

**SIMPSON**

**Strong-Tie**<sup>®</sup>

## Basic Fastener Installation

Connector Training for  
Contractors Series

Name:

(800) 999-5099  
[www.strongtie.com](http://www.strongtie.com)



Every day we work hard to earn your business, blending the talents of our people with the quality of our products and services to exceed your expectations. This is our pledge to you.

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## Table of Contents

Introduction .....	2
Choosing the Right Nail .....	3–4
Installation Methods .....	5
Screws .....	6–7
Machine Bolts .....	8
Fastener Holes .....	9
Innovative Features .....	10
Basic Fastener Installation Post-Training Test .....	11–13
Hot Spots .....	14–15
Training Evaluation Form .....	17

## Introduction

Welcome to the *Basic Fastener Installation Student Study Guide*, part of the *Connector Training for Contractors* series. This guide summarizes key points explained in the video. Review the information in this guide before you take the test. Quick reference cards are included for you to take on location.

## Choosing the Right Nail

- The type of nail that a connector needs is usually stamped on the connector.



- Nail **thickness (diameter)** affects its strength. The thicker the nail, the stronger it is.

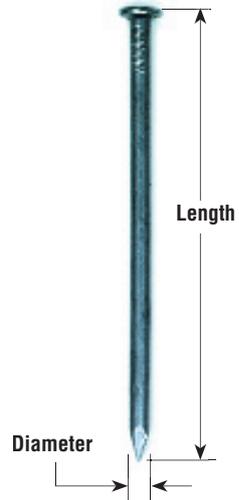


**DO NOT USE THINNER NAILS.**  
They reduce a connector's strength.

- Nail **length** affects a connector's strength. Some connectors need full-length nails.



**DO NOT USE SHORT NAILS WITHOUT CHECKING THAT THEY WILL WORK.**  
Shorter nails can reduce a connector's strength.



- Examples of hangers that need full-length nails:



HUS Hanger



HGUS410 Hanger

- Galvanized or stainless steel nails may be needed to prevent corrosion.



Galvanized



Stainless Steel

- Some nails cannot be used in connectors. They lack the correct length, thickness, steel composition, and/or coating and reduce a connector's strength.

 **DO NOT USE THESE NAILS IN CONNECTORS.**



Drywall Nail



Roofing Nail



Common Small Nail

## Installation Methods

- Use a metal claw hammer, palm nailer, or pneumatic nailer that can locate holes to install connectors.

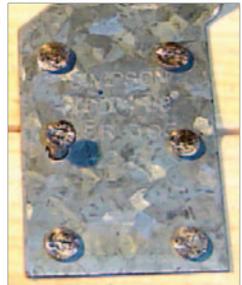


- Nails must be driven to the correct depth to ensure the greatest strength.



**DO NOT OVERDRIVE NAILS.**

A nail head should be seated flush with the steel of a connector.



Flush

Overdriven

Underdriven

## Screws

- Tempered screws are not as strong as nails.



- The Simpson **Strong-Drive® Screw** (SDS) comes with the appropriate connector.



SDS Screw



Connectors That Require SDS Screws



**DO NOT PRE-DRILL HOLES FOR THE SDS SCREW.**



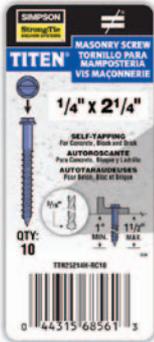
- Simpson connectors that need masonry screws usually state this on the connector.



- Pre-drill holes for masonry screws.
  - The pre-drilled hole diameter is written on the package.
  - Drill holes  $\frac{1}{2}$ " deeper than the screw length.



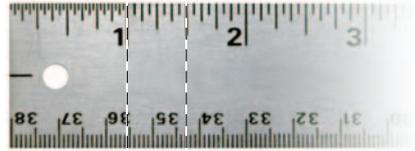
Pre-drill holes.



Hole diameter is stated on package.



$\frac{1}{2}$ " is roughly the radius of a quarter.



Drill holes  $\frac{1}{2}$ " deeper than screw length.



**DO NOT INTERCHANGE SCREWS.**



**DO NOT USE THESE SCREWS WITH SIMPSON CONNECTORS.**  
They cannot bear the same loads as the SDS screws.



Deck Screw



Drywall Screw



Lag Screw

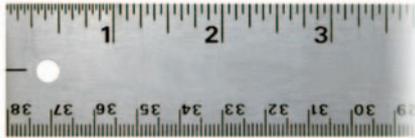
## Machine Bolts

- Pre-drill holes  $\frac{1}{32}$ " to  $\frac{1}{16}$ " larger than the bolt.

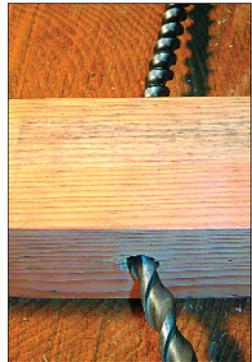
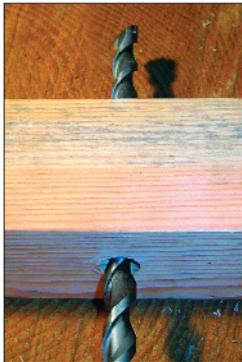


$< \frac{1}{16}$ "

$\frac{1}{16}$ " is roughly the thickness of a quarter.



- Drill from one side only.



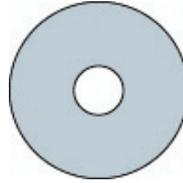
- Put the washer on the wood side.



## Fastener Holes

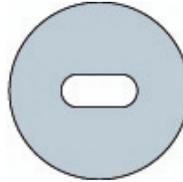
### Round

- Purpose: To fasten a connector.
- Fill Requirements: Always fill, and make sure you use the correct nail (*except for straps and strap-type hangers*).



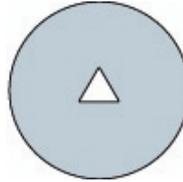
### Obround/Oval

- Purpose: To make fastening a connector in a tight location easier.
- Fill Requirements: Always fill, and make sure you use the correct nail.



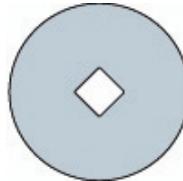
### Triangular

- Purpose: To increase a connector's strength or to achieve MAX strength.
- Fill Requirements: When the designer specifies.



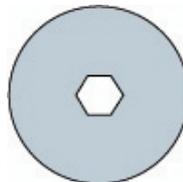
### Diamond

- Purpose: To temporarily fasten a connector to make installing it easier.
- Fill Requirements: None.



### Hexagonal

- Purpose: To fasten a connector to concrete or masonry.
- Fill Requirements: When you are fastening a connector to concrete with Titen screws.



## Innovative Features

### Dome Nailing

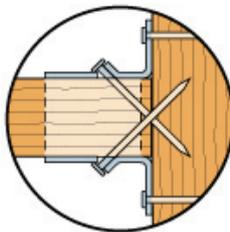
This feature guides the nail into the joist and header at a 45° angle.

*U.S. Patent No. 5,603,580*



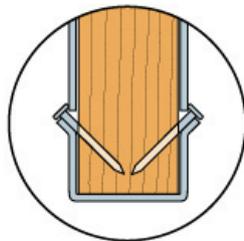
### Double-Shear Nailing

The nail is installed into the joist and header, distributing the load through two points on each joist nail for greater strength.



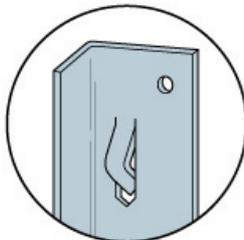
### Positive-Angle Nailing (PAN)

Provided when wood splitting may occur, and to speed installation.



### Speed Springs

Used to temporarily position and secure the connector for easier and faster installation.



## Basic Fastener Installation: Post-Training Test

### Instructions

There are 12 questions. Each question is worth one point. You must answer 9 out of 12 questions correctly to pass this test. Some questions have more than one right answer. Choose the best option or options for each question. Good luck!

### TEST

#### 1. Who should choose the connector?

- A. Architect
- B. Design professional
- C. Engineer
- D. Installer

#### 2. Which nail does the HUS hanger require?

- A.  N10 — joist hanger nail
- B.  Roofing nail
- C.  16d common nail
- D.  Drywall nail



**HUS Hanger**

#### 3. Which nail is the best substitute for the 16d sinker?

- A.  Drywall nail
- B.  N10 — joist hanger nail
- C.  8d common nail
- D.  10d common nail



**16d Sinker**

**4. Which fastener can be used in connectors?**

- A.  Drywall nail
- B.  Roofing nail
- C.  6d common small nail
- D.  Deck screw
- E.  Lag screw
- F.  16d common nail

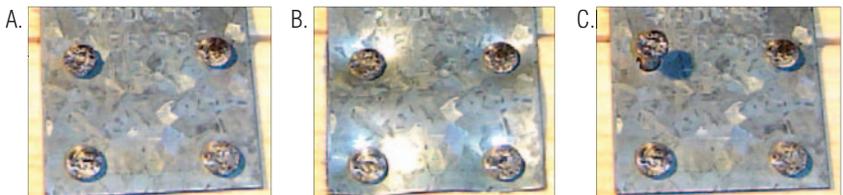
**5. In a corrosive environment, which nail is the most suitable?**

- A.  Common bright
- B.  Hot-dipped galvanized
- C.  Green vinyl
- D.  Cement-coated

**6. Which tools can be used to drive nails into connectors?**

- A.  Metal claw hammer
- B.  Pneumatic nailer without hole-locating device
- C.  Pneumatic nailer with hole-locating device
- D.  Palm nailer

**7. Which picture shows nails that were driven correctly?**



**8. Which type of nail does the HGUS410 hanger need?**

- A. Sinker
- B. Thin
- C. Full-length
- D. Short



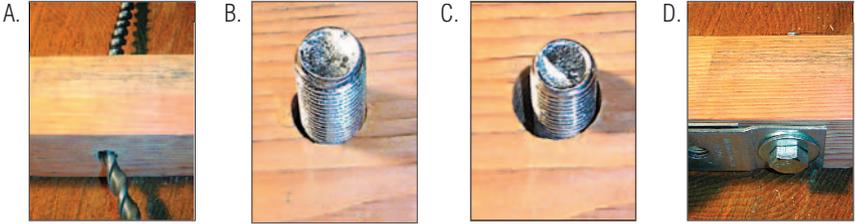
**9. When should the SDS be used?**

- A. When it is provided with a connector
- B. When using a masonry connector on wood
- C. When a connector requires a lag screw, because they are interchangeable

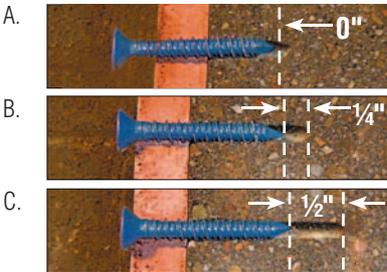


**SDS**

**10. Which picture shows a correct installation technique for bolts?**



**11. Which picture shows a hole that is pre-drilled to the correct depth for a masonry screw?**



**12. Match the types of holes to their descriptions by drawing a line from each hole to its description.**

-  Round Hole
-  Obround/Oval Hole
-  Triangular Hole
-  Diamond Hole
-  Hexagonal Hole

1. Optional — Fill when the designer specifies to increase a connector's strength or to achieve MAX strength.
2. Optional — Fill to temporarily fasten a connector to make installing it easier.
3. Required — Fill when you are fastening a connector to concrete with Titen screws.
4. Required — Always fill to fasten a connector.
5. Required — Always fill to make fastening a connector in a tight location easier.

# Hot Spots

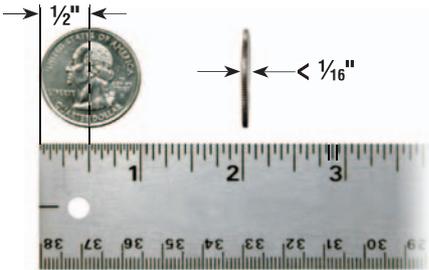
## Characteristics of Common Simpson Nails

Nail Type	Wire Gauge (ga)	Diameter	Required Penetration
 8d Common • Length = 2½"	10¼	0.131	1½"
 10d Common • Length = 3"	9	0.148	1¾"
 16d Common • Length = 3½"	8	0.162	2"
 16d Sinker • Length = ¾"	9	0.148	1¾"

## Pre-Drilling Requirements



½" to ⅛" larger than the bolt



½"

< ⅛"



½" deeper than the screw length

## Fastener Holes



Always fill to fasten a connector.



Always fill to make fastening a connector in a tight location easier.



Fill when the designer specifies to increase a connector's strength or to achieve MAX strength.



Fill to temporarily fasten a connector to make installing it easier.



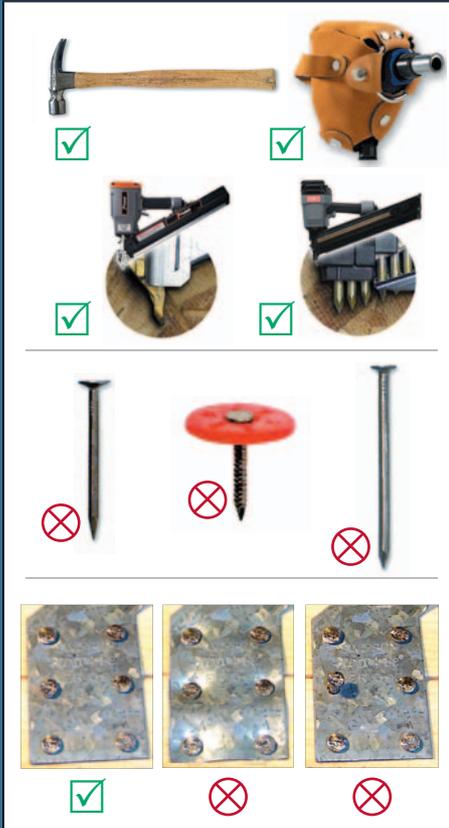
Fill when you are fastening a connector to concrete with Titen screws.

# Hot Spots

✓ Correct

✗ Incorrect

## Nails



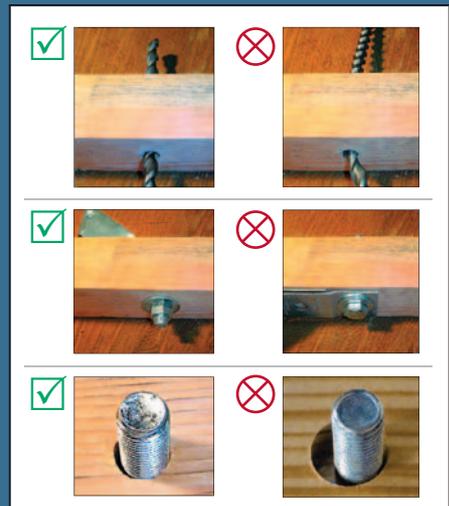
## SDS Screws



## Masonry Screws



## Machine Bolts





## Training Evaluation Form

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Date: \_\_\_\_\_ Training: \_\_\_\_\_

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. The objectives in this session were relevant to my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I was able to meet the learning objectives outlined at the beginning of the session.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I feel more confident that I will install Simpson products correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. My questions about product installation were answered during this session.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The session taught me how to identify and correct improper product installations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. This session held my interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The instructor was knowledgeable, courteous, professional, and effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The session instructions were sufficient and clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. The length of the session was appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Overall, I was satisfied with this training session.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. What other installation training should Simpson Strong-Tie provide to better assist with proper product installation and inspection processes?

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12. Suggestions for improving the training (please use the back of this page for additional suggestions):

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