Delivering PRO Driven Service Nationwide

Hands-on Jobsite Support for PROs

By offering hands-on product training, on-site technical support, and tailored solutions, we aim to establish a strong partnership with PRO contractors. We understand the unique challenges faced by contractors and aim to provide the necessary support and resources to help them succeed on their jobsites.

Dealer Training and Merchandising

We strive to establish valuable partnerships with our retail partners by offering comprehensive support via our dedicated field sales team such as on-site product training and dynamic merchandising setups. Our strong relationships with PRO contractors helps our dealers to maximize their sales potential and deliver a positive customer experience.

New Construction Engineering Team

Our engineering team is committed to providing unparalleled support to building designers and engineers, offering direct assistance and technical expertise. Plus, our field sales representatives collaborate closely throughout the entire design and construction process to facilitate successful project execution.

How to Connect with FastenMaster

Call us: 800·518·3569
Email us: info@fastenmaster.com
Follow us: @fastenmasterpro
Visit us: fastenmaster.com

Scan to contact your local representative here:

FM23295 (0825)

For PROs Who Want To Get More Done

Stronger, More Efficient Fastening Systems To Help Grow Your Business

FastenMaster products are designed for both general wood-to-wood construction as well as many task-specific applications. In every case, these fasteners are tested for performance characteristics and exposure conditions that would be expected during their intended use. The guidance within this catalog, including the technical data provided within is based on the results of third-party testing, published standards for building materials and well-established best practices within the construction industry.

First and foremost, the safety of those involved with the installation of any building product during construction should be given the highest priority. To minimize the potential for injury, a full assessment of risks and an appropriate avoidance strategy should be undertaken prior to any work regardless of the project's size, number of workers, or presumed hazards. FastenMaster has developed a Work-Safe Checklist that provides an easy-to-follow guide to a safer job-site experience.

To ensure optimal performance when using FastenMaster products, design professionals and installers should consult the published installation instructions and supporting technical literature available at fastenmaster.com/technical documents. Failure to adhere to this technical guidance, including the improper installation of products, may result in poor connection performance and unsafe construction.

General Technical Guidance

- Do not exceed the allowable loads for the fasteners being used as provided in the tables within this catalog or in the task-specific evaluation reports for your connection
- Unless otherwise noted in our instructions, fasteners should not be driven beneath the surface of the wood as overdriving the head into the wood may result in reduction of connection strength.
- Wood species, grade and end use conditions including anticipated moisture content, load direction and duration of load shall be considered when designing the connection.
- For tension applications, the lesser allowable load for head withdrawal vs thread withdrawal must be used to determine the proper load capacity.
- For shear applications the best attempt should be made to engage/align the strongest part of the fastener, the unthreaded shank, to the shear plane between wood surfaces.
- Although all FastenMaster structural screws are coated to resist corrosion in exterior applications up to and including the use in chemically treated wood, where extreme corrosion conditions exist such as salt-water exposure, a marine grade stainless steel fastener should be used.
- Fasteners in contact with dissimilar metals may cause premature failure due to galvanic corrosion and should be avoided. In some cases, an insulating barrier such as neoprene backed washer can be used to eliminate direct metal to metal contact.
- FastenMaster screws are not approved for use with metal connectors or straps from other manufacturers.
- Where installation instructions cannot be located for your specific application, a qualified design professional such as an engineer or architect should be consulted to design the connection using the guidance within our evaluation reports to recommend the fastener and installation instructions to ensure proper performance.
- End, edge and the spacing between fasteners to minimize splitting potential is a critical part of connection performance. Tables within our reports and task-specific installation instructions should be used to confirm the appropriate distance by species and load type. In some cases, where supported by FastenMaster literature, predrilling may be recommended to reduce spacing while maintaining connection performance.
- Wood members are dynamic when exposed to moisture. Limiting the effects of moisture should be part of any connection design especially in exterior applications.
- Where manufactured wood based products are being used, material manufacturer's installation instructions should be followed as it relates to the approved use of fasteners with their products.

Warranty Information

FastenMaster® warranties its fasteners to be free from defects in materials and workmanship for the life of the project. When used as recommended by FastenMaster and within the manufacturer's instructions for the materials being attached, the coating and structural performance of these fasteners is covered under the terms of our limited warranty which can be found at FastenMaster.com.

Best Practices

With all structural connections employing our products, the following recommendations apply:
Wood splitting can occur when fasteners are installed either too close to the ends and edges of the wood or too close to each other. Follow the recommended minimum spacing requirements found on our packaging, in task specific Technical Bulletins, or the evaluation report for each product.

FastenMaster products are primarily designed for wood-to-wood or composite-to-wood connections.
The attachment of metal brackets or fixtures to wood introduces unique loading and design requirements that must be evaluated prior to selecting a fastener. Consult with FastenMaster Technical staff before making this type of connection. Dimensional changes in wood and settlement of structures over time can cause connections to loosen, considerably reducing their strength. Critical connections should be checked for tightness as part of an ongoing maintenance program. Wood installed wet should be inspected after an initial drying period of 30 days as this is when the greatest dimensional changes occur.

Fasteners should never be used as the sole replacement for joist hangers or blocking used to support the ends of joists, beams or stair treads. Unless accommodated for by a design professional or outlined in our instructions, the use of materials between wood pieces being attached (such as foam insulation or built up facades) should be avoided whenever possible. Fasteners should be supported by structural material along their entire length for the best shear capacity.

Exposure of wood to moisture has the greatest potential impact on connection strength over time.
Proper design considerations should always include water mitigation techniques and sufficient ventilation to minimize wood decay, rot and wood boring insects. Likewise, the correct use of flashing and sealing of joints by the installer is an important part of wood preservation and dimensional stability of wood structures.

At FastenMaster, Everything We Do Is PRO Driven

FastenMaster is committed to supporting our professional contractors' businesses by developing innovative products and services. Our wide range of products, including those for wood framing, structural fastening, residential decking, and remodeling, offer unique benefits to multifamily framers, home builders, remodelers, and professional deck builders. In addition, our nationwide sales team regularly collaborates on the jobsite with PROs to gain a comprehensive understanding of their business practices and product needs.

1998 **TimberLOK** | 2000 **TrapEase** | 2003 **LedgerLOK** | 2008 **Cortex** | 2011 **ThruLOK** | 2015 **Collated Cortex** | 2016 **FrameFAST** | 2019 **NLB** | 2023 **MVP**

Improving PROs' Businesses Through Innovation

For more than 25 years FastenMaster, a division of OMG Building Products, has worked side-by-side with top PRO contractors as we've developed the most innovative structural, decking and framing fastening solutions in the industry. Our American-based engineering and manufacturing teams have enabled us to develop cutting-edge fastening solutions that reduce installed cost, increase structural integrity and reflect a pride in craftsmanship.

Improving PROs' Businesses Through World Class Engineering Support

At FastenMaster we know that having the strongest and most secure connections is critical to the professional design engineer. As an innovative company, we partner with the nation's most trusted 3rd party engineering companies to test and publish our design values. Our fasteners are tested to the industry's highest standards so engineers can rest assured that FastenMaster products perform. PROs across the country prefer FastenMaster and our world class technical support team delivers side-by-side design comparisons that make switching to FastenMaster easy.

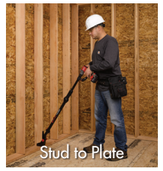
Improving PROs' Businesses Through American Manufacturing

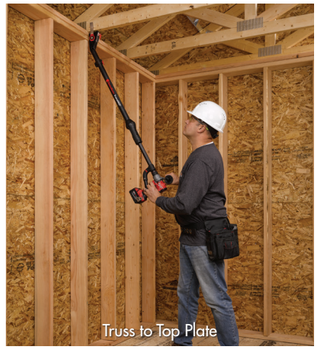
Between our manufacturing facilities in Agawam, MA and Addison, IL, our logistics centers in Charlotte, NC and Glendale Heights, IL, and our nationwide sales organization, the entire team at FastenMaster is driven to improve our professional contractors' businesses. With over 650 team members specializing in everything from manufacturing and new product development to customer support and logistics, we have the knowledge and experience to deliver a uniquely American level of service and support.

Table of Contents

Uplift Connectors & Continous Load Path	**FrameFAST**™ Structural Framing System *One screw replaces a variety of hurricane ties, straps and other metal connectors*	*07*
Non-Load Bearing	**NLB** Non-Load Bearing Connector *The fastest and easiest way to secure the top of non-load bearing walls to trusses and joists above*	*17*
Multi-ply Beam Truss & EWP	**FlatLOK**® Structural Wood Screw *Designed for joining multi-ply dimensional & engineered wood connections all from a single side*	*24*
Ledger Connections	**LedgerLOK**® Structural Wood Screw *1/2" Lag Bolt replacement in hex or flat headed options*	*26*
Multipurpose Structural Wood Screws	**TimberLOK**® Structural Wood Screw *Hex headed replaces 3/8" lag screws for headers, stair stringers, fences and more*	*29*
	HeadLOK® Structural Wood Screw *Flat headed replacement for 3/8" lag screws for decks, stair stringers, fences, cabinets and more*	*31*
	FastenMaster VersaLOK™ Structural Wood Screw *Flat headed heavy duty replacement for 1/2" lag screws in longer lengths*	*34*
	ThruLOK® Screw Bolt Fastening System *Replaces 1/2" through-bolts with no drill bits or wrenches required*	*36*
	FastenMaster MVP™ Multipurpose Wood Screw *Multipurpose wood screw for increased connection strength, durability and corrosion resistance*	*40*
	Lateral Tension System® *Code-Compliant Lateral Deck Attachment*	*42*

FrameFAST™ Structural Wood Screw





Features:
- 6" FrameFAST screws replace commonly used framing clips, straps, and ties installs 5x faster than traditional connectors
- Patented delivery system ensures correct installation angle and offset every time
- Eliminates ladders, nail guns and hoses

6" FrameFAST Fastener	
Description	**SKU**
50 piece box	FMFFTT006-50
250 piece box	FMFFTT006B-250

Packaging comes with TORX® ttap® Drive Bit and Alignment Guide

FrameFAST Installation Tools	
Description	**SKU**
FF Cordless DeWALT	FMFFTOOL-T2TP-DWC
FF Cordless Milwaukee	FMFFTOOL-T2TP-MILC

All FrameFAST Tools include (2) replacement TORX® ttap® drive bits & the FrameFAST Truss-to-Top-Plate head. Cordless tools do not include battery or charger.

Additional Installation Heads	
Description	**SKU**
Truss-to-Top-Plate Head	FMFFHEAD-T2TP
Stud-to-Plate Head	FMFFHEAD-S2P
Plate-to-Rim Head	FMFFHEAD-P2R

Description:
The FrameFAST system consists of both the structural wood screw and the FrameFAST tool. The 6" FrameFAST structural wood screw is a code-compliant replacement to hurricane ties, straps, and framing clips and its fully threaded design provides superior uplift and lateral resistance.

FrameFAST Structural Screw
The 6" FrameFAST structural screw is engineered to provide superior uplift and lateral strength. Made of hardened steel, FrameFAST exceeds design strength capacities of commonly used clips and ties throughout most of the United States and Canada.

FrameFAST Tool
It's critical that framing screws are installed at the precise angle, offset distance, and drive depth required for optimal connection strength. The FrameFAST Tool, with 3 interchangeable heads, ensures the fastener is installed properly every time. With cordless power options, it's easy to choose the FrameFAST tool that's right any crew.

Code Compliant 5X FASTER Easy to Inspect

IAPMO ES ®

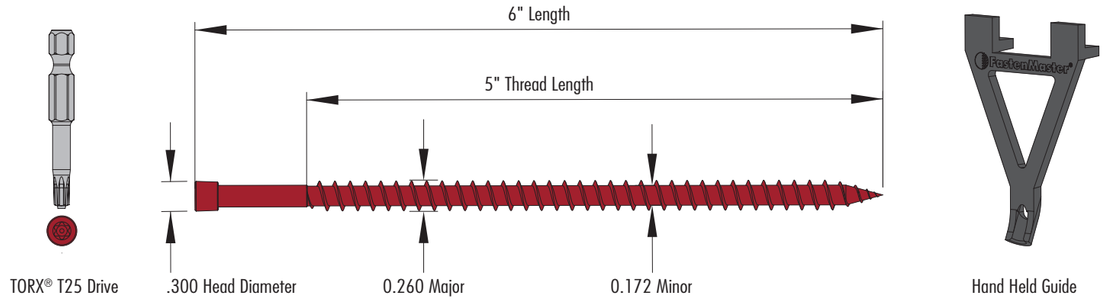
DITCH THE CLIPS
and eliminate:

Compressors

Ladders

Pneumatic Nailers

FrameFAST™ Product Specifications

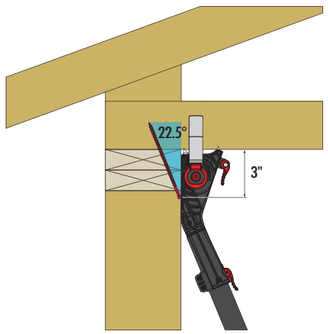


The FrameFAST Tool is the perfect companion to the FrameFAST Structural Fastener
- 3 Interchangeable heads accommodate a variety of structural connections ensuring accurate installation angle, precise offset, and optimized thread engagement.
- Patented delivery system ensures correct installation angle and offset every time.
- Allows the worker to stand safely on the floor, eliminating the need for ladders, pneumatic nailers, and other safety hazards.

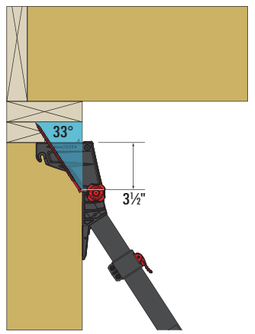
Three interchangeable heads accommodate a variety of structural connections

Cordless DEWALT

Cordless Milwaukee



Truss-to-Top Plate



Stud-to-Plate

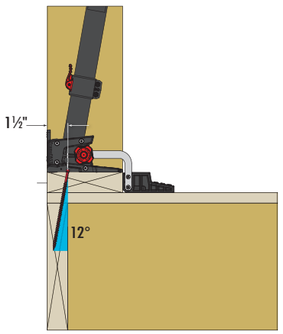


Plate-to-Rim

FastenMaster

FrameFAST™

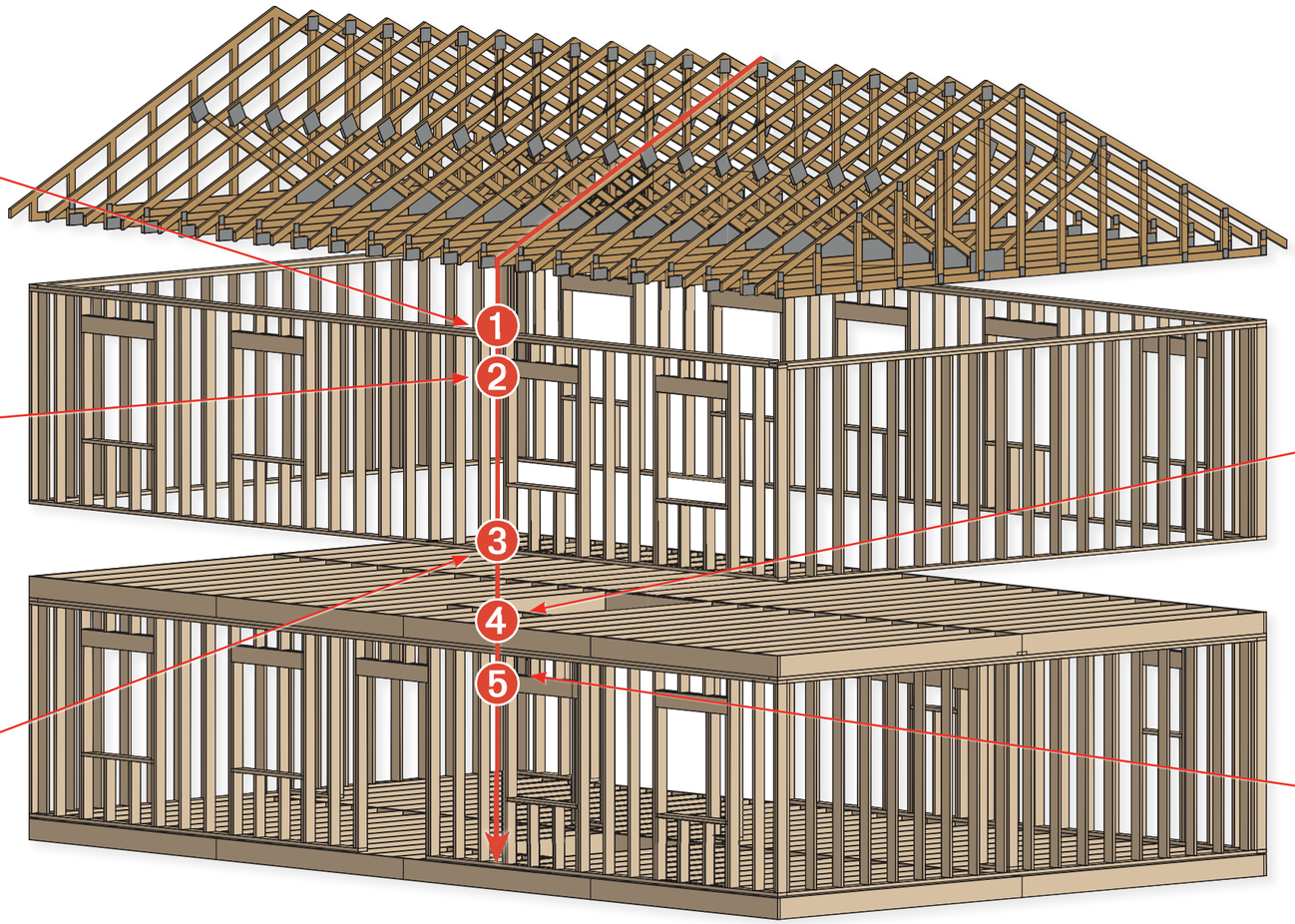
Structural Framing System

CONTINUOUS LOAD PATH

1 **Truss To Top Plate**

2 **Stud To Top Plate**

3 **Stud To Bottom Plate**



Three Installation Heads

4 **Bottom Plate To Rimboard**

5 **Top Plate To Rimboard**

One Screw. One Tool.
Three Interchangeable Heads.

For More Information, Call Or Visit Our Website Today!

800·518·3569

FastenMaster.com

FrameFAST™ Truss to Top Plate

Truss to Top Plate
FrameFAST is used to resist both uplift and lateral loads on trusses or rafters attached to the top plates of the wall. The fastener is installed at the prescribed angle through the top plates or header and into the center of the truss or rafter above. The FrameFAST tool, with the patented Truss to Top Plate Head, ensures proper location and installation angle every time. To verify the adequacy of this connection for your specific application, confirm that the allowable loads in Table 1A meet or exceed the design specification or the capacity of the specified connector on your plans.

Table 1A – Truss / Rafter To Top Plate Allowable Loads (in Pounds per Connection)

Wood Species	Uplift	Shear Parallel to Wall (F1)		Shear Perpendicular to Wall (F2)
		w/o Blocking	w/ Blocking	
S.Pine	950	285	650	485
D.Fir	990	300	600	455
SPF	780	330	520	400

Table Footnotes
- Fastener installed through double top plate or beam with head driven within 1/4" of flush as shown in Figures 1a-1d (see attached referenced drawings showing 22 deg, 22 deg w/ blocking, 90 deg, and header beam to truss)
- Refer to Technical Evaluation Report TER 1503-03 for all supporting data and complete installation instructions.
- For shear parallel to wall with blocking, refer to Figure 1c.
- Load duration factor of 1.6 applied for short term wind loads. No further increase allowed.

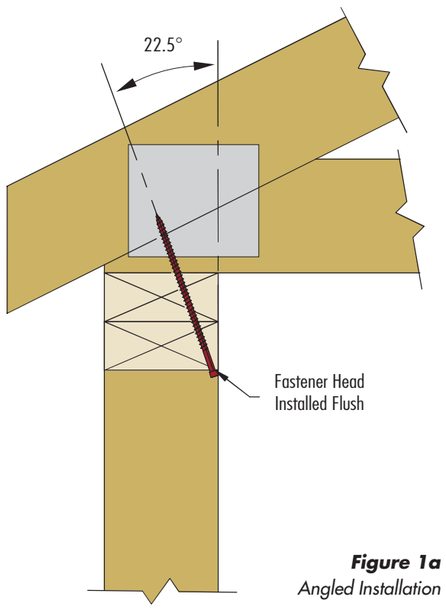


Figure 1a
Angled Installation

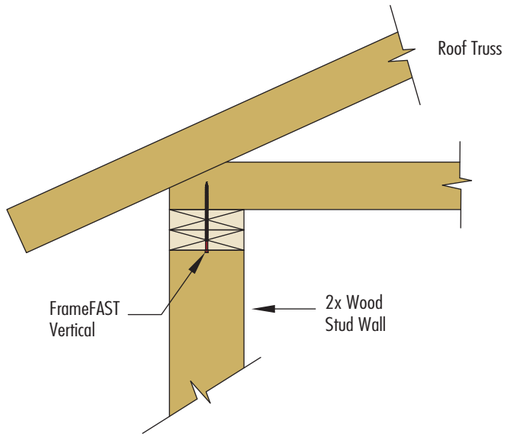


Figure 1b
Vertical Installation

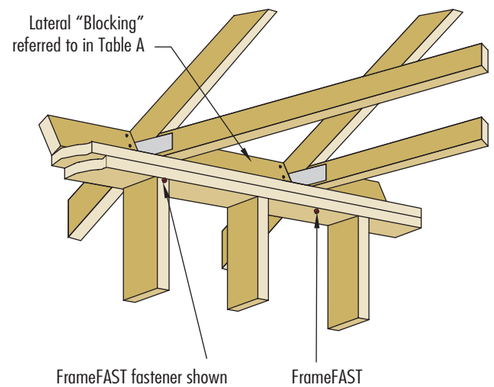


Figure 1c
FrameFAST with Lateral Blocking Between Trusses

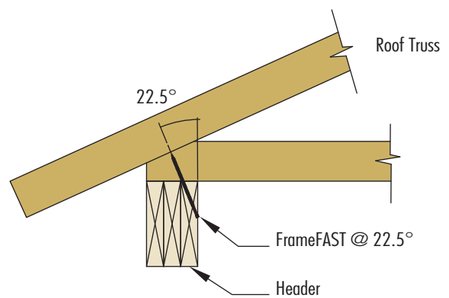


Figure 1d
Installation Over Header or Beam

FrameFAST™ Drag Truss to Plate

Table 1B – Drag Truss to Plate Allowable Load (in Pounds per Connection)

Wood Species	Lateral/Shear Parallel to Wall (F1)
S.Pine	330
D.Fir	300
SPF	285

Fastener installed through plate and into rim material as shown in Figure 1e. Refer to Technical Evaluation Report TER 1503-03 for all supporting data and complete installation instructions. Load duration factor of 1.6 applied for short term wind loads. No further increase allowed.

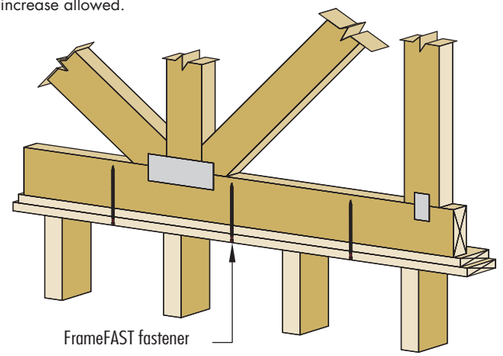
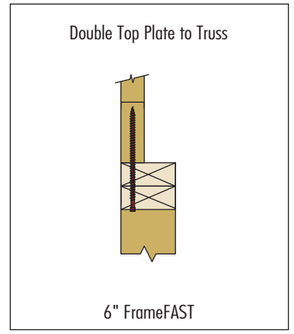
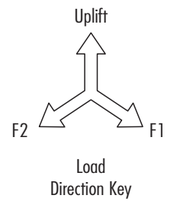


Figure 1e
Drag Truss Installation





FrameFAST™ Truss to Top Plate

Table 1C – Roof Truss to Top Plate - 2 Screw Detail Allowable Loads (in Pounds per Connection)	
Wood Species	**Uplift**
S.Pine	1425
D.Fir	1485
SPF	1195

Two fasteners installed through double top plate with one screw at angle and one vertical as shown in Figure 1f. Refer to Technical Evaluation Report TER 1503-03 for all supporting data and complete installation instructions.
- If vertical screw aligns with the stud below, screw can be installed at a slight angle to accommodate (12 degrees max).
- Load duration factor of 1.6 applied for short term wind loads. No further increase allowed.

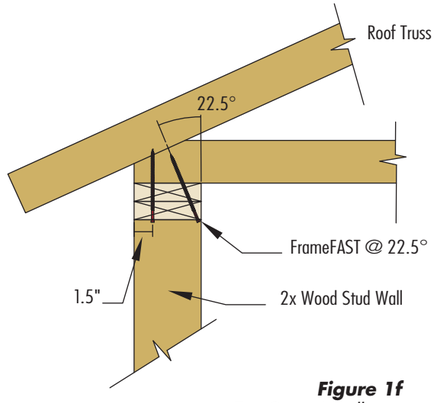


Figure 1f
Two Screw Installation

Table 1D – Floor Truss to Double Top Plate Allowable Loads (in Pounds per Connection)	
Wood Species	**Uplift**
S.Pine	540
D.Fir	560
SPF	440

Fastener installed through double top plate as shown in Figure 1g and 1h. Refer to Technical Evaluation Report TER 1503-03 for all supporting data and complete installation instructions.
- Load duration factor of 1.6 applied for short term wind loads. No further increase allowed.

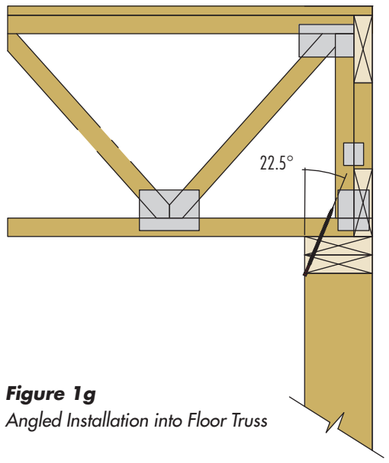


Figure 1g
Angled Installation into Floor Truss

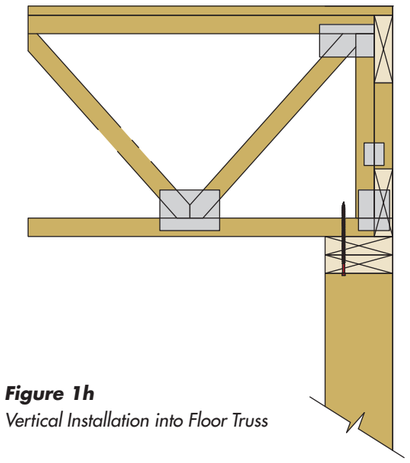


Figure 1h
Vertical Installation into Floor Truss

FrameFAST™ Stud to Plate

Stud to Plate
Connections between the top and bottom of the stud and the wall plates increase uplift capacity. The Stud to Plate Head is engineered to precisely install the FrameFAST fastener 3-1/2" from the end of the stud and at a 33˚ angle. Both the installation angle and the offset are critical to the strength of this connection. Confirm that the FrameFAST allowable loads in Table 1E meet or exceed the design criteria or the capacity of the specified connector on your plans. Fasteners at every stud may not be necessary: spacing may be adjusted to meet the required design loads.

Table 1E – Stud to Top or Bottom Plate Allowable Loads (in Pounds per Connection)	
Wood Species	**Uplift**
S.Pine	665
D.Fir	560
SPF	340

Fastener installed through narrow edge of stud and into single plate as shown in Figure 1j. Refer to Technical Evaluation Report TER 1801-02 for all supporting data and complete installation instructions.
- Load duration factor of 1.6 applied for short term wind loads. No further increase allowed.

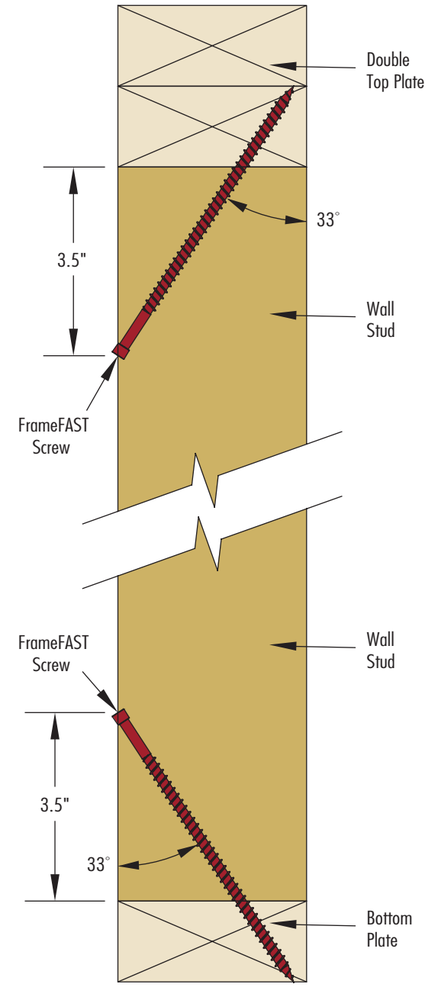


Figure 1j
Stud to Top and Bottom Plate

FrameFAST™ Plate to Rim

Plate to Rim
Shear and uplift loads between floors frequently require straps or clips on the exterior of the building to transfer these forces. The 6" FrameFAST screw can be more easily installed from the interior of the building to make this connection. The Plate to Rim Head installs the FrameFAST screw upwards through the wall plate and into the rim above, or downwards through the wall plate and into the rim below at the right angle and location.

Table 1F – Plate to Rim Board
Allowable Loads (in Pounds per Connection)

Wood Species	Single Plate		Double Plate	
	Uplift	Lateral/Shear	Uplift	Lateral/Shear
S.Pine	325	395	595	650
D.Fir	245	265	590	595
SPF	210	340	475	495
1-1/8" OSB	195	340	360	230
1-1/4" LSL	165	210	610	485
1-1/4 LVL	110	320	570	440

Fastener installed through plate and into rim material as shown in Figure 1k.
Refer to Technical Evaluation Report TER 1801-02 for all supporting data and complete installation instructions.
- Load duration factor of 1.6 applied for short term wind loads.
  No further increase allowed.

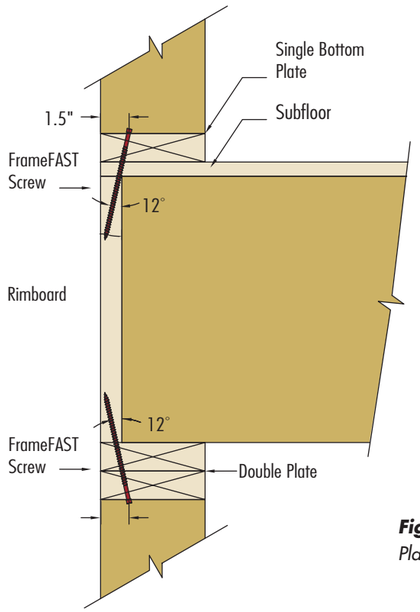


Figure 1k
Plate to Rim Installation

FrameFAST™ Deck Joist to Beam

Deck Joist to Beam
Exterior decks are subject to a variety of live and dead loads including the uplift potential from wind or seismic events. The connection between deck joists and the support beam provide an important link to provide both lateral and uplift support between the frame and the deck platform above. The 6" FrameFAST screw can be installed upward through the beam and into the joists as shown in figure 1m to make this connection. Refer to Table 1A for allowable design values.

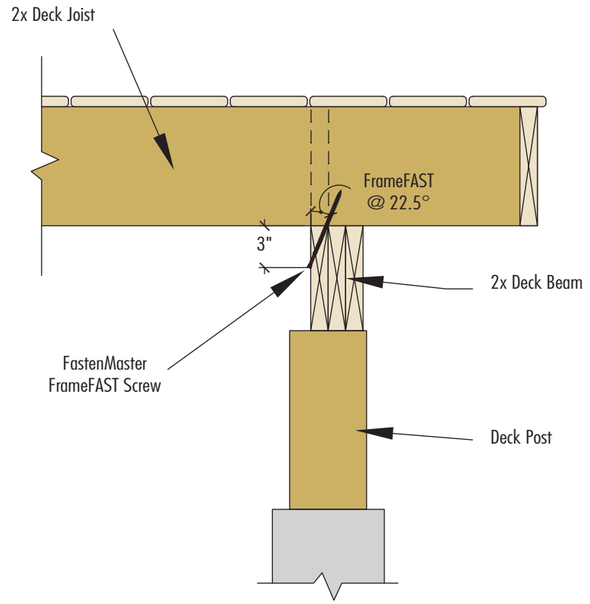


Figure 1m
Joist to Header/Beam Installation

Table 1A – Truss / Rafter To Top Plate
Allowable Loads (in Pounds per Connection)

Wood Species	Uplift	Shear Parallel to Wall (F1)		Shear Perpendicular to Wall (F2)
		w/o Blocking	w/ Blocking	
S.Pine	950	285	650	485
D.Fir	990	300	600	455
SPF	780	330	520	400

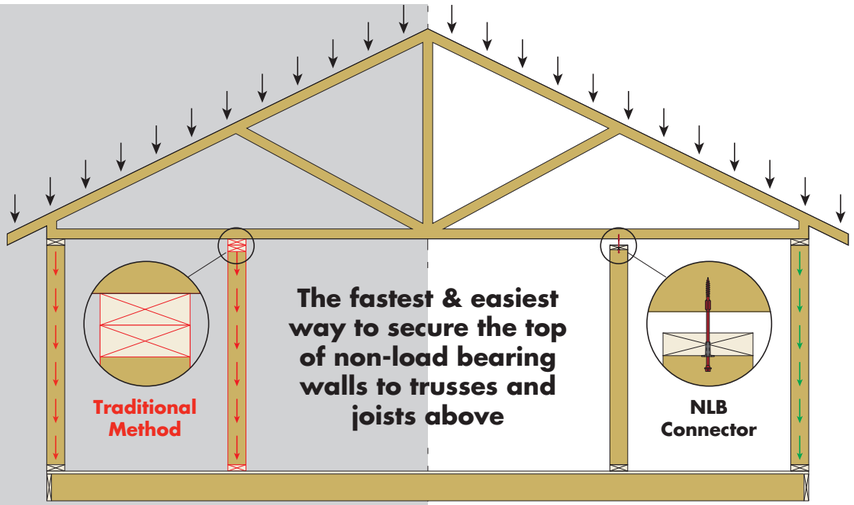
Table Footnotes
- Fastener installed through double top plate or beam with head driven within 1/4" of flush as shown in Figures 1a-1d (see attached referenced drawings showing 22 deg, 22 deg w/ blocking, 90 deg, and header beam to truss)
- Refer to Technical Evaluation Report TER 1503-03 for all supporting data and complete installation instructions.
- Load duration factor of 1.6 applied for short term wind loads.
  No further increase allowed.

NLB Connector™ For Non-Load Bearing Walls

Features:

- Provides lateral stability to non-load bearing walls while allowing vertical movement of structural members above
- Cutting wing eliminates predrilling
- Integrated friction-free sleeve
- Installation bit leaves head 3/4" proud to allow for upward movement
- Installs 8x faster while workers stand safely of the floor
- IRC/IBC code-compliant
- No predrilling required
- ProjectLife guaranteed

NLB Selection Guide	
Description	**SKU**
NLB Connector (50 pack)	FMNLB006-50



Interior walls with framing tight to truss cords

- **X** Loads transfer through partition walls
- **X** Not properly supported
- **X** Causes issues like sticking doors and windows and cracked drywall and trim

Framing with a gap between interior walls and truss cords

- ✓ Loads transfer through structure as designed
- ✓ Bearing points are properly supported
- ✓ Prevents callbacks for sticking doors and drywall repairs

NLB Connector™ Sample Applications

Table 3A – Allowable Lateral Load per Connection based on Plate Configuration and Gap Between Top Plate and Framing

	Single Top Plate					Double Top Plate	
Max Gap	0"	1/4"	1/2"	3/4"	1-1/2"	3/4"	1-1/2"
Load (lbs)	290	250	220	200	140	210	130

- Minimum thread embedment of 1/2" into wood truss with minimum size 1-1/2" x 3-1/2"
- In 0" gap condition, truss or wood structural member must bear on top plate of partition wall
- NLB Connectors can be used on wood I-joists where EW manufacturer's recommendations to predrill or add blocking are followed

Perpendicular To Floor/Ceiling Joist

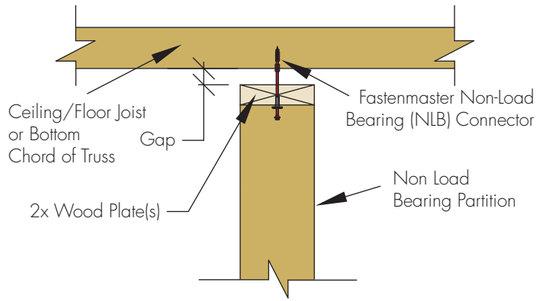


Figure 3a

Parallel To Floor/Ceiling Joist

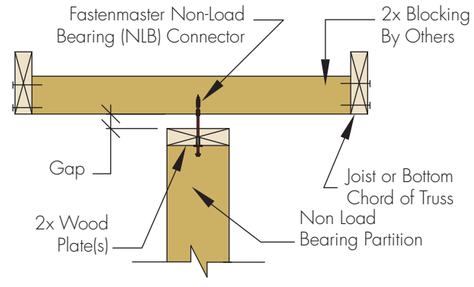


Figure 3c

Perpendicular To Floor/Roof Truss

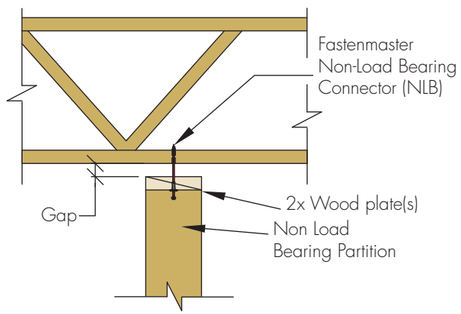


Figure 3b

Parallel To Floor/Roof Truss

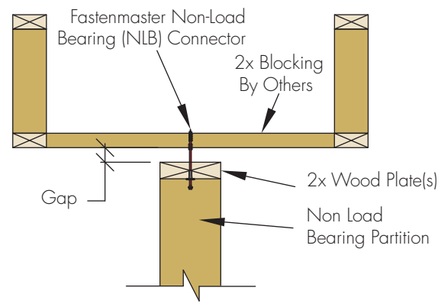


Figure 3d

FlatLOK® Structural Wood Screw

Features:

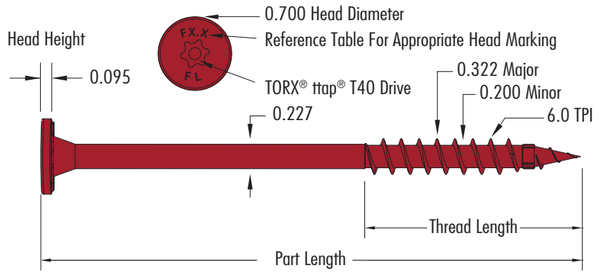
- Strip-out resistant #40 TORX® ttap® drive system
- Guaranteed corrosion resistance
- Compatible with chemically treated wood
- Approved for single-sided installation
- IRC/IBC code-compliant

FlatLOK Selection Guide			
Length	**Typical Applications**	**Packaging Qty**	**SKU**
2-7/8"	2-Ply Roof Girder Trusses	50pc box	FMFL278-50
		500pc bucket	FMFL278B-500
3-1/2"	2-Ply LVL Beams	Single fastener	FMFL312-INDY
		50pc box	FMFL312-50
		250pc bucket	FMFL312B-250
4"	Interior Corridor Ledgers	50pc box	FMFL004-50
		250pc bucket	FMFL004B-250
4-1/2"	3-Ply Roof Girder Trusses	50pc box	FMFL412-50
		250pc bucket	FMFL412B-250
5"	3-Ply LVL Beams	Single fastener	FMFL005-INDY
		50pc box	FMFL005-50
		250pc bucket	FMFL005B-250
6"	4-Ply Roof Girder Trusses	50pc box	FMFL006-50
		250pc bucket	FMFL006B-250
6-3/4"	4-Ply LVL Beams	Single fastener	FMFL634-INDY
		50pc box	FMFL634-50
		200pc bucket	FMFL634B-200

FlatLOK Bits	
(2) #40 TORX ttap per card	FMTTAPT40BIT-2PK

IAPMO ES®

FlatLOK® Product Specifications



FlatLOK Part Numbers			
Part Length	**Thread Length**	**Head Markings**	**Part Number**
2-7/8"	2"	F2.9 FL	FMFL278
3-1/2"	2"	F3.5 FL	FMFL312
4"	2"	F4.0 FL	FMFL004
4-1/2"	2"	F4.5 FL	FMFL412
5"	2"	F5.0 FL	FMFL005
6"	2"	F6.0 FL	FMFL006
6-3/4"	2"	F6.7 FL	FMFL634

Table 2A – Allowable Design Withdrawal Values (W) with Full Thread Embedment by Species			
Wood Type	**Grain Orientation**		
	Face	**Edge**	**End**
Southern Pine	425	390	285
Douglas Fir	335	390	295
S-P-F	230	280	175
LVL (0.50)	410	360	N/A
LSL (0.50)	450	405	N/A

Reference withdrawal design values, W, assume 2" of thread embedment into the main member

Table 2B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
595	530	395

Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2"

FlatLOK® Product Specifications

Table 2C – Allowable Lateral Design Values (Z) for Shear Connections in Dimensional Lumber by Load Direction and Wood Species

Minimum Side Member Thickness (Inches)	Minimum Main Member Penetration (Inches)	Southern Pine		Douglas Fir		Spruce-Pine-Fir / Hem Fir	
		Parallel to Grain	Perp. to Grain	Parallel to Grain	Perp. to Grain	Parallel to Grain	Perp. to Grain
1-1/2"	1-3/8"	270	270	235	240	150	200
1-1/2"	3"	440	550	350	480	245	320

Table 2D – Allowable Lateral Design Values (Z) for Shear Connections in Engineered Wood by Load Direction and Wood Type

Minimum Side Member Thickness (Inches)	Minimum Main Member Penetration (Inches)	LVL		LSL	
		Parallel to Grain	Perp. to Grain	Parallel to Grain	Perp. to Grain
1-3/4"	1-3/4"	235	375	235	435
1-3/4"	3-1/4"	350	560	350	480

- Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two.
- Unless otherwise noted, side members with thicknesses greater than the tabulated minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is still achieved for the given screw length.
- Values above reflect head side of fastener being loaded. Point side loading values may be lower and can be found in our evaluation reports ER-0718 and TER 1501-08 at FastenMaster.com

General Guidelines for Proper Connection Design

- Tabulated loads based on IAPMO-UES Evaluation Report ER-0718 that can be found at FastenMaster.com.
- Values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1 of ER-0718.
- For applications where different species are being attached, use the lowest allowable load to design the connection
- Where fasteners are loaded in tension, the lesser of thread withdrawal, head pull-through and allowable tensile strength must be used to design connection

FlatLOK® Sample Applications

Multiple-Ply Engineered Wood Beam Connection

When joining together multiple plies of dimensional wood or engineered wood together to act as a single beam, nailing patterns are typically aggressive, only satisfy up to three plies and require access to both sides. Through-bolts can be used to reduce the number of fasteners but require considerably more labor and cost to install. The FlatLOK has been designed specifically to be installed from one side and to carry both top and side loads. Refer to the details below for common application guide lines. For more detailed design information, refer to *Technical Evaluation Report, TER 1501-08* at FastenMaster.com.

Top Loaded Beam

Where floor joists, ceiling joists, or trusses rest along the top of the beam, the connection between plies is minimal as loads are shared by the combined plies bearing the weight. The minimum fastening patterns set forth in Table 2E can be used to meet these loads and to prevent ply separation.

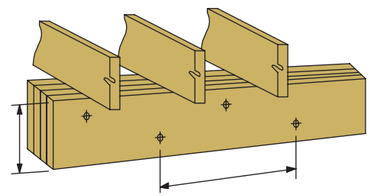


Figure 2a

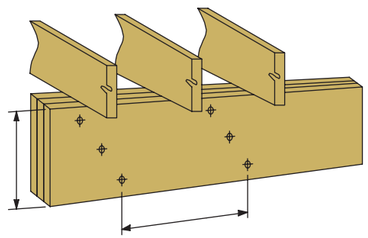


Figure 2b

Table 2E – Minimum Fastening Pattern for Top Loaded Beams

Wood Type	Beam Depth	Fasteners per Row	Spacing Between
Dimensional Lumber	Up to 2x10	2	24"
	2x12	3	24"
EW (LVL / LSL)	Under 18"	2	16"
	18" Plus	3	16"

FlatLOK® Sample Applications

Side Loaded Beam

Where joists or trusses are connected to the sides of a beam, typically by use of hangers or connectors, the incoming load on the outermost plies must be shared by connecting to the remaining plies using structural screws. The uniform load on the beam, shown as a pounds per lineal foot (plf) value on the beam detail or calculated by a design professional can be used to determine the proper fastening pattern in Table 2F for dimensional wood beams or Table 2G for engineered wood beams. For large point loads to the side of the beam, additional fasteners may be required. Consult a design professional.

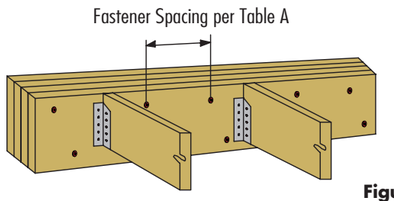
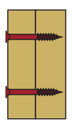
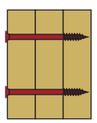
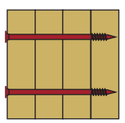


Figure 2c

Footnotes

- Fasteners should be installed in a staggered pattern at least 1-3/4" from top or bottom edge and 6" from either end of the beam

2-7/8" FlatLOK	4-1/2" FlatLOK	6" FlatLOK
Detail A 1-1/2" (2)	Detail B 1-1/2" (3)	Detail C 1-1/2" (4)
		

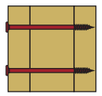
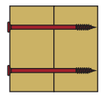
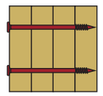
3-1/2" FlatLOK	5" FlatLOK		6-3/4" FlatLOK		
Detail A 1-3/4" (2)	Detail B 1-3/4" (3)	Detail C 1-3/4" & 3-1/2"	Detail D 1-3/4" & 3-1/2" & 1-3/4"	Detail E 3-1/2" & 3-1/2"	Detail F 1-3/4" (4)
					

Table 2G – Allowable Uniform Side Load for EW Beams based on Fastening Pattern

Rows	Spacing	Detail A	Detail B	Detail C	Detail D	Detail E	Detail F
2	24	660	490	490	440	440	660
	19.2	830	620	620	550	550	830
	16	990	740	740	660	660	990
	12	1320	980	980	880	880	1320
3	24	990	740	740	660	660	990
	19.2	1240	920	920	830	830	1240
	16	1490	1110	1110	990	990	1490
	12	1980	1480	1480	1320	1320	1980

Table 2F – Allowable Uniform Side Load for Dimensional Beams based on Fastening Pattern

Rows	Spacing	SPF			D.Fir			S.Pine		
		Detail A	Detail B	Detail C	Detail A	Detail B	Detail C	Detail A	Detail B	Detail C
2	24	300	220	200	360	270	240	420	310	280
2	16	450	340	300	540	400	360	630	470	420
2	12	600	450	400	720	540	480	840	630	560
3	24	450	340	300	540	400	360	630	470	420
3	16	675	500	450	810	600	540	950	710	630
3	12	900	670	600	1080	810	720	1260	940	840

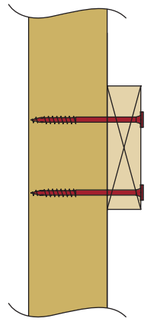
Values in Tables 2F and 2G based on FlatLOK properties taken from testing to ICC-ES Acceptance Criteria AC233 and reported in IAPMO ER-0718

- Loads have not been increased to accommodate for NDS load duration or other factors

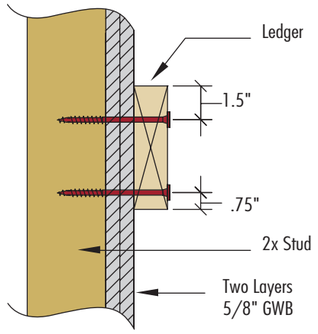
FlatLOK® Sample Applications

Interior Corridor Ledger to Stud Configurations
Ledgers are used for interior construction to support corridor floor spans and stairwell landings. In most cases these are installed over layers of gypsum to achieve the appropriate fire rating and then into vertical studs. These unique conditions require a tested solution that considers both the cantilevered portion of the fastener and narrower edge of the framing used to make this connection. The FlatLOK has been evaluated and loads determined for this specific application when installed in accordance with the details below. For more detailed design information, refer to *Technical Evaluation Report, TER 1611-01* available FastenMaster.com.

2x6 or 2x8 Ledger

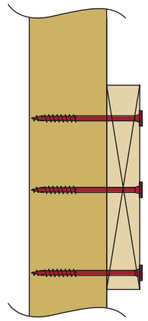


No Gypsum

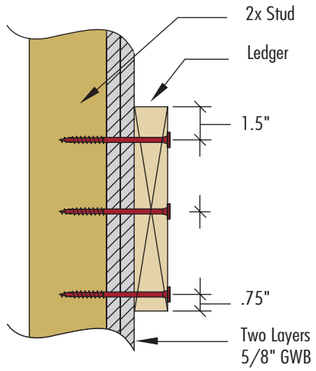


1 to 2 Layers of Gypsum

2x10 or 2 x 12 Ledger



No Gypsum



1 to 2 Layers of Gypsum

Table 2H – Allowable Load per Stud Connection (lbs)							
Approved FlatLOK Length			**Fasteners Required**		**Wood Species**		
4"	4 1/2"	5"	Ledger Size	Fasteners Per Stud	S. Pine	D. Fir	SPF
•	•	•	2 x 6	2	795	510	360
	•	•	2 x 8	2	900	735	580
		•	2 x 10	3	1075	860	805

Footnotes
- Values taken from Technical Report TER 1611-01
- Loads apply where ledger is applied up to two layers of 5/8" gypsum
- Additional fasteners and closer patterns other than those listed not allowed as they may induce splitting
- Where ledger and stud materials differ in species, use the lower density wood values

LedgerLOK® Structural Wood Screw

Flat Head Style

Hex Head Style

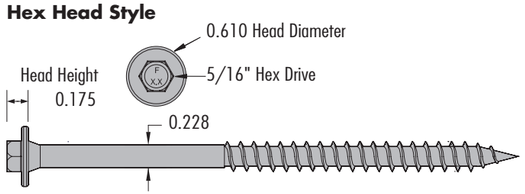
Features:
- Replaces traditional 1/2" lag screws
- Hex washer head or TORX flat head style option
- Compatible with chemically treated wood
- IRC/IBC code-compliant
- ProjectLife coating

LedgerLOK Selection Guide			
Length	**Packaging Qty**	**Hex Style SKU**	**Flat Head SKU**
3-5/8"	Single Fastener	FMLL358-INDY	FMLLF358-INDY
	12pc clamshell	FMLL358-12	FMLLF358-12
	50pc box	FMLL358-50	FMLLF358-50
	250pc bucket	FMLL358B-250	FMLLF358B-250
5"	Single Fastener	FMLL005-INDY	FMLLF005-INDY
	12pc clamshell	FMLL005-12	FMLLF005-12
	50pc box	FMLL005-50	FMLLF005-50
	250pc bucket	FMLL005B-250	FMLLF005B-250

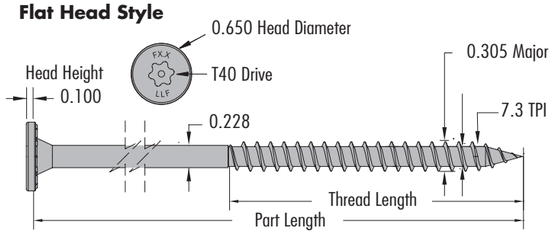
ICC ES

LedgerLOK® Product Specifications

Hex Head Style



Flat Head Style



LedgerLOK Hex Head Part Numbers				
Part Length	**Thread Length**	**Head Markings**		**Part No.**
3-5/8"	2"	Hex	F3.6	FMLL358
5"	3"		F5.0	FMLL005

LedgerLOK Flat Head Part Numbers				
Part Length	**Thread Length**	**Head Markings**		**Part No.**
3-5/8"	2"	Flat Head	F3.6 LLF	FMLLF358
5"	3"		F5.0 LLF	FMLLF005

Table 4A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species			Table 4B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**	**Southern Pine**	**Douglas Fir**	**S-P-F**
310	270	210	290	240	170

- Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2".

Table 4C – Allowable Lateral Design Values (Z) for Shear Connections by Load Direction and Species					
Minimum Side Member Thickness (Inches)	**Minimum Main Member Penetration (Inches)**	**Southern Pine / Douglas Fir**		**Spruce-Pine-Fir / Hem Fir**	
		Parallel to Grain	**Perp. to Grain**	**Parallel to Grain**	**Perp. to Grain**
1-1/2"	1-1/2"	260	260	220	220
1-1/2"	2-1/8"	310	310	270	250
1-1/2"	3-1/2"	320	300	280	260

- Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two.
- Unless otherwise noted, side members with thicknesses greater than the tabulated minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is still achieved for the given screw length.

General Guidelines for Proper Connection Design

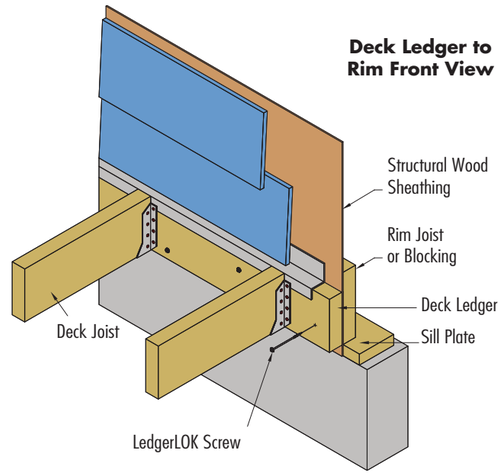
- Tabulated loads based on ICC-ES Evaluation Report ESR-1078 found at FastenMaster.com
- Values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1 of ESR-1078
- For applications where different species are being attached, use the lowest allowable load to design the connection
- Where fasteners are loaded in tension, the lesser of Thread Withdrawal, Head Pull-Through and Allowable Tensile Strength must be used to design connection

LedgerLOK® Sample Applications

Deck Ledger to Rim Board Connection

One of the most critical connections when designing and building an exterior deck is between the deck ledger and the rim board of the house. The building code provides specific lag screw installation and spacing requirements. The LedgerLOK has been designed and tested as a way to make to this attachment in a code compliant manner without the need for predrilling. Refer to *Table A* for a general fastening guide. For instructions and additional technical information, consult the *Deck Ledger to Rim Technical Evaluation Report, TER 1203-03,* available at FasterMaster.com.

Deck Ledger to Rim Front View



Footnote
Fasteners should be installed in staggered pattern at least 1-3/4" from top or bottom edge and 3-3/4" from end of the ledger & rim board

Table 4D – LedgerLOK Ledger to Rim Application								
Loading Condition (psf)	**2x Nominal Ledger Species**	**Rim Joist Material[3]**	**Maximum On-Center Spacing of LedgerLOK Ledger Board Fasteners (in)**					
			Maximum Deck Joist Spans (ft)					
			Up to 6'	**Up to 8'**	**Up to 10'**	**Up to 12'**	**Up to 14'**	**Up to 16'**	**Up to 18"**
LL + DL 40 + 10	HF/SPF	2x Nominal Sawn Lumber	20	15	12	10	8	7	6
		1" min EWP	25	19	15	12	10	9	8
	DF/SP	Nominal Sawn Lumber	24	18	14	12	10	9	8
		1" min EWP	25	19	15	12	10	9	8
SL + DL 50 + 10	HF/SPF	2x Nominal Sawn Lumber	17	12	10	8	7	6	5
		1" min EWP	21	16	12	10	9	8	7
	DF/SP	Nominal Sawn Lumber	20	15	12	10	8	7	6
		1" min EWP	21	16	12	10	9	8	7
SL + DL 60 + 10	HF/SPF	2x Nominal Sawn Lumber	14	11	8	7	6	5	4
		1" min EWP	18	13	10	9	7	6	6
	DF/SP	Nominal Sawn Lumber	17	13	10	8	7	6	5
		1" min EWP	18	13	10	9	7	6	6
SL + DL 70 + 10	HF/SPF	2x Nominal Sawn Lumber	12	9	7	6	5	4	4
		1" min EWP	16	12	9	8	6	6	5
	HF/SP	Nominal Sawn Lumber	15	11	9	7	6	5	5
		1" min EWP	16	12	9	8	6	6	5

TimberLOK® Structural Wood Screw

Features:

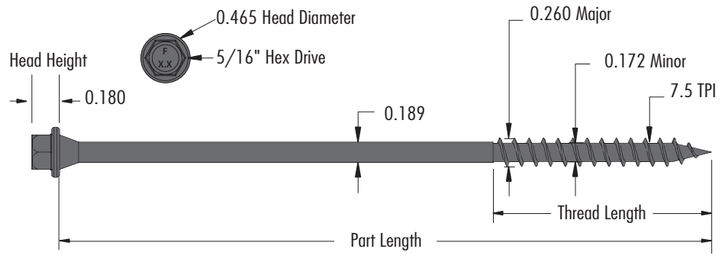
- Faster and easier than 3/8" lag screws
- Countersinking hex head style
- Compatible with chemically treated wood
- IRC/IBC code-compliant
- ProjectLife guaranteed

TimberLOK Selection Guide			
Length	**Typical Applications**	**Packaging Qty**	**SKU**
2-1/2"	Doubling/sistering up 2x header or carrying beams	Single fastener	FMTLOK212-INDY
		12pc clamshell	FMTLOK212-12
		50pc box	FMTLOK212-50
		500pc bucket	FMTLOK212-500
4"	Attaching 2x to 4x structures - fencing	Single fastener	FMTLOK04-INDY
		12pc clamshell	FMTLOK04-12
		50pc box	FMTLOK04-50
		250pc bucket	FMTLOK04-250
6"	Replacing hurricane ties on rafters or trusses. Joining multiple 4x timbers	Single fastener	FMTLOK04-INDY
		12pc clamshell	FMTLOK06-12
		50pc box	FMTLOK06-50
		250pc bucket	FMTLOK06-250
8"	Building up 6 landscape walls	Single fastener	FMTLOK08-INDY
		12pc clamshell	FMTLOK08-12
		50pc box	FMTLOK08-50A
		250pc bucket	FMTLOK08-250
10"	Post and Beam construction	Single fastener	FMTLOK10-INDY
		12pc clamshell	FMTLOK10-12
		50pc box	FMTLOK10-50A
		250pc box	FMTLOK10-250

Compliance audited by

ICC ES

TimberLOK® Product Specifications



TimberLOK Part Numbers			
Part Length	**Thread Length**	**Head Markings**	**Part Number**
2-1/2"	2"	F2.5	FMTLOK212
4"	2"	F4.0	FMTLOK04
6"	2"	F6.0	FMTLOK06
8"	2"	F8.0	FMTLOK08
10"	2"	F10.0	FMTLOK10

Table 5A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species			Table 5B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**	**Southern Pine**	**Douglas Fir**	**S-P-F**
260	220	170	200	160	110

- Reference withdrawal design values, W90, applies to fasteners driven into the face grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.
- Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2".

HeadLOK® Structural Wood Screw

Features

- Faster, easier and stronger than 3/8" lag screws
- Flat head style for flush applications
- TORX® ttap® Drive System delivers a superior bit engagement for a stable wobble free installation
- Compatible with chemically treated wood
- IRC/IBC code-compliant
- ProjectLife coating

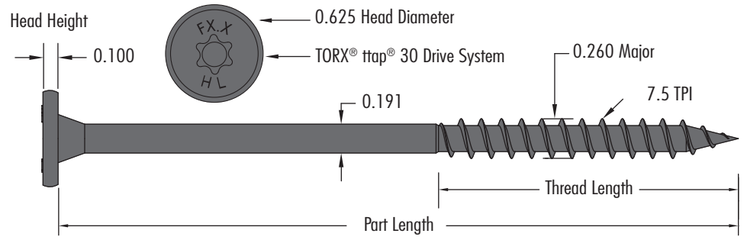
Headlok Standard Selection Guide		
Length	**Packaging Qty**	**SKU**
2-7/8"	Single fastener	FMHLGMTT278-INDY
	12pc clamshell	FMHLGMTT278-12
	50pc box	FMHLGMTT278-50
	500pc bucket	FMHLGMTT278-500
4-1/2"	Single fastener	FMHLGMTT412-INDY
	12pc clamshell	FMHLGMTT412-12
	50pc box	FMHLGMTT412-50
	250pc bucket	FMHLGMTT412-250
6"	Single fastener	FMHLGMTT006-INDY
	12pc clamshell	FMHLGMTT006-12
	50pc box	FMHLGMTT006-50
	250pc bucket	FMHLGMTT006-250
8"	Single fastener	FMHLGMTT008-INDY
	12pc clamshell	FMHLGMTT008-12
	50pc box	FMHLGMTT008-50
	250pc bucket	FMHLGMTT008-250
10"	Single fastener	FMHLGMTT010-INDY
	12pc clamshell	FMHLGMTT010-12
	50pc box	FMHLGMTT010-50
	250pc bucket	FMHLGMTT010-250

Additional Length Selection Guide		
Length	**Packaging Qty**	**SKU**
3-3/4"	50pc bucket	FMHLGMTT334-50
	250pc bucket	FMHLGMTT334-250
5"	250pc bucket	FMHLGMTT005-250
7"	250pc bucket	FMHLGMTT007-250
8"	250pc bucket	FMHLGMTT008-250
9"	250pc bucket	FMHLGMTT009-250
10"	250pc bucket	FMHLGMTT010-250
11"	250pc bucket	FMHLGMTT011-250
12"	250pc bucket	FMHLGMTT012-250
13"	250pc bucket	FMHLGMTT013-250
14"	250pc bucket	FMHLGMTT014-250

TORX 30 Bits	
2 bits per card	FMTTAPT30BIT-2PK

ICC ES

HeadLOK® Product Specifications



HeadLOK Selection Guide Part Numbers			
Part Length	**Thread Length**	**Head Markings**	**Part Number**
2-7/8"	2"	F2.9HL	FMHLGM278
4-1/2"	2"	F4.5HL	FMHLGM412
6"	2"	F6.0HL	FMHLGM006

Other Lengths: 1-5/8", 3-3/4", 5", 5-1/2", 6-1/2", 7", 7-1/2", 8", 8-1/2", 9", 9"-1/2", 10", 11", 12", 13", 14", 15", 16", 18"

Table 6A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
270	230	170

- Reference withdrawal design values, W90, applies to fasteners driven into the face grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.
- To determine allowable withdrawal for a specific connection, multiply W90 by the amount of thread embedment into the main member.

Table 6B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
600	520	400

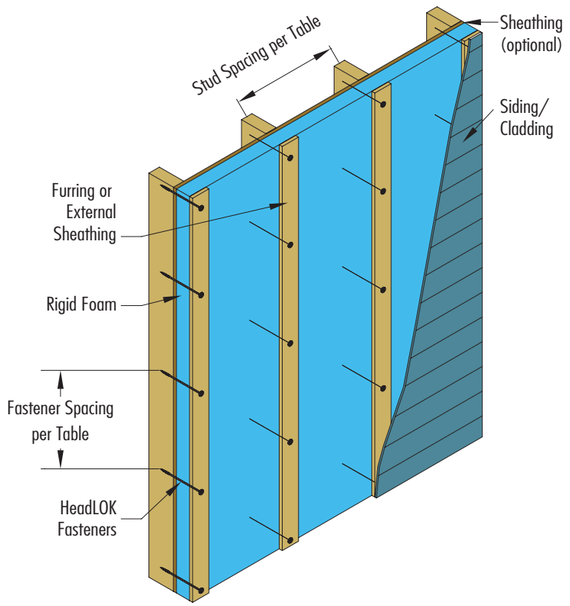
- Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2".

Table 6C – Allowable Lateral Design Values (Z) for Shear Connections by Load Direction and Species					
Minimum Side Member Thickness (Inches)	**Minimum Main Member Penetration (Inches)**	**Southern Pine / Douglas Fir**		**Spruce-Pine-Fir / Hem Fir**	
		Parallel to Grain	**Perp. to Grain**	**Parallel to Grain**	**Perp. to Grain**
1-1/2	1-3/8	240	210	210	150
1-1/2	3	280	260	250	220
1-1/2	4-1/2	290	270	250	230
2-1/2	3-1/2	300	280	270	240

- Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two.
- Unless otherwise noted, side members with thicknesses greater than the tabulated minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is still achieved for the given screw length.

HeadLOK® Sample Applications

Furring or Sheathing over Rigid Foam
Recent changes in the Energy Code have resulted in an increased use of rigid insulation over exterior walls. Attaching the finish materials (siding) requires a furring strip or sheathing be mechanically attached to the structural framing of the building over the insulation layer. The HeadLOK has been approved for use in this unique cantilevered condition. Proper fastening is shown in *Table A*. For instructions and additional technical information, consult the *Rigid Foam to Wood Framing Technical Evaluation Report, TER 1009-01,* at FastenMaster.com.



Recommended Spacing Between HeadLOK Fasteners when Attaching Rigid Foam									
On-Center Stud Spacing	Foam Thickness	Maximum Allowable Cladding Weight (psf) to be Supported							
		10	15	20	25	10	15	20	25
		When Using 3/4" x 3-1/2" Furring				When Using 3/8" WSP Sheathing			
16" oc	1.0	24	24	24	16	12	12	12	12
	1.5	24	24	16	16	12	12	12	12
	2.0	24	16	16	12	12	12	12	12
	3.0	24	16	12	8	12	12	8	8
	4.0	16	12	8	8	12	8	8	6
12" oc	1.0	24	24	16	12	12	12	12	12
	1.5	16	16	12	8	12	12	12	8
	2.0	16	12	8	8	12	12	8	8
	3.0	16	8	8	6	12	8	6	6
	4.0	12	8	6	NA	8	6	NA	NA

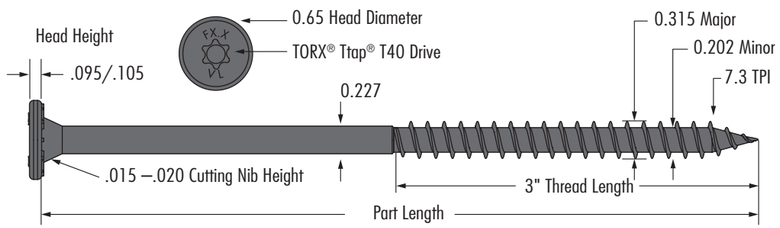
FastenMaster VersaLOK® Structural Wood Screw

Features:
- Faster and easier than 1/2" Lags
- Attractive flush mount flat head
- TORX® ttap® drive system
- Compatible with chemically treated lumber
- IBC/IRC code-compliant
- ProjectLife coating

ICC ES

VersaLOK Selection Guide			
Length	Typical Applications	Pkg Qty	SKU
6"	Angle Bracing	Single Fastener	FMVL006-INDY
		50pc box	FMVL006-50
8"	Pergolas	Single Fastener	FMVL008-INDY
		50pc box	FMVL008-50
10"	Retaining Walls	Single Fastener	FMVL010-INDY
		50pc box	FMVL010-50

FastenMaster VersaLOK® Product Specifications



VersaLOK Part Numbers		
Part Length	Thread Length	Head Markings
6"	3"	F6.0 VL
8"	3"	F8.0 VL
10"	3"	F10.0 VL

FastenMaster VersaLOK® Product Specifications

VersaLOK Part Numbers		
Part Length	**Thread Length**	**Head Markings**
6"	3"	F6.0 VL
8"	3"	F8.0 VL
10"	3"	F10.0 VL

Table 7A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
310	270	210

- Reference withdrawal design values, W90, applies to fasteners driven into the face grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.
- To determine allowable withdrawal for a specific connection, multiply W90 by the amount of thread embedment into the main member.

Table 7B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
290	240	170

- Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2".

Table 7C – Allowable Lateral Design Values (Z) for Shear Connections by Load Direction and Species					
Minimum Side Member Thickness (Inches)	**Minimum Main Member Penetration (Inches)**	**Southern Pine / Douglas Fir**		**Spruce-Pine-Fir / Hem Fir**	
		Parallel to Grain	**Perp. to Grain**	**Parallel to Grain**	**Perp. to Grain**
1-1/2	1-1/2	260	260	220	220
1-1/2	2-1/8	310	310	270	250
1-1/2	3-1/2	320	300	280	260

- Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two.
- Unless otherwise noted, side members with thicknesses greater than the tabulated minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is still achieved for the given screw length.

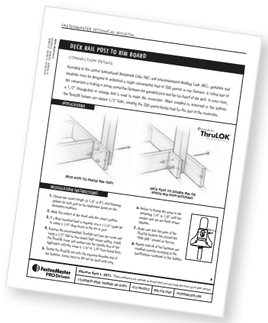
General Guidelines for Proper Connection Design

- Tabulated loads based on ICC-ES Evaluation Report ESR-1078 which can be found at FastenMaster.com.
- Values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1 of ESR-1078
- For applications where different species are being attached, use the lowest allowable load to design the connection
- Where fasteners are loaded in tension, the lesser of Thread Withdrawal, Head Pull-Through and Allowable Tensile Strength must be used to design connection.

ThruLOK® Through-Bolt Replacement

Features:
- Faster, easier than 1/2" through-bolts
- No drill bits or wrenches required
- Galvanized coating meets code requirements for treated wood
- IRC/IBC code-compliant

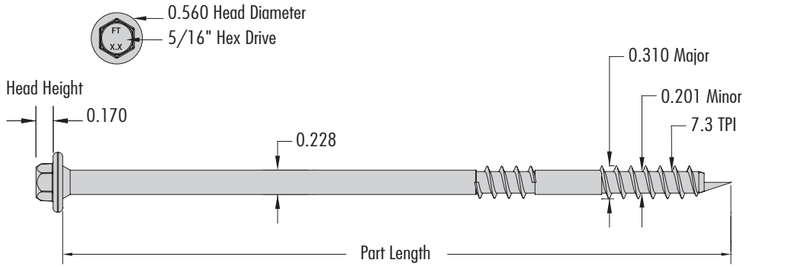
ThruLOK Selection Guide			
Length	**Wood Dim Range**	**Pkg Qty**	**SKU**
6-1/4"	4-1/2" to 5-1/4"	Single Fastener	FMTHR614-INDY
		24pc box	FMTHR614-24
7"	5-1/4" to 6"	Single Fastener	FMTHR007-INDY
		24pc box	FMTHR007-24
8"	6-1/4" to 7"	Single Fastener	FMTHR008-INDY
		24pc box	FMTHR008-24
9-1/2"	7-3/4" to 8-1/2"	Single Fastener	FMTHR912-INDY

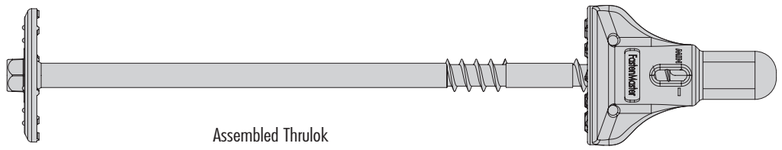


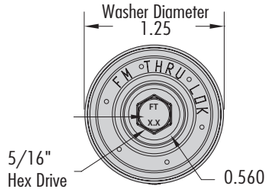
DECK RAIL POST TO RIM BOARD

ICC ES

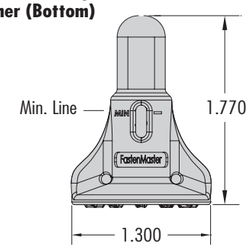
ThruLOK® Product Specifications







Thrulok Nut (Top) and Washer (Bottom)



ThruLOK Part Numbers		
Part Length	**Head Markings**	**Part Number**
6 1/4"	FT6.2	FMTHR614
7"	FT7.0	FMTHR007
8"	FT8.0	FMTHR008
9 1/2"	FT9.5	FMTHR912

Table 8A – Allowable Tension Load by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
1060	900	680

Allowable tension loads above reflect the lesser of head pull through in the side member and nut pull through in the main member when ThruLOK is driven into the face grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.

ThruLOK Application Guide

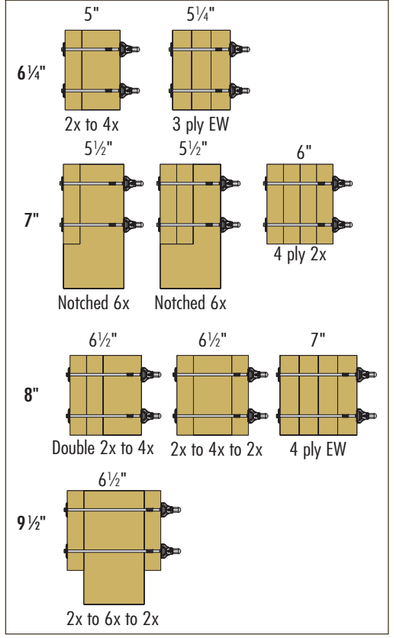


Table 8B – Allowable Lateral Design Values (Z) for Shear Connections by Load Direction and Species							
Minimum Side Member Thickness (Inches)	**Minimum Main Member Penetration (Inches)**	**Southern Pine**		**Douglas Fir**		**Spruce-Pine-Fir / Hem Fir**	
		Parallel to Grain	**Perpendicular to Grain**	**Parallel to Grain**	**Perpendicular to Grain**	**Parallel to Grain**	**Perpendicular to Grain**
1-1/2	3-1/4	350	330	320	300	300	270

Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two.

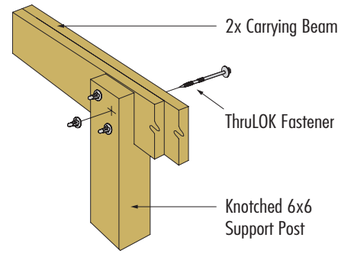
General Guidelines for Proper Connection Design

- Tabulated loads based on ICC-ES Evaluation Report ESR-1078 which can be found at FastenMaster.com.
- Values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1 of ESR-1078.
- For applications where different species are being attached, use the lowest allowable load to design the connection
- Where fasteners are loaded in tension, the lesser of Thread Withdrawal, Head Pull-Through and Allowable Tensile Strength must be used to design connection.

ThruLOK® Sample Applications

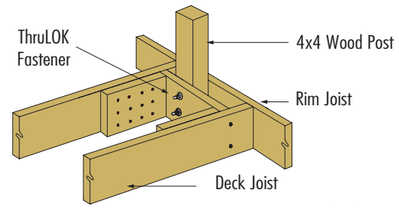
Deck Carrying Beam Connection

A common method of deck construction allows for carrying beams and notched 6x6 support posts to be bolted together using 1/2" or 5/8" through bolts. According to current code, "where posts and beam or girders construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement." When installed correctly, the 7" ThruLOK restrains against both of these forces equal to traditionally bolted connections with a faster and easier method of installation. For proper installation instructions including engineered solutions for the most common post to carrying beam configurations, refer to the *Deck Carrying Beam to Support Post Technical Bulletin,* at FastenMaster.com.

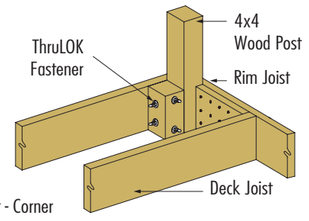


Deck Rail Post Connection

Current building code requires that guardrails and handrails must be designed to withstand a single concentrated load of 200 pounds in any direction. A critical part of this connection is making a strong tension connection between the guardrail post and the rim board of the deck. In most cases, 1/2" through-bolts or carriage bolts are used to make this connection. When installed as shown in our instructions, the ThruLOK offers a faster and easier method to meet the 200 pound design load for this part of the connection. For proper installation instructions including engineered solutions for the most common post to rim configurations, refer to the *Deck Hand Rail Post to Rim Joist Technical Bulletin,* at FastenMaster.com.



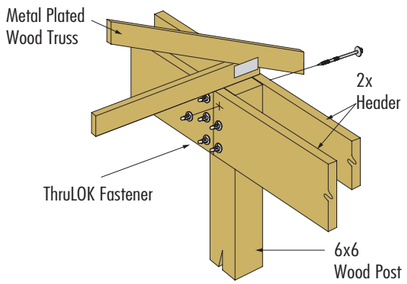
Interior Post Front Rim at or Between Joists



Interior Post - Corner

ThruLOK® Sample Applications

Pole Barn Header Connection
A typical detail in pole barn construction consists of 2x beams mounted to face or faces of 6x columns. Prefabricated trusses are then placed atop these beams. Bolting of the connections between column and beam(s) has become more common and in some states required by code. When properly installed, the ThruLOK Fastener can replace bolts. For instructions and additional technical information, consult the *Pole Barn Header Connection Technical Evaluation Report, TER 1308-11,* available at FastenMaster.com.



Fastening Schedule for Header to Column Connections				
		Snow Load on Truss		
Total Building Width	Header & Column Species	20	30	40
		Number of Fasteners/Connection		
24	Hem Fir	4	6	6
	D.Fir / S.Pine	4	4	6
28	Hem Fir	6	6	8
	D.Fir / S.Pine	4	6	6
32	Hem Fir	6	8	8
	D.Fir / S.Pine	6	6	8
36	Hem Fir	6	8	NA
	D.Fir / S.Pine	6	6	8
40	Hem Fir	6	8	NA
	D.Fir / S.Pine	6	6	8

Footnotes
- Values above calculated using individual ThruLOK values from ICC Evaluation Report ESR-1078
- Assumed loads of 10 plf for Bottom Chord (BC) Live and 5 plf BC Dead added to snow loads
- Maximum column spacing of 8' on center with trusses nearest columns resting atop column
- Table to be used as a guide only. Refer to TER 1308-11 for complete instructions & restrictions

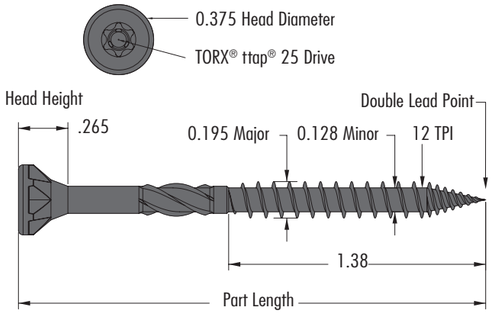
FastenMaster MVP™ Multipurpose Wood Screw

Features:
- TORX® ttap® drive system wobble-free drive
- SureStart™ point for fast starts
- ProjectLife™ coating with superior corrosion protection
- SureSink™ head prevents spin-out
- For Framing, cabinetry & more
- IRC/IBC code-compliant

FastenMaster MVP Selection Guide		
Length	**Packaging Qty**	**SKU**
1-1/2"	100 Pack	FMMVP112-100
	500 Pack	FMMVP112-500
	2000 Pack	FMMVP112-2000
2"	100 Pack	FMMVP002-100
	500 Pack	FMMVP002-500
	2000 Pack	FMMVP002-2000
2-1/2"	100 Pack	FMMVP212-100
	450 Pack	FMMVP212-450
	2000 Pack	FMMVP212-2000
3"	100 Pack	FMMVP003-100
	350 Pack	FMMVP003-350
	1600 Pack	FMMVP003-1600
3-1/2"	100 Pack	FMMVP312-100
	250 Pack	FMMVP312-250
	1250 Pack	FMMVP312-1250
4"	100 Pack	FMMVP004-100
	250 Pack	FMMVP004-250
	1250 Pack	FMMVP004-1250

ICC ES

FastenMaster MVP™ Product Specifications



MVP Part Numbers		
Part Length	**Thread Length**	**Part Number**
1-1/2"	1"	FMMVP112
2"	1"	FMMVP002
2-1/2"	1-3/8"	FMMVP212
3"	1-3/8"	FMMVP003
3-1/2"	1-3/4"	FMMVP312
4"	2"	FMMVP004

Table 9A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
175	143	110

- Reference withdrawal design values, W90, applies to fasteners driven into the face grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.
- To determine allowable withdrawal for a specific connection, multiply W90 by the amount of thread embedment into the main member.

Table 9B – Allowable Design Head Pull-Through Values (WH) by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
185	179	132

- Reference head pull-through design values, WH, are based on minimum side member thickness of 1-1/2".

Table 9C – Allowable Lateral Design Values (Z) for Shear Connections by Wood Species				
Minimum Side	**Minimum Main**	**Southern Pine**	**Dougla Fir**	**SPF / H. Fir**
3/4"	1"	240	220	200
1-1 /2"	2-1 /2"	280	260	240

- Reference lateral design values, Z, apply to single shear (two-member) connections with wood main and side members having specific gravity as shown, in which the screw is oriented perpendicular to the grain and loaded laterally either parallel to or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two
- Unless otherwise noted, side members with thicknesses greater than the tabulated minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is still achieved for the given screw length.

General Guidelines for Proper Connection Design

- Tabulated loads based on ICC-ES Evaluation Report ESR-5265 which can be found at FastenMaster.com.
- Values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1 of ESR-5265.
- For applications where different species are being attached, use the lowest allowable load to design the connection
- Where fasteners are loaded in tension, the lesser of Thread Withdrawal, Head Pull-Through and Allowable Tensile Strength must be used to design connection.

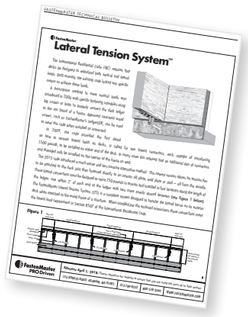
Lateral Tension System™

Code Compliant Lateral Deck Attachment

Features:
- Meets IRC lateral load requirements for decks
- Galvanized coating meets code requirements for treated wood
- No pre-drilling required
- No interior access needed to install
- ProjectLife guaranteed

Each kit contains:
(4) Lateral Tension Brackets
(4) Tension Transfer Screws
(32) Bracket Mounting Screws
(2) Driver Bits

IAPMO ES®



Installation Procedure:
The LTS is approved for the five most common installation conditions:

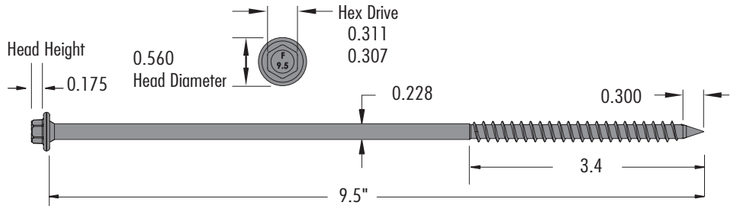
Condition A: Sill Plate or Wall Plate Behind Ledger
Condition B: Sill Plate or Wall Plate Directly Below Ledger
Condition C: Sill Plate or Wall Plate 2" – 5" below Ledger
Condition D: Wall Stud in line with Deck Joist
Condition E: Wall Stud between Deck Joists

The FastenMaster LTS, is one complete kit to make all five of these code conforming connections. Each LTS bracket attaches an individual deck joist to a structural framing member of the house. With the LTS, you can install the fastener first and then add the bracket. The long fastener allows you to achieve the 3" of threading within the sill plate without having to access the interior of the house. You can achieve the code complaint connection in seconds.

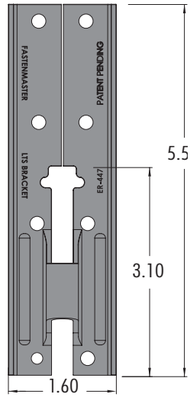
ProjectLife™ Guaranteed:
The performance and corrosion protection of LTS is guaranteed for the life of the project.
LTS is not recommended for use in saltwater applications.

Lateral Tension System™ Product Specifications

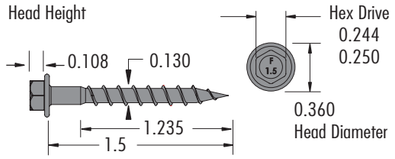
Tension Transfer Screw



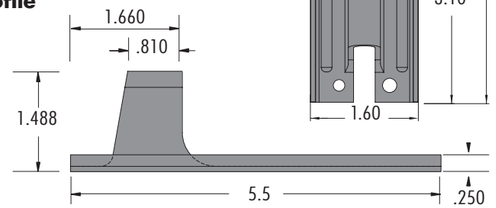
LTS Bracket Top View



Bracket Mounting Screw



LTS Bracket Profile



Lateral Tension System Selection Guide			
Part Length	**Thread Length**	**Head Markings**	**Part Number**
9-1/2"	3.4"	F 1.5	FMLTS4

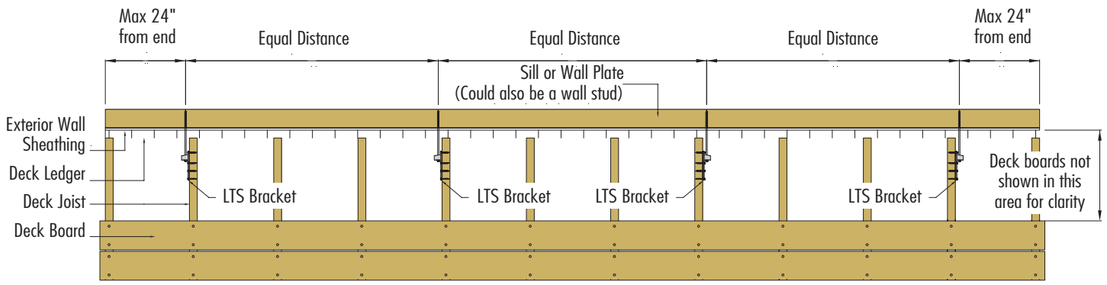
Table 10A – Allowable Design Withdrawal Values (W90) per Inch of Thread Embedment by Species		
Southern Pine	**Douglas Fir**	**S-P-F**
1407	931	836

- Minimum thread embedment of 3" into wood plate, stud or beam. Installation into rim board only prohibited.
- Load duration factor of 1.6 applied for short term wind and seismic loads. No further increase allowed.

Lateral Tension System™ Sample Applications

Residential deck code requires that a mechanical connection be made between the deck joists and the house structure to resist lateral dislocation of the deck. The deck joist must be tied back to the interior sill plate, wall plate, stud or header beam and designed to resist 750 pounds in tension at four locations along the length of the ledger: one within 2' of each end of the ledger and two more evenly spaced between (see diagram below).

The FastenMaster (LTS) is a complete system designed to transfer these lateral forces on an exterior deck when attached to the wood frame of a structure. When installed per the enclosed instructions these connections meet the lateral load requirement in Section R507 of the International Residential Code.

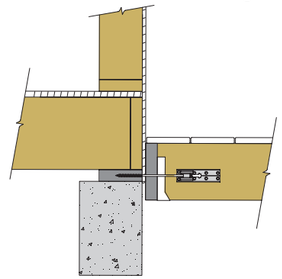


Lateral Tension System™ Sample Applications

Select the appropriate ledger alignment condition, A through E, based on the orientation of the deck ledger to house framing member that applies to your specific deck. For instructions and additional technical information, consult the *Lateral Tension System Technical Evaluation Report*, available at FastenMaster.com.

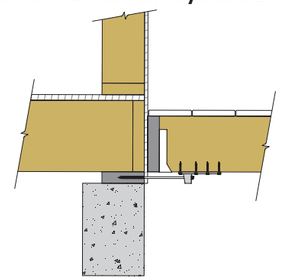
Condition A

Sill Plate or Wall PlateBehind Ledger



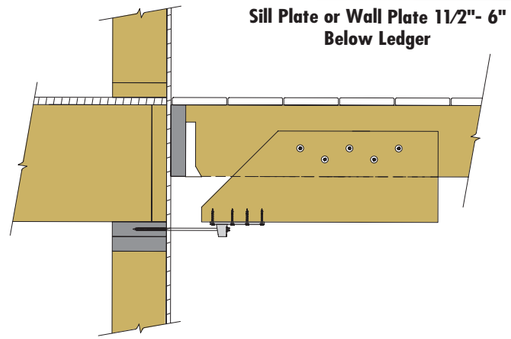
Condition B

Sill Plate or Wall Plate Directly Below Ledger



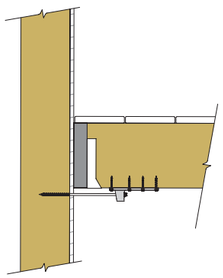
Condition C

Sill Plate or Wall Plate 11/2"- 6" Below Ledger



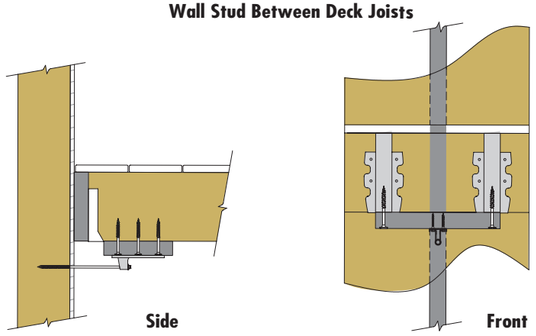
Condition D

Wall Stud In Line with Deck Joist



Condition E

Wall Stud Between Deck Joists



General Notes

Table 1 – Reference Withdrawal Design Values (W)
(Reference withdrawal design values (W) are in pounds per inch of thread penetration into side grain of main member)

Fastener	"Thread Length (inches)"	W (lbf. /in.) for Specific Gravities of:					
		0.57	0.55	0.5	0.46	0.43	0.42
TimberLOK	1.25 or 2.0	270	260	220	200	180	170
HeadLOK	2	290	270	230	200	180	170
"LedgerLOK, VersaLOK, LogHog"	2.0 or 3.0	330	310	270	240	220	210

For SI: 1 inch = 25.4 mm, 1 lbf/in = 175 N/m.
1. Tabulated reference withdrawal design values, W, apply to fasteners driven into the side grain of the main member, such that the screws are oriented perpendicular to the grain and loaded in direct withdrawal.
2. Reference withdrawal design values must be multiplied by all applicable adjustment factors, in accordance with Section 4.1.
3. Reference withdrawal design values are to be multiplied by the length of thread penetration into the main member, but must not exceed the head pull-through design values given in Table 2. Threaded length includes the tapered tip.
4. See Tables 1A through 1F for thread lengths corresponding to specific fastener model numbers.
5. The ThruLOK must be used with the ThruLOK washer and nut (supplied with the fastener). The nut must be installed such that it is snug against the main member, and at least 1/2" of the threaded portion of the shank (not including the tip) is within the nut.
6. Tabulated withdrawal values for the ThruLOK are based on the head pull-through design values given in Table 2, as these values will govern designs in which the screw is subject to axial tension, where the ThruLOK is properly installed with the ThruLOK washer and nut (see footnote 5 above).

Table 2 – Reference Head Pull-Through Design Value (P)

Fastener	Minimum Side	P (lbf) for Specific Gravities of:					
		0.57	0.55	0.5	0.46	0.43	0.42
TimberLOK	1.5	220	200	160	130	110	110
HeadLOK	1.5	630	600	520	460	410	400
LedgerLOK, VersaLOK	1.5	320	290	240	200	180	170
ThruLOK	1.5	1140	1060	900	780	700	680

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa.
1. Reference head pull-through design values, P, must be multiplied by all applicable adjustment factors, in accordance with Section 4.1
2. Design values apply to connections with minimum side member thicknesses, ts, as given above
3. The ThruLOK must be used with the ThruLOK washer and nut (supplied with the fastener). The nut must be installed such that it is snug against the main member, and at least 1/2" of the threaded portion of the shank (not including the tip) is within the nut

Table 3 – Reference Lateral Design Values (Z) for Single Shear (Two Member) Wood-to-Wood Connections Loaded Parallel (Z ||) or Perpendicular (Z ⊥) to the Grain [1,2]

Fastener		"Thread Length (inches)"	"Minimum Side Member Thickness [3], t1 (inches)"	Minimum Main Member Penetration [4], p (inches)	Z(lbf) for Minimum Specific Gravities of:											
					0.5		0.46		0.42							
	Designation	"Length (inches)"			Z ||	Z ⊥	Z ||	Z ⊥	Z ||	Z ⊥						
OlyLog/TimberLOK		2 -1/2	1-1/2	1	240	220	220	200	200	180						
		4 & Longer	1-1/2	2-1/2	280	260	260	230	240	210						
		6 & Longer	2-1/2	3-1/2	290	270	270	250	250	230						
		8 & Longer	3	5	290	270	260	250	240	230						
HeadLOK		2-7/8	1-1/2	1-3/8	240	210	220	180	210	150						
		4-1/2	1-1/2	3	280	260	260	240	250	220						
		6 & Longer	1-1/2	4-1/2	290	270	270	250	250	230						
		6 & Longer	2-1/2	3-1/2	300	280	280	260	270	240						
		8 & Longer	3	5	290	280	280	260	260	230						
LegerLOK		3-5/8 7	1-1/2 5	1 6	-	300	-	-	-	-						
		3-5/8	1-1/2	1-1/2 6	-	260	-	220	-	220						
		3-5/8	1-1/2	2-1/8	310	310	290	280	270	250						
		5	1-1/2	3-1/2	320	300	300	280	280	260						
LogHog		9 &Longer	6	3	310	300	290	280	270	260						
	Fastener	"Thread Length (inches)"	"Minimum Side Member Thickness [3], t1 (inches)"	Minimum Main Member Penetration [4], p (inches)	Z(lbf) for Minimum Specific Gravities of:											
					0.5		0.46		0.42							
	Designation	"Length (inches)"			Z ||	Z ⊥	Z ||	Z ⊥	Z ||	Z ⊥						
ThruLOK[5]		6-1/4	1-1/2	3-1/4	350	320	320	300	300	270						
		7	1-1/2	4	350	330	320	300	300	270						
		8	3	3-1/2	350	330	320	300	300	270						
		9-1/2	1-1/2	6-1/2	350	330	320	300	300	270						

For SI: 1 inch = 25.4 mm, 1 pound = 4.448 kPa
[1] Tabulated reference lateral design values, Z, apply to single shear (two member) connections with wood main and side members having specific gravity as shown, in the with the screw is orientated perpendicular to the grain and loaded laterally either parallel or perpendicular to the grain. For connections in which the main and side members have different specific gravities, use the lower of the two. Gaps are not permitted between the main and side members.
[2] Values must be multiplied by all applicable adjustment factors, in accordance with section 4.1 of ESR-1078 Side member penetration is still achieved for the given screw length. minimum side member thickness may be used, provided the corresponding tabulated minimum main member penetration is the minimum length of the screw (including threaded, unthreaded and tip length) that must be embedded within the main member.
[4] Minimum main member penetration is the minimum length of the screw (including threaded, unthreaded and tip length) that must be embedded within the main member.
[5] The ThruLOK must be installed with the washer and nut, and must penetrate through the opposite face of the main member a sufficient distance to allow the nut to be tightened snugly against the main member, with at leas 1-1/2", and no more than 1-1/2" of the ThruLOK screw engaged with the nut.

General Notes

General Notes