

Channel Nuts & Hardware

Channel Nuts

Channel nuts are one of the main components of our metal framing system. It is designed to provide essential gripping power and ease during installation. Channel nuts are press formed, machined and hardened from steel which meets the requirements of ASTM A108 or ASTM A36 for our larger sizes.

Bolts, Screws, and Nuts

All bolts, screws and nuts meet the physical and chemical requirements of ASTM A307, SAE J429 or ASTM A563, and have unified inch screw threads (coarse, UNC). ISO metric threads are also available on special request.

Recommended Torque

Bolt Size	1/4"-20	5/16"-18	3/8"-16	1/2"-13
Foot/Lbs.	6	11	19	50
Nm	8	15	26	68

Bolt Size	M6x1	M8 x1.25	M10 x 1.5	M12x1.75
Nm	12	17	36	62
Foot/Lbs.	9	13	27	46

Materials & Finishes*

Finish Code	Finish	Specification
PLN	Plain	ASTM A108/A307 Gr. A, ASTM A563, SAE J429
ZN	Electro-Plated Zinc	ASTM B633 SC1 Type III
CZ	Chromium Zinc	ASTM F1136 Gr. 3
HDG	Hot-Dipped Galvanized	ASTM A153
SS6	Stainless Steel Type 316	MPIF 35/ASTM F593
AL	Aluminum	ASTM F468 S4

*Unless otherwise noted.

Note: Channel nuts are not available in HDG, Aluminum, or Stainless Steel Type 304

Metric

Metric dimensions are shown in parentheses. Unless noted, all metric dimensions are in millimeters.



Fiberglass

We offer two fire retardant (FR) resins for strut systems, polyester and vinyl ester. Both resins are ideal for corrosive environments.

While polyester is sufficient for most uses, vinyl ester is suitable for a broader range of environments.

Please refer to the "Corrosion Resistance Guide" for specific applications, page 183.

Materials & Finishes

Our Fiberglass Strut systems are manufactured from glass fiber-reinforced plastic shapes that meet ASTM E-84, Class 1 Flame Rating and self-extinguishing requirements of ASTM D-635. A surface veil is applied during pultrusion to insure a resin-rich surface and ultraviolet resistance.

Fittings

The following dimensions apply to all fittings except as noted on the drawings:

Hole Size— $1\frac{3}{32}$ " (10.3 mm) Dia.

Hole Spacing— $1\frac{3}{16}$ " (20.6 mm) from end and $1\frac{7}{8}$ " (47.6 mm) on center.

Width— $1\frac{5}{8}$ " (41.3 mm)

Thickness— $\frac{1}{4}$ " (6.3 mm)

Metric

Metric dimensions are shown in parentheses. Unless noted, all metric dimensions are in millimeters.



CHANNEL RESIN INFORMATION

We offer two fire retardant (FR) resins for strut systems, polyester and vinyl ester. Both resins are ideal for corrosive environments. While polyester is sufficient for most uses, vinyl ester is suitable for a broader range of environments.

Please refer to the "Corrosion Resistance Guide" below for specific applications.

Corrosion Resistance Guide					
Chemicals	70°F (21°C)	160°F (71°C)	Chemicals	70°F (21°C)	160°F (71°C)
Acetic acid 5%	BFP/BFV	BFP/BFV	Methyl alcohol 10%	BFP/BFV	BFV-150° **
Acetic acid 52%	BFP/BFV	BFV-210° **	Naphtha	BFP/BFV	BFP/BFV
Aluminum potassium sulfate 5%	BFP/BFV	BFP/BFV	Nitric acid 5%	BFP/BFV	BFP/BFV
Ammonium hydroxide 10%	BFP/BFV	BFV-150° **	Nitric acid 20%	BFV	BFV-120° **
Ammonium nitrate	BFP/BFV	BFP/BFV	Phosphoric acid 10%	BFP/BFV	BFP/BFV
Benzene sulfonic acid 5%	BFP/BFV	BFP/BFV	Phosphoric acid 30%	BFP/BFV	BFP/BFV
Calcium chloride	BFP/BFV	BFP/BFV	Phosphoric acid 85%	BFP/BFV	BFP/BFV
Carbon tetrachloride	BFV	BFV-100° **	Sodium bicarbonate 10%	BFP/BFV	BFP/BFV
Chlorine dioxide 15%	BFP/BFV	BFV-150° **	Sodium bisulfate	BFP/BFV	BFP/BFV
Chromic acid 5%	BFV	BFV-150° **	Sodium carbonate	BFP/BFV	BFV
Copper sulfate	BFP/BFV	BFP/BFV	Sodium chloride	BFP/BFV	BFP/BFV
Diesel fuel	BFP/BFV	BFV	Sodium hydroxide 1-50%	BFV	BFV-120° **
Ethylene glycol	BFP/BFV	BFP/BFV	Sodium hypochlorite 5%	BFP/BFV	BFV-120° **
Fatty acids 100%	BFP/BFV	BFP/BFV	Sodium nitrate	BFP/BFV	BFP/BFV
Ferrous sulfate	BFP/BFV	BFP/BFV	Sodium silicate	BFP/BFV	BFV-210° **
Fluosilicic acid 0-20%	BFV	BFV	Sodium sulfate	BFP/BFV	BFP/BFV
Gasoline	BFP/BFV	BFV	Sulfuric acid 0-30%	BFP/BFV	BFP/BFV
Hydrochloric acid 1%	BFP/BFV	BFP/BFV	Sulfuric acid 30-50%	BFV	BFV
Hydrochloric acid 15%	BFP/BFV	BFV-180° **	Sulfuric acid 50-70%	BFV	BFV-180° **
Hydrochloric acid 37%	BFP/BFV	BFV-150° **	Trisodium phosphate 25%	BFP/BFV	BFV-210° **
Kerosene	BFP/BFV	BFP/BFV	Trisodium phosphate-All	BFV	BFV-210° **
Magnesium chloride	BFP/BFV	BFP/BFV	Water, Distilled	BFP/BFV	BFP/BFV

BFP - BFP parts recommended BFV - BFV parts recommended ** - Not recommended to exceed this temperature

Information contained in this chart is based on data from raw material suppliers.

Temperatures are not the minimum nor the maximum (except where specifically stated) but represent standard test conditions. The products may be suitable at higher temperatures but individual test data should be required to establish suitability.

The recommendations or suggestions contained in this chart are made without guarantee or representation as to results. We suggest that you evaluate the recommendations and suggestions in your own laboratory or actual field trial prior to use.

Fiberglass Materials

Recommended Guideline:

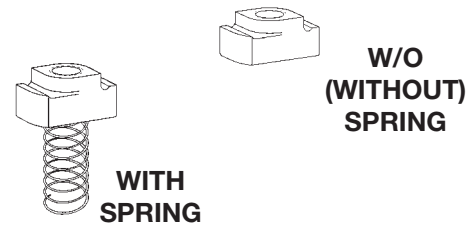
Temperature	Design Load Multiplier
75°F (24°C)	100%
100°F (38°C)	90%
125°F (52°C)	78%
150°F (66°C)	68%
175°F (79°C)	60%
200°F (93°C)	52%

Flame Retardant Properties	BFP	BFV
Flame Resistance (FTMS 406-2023) ign/burn, seconds	75/75	75/75
Intermittent Flame Test (HLT-15), rating	100	100
Flammability Test (ASTM D635) Ignition Burning Time	none 0 sec.	none 0 sec.
Surface Burning Characteristics (ASTM E84), Flame spread index	25	25
UL 94 Flame Class	V-0	V-0

Reference page 182 for general fitting specifications.

CHANNEL NUTS

- Design Load Safety Factor of 3
- Overall Nut Height $\frac{5}{8}$ " (15.9)
- Maximum torque and slip resistance loads shown are when using stainless steel bolts. When using fiberglass hardware use Max. Torque for fiberglass bolts, and multiply slip resistance loads by .14 for $\frac{3}{8}$ " and .60 for $\frac{1}{2}$ " thread size.
- Material: Glass Reinforced Polyurethane
- Spring Material: Zinc Plated Steel

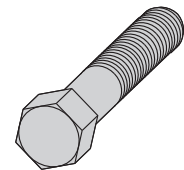


Part No. With Spring	Part No. W/O Spring	Thread Size	Pull-Out		Slip Resistance		Max. Torque		Wt./C	
			Lbs	kN	Lbs.	N	in.-Lbs.	N•m	Lbs.	kg
BFV-224	BFV-224WO	$\frac{1}{4}$ "-20	300	(1.33)	150	(.67)	200	(22.6)	2.4	(1.09)
BFV-223	BFV-223WO	$\frac{5}{16}$ "-18	300	(1.33)	150	(.67)	200	(22.6)	2.5	(1.13)
BFV-228	BFV-228WO	$\frac{3}{8}$ "-16	300	(1.33)	150	(.67)	200	(22.6)	2.3	(1.04)
BFV-225	BFV-225WO	$\frac{1}{2}$ "-13	300	(1.33)	150	(.67)	200	(22.6)	2.1	(0.95)

BFVHHCS HEX HEAD CAP SCREWS

- Design Load Safety Factor of 3
- Material: Glass Reinforced Polyurethane

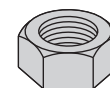
Part No.	Thread Size	Design Load (in tension)		Max. Torque		Wt./C	
		Lbs.	kN	in.-Lbs.	N•m	Lbs.	kg
BFVHHCS $\frac{5}{16}$ x 1	$\frac{5}{16}$ "-18	190	(.84)	30	(3.4)	.4	(.18)
BFVHHCS $\frac{5}{16}$ x $1\frac{1}{4}$	$\frac{5}{16}$ "-18	190	(.84)	30	(3.4)	.5	(.23)
BFVHHCS $\frac{5}{16}$ x $1\frac{1}{2}$	$\frac{5}{16}$ "-18	190	(.84)	30	(3.4)	.6	(.27)
BFVHHCS $\frac{5}{16}$ x 2	$\frac{5}{16}$ "-18	190	(.84)	30	(3.4)	.8	(.36)
BFVHHCS $\frac{3}{8}$ x 1	$\frac{3}{8}$ "-16	300	(1.33)	45	(5.1)	.9	(.41)
BFVHHCS $\frac{3}{8}$ x $1\frac{1}{4}$	$\frac{3}{8}$ "-16	300	(1.33)	45	(5.1)	1.1	(.50)
BFVHHCS $\frac{3}{8}$ x $1\frac{1}{2}$	$\frac{3}{8}$ "-16	300	(1.33)	45	(5.1)	1.3	(.59)
BFVHHCS $\frac{3}{8}$ x 2	$\frac{3}{8}$ "-16	300	(1.33)	45	(5.1)	1.3	(.59)
BFVHHCS $\frac{3}{8}$ x $2\frac{1}{2}$	$\frac{3}{8}$ "-16	300	(1.33)	45	(5.1)	1.5	(.68)
BFVHHCS $\frac{1}{2}$ x 1	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	1.4	(.63)
BFVHHCS $\frac{1}{2}$ x $1\frac{1}{4}$	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	1.8	(.81)
BFVHHCS $\frac{1}{2}$ x $1\frac{1}{2}$	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	2.2	(1.00)
BFVHHCS $\frac{1}{2}$ x 2	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	3.0	(1.36)
BFVHHCS $\frac{1}{2}$ x $2\frac{1}{2}$	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	3.7	(1.68)
BFVHHCS $\frac{1}{2}$ x 3	$\frac{1}{2}$ "-13	490	(2.18)	110	(12.4)	4.5	(2.04)



BFVHN HEX NUTS

- $\frac{3}{4}$ " & 1" sizes are available. Contact inside sales for details
- Material: Glass Reinforced Polyurethane

Part No.	Thread Size	Nut Thickness		Wt./C	
		in.	mm	Lbs.	kg
BFVHN $\frac{5}{16}$	$\frac{5}{16}$ "-18	$\frac{17}{64}$	(6.7)	.2	(.09)
BFVHN $\frac{3}{8}$	$\frac{3}{8}$ "-16	$\frac{21}{64}$	(8.3)	.3	(.13)
BFVHN $\frac{1}{2}$	$\frac{1}{2}$ "-13	$\frac{7}{16}$	(11.1)	.7	(.32)
BFVHN $\frac{5}{8}$	$\frac{5}{8}$ "-11	$\frac{35}{64}$	(13.9)	1.4	(.63)



Reference page 182 for general fitting specifications.

General Notes for Strut-Type Channel Raceway

UL Category RIUU - B-Line, Inc., Highland, IL 62249 December 11, 1998 (C)
 FLUORESCENT AND INCANDESCENT LIGHTING



Suitable for not more than the number of wires of the sizes and types indicated in the following tables. Intended to enclose circuits operating at potentials not exceeding 600 volts between conductors. In all cases, the B217-20 or B217P snap-in cover is required to complete raceway closure. When using B217-24 snap-in cover, the number of wires is limited to 7 or fewer conductors no larger than #12 AWG.

B-Line's strut-type channel raceways and fittings are manufactured and tested to comply with the UL Standard for Safety for Strut-Type Channel Raceways and Fittings (UL 5B) in accordance with Article 384 of the 2002 National Electrical Code, NFPA 70.

1. Support spans for strut-type channel raceway shall not exceed 10 foot intervals.
2. No conductor larger than that for which the raceway is listed shall be installed in strut-type channel raceways. No wires under 14AWG or over 6AWG are allowed in any of B-Line's strut-type channel raceway. See tables 1, 2 and 3 below for a listing of the approved conductors for B-Line's strut-type channel raceways.
3. The number of conductors permitted in strut-type channel raceway shall not exceed the percentage fill using Table 384-22 and the applicable outside diameter of specific types and sizes of wire given in the tables in chapter 9 of the National Electrical Code. Table 384-22 lists two different percent fill areas depending on the use of internal or external joiners. Use 40% area fill with external joiners and 25% area fill for internal joiners.
4. Items in the electrical section of the B-Line Strut Systems Catalog identified by the UL symbol provide for electrical continuity. Other items require the use of a separate grounding wire.
5. If strut-type channel raceway is connected to another wiring system, the raceway must be field-tapped adjacent to the wire entry point to accept a #10-32 or larger grounding screw. A plated or stainless steel screw may be used. A sheet metal screw is not acceptable. Drill and tap the grounding wire hole before installing wires in raceway or move installed wires out of the way to avoid damage. After drilling and tapping, remove metal chips and burrs before installing screw.

TABLE 1: MAXIMUM NUMBER OF WIRES (Adjusted per NEC Table 384.22 for 40% fill)

Use this table to determine the type and number of conductors for use with B-Line's strut-type channel raceway using external joiners. This table applies for all installations except for the support and supply of electric discharge type lighting fixtures. See table 2 and 3 for further information.

Insulation Type	Wire Size AWG.	B11 B11K06	B12 B12K06	B22 B22K06	B24 B24K06	B26 B26K06	B32 B32K06	B56 B56K06
FEP, FEPB	14	172	127	81	81	81	67	36
	12	126	92	59	59	59	49	26
	10	90	66	42	42	42	35	19
	8	51	38	24	24	24	20	11
	6	24	17	11	12	12	9	5
RH, RHH, RHW	14	52	38	24	26	27	20	12
	12	45	33	21	22	23	17	10
	10	37	27	17	18	19	14	8
	8	20	14	9	10	10	7	4
	6	14	10	6	7	7	5	3
T, TW	14	124	91	58	58	58	48	26
	12	95	70	45	45	45	37	20
	10	69	51	33	33	33	27	14
	8	36	26	17	18	19	14	8
	6	21	15	9	10	11	8	5
THHN, THWN	14	178	131	84	84	84	69	37
	12	130	95	61	61	61	50	27
	10	82	60	38	38	38	32	17
	8	46	34	21	22	22	17	10
	6	33	24	15	16	16	12	7
THW	14	82	61	39	39	39	32	17
	12	66	49	31	31	31	26	14
	10	52	38	24	24	24	20	11
	8	29	21	13	14	15	11	6
	6	21	15	10	10	11	8	5
XHHW	14	124	91	58	58	58	48	26
	12	95	70	45	45	45	37	20
	10	71	52	33	33	33	28	15
	8	37	27	17	19	19	14	8
	6	27	20	13	14	14	10	6