Canada for more information. Designer to note provisions for net area and group of fasteners per Clause 12 in CSA 086 2016.

⁴ Factored withdrawal resistances shown have been developed in accordance with Clause 12.6 CSA 086 2016 **Lag Screw** provisions. Values must be multiplied by all applicable modification factors as specified for **lag screws** in accordance with CSA 086 2016.

⁵ Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. This accounts for the tip length reduction as per 12.6 CSA 086 2016 **Lag Screw** provisions.

⁶ Minimum row spacing, spacing in row and edge distances shall be as specified in Clause 12.6.2.6 CSA 086 2016. Designer to note additional provision in Clause 12 in CSA 086 2016 for service conditions and other factors affecting connection layout and capacity. The minimum spacing table can be used for reference.

*The penetration length is less than the minimum as per Lag Screw provision but it meets the penetration length according to the Wood Screw provision on Clause 12 of CSA 086 2016. See footnote 6.

⁷ Convert inches to millimetres by multiplying the value by 25.4 (1 in. = 25.4 mm).

Kameleon™

Composite Deck Screws

**Heads Blend in
with Decking.
No Mushrooming
Effect**



DESCRIPTION/SUGGESTED SPECIFICATIONS

Composite Deck Screws—

GRK's Kameleon™ screws are an excellent choice for composite and PVC decking applications. The underhead has saw-blade like cutting teeth that cut a perfectly clean hole into the decking.

The Kameleon™ also features five to seven rings that have three indented fibre traps on each ring designed to trap fibres and eliminate the mushroom effect.

ÜberGrade™

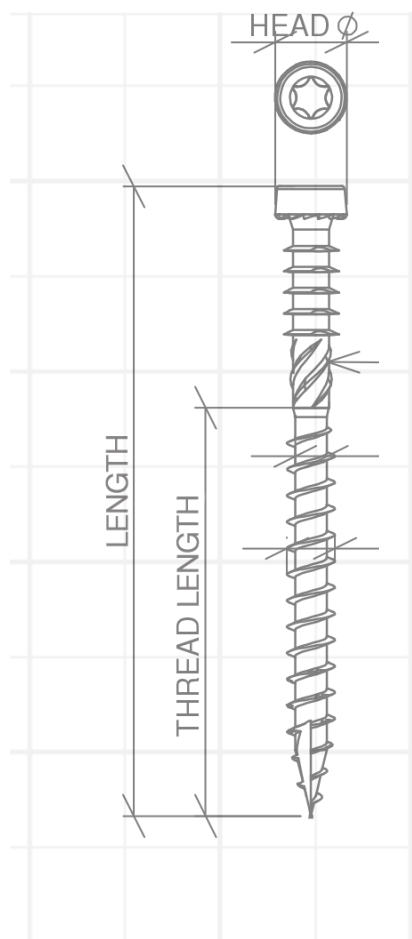


The CEE Thread feature enlarges the screw hole allowing the composite decking to settle easily, increases the screw's drawing strength, and reduces the friction on the screw shank, which can result in lowering the overall driving torque.

The Kameleon™ is also available in many different colors including: Grey, Brown, and Tan.

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **CEE Thread:** Enlarges hole to reduce splitting, install torque.
- **W-Cut™:** Low torque, smoother drive, reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration, reduce splitting.
- **Fibre Trapping Rings:** are designed to prevent mushrooming and dimpling.
- **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; both composite and PVC decking.



APPROVALS/LISTING



Kameleon™ Composite Deck Screws

SELECTION CHART



T-20

Grey
Tan
Brown

	U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC SIZE (DIA. X LENGTH)	HANDY-PAK PART NO.	HANDY-PAK CTN. SIZE/QTY.
Grey	#9 x 2-1/2"	4.5 x 63	67151	M/100
Tan	#9 x 2-1/2"	4.5 x 63	67155	M/100
Brown	#9 x 2-1/2"	4.5 x 63	67158	M/100



NOTE: 1" bits in Handy-Paks.

Fin/Trim™

*Finishing Trim
Head Screws*
*Smallest Head on
the Market for a
Clean Finish*



DESCRIPTION/SUGGESTED SPECIFICATIONS

Finishing Trim Head Screws—

GRK's Trim™ Head screws are an excellent choice for most fine carpentry applications, as well as window extension jambs 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).

ÜberGrade™

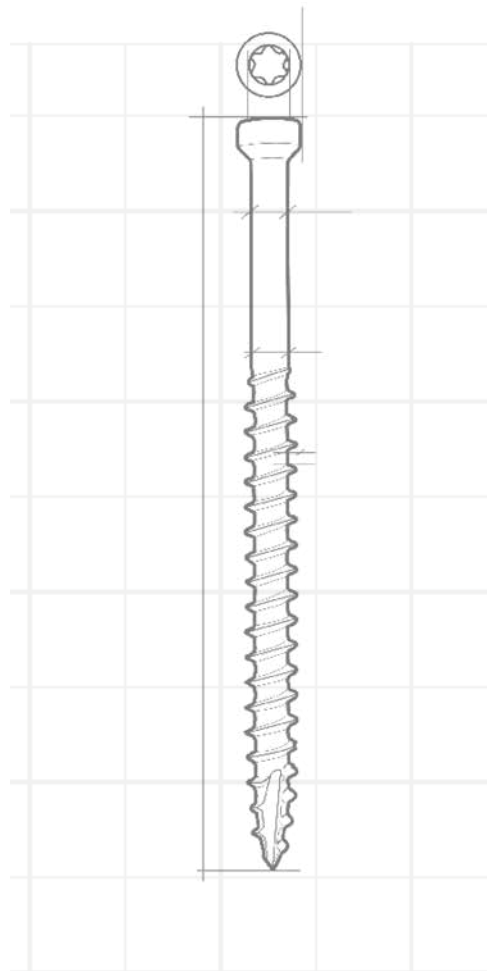
Most material splitting is prevented because of the Trim™ Head screw's exceptionally small head and the W-Cut thread design.



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

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **Trim Head:** for a clean finished look.
- **W-Cut™:** Low torque, smoother 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 powder coated finish.



APPROVALS/LISTING



SELECTION CHART



T-10



T-15



T-10

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC 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"	4.0 x 30					17720	S/100
#8 x 1-1/2"	4.0 x 40					17724	S/100
#8 x 2"	4.0 x 50					17728	S/100
#8 x 2-1/2"	4.0 x 63	15730	3,500	16730	605	17730	S/100
#8 x 2-3/4"	4.0 x 70					17732	S/100
#8 x 3-1/8"	4.0 x 80	15734	2,500			17734	M/100
#9 x 3-1/8"	4.5 x 80	15756	1,900				
#9 x 4"	4.5 x 100	15760	1,000			17760	M/100
#9 x 5"	4.5 x 125					17766	M/100
WHITE FIN/TRIM™							
#8 x 2-1/2"	4.0 x 63	15830	3,500			17830	S/100

**Excellent for all of
your trimwork and fine
carpentry finishing.**



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

Composite Exterior Trim Screws

Reverse Thread Design Prevents Mushrooming



APPROVALS/LISTING



DESCRIPTION/SUGGESTED SPECIFICATIONS

Exterior Trim Screws—

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.

ÜberGrade™

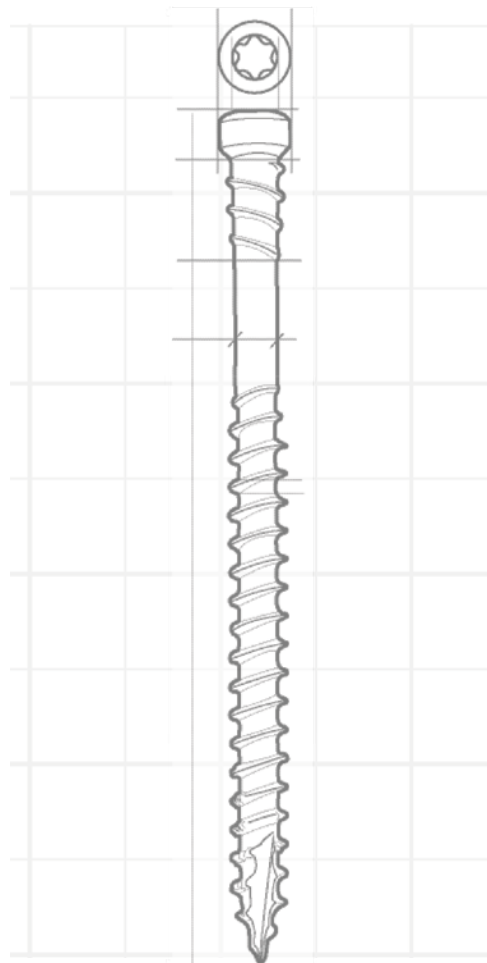


Based on extensive tests, GRK has found that the reverse thread helps the screw head disappear beneath the surface of the classic wood composite material, reducing or eliminating the dimple that sometimes appears when using the FIN/Trim™ screw.

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.

ADVANTAGES

- **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, smoother drive and reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration and reduce splitting.
- **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, Kleer, Koma), no pre-drilling is necessary. Climatek™ coated screws work well with CAMO system.
- Available in **Climatek™** or white powder coated finish.



RT Composite™ Exterior Trim Screws

SELECTION CHART



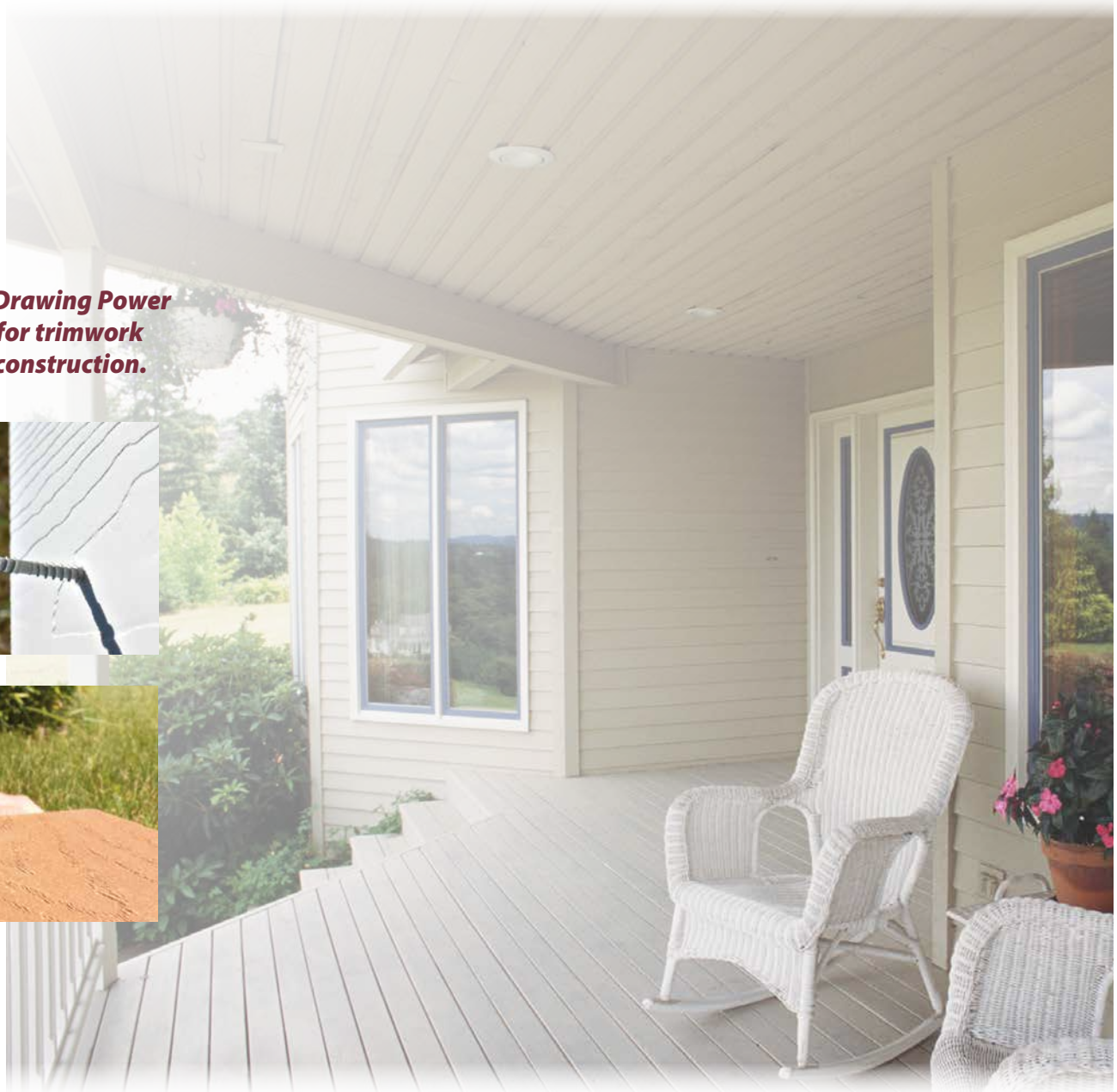
T-10



T-10

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC 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 2"	4.0 x 50					17077	S/100
#8 x 2-1/2"	4.0 x 63	15079	3,500	16079	605	17079	S/100
#8 x 3-1/8"	4.0 x 80	15083	2,500				
WHITE RT COMPOSITE™							
#8 x 2-1/2"	4.0 x 63					17630	S/100

**Supreme Drawing Power
is perfect for trimwork
and deck construction.**



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

ITW Construction Products

Call our toll free number 800-387-9692 or visit www.itwconstruction.ca for general information.
Visit GRK Fasteners web site www.grkfasteners.com for the most current product and technical information.

GRK
FASTENERS™

G 37

Low Profile™

*Low Profile
Cabinet™ Screws
Built-in Washer
Head Presses
Flush Against
any Material*



APPROVALS/LISTING



DESCRIPTION/SUGGESTED SPECIFICATIONS

Cabinet Screws—

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.

ÜberGrade™

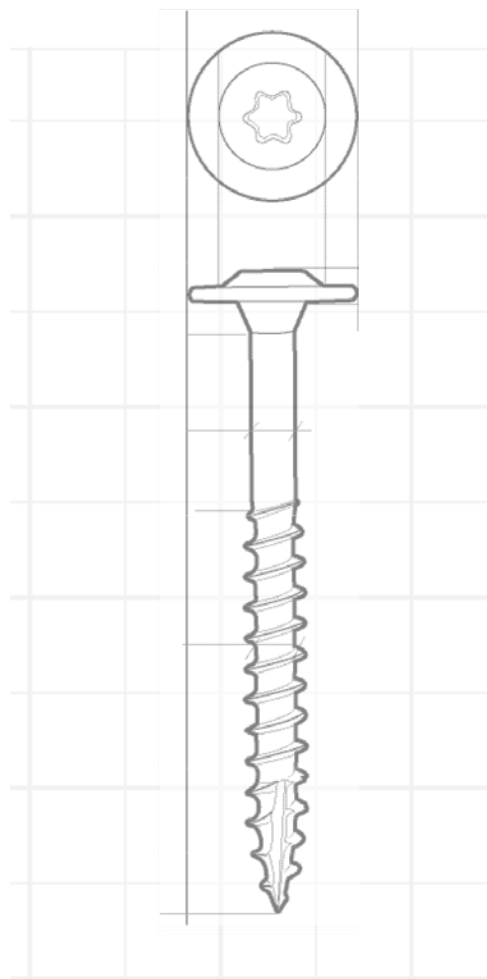


Builders have discovered that short Cabinet™ screws can sometimes be used in vinyl siding installation, which makes this fastener ideal for both interior and exterior applications.

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.

ADVANTAGES

- **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, smoother drive, reduce splitting.
- **Zip-Tip™:** No pre-drilling, faster penetration, reduce splitting.
- **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.



SELECTION CHART



U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC SIZE (DIA. X LENGTH)	BULK PART NO.	BULK BOX QTY.	HANDY-PAK PART NO.	HANDY-PAK CTN. SIZE/QTY.
#8 x 1"	4.0 x 25			12067	S/100
#8 x 1-1/4"	4.0 x 30	10069	4,000	12069	S/100
#8 x 1-1/2"	4.0 x 40			12073	M/100
#8 x 1-3/4"	4.0 x 45			12075	M/100
#8 x 2"	4.0 x 50			12077	M/100
#8 x 2-1/2"	4.0 x 63			12079	M/100



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

NOTE: 1" bits in Handy-Paks.

Top Star™

Adjustable Shim Screws

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



DESCRIPTION/SUGGESTED SPECIFICATIONS

Adjustable Shim Screws—

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.

ÜberGrade™



Door stop or cover caps will hide hole

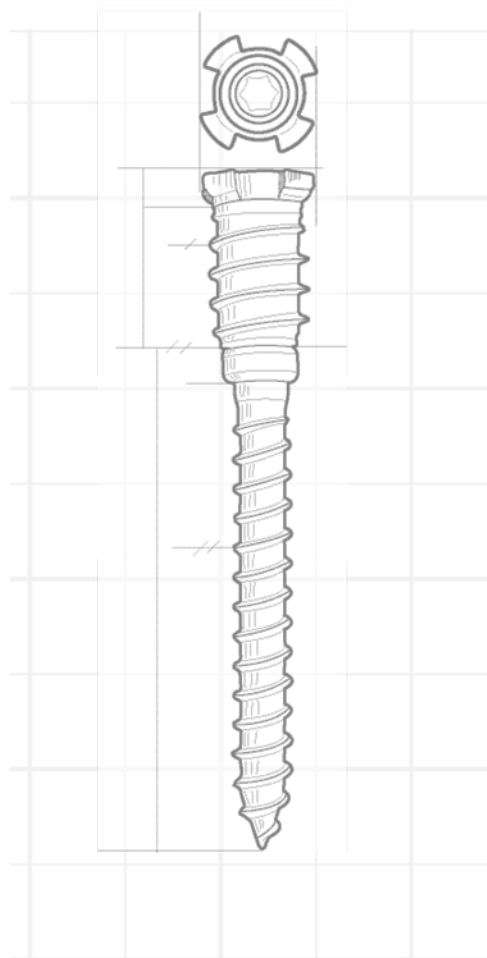
The quick and easy system reduces labour and allows for hassle free adjustment to ensure plumb installation.

Our product is suited to meet the needs of both professional contractors and weekend warriors making the job easier for one person.

Fine adjustments are as simple as the turn of a screw, even after years of use and settling.

ADVANTAGES

- **Recessed Star Drive:** Zero Stripping, with 6 points of contact.
- **4-point 3/8" diameter Threaded Sleeve** provides a secure hold on 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.



SELECTION CHART

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC SIZE (DIA. X LENGTH)	BULK PART NO.	BULK BOX QTY.	BLISTER-PAK PART NO.	BLISTER-PAK QTY.
3/8" x 2-1/2"	6.0 x 63	20157	100	24050	6
3/8" x 3-1/8"	6.0 x 80	20161	100	24100	6
CROWN / BIT					
Includes: (1) Crown / Bit with each				86465	1



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.

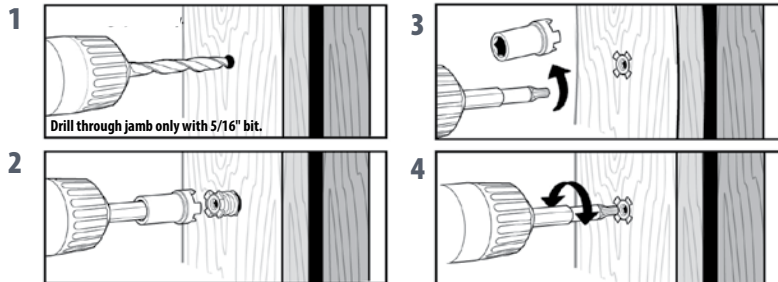
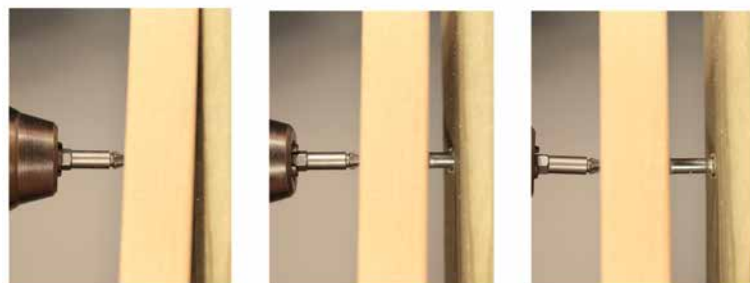
The Threaded Sleeve moves independently from the Top Star™ unless locked by the Crown. When locked, the Top Star™ gets driven into the material. Unlocked, the installed Top Star™ is ready for levelling.

The Complete Top Star™ System Includes:

BIT

CROWN

THREADED SLEEVE



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



Caliburn™

Concrete Screws Heavy Duty Concrete and Masonry Fastener

DESCRIPTION/SUGGESTED SPECIFICATIONS

Concrete Screws—

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

Available in three different head designs for multiple applications. Caliburn™, Caliburn™ PH and Caliburn™ XL are Climatek™ coated for high corrosion resistance.

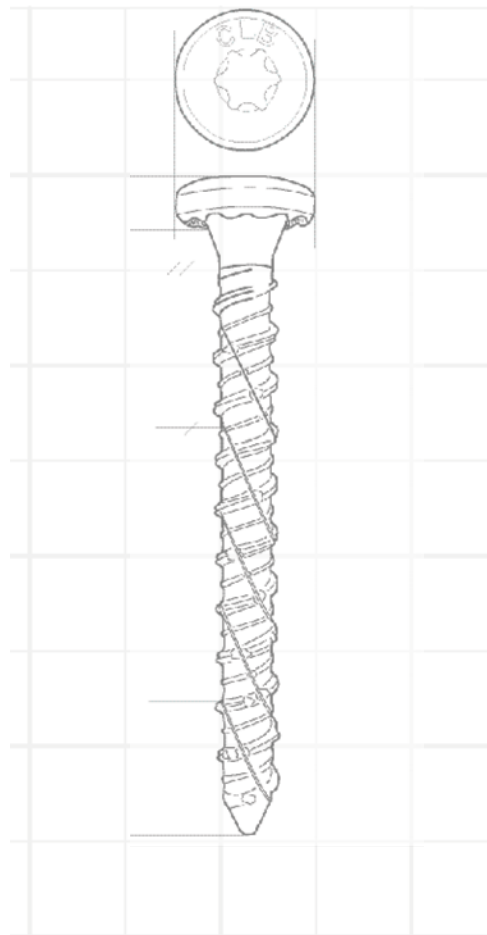
ÜberGrade™



Caliburn's uncompromised draw and pullout strength make it possible to be used in jobs which previously required an anchor. The screws aggressive thread design afford it the ability to be removed and reinserted into the same pilot hole numerous times—without the concern of the fastener breaking or the threads wearing.

ADVANTAGES

- **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.
- **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.



APPROVALS/LISTING



SELECTION CHART



T-30

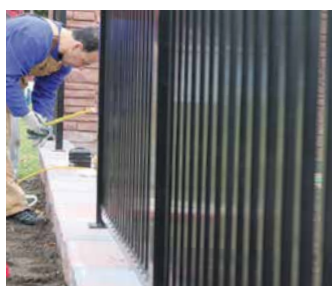


T-30



T-40

U.S. (STD.) SIZE (DIA. X LENGTH)	METRIC SIZE (DIA. X LENGTH)	HANDY-PAK PART NO.	HANDY-PAK CTN. SIZE/QTY.
1/4" x 1-3/4"	6.0 x 45	57153	M/50
1/4" x 2-1/4"	6.0 x 55	57156	M/50
1/4" x 2-3/4"	6.0 x 70	57159	M/50
1/4" x 3-1/2"	6.0 x 90	57163	M/50
CALIBURN™ PH			
1/4" x 2-1/4"	6.0 x 55	57831	M/50
CALIBURN™ XL			
19/64" x 2-3/4"	7.5 x 70	57774	M/25
19/64" x 3-1/2"	7.5 x 90	57778	M/25
19/64" x 5"	7.5 x 125	57785	M/25



Great for a wide variety of indoor / outdoor home renovation projects

1" bits in Handy-Paks.



Selection Guide

Star Drive Bits, Crown/Bit and Magnetic Bit Holder



BIT SIZE	BIT COLOUR	FITS	CARDED PART NO.	CARDED QTY/PER PACK	BOX PART NO.	QTY/BOX
T-10 2"	yellow	Trim™ Head #8	87419	2		
T-15 2"	red	R4™ Screw #6 & 8 Trim™ Head #9 Cabinet™ Screw Vinyl Window #8	87427	2		
T-20 2"	purple	Kameleon™ Screws	87435	2		
T-25 2"	green	R4™ #9,10 & 12, Caliburn™, Caliburn PH™, RSS™ #10 & 1/4"	87443	2	86443	1,000
T-30 2"	black	RSS™ Structural Screw 5/16" & 3/8", Caliburn™ & Caliburn PH™	87451	2	86451	1,000
T-40 2"	blue	Caliburn XL™ Screws RSS™ Structural Screw 3/8"	87459	2	86459	1,000
CROWN/BIT						
		TOP STAR™	86465	1		

High Impact Merchandisers Designed to Drive Sales

Displays are free with qualifying order.

Universal Display:

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

Heavy Duty Rack Display:



PERFORMANCE TABLES

TABLE 1: RSS™ FASTENER SPECIFICATIONS

FASTENER DESIGNATION	OVERALL LENGTH ¹ (INCHES)	LENGTH OF THREAD ² (INCHES)	MINOR THREAD DIAMETER ³ (INCHES)	SHANK DIAMETER ³ (INCHES)	OUTSIDE THREAD DIAMETER ³ (INCHES)	ALLOWABLE STEEL STRENGTH		
						BENDING YIELD STRENGTH ⁴ F _{YB} (PSI)	TENSILE (LBF)	SHEAR (LBF)
RSS	1/4 x 2-1/2"	2-3/8	0.152	0.169	0.236	170,400	1,112	754
	1/4 x 2-3/4"	2-3/4						
	1/4 x 3-1/8"	3-1/8						
	1/4 x 3-1/2"	3-1/2						
	5/16 x 2-1/2"	2-3/8	0.167	0.195	0.276	190,900	1,415	982
	5/16 x 2-3/4"	2-3/4						
	5/16 x 3-1/8"	3-1/8						
	5/16 x 3-1/2"	3-1/2						
	5/16 x 4"	3-7/8						
	5/16 x 5-1/8"	5						
	5/16 x 6"	5-7/8						
	3/8 x 3-1/8"	3-1/8	0.191	0.219	0.313	178,000	1,941	1,231
	3/8 x 4"	3-7/8						
	3/8 x 5-1/8"	5-1/8						
	3/8 x 6"	5-7/8						
	3/8 x 7-1/4"	7						
	3/8 x 8"	7-7/8						
	3/8 x 10"	9-3/4						
	3/8 x 12"	11-7/8						
	3/8 x 14-1/8"	14-1/8						
	3/8 x 16"	15-5/8						
LFT	3/8 x 8"	7-7/8	0.191	0.220	0.310	167,600	1,714	1,094
	3/8 x 10"	9-7/8						
	3/8 x 12"	11-3/4						
	3/8 x 15"	14-3/4						
	3/8 x 20"	19-5/8						
JTS	1/4 x 3-3/8"	3-3/8	0.152	0.171	0.240	226,300	1,104	769
	1/4 x 5"	5						
	1/4 x 6-3/4"	6-3/4						

for S1: 1 inch = 25.4 mm; 1 psi = 6.9 kPa.

¹ Overall length of fastener is measured from the underside of the head to bottom of the tip. See Figure 1.² Length of thread includes tip. See detailed illustration, Figure 1.³ Minor thread, shank and outside thread diameters are shown in table without manufacturing tolerances.⁴ Bending yield strength determined in accordance with ASTM F 1575 using the minor thread diameter.

PERFORMANCE TABLES

TABLE 2: RSS™ WITHDRAWAL DESIGN VALUES (W)¹

[WITHDRAWAL VALUES (W) ARE IN POUNDS PER INCH OF THREAD PENETRATION INTO SIDE GRAIN OF MAIN MEMBER]

FASTENER DESIGNATION AND DIAMETER Ø		WITHDRAWAL, W (LBS./IN.) FOR SPECIFIC GRAVITIES OF:	
		0.42 ≤ G < 0.55	0.55 ≤ G < 0.67
RSS	Ø 1/4	151	186
	Ø 5/16	165	227
	Ø 3/8	180	259
LTF	Ø 3/8	163	216
JTS	Ø 1/4	152	191

for S1: 1 inch = 25.4 mm

¹ Fastener withdrawal was tested in accordance with ASTM D 1761.

² Withdrawal values (W) shall be multiplied by the length of thread penetration in the main member (including tip).

TABLE 3: RSS™ PULL-THROUGH DESIGN VALUES (P)¹

[PULL-THROUGH VALUES (P) ARE IN POUNDS PER INCH OF SIDE MEMBER THICKNESS]

FASTENER DESIGNATION AND DIAMETER Ø		PULL-THROUGH, P (LBS./IN.) FOR SPECIFIC GRAVITIES OF:	
		0.42 ≤ G < 0.55	0.55 ≤ G < 0.67
RSS	Ø 1/4	165	275
	Ø 5/16	207	418
	Ø 3/8	196	351
LTF	Ø 3/8	202	373
JTS	Ø 1/4	154	372

for S1: 1 inch = 25.4 mm

¹ Fastener pull-through testing was performed in accordance with ASTM D 1037 with 3/4" thick side members.

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

PERFORMANCE TABLES

TABLE 4: RSS™ LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR (TWO-MEMBER) CONNECTIONS¹
[FOR SAWN LUMBER OR SCL WITH BOTH MEMBERS OF IDENTICAL SPECIFIC GRAVITY]

FASTENER DESIGNATION	SIDE MEMBER THICKNESS T_s (INCHES):	FASTENER PENETRATION P (INCHES)	LATERAL VALUE, Z (POUNDS) FOR SPECIFIC GRAVITIES OF:			
			$0.42 \leq G < 0.55$		$0.55 \leq G < 0.67$	
			PARALLEL TO GRAIN $Z_{ }$	PERPENDICULAR TO GRAIN, Z_{\perp}	PARALLEL TO GRAIN $Z_{ }$	PERPENDICULAR TO GRAIN, Z_{\perp}
RSS	1/4 x 2-1/2"	3/4	153	137	175	175
	1/4 x 2-3/4"	3/4				
	1/4 x 3-1/8"	3/4				
	1/4 x 3-1/2"	3/4				
	5/16 x 2-1/2"	3/4	168	133	214	178
	5/16 x 2-3/4"	3/4				
	5/16 x 3-1/8"	3/4				
	5/16 x 3-1/2"	3/4				
	5/16 x 4"	1-1/2	239	236	333	257
	5/16 x 5-1/8"	1-1/2				
	5/16 x 6"	2	265	299	472	289
	3/8 x 3-1/8"	3-4	188	156	251	220
	3/8 x 4"	1-1/2	224	205	274	264
	3/8 x 5-1/8"	1-1/2				
	3/8 x 6"	2	270	296	325	288
	3/8 x 7-1/4"	2-3/4	423	291	593	304
	3/8 x 8"	3-1/2				
	3/8 x 10"	3-1/2				
	3/8 x 12"	3-1/2				
	3/8 x 14-1/8"	3-1/2				
	3/8 x 16"	3-1/2				
LFT	3/8 x 8"	4	433	315	556	402
	3/8 x 10"	6				
	3/8 x 12"	8				
	3/8 x 15"	11	N/A	N/A	N/A	N/A
	3/8 x 20"	16				
JTS	1/4 x 3-3/8"	1-3/4	157	168	217	217
	1/4 x 5"	1-3/4	168	221	241	237
	1/4 x 6-3/4"	1-3/4				

for S1: 1 inch = 25.4 mm

¹ Lateral load testing was performed in accordance with ASTM D 1761.

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

PERFORMANCE TABLES

TABLE 5: CONNECTION GEOMETRY

CONNECTION GEOMETRY/CRITERIA	DIAMETERS ¹	RSS & JTS 1/4" NOMINAL DIAMETER (INCHES)	RSS 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 AND 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 ²	1-1/8	1-1/4	1-3/8

for S1: 1 inch = 25.4 mm

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

² Reduce lateral load values provided in Table 4 when penetration is less than 10D.

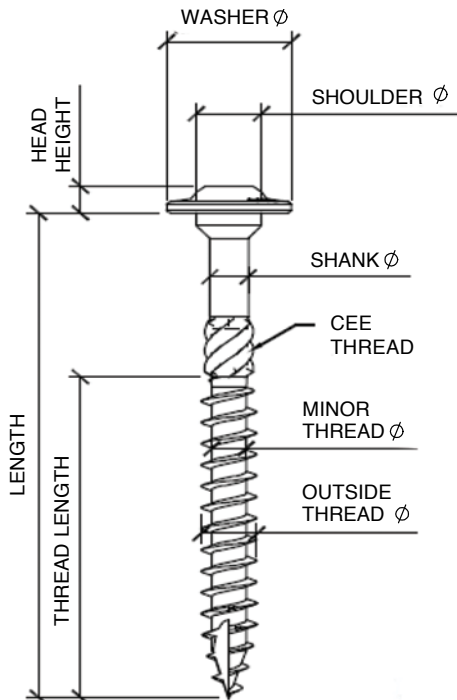


FIGURE 1 - FASTENER DIMENSIONS

SCREW TYPE	HEAD STAMP	WASHER Ø ± 0.020	HEAD HEIGHT ± 0.010	SHOULDER Ø ± 0.010	CEE THREAD ²
RSS 1/4 (6.0 mm)		0.533	0.110	0.244	LENGTH ≥ 3-1/8"
RSS 5/16 (7.0 mm)		0.620	0.157	0.301	LENGTH ≥ 3-1/8"
RSS 3/8 (8.0 mm)		0.689	0.181	0.364	LENGTH ≥ 3-1/8"
LFT 3/8 (8.0 mm)		0.688	0.181	0.364	LENGTH ≥ 3-1/8"
JTS 1/4 (6.3 mm)		0.534	0.090	0.244	LENGTH ≥ 5"

NOTES:

1. See table 1 for overall length, thread length, shank diameter, outside thread diameter and minor thread diameter.
2. CEE thread on screws with lengths greater than or equal to those indicated, not used for calculations.

PERFORMANCE TABLES

TABLE 1: FASTENER SPECIFICATIONS

FASTENER DESIGNATION	OVERALL LENGTH ¹ (INCHES)	LENGTH OF THREAD ² (INCHES)	MINOR THREAD DIAMETER ³ (INCHES)	SHANK DIAMETER ³ (INCHES)	OUTSIDE THREAD DIAMETER ³ (INCHES)	ALLOWABLE STEEL STRENGTH		
						BENDING YIELD STRENGTH ⁴ <i>F_{yb}</i> (PSI)	TENSILE (PSI) [POUNDS]	SHEAR (PSI) [POUNDS]
R4	9 x 2"	2	0.117	0.130	0.174	158,800	61,760 [627]	39,660 [428]
	9 x 2-1/2"	2-3/8						
	9 x 2-3/4"	2-3/4						
	9 x 3-1/8"	3-1/8						
	10 x 2-1/2"	2-3/8	0.128	0.142	0.194	143,590	62,640 [846]	44,520 [542]
	10 x 2-3/4"	2-3/4						
	10 x 3-1/8"	3-1/8						
	10 x 3-1/2"	3-1/2						
	10 x 4"	3-7/8						
	10 x 4-3/4"	4-5/8						
	12 x 2-1/2"	2-3/8	0.153	0.172	0.238	134,280	60,580 [1,134]	38,610 [655]
	12 x 2-3/4"	2-3/4						
	12 x 3-1/8"	3-1/8						
	12 x 3-1/2"	3-1/2						
	12 x 4"	3-7/8						
	12 x 4-3/4"	4-5/8						
	12 x 5-5/8"	5-1/2						
	12 x 6-3/8"	6-1/4						
	12 x 7-1/4"	7						
	12 x 8"	7-7/8						
	12 x 10"	9-3/4						
	12 x 12"	11-3/4						
TRIM	8 x 2-1/2"	2-3/8	0.106	0.116	0.160	148,410	56,580 [499]	40,000 [360]
	8 x 2-3/4"	2-3/4						
	8 x 3-1/8"	3-1/8						
	9 x 2-1/2"	2-3/8	0.114	0.128	0.176	147,280	57,000 [576]	42,160 [425]
	9 x 2-3/4"	2-3/4						
	9 x 3-1/8"	3-1/8						
KAMELEON	9 x 2-1/2"	2-1/2	0.119	0.134	0.177	160,210	57,490 [634]	37,870 [437]
	9 x 2-3/4"	2-3/4						
	9 x 3-1/8"	3-1/8						

for S1: 1 inch = 25.4 mm; 1 psi = 6.9 kPa.

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

² Length of thread includes tip. See detailed illustration, Figure 1.

³ Minor thread, shank and outside thread diameters are shown in table without manufacturing tolerances.

⁴ Bending yield strength determined in accordance with ASTM F 1575 using the minor thread diameter.

PERFORMANCE TABLES

SCREW TYPE	HEAD Ø	CEE-THREAD
R4 - #9 (4.5 mm)	0.328 ± 0.006	LENGTH = > 2"
R4 - #10 (5.0 mm)	0.368 ± 0.006	LENGTH = > 2"
R4 - #12 (6.0 mm)	0.439 ± 0.010	LENGTH = > 2"
TRIM - #8 (4.0 mm)	0.197 ± 0.006	N/A
TRIM - #9 (4.5 mm)	0.230 ± 0.006	N/A
KAMELEON - #9 (4.5 mm)	0.258 ± 0.006	ALL LENGTHS

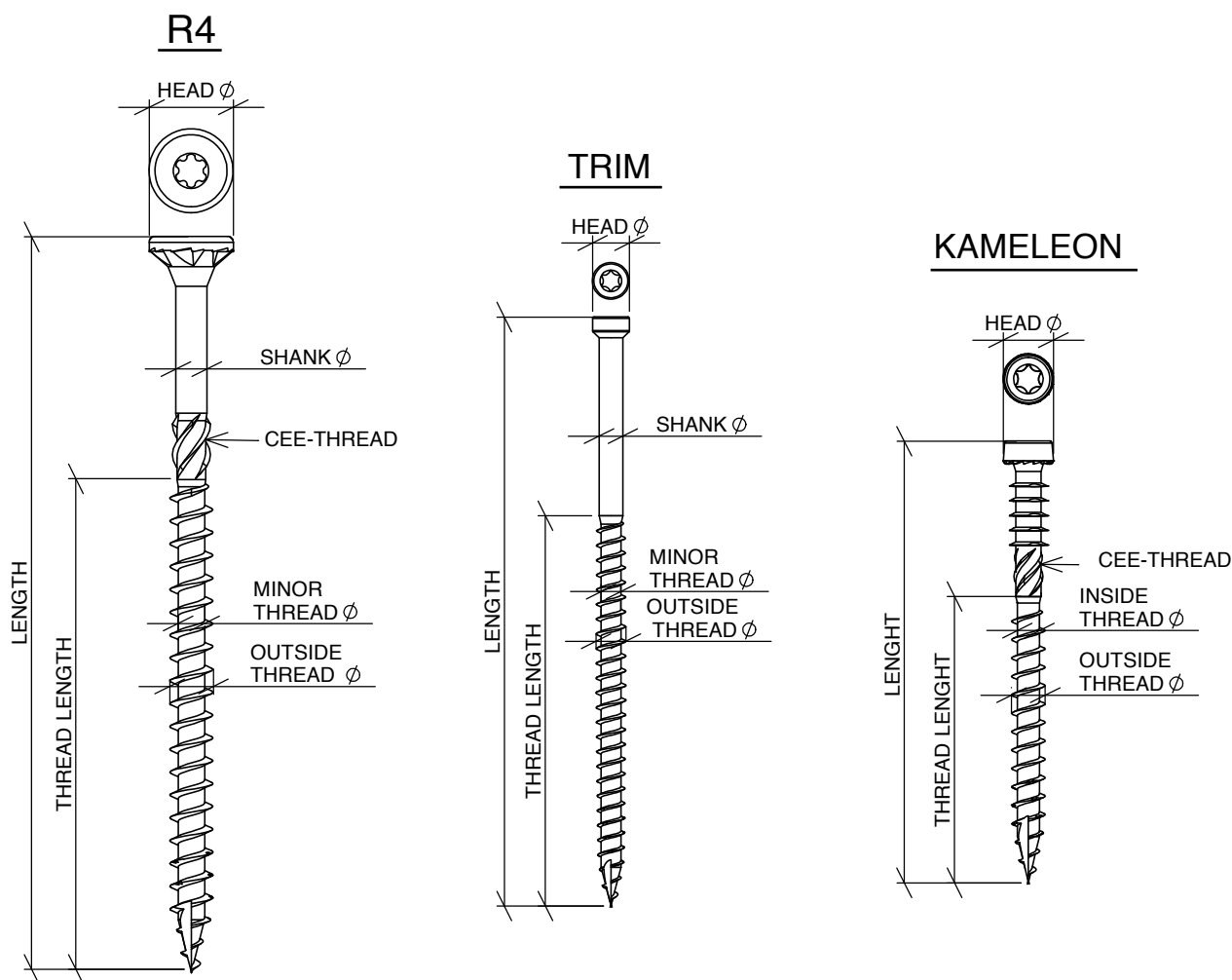


FIGURE 1 - FASTENER DIMENSIONS

NOTES:

1. See table 1 for overall length, thread length, shank diameter, outside thread diameter and minor thread diameter.
2. CEE thread on screws with lengths greater than or equal to those indicated, not used for calculations.
3. Dimensions given if not otherwise stated are in inches (for SI 1 inch = 25.4 mm)

PERFORMANCE TABLES

TABLE 2: DESIGN WITHDRAWAL VALUES (W)¹

[TABULATED WITHDRAWAL VALUES (W) ARE IN POUNDS PER INCH OF THREAD PENETRATION INTO SIDE GRAIN OF MAIN MEMBER]

FASTENER DESIGNATION		WITHDRAWAL, W (LBS./IN.) FOR SPECIFIC GRAVITIES OF:
		0.67
R4	# 9	179
	# 10	249
	#12	255
TRIM	# 8	175
	# 9	221
KAMELEON	# 9	186

for S1: 1 inch = 25.4 mm; 1 lbf/in = 175.127 N/m.

¹ Fastener withdrawal was tested in accordance with ASTM D 1761.

² Values must not be multiplied by any adjustment/safety factor.

TABLE 3: DESIGN PULL-THROUGH VALUES (P)¹

(TABULATED PULL-THROUGH VALUES (P) ARE IN POUNDS PER INCH OF SIDE MEMBER THICKNESS)

FASTENER DESIGNATION		PULL-THROUGH, P (LBS./IN.) FOR SPECIFIC GRAVITIES OF:
		0.67
R4	# 9	162
	# 10	275
	#12	407
TRIM	# 8	61
	# 9	94
KAMELEON	# 9	143

for S1: 1 inch = 25.4 mm; 1 lbf/in = 175.127 N/m.

¹ Fastener pull-through testing was performed in accordance with ASTM D 1037.

² Values must be multiplied by all applicable adjustment factors. (20.15 NDS Table 11.3.1)

³ Minimum side member thickness must be 3/4".

PERFORMANCE TABLES

TABLE 4: REFERENCE LATERAL DESIGN VALUES (Z) FOR SINGLE SHEAR (TWO MEMBER) CONNECTIONS¹
[FOR SAWN LUMBER OR SCL WITH BOTH MEMBERS OF IDENTICAL SPECIFIC GRAVITY]

	FASTENER DESIGNATION	SIDE MEMBER THICKNESS, T_s (INCHES)	FASTENER PENETRATION, P (INCHES)	REFERENCE LATERAL ULTIMATE VALUE, Z (POUNDS) FOR SPECIFIC
				0.67
				PARALLEL TO GRAIN, $Z_{ }$
R4	9 x 2"	3/4	1-1/8	175
	9 x 2-1/2"	3/4	1-1/2	
	9 x 2-3/4"	3/4	2	
	9 x 3-1/8"	3/4	2-3/8	
	10 x 2-1/2"	3/4	1-1/2	203
	10 x 2-3/4"	3/4	2	
	10 x 3-1/8"	3/4	2-3/8	
	10 x 3-1/2"	3/4	2-3/4	
	10 x 4"	3/4	3-1/8	242
	10 x 4-3/4"	3/4	3-7/8	
	12 x 2-1/2"	3/4	1-1/2	
	12 x 2-3/4"	3/4	2	
	12 x 3-1/8"	3/4	2-3/8	
	12 x 3-1/2"	3/4	2-3/4	
	12 x 4"	3/4	3-1/8	
	12 x 4-3/4"	3/4	3-7/8	
	12 x 5-5/8"	3/4	4-3/4	
	12 x 6-3/8"	3/4	5-1/2	
	12 x 7-1/4"	3/4	6-1/4	
	12 x 8"	3/4	7	
	12 x 10"	3/4	9	
	12 x 12"	3/4	11	
TRIM	8 x 2-1/2"	3/4	1-1/2	84
	8 x 2-3/4"	3/4	2	
	8 x 3-1/8"	3/4	2-1/2	
	9 x 2-1/2"	3/4	1-1/2	104
	9 x 2-3/4"	3/4	2	
	9 x 3-1/8"	3/4	2-3/8	
KAMELEON	9 x 2-1/2"	3/4	1-5/8	159
	9 x 2-3/4"	3/4	1-7/8	
	9 x 3-1/8"	3/4	2-3/8	

for S1: 1 inch = 25.4 mm

¹ Lateral load testing was performed in accordance with ASTM D 1761.

² Values must be multiplied by all applicable adjustment factors. (20.15 NDS Table 11.3.1)



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