

Metal Framing Channels

Channel

Metal framing channel is cold formed on our modern rolling mills from 12 Ga. (2.6mm), 14 Ga. (1.9mm), and 16 Ga. (1.5mm) low carbon steel strips. A continuous slot with turned lips provides the ability to make attachments at any point.

Lengths & Tolerances

All channels excluding 'SH' style
 $\pm 1/8"$ (3.2mm) on 10' (3.05m) and
 $\pm 3/16"$ (4.76mm) on 20' (6.09m)

All 'SH' channels only
 $\pm 1/4"$ (6.35mm) on 10' (3.05m) and
 $\pm 1/2"$ (12.70mm) on 20' (6.09m)

Custom lengths are available upon request.

Slots

Slotted series of channels offer full flexibility. A variety of pre-punched slot patterns eliminate the need for precise field measuring for hole locations. Slots offer wide adjustments in the alignment and bolt sizing.

Holes

A variety of pre-punched $9/16"$ (14.3 mm) diameter hole patterns are available in our channels. These hole patterns provide an economical alternative to costly field drilling required for many applications.

Knockouts

When used with series B217-20 Closure Strips, knockout channels can be used to provide an economical U.L. listed surface raceway. Channels are furnished with $7/8"$ (22.2 mm) knockouts on 6" (152 mm) centers, allowing for perfect fixture alignment on spans up to 20' (6.09 m).

Materials & Finishes (Unless otherwise noted)

Steel: Plain & Pre-galvanized

12 Ga. (2.6), 14 Ga. (1.9) and 16 Ga. (1.5)



Channel & Combinations

Finish Code	Finish	Specification
PLN	Plain	ASTM A1011, 33,000 PSI min. yield
GRN	DURA-GREEN™	
GLV	Pre-Galvanized	ASTM A653 33,000 PSI min. yield
HDG	Hot-Dipped Galvanized	ASTM A123
YZN	Yellow Zinc Chromate	ASTM B633 SC3 Type II
SS4	Stainless Steel Type 304	ASTM A240
SS6	Stainless Steel Type 316	ASTM A240
AL	Aluminum	Aluminum 6063-T6

Note: A minimum order may apply on special material and finishes.

Design Load (Steel & Stainless Steel)

The design loads given for strut beam loads are based on a simple beam condition using an allowable stress of 25,000 psi. This allowable stress results in a safety factor of 1.68. This is based upon virgin steel minimum yield strength of 33,000 psi cold worked during rolling to an average yield stress of 42,000 psi. For aluminum channel loading multiply steel loading by a factor of 0.38.

Welding

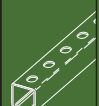

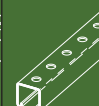


Weld spacing is maintained between 2 $1/2$ inches (63.5 mm) and 4 inches (101.6 mm) on center. Through high quality control testing of welded channels and continuous monitoring of welding equipment, B-Line provides the most consistent combination channels available today.

Metric

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

SELECTION CHART

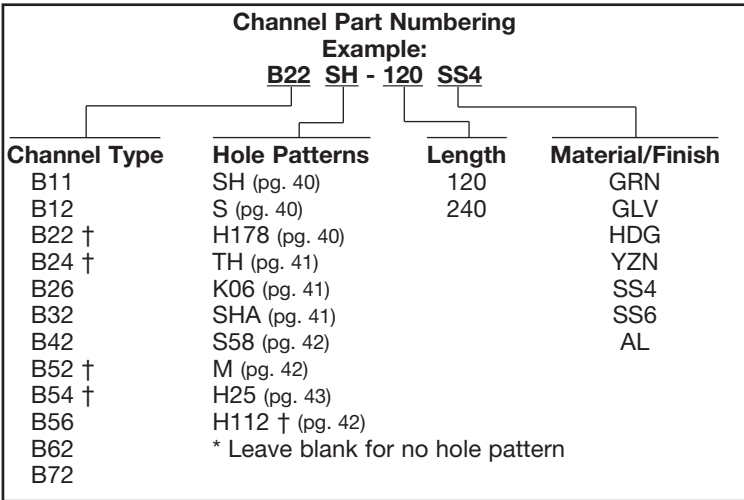
for Channels, Materials and Hole Patterns

Channel Type	Channel Dimensions				Material & Thickness *				Channel Hole Pattern **				
					Stainless Steel				SH	S	H17/8	TH	KO6
	Height		Width		Steel	Alum.	Type 304	Type 316	9/16" x 1 1/8" slots on 2" centers	13/32" x 3" slots	9/16" diameter holes	9/16" diameter on 1 7/8" centers	7/8" diameter knockouts
				<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>						
B11	3 1/4"	(82.5)	1 5/8"	(41.3)	12 Ga.	.105	-	-	<u>1</u>	<u>1</u>	<u>1</u>	-	<u>1</u>
B12	2 7/16"	(61.9)	1 5/8"	(41.3)	12 Ga.	.105	-	-	<u>1 2</u>	<u>1</u>	<u>1 2</u>	-	<u>1 2</u>
B22	1 5/8"	(41.3)	1 5/8"	(41.3)	12 Ga.	.105	12 Ga.	12 Ga.	<u>1 2 3 4</u>	<u>1 3</u>	<u>1 2 3</u>	<u>1</u>	<u>1 2</u>
B24	1 5/8"	(41.3)	1 5/8"	(41.3)	14 Ga.	.080	14 Ga.	14 Ga.	<u>1 2 3 4</u>	<u>1</u>	<u>1 2 3</u>	-	<u>1 2</u>
B26	1 5/8"	(41.3)	1 5/8"	(41.3)	16 Ga.	-	-	-	<u>1</u>	<u>1</u>	<u>1</u>	-	<u>1</u>
B32	1 3/8"	(34.9)	1 5/8"	(41.3)	12 Ga.	-	12 Ga.	-	<u>1 3</u>	<u>1</u>	<u>1 3</u>	-	<u>1</u>
B42	1"	(25.4)	1 5/8"	(41.3)	12 Ga.	-	12 Ga.	-	<u>1 3</u>	<u>1</u>	<u>1 3</u>	-	<u>1</u>
B52	1 3/16"	(20.6)	1 5/8"	(41.3)	12 Ga.	-	12 Ga.	12 Ga.	<u>1 3 4</u>	<u>1</u>	<u>1</u>	-	<u>1</u>
B54	1 3/16"	(20.6)	1 5/8"	(41.3)	14 Ga.	.080	14 Ga.	14 Ga.	<u>1 2 3 4</u>	<u>1</u>	<u>1 2 3 4</u>	-	<u>1 2</u>
B56	1 3/16"	(20.6)	1 5/8"	(41.3)	16 Ga.	-	-	-	<u>1</u>	<u>1</u>	<u>1</u>	-	<u>1</u>
B62	1 3/16"	(20.6)	1 3/16"	(20.6)	18 Ga.	-	-	-	-	-	-	-	-
B72	1 3/32"	(10.3)	1 3/16"	(20.6)	18 Ga.	-	-	-	-	-	-	-	-

The selection has been prepared to provide a reference for available channel, materials and hole patterns. Material types available for various hole patterns are defined by numbers 1 thru 4. Some stainless steel channels with hole patterns are available on special order only.

*Metric equivalent for thicknesses shown in chart. **1 - Steel
 12 Ga. = 2.6 mm 18 Ga. = 1.2 mm 2 - Aluminum
 14 Ga. = 1.9 mm .105 = 2.6 mm 3 - Type 304 Stainless Steel
 16 Ga. = 1.5 mm .080 = 2.0 mm 4 - Type 316 Stainless Steel

Properties may vary due to commercial tolerances of the material.



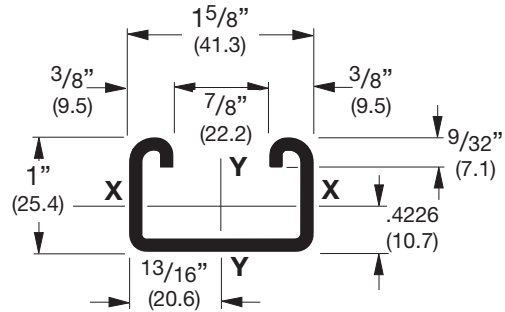
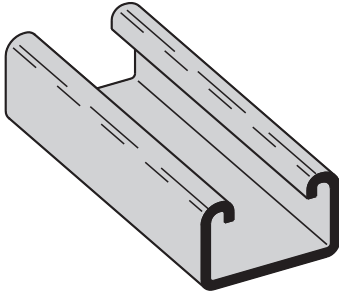
Reference page 14 for general fitting and standard finish specifications.

B42 Channel & Combinations

B42

- Thickness: 12 Gauge (2.6 mm)
- Standard lengths: 10' (3.05 m) & 20' (6.09 m)
- Standard finishes: Plain, DURA-GREEN™, Pre-Galvanized, Hot-Dipped Galvanized, Stainless Steel Type 304
- Weight: 1.44 Lbs./Ft. (2.14 kg/m)

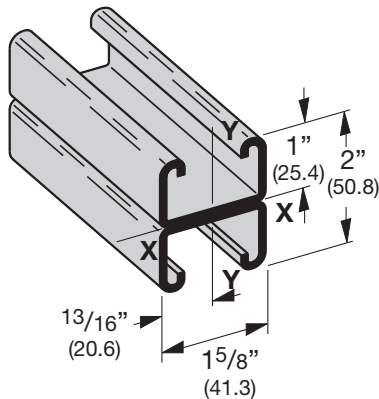
Note: Also available in 14 gauge (1.9mm) material as B44



SECTION PROPERTIES

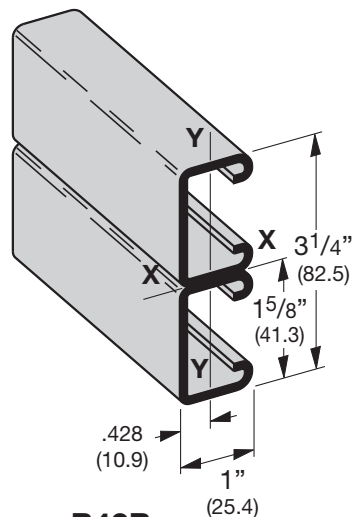
Channel	Weight		Areas of Section		Moment of Inertia (I)		Section Modulus (S)		Radius of Gyration (r)		X - X Axis				Y - Y Axis			
											Moment of Inertia (I)		Section Modulus (S)		Radius of Gyration (r)			
	lbs./ft.	kg/m	sq. in.	cm ²	in. ⁴	cm ⁴	in. ³	cm ³	in.	cm	in. ⁴	cm ⁴	in. ³	cm ³	in.	cm		
B42	1.468	(2.18)	.432	(2.79)	.0554	(2.31)	.0968	(1.59)	.358	(.91)	.1645	(6.85)	.2025	(3.32)	.617	(1.57)		
B42A	2.936	(4.37)	.864	(5.57)	.2689	(11.19)	.2689	(4.41)	.558	(1.42)	.3292	(13.70)	.4052	(6.64)	.617	(1.57)		

Calculations of section properties are based on metal thicknesses as determined by the AISI Cold-Formed Steel Design Manual.



B42A

Wt. 2.88 Lbs./Ft. (4.28 kg/m)



B42B

Wt. 2.88 Lbs./Ft. (4.28 kg/m)

Reference page 14 for general fitting and standard finish specifications.

B42 Beam & Column Loading Data

BEAM LOADING

Beam Span In. mm		Channel Style	Uniform Load and Deflection				Uniform Load @ Deflection =			
			Lbs. kN		In. mm		1/240 Span		1/360 Span	
			Lbs.	kN	In.	mm	Lbs.	kN	Lbs.	kN
12	(305)	B42	1538	(6.84)	.022	(.56)	1538	(6.84)	1538	(6.84)
		B42A	1590*	(7.07)	.005	(.13)	1590*	(7.07)	1590*	(7.07)
24	(609)	B42	769	(3.42)	.088	(2.23)	769	(3.42)	582	(2.59)
		B42A	1590*	(7.07)	.038	(.96)	1590*	(7.07)	1590*	(7.07)
36	(914)	B42	513	(2.28)	.198	(5.03)	388	(1.72)	259	(1.15)
		B42A	1428	(6.35)	.114	(2.89)	1428	(6.35)	1248	(5.55)
48	(1219)	B42	384	(1.71)	.352	(8.94)	218	(0.97)	145	(0.64)
		B42A	1071	(4.76)	.203	(5.15)	1053	(4.68)	702	(3.12)
60	(1524)	B42	308	(1.37)	.550	(13.97)	140	(0.62)	93	(0.41)
		B42A	857	(3.81)	.318	(8.08)	674	(3.00)	449	(2.00)
72	(1829)	B42	256	(1.14)	.792	(20.11)	97	(0.43)	65	(0.29)
		B42A	714	(3.17)	.457	(11.61)	468	(2.08)	312	(1.39)
84	(2133)	B42	220	(0.98)	1.079	(27.40)	71	(0.31)	48	(0.21)
		B42A	612	(2.72)	.623	(15.82)	344	(1.53)	229	(1.02)
96	(2438)	B42	192	(0.85)	1.409	(35.79)	55	(0.24)	36	(0.16)
		B42A	535	(2.38)	.813	(20.65)	263	(1.17)	176	(0.78)
108	(2743)	B42	171	(0.76)	1.783	(45.29)	43	(0.19)	29	(0.13)
		B42A	476	(2.12)	1.029	(26.13)	208	(0.92)	139	(0.62)
120	(3048)	B42	154	(0.68)	2.202	(55.93)	35	(0.15)	23	(0.10)
		B42A	428	(1.90)	1.271	(32.28)	168	(0.75)	112	(0.50)

Based on simple beam condition using an allowable design stress of 25,000 psi (172 MPa) in accordance with MFMA, with adequate lateral bracing (see page 11 for further explanation). Actual yield point of cold rolled steel is 42,000 psi. To determine concentrated load capacity at mid span, multiply uniform load by 0.5 and corresponding deflection by 0.8. *Failure determined by weld shear.

COLUMN LOADING

Unbraced Height In. mm		Channel Style	Max. Column Loading K = .80				Max. Column Loading (Loaded @ C.G.)					
			Loaded@ C.G.		Loaded@ Slot Face		K = .65		K = 1.0		K = 1.2	
			Lbs.	kN	Lbs.	kN	Lbs.	kN	Lbs.	kN	Lbs.	kN
12	(305)	B42	9138	(40.65)	3493	(15.54)	9283	(41.23)	8916	(39.66)	8670	(38.56)
		B42A	21094	(93.83)	5834	(25.95)	21304	(94.76)	20793	(92.49)	20469	(91.05)
24	(609)	B42	8137	(36.19)	3145	(13.99)	8540	(37.99)	7589	(33.76)	7050	(31.36)
		B42A	19757	(87.88)	5585	(24.84)	20299	(90.29)	18964	(84.35)	18094	(80.48)
36	(914)	B42	7050	(31.36)	2722	(12.11)	7657	(34.06)	5925	(26.35)	4335	(19.28)
		B42A	18094	(80.48)	5237	(23.29)	19067	(84.81)	16654	(74.08)	15057	(66.98)
48	(1219)	B42	5405	(24.04)	2227	(9.90)	6786	(30.18)	3512	(15.62)	2439	(10.85)
		B42A	16139	(71.79)	4818	(21.43)	17632	(78.43)	13906	(61.86)	11387	(50.65)
60	(1524)	B42	3512	(15.62)	1718	(7.64)	5272	(23.45)	2247	(9.99)	1561**	(6.94)
		B42A	13906	(61.86)	4352	(19.36)	16008	(71.21)	10710	(47.64)	7531	(33.50)
72	(1829)	B42	2439	(10.85)	1351	(6.01)	3694	(16.43)	1561**	(6.94)	1084**	(4.82)
		B42A	11387	(50.65)	3856	(17.15)	14200	(64.16)	7531	(33.50)	5230	(23.26)
84	(2133)	B42	1792	(7.97)	1087	(4.83)	2714	(12.07)	1147**	(5.10)	796**	(3.54)
		B42A	8645	(38.45)	3332	(14.82)	12206	(54.29)	5533	(24.61)	3842	(17.09)
96	(2438)	B42	1372**	(6.10)	891	(3.96)	2078	(9.24)	878**	(3.90)	-	-
		B42A	6619	(29.44)	2873	(12.78)	10012	(44.53)	4236	(18.84)	2942**	(13.08)
108	(2743)	B42	1084**	(4.82)	743	(3.30)	1642	(7.30)	-	-	-	-
		B42A	5230	(23.26)	2495	(11.10)	7922	(35.24)	3347	(14.89)	2324**	(10.34)
120	(3048)	B42	878**	(3.90)	628	(2.79)	1330**	(5.91)	-	-	-	-
		B42A	4236	(18.84)	2182	(9.70)	6417	(28.54)	2711**	(12.06)	1883**	(8.37)

**Where the slenderness ratio $\frac{KL}{r}$ exceeds 200, and K = end fixity factor, L = actual length and r = radius of gyration.

Reference page 14 for general fitting and standard finish specifications.

Reference Data

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