*Connectors for Cold-Formed Steel Construction*

# Simplified Design and Installation Through Innovation

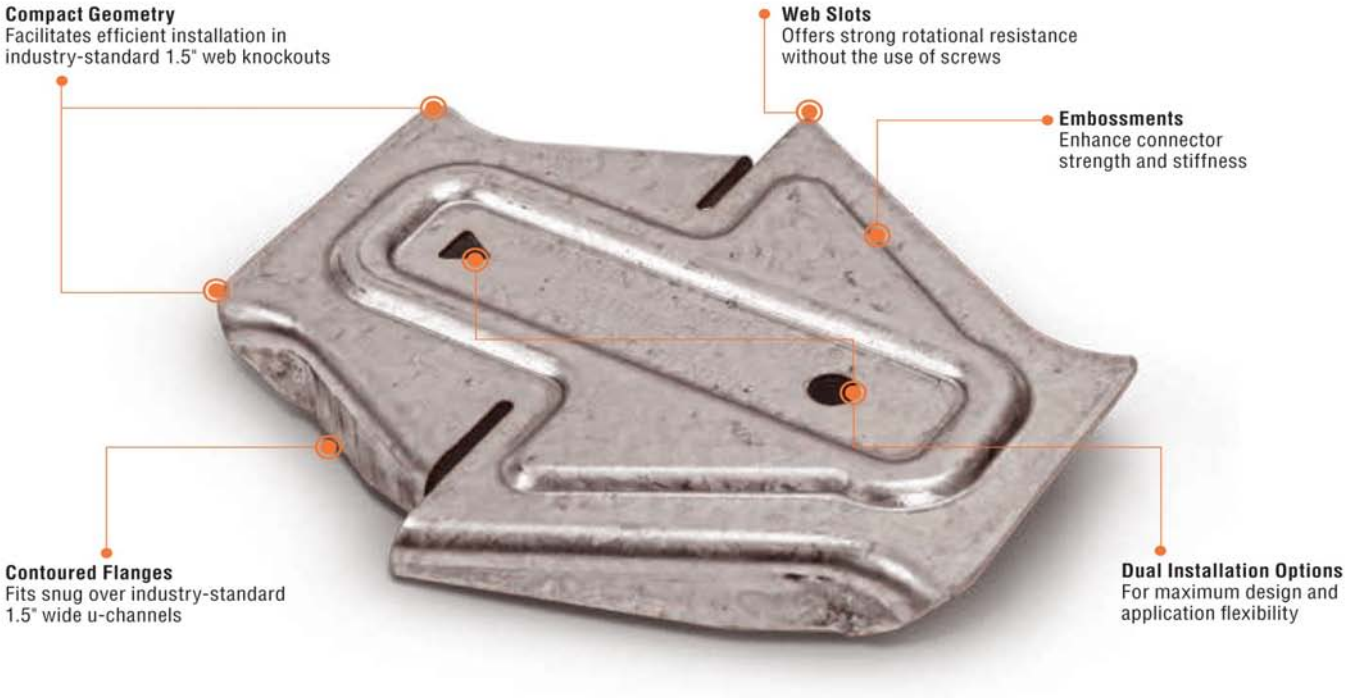
SIMPSON Strong-Tie

## SUBH/MSUBH Bridging Connectors

The latest innovations from Simpson Strong-Tie for cold-formed steel (CFS) framing are the SUBH and MSUBH wall stud bridging connectors. Through enhanced product design, these connectors can reduce labor costs and increase installation productivity.

## Features

- Installed easily by a single installer
- Many applications require only one screw
- Tested to include stud-web strength and stiffness in the tabulated design values
- Design values ensure compliance with AISI S100 Sections D3.2.1 and D3.3 for axially and laterally loaded studs
- Flexible design solutions for web thicknesses of 33 mil (20 ga.) through 97 mil (12 ga.) and stud sizes from 3⅝" to 8"
- Compact profile allows standard 1⅝" studs to be sistered directly against adjacent studs
- MSUBH accommodates back-to-back built-up members ranging from 33 mil (20 ga.) to 54 mil (16 ga.)




**SUBH3.25**
(MSUBH3.25 Similar)
Patent Pending

## Product Information

**Material:** SUBH3.25 – 43 mil (18 ga.); MSUBH3.25 – 68 mil (14 ga.)

**Finish:** Galvanized (G90)

**Codes:** IAPMO UES ER-124

**Ordering Information:** SUBH3.25-R150 (Bucket of 150)
MSUBH3.25-R100 (Bucket of 100)

07-14

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# SUBH/MSUBH Technical Information

SIMPSON Strong-Tie

## Allowable Loads

**SUBH and MSUBH Bridging Connector - Strength and Stiffness**

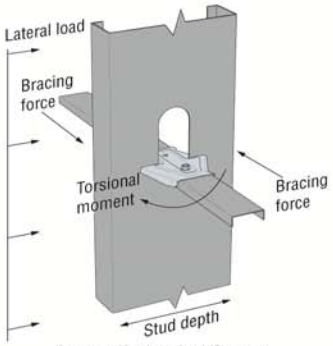
| Model No. | Stud Depth (in.) | Stud Thickness mil (ga.) | Laterally Loaded C-Stud | | Axially Loaded C-Stud | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Allowable Torsional Moment[1] (in.-lbs.) | | Allowable Brace Strength[1,2] (lbs.) | | Brace Stiffness[3] (lbs. / in.) | |
| | | | Min. | Max. | Min. | Max. | Min. | Max. |
| SUBH3.25 | 3⅝ | 33 (20) | 320 | 345 | 230 | 370 | 1,450 | 1,985 |
| | | 43 (18) | 355 | 430 | 255 | 420 | 2,780 | 4,035 |
| | | 54 (16) | 420 | 455 | 290 | 475 | 2,925 | 3,975 |
| MSUBH3.25 | | 54 (16) | 550 | 800 | 435 | 630 | 3,440 | 4,015 |
| | | 68 (14) | 640 | 860 | 485 | 695 | 4,040 | 6,145 |
| | | 97 (12) | 670 | 860 | 515 | 770 | 6,860 | 14,265 |
| SUBH3.25 | 6 | 33 (20) | 275 | 385 | 110 | 110 | 605 | 605 |
| | | 43 (18) | 295 | 525 | 230 | 250 | 1,050 | 1,205 |
| | | 54 (16) | 350 | 550 | 275 | 415 | 1,130 | 1,700 |
| MSUBH3.25 | | 54 (16) | 565 | 895 | 385 | 430 | 1,630 | 1,695 |
| | | 68 (14) | 655 | 925 | 455 | 620 | 1,860 | 2,655 |
| | | 97 (12) | 690 | 960 | 505 | 765 | 4,070 | 4,090 |
| SUBH3.25 | 8 | 43 (18) | 255 | 570 | 190 | 190 | 505 | 535 |
| | | 54 (16) | 325 | 605 | 250 | 300 | 895 | 1,025 |
| MSUBH3.25 | | 54 (16) | 545 | 890 | 270 | 270 | 1,025 | 1,045 |
| | | 68 (14) | 635 | 925 | 435 | 455 | 1,400 | 1,400 |
| | | 97 (12) | 665 | 955 | 545 | 545 | 2,465 | 2,465 |

## General Notes

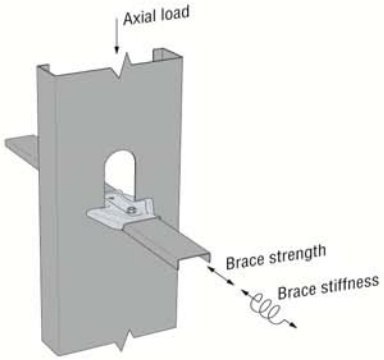
- Allowable loads are based on #10 self-drilling screws with a nominal diameter of 0.190" and a washer diameter of 0.375". Additionally, the fasteners must have a minimum nominal shear strength, $P_{ss}$, of 1665 lbs. and a nominal tensile strength, $P_{ts}$, of 2640 lbs.
- Allowable loads are based on cold-formed steel studs with a minimum yield strength, $F_y$, of 33 ksi and tensile strength, $F_u$, of 45 ksi for 43 mil (18 ga.) and thinner, and a minimum yield strength, $F_y$, of 50 ksi and tensile strength, $F_u$, of 65 ksi for 54 mil (16 ga.) and thicker. Additionally, the allowable loads are based on 54 mil (16 ga.) u-channel bridging with a minimum yield strength, $F_y$, of 33 ksi and tensile strength, $F_u$, of 45 ksi.
- Allowable loads consider the bridging connection only. It is the responsibility of the Designer to verify the strength and serviceability of the framing members.
- Min. fastener quantity and tabulated values – fill round hole (1 screw total); Max. fastener quantity and tabulated values – fill round and triangle holes (2 screws total).
- Allowable loads may not be increased for wind or seismic load.
- Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use these products in dry and non-corrosive environments only.

## Table Footnotes

1. Allowable loads are for use when utilizing Allowable Stress Design methodology. For LRFD loads multiply the ASD tabulated values by 1.6.
2. Allowable brace strengths are based on ultimate test load divided by a safety factor. Serviceability limit is not considered, as brace stiffness requirements are given in section D3.3 of AISI S100-2007. Contact Simpson Strong-Tie if nominal brace strength is required.
3. Tabulated stiffness values apply to both ASD and LRFD designs.




**Laterally loaded C-stud**




**Axially loaded C-stud**

## How to Use the SUBH and MSUBH Bridging Connector Table

The tabulated strength and stiffness values are for use with Sections D3.2.1 and D3.3 of the 2007 edition of AISI North American Specification for the Design of Cold-Formed Steel Structural Members (AISI S100-2007) as follows:

### Bracing Design for Laterally Loaded C-Studs

Step 1: Calculate required flange force for bracing using equation D3.2.1-3

Step 2: Multiply result by stud depth to obtain torsional moment

Step 3: Select connector with tabulated allowable torsional moment that exceeds torsional moment from Step 2 for the stud depth and gauge required

### Bracing Design for Axially Loaded C-Studs

Step 1: Calculate required LRFD brace strength using equation D3.3-1

Step 2: Divide result by 1.5 for ASD design[1]

Step 3: Calculate required brace stiffness using equation D3.3-2

Step 4: Select connector with tabulated allowable brace strength that exceeds strength from Step 2 and tabulated brace stiffness that exceeds stiffness from Step 3 for the stud depth and gauge required

1. Page III-54 of the 2008 edition of the AISI Cold-Formed Steel Design Manual states that equation D3.3-1 is applicable to LRFD design, and recommends dividing the result by 1.5 for ASD design.