

GE
Industrial Solutions

Spectra Series* Busway



Spectra Series* Busway.

All the muscle without the weight.

GE engineers have broken the weight barrier with Spectra Series Busway. Its computer-designed, all-aluminum housing is up to 50% lighter than comparable wire and conduit – and lighter than competitors' busway – while providing the current-carrying capacity (up to 5,000 amps) and short-circuit protection you've always counted on from GE busway.





Less weight means big labor savings.

Since Spectra Series Busway is lighter than other busways, it's easier to handle and hang. You save on labor and installation time (per NECA labor standards). This may lower your total installed cost by up to 75% versus wire and conduit.



Epoxy insulation protects your investment.

GE has applied more than three decades of experience with material coatings to bring advanced epoxy insulation technology to Spectra Series Busway. Our special Class B 130°C Blue Coat™ epoxy insulation provides tougher, longer life (50 years expected) than mylar, PVC, and glass tape used by other manufacturers.



A load of extras.

Both plug-in and feeder configurations offer identical low voltage drop. In fact, it's one of the most efficient busway systems available.

Our exclusive adjustable joint connector allows quick $\pm 1/2$ " busway length adjustment – right in the field. This new level of flexibility makes it easy to cope with unexpected building variations during installation.

Spectra Series Busway also includes our specially designed belleville spring washer that retains over 90% of its original contact pressure. So you get a more secure, reliable and virtually maintenance-free joint.

Our new busway can often be hung with a unique GE hanger that employs just a single drop rod. Plug-assist and plug-position locators make installation a snap (even on larger plugs). And 50% integral housing ground is standard. Internal ground is available for both aluminum and copper busway.



Plating options.

Copper busway: Tin plating is standard on all copper busway.

Aluminum busway: Silver plating is standard on all aluminum busway.

A complete silver plating system is optional on copper busway.

Contents

Introduction	1-2
Busway Tool Kit	3
Key Features	4-6
Electrical Data	7-10
Physical Data	11-34
Plugs	35-40
Cataloging	41-44
Guide Form Specifications	45-49
Joint Guard	Back Cover

Put the Busway Tool Kit to work for you!

GE's Busway Tool Kit is a collection of electronic tools that quickly and easily answers customers' questions, calculates costs savings for contractors, provides layout assistance to specifiers, and delivers value engineering to distributors.



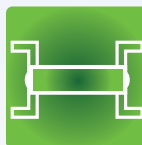
Labor Calculator compares the labor costs of installing lighter GE busway versus Square D busway.



Cable Converter – calculates how busway costs to compare to pipe and wire.

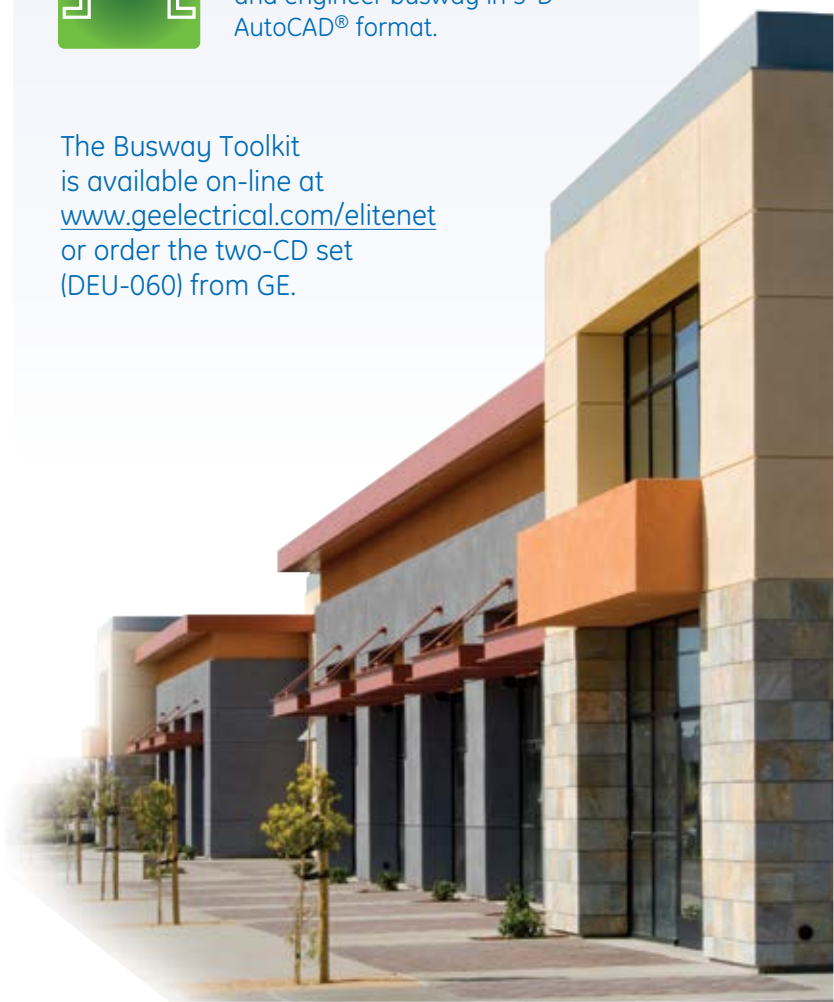


Speculator answers busway-related electrical questions.



Autobus allows specifiers, electrical contractors and others to design and engineer busway in 3-D AutoCAD® format.

The Busway Toolkit is available on-line at www.geelectrical.com/elitenet or order the two-CD set (DEU-060) from GE.



State-of-the-Art Busway Systems



All Spectra Series* bus bars are integrity tested with 5000 Vac – for absolute performance confidence.



Automated process applies durable baked-enamel ANSI 61 finish (tough .09" thick aluminum 6061-T6 housings) – for consistent, repeatable quality and protection.



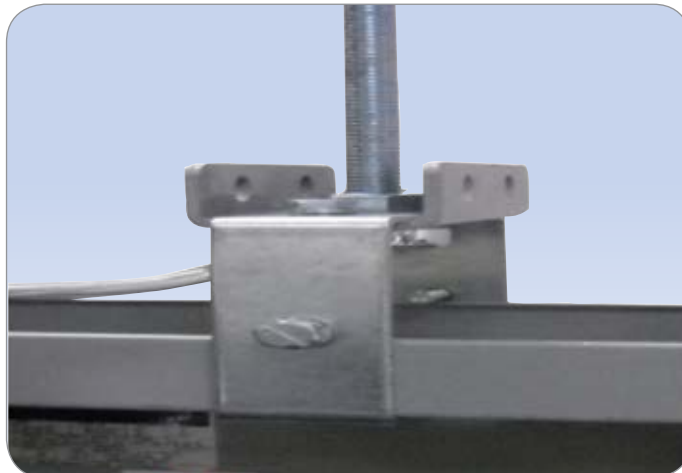
Our experts closely monitor production performance – to help protect your investment.


Features

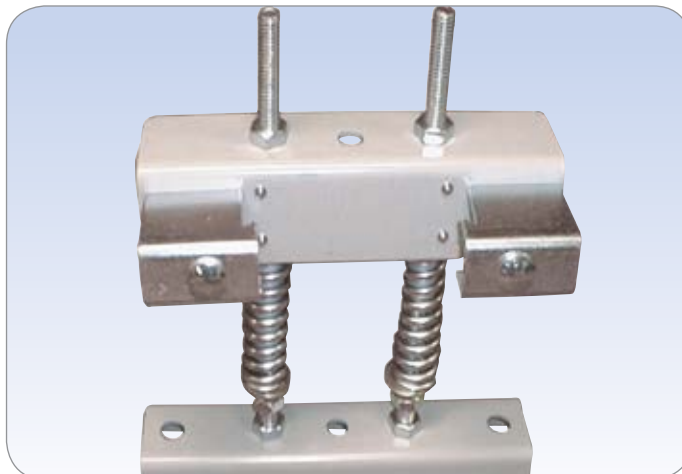
Easiest-to-Install Busway – Ever.



Spectra Series* Busway features an aluminum housing that cuts busway weight up to 50% – reducing installation costs. Single bolt joint with positive torque connection at 50 ft.-lbs. is standard. See the back cover for optional Joint Guard™ bolt.



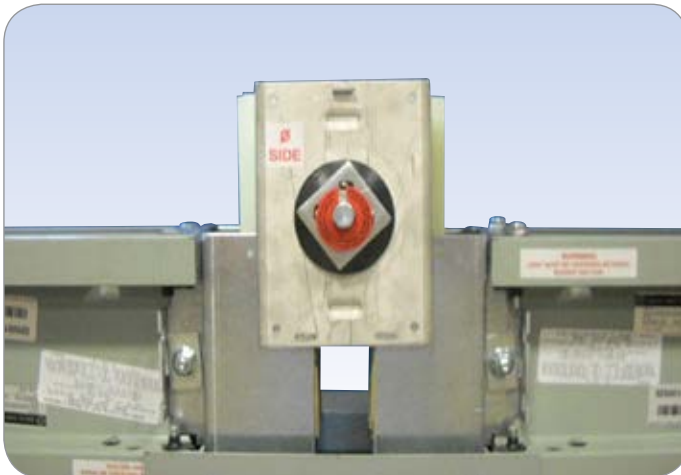
Sections can be hung every 10 feet with just a single drop rod hanger standard up to 2000 amp aluminum or 1600 amp copper. Spectra bus is extremely light – enough to lighten ceiling loads up to 50%.



Easy-to-install, rugged vertical riser hanger supports simplify busway installation and adjustment.



For secure, flexible long-term reliability and minimal maintenance, Spectra Busway offers up to $\pm 1/2$ " adjustable joints with belleville spring washers that do not require re-torquing.



Flex-A-Joint* removable isolation joints allow individual sections to be conveniently taken out of service with minimum downtime or interruption of power. Accepts Flex-A-Tap™ bolted power take-off devices up to 1600 amps at every joint, plug-in or feeder.



Plug-assist and plug-position locators simplify connection – assuring positive, safe installation. See General Electric installation instructions, pub number DEH-40087 for recommended low maintenance procedures.

Note: It is a good practice to de-energize the busway when installing or removing plugs. Please follow all guidelines in GE publication DEH-40087 carefully.

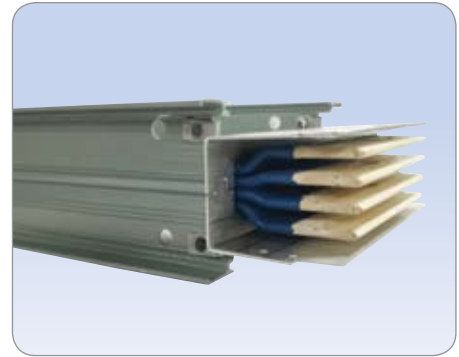
Electrical Data

Integrated housing ground resistance

Spectra Series* Busway all-aluminum housing provides an extremely low impedance ground path with less resistance (more continuous current capacity) than internal ground bus bars for both copper and aluminum systems.

Spectra Series Busway integrated housing ground resistance values exceed NEC 250-94 standards for minimum ground conductors.

Plug-in outlet grounding may be supplied with optional tin-plated copper tabs bolted to the aluminum housing for superior continuity through standard bus plug ground stabs. An internal ground bus bar (50% capacity, .125 inch thick) is also available to provide a complete system.



Spectra Series* feeder busway

Table 7.1

Bar Width	DC Resistance Ohms x 10 ³ /100 ft. @ 75° C		
	Aluminum Internal ¹ 50% Ground Bus	Copper Internal 50% Ground Bus	Housing Ground
1.625	8.62	5.15	2.15
2.250	6.22	3.72	1.83
2.875	4.87	2.91	1.71
3.375	4.15	2.48	1.55
4.000	3.44	1.98	1.40
4.250	3.29	1.95	1.34
4.500	3.11	1.84	1.29
5.750	2.44	1.44	1.10
6.500	2.15	1.27	1.02
7.500	1.86	1.07	0.93
8.250	1.70	1.00	0.87

¹ The housing could satisfy 50% ground bus conductor requirements. An internal aluminum ground bar offers no electrical advantage and is not available in the Spectra II option.

Busway applications with harmonics

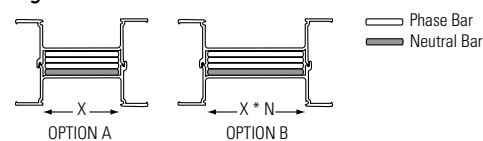
For busway applications where non-linear loads are present, first determine the specific non-linear load condition for the application. Once the non-linear load condition is established, Spectra Series Busway should be derated in accordance with Option A; see Table 7.2 and Fig. 7.1 below.

Where full nameplate loading is required, Spectra Series Busway should be sized in accordance with Option B; see Table 7.2 and Fig. 7.1 below. By increasing the width of both the phase and neutral bars equally, the busway will operate within UL heat rise limits at full nameplate rating, while also carrying up to twice the rated current in the neutral conductor.

Table 7.2

Non-linear Load (Neutral Harmonic Current / Total Phase Current)	Option A			Option B	
	Derating Factor	Phase Bar Width	Neutral Bar Width Width	Phase Bar Width	Neutral Bar Width
0.00	1.000	X	X	Not Required	
1.00	0.866	X	X	X * 1.15	X * 1.15
1.25	0.811	X	X	X * 1.23	X * 1.23
1.50	0.756	X	X	X * 1.32	X * 1.32
1.75	0.703	X	X	X * 1.42	X * 1.42
2.00	0.655	X	X	X * 1.53	X * 1.53

Figure 7.1



Note: Please contact your local GE Industrial Solutions sales office for additional information on application of busway with non-linear loads.

Short-circuit ratings

The Spectra Series* Busway design provides predictable, consistent strength and high short-circuit ratings.

The ratings shown below are UL recognized rms symmetrical amps for both feeder and plug-in phase-to-phase and phase-to-ground. Tests were run at three cycles minimum per UL standards. Additional tests were run at six cycles. Spectra Series Busway is third party certified by KEMA for short circuit withstand test at 1 and 3 seconds.

Table 8.1
Short-Circuit Ratings Plug-In and Feeder

Amp Rating	Aluminum (kA)			Copper (kA)		
	3 and 6 Cycles	1 Sec.	3 Secs.	3 and 6 Cycles	1 Sec.	3 Secs.
225	50	24	14	50	40	21
400	85	24	14	50	40	21
600	85	24	14	85	40	21
800	100	42	24	85	40	21
1000	100	50	29	100	51	29
1200	125	62	36	100	65	37
1350	150	84	49	100	76	44
1600	150	95	55	125	95	55
2000	150	121	70	150	129	75
2500	200	132	76	150	150	107
3000	200	169	97	200	191	110
3200	200	169	97	200	191	110
4000	200	200	140	200	200	149
5000	-	-	-	200	200	200

Table 8.2
Maximum Fuse Size for Increased Short-Circuit Protection

Amp Rating		Maximum "L" Fuse Size	
AL	CU	100kA	200kA
225	225	1200 ²	800 ¹
400	400	1200 ²	800 ¹
-	600	1200 ²	800 ¹
600	800	2000 ²	1200 ²
-	1000	-	2000 ²
800	1200	-	2500 ²
1000	1350	-	2500 ²
1200	1600	-	3000 ²
1350	2000	-	4000 ²
1600	-	-	4000 ²
2000	2500	-	4000 ²

¹ Also 600J, 800T or 400R.

² Also 600J, 800T or 600R.

Example: A 225A (AL) short-circuit rating will increase to 100kA with a 1200A (L) fuse installed on the line side of the busway, normally mounted in the gear.

Standards

Spectra Series Busway conforms to the latest revisions of NEMA BU-1; ANSI/UL857; federal spec W-B-811b; cUL. Can comply with IEC 439-1 and 2. Contact factory for details.



Electrical

Electrical Data

Busway operation at other frequencies

Spectra Series* Busway continuous current ratings are for 50/60 Hz frequency. For 400 Hz operation, de-rate bus to 85% load.

Effect of ambient temperature on busway operation

Graph 9.1 illustrates the effect of various ambient temperature conditions on busway operating temperature. Spectra Series Busway utilizes NEMA Class B 130°C insulation. This chart can be used to determine bus operating parameters in accordance with various standards.

Note: In addition to the standard illustrated on Graph 9.1, the Bluecoat™ epoxy insulation of Spectra Series busway has earned "Class B - 130°C UL recognition in accordance with UL 857." This superior insulation enables Spectra Series busway to operate satisfactorily at 50°C ambient with a 55°C heat rise, allowing 105°C maximum operating temperature, with some loss of the 50 year insulation life. See Graph 9.1 for derating details.

Graph 9.1
Effect of ambient temperature on busway operation

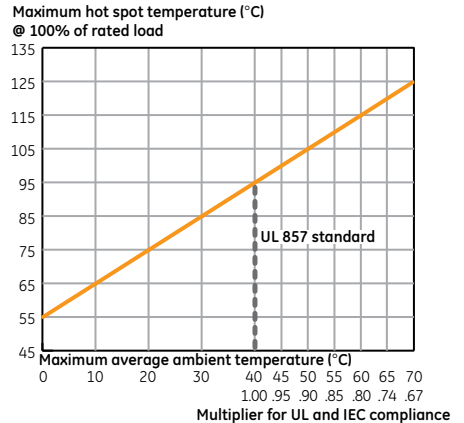
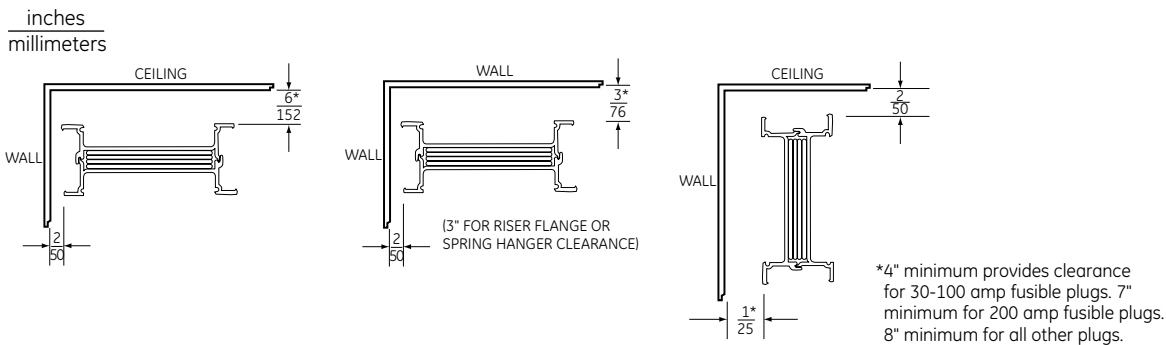


Fig. 9.1

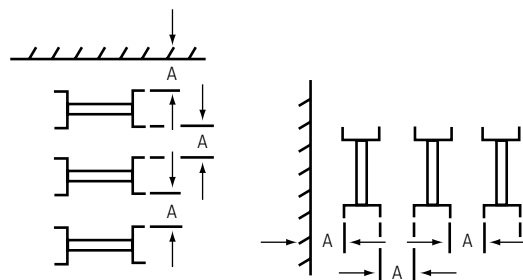
Plug-In or Feeder, One or Two Stack



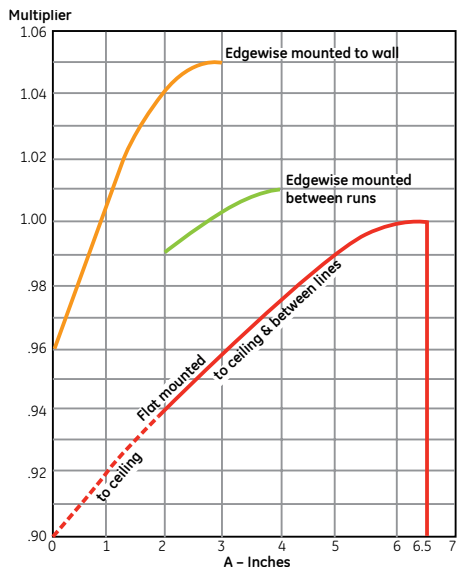
Proximity

Below is a drawing that shows the possible positions of busways relative to walls and to each other. Refer to Graph 9.2 for the proper multiplier required to maintain a 55°C rise in a 40°C ambient.

If horizontally mounted busways are three high, there is an additional multiplying factor of 0.95 for the top run and 0.975 for the center run. The average current hours per week the busway runs at full load will need to be taken into account to determine if the installation requires derating as shown in Graph 9.2.



Graph 9.2



Voltage drop: plug-in or feeder

Spectra Series* Busway has excellent low-voltage-drop values. Minimum reactance (X) is due to very close bar spacings (sandwiched construction) and a non-magnetic housing. Values shown are identical for plug-in and feeder.

60 Hz values shown. For 50 Hz multiply reactance (X) by 0.83 and resistance values do not change. For 400 Hz, multiply reactance by 3.9 and multiply resistance by 1.4. Calculate new voltage drop $V_d = \text{amps load} \times \sqrt{3} (R \cos \Theta + X \sin \Theta) \text{ ft}/100$, where $\cos \Theta = \text{Power Factor}$. Contact your local GE representative for a free copy of the Busway Tool Kit (DEU-066) to help with electrical calculations.

Table 10.1
Voltage Drop: Plug-In or Feeder

	Rated Load Amps	Bar Width x 1/4" Thickness		Ohms x 10 ⁻³ /100Ft. Line-to-Neutral			Voltage Drop – Concentrated Load ¹ Line-to-Line/100 Ft. @ 100% Rated Load, 25°C Amb.								
		IN	MM	R	X	Z	Power Factor								
							.3	.4	.5	.6	.7	.8	.9	1.0	
Aluminum	Spectra Series	225	1.625	41	4.09	1.28	4.29	.95	1.09	1.23	1.36	1.47	1.57	1.65	1.59
		400	1.625	41	4.20	1.28	4.39	1.72	1.98	2.22	2.46	2.67	2.86	3.01	2.91
		600	1.625	41	4.52	1.28	4.70	2.68	3.10	3.50	3.88	4.24	4.56	4.81	4.70
		800	2.875	73	2.48	.79	2.60	2.08	2.38	2.67	2.94	3.19	3.41	3.57	3.44
		1000	3.375	86	2.17	.68	2.27	2.25	2.58	2.90	3.20	3.47	3.71	3.90	3.76
		1200	4.25	108	1.73	.55	1.81	2.17	2.49	2.79	3.07	3.33	3.56	3.73	3.60
		1350	5.75	146	1.24	.41	1.31	1.78	2.04	2.28	2.51	2.71	2.89	3.03	2.90
		1600	6.50	165	1.12	.36	1.18	1.88	2.16	2.42	2.66	2.89	3.08	3.23	3.10
		2000	8.25	210	.89	.29	.94	1.88	2.15	2.41	2.65	2.88	3.07	3.21	3.08
		2500	(2)4.50	(2)114	.82	.26	.86	2.14	2.45	2.75	3.03	3.29	3.52	3.69	3.55
		3000	(2)5.75	(2)146	.64	.21	.67	2.04	2.33	2.61	2.87	3.11	3.32	3.47	3.33
		3200	(2)6.50	(2)165	.57	.18	.59	1.90	2.18	2.44	2.69	2.92	3.13	3.28	3.16
Copper	Spectra Series	4000	(2)8.25	(2)210	.45	.14	.47	1.86	2.14	2.40	2.65	2.88	3.08	3.23	3.12
		225	1.625	41	2.33	1.28	2.66	.75	.82	.89	.94	.99	1.03	1.03	.91
		400	1.625	41	2.38	1.28	2.70	1.34	1.47	1.59	1.70	1.79	1.85	1.87	1.65
		600	1.625	41	2.48	1.28	2.79	2.04	2.25	2.44	2.61	2.75	2.86	2.90	2.58
		800	1.625	41	2.62	1.28	2.92	2.78	3.08	3.35	3.60	3.81	3.97	4.04	3.63
		1000	2.25	57	1.90	.98	2.14	2.61	2.87	3.12	3.33	3.52	3.65	3.70	3.29
		1200	2.875	73	1.49	.79	1.69	2.50	2.74	2.97	3.17	3.34	3.46	3.50	3.10
		1350	3.375	86	1.27	.68	1.44	2.41	2.65	2.86	3.05	3.21	3.33	3.37	2.97
		1600	4.25	108	1.00	.55	1.14	2.29	2.51	2.71	2.88	3.03	3.13	3.16	2.77
		2000	5.75	146	.73	.41	.84	2.11	2.31	2.49	2.65	2.78	2.88	2.90	2.53
		2500	7.50	191	.57	.32	.65	2.06	2.26	2.43	2.59	2.72	2.81	2.83	2.47
		3000	(2)4.00	(2)102	.53	.29	.58	2.26	2.48	2.68	2.86	3.00	3.11	3.14	2.73
		3200	(2)4.50	(2)114	.51	.25	.55	2.21	2.44	2.63	2.82	2.96	3.06	3.10	2.67
		4000	(2)5.75	(2)146	.37	.21	.42	2.16	2.36	2.54	2.70	2.83	2.92	2.94	2.56
		5000	(2)7.50	(2)191	.28	.16	.32	2.05	2.24	2.41	2.56	2.69	2.77	2.79	2.42

¹ For plug-in distributed loads divide by 2

$$\text{Actual voltage drop} = V_d (\text{from Table}) \times \frac{\text{actual load}}{\text{rated load}} \times \frac{\text{actual distance (ft/mm)}}{100 \text{ feet (30480mm)}}$$

Physical Data

UL Firestop System

UL Listed through-penetration firestop system is available for use with GE busway systems. The system is listed in the UL Fire Resistance Directory under XHEZ, System C-AJ-6003 with F rating = 3 hours and T rating = 1/2 hour for aluminum bars and T rating = 0 hours for copper bars.

The contractor installs a mineral wool batt (4 PCF Nominal) as shown below, on-site during the busway installation process. For riser applications, the system is used in combination with a standard GE spring hanger and floor flange. For horizontal applications, the system is used in combination with two wall flanges (one per side). See publication DEH-40087 for installation instructions.

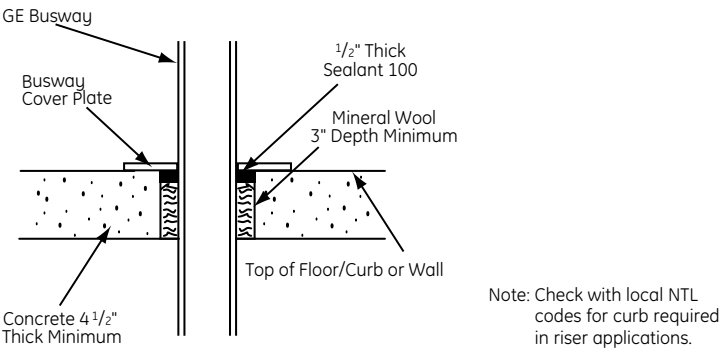
Table 11.1
Cubic Inches Required per Floor and Wall

Amp Rating	Sealant 100 Floor		Sealant 100 Wall	
	AL	CU	AL	CU
225-600	17	17	34	34
800	21	17	42	34
1000	22	18	44	42
1200	23	20	46	44
1350	27	22	54	46
1600	28	23	56	54
2000	33	27	66	56
2500	46	33	92	66
3000	53	44	106	92
3200	60	46	114	92
4000	66	53	132	106
5000	-	66	-	132

Sealant 100 standard tube equals 19 in³

This information is provided as a guideline for typical fire-stop systems. If you have an annulus (or opening) greater than 1 inch beyond the busway enclosure, you will need to determine the proper amount of fire-stop material based on Fig. 11.1. Quantities are based on application of recommended amount of material; more may be required if over-application occurs.

Fig. 11.1



Spectra Series* Busway seismic certification facts

General

The complete standard commercial offering of Spectra Series Busway is certified to IBC-2009 levels IEEE-693-2005 and UBC zone 4 seismic conditions.

Table 12.1

Maximum Acceptable Parameters	Vertical Riser Configuration	Horizontal Configuration
Acceptable Orientations	Edgewise & Flatwise	Edgewise & Flatwise
Maximum Ratings	5000A Max Copper / 4000A Max Aluminum	5000A Max Copper / 4000A Max Aluminum
Maximum Voltage	600 V Max	690 Max V 690
Service	3- & 4-Wire	3- & 4-Wire
Distribution	Plug-In & Feeder	Plug-In & Feeder
Hangers	Standard Floor Flange Kit with Seismic Spring Hanger Assembly	Standard and Seismic Hanger System using Trapeze Hangers & Clips
Maximum Hanger Spacing	16 feet (4876.8 mm) (See Table 12.2)	10 feet (3048 mm)
Full Threaded Drop Rod	Standard 1/2" Rod	Standard 1/2" Rod
Drop Rod Connection ¹	Not Applicable	Must be BOLTED through Ceiling/Floor using standard hardware ¹
Distribution Equipment Connection (Pbd., Swbd, Swgr, MCC, etc.)	Standard Flanged-End Stub – Special Hardware & connections NOT Required	Standard Flanged-End Stub – Special Hardware & connections NOT Required.
Bus Plugs	All Types Acceptable	All Types Acceptable
Fittings	All Types Acceptable	All Types Acceptable
Cable Tap Boxes	All Types Acceptable	All Types Acceptable
End Boxes	All Types Acceptable	All Types Acceptable
Acceptable Applications & Constructions	Indoor, Drip-Proof & Outdoor	Indoor, Drip-Proof & Outdoor
Proximity To Walls	Standard ¹	Standard ¹

¹ Drop rod must be bolted through ceiling/floor and secured on both sides with standard washers and nuts.

Table 12.2
Spectra Busway Seismic Parameters

Configuration	Maximum Support Spacing	IBC-2012/CBC-2013		IEEE-693-2005
		z/h	S _{ps} (g)	
Horizontal Trapeze – Mounted	10 ft (3048.0 mm)	1.0	1.97	High
	12 ft (3657.6 mm)	1.0	1.97	High
	16 ft (4876.8 mm)	1.0	1.11	High

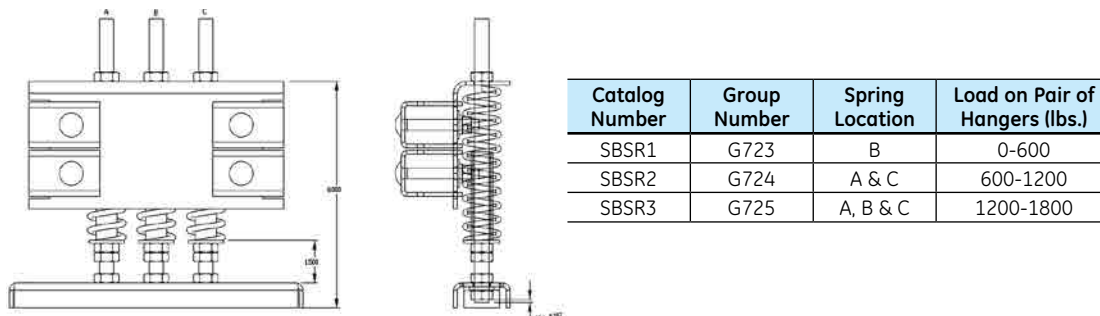
¹ For OSHPD related projects please refer to OSP-0314-10 for additional details

² IBC-2012 results are obtained through testing in accordance with ICC-ES AC156

Summary

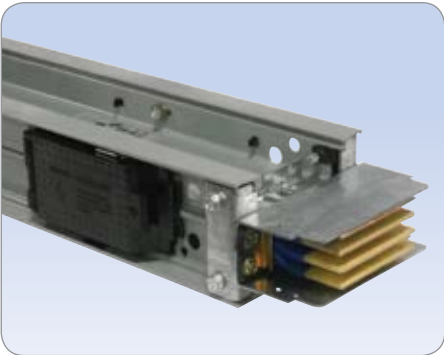
These parameters for seismic conditions are identical to the complete standard commercial offering of Spectra Series Busway. **Therefore, Spectra Series Busway can be used in applications in above seismic conditions without restrictions, special bracing or connections except when seismic spring hangers are required (see hangers section).** Plus, Spectra Series Busway can connect to equipment (panelboards, switchboards, motor control centers, switchgear, etc.) using standard flanged end stubs, cable tap boxes, and bus plugs.

Fig. 12.1
Seismic spring riser hanger (Cat. No. SBSR"X"). See page 31 for more details.



Physical Data

Straight lengths:
dimensions and weights



Spectra Series* Busway plug-in

Fig. 13.1
One bar per phase

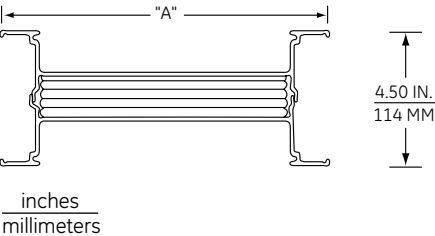


Fig. 13.2
Two bars per phase

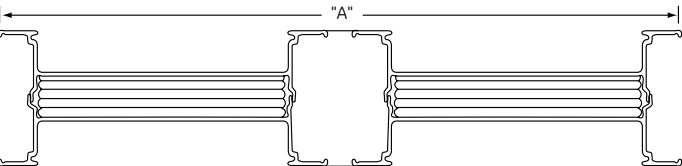


Table 13.1
Plug-in and Feeder, all bus UL Listed @600 Volts

		AC Ampere Rating	Fig. No.	Standard Bar				+1 Bar				DC Ampere Rating	Approximate Weight ft./lbs.			
				"A" Width		Bar Sizes Width x Thickness		"A" Width		Bar Size						
				Inches	MM	Inches	MM	Inches	MM	Inches	MM		3-Wire	4 Wire	3-Wire/G	4-Wire/G
Aluminum	Spectra Series	225	13.1	4.38	111	1.63 x .25	41 x 6	4.38	111	1.63	41	600	5	6	5	6
		400	13.1	4.38	111	1.63 x .25	41 x 6	4.38	111	1.63	41	-	5	6	5	6
		600	13.1	4.38	111	1.63 x .25	41 x 6	5.00	127	2.25	57	800/1000	5	6	5	6
		800	13.1	5.63	143	2.88 x .25	73 x 6	6.13	156	3.38	86	1350	6	7	6	8
		1000	13.1	6.13	156	3.38 x .25	86 x 6	7.00	178	4.25	108	1600	7	8	8	9
		1200	13.1	7.00	178	4.25 x .25	108 x 6	7.25	184	4.50	114	-	8	9	9	10
		1350	13.1	8.50	216	5.75 x .25	146 x 6	9.25	235	6.50	165	2500	9	10	10	11
		1600	13.1	9.25	235	6.50 x .25	165 x 6	11.00	279	8.25	210	-	10	12	11	13
		2000	13.1	11.00	279	8.25 x .25	210 x 6	15.00	381	(2)4.25	(2)108	3000	12	15	13	16
		2500	13.2	15.50	394	(2)4.50 x .25	(2)114 x 6	18.00	457	(2)5.75	(2)146	4000	17	20	18	21
		3000	13.2	18.00	457	(2)5.75 x .25	(2)146 x 6	19.50	495	(2)6.50	(2)165	-	19	23	21	25
3200	13.2	19.5	495	(2)6.50 x .25	(2)165 x 6	-	-	-	-	5200	21	24	23	25		
4000	13.2	23.00	584	(2)8.25 x .25	(2)210 x 6	-	-	-	-	6000	25	30	27	32		
Copper	Spectra Series	225	13.1	4.38	111	1.63 x .25	41 x 6	4.38	111	1.63	41	800	8	9	9	10
		400	13.1	4.38	111	1.63 x .25	41 x 6	4.38	111	1.63	41	-	8	9	9	10
		600	13.1	4.38	111	1.63 x .25	41 x 6	4.38	111	1.63	41	-	8	9	9	10
		800	13.1	4.38	111	1.63 x .25	41 x 6	5.00	127	2.25	57	1000/1200	8	9	9	10
		1000	13.1	5.00	127	2.25 x .25	57 x 6	5.63	143	2.88	73	1350/1600	10	12	11	12
		1200	13.1	5.63	143	2.88 x .25	73 x 6	6.13	156	3.38	86	-	12	15	13	16
		1350	13.1	6.13	156	3.38 x .25	86 x 6	7.00	178	4.25	108	2000	14	17	16	19
		1600	13.1	7.00	178	4.25 x .25	108 x 6	7.25	184	4.50	114	2500	16	20	18	22
		2000	13.1	8.50	216	5.75 x .25	146 x 6	9.25	235	6.50	165	3000	21	26	24	29
		2500	13.1	10.25	260	7.50 x .25	191 x 6	11.00	279	8.25	210	4000	26	33	30	37
		3000	13.2	14.50	368	(2)4.00 x .25	(2)102 x 6	15.00	381	(2)4.25	(2)108	5000	32	40	36	44
		3200	13.2	15.50	394	(2)4.50 x .25	(2)114 x 6	-	-	-	-	5200	34	43	38	47
		4000	13.2	18.00	457	(2)5.75 x .25	(2)146 x 6	19.50	495	(2)6.50	(2)165	6000	42	52	47	58
		5000	3.2	21.50	546	(2)7.50 x .25	(2)191 x 6	23.00	584	(2)8.25	(2)210	8000	52	66	59	73

Comparison to wire and conduit

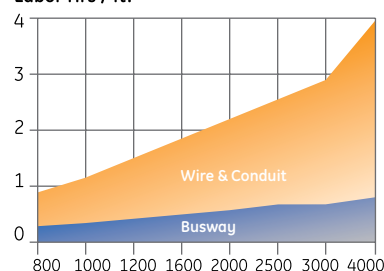
Estimates based on material costs alone often exclude the substantial cost savings and ease of installation available with the lighter, more compact Spectra Series Busway. Labor savings can be significant, often resulting in lower total installed cost and the ability to free up time to complete more jobs.

A **Labor Estimating Manual**, which uses NECA labor units, is available to assist in estimating and comparing the amount of labor required to install busway and wire and conduit. This manual, along with the "Total Installed Cost Worksheet" in the back of the manual, is a valuable, simple tool used to estimate and compare the total cost for busway and wire and conduit. See General Electric publication number GEZ-7737. Your local GE Account Manager can also assist you. Layout and measurement support also are available through your GE Account Manager.

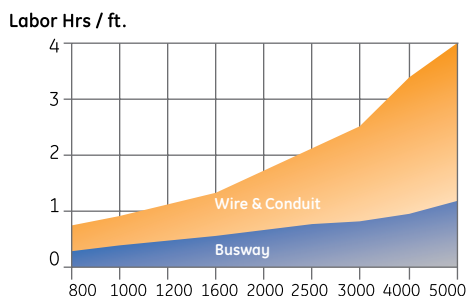
Benefits of busway over wire and conduit

- Lower installed cost
- Smaller size, lighter weight
- Better efficiency
- No cutters, benders, oils, jellies, grease, scrap or cable reels
- Future expansion flexibility
- Higher short-circuit ratings
- Lower voltage drop
- Higher integrity and reliability

Fig. 14.1
Installation Labor Costs
Labor Hrs / ft.



Aluminum Conductor



Copper Conductor

Spectra Series Busway plug-in labor measurements are the same as feeder labor measurements

Table 14.1
Compact Size

Amperes	Width	
	AL	CU
225-600	4.375	4.375
800	5.625	4.375
1000	6.125	5
1200	7	5.625
1350	8.5	6.125
1600	9.25	7
2000	11	8.5
2500	15.5	10.25
3000	18	14.5
3200	19.5	15.5
4000	23	18
5000	-	21.5

Dimensions

Representative in inches for aluminum and copper housings. All depths are 4.5".

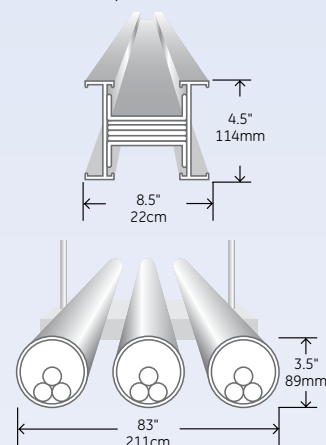
Table 14.2
Low Weight

Amperes	AL3W	4W	CU3W	4W
225-600	4	5	6	7
800	6	7	8	9
1000	7	8	10	12
1200	8	9	12	15
1350	9	10	14	17
1600	10	12	16	20
2000	12	15	21	26
2500	17	20	29	37
3000	19	23	32	40
3200	21	24	34	43
4000	25	30	42	52
5000	-	-	58	74

Pounds / 1 Foot

Representative for aluminum and copper housings with 3 wire and 4 wire applications.

Common Application - 2000 Amp,
600 Volt, 3 Phase / 4 Wire



Requires 12, 500 MCM Cables
in 6" Rigid Conduit

Spectra Series Busway requires less space than wire and conduit. Layout and measurement support are available. Contact your local GE Account Manager for more information.

Physical Data

Spectra Series* Busway provides optimum performance in the most demanding applications. Through superior design and applied materials technology, it assures uptime and reliability, even in severe-duty weather environments.

Weather protection: features and benefits

- Industry Exclusive WEATHERSHIELD* Epoxy Joint Insulators designed for long life. Joint Bolt access via easily removable, UL listed/cUL certified Raintight Santoprene Plugs.
- Extra drainage channels through the galvanized steel bracket help eliminate standing water near joints.
- Gasketing materials rated for extreme temperatures, -40 to 250 degrees F.
- Internal sealants rated for use in extreme temperature environments of -40 to 200 degrees F.
- All Gaskets and Sealants tested to verify superior UV resistance and excellent stability when subjected to long term thermal aging.

Construction options

The materials and processes used in these construction options are the result of an intensive Design for Six Sigma (DFSS) design and testing process. These products combine high reliability with new features that reduce assembly time by more than 50%. The joint shield, as shown in the photo above, uses an integral spring latch clamping system. This system provides optimum gasket compression at all joint connections, and eliminates the need for additional joint cover hardware.

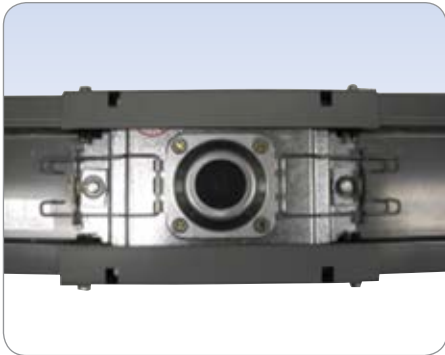
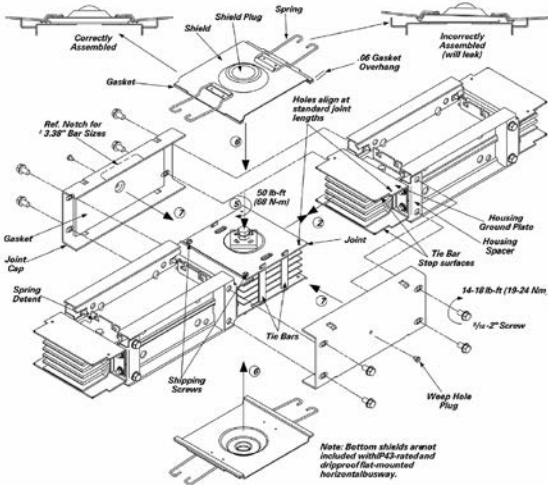
The Splash-proof and Outdoor designs feature an industry-exclusive 100% epoxy insulation system throughout the bus and joints. This system includes GE Bluecoat™ epoxy on the bus bars and WEATHERSHIELD™ insulators in the joints.

Table 15.1

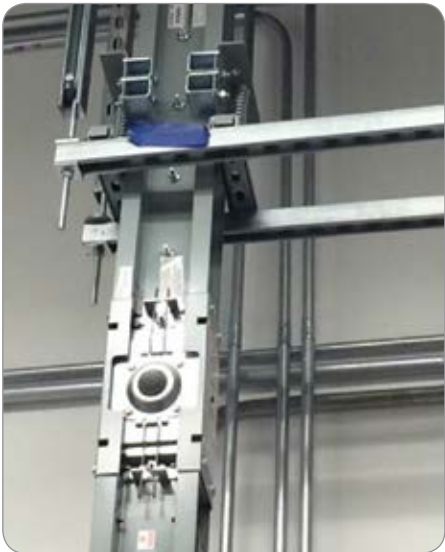
Construction Type		IEC Degree of Protection	Joint Insulator
Indoor (NEMA 1)	Feeder, Plug-in, Riser	IP-40	Standard
Drip-proof	Feeder, Plug-in, Riser	IP-43	Standard
Splash-proof	Feeder, Plug-in, Riser	IP-54	Weathershield™
Outdoor (NEMA 3R) ¹	Feeder (Only)	IP-65/66	Weathershield™

¹ Excludes (2) stack flatwise elbow

Fig. 15.1
Joint shield



Innovative joint shield design provided with drip-proof, splash-proof, and outdoor bus.



Complete outdoor run of Spectra Series Busway

Straight lengths: plug-in and feeder

Spectra Series* Busway is available in ratings from 250-5000 amps in both feeder and plug-in using common joint and housing parts.

Plug-in lengths are available in 2-, 4-, 6-, 8-, and 10-foot lengths, and feeder lengths are also available in 2- to 10-foot lengths in 1/8-inch increments. The $\pm 1/2$ -inch (13 mm) adjustable, removable joint is attached to one end of each section (AKA "joint-end").

Plug-in busway has up to 10 unobstructed, usable plug outlets, standard as shown (trapeze hanger positions may obstruct some openings). Vertical riser plug-in busway is also available with plug outlet openings on one side (when the other side is inaccessible) for even greater value. Plug outlet covers are molded of tough, impact and chemical resistant polycarbonate thermoplastic.



Spectra Series plug-in bus with bus plug

Plug-in flatwise mounted

Unless otherwise specified, horizontal runs of plug-in busway will be furnished with the phase, Ø side label on the bottom of the busbar stack so that plug On/Off position pointer, and labels will be visible from the floor. Operating handles can be installed on the end walls (for hook stick access). Additionally, vertical risers of plug-in busway will be furnished with the phase Ø side label on the right so that the line-side of the plug will be up, and operating handle will be on the right side.

Fig. 16.1
Plug outlet locations

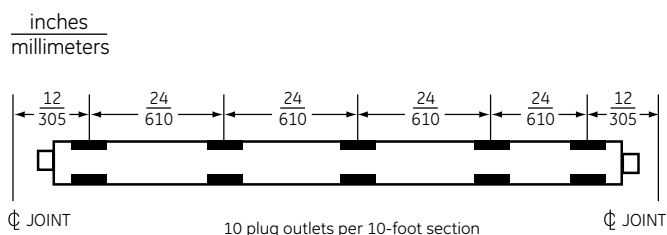
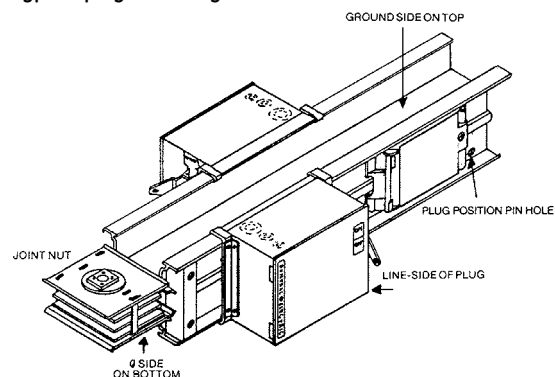


Fig. 16.2
Typical plug mounting



Physical Data

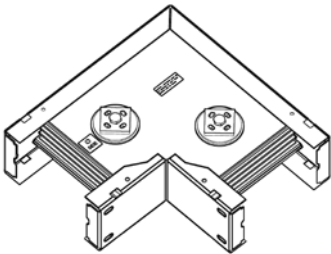
Fittings

Spectra Series* Busway has a complete family of fittings to meet virtually all layout requirements using the compact minimum sizes shown. Special turns such as flat angles greater than 90° and crosses are also available.

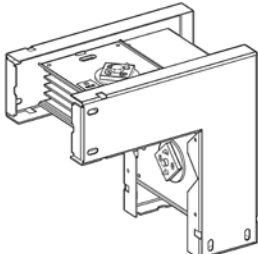
Nomenclature for completely defining the turn is defined by looking into the joint end with phase Ø side facing down on the busway as shown in Fig. 17.1.

Each piece of busway is labeled to maintain proper phasing. All turn dimensions are defined from the centerline of the joint end to the centerline of the busways as "X," "Y," and "Z" (where applicable) leg lengths. Tables 18.1 - 18.4 Dimensions listed are standard. Variable leg lengths are available in 1/8" increments (except joint elbows). The total footage of any one fitting cannot exceed 10 feet (3048 mm) in length.

Note: Offsets and combination elbows are typically used only when standard elbows will not fit.



Flatwise joint elbow indoor only (2) stack



Edgewise joint elbow

Fig. 17.1

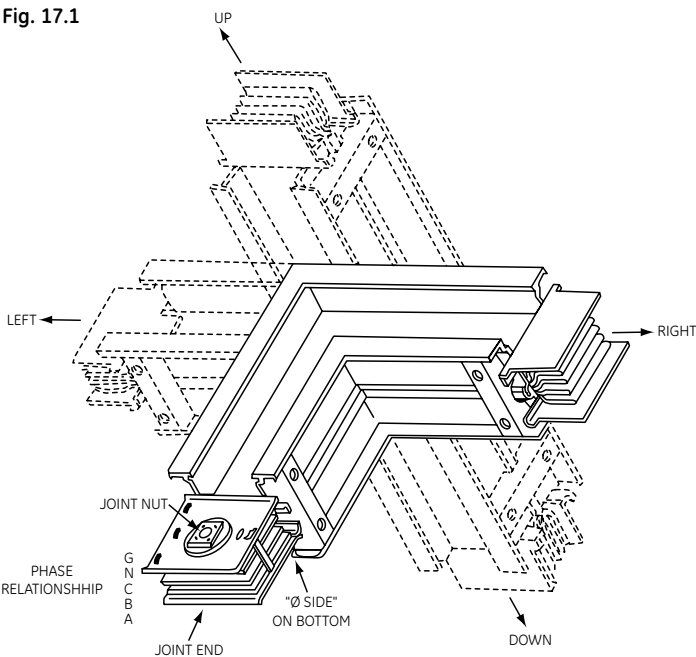


Table 17.1

Bars Per Phase	Bar Width (Inches)	Center to Center Distance (Inches)		
		Flatwise Elbows		Edgewise Elbows
		Indoor	Outdoor	Typical Indoor and Outdoor
1	1.625	3	4	6
	2.25	3	4	6
	2.875	3	4	6
	3.375	4	4	6
	4.25	4	4	6
	4.5	4	4	6
	5.75	5	5	6
	6.5	5	5	6
	7.5	5	6	6
	8.25	5	6	6
2	4	8	N/A	6
	4.25	8	N/A	6
	4.5	8	N/A	6
	5.75	10	N/A	6
	6.5	10	N/A	6
	7.5	12	N/A	6
	8.25	12	N/A	6

For use in applications where joint elbows do not apply, e.g., variable lengths, drip-proof, splash-proof and outdoor.

Table 18.1
Flat Elbows

	Amps	Standard Dimensions				
		X Inches	X MM	Y Inches	Y MM	Z
Aluminum	225-1350	12	305	12	305	—
	1600-3200	18	457	18	457	—
	4000	24	610	24	610	—
Copper	225-2000	12	305	12	305	—
	2500-4000	18	457	18	457	—
	5000	24	610	24	610	—

Table 18.2
Flat Tees

	Amps	Standard Dimensions					
		X Inches	X MM	Y Inches	Y MM	Z Inches	Z MM
Aluminum	225-1200	12	305	12	305	12	305
	1350-3200	18	457	18	457	18	457
	4000	24	610	24	610	24	610
Copper	225-1600	12	305	12	305	12	305
	2000-4000	18	457	18	457	18	457
	5000	24	610	24	610	24	610

Table 18.3
Flat Offsets

	Amps	Standard Dimensions					
		X Inches	X MM	Y Inches	Y MM	Z Inches	Z MM
Aluminum	225-1350	12	305	5	127	12	305
	1600-3200	18	457	5	127	18	457
	Except 2000	18	457	8	203	18	457
	4000	24	610	9	229	24	610
Copper	225-2000	12	305	5	127	12	305
	2500	18	457	8	203	18	457
	3000-4000	18	457	5	127	18	457
	5000	24	610	9	229	24	610

Table 18.4
Combination Elbows

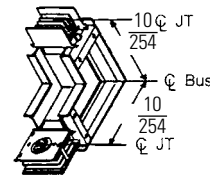
	Amps	Standard Dimensions					
		X Inches	X MM	Y Inches	Y MM	Z Inches	Z MM
Aluminum	225-1350	10	254	8	203	12	305
	1600-2500	10	254	12	305	18	457
	3200-4000	10	254	16	406	24	610
Copper	225-2000	10	254	8	203	12	305
	2500-3200	10	254	12	305	18	457
	4000-5000	10	254	16	406	24	610

Turns

inches
millimeters

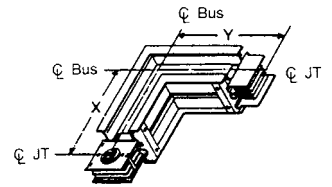
Elbows – Drip proof, splash proof & outdoor only

Up or down elbows (Edgewise)



Up elbow shown

Left or right elbows (Flat)

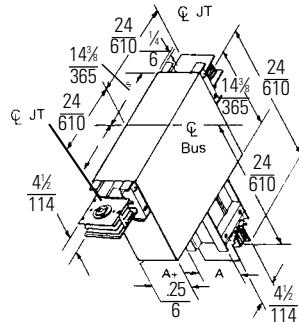


Right elbow shown

Note: For use where joint elbows do not apply.

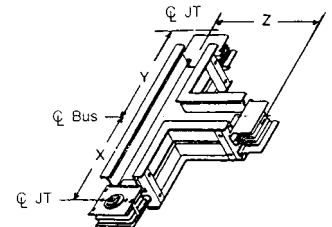
Tees

Up or down tees (Edgewise)



Down tee shown

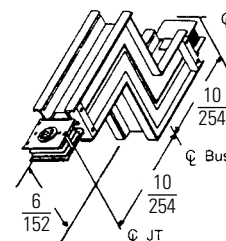
Left or right tees (Flat)



Right tee shown

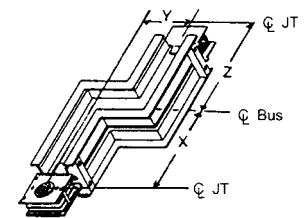
Offsets

Up or down offsets (Edgewise)



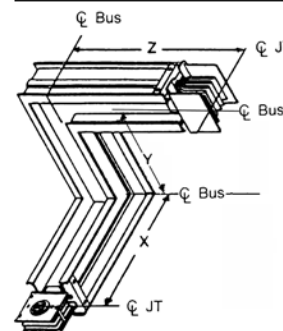
Down offset shown

Left or right offsets (Flat)



Right offset shown

Combination Elbow



Alternate Cable Tap Boxes

Table 20.1

Number of Bars Per Phase	Amp	Dimensions, Cable Bending Space and Lug Data								"C" Cable Bend Space		Number of #2-600 MCM Lugs Per Phase ¹	Weight in Lbs.			
		Aluminum				Copper							8" Stub			
		W		L ²		W		L ²					Aluminum		Copper	
		Inches	MM	Inches	MM	Inches	MM	Inches	MM	Inches	MM		3 Wire	4 Wire	3 Wire	4 Wire
1	225	17	432	26	660	17	432	26	660	15	381	1	121	123	131	135
	400	17	432	26	660	17	432	26	660	15	381	2	121	123	131	135
	600	17	432	26	660	17	432	26	660	15	381	2	121	123	131	135
	800	17	432	26	660	17	432	26	660	15	381	3	123	125	131	135
	1000	17	432	26	660	17	432	26	660	15	381	3	125	127	135	141
	1200	20	508	29	737	20	508	29	737	18	457	4	141	144	150	156
	1350	20	508	29	737	20	508	29	737	18	457	4	144	147	155	164
	1600	20	508	29	737	20	508	29	737	18	457	5	146	151	166	177
	2000	26	660	29	737	26	660	29	737	18	457	6	170	177	195	210
	2500	–	–	–	–	26	660	29	737	18	457	8	–	–	212	231
2	2500	26	660	29	737	–	–	–	–	18	457	8	182	190	–	–
	3000	33	838	34	864	33	838	34	864	23	584	9	225	235	264	286
	3200	33	838	34	864	33	838	34	864	23	584	10	230	241	271	295
	4000	33	838	34	864	33	838	34	864	23	584	12	242	255	285	313
	5000	–	–	–	–	39	991	34	864	23	584	15	–	–	324	352

¹ Mechanical type (CU-AL wire) lugs standard; crimp type optional. One ground lug standard through 3000-Amp CU.

Two ground lugs standard for 4000-Amp AL, 5000-Amp CU. Optional one ground lug per phase lug.

² Box size may change when using some compression lugs or mechanical lugs greater than 600 mcm depending on size and quantity. Check with factory.

Fig. 20.1
Alternate End Tap Box: Feeder or Plug-In

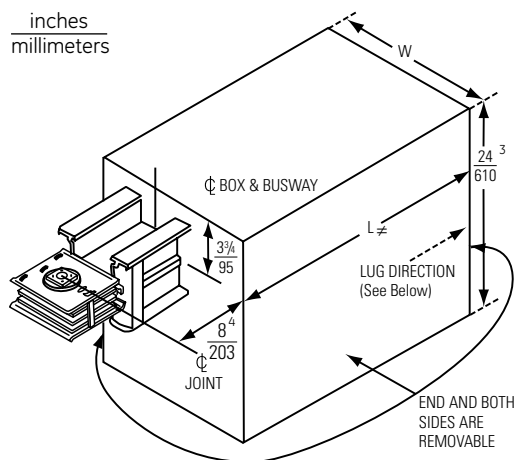


Fig. 20.2
Standard Box Down Position, Side View

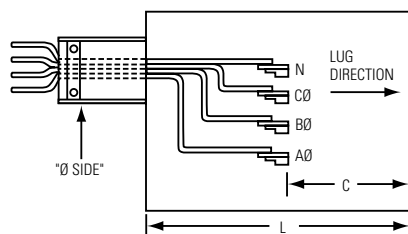
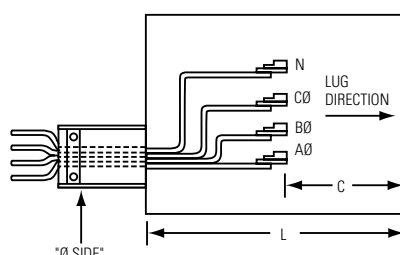


Fig. 20.3
Inverted Box Up Position, Side View



³ 24 dimension changes to 28 for 5000-Amp or if optional one ground lug per phase lug is required.
610 711

⁴ Standard stub length is 8" except for 5000A which is 10".

Physical Data

Center Cable Tap Boxes

Table 21.1

Number of Bars Per Phase	Amp	Dimensions, Cable Bending Space and Lug Data												Cable Bend Space	Number of #2-600 MCM Lugs Per Phase ¹	Weight in Lbs.				
		Aluminum						Copper								8" Stub				
		W ²		E		L		W ²		E		L				Aluminum		Copper		
		Inches	MM	Inches	MM	Inches	MM	Inches	MM	Inches	MM	Inches	MM	3 Wire	4 Wire	3 Wire	4 Wire			
1	225	24	610	4 3/8	111	20	508	24	610	4 3/8	111	20	508	15	381	1	117	122	134	141
	400	24	610	4 3/8	111	20	508	24	610	4 3/8	111	20	508	15	381	2	117	122	134	141
	600	24	610	4 3/8	111	20	508	24	610	4 3/8	111	20	508	15	381	2	117	122	134	141
	800	24	610	4 3/8	111	20	508	24	610	4 3/8	111	20	508	15	381	3	123	132	134	141
	1000	24	610	4 3/8	111	20	508	24	610	4 3/8	111	20	508	15	381	3	127	132	141	151
	1200	30	762	6	152	28	711	30	762	6	152	28	711	18	457	4	178	184	208	222
	1350	30	762	6	152	28	711	30	762	6	152	28	711	18	457	4	184	191	214	230
	1600	30	762	6	152	28	711	30	762	6	152	28	711	18	457	5	188	196	224	240
	2000	36	914	9	229	28	711	36	914	9	229	28	711	18	457	6	246	267	250	276
2500	—	—	—	—	—	—	36	914	9	229	32	813	18	457	8	—	—	320	358	
2	2500	36	914	9	229	32	813	—	—	—	—	—	—	18	457	8	255	279	—	—
	3000	48	1219	12 3/4	324	39	991	48	1219	12 3/4	324	39	991	23	584	9	345	370	395	436
	3200	48	1219	12 3/4	324	39	991	48	1219	12 3/4	324	39	991	23	584	10	352	373	401	445
	4000	48	1219	12 3/4	324	39	991	48	1219	12 3/4	324	39	991	23	584	12	447	503	498	569
	5000	—	—	—	—	—	—	48	1219	12 3/4	324	46	1168	23	584	15	—	—	585	676
2000 Amp (Max) Center Branch Tap Boxes																				
1	2500	—	—	—	—	—	—	36	914	9	229	28	711	18	457	6	—	—	303	343
2	2500	36	914	9	229	28	711	—	—	—	—	—	—	18	457	6	239	264	—	—
	3000	43	1092	12 3/4	324	28	711	43	1092	12 3/4	324	28	711	18	457	6	290	315	387	443
	3200	43	1092	12 3/4	324	28	711	43	1092	12 3/4	324	28	711	18	457	6	296	318	393	452
	4000	43	1092	12 3/4	324	28	711	43	1092	12 3/4	324	28	711	18	457	6	392	447	443	513
	5000	—	—	—	—	—	—	43	1092	12 3/4	324	28	711	18	457	6	—	—	500	591

¹ Mechanical type (CU-AL wire) lugs standard; crimp type optional. One ground lug standard through 3000-Amp CU.

Two ground lugs standard for 4000-Amp AL, 5000-Amp CU. **Optional one ground lug per phase lug.**

² Box size may change when using some compression lugs or mechanical lugs greater than 600 mcm depending on size and quantity. Check with factory.

Fig. 21.1
Center Tap Box: Feeder or Plug-In

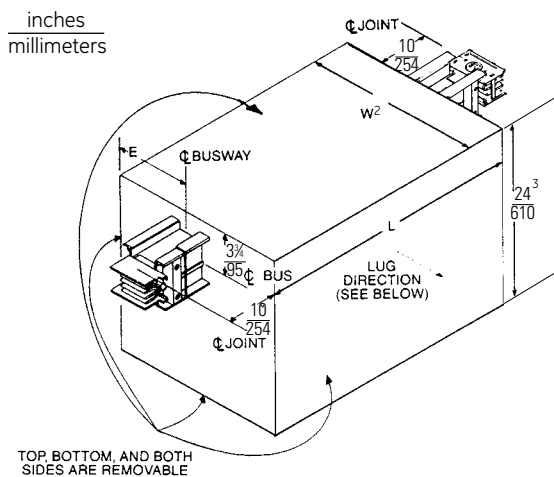


Fig. 21.2
Inverted Box Up Position, Side View

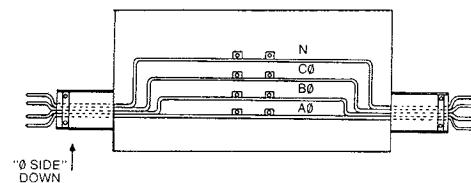
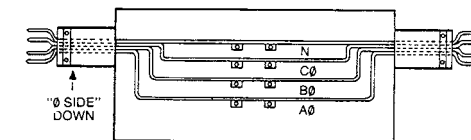


Fig. 21.3
Standard Box Down Position, Side View



³ 24 dimension changes to 28 for 5000-Amp or if optional one ground lug per phase lug is required.
610 711

Standard stub length is 8" / 203.2 mm, except for 5000A, which is 10" / 254 mm.

Transformer Taps

Table 22.1
Dimensions for Three Phase End Tap

Number of Stacks	Amp	Dimensions and Lug Data				Number of #2-600 MCM Lugs Per Phase ¹	Weight in Lbs.			
		Aluminum		Copper			8" Stub			
		W ²		W ²			Aluminum		Copper	
		Inches	MM	Inches	MM		3 Wire	4 Wire	3 Wire	4 Wire
1	600	17	432	17	432	2	88	90	98	102
	800	17	432	17	432	2	90	92	98	102
	1000	17	432	17	432	2	92	94	102	108
	1200	20	508	20	508	3	99	102	108	114
	1350	20	508	20	508	3	102	105	113	122
	1600	20	508	20	508	3	104	109	124	135
	2000	26	660	26	660	4	120	126	144	159
	2500	–	–	26	660	5	–	–	161	180
2	2500	26	660	–	–	–	131	139	–	–
	3000	33	838	34	864	6	149	159	188	210
	3200	33	838	34	864	10	154	165	195	219
	4000	33	838	34	864	8	166	179	210	237
	5000	–	–	39	991	10	–	–	239	267

¹ Mechanical type (CU-AL wire) lugs standard; crimp type optional. One ground lug standard through 3000-Amp CU. Two ground lugs standard for 4000-Amp AL, 5000-Amp CU. Optional one ground lug per phase lug.

² Box size may change when using some compression type lugs. Check with factory.

Table 22.2
Dimensions for Single Phase End Tap

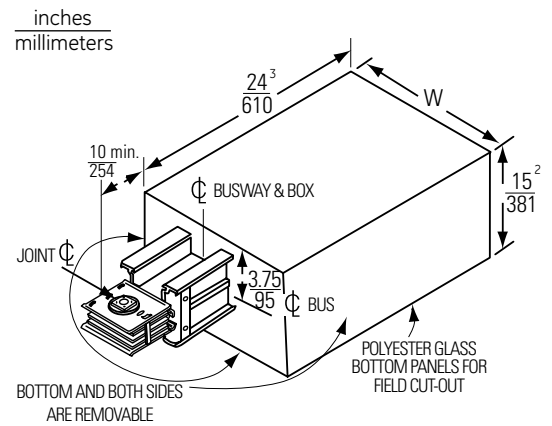
Number of Stacks	Amp	Dimensions and Lug Data				Number of #2-600 MCM Lugs Per Phase ¹
		Aluminum		Copper		
		W ²		W ²		
		Inches	MM	Inches	MM	
1	1000	16	406	–	–	2
	1200	16	406	16	406	3
	1350	20	508	16	406	3
	1600	20	508	16	406	3
	2000	20	508	20	508	4
	2500	–	–	20	508	5
2	2500	24	610	–	–	5
	3000	32	813	24	609	6
	3200	32	813	24	609	10
	4000	32	813	32	813	8
	5000	–	–	32	813	10

¹ Mechanical type (CU-AL wire) lugs standard; crimp type optional. One ground lug standard through 3000-Amp CU. Two ground lugs standard for 4000-Amp AL, 5000-Amp CU. Optional one ground lug per phase lug.

² Box size may change when using some compression type lugs. Check with factory.

Standard stub length is 8", except for 5000A, which is 10".

Fig. 22.1
Three-Phase End Tap



³ 24 dimension changes to 28 for 5000-Amp 610 711 or if optional one ground lug per phase lug is required.

Fig. 22.2
Single-Phase Transformer Taps

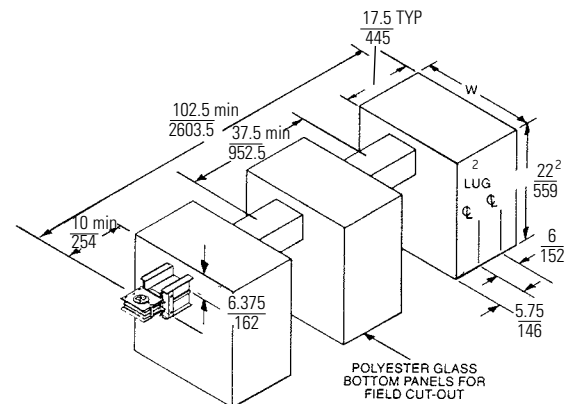
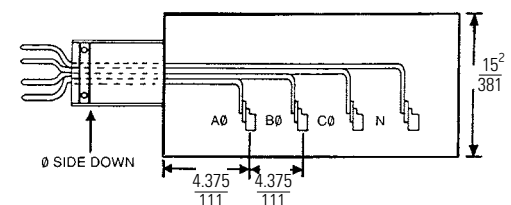


Fig. 22.3
Standard Lug Position

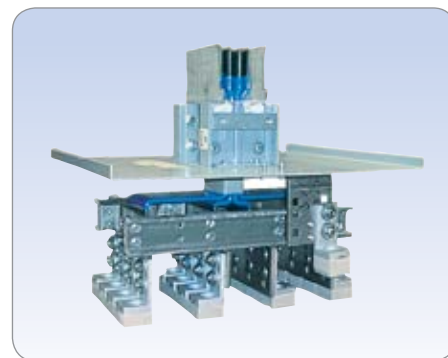


Flanged end with lugs

Lugs are provided as shown in Table 19.1. Universal lug terminal plates are available to accept almost all NEMA and non-NEMA mechanical and compression lugs. (Maximum 1.875 inches wide).

48 mm

Standard lugs are #2-600mcm mechanical type (Cu-Al) wire lugs; crimp type is optional. One ground lug is standard through 3000A Cu. Two ground lugs are standard for 4000A Al, 5000A Cu. Optional one ground lug per phase lug.



Flanged end stub with lugs

Flanged end with lugs cutout and drilling pattern

Fig. 24.1
Flanged End with Lugs, 1 Bar per Phase

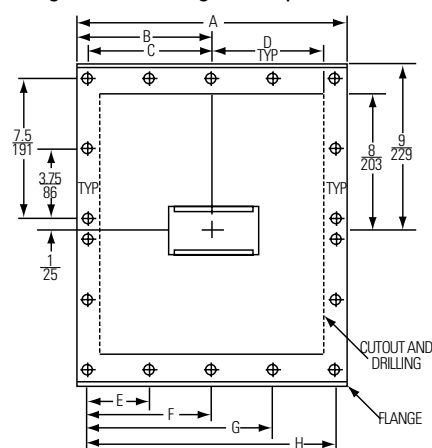


Fig. 24.2
Flanged End with Lugs, 2 Bars per Phase

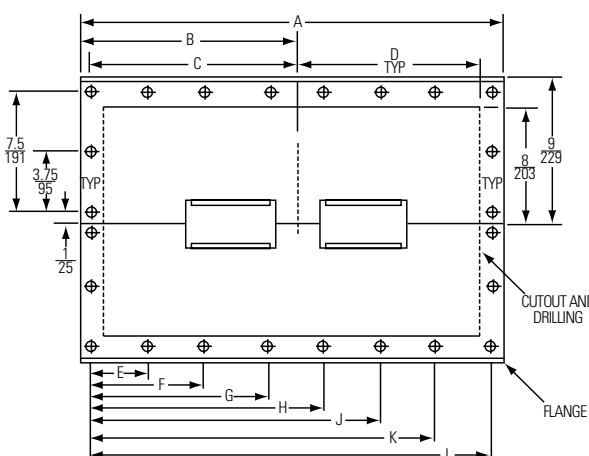


Table 24.1
Flanged End with Lugs

	Amps	Figure	A	B	C	D	E	F	G	H	J	K	L
Aluminum	225-600	24.1	<u>14</u>	<u>7</u>	<u>6.5</u>	<u>6</u>	<u>4.5</u>	<u>8.5</u>	NA	<u>13</u>	NA	NA	NA
Copper	225-1000		<u>356</u>	<u>178</u>	<u>165</u>	<u>152</u>	<u>114</u>	<u>216</u>		<u>330</u>			
Aluminum	800-1000	24.1	<u>15.12</u>	<u>7.56</u>	<u>7.06</u>	<u>6.56</u>	<u>4.69</u>	<u>9.44</u>		<u>14.12</u>			
Copper	1200-1350		<u>384</u>	<u>192</u>	<u>179</u>	<u>167</u>	<u>119</u>	<u>240</u>		<u>359</u>			
Aluminum	1200	24.1	<u>16.25</u>	<u>8.12</u>	<u>7.62</u>	<u>7.12</u>	<u>5.12</u>	<u>10.12</u>		<u>15.25</u>			
Copper	1600		<u>413</u>	<u>206</u>	<u>194</u>	<u>181</u>	<u>130</u>	<u>257</u>		<u>387</u>			
Aluminum	1350-1600	24.1	<u>18.25</u>	<u>9.12</u>	<u>8.62</u>	<u>8.12</u>	<u>5.75</u>	<u>11.5</u>		<u>17.25</u>			
Copper	2000		<u>464</u>	<u>232</u>	<u>244</u>	<u>206</u>	<u>146</u>	<u>292</u>		<u>438</u>			
Aluminum	2000	24.1	<u>20</u>	<u>10</u>	<u>9.5</u>	<u>9</u>	<u>4.75</u>	<u>9.5</u>	<u>14.5</u>	<u>19</u>	NA	NA	NA
Copper	2500		<u>508</u>	<u>254</u>	<u>241</u>	<u>229</u>	<u>121</u>	<u>241</u>	<u>362</u>	<u>483</u>			
Aluminum	2500	24.2	<u>25.5</u>	<u>12.75</u>	<u>12.25</u>	<u>11.75</u>	<u>4.88</u>	<u>9.75</u>	<u>14.75</u>	<u>19.62</u>			<u>24.5</u>
			<u>648</u>	<u>324</u>	<u>311</u>	<u>298</u>	<u>200</u>	<u>248</u>	<u>375</u>	<u>498</u>			<u>622</u>
Copper	3000	24.2	<u>24</u>	<u>12</u>	<u>11.5</u>	<u>11</u>	<u>5.75</u>	<u>11.5</u>	<u>17.25</u>	NA			<u>23</u>
	3200		<u>610</u>	<u>305</u>	<u>292</u>	<u>279</u>	<u>146</u>	<u>292</u>	<u>438</u>				<u>584</u>
Aluminum	3000	24.2	<u>27</u>	<u>13.5</u>	<u>13</u>	<u>12.5</u>	<u>5.25</u>	<u>10.5</u>	<u>15.5</u>	<u>20.75</u>			<u>26</u>
	3200		<u>686</u>	<u>343</u>	<u>330</u>	<u>318</u>	<u>133</u>	<u>267</u>	<u>394</u>	<u>527</u>			<u>660</u>
Copper	4000	24.2	<u>31.5</u>	<u>15.75</u>	<u>15.25</u>	<u>14.75</u>	<u>4.37</u>	<u>8.75</u>	<u>13.12</u>	<u>17.37</u>	<u>21.75</u>	<u>26.12</u>	<u>30.5</u>
			<u>800</u>	<u>400</u>	<u>387</u>	<u>375</u>	<u>111</u>	<u>222</u>	<u>333</u>	<u>441</u>	<u>552</u>	<u>664</u>	<u>775</u>
Aluminum	4000	24.2	<u>32</u>	<u>16</u>	<u>15.5</u>	<u>15</u>	<u>4.5</u>	<u>9</u>	<u>13.5</u>	<u>17.5</u>	<u>22</u>	<u>26.5</u>	<u>31</u>
			<u>813</u>	<u>406</u>	<u>394</u>	<u>381</u>	<u>114</u>	<u>229</u>	<u>419</u>	<u>445</u>	<u>559</u>	<u>673</u>	<u>787</u>
Copper	5000	24.2	<u>37</u>	<u>18.5</u>	<u>18</u>	<u>17.5</u>	<u>6</u>	<u>12</u>	<u>18</u>	<u>24</u>	<u>30</u>	NA	<u>36</u>
			<u>940</u>	<u>470</u>	<u>457</u>	<u>445</u>	<u>152</u>	<u>304</u>	<u>457</u>	<u>608</u>	<u>762</u>		<u>914</u>

Note: For quantity and size of lugs, refer to Cable Tap Box, page 19, Table 19.1.

Physical Data

Switchboard/switchgear stub

Spectra Series offers full factory coordination to other GE equipment as shown. Other entrance combinations are available. Refer to company. Straight and elbow stubs are available with flange to ϕ joint or elbow dimensions per Table 25.1.

Table 25.1
Stubs, Switchboard Ends

	Amps	Minimum Stub Dimensions "A" ¹					
		Straight Stubs		Edgewise Elbows		Flat Elbows	
		Inches	MM	Inches	MM	Inches	MM
Aluminum	225-600	8	203	6	152	4	102
	800-1200	8	203	6	152	5	127
	1350	8	203	6	152	6	152
	1600-2000	8	203	6	152	8	203
	2500	8	203	6	152	10	254
	3000	8	203	6	152	11	279
	3200	8	203	6	152	11	279
	4000	8	203	6	152	13	330
Copper	225-800	8	203	6	152	4	102
	1000-1600	8	203	6	152	5	127
	1600-2000	8	203	6	152	6	152
	2500	8	203	6	152	8	203
	3000	8	203	6	152	10	254
	3200	8	203	6	152	10	254
	4000	8	203	6	152	11	279
	5000	10	254	6	152	14	356

¹ Add 2 inches to dimensions shown for GE Type AKD-8/10 Switchgear.

Fig. 25.1

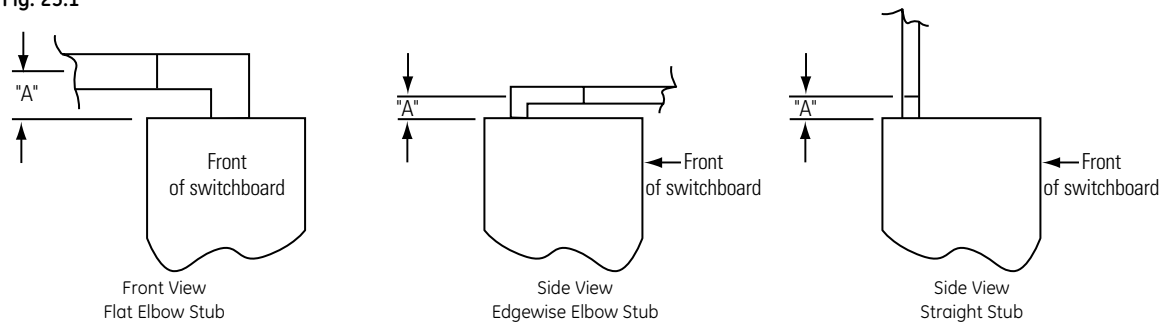
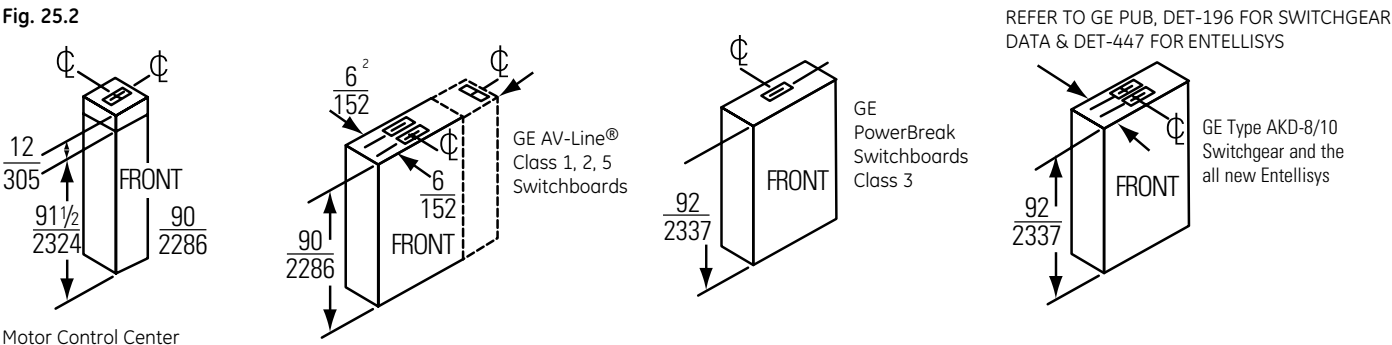


Fig. 25.2



² Standard dimension 6" from rear may vary and must be coordinated with switchboard factory.

Power takeoffs (PTO)

Standard lugs #2-600mcm

Bolt-On Tap	Amp Rating
Fusible-Switches (QMW Only)	600
Molded-Case Circuit Breakers (PB Only)	1600 Max.
Cable Boxes	1600 Max.

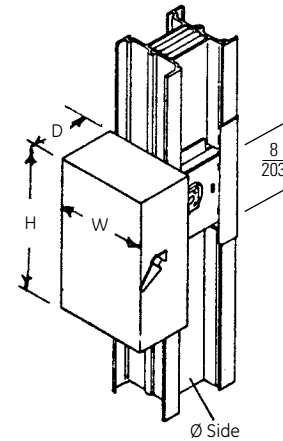
Table 26.2
Flex-A-Tap Device

Device	“H”		“W”		“D”	
	Inches	MM	Inches	MM	Inches	MM
Cable Tap Box	54	1372	24	610	15 1/2	394
QMW (600A)	66	1676	19 9/32	490	15 1/2	394
Power Break II	63	1600	24 9/32	617	18	457

Power Takeoff Weight in Lbs. (Add to Feed through Busway)

Bars Per Phase	All	
	3 Wire	4 Wire
1	73	87
2	104	119

Amp Rating	Type	"H"		"W"		"D"		PTO Device Weight (Lbs.)	
		Inches	MM	Inches	MM	Inches	MM	3 Wire	4 Wire
100	QMR	17.75	451	9.38	238	6.75	171	31	32
200	QMR	24.38	619	15.50	394	7.25	184	49	50
400	QMR	18	457	18.50	470	17.56	446	140	142
400	QMW	18	457	18.50	470	17.56	446	140	142
600	QMR	24	610	18.50	470	17.56	446	169	172
225	SF	20.50	521	9.75	248	7.75	197	45	47
600-800	SK	36	914	15.50	394	10.75	273	175	181
1200	SK	45.50	1156	15.50	394	10.75	273	203	219

$$\frac{\text{inches}}{\text{millimeters}}$$


12 1/2 min
324

14 1/8
368

9
229

26 1/8
670

18
457

(1) STACK

(2) STACK

H

W

D

Ø side

Power Take-off Device
See Table 26.4

30 1/8 min
768

H

CL JOINT

Physical Data

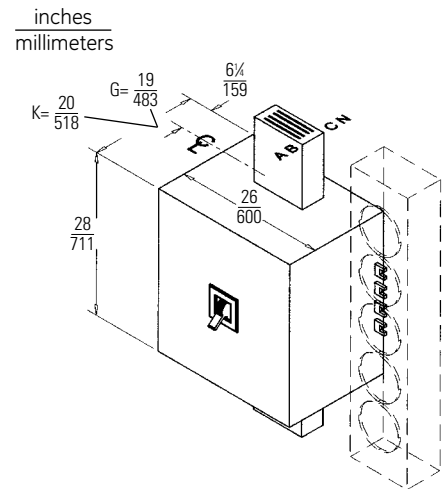
Power takeoffs (PTO)

Continued

Table 27.1

Bar Per Ø	Bar Width		"A"	
	Inches	MM	Inches	MM
1	1.625	41	16.75	425
	2.250	57		
	2.875	73		
	3.375	86		
	4.250	108		
	4.500	114		
	5.750	146		
2	6.500	165	20.00	508
	7.500	190		
	4.250	108		
	4.000	102		
	4.500	114		
	7.500	190		
			25.00	635
			28.75	730
			32.00	813

Fig. 27.1
Meter-mod Metering (in line device)
Available for G&K frame Spectra C/B only
For PTO Selection, see Table 33.1



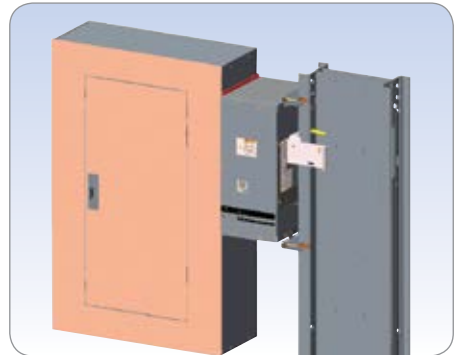
Note: Allow 6 5/8" from centerline of busway to the wall for Figures 27.1 and 27.2.

Busway Panel Plug

The Busway Panel Plug is a plug-in device that allows an A-Series* Lighting panelboard to mount to the wall and stab directly into the plug-in outlet of a vertically mounted, 3 phase 4 wire AL/CU, Spectra Series Busway. This unit is a labor saving device that comes completely assembled, with the main circuit breaker (MCB) prewired to the busway plug-in unit, ready to stab into vertical riser busway, mount to the wall and for the user to wire the load side of the A-Series branch breakers. The Busway Panel Plug is UL listed device per UL 857 (E22178) and UL 67 (E21790). It uses enclosure sizes and surface mounted fronts which are standard as the regular A-Series LP offering.

Features

- **Alignment Pin.** An alignment pin polarizes and locates the Busway Panel Plug in the correct position only.
- **Sliding Feature.** While the A-Series LP stays rigidly attached to the wall, the stab enclosure with the stab base slides with respect to the panelboard, via a sliding channel and stainless steel hardware which provide a frictionless finish. This is strategically designed in order to account for the thermal expansion of the busway. The design accounts for a 2" deflection on either side top or bottom corresponding to 90 degree C temperature on the busway.
- **Right/Left Mounting.** We have provided the ability that the Busway Panel Plug can be connected on either side of the busway, left or right.
- **Polarization.** The vertical riser busway is always engineered with Phase A in the front, furthest from the wall. This ensures that the phase matching between the Busway Panel Plug and the vertical riser Busway is always intact.
- **One Design Fits All.** The stab enclosure plug-in unit is geometrically the same for 150-400 A Busway Panel Plugs.
- **Compression Terminals.** We use compression terminals in our connections between the panelboard and plug stab asm. Conversely to mechanical terminals, compression terminals do not require re-torquing over time, hence they have less maintenance needed, if at all.
- **Delivery.** This product ships compete and ready to be installed from Busway Selmer, TN plant.



Busway Panel Plug

Continued

Specification/information requirements when engineering/ordering a Busway Panel Plug

1. The A-Series LP **interior and front** must be engineered in Speedi and it must be ordered separately from the Mebane, NC plant and shipped to the Selmer, TN plant. When ordering in Speedi use **MOD CODE INT** for interior only.
2. The A-Series **front** must be ordered through SFDC and shipped to Selmer, TN plant, on the same order with interior. Use Speedi to obtain the correct enclosure height and front Catalog Number. See Figure 28.1 at right. The **Busway Panel Plug enclosure** is ordered from Selmer, TN plant, manufactured, wired, assembled, and shipped from Selmer, TN to the customer job site.
3. Available only on A-Series LP with:
 - (a) *Top incoming feed location*
 - (b) *Enclosure box sizes, 20" wide, 7.86" deep, up to 64.5" high; (42 position panel-400amps max.)*
 - (c) *Surface mounted fronts*
 - (d) *Applications for 3 phase 4 wire, interiors, and vertically mounted, 3 phase 4 wire, AL/CU Spectra Series Busway*
 - (e) *Main Circuit Breaker (MCB) devices as shown on page 29 (See Table 29.1 — Main Circuit Breaker Availability).*
 - (f) *With SG MCB, the A-Series LP interior must be engineered with 200% neutral lugs (MOD CODE N2). Feed through lugs (MOD CODE), and sub-feed breakers cannot be selected with this configuration.*
4. The short circuit rating is limited to the lower short circuit rating of either the A-Series LP interior, the vertical Busway, or the main circuit breaker device.
5. Right/Left Mounting refers to the stab location with respect to the busway, when facing the phase/front side of the busway.
6. The service voltage of the vertical riser Busway, must match the service voltage of the A-Series LP. Only 60 hertz frequency is allowed for this application.
7. For the Busway Panel Plug installation instructions refer to GEH5658B.
8. For 150A Plug rating, with a horizontal Main Circuit Breaker (MCB), the MCB must be engineered in Speedi such that it is always on the same side as the stab enclosure plug-in unit.

Fig. 28.1
Example

1A Interior	AQF3424JTX AXN2
1B Box	AB64B Not Supplied
1C Front	AF64S Not Supplied
Dimensions	64.5"H x 20"W x 5.75"D

Physical Data

Catalog Nomenclature

Example – **SB150431LP**

SB	(150)	4	(31)	(L)	P
↓	↓	↓	↓	↓	↓
SB = Spectra busway	150 = 150A 250 = 250A 400 = 400A	4 = 3 PH, 4 W, GRD	31 = 31.5" high 37 = 37.5" high 43 = 43.5" high 49 = 49.5" high 55 = 55.5" high 64 = 64.5" high	R = Right side L = Left side	P = Phase A in front Neutral in back

Table 29.1
Main Circuit Breaker Availability

Plug Rating (A)	MCB Type	No. of Poles	Max. Voltage (V, RMS)	MCB Rating (A)	MCB Interruption Current Rating (ka)		
					240V	480V	600V
150	THQB	3	240	70-100A	10	-	-
150	THHQB	3	240	70-100A	22	-	-
150	TEYF	3	480	70-100A	65	18-	-
150	TEYD	3	480	70-125A	65	25	-
150	TEYH	3	480	70-125A	65	35	-
150	TEYL	3	480	70-125A	100	65	-
150	SED	2,3	600	15-150A	18	18	14
150	SEH	2,3	600	15-150A	65	25	18
150	SEL	2,3	600	15-150A	100	65	25
150	SEP	2,3	600	15-150A	200	100	25
250	SFH	3	600	70-250A	65	25	18
250	SFL	3	600	70-250A	100	65	25
250	SFP	3	600	70-250A	200	100	25
250	FEH	3	480	25-250A	200	100	-
250	FEN	3	480	25-250A	150	65	-
400	SGD	3	600	125-400A	65	-	-
400	SGH	3	600	125-400A	65	35	25
400	SGL	3	600	125-400A	100	65	65
400	SGP	3	600	125-400A	200	100	65

Table 29.2
Panelboard Enclosures Height

A
31.5
37.5
43.5
49.5
55.5
64.5

Fig. 29.1
Panel Plug, Front View

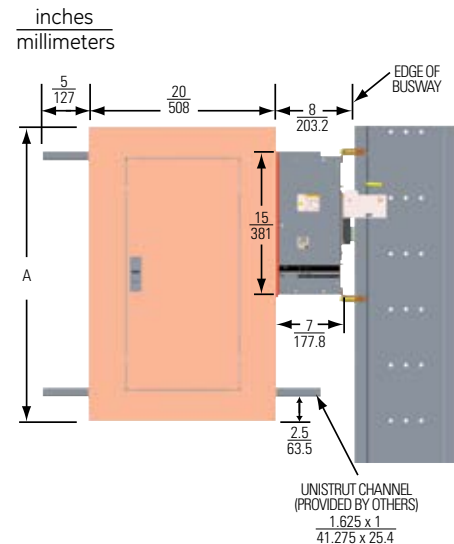
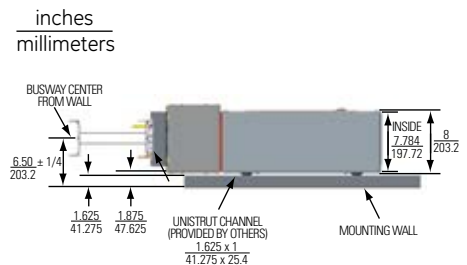


Fig. 29.2
Panel Plug, Top View



Physical Data

Transposition lengths

A transposition length is available in any dimension from 3 feet (914 mm) through 10 feet (3048 mm). Standard lengths are 36" and 42". "A" dimension varies with ampere rating. See Table 13.1 for "A" dimension.

inches
millimeters

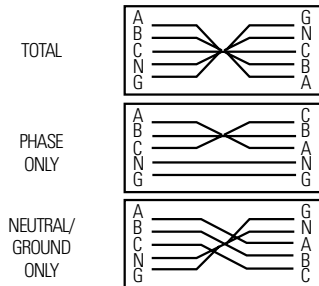
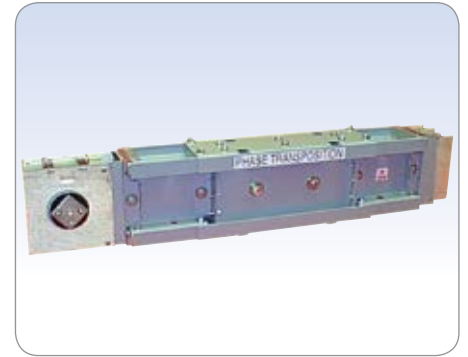
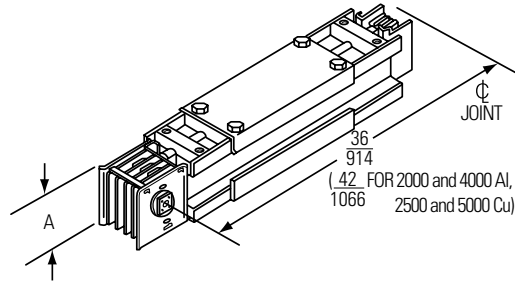


Fig. 30.1
Transposition Length



Phase transposition

Joints with $\pm \frac{1}{2}$ -inch (12.7 mm) adjustability

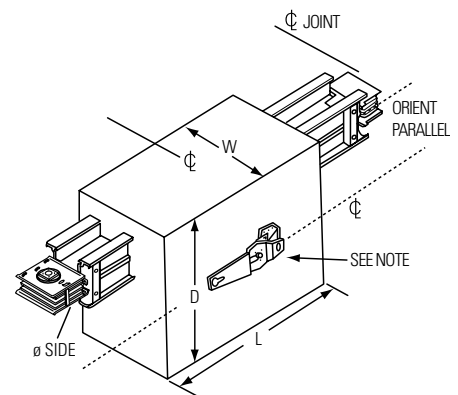
Every Spectra Series Busway is supplied with up to $\pm \frac{1}{2}$ -inch adjustable joint as standard. The modular joint pack is preassembled to one end of each piece of busway and shipped in the "nominal" position. The joint caps have four housing mounting holes or slots (eight on 5000 amp Copper) the holes contain twistouts permitting expansion or contraction of the joint up to $\frac{1}{2}$ inch in either direction.

Adapter/reducer cubicle with overcurrent device

Table 30.1

QMR Reducers							
QMR Switch	Line Side	L		W		D	
		Inches	MM	Inches	MM	Inches	MM
225A & 400A	1 Stack	48	1219	24	610	14 1/2	368
	2 Stack	48	1219	24	610	14 1/2	368
	Lugs	48	1219	24	610	14 1/2	368
600A	1 Stack	48	1219	24	610	14 1/2	368
	2 Stack	48	1219	24	610	14 1/2	368
	Lugs	48	1219	24	610	14 1/2	368
JJ C/B Reducers							
JJ C/B Switch	Line Side	L		W		D	
		Inches	MM	Inches	MM	Inches	MM
225A, 400A & 600A	1 Stack	40	1016	18	457	13	330
	2 Stack	40	1016	24	610	13	330
	Lugs	40	1016	18	457	13	330
S C/B Reducers							
SF C/B Switch	Line Side	L		W		D	
		Inches	MM	Inches	MM	Inches	MM
225A	1 Stack	40	1016	18	457	13	330
	Lugs	40	1016	18	457	13	330
SK C/B Switch	Line Side	L		W		D	
		Inches	MM	Inches	MM	Inches	MM
800A, 1000A & 1200A	1 Stack	42	1067	18	457	14	356
	2 Stack	42	1067	24	610	14	356
	Lugs	42	1067	18	457	14	356

Fig. 30.2
Reducer Cubicle
For cubicle selection, see Table 30.1



Note: For QMR Fusible 800,1000 and 1200 amp models, handle located on the bottom side of the cubicle. For standard flatwise mounted busway. Contact your local GE representative for catalog numbers.

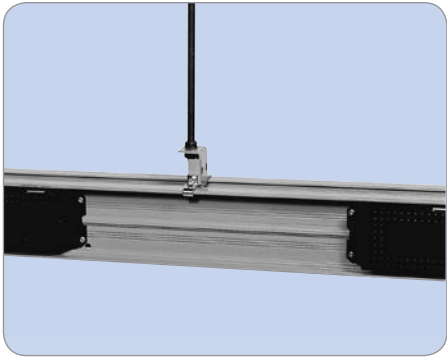
Standard lugs: #2-600mcm.

Physical Data

Hangers

Vertical mounting – spring hangers *(Must be ordered separately)*

Spring hangers should be ordered to support the busway at each floor if the distance from floor to floor is less than 16 feet. When the floor-to-floor span is more than 16 feet, supports and additional spring hangers are required on 16-foot centers maximum. The quantity of springs supplied is based on busway weight. Simple adjustment procedures are included with installation instructions. Mounting holes align with floor flanges.

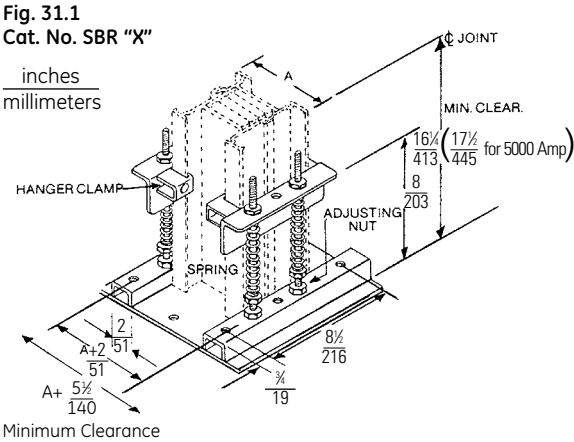


Standard clevis hanger

Cat. No. (SBR “X”) where “X” = Quantity of springs (1, 2 or 3) on each side of hanger (single spring up to 600 lbs. per floor).

Floor opening size refer to Table 13.1 for “A” dimension.

Catalog Number	Group Number	Spring Location	Load on Pair of Hangers (lbs.)
SBSR1	G723	B	0-600
SBSR2	G724	A & C	600-1200
SBSR3	G725	A, B & C	1200-1800



Horizontal mounting – 1 stack clevis hangers

(1 furnished every 10 feet. Requires (1) .50 inch diameter drop rods. Drop rods by others.)

One Stack Flatwise Hangers

Aluminum		Copper	
Catalog Number	Ampere Range	Catalog Number	Ampere Range
SBF16	225-600	SBF16	225-800
SBF28	800	SBF22	1000
SBF33	1000	SBF28	1200
SBF42	1200	SBF33	1350
SBF57	1350	SBF42	1600
SBF65	1600		
SBF82	2000		

Bar Width (Inches)		
IN	IN	IN
16 = 1.63	33 = 3.38	57 = 5.75
22 = 2.25	42 = 4.25	65 = 6.50
28 = 2.88	45 = 4.50	82 = 8.25

Fig. 31.2
One Stack (Standard) Flatwise
Cat. No. SBF “XX”
(See table at left)

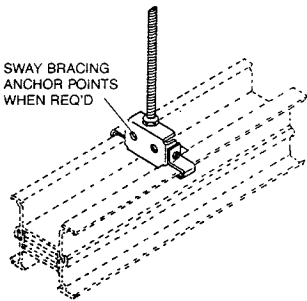
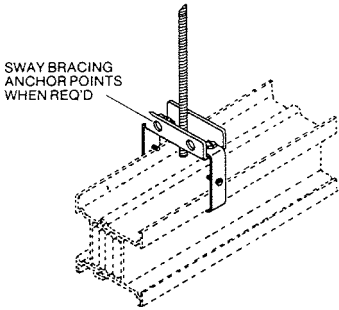


Fig. 31.3
One Stack Edgewise
Cat. No. SBE45
(Up to 2000 Amp Max)



Hangers

Continued

Horizontal mounting – trapeze hangers

One hanger furnished for every 10 ft. of Bus. Requires two 0.50 inch diameter drop rods not supplied by GE. Hanger will support 0.75 inch drop rods with field modification.

Fig. 32.1

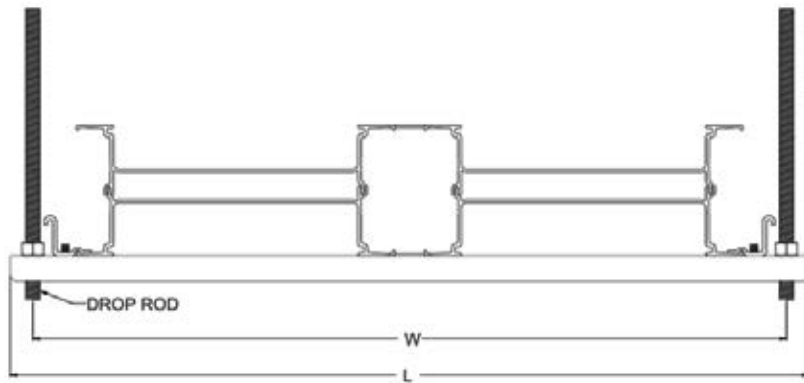
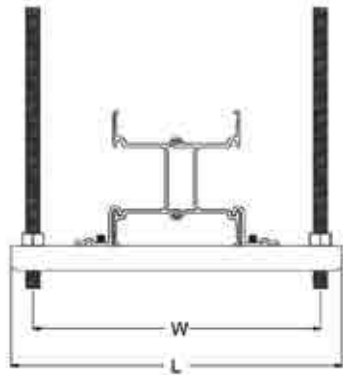


Fig. 32.2
Edgewise Trapeze
Use SBTE Only



Catalog Number	Stacks	Bar	"W"		"L"	
		Widths	Inches	MM	Inches	MM
SBT E	(1)	1.63" - 4.25"	10.25	260	11.81	300
SBT F	(1)	5.75" - 8.25"	14.00	356	15.56	395
SBT J	(2)	All	26.00	660	27.56	700

Physical Data

No fuse reducers

Table 33.1
"A" Dimensions

No. of Stacks	Amp	Aluminum		Copper	
		IN	MM	IN	MM
1	225	4.38	111	4.38	111
	400	4.38	111	4.38	111
	600	4.38	111	4.38	111
	800	5.63	143	4.38	111
	1000	6.13	156	5.00	127
	1250	7.00	178	5.63	143
	1350	8.50	216	6.13	156
	1600	9.25	235	7.00	178
	2000	11.00	279	8.50	216
	2500	—	—	10.50	260
2	2500	15.50	394	—	—
	3000	18.00	457	14.50	368
	3200	19.50	495	15.50	393
	4000	23.00	584	18.00	457
	5000	—	—	21.50	546

NOTE: Per NEC 368.17 (B), a no-fuse reduced busway shall not exceed 50 feet (1270 mm) in length and have a current rating at least 1/3 the rating of the upstream overcurrent protective device.

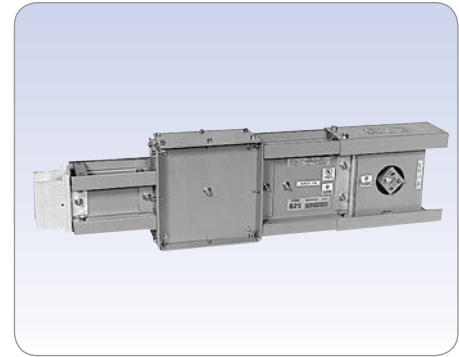
For industrial applications only.

Thermal expansion

Consideration should be given to the effects of thermal expansion. The $\pm 1"$ (25 mm) expansion fittings may be necessary for vertical or horizontal applications of 150' (45720 mm) or more. The use of the $\pm 2"$ (51 mm) expansion fitting is required when the busway run is long and may cross a building. Contact GE Requisition Engineering for specific applications.

Table 33.2
"W" Dimensions

No. of Stacks	Amp	Aluminum		Copper		Weight in lbs. ± 1 inch				Weight in lbs. ± 2 inches			
						Aluminum		Copper		Aluminum		Copper	
		Inches	MM	Inches	MM	3 Wire	4 Wire	3 Wire	4 Wire	3 Wire	4 Wire	3 Wire	4 Wire
1	225	16	406	16	406	71	82	83	92	82	93	96	107
	400	16	406	16	406	71	82	83	92	82	93	96	107
	600	16	406	16	406	71	82	83	92	82	93	96	107
	800	16	406	16	406	83	95	83	92	101	116	96	107
	1000	17.6	448	16	406	94	107	100	114	108	124	111	127
	1200	17.6	448	16	406	104	118	115	137	120	138	128	151
	1350	21.6	549	17.6	448	121	140	149	169	143	166	143	167
	1600	21.6	549	17.6	448	130	148	144	171	152	179	162	192
	2000	21.6	549	21.6	549	151	181	185	219	178	214	203	242
	2500	—	—	21.6	549	—	—	216	261	—	—	252	304
2	2500	29	737	—	—	194	226	—	—	224	263	—	—
	3000	29	737	29	737	230	274	263	316	269	323	293	353
	3200	30.5	775	29	737	262	309	272	329	278	328	338	412
	4000	33.6	854	29	737	281	336	358	433	297	355	375	453
	5000	—	—	33.6	854	—	—	455	560	—	—	457	561



No fuse reducer

Fig. 33.1
Reducer

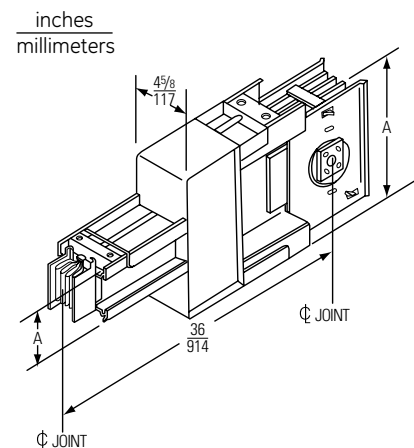
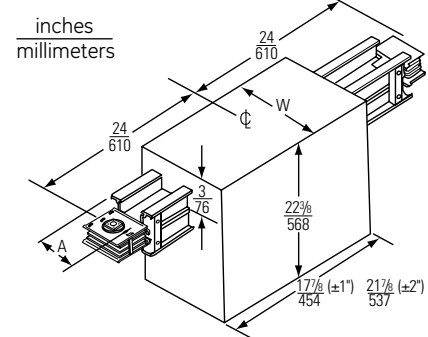


Fig. 33.2
Expansion Length



Wall, ceiling, and floor flanges

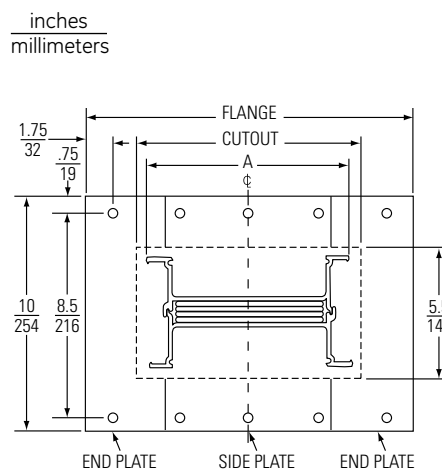
Flanges are used to close wall openings when busway runs pass through walls, ceilings and floors. See Table 34.1. Hole pattern aligns with spring riser brackets. See Table 13.1 for "A" dimension.

Note: Floor or wall opening should be 1" (25 mm) larger than applied busway.

Table 34.1
Flange and cutout dimensions

Ampere	Dimensions			
	Flange		Cutout	
	IN	MM	IN	MM
Aluminum				
225	9.88	251	5.38	137
400	9.88	251	5.38	137
600	9.88	251	5.38	137
800	11.13	283	6.63	168
1000	11.63	295	7.13	181
1200	12.5	318	8	203
1350	14	356	9.5	241
1600	14.75	375	10.25	261
2000	16.5	419	12	305
2500	21	533	16.5	419
3000	23.5	597	19	483
3200	24	610	19.5	495
4000	28.5	724	24	610
Copper				
225	9 $\frac{1}{8}$	251	5.38	137
400	9 $\frac{1}{8}$	251	5.38	137
600	9 $\frac{1}{8}$	251	5.38	137
800	9 $\frac{1}{8}$	251	5.38	137
1000	10 $\frac{1}{2}$	267	6	152
1200	11 $\frac{1}{8}$	283	6.63	168
1350	11 $\frac{1}{8}$	295	7.13	181
1600	12 $\frac{1}{2}$	318	8	203
2000	14	356	9.5	241
2500	15 $\frac{1}{8}$	400	11.25	286
3000	20	508	15.5	394
3200	21	533	16.5	419
4000	23 $\frac{1}{2}$	597	19	483
5000	27	686	22.5	572

Fig. 34.1

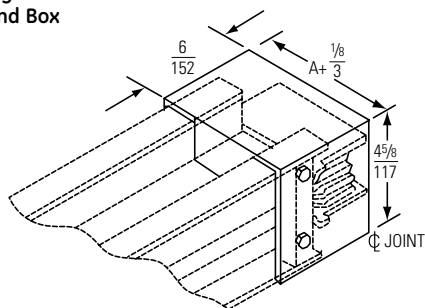


Cutout allows .5", 13mm on all sides of busway.

End Boxes

End boxes are used to terminate busway runs. No joint is required. End surface of box adds 6" (152 mm) to length of drip-proof, splash-proof and outdoor runs. See Table 13.1 for "A" dimension. Box is secured via joint cap bolts.

Fig. 34.2
End Box



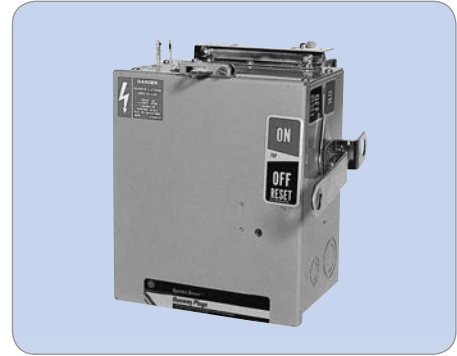
Plugs

Switch-operated fusible plugs are equipped with type QMR quick-make, quick-break mechanisms, in ratings from 30 to 600 amps, 240 and 600 volts. Positive pressure NEC fuse clips are furnished standard. They are also available with class “J” or “R” fuse clips.

Circuit breaker plugs are available with molded case circuit breakers, in ratings from 15 to 800 amps, 240 to 600 volts.

Both fusible and circuit breaker Spectra Series busway plugs have:

- Plug assist mechanism standard on plugs rated above 100 amps.
- A cover interlock that prevents opening the cover when the switching device is in the “ON” position. The interlock can be defeated by operating the release mechanism through the door. However, by bending down a tab inside the cover, the interlock becomes non-defeatable.
- A device interlock that prevents the switching device from being accidentally operated when the cover is open.
- A provision to padlock the plug in the “OFF” position when the cover is closed (suitable for single padlock with a 5/16-inch shank).
- A handle that can be mounted either on the side or end of the plug. In addition, the handle may be mounted in one of two positions at each location.
- A handle that can be operated by a hook stick.
- A safety interlock that prevents insertion or removal of the plug when in the “ON” position.
- Positive locator pin for exact, safe positioning.
- Both drip-proof (IP43) and splash-proof (IP54) plugs are available.



Industrial duty plug

Table 35.1
Recommended Type QMR and QMW¹ Fusible Switch Combinations

Fusible Switch Type	Amperes	Fuse		Short-Circuit Rating in Ampere RMS Symmetrical
		U/L Class	Description	
QMR	30-600	H/NEC	One-Time	10,000
		R	Current Limiting Rejection	200,000
		J	Current Limiting Rejection	200,000

The interrupting rating of the fuse must equal or exceed the short-circuit rating of the switch. If it is lower, then the interrupting rating of the switch is the same as for the fuse. Both QMR and QMW switches have no short-circuit ratings if renewable fuses are used.

¹ For type QMW, refer to factory.

Table 35.2
Fusible Plug Horsepower Ratings²

Device Rating in Amperes	3-Phase Horsepower Ratings					
	With NEC Fuses			With Time Delay Fuses		
	240 Volts	480 Volts	600 Volts	240 Volts	480 Volts	600 Volts
30	3	5	7 1/2	10	20	20
60	7 1/2	15	15	20	40	50
100	15	25	30	30	60	75
200	25	50	60	60	125	150
400	50	100	125	125	250	350
600	75	150	200	200	400	500

² Ratings are based on NEC Article 430. Horsepower ratings for plugs with NEC fuses are based on one-time fuses having minimum time delay. When time delay fuses are used, the horsepower ratings are maximum for the plug.

Table 35.3
Circuit Breaker Plug Interrupting Ratings³

Circuit Breaker		Trip Range Rating in Amperes	Interrupting Ratings in Thousand Amperes RMS Symmetrical		
Standard Frame	Number of Poles		120 Volts or 240 Volts	480 Volts	600 Volts
TEB	1, 2, 3	15-100	10	—	—

³ These are maximum ratings regardless of the busway rating.

Plugs

Table 36.1
Spectra RMS* Circuit Breaker Busway Plugs

Construction	Spectra ¹ Frame Type	Trip Range (Amps)	Old Frame Type	Trip Range (Amps)	Spectra Frame ² IC Ratings		
					240 V	380, 415, 480 V	600 V
Standard Frames	—	—	TEB	15-100	—	—	—
	SED	15-150	TED4	15-100	18	18	14
	SED	15-150	TED6	15-100	18	18	14
	SFH	70-250	TFJ	70-225	65	35	22
	SFH	70-250	TFK	70-225	65	35	25
	SGH4	125-400	TJJ	125-400	65	35	25
	SGH4	125-400	TJK4	125-400	65	35	25
	SGH6	250-600	TJK6	250-600	65	35	25
	SGH6	250-600	TJ4V	150-600	65	35	25
	SKH	300-800	TKM8	300-800	65	50	25
Hi-Break® Frames	SKH	300-800	TK4V	800	65	50	25
	SEH	15-150	THED	15-100	65	25	18
	SFH	70-250	THFK	70-225	65	35	22
	SGH4	125-400	THJK4	125-400	65	35	25
	SGH6	250-600	THJK6	400-600	65	35	25
	SGH6	250-600	THJ4V	150-600	65	35	25
	SGH6	250-600	TJH	150-600	65	35	25
	SKH	300-800	THKM8	300-800	65	50	25
Fuseless Current Limiting	SKH	300-800	TKH	300-800	65	50	25
	SEP	15-150	THLC1 ³	15-100	200	100	25
	SFP	70-250	THLC2 ³	125-225	200	100	25
	SGP4	125-400	THLC4 ³	225-400	200	100	65
High Interrupting	SGP6	250-600	—	—	200	100	65
	SEL	15-150	TEL ³	15-100	100	65	25
	SFL	70-250	TFL ³	125-225	100	65	25
	SGL4	125-400	TLB4 ³	250-400	100	65	65
	SGL6	250-600	TJL4V	150-600	100	65	65
	SGL6	250-600	TJL	150-600	100	65	65
	SKL	300-800	TKL4V	400-800	100	65	42
	SKL	300-800	TKL	800	100	65	42

¹ Spectra RMS™ Circuit Breakers UL listed for Spectra Series* Busway only.

² UL listed interrupting ratings in thousand amperes rms symmetrical ac volts.

³ Discontinued; replaced by Spectra Frame Type.

Spectra RMS* Circuit Breaker Maximum IC Ratings
(rms sym. kA)

Frame Type	240V	380, 415, 480 V	600 V
SED	18	18	14
SEH	65	25	18
SEL	100	65	25
SEP	200	100	25
SFH	65	35	22
SFL	100	65	25
SFP	200	100	25
SGH4	65	35	25
SGL4	100	65	65
SGP4	200	100	65
SGH6	65	35	25
SGL6	100	65	65
SGP6	200	100	65
SKH	65	50	25
SKL	100	65	42
SKP	200	100	65



Plugs

Spectra Bus Plugs with Surge Protective Device (SPD) Protection

Spectra bus plugs are available with integral SPD devices (see Table 37.1 below and Table 38.1 on page 38) for a variety of location categories and exposure levels. Indicating lights communicate proper system operation. Ratings and specifications:

- SPDs are individually fused through Thermally Protected MOV Technology.
- Suitable for medium to high exposure, service entry or branch panel locations.
- UL-1449, Third Edition; cUL and UL-1283 Recognized Component.
- Maximum surge current rating is based on the 8/20 μ s test waveform.
- Maximum single impulse surge current ratings of 65kA to 300kA per **mode** tested on a complete SPD unit and all components that make up SPD system. Modes are expressed as (L-L, L-N, N-G, L-G); Phase is expressed as (L-N + L-G).
- Repetitive surge current tested — ANSI/IEEE C62.41, Category C3 (High) Exposure Level:
 - 125kA-300kA per mode rated device; 10kA/8x20 μ s: 20,000 impulses.
 - 65kA-100kA per mode rated device; 10kA/8x20 μ s: 5,000 impulses.
- Short Circuit Current Rating (SCCR): 200kA maximum.
- UL 1449 Nominal Discharge Current Rating (In): 20kA — rated for use on UL96A Lighting Protection Systems. Refer to UL directory VZCA.E320456 for the Voltage Protection Rating (VPR) UL 1449 3rd Edition ratings.

Note: Suppression Voltage Rating (SVR) are no longer assigned by UL and are provided for reference purpose only. Refer to FES-006, DET-516, DET-514 for UL-1449, Second Edition SVR values.

- Maximum Continuous Operating Voltage (MCOV). 115% of nominal system voltage or greater (depending on model voltage type). 125% on 120 volt models. Refer to UL directory category VZCA. E320456 for specific MCOV values.
- Noise Filter Capability: -50dB minimum at 100kHz.
- Contact your GE representative for more details.



Spectra SPD bus plug

Table 37.1
Spectra Bus Plugs with Tranquell SPD Protection

Nominal Voltage (Volts, RMS)	Configuration	Medium Exposure Models					
		65kA per Mode		80kA per Mode		100kA per Mode	
		Plug Cat. No.	SPD Cat. No.	Plug Cat. No.	SPD Cat. No.	Plug Cat. No.	SPD Cat. No.
120/240	1 Phase, 3 Wire + Ground	SB35TVSS120S	TPME120S06	SB38TVSS120S	TPME120S08	SB310TVSS120S	TPME120S10
120Y/208	3 Phase, 4 Wire + Ground	SB45TVSS208YX	TPME120Y06	SB48TVSS208YX	TPME120Y08	SB410TVSS208YX	TPME120Y10
240 Delta	3 Phase, 3 Wire + Ground	SB35TVSS240DX	TPME240D06	SB38TVSS240DX	TPME240D08	SB310TVSS240DX	TPME240D10
120/240 Delta HL	3 Phase, 4 Wire + Ground	SB45TVSS240H	TPME240H06	SB48TVSS240H	TPME240H08	SB410TVSS240H	TPME240H10
240Y/415	3 Phase, 4 Wire + Ground	SB45TVSS240YX	TPME240Y06	SB48TVSS240YX	TPME240Y08	SB410TVSS240YX	TPME240Y10
277Y/480	3 Phase, 4 Wire + Ground	SB45TVSS480YX	TPME277Y06	SB48TVSS480YX	TPME277Y08	SB410TVSS480YX	TPME277Y10
220Y/380	3 Phase, 4 Wire + Ground	SB45TVSS220Y	TPME220Y06	SB48TVSS220Y	TPME220Y08	SB410TVSS220Y	TPME220Y10
480 Delta	3 Phase, 3 Wire + Ground	SB35TVSS480DX	TPME480D06	SB38TVSS480DX	TPME480D08	SB310TVSS480DX	TPME480D10
347Y/600	3 Phase, 4 Wire + Ground	SB45TVSS600YX	TPME347Y06	SB48TVSS600YX	TPME347Y08	SB410TVSS600YX	TPME347Y10
600 Delta	Not Available						

Plugs

Table 38.1
Spectra Bus Plugs with Tranquell SPD Protection (continued)

Nominal Voltage (Volts, RMS)	Configuration	High Exposure Models							
		125kA per Mode		150kA per Mode		200kA per Mode		300kA per Mode	
		Plug Cat. No.	SPD Cat. No.	Plug Cat. No.	SPD Cat. No.	Plug Cat. No.	SPD Cat. No.	Plug Cat. No.	SPD Cat. No.
120/240	1 Phase, 3 Wire + Ground	SB412TVSS120S	TPHE120S12	SB415TVSS120S	TPHE120S15	SB420TVSS120S	TPHE120S20	SB430TVSS120S	TPHE120S30
120Y/208	3 Phase, 4 Wire + Ground	SB412TVSS120Y	TPHE120Y12	SB415TVSS120Y	TPHE120Y15	SB420TVSS120Y	TPHE120Y20	SB430TVSS120Y	TPHE120Y30
240 Delta	3 Phase, 3 Wire + Ground	SB312TVSS240D	TPHE240D12	SB315TVSS240D	TPHE240D15	SB320TVSS240D	TPHE240D20	SB330TVSS240D	TPHE240D30
120/240 Delta HL	3 Phase, 4 Wire + Ground	SB412TVSS240H	TPHE240H12	SB415TVSS240H	TPHE240H15	SB420TVSS240H	TPHE240H20	SB430TVSS240H	TPHE240H30
240Y/415	3 Phase, 4 Wire + Ground	SB412TVSS240Y	TPHE240Y12	SB415TVSS240Y	TPHE240Y15	SB420TVSS240Y	TPHE240Y20	SB430TVSS240Y	TPHE240Y30
277Y/480	3 Phase, 4 Wire + Ground	SB412TVSS277Y	TPHE277Y12	SB415TVSS277Y	TPHE277Y15	SB420TVSS277Y	TPHE277Y20	SB430TVSS277Y	TPHE277Y30
220Y/380	3 Phase, 4 Wire + Ground	SB412TVSS220Y	TPHE220Y12	SB415TVSS220Y	TPHE220Y15	SB420TVSS220Y	TPHE220Y20	SB430TVSS220Y	TPHE220Y30
480 Delta	3 Phase, 3 Wire + Ground	SB412TVSS480D	TPHE480D12	SB415TVSS480D	TPHE480D15	SB420TVSS480D	TPHE480D20	SB430TVSS480D	TPHE480D30
347Y/600	3 Phase, 4 Wire + Ground	SB412TVSS347Y	TPHE347Y12	SB415TVSS347Y	TPHE347Y15	SB420TVSS347Y	TPHE347Y20	SB430TVSS347Y	TPHE347Y30
600 Delta	Not Available								

Notes:

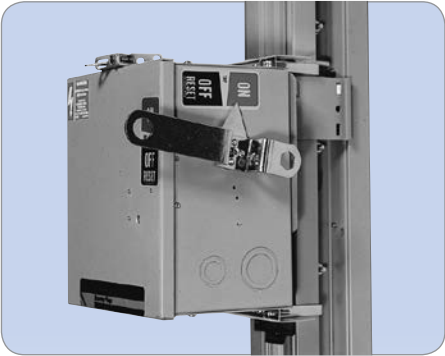
1. All SPD catalog numbers followed by suffix NSBX, Type 2 installation locations.
2. SPD plugs come with SPDs individually fused with Thermally Protected MOV Technology.
3. **(Optional Offering)** SPD plugs with additional UL recognized component (E60314) special purpose MOV protector fuse, one per phase, manufactured by Mersen, catalog number VSP100-XL. Add suffix "F" to plug catalog number.

Plugs

Table 39.1

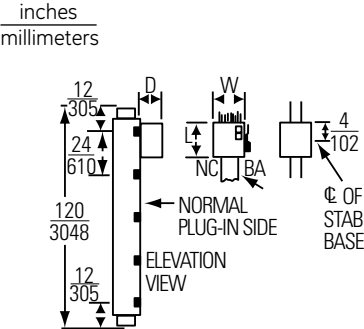
Tier	Frame	Dimensions						Handle Height ¹		Weight (lbs.)	Plug-in Outlets	Figure
		W		L		D						
		Inches	MM	Inches	MM	Inches	MM	Inches	MM			
Lowest	SED	11.00	279	13.00	330	8.00	203	9.12	232	25	1	40.1
Low	SEH	11.00	279	13.00	330	8.00	203	9.12	232	25	1	40.1
	SFH	11.00	279	21.25	540	9.00	229	9.50	241	41	1	40.1
	SGH	16.75	425	26.50	673	12.00	305	9.50	241	91	2	40.2
	SKH ²	16.75	425	36.50	927	12.00	305	18.00	457	160	2	40.2
Mid	SEL	11.00	279	13.00	330	8.00	203	9.12	232	25	1	40.1
	SFL	11.00	279	21.25	540	9.00	229	9.50	241	41	1	40.1
	SGL	16.75	425	26.50	673	12.00	305	18.00	457	91	1	40.2
	SKL ²	16.75	425	36.50	927	12.00	305	18.00	457	160	2	40.2
Peak	SEP	11.00	279	13.00	330	8.00	203	9.12	232	25	1	40.1
	SFP	11.00	279	21.25	540	9.00	229	9.50	241	41	1	40.1
	SGP	16.75	425	26.50	673	12.00	305	18.00	457	91	1	40.2
	SKP ²	16.75	425	36.50	927	12.00	305	18.00	457	160	2	40.2

¹ Maximum distance from enclosure bottom to handle tip.
² For ground fault option, increase width by 2.125 inches and length by 6.00 inches.



Vertical riser bus with plug installed

Fig. 39.1
Typical vertical application
with Spectra Series riser busway



Plugs

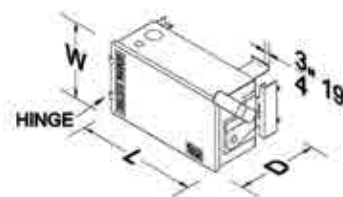
Table 40.1
Fusible Switches

Type	Amps	Dimensions								Weight (lbs.)	Voltage Rating	Figure
		W		L				D				
				Standard Gutter		Extender						
		Inches	MM	Inches	MM	Inches	MM	Inches	MM			
QMR	30	11.25	286	13.00	330	18.63	473	8.75	222	24	240, 380, 415, 480, 600	40.1
	60	11.25	286	13.00	330	18.63	473	8.75	222	25		40.1
	100	11.25	286	18.75	476	NA	NA	8.75	222	28		40.1
	200	16.00	406	18.75	476	24.50	622	8.75	222	46		40.1
	400	20.50	521	18.75	476	NA	NA	18.75	476	135		40.1
	600	20.50	521	24.50	622	NA	NA	18.75	476	160		40.2

NA = Not Available

Fig. 40.1
Door hinges at left end.

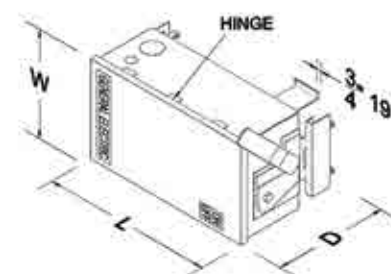
All dimensions are shown over largest part of plug.



Rotate plug 180° clockwise

Fig. 40.2
Door hinges at top.

All dimensions are shown over largest part of plug.



Rotate plug 180° clockwise

Cataloging

Busway plugs

Fusible bus plug catalog numbering system.

Refer to page 39-40 for enclosure sizes.

Table 41.1

Type	Code	Description	SB	3	6	2	R	G	R	P	I	X
Service	SB	Spectra Bus (Industrial)										
	AC	N/A										
	FVK	N/A										
Volts	3	3Ø 3W										
	4	3Ø 4W										
Amps	2	240										
	6	380, 415, 480, 600										
Switch	1	30										
	2	60										
	3	100										
	4	200										
	5	400										
	6	600										
Ground	R	QMR										
	W	QMW										
Fuse Clips	G	Ground Stab (Std.)										
	R	Class R										
	J	Class J										
Plug Assist	Omit	Class H										
	P	Plug Assist (Std. on 200-600)										
	Omit	None										
Drip Resistant (IP-43)	I	Cover & Base Gasketing										
	Omit	None										
Splash-Proof (IP-54)	Z	Cover & Base Extensive Gasketing/Sealing										
	Omit	None										
Bus Plug	X	Two Interlocked										

Notes:
Lugs size may vary depending on the application. Contact factory for details.
Compression lugs are available as an option.
* Plug assist feature is standard on 200 amp and greater; optional for plugs 150 and below.

Cataloging

Plugs

A plug assist is furnished as standard on all plugs 200 amps and greater listed on this page. If plug assist is required on other plugs, add Suffix "P" to Catalog Number.

Grounding stab to engage internal or integrated housing ground bus is standard on all Spectra Series plugs. Mating stab is optional on Spectra Series Plug-in Busway.

All fusible plugs are furnished with Type "NEC" fuse clips as standard. Optional fuse clips are available.

Refer to page 39-40 for enclosure sizes.

Table 42.1
Switch-operated Fusible Plug with QMR Interrupter

Volts ac	Amps	3Ø-3W Catalog Number	3Ø-4W Catalog Number
240	30	SB 321RG	SB 421RG
	60	SB 322RG	SB 422RG
	100	SB 323RG	SB 423RG
	200	SB 324RG	SB 424RG
	400	SB 325RG	SB 425RG
	600	SB 326RG	SB 426RG
480 or 600	30	SB 361RG	SB 461RG
	60	SB 362RG	SB 462RG
	100	SB 363RG	SB 463RG
	200	SB 364RG	SB 464RG
	400	SB 365RG	SB 465RG
	600	SB 366RG	SB 466RG

Table 42.2
Adapter Kits Convert Spectra Series Bus Plugs to Armor Clad
Ground stab included. See GE instructions pub no. GEH-5647

Amps	Catalog Number
30-100	SBAC1G
200-225	SBAC4G
440-600	SBAC5G

Table 42.3
Combination motor starter plugs-fusible and circuit breaker¹
(3-pole, full-voltage, non-reversing, single-speed)
Includes 3 overload relays with manual reset

NEMA Size	Max Hp Rating, 3-phase		Max. Fuse Size, Amp	Max. Trip Size, Amp
	240 Volts	440/550 Volts	With Fusible Switch Disconnect	With Circuit Breaker Disconnect
0	3	5	30	20
1	7½	10	60	50
2	15	25	100	70
3	30	50	200	100

¹ Order by description.



Bus plug with plug assist

Exclusive GE plug assists are furnished on all plugs 200A and above that will mechanically engage or disengage the plug from the busway only when the plug is in the OFF position. Plug assist is optional on plugs less than 200A.

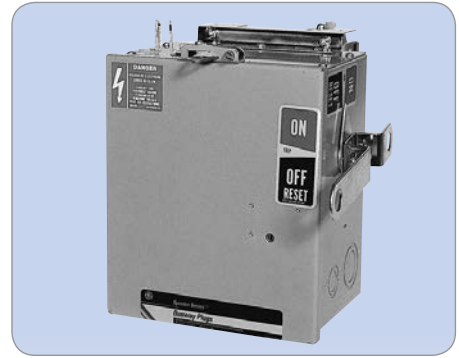
Cataloging

Cataloging

Cataloging

Table 43.1
Circuit Breaker Plugs

Type Frame	Trip Amps	3Ø-3W Cat. No.	3Ø-4W Cat. No.
Record Plus Circuit Breakers			
FGH250	125	SB312FGH2G	SB412FGH2G
	150	SB315FGH2G	SB415FGH2G
	175	SB317FGH2G	SB417FGH2G
	200	SB320FGH2G	SB420FGH2G
	225	SB322FGH2G	SB422FGH2G
	250	SB325FGH2G	SB425FGH2G
FGH400	175	SB317FGH4G	SB417FGH4G
	200	SB320FGH4G	SB420FGH4G
	225	SB322FGH4G	SB422FGH4G
	250	SB325FGH4G	SB425FGH4G
	300	SB330FGH4G	SB430FGH4G
	350	SB335FGH4G	SB435FGH4G
	400	SB340FGH4G	SB440FGH4G
FGH600	450	SB345FGH7G	SB445FGH7G
FGN250	125	SB320HFK	SB320HFK
	150	SB322HFK	SB322HFK
	175	SB312HJK4	SB312HJK4
	200	SB315HJK4	SB315HJK4
	225	SB317HJK4	SB317HJK4
	250	SB320HJK4	SB320HJK4
FGN400	175	SB317FGN4G	SB417FGN4G
	200	SB320FGN4G	SB420FGN4G
	225	SB322FGN4G	SB422FGN4G
	250	SB325FGN4G	SB425FGN4G
	300	SB330FGN4G	SB430FGN4G
	350	SB335FGN4G	SB435FGN4G
	400	SB340FGN4G	SB440FGN4G
FGN600	450	SB345FGN6G	SB445FGN6G



Industrial duty plug

Table 43.2
100% Rated Bus Plugs

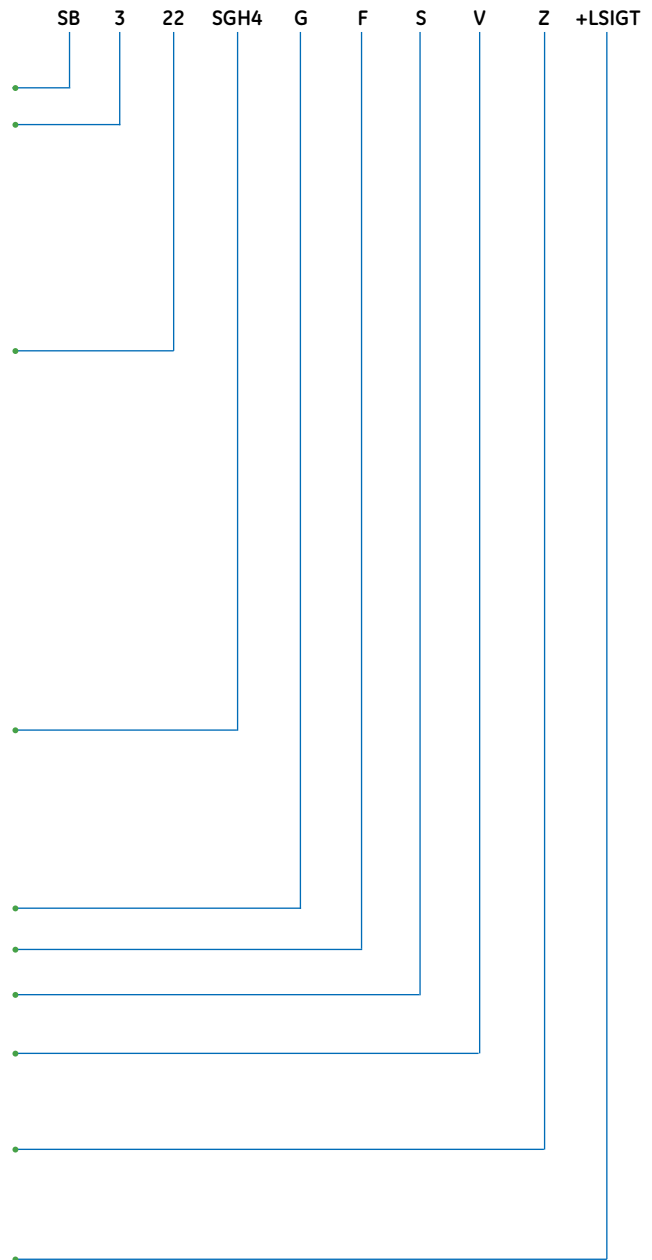
Trip Amps	Service	Cat. No.			Weight	Dimensions		
		50kaic @ 480vac	65kaic @ 480vac	100kaic @ 480vac	Lbs.	W	L	D
600	3PØ-3W	SB360SKHHG	SB360SKLLG	SB360SKPPG	160	16.75	16.50	12.00
	3PØ-4W	SB460SKHHG	SB460SKLLG	SB460SKPPG				
700	3PØ-3W	SB370SKHHG	SB370SKLLG	SB370SKPPG				
	3PØ-4W	SB470SKHHG	SB470SKLLG	SB470SKPPG				
800	3PØ-3W	SB380SKHHG	SB380SKLLG	SB380SKPPG				
	3PØ-4W	SB480SKHHG	SB480SKLLG	SB480SKPPG				

Cataloging

microEntelliGuard* Busway catalog numbering system

Table 44.1

Type	Code	Description
Service	SB	Spectra Bus (Industrial)
	3	3P 3W
	4	3P 4W
Amps	6	60
	8	80
	10	100
	12	120
	15	150
	20	200
	22	2250
	25	25
	30	300
	35	350
	40	400
	45	450
	50	500
	60	600
	70	700
	80	800
Breaker Frame	SGH	SGHC3601
	SGH4	SGHC3604
	SGH6	SGHC3606
	SKH	SKHC3608
	SGL	SGLC3601
	SGL4	SGLC3604
	SGL6	SGLC3606
	SKL	SKLC3608
	SGP	SGPC3601
	SGP4	SGPC3604
	SGP6	SGPC3606
	SKP	SKPC3608
Ground	G	Ground Stab (Std.)
Ground Fault	F	Ground Fault
	Omit	None
Shunt Trip	S	Shunt Trip
	Omit	None
Communication	V	Communication
	Omit	None
Enclosure	I	Cover & Base Gasketing Drip Resistant (IP-43)
	Z	Cover & Base Extensive Gasketing/ Sealing Splash proof (IP-54)
	Omit	Indoor
Trip Function	+LSIT	Long Time, Short Time, Instantaneous Trip
	+LSIGT	Long Time, Short Time, Instantaneous, Ground Fault Trip



Note: microEntelliGuard replaces the MicroVersaTrip trip units. Plug assist is standard on all catalog numbers.

Guide Form Specifications

Drawing notes for Spectra Series* Feeder and Plug-in Busway

The following information should appear on the electrical drawings:

1. Amp rating, continuous.
2. Service: _____ phase, _____ wire, _____ volts, with or without internal ground.
3. Available short-circuit current at input end in amps rms symmetrical.
4. Maximum voltage drop and power factor at output end and whether load is distributed along run or concentrated at end of run.
5. Bus bar material (aluminum or copper).
6. Location of all fittings. For expansion fittings, show amount of compensation required as "± inches/mm, total _____ inches/mm."
7. Limiting dimensions of busway width and depth where passing through walls or floors or around obstructions.
8. Mounting position of busway (flatwise, edgewise, or vertical riser).

Feeder Busway specifications

Where shown on plans, furnish and install a totally enclosed, low-impedance busway system of the indicated ratings with all necessary fittings, power takeoffs, hanging devices and accessories.

Material and installation shall comply with all applicable codes, recommended practices, and standards of ANSI, IEEE, NEMA and UL. All components of the busway shall be UL listed. Arrangements, details, and locations shall be as shown on the drawings and specified herein.

The housing shall be of extruded aluminum to provide maximum protection against corrosion from water and other contaminants normally encountered during construction. All hardware shall be plated to prevent corrosion.

Tie bolts shall brace aluminum housing and bars to withstand, without damage or permanent distortion, short-circuit currents of the magnitude shown on the drawings when tested in accordance with UL standard. Busway shall be finished in ANSI-61 grey enamel.

Joints shall be of the one-bolt removable/isolatable type with through-bolts that can be checked for tightness without deenergizing the system. It shall be possible to make up a joint from one side in the event the busway is installed against a wall or ceiling. The joint shall be so designed as to allow removal of any length without disturbing adjacent lengths. Belleville springs shall be provided to give positive pressure over complete contact area. Where required, the joint bolt shall provide a direct visual indication of pressure (tension) applied to the joint contact area. The means of visual indication shall be a color change in the head of the bolt. This indication shall remain accurate after multiple tightenings and loosening of the bolt.

The maximum hot-spot temperature rise at any point in the busway at continuous rated load shall not exceed 55°C above a maximum ambient temperature of 40°C in any position. (Ambient temperature averaged over 24-hour period.)

Bus bars shall be suitably plated at all joints and contact surfaces.

Feeder Busway specifications *(continued)*

All insulation material shall be NEMA class B epoxy (130°C).

Horizontal runs of busway shall be UL Listed for hanging on 10-foot (3.05 meters) centers in any position. Vertical riser runs of busway shall be supported with rigid and/or spring hangers in positions indicated on plans (max 16'/4.88 meters) centers.

Final field measurements shall be made by the contractor prior to release for manufacture to assure coordination with other trades.

The busway shall be General Electric Spectra Series.

Plugs

Where shown on plans, furnish and install busway plugs of the types and ratings indicated. When applicable, plugs shall be UL labeled.

Housing shall completely enclose the switching device and shall be of sheet steel furnished in ANSI-61 grey enamel over a rust inhibitor. Provide stab shields that protect stabs and ground plug body to busway housing before stabs make power contact. Provide grounding terminal inside plug body and adequate shielding to prevent access to live parts when cover is open.

Provide means for padlocking cover and operating handle in "OFF" position. The operating handle shall be easily moved from end to side or vice versa so that it will be in the correct position to operate from the floor. All current-carrying parts shall be suitably plated.

Operating switch type plugs shall have positive quick-make, quick-break interrupter, and positive-pressure fuse clips. Provide a releasable cover interlock that prevents opening cover except when switch is in "OFF" position. This interlock shall be convertible to non-releasable type on the job. A releasable interlock preventing closing switch with cover open shall also be included, as well as interlock to prevent insertion or removal from busway when in "ON" position.

Circuit breaker type plugs shall have an interrupting rating of not less than _____amps rms symmetrical. They shall have a releasable cover interlock that prevents opening of cover except with breaker in "OFF" position. This interlock shall be convertible to non-releasable type on the job. An interlock to prevent insertion or removal from busway when in "ON" position shall be provided, as well as an interlock (releasable) to prevent closing circuit breaker with cover open.

Plug assists shall be furnished on all plugs over 200 amps that will mechanically engage or disengage the plug from the busway, but only when the plug is in the "OFF" position.



specs

5-Day Field Check Piece Procedure

Spectra Series* Busway Only

To place your order, send this form to your local GE Account Manager.

To:_____Date:_____

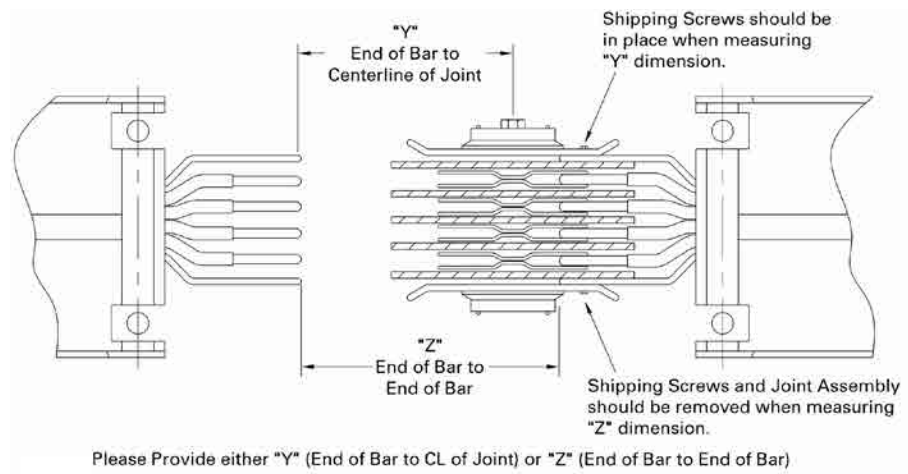
From:_____Phone:_____

Job Name:_____SO #:_____

Field Check Piece	Amperes	Run #	3W/4W/G	90° Elbows (either "Y" or "Z")	
				"Y"	"Z"
1					
2					
3					
4					
5					

Important Notes

- This program is designed to provide flexibility on critical jobs in which exact dimensions are not known at the time of order.
- To determine the length of the piece to be inserted, measure the opening length "Y" (end of bar to centerline of joint) or "Z" (end of bar to end of bar). See drawing below.
- To qualify for shipment of field check piece shipments within 5 working days, all information (including drawings) must be on or attached to this form. A maximum of 5 straight length pieces are allowed. More than 5 field check pieces can be ordered, but additional pieces do not qualify for the 5-day shipping schedule. For elbows, mark up GE drawings and attach to this form. Elbows do not qualify for the 5-day shipping schedule.
- In addition to the 5 working days until shipment, allow for delivery time to the construction site. Contact your GE Account Manager if you require air delivery.
- Contact the Selmer order center for cycle times for elbows or more than 5 pieces.

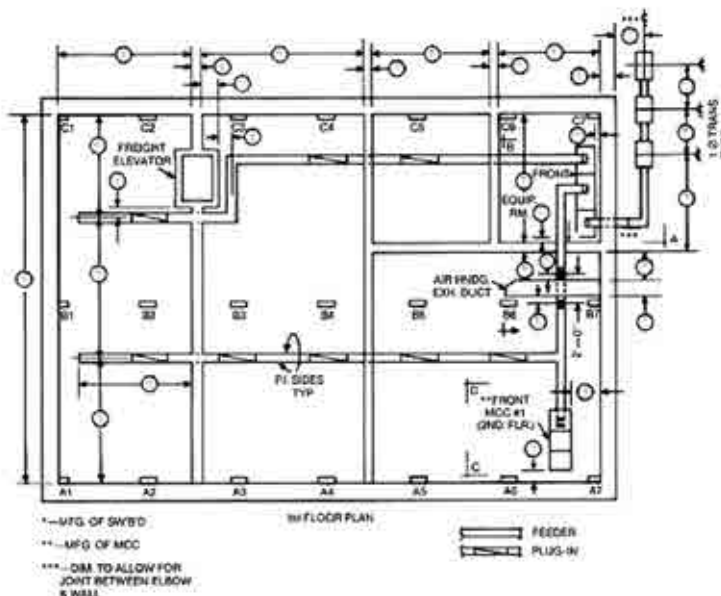


Installations

How to Measure for Spectra Series* Busway Installation

1. Determine general right-of-way (and elevation) of busway run by walking through the entire facility.
2. Locate all tie-in equipment (SWBD, etc.) with respect to building steel, walls, etc.
3. Locate any utility power to be connected, specify type.
4. Take all measurements to walls, ceilings, floors or building steel and to bottom of beams and face of columns.
5. Locate obstructions and/or walls through which busway must pass (specify wall thicknesses and dimensions of obstructions).
6. Measure floor dimensions (and floor thickness). Determine if curb is to be poured around bus openings, and if so indicate thickness.
7. In general, establish the corridor through which the busway will run, providing sufficient information, dimensions and sketches so that drawings

Fig. 48.1
Busway Installation Schematic Guidelines



Field Drawing Page

A large grid of small triangles, formed by intersecting horizontal, vertical, and diagonal lines, covering the majority of the page for field drawing.

Guide Form Specs



Joint Guard*

Positive torque indication. Time after time.

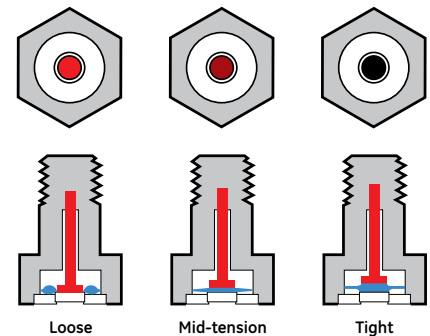
GE's *exclusive* Joint-Guard* protection system shows you, with color, whether a busway joint is loose or tight. The center spot is bright red when a joint is loose and turns dark when proper torque is applied. It does this not just once — as with double-headed break-off bolts — but even after the repeated tightening and loosening so often required during installation. And it will keep on working that way for 30 years¹.

Easy Maintenance. Joint-Guard simplifies periodic maintenance, too. Visual inspection, even from a distance, tells you whether the busway joint is properly torqued. No more unnecessary and labor-intensive re-torquing. It gets even easier: when combined with the superior torque retention design of GE's industry-leading Belleville washer, Joint-Guard bolts deliver the best solution for any maintenance program.

How it works

Joint-Guard technology was developed for the nuclear and aerospace industries. It measures the elongation of the busway joint bolt, and is more accurate than a torque wrench, which is subject to substantial variations in static and dynamic friction, depending on thread wear and lubrication.

¹ Assumes busway operates 14 hours per day, six days per week, at 81% load in 25°C ambient. Joint Guard bolts are sold separately.



Imagination at work

