

LiteSteel™ beam – Guide to Fasteners

Power Actuated Pins

- 1) Pins and guns from Aerosmith, Powers, and Hilti have been used to successfully attach wood nailers, sheathing and I-joists (up to 1 ½" thick) to the top flanges of all LSB members, including the 14-134. Pull out strength varies, but appears to meet or exceed a nailed wood to wood connection. Some splitting occurs in all I-joist applications, but we have been told that the splitting is no worse than using nail guns in the same application. At least a half dozen different pin types have been used ranging from “step pins” to “ballistic concrete pins” with no discernable difference in performance.
- 2) Steel to steel pins have been used to attach two layers of LSB together (i.e. back to back or a single stiffener in a single LSB) of all sizes including 14-134. Three layers fail as often as they succeed, and four layers are outside of the capabilities of the current equipment. The shear capacity of a pinned connection is similar to a same diameter screw, but is weaker in pull out. Preliminary testing supports properly installed pins having adequate performance when used to attach single LSB stiffeners to a single LSB.

Self Drilling Self Tapping Screws

- 1) For top mounted joist hangers these screws may be used in place of standard hex head screws in the flange top connections only:
 - 12in. and 14in LSB use a #10 x 1 in. TEK 3-pancake head made by Buildex part # 1560553. This screw has a Philips drive. Unfortunately, it is too long to work in the 8" and 10" LSB flanges.
 - 8 in. and 10in LSB use a #10 x ¾ inch flat pan head drivall self-drilling # 3 drill point screw made by Grabber part #FP101875LYZ. This screw has a unique drive head that is about twice as tall as the pancake head, but it may be used in the deeper LSB beams as well.

Both of these screws have considerably weaker heads than a standard hex head screw and are NOT suitable for connections requiring the head to resist tension such as stiffeners and the face mounted screws in joist hangers. In all connections, other than flange top connections, standard hex headed TEK or equivalent screws should be used.

Application	Manufacturer	Example Manufacturer Part Numbers	Dia.	Thread Count	Length**	Head	Drill*** Point	Type
Attaching Wood	ITW-Buildex or Equivalent*	For example 1092000 or Eq. For 1 ½" Thick Wood Nailer	Min. #10	24	12" & 14" → Max = Wood thickness +1" Min = Wood thickness +1/2" 8" & 10" → Max = Wood thickness +3/4" Min = Wood thickness +3/8"	Phillips Flat Head	#3	Winged Wood to Metal
Top Holes of Top Mount Hanger into 12" & 14" LSB	ITW-Buildex	1560553	#10	16	Maximum 1"	Pancake	#3	Metal to Metal
Top Holes of Top Mount Hanger into 10" & 8" LSB	Grabber	FP101875LYZ or Eq.	#10	18	Maximum 3/4"	Pan	#3	Metal to Metal
Top Holes of Top Mount Hanger	ITW-Buildex or Equivalent*	1129000 or Eq. 1128000 or Eq.	#10	16	12" & 14" → Max = 1"; Min = 5/8" 8" & 10" → Max = 3/4"; Min = 5/8"	Hex	#3	Metal to Metal
All Holes of Any Hanger into all LSB Sections	ITW-Buildex or Equivalent*	1128000 or Eq.	#10	16	Minimum 3/4"	Hex	#3	Metal to Metal
Connecting LSB Back to Back	ITW-Buildex or Equivalent*	1088000 or Eq. 1134000 or Eq.	#12	24 14	.118 & greater min. 7/8" .098 & less min. 3/4"	Hex	#4 #3	Metal to Metal
Nesting Two LSB's	ITW-Buildex or Equivalent*	1414000 or Eq.	#12	24	Minimum 1 1/4"	Hex	#4.5	Metal to Metal
Attaching Stiffeners	ITW-Buildex or Equivalent*	1088000 or Eq. 1134000 or Eq.	#12	24 14	0.118 & greater 0.098 & less min. 3/4"	Hex	#4 #3	Metal to Metal
Attaching Stiffeners in Back to Back LSB's	ITW-Buildex or Equivalent*	1070000 or Eq. 1414000 or Eq.	#12	24	0.098" & greater → Min = 1" 0.079" & Less → Min = 1"	Hex	#5 #4.5	Metal to Metal
All other LSB Attachments	ITW-Buildex or Equivalent*	1088000 or Eq. 1134000 or Eq.	#12	24 14	0.118 & Greater min. 7/8" 0.098 & Less min. 3/4"	Hex	#4 #3	Metal to Metal

*Equivalent screws should have equivalent shear and pullout of screw listed or be checked to ensure screw has enough shear and pullout for application.

**A minimum of three full threads should penetrate all members.

*** Drill points should be kept as short as practical. Excessively long drill points may allow the screw to “wallow” out the hole, decreasing screw strength.

Bolts

- 1) All bolts should be a minimum 1/2" diameter ASTM A307/SAE J429 Grade 2. Washers should always be used under both the head and the nut, and length should be adequate for the application.