

Seismic System Attachments

Fig. 1CBS - Clevis Bolt Spacer (Cooper B-Line B3100PS)

Size Range: Size 1" (25mm) thru 20" (500mm) clevis hanger

Material: Steel

Function: Used as a spacer at a seismic brace location to keep clevis hanger from collapsing during seismic event.

Approvals: Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines.

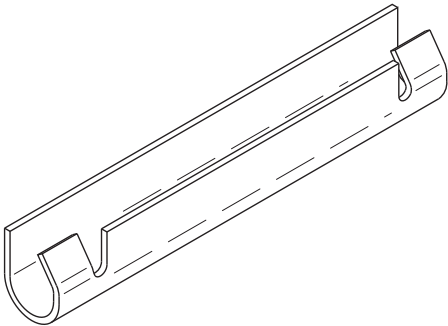
Installation Note: Fig. 1CBS fits easily over the cross bolt and attaches by pinching tabs down.

Finish: Pre-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Figure number and finish.



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Part No.	Pipe Size		Approx. Wt./100	
	in.	(mm)	lbs.	(kg)
1CBS-1	1"	(25)	3.2	(1.4)
1CBS-1¼	1¼"	(32)	4.1	(1.8)
1CBS-1½	1½"	(40)	4.8	(2.2)
1CBS-2	2"	(50)	9.4	(4.2)
1CBS-2½	2½"	(65)	11.4	(5.2)
1CBS-3	3"	(75)	13.9	(6.8)
1CBS-3½	3½"	(90)	16.0	(7.2)
1CBS-4	4"	(100)	18.0	(8.1)
1CBS-5	5"	(125)	27.3	(12.4)
1CBS-6	6"	(150)	32.5	(14.7)
1CBS-8	8"	(200)	42.5	(19.2)
1CBS-10	10"	(250)	72.7	(32.9)
1CBS-12	12"	(300)	86.3	(39.1)
1CBS-14	14"	(350)	157.6	(71.5)
1CBS-16	16"	(400)	183.7	(83.3)
1CBS-18	18"	(450)	224.6	(101.9)
1CBS-20	20"	(500)	254.0	(115.2)

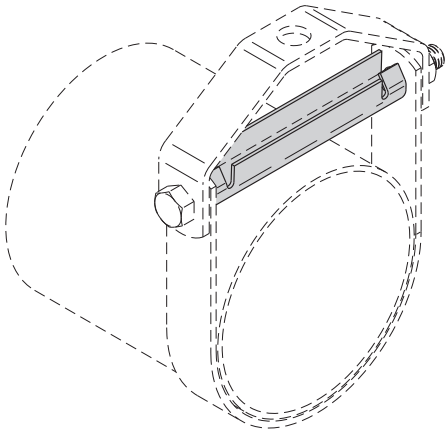


Fig. 120RWA - (Model B) Retrofit Wrap Around "U" Hanger Clamp

Size Range: 1" (25mm) thru 8" (200mm) pipe

Material: Steel

Function: Designed to restrain movement of the pipe within standard U-hangers as required by NFPA 13. Where retrofit capability is crucial, the Fig. 120RWA is a labor efficient alternative to the standard B-Line Fig. 120W wrap around U-hanger.

Features Installs easily by tightening two hex nuts. Features a unique bracing slot that locks onto a standard U-hanger to become a solid unit that will stabilize the pipe during seismic activity or sprinkler head activation. Designed to be used in retrofit or new construction applications. Will clamp to existing U-Hangers without restriction to leg angle.

Approvals: Underwriters Laboratories listed in the USA (**UL**) and Canada (**cUL**) as a restrainer. Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines. NFPA 13 (2010) 9.3.6.3.

Finish: Plain and Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Figure number, type numbers and pipe size

Ordering Note: Order by the following type and pipe size:

Type 1 — 1" (25mm) and 1 1/4" (32mm) pipe size)

Type 2 — (1 1/2" (40mm) and 2" (50mm) pipe size)

Type 3 — (2 1/2" (65mm) and 3" (80mm) pipe size)

Type 4 — (4" (100mm) pipe size)

Type 6 — (5" (125mm) and 6" (150mm) pipe size)

Type 8 — (8" (200mm) pipe size)

Important Note: The bracing slot feature is sized to fit the U-Hanger rod schedule as required by NFPA 13 as follows:

5/16" (7.9mm) rod for up to 2" (50mm) pipe

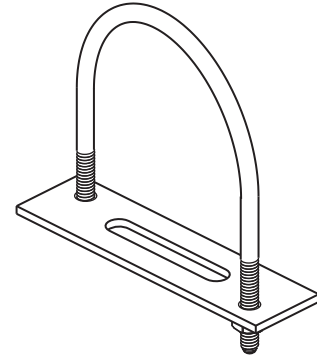
3/8" (9.5mm) rod for 2 1/2" (65mm) - 6" (160mm) pipe

1/2" (12.7mm) rod for 8" (200mm) pipe

For other rod size requirements consult factory.

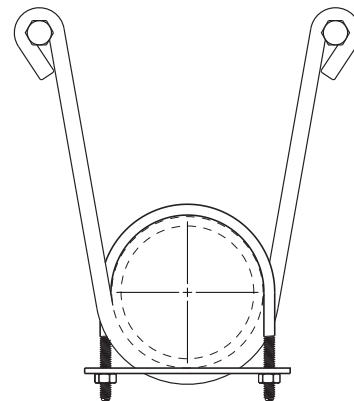
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Part No.	Type	Pipe Size in. (mm)
120RWA-TYPE1-1	1	1" (20)
120RWA-TYPE1-1 1/4	1	1 1/4" (25)
120RWA-TYPE2-1 1/2	2	1 1/2" (40)
120RWA-TYPE2-2	2	2" (50)
120RWA-TYPE3-2 1/2	3	2 1/2" (65)
120RWA-TYPE3-3	3	3" (80)
120RWA-TYPE4-3 1/2	4	3 1/2" (90)
120RWA-TYPE4-4	4	4" (100)
120RWA-TYPE6-5	6	5" (125)
120RWA-TYPE6-6	6	6" (150)
120RWA-TYPE8-8	8	8" (200)



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

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Fig. 25 - Surge Restrainer

Size Range: — One size fits 3/4" (20mm) thru 2" (40mm) pipe.

Material: — Pre-Galvanized Steel

Function: — Designed to be used in conjunction with Fig. 200 band hangers to restrict the upward movement of piping as it occurs during sprinkler head activation or earthquake type activity. The surge restrainer is easily and efficiently installed by snapping into a locking position on the band hanger. This product is intended to satisfy the requirements as indicated in the National Fire Protection Association NFPA 13, 2010 edition, 9.2.3.4.4.1 and 9.2.3.4.4.4 Can be used to restrain either steel pipe or CPVC plastic Pipe.

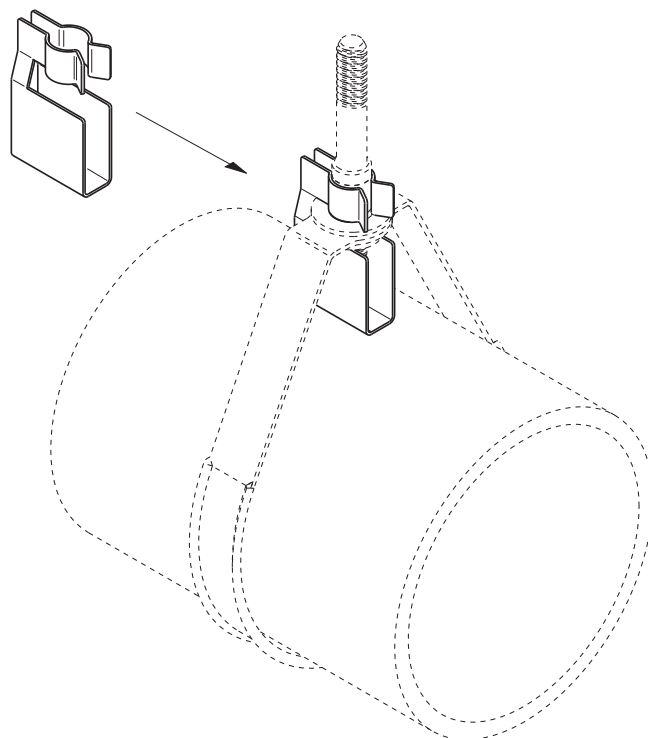
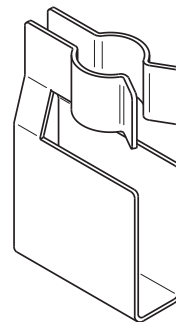
Approvals: — Underwriters Laboratories Listed only when used with band hanger Fig. 200, in the USA (**UL**) and Canada (**cUL**).

Finish: Pre-Galvanized

Order By: Figure number and band hanger, size from 3/4" (20mm) thru 2" (40mm).

Patent #5,344,108

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Fig. 98 - Rod Stiffener

Fig. 98B - Rod Stiffener with Break-Off Bolt Head

Size Range: Secures 3/8"-16 thru 7/8"-9 hanger rod

Material: Steel

Function: Secures channel to hanger rod for vertical seismic bracing.

Approvals: Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines

Finish: Electro Galvanized. Contact B-Line for alternative finishes and materials.

Weight: Approx. Wt./100: Fig. 98 - 11.8 Lbs. (5.3kg)
Fig. 98B - 12.7 Lbs. (5.7kg)

Order By: Figure number

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Fig. 98

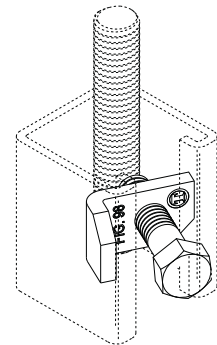


Fig. 98B

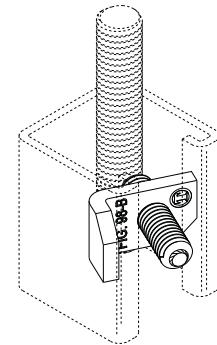


Fig. SC228 - Hanger Rod Stiffener

Size Range: Secures 3/8"-16 thru 5/8"-11 hanger rod

Material: Steel

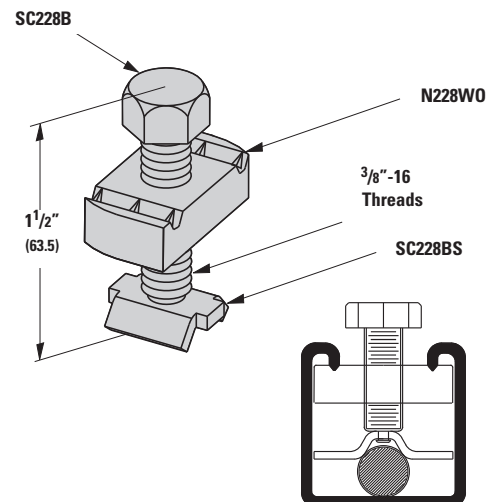
Function: Secures channel to hanger rod for vertical seismic bracing. Slight distortion of the channel (strut) may occur upon installation of rod stiffeners.

Finish: Electro Galvanized. B-Line for alternative finishes and materials.

Weight: Approx. Wt./100: 21.0 Lbs. (9.5kg)

Order By: Figure part number

Note: Order channel separately



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Rod Stiffener Requirements

Rod Size	Maximum Rod Length Without Rod Stiffener	Maximum Spacing Between Rod Stiffeners
3/8"	19" (482mm)	13" (330mm)
1/2"	25" (635mm)	18" (457mm)
5/8"	31" (787mm)	23" (584mm)
3/4"	37" (940mm)	28" (711mm)
7/8"	43" (1092mm)	33" (838mm)
1"*	50" (1270mm)	38" (965mm)
1 1/4"*	60" (1524mm)	43" (1092mm)

* Use with SC228 only.

Notes:

- 1.) Rod stiffeners are required only on hanger and trapeze assemblies that have seismic bracing attached at or within 4" (101.6mm) of the rod. A minimum of two rod stiffeners (Figure 98, 98B, or SC228) must be installed.
- 2.) Recommended torque on Figure 98 and SC228 is 8 ft-lbs. (10.8Nm) or finger tight and one full turn with a wrench. Figure 98B has the break off bolt head.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

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Fig. 4A - Pipe Clamp for Sway Bracing

Size Range: 4" (100mm) thru 8" (200mm) pipe. For sizes smaller than 4" (100mm) use B3140.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**) 4" (100mm) thru 8" (200mm). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**).

Installation Instructions: Fig. 4A is the "braced pipe" attachment component of a longitudinal or riser brace assembly. It is intended to be combined with the "bracing pipe" and our transitional and structural attachment component(s) to form a complete bracing assembly.

NFPA 13 and/or OSHPD guidelines should be followed.

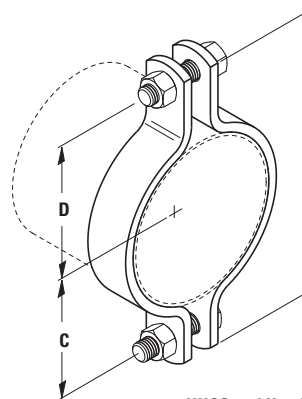
To Install: Place the Fig. 4A over the pipe to be braced. Attach our transitional fitting, either Fig. 980, 910 or 909, to the clamp ears. Tighten bolts and nuts; torque requirement is a minimum of 50 ft./lbs. (68Nm) per MSS-SP-58 (2009). Transitional fitting attachment can pivot for adjustment to proper brace angle.

Finish: Plain or Electro-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Figure number, pipe size and finish

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HHCS and Hex Nuts Included

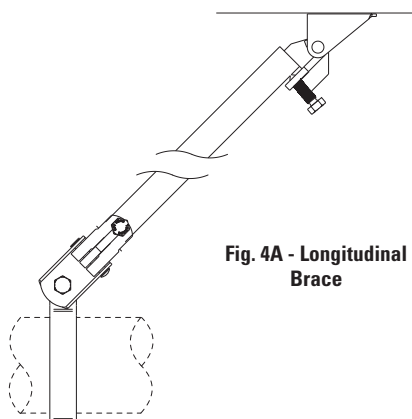


Fig. 4A - Longitudinal
Brace

Part No.	Pipe Size in. (mm)	A		C		D		Bolt Size		Max. Horizontal Design Load (UL)		Approx. Wt./100	
		in.	(mm)	in.	(mm)	in.	(mm)			lbs.	(kN)	lbs.	(kg)
4A-4	4" (100)	8 1/2"	(215.9)	3 3/8"	(85.7)	3 11/16"	(93.7)	1/2"-13		1600	(7.11)	221	(100.2)
4A-5	5" (125)	9 3/4"	(247.6)	3 7/8"	(98.4)	4 3/8"	(111.1)	1/2"-13		1600	(7.11)	253	(114.7)
4A-6	6" (150)	11 1/2"	(292.1)	5"	(127.0)	5 1/8"	(130.2)	1/2"-13		2015	(8.96)	513	(232.7)
4A-8	8" (200)	13 1/4"	(336.5)	6 11/16"	(169.9)	6 1/8"	(155.6)	1/2"-13		2015	(8.96)	601	(272.6)

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

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Figure 4B Pipe Clamp for Sway Bracing (Cooper B-Line B386)

Size Range: 3/4" (20mm) to 8" (200mm) pipe

Material: Steel

Function: For bracing pipe against sway and seismic disturbance

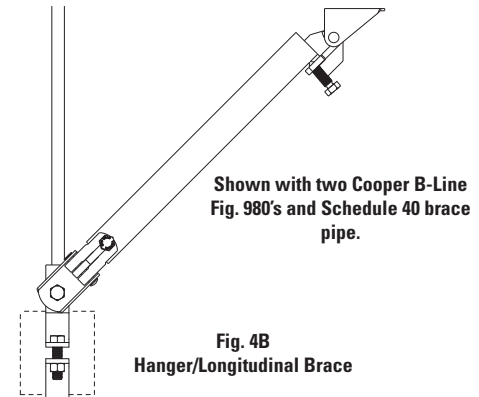
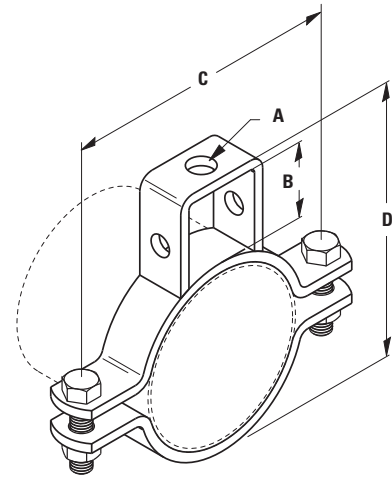
Approvals: Included in the Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD).

Standard Finish: Plain or Electro-Plated, Contact B-Line for alternative finishes and materials.

Ordering: Specify part number and finish.

Installation Instructions: Fig. 4B is the "braced pipe" attachment component of a longitudinal or lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and transitional and structural attachment component(s) to form a complete bracing assembly. NFPA 13 and/or OSHPD guidelines should be followed.

To Install: Place the Fig. 4B over the pipe to be braced. Attach other transitional fitting, Fig. 909, 910, or 980. Tighten bolts and nuts. Transitional fitting attachment can pivot for adjustment to proper brace angle.



Part No.	Pipe Size in. (mm)	Rod Size A (mm)	B in. (mm)	C in. (mm)	D in. (mm)	Bolt Size	Design Load Lbs. (kN)	Approx. Wt./100 Lbs. (kg)
4B-3/4	3/4" (20)	3/8"-16	1" (25.4)	2 7/8" (73.0)	2 5/8" (66.7)	5/16"-18	330 (1.47)	56 (25.4)
4B-1	1" (25)	3/8"-16	1" (25.4)	3 1/4" (82.5)	2 15/16" (74.6)	5/16"-18	330 (1.47)	60 (27.2)
4B-1 1/4	1 1/4" (32)	3/8"-16	1" (25.4)	3 9/16" (90.6)	3 1/4" (82.5)	5/16"-18	330 (1.47)	74 (33.5)
4B-1 1/2	1 1/2" (40)	3/8"-16	1" (25.4)	3 13/16" (96.8)	3 7/16" (87.3)	5/16"-18	330 (1.47)	79 (35.8)
4B-2	2" (50)	3/8"-16	1 1/2" (38.1)	5 1/8" (130.2)	4 5/8" (117.5)	5/16"-18	440 (1.78)	156 (70.7)
4B-2 1/2	2 1/2" (65)	1/2"-13	1 3/4" (44.4)	5 5/8" (142.9)	5 3/8" (136.5)	3/8"-16	440 (1.78)	176 (79.8)
4B-3	3" (80)	1/2"-13	1 7/8" (47.6)	6 3/4" (171.4)	6 1/8" (155.5)	3/8"-16	660 (2.93)	198 (89.9)
4B-3 1/2	3 1/2" (90)	1/2"-13	2" (50.8)	7 1/4" (184.1)	6 3/4" (171.4)	3/8"-16	660 (2.93)	219 (99.3)
4B-4	4" (100)	5/8"-11	2" (50.8)	8 5/8" (219.1)	7 1/4" (184.1)	1/2"-13	800 (3.56)	288 (130.6)
4B-5	5" (125)	5/8"-11	2" (50.8)	9 7/8" (250.8)	8 5/16" (211.1)	5/8"-11	980 (4.36)	390 (176.9)
4B-6	6" (150)	3/4"-10	2 1/8" (54.0)	10 15/16" (277.8)	9 1/2" (241.3)	5/8"-11	980 (4.36)	448 (203.2)
4B-8	8" (200)	7/8"-9	2 1/8" (54.0)	13 7/16" (341.2)	11 1/2" (292.1)	3/4"-10	1200 (5.34)	691 (313.4)

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

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Fig. 4LA - "In-Line" Sway Brace Attachment

Size Range: 1" (25mm) through 12" (300mm) IPS.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Approved by Factory Mutual Engineering (FM), 1" (25mm) through 12" (300mm) pipe.

Installation Instructions: Fig. 4LA can be used as the system attachment component of a longitudinal or lateral brace assembly. It is intended to be combined with the "bracing member" and our transitional attachment and structural attachment to form a complete bracing assembly. NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

To Install: Place the Fig. 4LA pipe clamp component over the pipe to be braced and tighten down the break-off nuts until the hex head portion breaks off to verify correct installation torque. Next engage brace member (pipe or strut) with jaw component and tighten break-off head bolt until the hex head breaks off to verify correct installation torque. Pivot jaw for correct angle and attach to structure using our brand transitional attachment and structural attachment.

Finish: Plain or Electro-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Figure number, pipe size and finish.

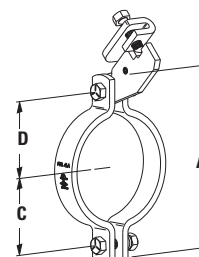
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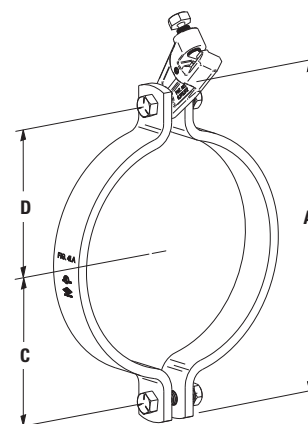
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4LA-1 thru 4LA-4



4LA-5 thru 4LA-12



Part No.	Pipe Size		A		C		D		Bolt Size	Approx. Wt./100	
	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)		lbs.	(kg)
4LA-1	1"	(25)	3 ¹⁹ / ₃₂ "	(91.2)	1 ⁵ / ₁₆ "	(33.5)	1 ⁵ / ₁₆ "	(33.5)	3/8"-16	119	(54.0)
4LA-1 ¹ / ₄	1 ¹ / ₄ "	(32)	3 ²⁹ / ₃₂ "	(99.3)	1 ³ / ₈ "	(35.3)	1 ³ / ₈ "	(35.3)	3/8"-16	123	(55.8)
4LA-1 ¹ / ₂	1 ¹ / ₂ "	(40)	4 ⁵ / ₃₂ "	(105.7)	1 ¹ / ₂ "	(38.5)	1 ¹ / ₂ "	(38.5)	3/8"-16	127	(57.6)
4LA-2	2"	(50)	5 ¹¹ / ₃₂ "	(135.6)	2 ¹ / ₃₂ "	(51.9)	2 ¹ / ₁₆ "	(51.9)	3/8"-16	142	(64.4)
4LA-2 ¹ / ₂	2 ¹ / ₂ "	(65)	5 ²⁷ / ₃₂ "	(148.7)	2 ⁵ / ₁₆ "	(58.5)	2 ⁵ / ₁₆ "	(58.5)	3/8"-16	173	(78.5)
4LA-3	3"	(80)	6 ¹ / ₂ "	(164.9)	2 ⁵ / ₈ "	(66.6)	2 ⁵ / ₈ "	(66.6)	3/8"-16	187	(84.8)
4LA-3 ¹ / ₂	3 ¹ / ₂ "	(90)	7 ¹³ / ₃₂ "	(188.1)	2 ⁷ / ₈ "	(73.1)	2 ⁷ / ₈ "	(73.1)	3/8"-16	198	(89.8)
4LA-4	4"	(100)	7 ¹⁷ / ₃₂ "	(191.3)	3 ¹ / ₈ "	(79.5)	3 ¹ / ₈ "	(79.5)	3/8"-16	209	(94.8)
4LA-5	5"	(125)	8 ¹ / ₄ "	(222.3)	3 ⁵ / ₈ "	(92.1)	3 ⁵ / ₈ "	(92.1)	1/2"-13	298	(135.2)
4LA-6	6"	(150)	10 ⁵ / ₈ "	(269.9)	4 ⁹ / ₁₆ "	(115.9)	4 ⁹ / ₁₆ "	(115.9)	1/2"-13	521	(236.3)
4LA-8	8"	(200)	12 ¹³ / ₁₆ "	(325.5)	5 ⁹ / ₁₆ "	(143.7)	5 ²¹ / ₃₂ "	(143.7)	1/2"-13	629	(285.3)
4LA-10	10"	(250)	16 ¹ / ₂ "	(419.1)	7 ¹ / ₄ "	(184.2)	7 ¹ / ₄ "	(184.2)	1/2"-13	1320	(598.7)
4LA-12	12"	(300)	18 ¹ / ₂ "	(469.9)	8 ¹ / ₄ "	(209.6)	8 ¹ / ₄ "	(209.6)	1/2"-13	1496	(678.6)

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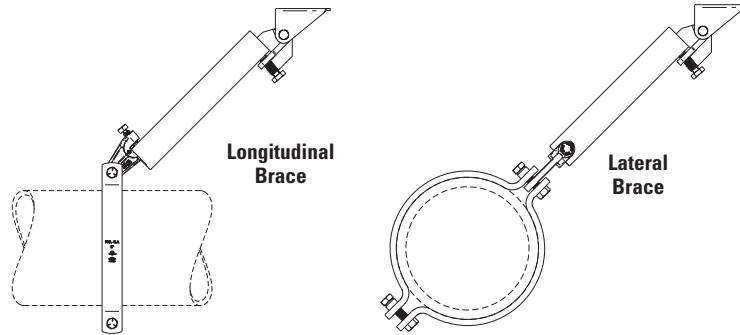
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Fig. 4LA - "In-Line" Sway Brace Attachment cont.

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Longitudinal Loads		Max. Horizontal Design Load (FM)				Max. Horizontal Design Load
Part No.	Pipe Size in. (mm)	30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)	
4LA-1	1" (25)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-1 ¹ / ₄	1 ¹ / ₄ " (32)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-1 ¹ / ₂	1 ¹ / ₂ " (40)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-2	2" (50)	680 (3.02)	860 (3.82)	1030 (4.58)	1150 (5.11)	1000 (4.45)
4LA-2 ¹ / ₂	2 ¹ / ₂ " (65)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-3	3" (80)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-3 ¹ / ₂	3 ¹ / ₂ " (90)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-4	4" (100)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-5	5" (125)	-	-	-	-	1600 (7.11)
4LA-6	6" (150)	1620 (7.20)	2,260 (10.05)	2010 (8.94)	2220 (9.87)	1600 (7.11)
4LA-8	8" (200)	1620 (7.20)	1,660 (7.38)	1570 (6.98)	1740 (7.74)	2015 (8.96)
4LA-10	10" (250)	1620 (7.20)	1,660 (7.38)	1570 (6.98)	1740 (7.74)	2765 (12.30)
4LA-12	12" (300)	1620 (7.20)	1,660 (7.38)	1570 (6.98)	1740 (7.74)	-

Lateral Loads		Max. Horizontal Design Load (FM)				Max. Horizontal Design Load
Part No.	Pipe Size in. (mm)	30°-44° lbs. (kN)	45°-59° lbs. (kN)	60°-74° lbs. (kN)	75°-90° lbs. (kN)	
4LA-1	1" (25)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-1 ¹ / ₄	1 ¹ / ₄ " (32)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-1 ¹ / ₂	1 ¹ / ₂ " (40)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-2	2" (50)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-2 ¹ / ₂	2 ¹ / ₂ " (65)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-3	3" (80)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-3 ¹ / ₂	3 ¹ / ₂ " (90)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-4	4" (100)	680 (3.02)	970 (4.31)	1190 (5.29)	1320 (5.87)	1000 (4.45)
4LA-5	5" (125)	-	-	-	-	1600 (7.11)
4LA-6	6" (150)	1620 (7.20)	2,300 (10.23)	2820 (12.54)	3140 (13.96)	1600 (7.11)
4LA-8	8" (200)	1620 (7.20)	2,300 (10.23)	2820 (12.54)	3140 (13.96)	2015 (8.96)
4LA-10	10" (250)	1620 (7.20)	2,300 (10.23)	2820 (12.54)	3140 (13.96)	2765 (12.30)
4LA-12	12" (300)	1620 (7.20)	2,300 (10.23)	2820 (12.54)	3140 (13.96)	-

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic System Attachments

Fig. 4L - "In-Line" Sway Brace Attachment

Size Range: 2 1/2" (65mm) through 8" (200mm) ips.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.

Approvals: Underwriters Laboratories Listed in the USA (**UL**) and Canada (**cUL**) 2 1/2" (65mm) through 8" (200mm) pipe. Approved by Factory Mutual Engineering (**FM**), 2 1/2" (65mm) through 8" (200mm) pipe.

Installation Instructions: Fig. 4L is the "braced pipe" attachment component of a longitudinal or 4-way sway brace assembly. It is intended to be combined with the "bracing pipe" and our structural attachment component to form a complete bracing assembly.

NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

To Install: Place the Fig. 4L over the pipe to be braced and tighten bolts. Then engage "bracing pipe" into jaw opening and tighten set screw until head snaps off. Jaw attachment can pivot for adjustment to proper brace angle.

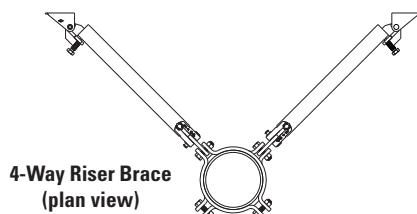
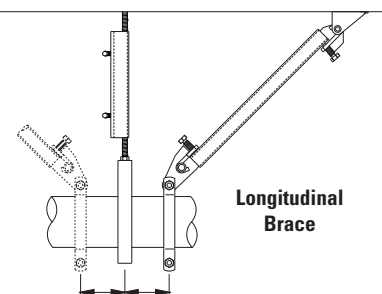
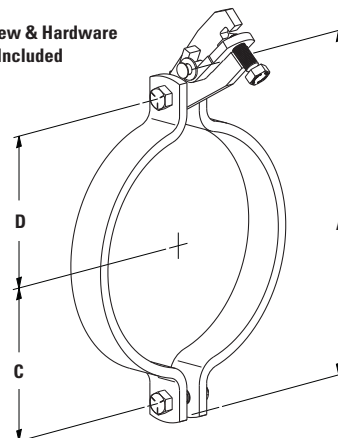
Finish: Plain or Electro-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Figure number, pipe size and finish.



Component of State of California OSHPD Approved Seismic Restraints System

Set Screw & Hardware Included



Part No.	Pipe Size in. (mm)	A in. (mm)	C in. (mm)	D in. (mm)	Bolt Size	Max. Horizontal Design Load (cULuc) lbs. (kN)	Approx. Wt./100 lbs. (kg)
4L-2 1/2	2 1/2" (65)	6 7/16" (163.5)	2 1/2" (63.5)	2 3/4" (69.8)	1/2"-13	2015 (8.96)	253 (114.7)
4L-3	3" (80)	7" (177.8)	2 3/4" (69.8)	3 1/16" (77.8)	1/2"-13	2015 (8.96)	268 (121.5)
4L-4	4" (100)	8 1/2" (215.9)	3 3/8" (85.7)	3 11/16" (93.7)	1/2"-13	2015 (8.96)	348 (157.8)
4L-5	5" (125)	9 3/4" (247.6)	3 7/8" (98.4)	4 3/8" (111.1)	1/2"-13	2015 (8.96)	380 (172.3)
4L-6	6" (150)	11 1/2" (292.1)	5" (127.0)	5 1/8" (130.2)	1/2"-13	2015 (8.96)	640 (290.3)
4L-8	8" (200)	13 1/4" (336.5)	5 5/8" (142.8)	5 5/8" (142.8)	1/2"-13	2015 (8.96)	728 (330.2)

Part No.	Pipe Size in. (mm)	Max. Horizontal Design Load (cULuc) lbs./ (kN)	Max. Horizontal Design Load (FM)			
			30-44° lbs./ (kN)	45-59° lbs./ (kN)	60°-74° lbs./ (kN)	75°-90° lbs./ (kN)
4L-2 1/2	2 1/2" (65)	2015 (8.96)	1030 (4.58)	1180 (5.24)	1420 (6.31)	1590 (7.07)
4L-3	3" (80)	2015 (8.96)	1030 (4.58)	1180 (5.24)	1420 (6.31)	1590 (7.07)
4L-4	4" (100)	2015 (8.96)	530 (2.36)	730 (3.25)	890 (3.96)	990 (4.40)
4L-5	5" (125)	2015 (8.96)	530 (2.36)	730 (3.25)	890 (3.96)	990 (4.40)
4L-6	6" (150)	2015 (8.96)	530 (2.36)	730 (3.25)	890 (3.96)	990 (4.40)
4L-8	8" (200)	2015 (8.96)	490 (2.18)	680 (3.02)	830 (3.69)	930 (4.13)

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

Fig. 907 - 4-Way Sway Brace Attachment

Size Range: 1" (25.4mm) x 1" (25.4mm), 1" (25.4mm) x 1¹/₄" (31.7mm) and 1¹/₄" (25.4mm) x 1¹/₄" (25.4mm) bracing pipe.

Material: Steel, hardened cone (or cup) point set screw

Function: For bracing pipe against sway and seismic disturbances, Functions as a longitudinal brace connection when attached to a lateral brace pipe. Bracing connection must be positioned as close as physically possible to the braced pipe (No more than 3" (76.2mm) away). Must be used only with B-Line/TOLCO bracing components. When used in conjunction with Fig. 1000, this combination bracing restricts piping movement in tension and compression both laterally and longitudinally.

Approvals: Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines.

Installation Instructions: Fig. 907 is a transitional component of a longitudinal 4-way sway brace assembly. It is intended to be installed with the longitudinal and lateral "bracing pipes", our structural attachment fittings, Fig. 909, 910 and 980 and the Fig. 1000 our "braced pipe" fitting, to form a complete bracing assembly. NFPA 13 and/or OSHPD guidelines should be followed.

To Install: Attach the Fig. 907 over the lateral "bracing pipe" to within 3" (76.2mm) of its position relative to the "braced pipe" connection. Adjust brace angle and tighten set screws until the heads bottom out on surface.

Finish: Plain. Contact B-Line for alternative finishes and materials.

Order By: Figure number, bracing pipe sizes and finish.



Component of State of California OSHPD Approved Seismic Restraints System

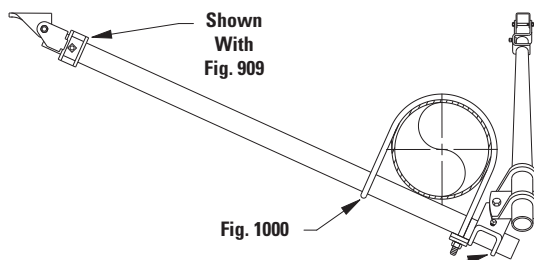
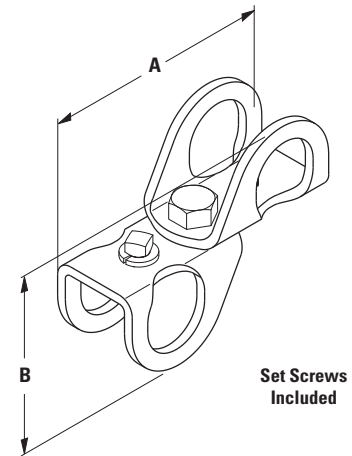
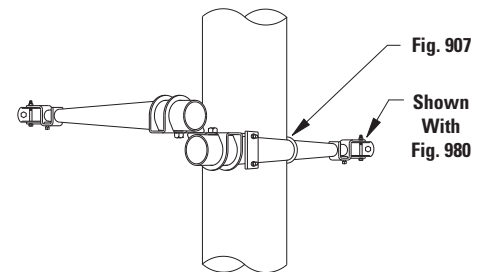


Fig. 907 Can Be Attached On Either Side Of The Pipe Being Braced



4-Way Riser Brace

Part Number	Brace Pipe Size		A		B		Max. Design Load	Approx. Wt./100
	in.	(mm)	in.	(mm)	in.	(mm)	lbs. (kN)	lbs. (kg)
907-1 X 1	1" x 1"	(25 x 25)	4 ³ / ₄ "	(120.6)	4 ³ / ₄ "	(120.6)	655* (2.91)	103 (46.7)
907-1 X 1 ¹ / ₄	1" x 1 ¹ / ₄ "	(25 x 32)	5 ³ / ₁₆ "	(128.6)	4 ¹³ / ₁₆ "	(122.2)	655* (2.91)	107 (48.5)
907-1 ¹ / ₄ X 1 ¹ / ₄	1 ¹ / ₄ " x 1 ¹ / ₄ "	(32 x 32)	5 ³ / ₈ "	(136.5)	5 ¹ / ₄ "	(133.1)	655* (2.91)	109 (49.4)

* Load will accommodate up to 4" (100mm) pipe at maximum spacing.

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic System Attachments



Component of State of California OSHPD Approved Seismic Restraints System

Fig. 981 - Fast Attach – Universal Swivel Sway Brace Attachment

Size Range: Fits bracing pipe 1" (25mm) thru 2" (50mm), 12 gauge (2.6mm) channel and all structural steel up to 1/4" (6.3mm) thick.

Fig. 981-S fits rod sizes 3/8" thru 5/8".

Fig. 981-L fits rod sizes 3/4" thru 7/8".

Material: Steel

Function: Multi-functional attachment to hanger rod, trapeze rod, structure or braced pipe fitting.

Features: Fits multiple sizes of bracing pipe, strut or structural steel. Swivel allows adjustment to various surface angles. Breakaway bolt heads assure verification of proper installation torque. Unique "fast attach" yoke design fits multiple rod sizes; 3/8" thru 5/8" and 3/4" thru 7/8". "Stackable" design allows installation of both lateral and longitudinal braces to be easily installed on a single hanger rod, with no disassembly.

Installation: Fig. 981 is the "braced pipe" attachment component of a lateral or longitudinal brace assembly. It is intended to be combined with the pipe hanger, all-thread rod, "bracing pipe" and our transitional and structural attachment component(s) to form a complete bracing assembly. NFPA 13 and/or OSHPD guidelines should be followed.

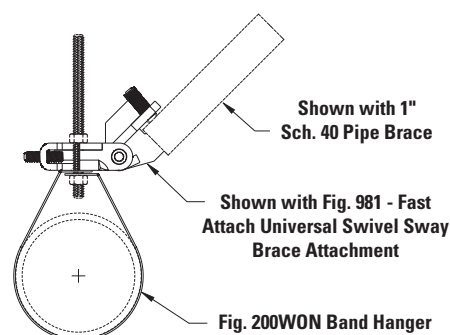
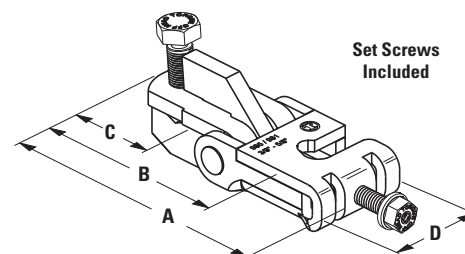
To Install: Spin nut on top of hanger counterclockwise to loosen the nut and raise it above the top of the hanger. Attach Fig. 981 by slipping the open side of the 981 yoke onto the all thread rod above the top of the hanger. Tighten 3/8" cone point set screw on yoke until head breaks-off to ensure proper installation torque. Spin the hex nut clockwise and tighten securely. Insert brace pipe into the jaw of the 981 and tighten the cone point set screw until the head breaks off ensuring proper installation torque. Pivot brace pipe to proper angle and attach to structure using our swivel structural attachment.

Approvals: Included in our Seismic Restraint Systems Guidelines, approved by the California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines.

Finish: Electro-Galvanized

Order By: Figure number, rod size

Pat. # 6,273,372, Pat. # 7,097,141, Pat. # 7,654,043, Pat. # 7,654,043 B2



Part Number	Rod Size Range	A		B		C		D		Max. Horizontal Design Load lbs. (kN)	Approx. Wt./100 lbs. (kg)
		in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)		
981-S	3/8" thru 5/8"	5 1/8"	(130.2)	4 1/8"	(104.8)	1 1/4"	(31.7)	2 1/4"	(57.1)	2015 (8.96)	88 (39.9)
981-L	3/4" & 7/8"	5 1/8"	(130.2)	4 1/8"	(104.8)	1 1/4"	(31.7)	2 1/4"	(57.1)	2015 (8.96)	82 (37.2)

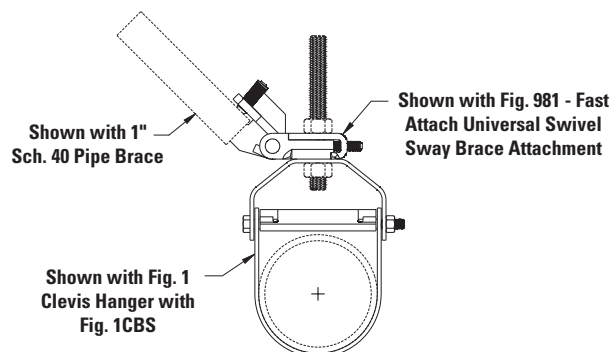
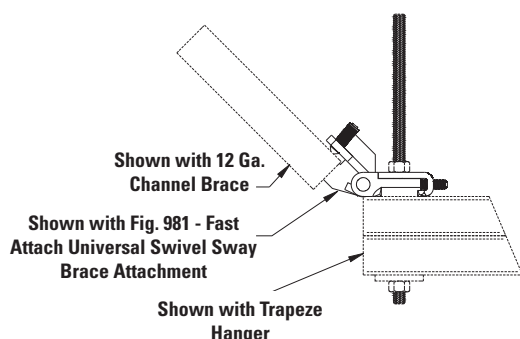


Fig. 985 - Mechanical Fast Clamp

Size Range: Fig. 985-S fits rod sizes $\frac{3}{8}$ " thru $\frac{5}{8}$ "
 Fig. 985-L fits rod sizes $\frac{3}{4}$ " thru $\frac{7}{8}$ " rod sizes

Material: Steel

Function: Used for attachment of seismic bracing to pipe hanger or trapeze

Features:

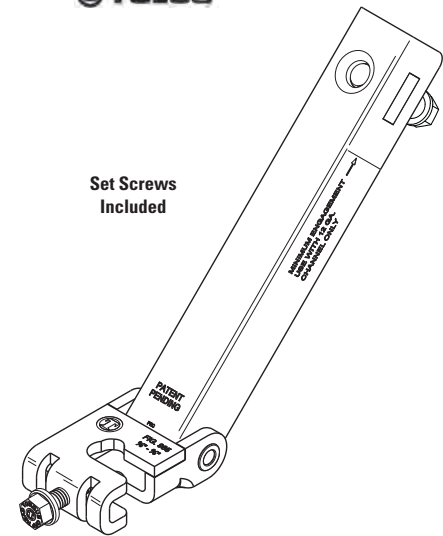
- Allows up to 12" (304.8mm) of adjustability in brace length, when used with Fig. 986
- Break-off set screw heads visually verify required installation torque
- Unique "Fast Attach" yoke design allows Fig. 985 to be installed to hanger rods $\frac{3}{8}$ " thru $\frac{5}{8}$ " or $\frac{3}{4}$ " thru $\frac{7}{8}$ "

Finish: Electro-galvanized

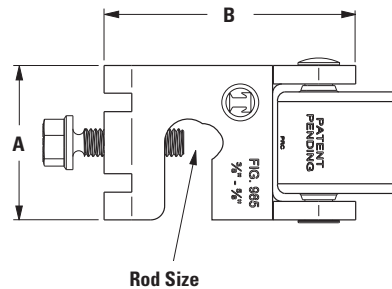
Order By: Figure number, rod size & finish

Patent Pending

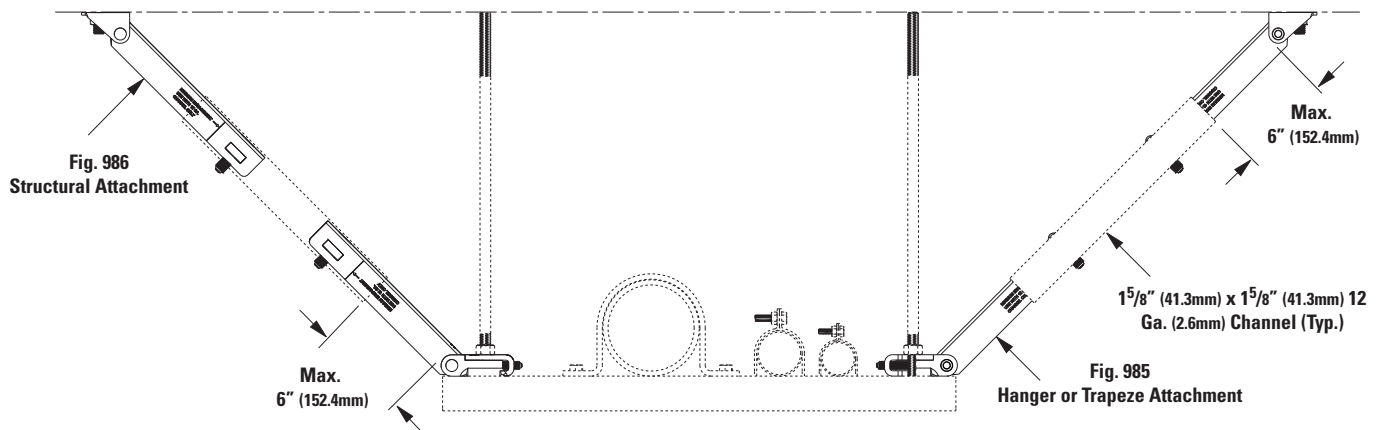
TOLCO



Set Screws
Included



Part Number	Rod Size	A		B		Max. Horizontal Design Load lbs. (kN)	Approx. Wt./100 lbs. (kg)
		in.	(mm)	in.	(mm)		
985-S	$\frac{3}{8}$ " thru $\frac{5}{8}$ "	2"	(50.8)	1 $\frac{1}{2}$ "	(38.1)	2015 (8.96)	204 (92.5)
985-L	$\frac{3}{4}$ " & $\frac{7}{8}$ "	2"	(50.8)	1 $\frac{5}{8}$ "	(41.3)	2015 (8.96)	198 (89.8)



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic System Attachments

Fig. 991 - Fast Attach – Cable Sway Brace Attachment

Size Range: 1/8", 3/16" and 1/4" pre-stretched cable.
Fig. 991S fits rod sizes 3/8" thru 5/8".
Fig. 991L fits rod sizes 3/4" thru 7/8".

Material: Steel

Function: Cable attachment for sway bracing. Attaches sway brace to hanger rod. To be used with 7 x 19 strand core pre-stretched galvanized aircraft cable.

Features: Cable easily slides into oversized front arch opening. Swivel allows adjustment to various surface angles. Break-away hex nuts assure verification of proper installation torque. Unique "Fast-Attach" yoke design fits multiple rod sizes; 3/8" thru 5/8" or 3/4" thru 7/8". To verify proper installation to hanger rod, simply install yoke to hanger rod and tighten 3/8" cone point set screw until head breaks off. "Stackable" design allows installation of both lateral and longitudinal braces, as well as opposing braces, to be easily installed on a single hanger rod, with no disassembly. The retrofit yoke has a visual verification of proper installation torque. Tighten existing hex nut down until the slight gap in the yoke assembly closes completely.

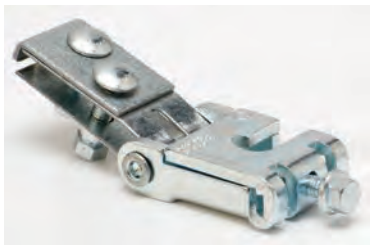
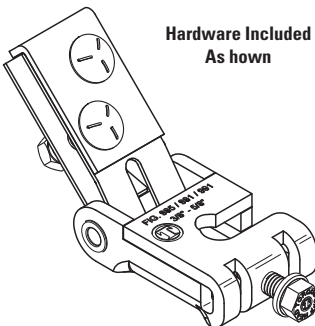
Approvals: Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint System Guidelines.

Finish: Electro-Galvanized

Order By: — Figure number, rod size range 3/8" thru 5/8" or 3/4" thru 7/8"

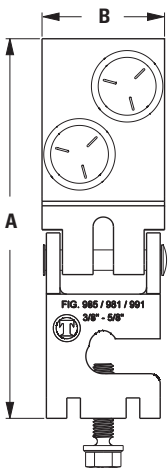
Pat. # 7,097,141, Pat. # 7,654,043, Pat. # 7,654,043 B2

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California OSHPD Approved
Seismic Restraints System

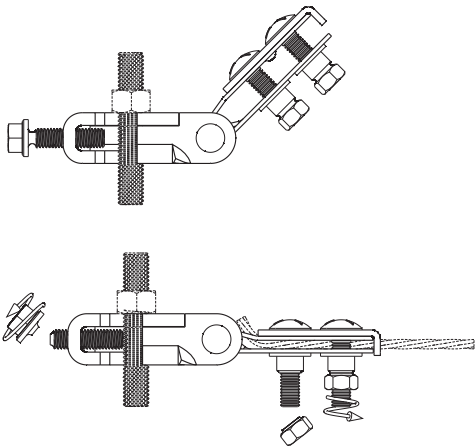
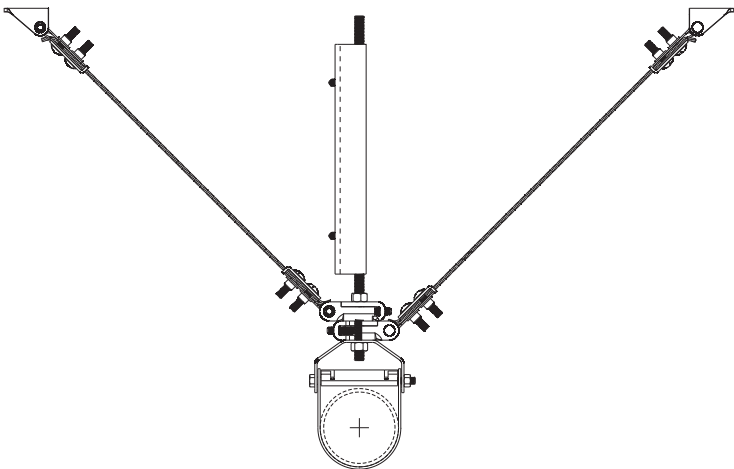


Part Number	Rod Sizes	Cable Diameter in. (mm)	A in. (mm)	B in. (mm)	Max. Horizontal Design Load* lbs. (kN)	Approx. Wt./100 lbs. (kg)
991-S-1/8	3/8"	1/8" (3.2)	4 5/16" (14.3)	2" (50.8)	975 (4.33)	128.3 (58.2)
991-S-3/16	thru	3/16" (4.8)	5" (127.0)	2 1/4" (57.1)	2050 (9.12)	182.1 (82.6)
991-S-1/4	5/8"	1/4" (6.3)	5" (127.0)	2 5/8" (66.7)	3150 (14.01)	221.1 (100.3)

Part Number	Rod Sizes	Cable Diameter in. (mm)	A in. (mm)	B in. (mm)	Max. Horizontal Design Load* lbs. (kN)	Approx. Wt./100 lbs. (kg)
991-L-1/8	3/4"	1/8" (3.2)	4 5/16" (14.3)	2" (50.8)	975 (4.33)	122.3 (55.5)
991-L-3/16	&	3/16" (4.8)	5" (127.0)	2 1/4" (57.1)	2050 (9.12)	176.1 (79.9)
991-L-1/4	7/8"	1/4" (6.3)	5" (127.0)	2 5/8" (66.7)	3150 (14.01)	215.1 (97.5)



* Maximum load rating controlled by cable breaking strength.



Seismic System Attachments

Fig. 1000 - "Fast Clamp" Sway Brace Attachment

Size Range: Pipe size to be braced: 1" (25mm) thru 6" (150mm) Schedule 10 thru 40 IPS.

Pipe size used for bracing: 1" (25mm) and 1 1/4" (32mm) Schedule 40 IPS.

Material: Steel

Function: A restraint device intended for lateral bracing.

Features: Field adjustable, making critical pre-engineering of bracing pipe unnecessary. Unique design requires no threading of bracing pipe. Can be used as a component of a 4-way riser brace. Can be used as longitudinal brace with Fig. 907. Steel leaf spring insert provided to assure installer and inspector necessary minimum torque has been achieved.

Installation: Fig. 1000 is the "braced pipe" attachment component of a lateral sway brace assembly. It is intended to be combined with the "bracing pipe" and our structural attachment component, Fig. 980, 910 or 909 to form a complete bracing assembly. NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

To Install: Place the Fig. 1000 over the pipe to be braced, insert bracing pipe through opening leaving a minimum of 1" extension. Brace pipe can be installed on top or bottom of pipe to be braced. Tighten hex nuts until leaf spring is flat. It is recommended that the brace angle be adjusted before hex nuts are fully tightened.

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). Approved for use with Allied Dyna Flow sprinkler pipe up to 2" as a restraint device. Maximum horizontal design load is 655 lbs. (2.91kN) Torque requirement is 6-8 ft./lbs. (8-10Nm). Approved by Factory Mutual Engineering (FM). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines.

Application Note: Position Fast Clamp and tighten two hex nuts until leaf spring flattens. A minimum of 1" pipe extension beyond the Fig. 1000 is recommended.

Finish: Plain. Contact B-Line for alternative finishes and materials.

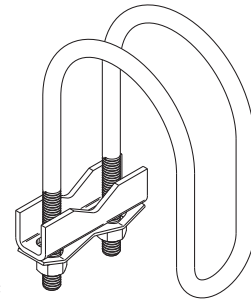
Order By: Order first by pipe size to be braced, followed by pipe size used for bracing, figure number and finish.

Component of State of
California OSHPD Approved
Seismic Restraints System

TOLCO

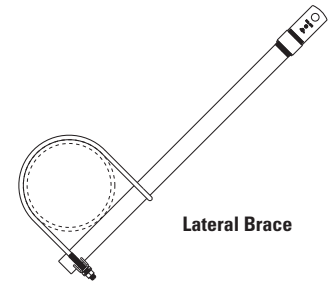


Hardware
Included



Max. Horizontal Design Load (UL)

1" (25mm) thru 2" (50mm) pipe size
655 lbs. (2.91kN)



Lateral Brace

Pipe Size in. (mm)	Part Number & Approx. Wt./100				Max. Horizontal Design Load (FM) ^{1,2}							
	1" (24mm) Brace Pipe		1 1/4" (32mm) Brace Pipe		30°-44°	45°-59°	60°-74°	75°-90°				
		Lbs. (kg)		Lbs. (kg)	Lbs. (kN)	Lbs. (kN)	Lbs. (kN)	Lbs. (kN)				
1" (25)	1000-1 X 1	71.6 (32.5)	1000-1 X 1 1/4	75.8 (34.4)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)				
1 1/4" (32)	1000-1 1/4 X 1	74.8 (33.9)	1000-1 1/4 X 1 1/4	79.1 (35.9)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)				
1 1/2" (40)	1000-1 1/2 X 1	77.8 (35.3)	1000-1 1/2 X 1 1/4	82.1 (37.2)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)				
2" (50)	1000-2 X 1	84.1 (38.1)	1000-2 X 1 1/4	88.4 (40.1)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)				
2 1/2" (65)	1000-2 1/2 X 1	90.2 (40.9)	1000-2 1/2 X 1 1/4	94.6 (42.9)	200 (0.89)	280 (1.24)	340 (1.51)	380 (1.69)				
3" (80)	1000-3 X 1	97.3 (44.1)	1000-3 X 1 1/4	101.7 (46.1)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)				
3 1/2" (90)	1000-3 1/2 X 1	104.0 (47.2)	1000-3 1/2 X 1 1/4	108.4 (49.2)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)				
4" (100)	1000-4 X 1	110.3 (50.0)	1000-4 X 1 1/4	114.6 (52.0)	230 (1.02)	320 (1.42)	400 (1.78)	450 (2.00)				
5" (125)	1000-5 X 1	123.1 (55.8)	1000-5 X 1 1/4	127.4 (57.8)	--	--	--	--				
6" (150)	1000-6 X 1	136.5 (61.9)	1000-6 X 1 1/4	140.8 (63.8)	--	--	--	--				

¹ Load rating for LW above refers to FM Approved Lightwall Pipe commonly referred to as "Schedule 7." These ratings may also be applied with EN 10220 and GB/T 8163 steel pipe.

² Load rating for Schedule 10 above may be applied to GB/T 3092, EN 10255M and H, or JIS G3454, FM Approved Thinwall, or Schedule 40 steel pipes.

Note: See UL load ratings in UL Listed Design Load chart shown under drawing.

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Seismic System Attachments

Fig. 1001 - Sway Brace Attachment

Size Range: Pipe size to be braced: 1" (25mm) thru 8" (200mm) IPS.
* Pipe size used for bracing: 1" (25mm) and 1 1/4" (32mm) Schedule 40 IPS.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance.
The pipe attachment component of a sway brace system:
Fig. 1001 is used in conjunction with a Fig. 900 Series fitting and joined together with bracing pipe per NFPA 13, forming a complete sway brace assembly.

Features: Can be used to brace schedules 7 through 40 IPS. Field adjustable, making critical pre-engineering of bracing pipe length unnecessary. Unique design requires no threading of bracing pipe. Can be used as a component of a four-way riser brace. Comes assembled and ready for installation. Fig. 1001 has built-in visual verification of correct installation. See installation note below.

Installation Note: Position Fig. 1001 over the pipe to be braced and tighten two hex head cone point set screws until heads bottom out. A minimum of 1" (25mm) pipe extension is recommended. Brace pipe can be installed on top or bottom of pipe to be braced.
NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). Approved by Factory Mutual Engineering (FM). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines, OPA-0300-10.

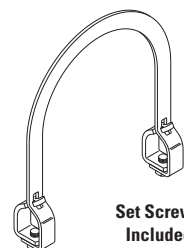
Finish: Plain or Electro-Galvanized. Contact B-Line for alternative finishes and materials.

Order By: Indicate pipe size to be braced followed by pipe size used for bracing, figure number and finish.

Important Note: Fig. 1001 is precision manufactured to perform its function as a critical component of a complete bracing assembly. To ensure performance, the UL Listing requires that Fig. 1001 must be used only with other TOLCO bracing products.

Component of State of California OSHPD Approved Seismic Restraints System

TOLCO



Pipe Size in. (mm)	Max. Horizontal Design Load (UL) - Lbs. For Brace Pipe Size 1" / 1 1/4"		
	Sch. 7 1" / 1 1/4"	Sch. 10 1" / 1 1/4"	Sch. 40 1" / 1 1/4"
1" (25)	-- / --	1000 / 1000	1000 / 1000
1 1/4" (32)	1000 / 1000	1000 / 1000	1000 / 1000
1 1/2" (40)	1000 / 1000	1500 / 1500	1500 / 1500
2" (50)	1000 / 1000	2015 / 2015	2015 / 2015
2 1/2" (65)	1600 / 1600	2015 / 2765	2015 / 2765
3" (80)	1600 / 1600	2015 / 2765	2015 / 2765
4" (100)	1600 / 1600	2015 / 2765	2015 / 2765
6" (150)	1600 / 1600	2015 / 2765	2015 / 2765
8" (200)	1600 / 1600	2015 / 2765	2015 / 2765

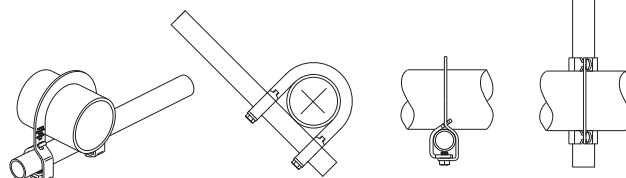
Pipe Size in. (mm)	Part Number & Approx. Wt./100				Max. Horizontal Design Load (FM) For Sch. 7, Sch. 10, & Sch. 40 Pipe ^{1,2,3}			
	1" (24mm) Brace Pipe		1 1/4" (32mm) Brace Pipe		30°-44°	45°-59°	60°-74°	75°-90°
	Lbs.	(kg)	Lbs.	(kg)	Lbs. (kN)	Lbs. (kN)	Lbs. (kN)	Lbs. (kN)
1" (25)	1001-1 X 1	100.0 (45.3)	1001-1 X 1 1/4	118.0 (53.5)	1800 (8.00)	2550 (11.34)	3120 (13.88)	3490 (25.52)
1 1/4" (32)	1001-1 1/4 X 1	100.0 (45.3)	1001-1 1/4 X 1 1/4	114.0 (51.7)	1230 (5.47)	1740 (7.74)	2140 (9.52)	2380 (10.58)
1 1/2" (40)	1001-1 1/2 X 1	100.0 (45.3)	1001-1 1/2 X 1 1/4	115.0 (52.1)	1230 (5.47)	1740 (7.74)	2140 (9.52)	2380 (10.58)
2" (50)	1001-2 X 1	108.0 (49.0)	1001-2 X 1 1/4	121.0 (54.9)	1230 (5.47)	1740 (7.74)	2140 (9.52)	2380 (10.58)
2 1/2" (65)	1001-2 1/2 X 1	138.6 (62.8)	1001-2 1/2 X 1 1/4	160.4 (72.7)	800 (3.56)	1130 (5.02)	1380 (6.14)	1540 (6.85)
3" (80)	1001-3 X 1	147.2 (66.7)	1001-3 X 1 1/4	168.7 (76.5)	850 (3.78)	1200 (5.34)	1470 (6.54)	1640 (7.29)
4" (100)	1001-4 X 1	160.9 (73.0)	1001-4 X 1 1/4	182.4 (82.7)	850 (3.78)	1200 (5.34)	1470 (6.54)	1640 (7.29)
6" (150)	1001-6 X 1	190.0 (86.2)	1001-6 X 1 1/4	211.4 (95.9)	510 (2.27)	730 (3.25)	890 (3.96)	990 (4.40)
8" (200)	1001-8 X 1	217.4 (98.6)	1001-8 X 1 1/4	238.8 (108.3)	510 (2.27)	730 (3.25)	890 (3.96)	990 (4.40)

¹ FM Approved when used with 1 or 1 1/4 inch NPS Schedule 40 GB/T 3091, EN 10255H, or JIS G3451 steel pipe as the brace member.

² Load rating for LW above refers to FM Approved Lightwall Pipe commonly referred to as "Schedule 7". These ratings may also be applied with EN 10220 and GB/T 8163 steel pipe.

³ Load rating for Schedule 10 above may be applied to GB/T 3092, EN 10255M and H, or JIS G3454, FM Approved Thinwall, or Schedule 40 steel pipes.

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-Line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

Revised 5/9/2014

Fig. 2002 - Sway Brace Attachment

Size Range: Pipe size to be braced: 2½" (65mm) thru 8" (200mm) all steel schedules, copper, plastic, FRP, cast iron and ductile iron. Consult factory when bracing other than steel. The Fig. 2002 accepts brace pipes sizes 1½" (40mm) and 2" (50mm) steel schedule 100 through schedule 40.

Material: Steel

Function: For bracing pipe against sway and seismic disturbance. The pipe attachment component of a sway brace system: Fig. 2002 is used in conjunction with a TOLCO 900 Series sway brace attachments and joined together with bracing pipe. Install per NFPA 13 and/or our State of California OSHPD Approved Seismic Restrain Manual.

Features: Unique design will not damage thin wall, plastic, copper or ductile iron pipe. Easy verification of proper installation by tightening bolts until ears touch.

Installation: Place Fig. 2002 over pipe to be braced. Slide bracing pipe through attachment and tighten hex nuts until ears touch. NFPA 13, FM DS 2-8, and/or OSHPD guidelines should be followed.

Approvals: Underwriters Laboratories Listed in the USA (UL) and Canada (cUL). Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (OSHPD). For additional load, spacing and placement information relating to OSHPD projects, please refer to our Seismic Restraint Systems Guidelines.

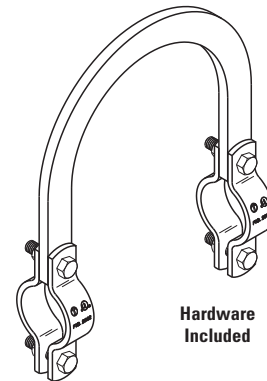
Finish: Plain. Contact B-Line for alternative finishes and materials.

Order By: Figure number, pipe size to be braced, pipe size used for bracing (1½" (40mm) or 2" (50mm)) and finish.

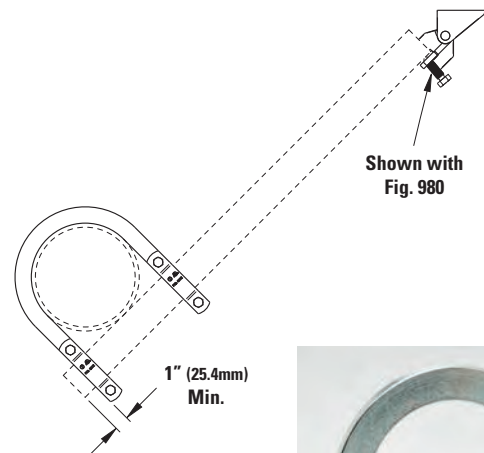
Important Note: Fig. 2002 is precision manufactured to perform its function as a critical component of a complete bracing assembly. To ensure performance, the UL Listing requires that the Fig. 2002 must be used only with our other bracing products.

Component of State of California OSHPD Approved Seismic Restraints System

TOLCO



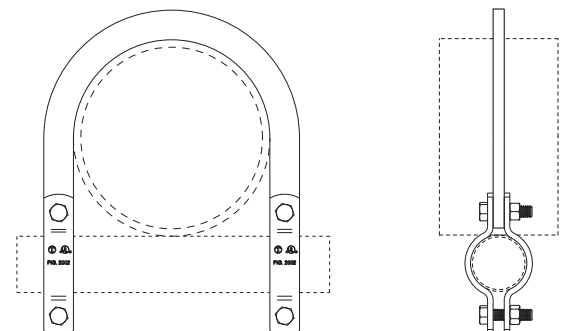
Hardware Included



Pipe Size in. (mm)	Part Number & Approx. Wt./100				Max. Horizontal Design Load (UL) Lbs. (kg)	
	1½" (32mm) Brace Pipe		2" (50mm) Brace Pipe			
		Lbs. (kg)		Lbs. (kg)		
2½" (65)	2002-2½ X 1½	224.9 (102.0)		2002-2½ X 2	283.3 (128.6)	2015 (8.96)
3" (80)	2002-3 X 1½	241.0 (109.3)		2002-3 X 2	299.4 (135.8)	2015 (8.96)
4" (100)	2002-4 X 1½	268.4 (121.7)		2002-4 X 2	326.8 (148.2)	2015 (8.96)
6" (150)	2002-6 X 1½	326.6 (148.1)		2002-6 X 2	385.0 (174.6)	2015 (8.96)
8" (200)	2002-8 X 1½	381.3 (172.9)		2002-8 X 2	439.7 (199.4)	2015 (8.96)

Seismic System Attachments

Eaton's B-Line Business seismic bracing components are designed to be compatible only with other B-Line bracing components, resulting in a listed seismic bracing assembly. B-Line's warranty for seismic bracing components will be the warranty provided in B-Line's standard terms and conditions of sale made available by B-Line, except that, in addition to the other exclusions from B-Line's warranty, Eaton's B-line Business makes no warranty relating to B-Line's seismic bracing components that are combined with products not provided by Eaton's B-Line Business.



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Seismic System Attachments

Fig. BRC CABLE - Pre-Stretched 7 x 19 Galvanized Aircraft Cable

Size Range: Available in cable diameters of 1/8", 3/16", and 1/4"

Cables spooled in 300 foot (91.4m) lengths.

Material: Steel

Function: Used for attachment of seismic bracing to structure or hanger.

Features: Meets requirements of IBC 2009 and ASCE 7-05 for seismic bracing.

Finish: Galvanized

Order By: Figure number and size

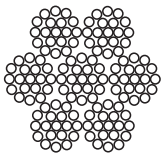
Note: Only pre-stretched aircraft cable should be used in seismic bracing installations where cable is used as the bracing component. Use of other types of cable will, over time, begin to sag and deform, thus rendering the bracing system to not perform properly.



Component of State of California OSHPD Approved Seismic Restraints System

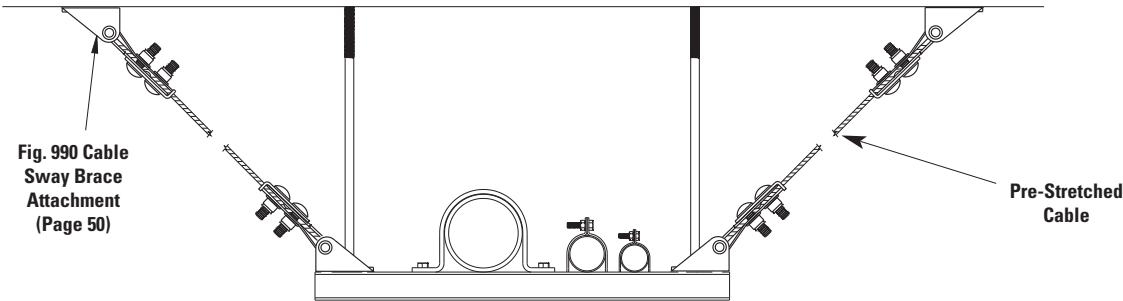
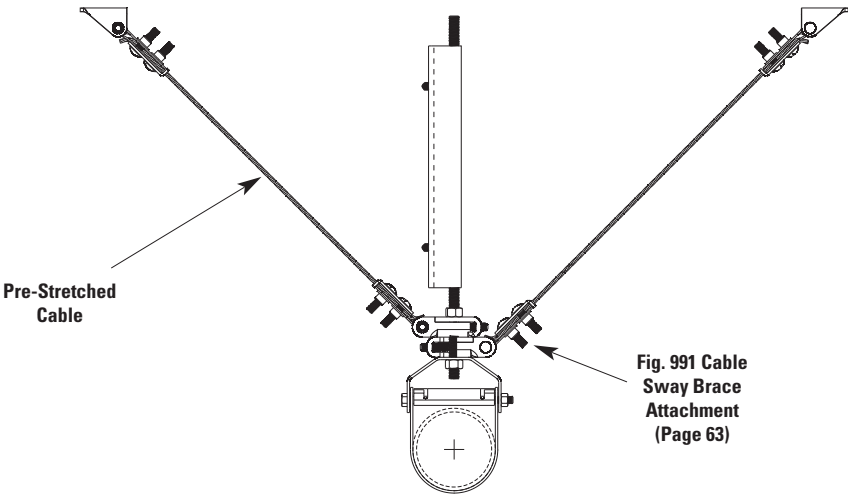


Part Number	Cable Diameter in. (mm)	Max. Rec. Load* lbs. (kN)	Approx. Wt./100 Ft. lbs. (kg)
BRC CABLE-1/8	1/8" (3.2)	975 (4.33)	2.9 (1.31)
BRC CABLE-3/16	3/16" (4.8)	2050 (9.12)	6.5 (2.95)
BRC CABLE-1/4	1/4" (6.3)	3150 (14.01)	11.0 (4.99)



7 x 19

* Cable breaking strength



Seismic System Attachments

B22, B22A & B24 - Solid Strut Bracing Materials

Component of State of
California OSHPD Approved
Seismic Restraints System

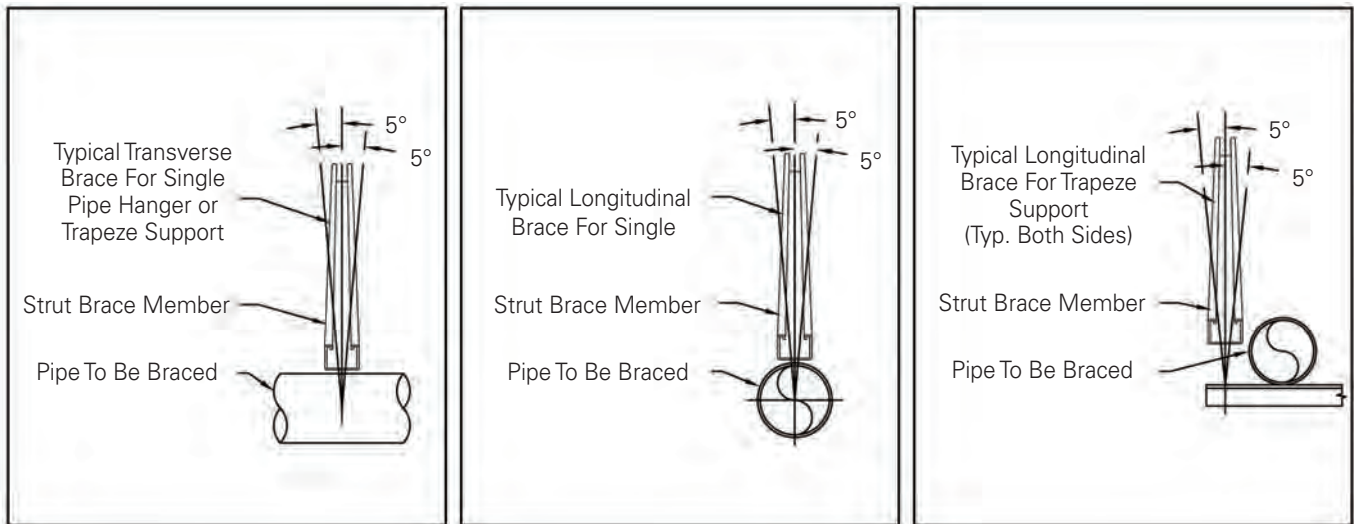
Size Range: Available in 10 ft (3.05m) and 20 ft. (6.1m) lengths

Material: Steel, Stainless 304 & 316, and Aluminum

Function: Designed to be used as the bracing member for a rigid bracing system.

Finish: Plain, Dura-Green™, Pre-Galvanized, and Hot-Dipped Galvanized Steel.

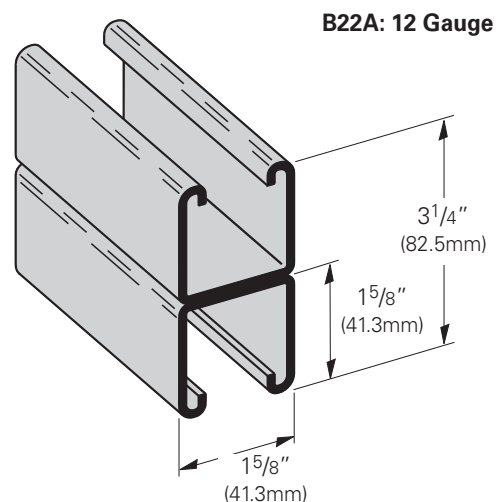
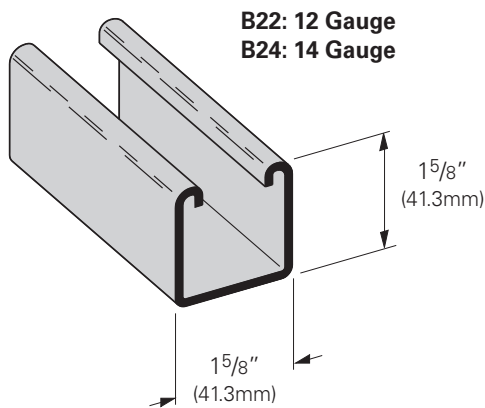
Order By: Figure number and finish.



Strut Type Part No.	Maximum Length		Allowable Horizontal Seismic Load w/Brace at 45°	
	in.	(m)	lbs.	(kN)
B22	9'-6"	(2.89)	2043	(9.08)
B22A	10'-10"	(3.30)	3000	(13.3)
B24	8'-0"	(2.44)	1078	(4.79)

Notes:

- 1.) Maximum allowable lengths and concentric loads when $L/R = 200$
- 2.) When using strut as a brace material, it must be solid strut. Slotted or punched are not acceptable.
- 3.) For more details on B-Line strut, please refer to the B-Line Strut Systems catalog.



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