

Strut Framing Systems



1. Scope

This standard covers the requirements for strut framing systems. Systems of this type are sometimes referred to as Unistrut; however, Unistrut is simply the name of the manufacturer that popularized the system.

This standard is confined to the following strut families:

Dimensions (W x H)	Thickness, nominal	Unistrut Equivalent
1-5/8 in x 1-5/8 in	12 gauge	P1000 series
1-5/8 in x 7/8 in	12 gauge	P3300 series
1-5/8 in x 13/16 in	16 gauge	P4000 series
13/16 in x 13/32 in	19 gauge	P7000 series

This standard applies to the Seattle City Light (SCL) stock numbers cited in Section 4. Fastener bolts are outside the scope of this standard.

2. Application

Strut framing systems facilitate weldless connections that are strong, fast, economical, and fully adjustable. System components are 100% reusable, and require no drilling or special assembly tools.

P4000 series strut is embedded in the walls of vaults smaller than 712. P1000 series strut is embedded in the walls of vaults 712 and larger. P4000 series strut is not available from the warehouse as a separate item.

Beam clamps with U-bolts are used to:

- Secure beams with a flange (up to 3/4 inches thick) to strut framing systems
- Connect the strut system to Integral Web Bus Conductors (IWCBs)
- Secure current transformers (CTs) to strut framing systems
- Rack cable

See SCL 7216.78 for light duty and heavy-duty pipe clamps for use with strut systems.

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3. Industry Standards

Strut framing system components shall meet the applicable requirements of the following industry standards:

ASTM A123/A123M-15; Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A153/A153M-16a; Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM B633-15; Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel

4. Requirements

4.1 Strut

Strut shall be accurately and carefully cold-formed to size from low carbon strip steel.

Strut shall meet the requirements of Table 4.1.

Table 4.1. Strut

Stock No.	Width x Height (in)	Gauge	Holes/Slots	Base Material	Finish	Figure	Series
723505	13/16 x 13/32	19	No	Steel	Coated	4.1a	P7000
723506	1-5/8 x 7/8	12	Yes	Steel	Hot-dip galvanized	4.1b	P3300
723510	1-5/8 x 1-5/8	12	Yes	Steel	Hot-dip galvanized	4.1c	P1000
723502	1-5/8 x 1-5/8	12	Yes	Aluminum	None	4.1c	P1000

Figure 4.1a. Stock No. 723505

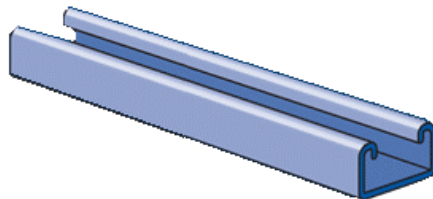


Figure 4.1b. Stock No. 723506

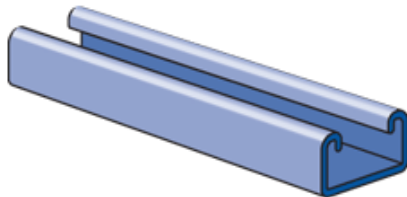
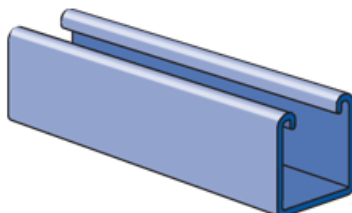


Figure 4.1c. Stock Nos. 723510 and 723502



Stock Nos. 723510, 723502, and 723506 shall be provided with either of the following slot configurations:

- 7/8 x 9/16 inch slots on 2 inch centers
- 1-1/8 x 9/16 inch slots on 2 inch centers

Stock No. 723505 shall be finished with a thermoset acrylic, epoxy, or urethane powder resin coating that provides a smooth, hard, durable surface; finish color shall be green.

Stock Nos. 723506 and 723510 shall be hot-dip galvanized according to the requirements of ASTM A123 or ASTM A153.

4.2 Fittings

Strut fittings shall be punch-press made from hot rolled, pickled and oiled steel plates, strip, or coil.

Strut fitting thicknesses shall be 1/4 inch.

Strut fitting surfaces shall be smooth and free from scale.

Strut fittings shall be designed for use with 1-5/8 x 1-5/8-inch strut.

Strut fittings shall meet the requirements of Table 4.2.

Table 4.2 Strut Fittings

Stock No.	Description	Finish	Figure
720645	Flat plate, five-hole, cross	Electro-galvanized	4.2a
720632	"U" shape, four-hole, connector	"	4.2b
720633	Flat plate, four-hole, tee	"	4.2c
720634	Flat plate, two-hole, strap	"	4.2d
720635	Flat plate, four-hole, strap	"	4.2e
010415	Flat plate, three-hole, corner	"	4.2f
013659	Post base, square	Hot-dip galvanized	4.2g
686466	Bracket, four-hole	Hot-dip galvanized	4.2h
680806	Clamp, beam, with 3/8" hex nuts and U-bolt	Electro-galvanized	4.2i

Figure 4.2a. Flat plate, five-hole, cross

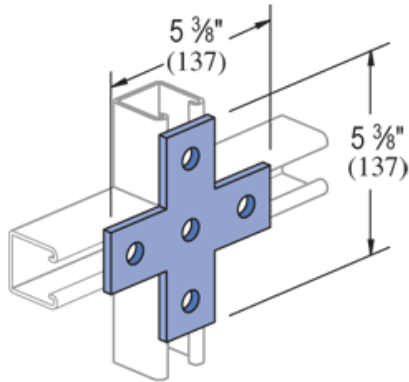


Figure 4.2b. "U" shape, four-hole, connector

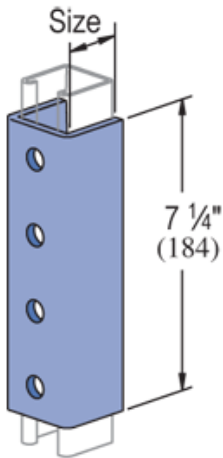


Figure 4.2c. Flat plate, four-hole, tee

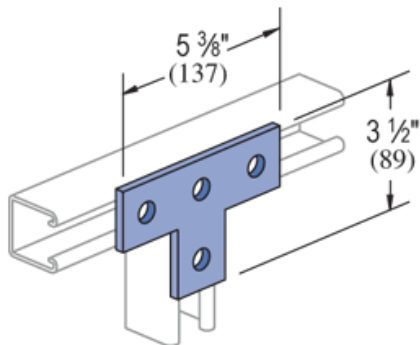


Figure 4.2d. Flat plate, two-hole, strap

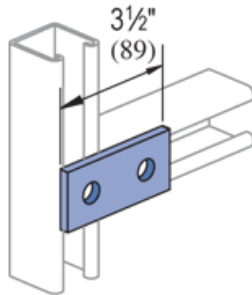


Figure 4.2e. Flat plate, four-hole, strap

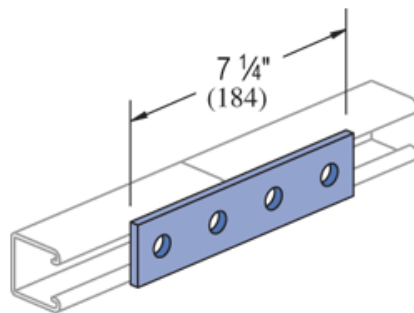


Figure 4.2f. Flat plate, three-hole, corner

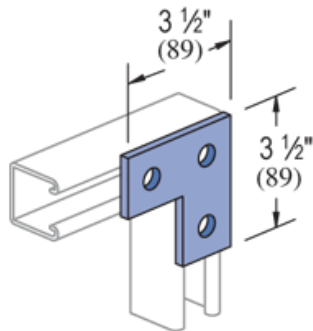
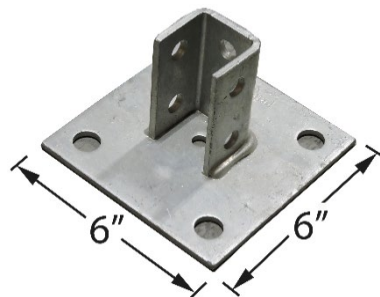


Figure 4.2g. Post base, four-hole, square



Note: Four-holes, 3/4" typ.

Figure 4.2h. Bracket, four-hole

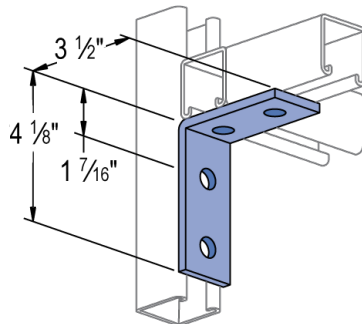
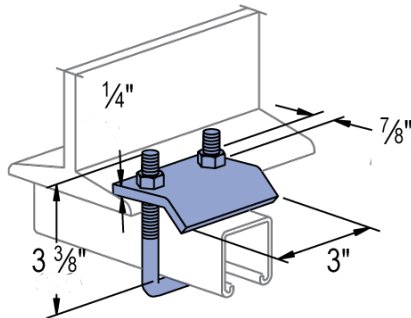


Figure 4.2i. Clamp, beam, with 3/8" hex nuts and U-bolt



4.3 Nuts

Nuts shall be made from steel bars and after machining operations are complete, shall be thoroughly case hardened.

Nut finish shall be electro-galvanized according to the requirements of ASTM B633.

Nuts shall meet the requirements of Table 4.3.

Table 4.3. Nuts

Stock No.	Description	For Use with Unistrut Channel	Figure
723610	Channel stud nut with long spring, 3/8-16 thread, 2-1/8 in stud	P1000	4.3a
723611	Channel stud nut with long spring, 1/2-13 thread, 2-1/8 in stud	"	"
723606	Channel nut with long spring, 1/2-13 thread	P1000	4.3b
723609	Channel nut with long spring, 3/8-16 thread	"	"
723613	Channel nut with long spring, 5/8-11 thread	"	"
723603	Channel nut with short spring, 8-32 thread	P3300/P4000	4.3c
723604	Channel nut with short spring, 10-24 thread	"	"
723605	Channel nut with short spring, 1/4-20 thread	"	"
723608	Channel nut with short spring, 3/8-16 thread	"	"
723607	Channel nut with short spring, 1/2-13 thread	"	"
723615	Channel nut with short spring, 5/8-11 thread	"	"
723620	Channel nut with very short spring, 8-32 thread	P7000	4.3d
723622	Channel nut with very short spring, 10-24 thread	"	"
723624	Channel nut with very short spring, 14-20 thread	"	"

Figure 4.3a. hannel stud nut with long spring

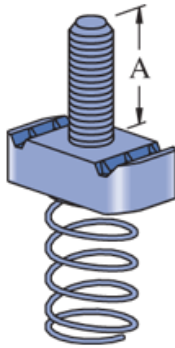


Figure 4.3b. Channel nut with long spring

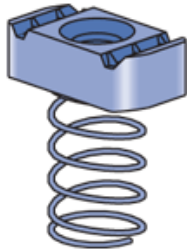


Figure 4.3c. Channel nut with short spring

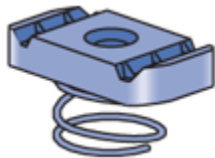


Figure 4.3d. Channel nut with very short spring



4.4 Washers

Washers shall meet the requirements of Table 4.4.

Table 4.4. Washers

Stock No.	Description	Finish	Figure
788190	Flat washer, 1-5/8 in square, 9/16 in hole	Hot-dip galvanized	4.4a
788192	Flat washer, 1-5/8 in square, 11/16 in hole	"	"
720658	Flat washer, 1-5/8 in square, with tabs, 9/16 in hole	Electro-galvanized	4.4b
720659	Flat washer, 1-5/8 in square, with tabs, 11/16 in hole	"	"

Figure 4.4a. Flat washer

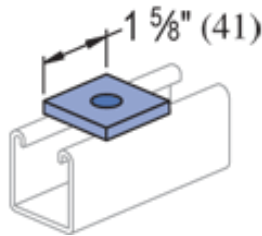
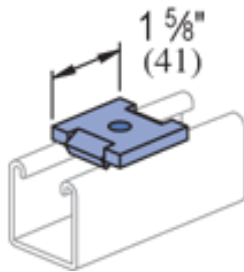


Figure 4.4b. Flat washer with tabs



5. Marking

Each length of strut channel shall be stamped with a code that allows traceability to the origin of the steel.

6. Packaging

Product shall be packaged to prevent damage during shipping, handling, and storage.

Strut shall be provided in standard lengths of 10 feet.

Individual packages shall be legibly marked with:

- Manufacturer name
- Manufacturer catalog number
- Product description
- SCL stock number

Shipping containers shall be legibly marked with the SCL purchase order number.

7. Issuance

Stock Unit: FT (strut)
EA (fittings, nuts, washers)

8. Approved Manufacturers

8.1 Strut

Stock No.	B-Line (Eaton)	Caddy (nVent)	Superstrut (ABB)	Unistrut (Atkore Int)	Wesanco (ZSI-Foster)
723505	B72-GRN-120	–	–	P7000-GR-10	W700GR10
723506	B52SH-HDG-120	–	B-1200-HS-10-HDG	P3300-T-HG-10	W900SSHG10
723510	B22SH-HDG-120	A12H 1000HD	A-1200-HS-10-HDG	P1000 T-HG-10	W200SSHD10
723502	B22SH-AL-120	A12H 1000AL	A-1200-HS-10-AL	–	W200SSAL10

8.2 Fittings

Stock No.	B-Line (Eaton)	Caddy (nVent)	Superstrut (ABB)	Unistrut (Atkore Int)	Wesanco (ZSI-Foster)
720645	B132 ZN	–	–	P1028 EG	W5023EG
720632	B172 ZN	–	–	P1377 EG	W5345EG B5345EG
720633	B133 ZN	–	–	P1031 EG	W5022EG B5022EG
720634	B129 ZN	–	–	P1065 EG	W5007EG B5007EG
720635	B341 ZN	–	–	P1067 EG	W5009EG B5009EG
010415	B140 ZN	–	–	P1036 EG	W5021EG
013659	B280-SQ-HDG	–	–	P2072ASQ-HG	W5814SQHG
686466	–	–	–	P1325HG	W5123HDGAF
680806	–	BC17A000EG	U501 EG	P2795 EG	W5709EG

8.3 Nuts

Stock No.	B-Line (Eaton)	Caddy (nVent)	Superstrut (ABB)	Unistrut (Atkore Int)	Wesanco (ZSI-Foster)
723610	SN228-2 1/8	–	–	P2380-6	W6-6SN EG
723611	SN225-2 1/8	–	–	P2381-7	W8-6SN EG
723606	N225 ZN	–	–	P1010 - EG	W2-8 EG B2-8 EG
723609	N228 ZN	–	–	P1008 - EG	W2-6 EG
723613	N255 ZN	–	–	P1012S - EG	W2-10 EG
723603	N521 ZN	–	–	P4006-0832	W5-0832 EG
723604	N522 ZN	–	–	P4006-1024	W5-1024 EG
723605	N524 ZN	–	–	P4006-1420	W5-4 EG B5-4 EG
723608	N528 ZN	–	–	P4008 - EG	W5-6 EG B5-4 EG
723607	N525 ZN	–	–	P4010 - EG	W5-8 EG B5-8 EG
723615	N555 ZN	–	–	P4012S - EG	W5-10 EG
723620	N7221	–	–	P7006-0832	W7-0832 EG
723622	N7222	–	–	P7006-1024	W7-1024 EG
723624	N7224	–	–	P7006-1420	W7-4 EG

Note: Wesanco catalog numbers that start with "W" will be of U.S. origin. Wesanco part numbers that start with "B" will most likely be imported.

8.4 Washers

Stock No.	B-Line (Eaton)	Caddy (nVent)	Superstrut (ABB)	Unistrut (Atkore Int)	Wesanco (ZSI-Foster)
788190	B202 HDG	–	–	P1064 HG	W5054HG
788192	B202-1HDG	–	–	P1964 HG	W5055HG
720658	B202D ZN	–	–	B2864 EG	W5004EG B5004EG
720659	B202-1D ZN	–	–	–	W5005EG B5005EG

Note: Wesanco catalog numbers that start with “W” will be of U.S. origin. Wesanco part numbers that start with “B” will most likely be imported.

9. Sources

SCL Stock Catalog page 70-7; April 6, 2011

SCL Stock Catalog page 70-40; May 27, 2008

SCL Stock Catalog page 70-42; December 15, 2016

SCL Stock Catalog page 78-22; September 29, 2006

SCL Stock Catalog page 78-24; February 5, 2016

Shipek, John; SCL Standards Supervisor and originator of 7216.75

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