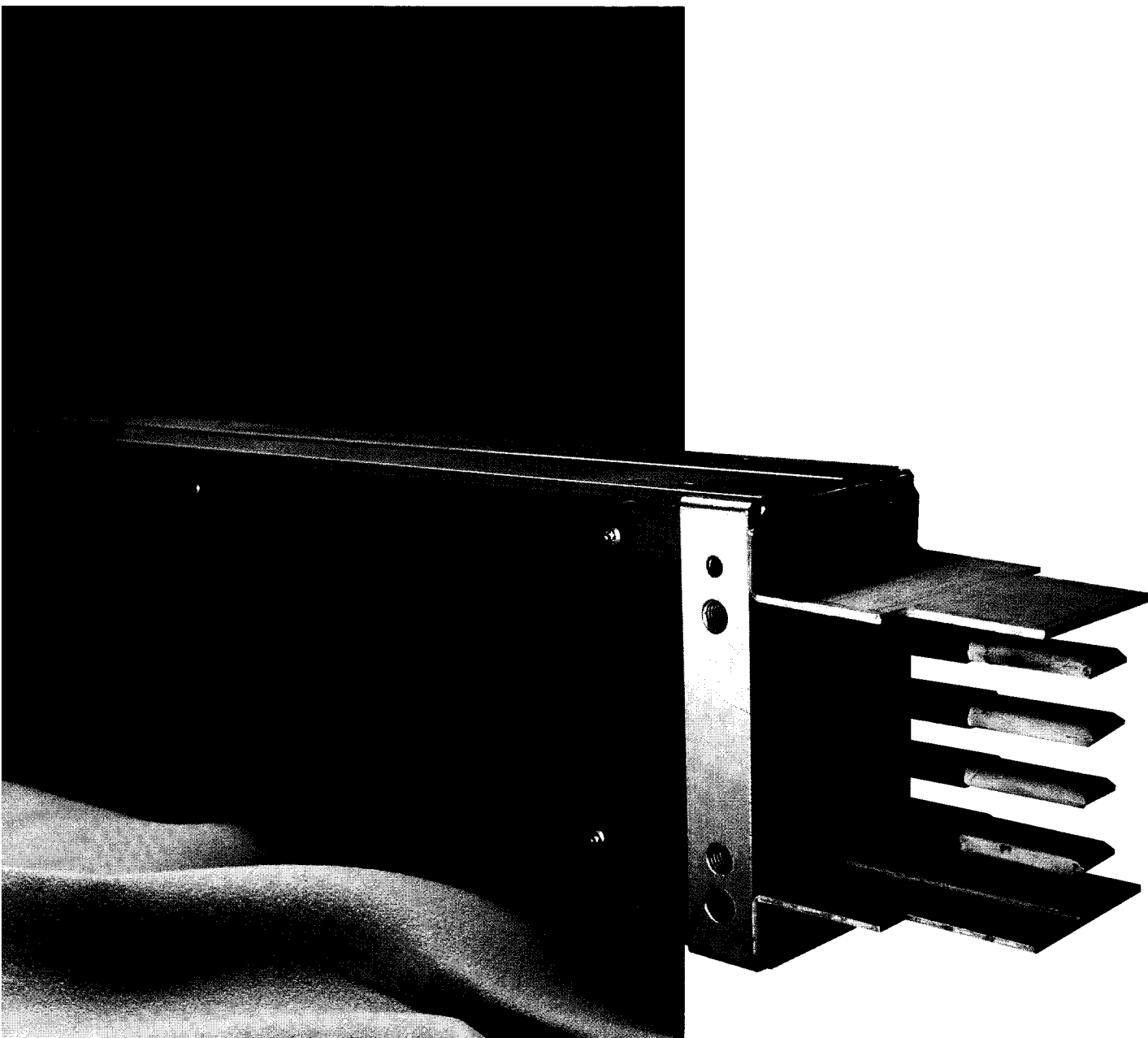




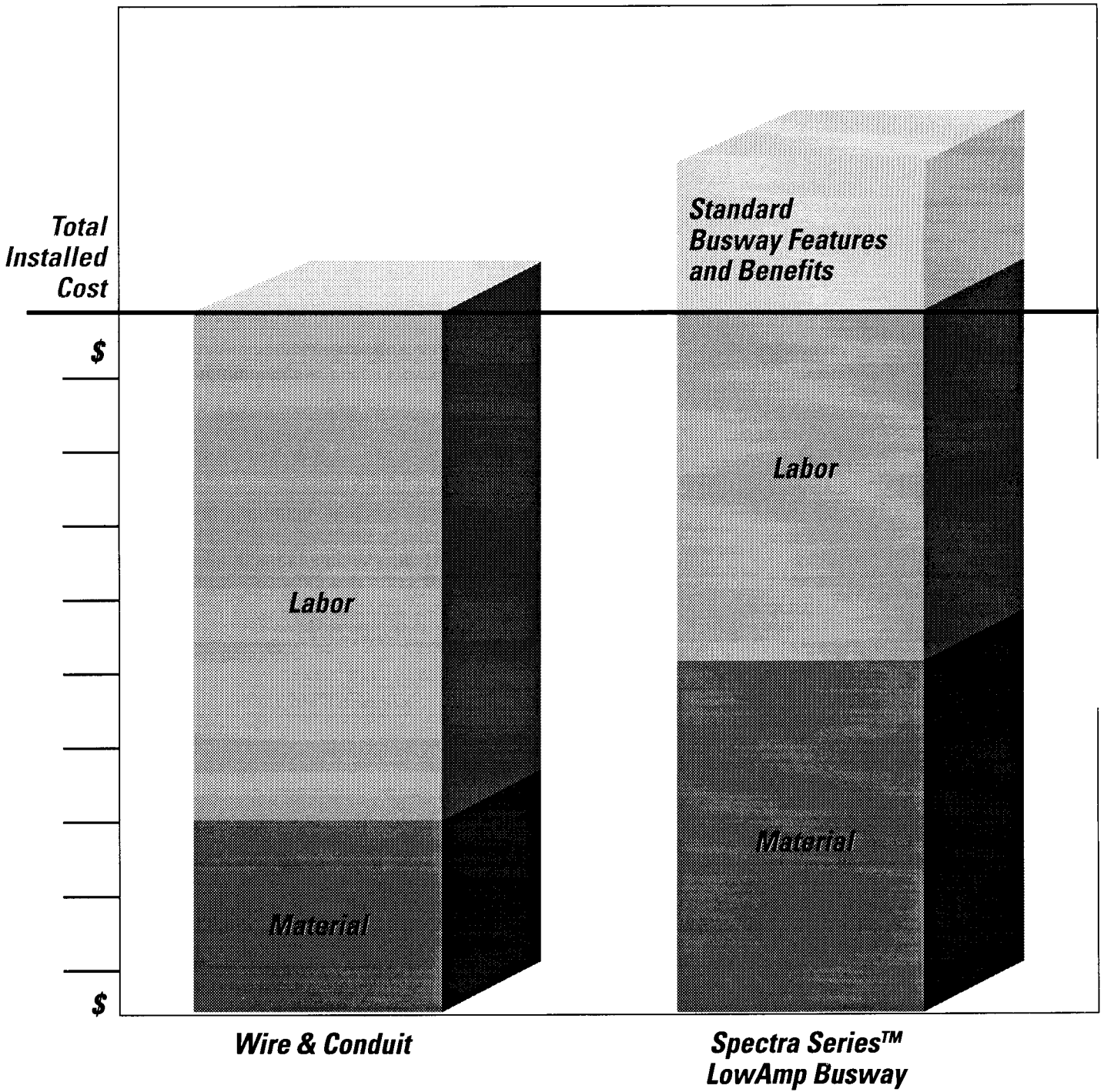
Spectra Series™ LowAmp Busway

225-800 Amperes





New Spectra Series™ LowAmp Busway



...with Standard, Built-In Busway Features

The bigger the job, the better the savings with Spectra Series™ LowAmp Busway. Feeder or plug-in construction, with ten usable plug outlets — each plug-in ten foot length. Take advantage of the standard built-in features available with Spectra Series™ LowAmp Busway:

- ◆ Available with an adjustable straight length, and all busway joints are adjustable. Field adjustability minimizes the need for time consuming measurements, or special field-check pieces.
- ◆ Integral dead front, automatic shutter plug outlet mechanism for positive, safe plug installations. Helps eliminate accidental contact with live conductors.
- ◆ Same proven, long-life, Blue Coat™ Epoxy bus bar insulation system as used in other GE Busways.
- ◆ Lightweight. Easy to install. One person can handle ten foot lengths, saving labor costs.
- ◆ Complies with appropriate international codes and standards including UL, IEC, CSA, NOM, NEMA, IEEE.

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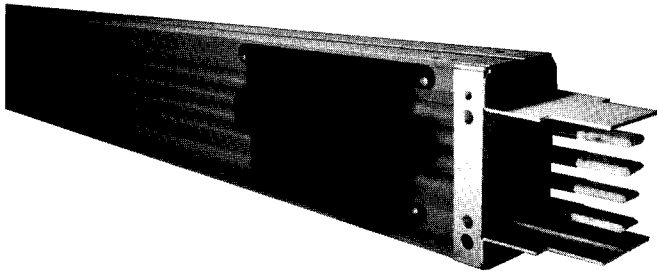


Fig. 4-1. Lightweight, but rugged, Spectra Series™ LowAmp Busway. You can quickly install the busway system and get on to the next job.

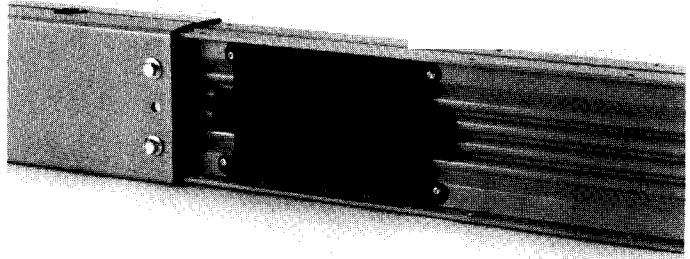


Fig. 4-3. Dead front plug outlet, automatic shutter mechanism. Shutter opens to allow plug stabs to contact conductors as the plug is inserted. Shutter system provides dead front protection, meeting IEC finger test standards.

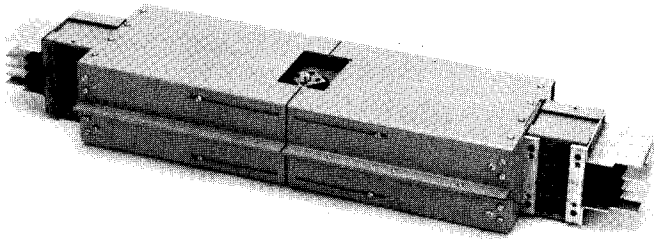


Fig. 4-2. An adjustable straight length, field adjustable from a minimum of 48" to a maximum of 60", provides on-site, on-time field flexibility.

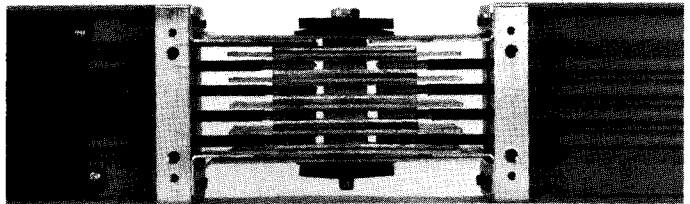


Fig. 4-4. Insulated, polarized, one-bolt joint. Quick, easy, hassle-free joining of lengths and fittings, feeder and plug-in. All joints (straight lengths and fittings) are adjustable to ($\pm 5/8"$, 16mm). Reduces the need for precise measurements.

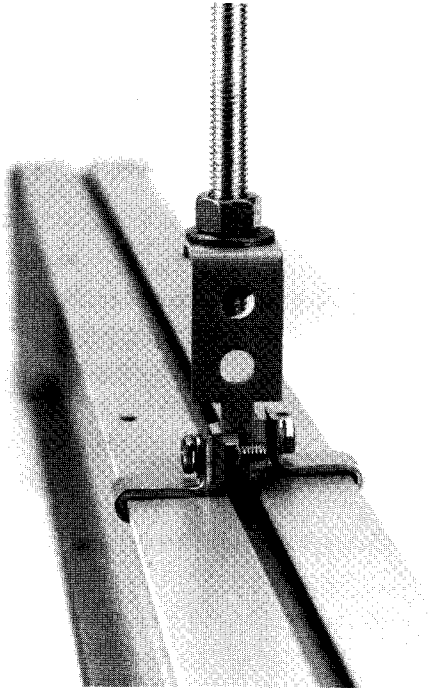


Fig. 5-1. Standard flatwise clevis hanger provided, one per straight length.

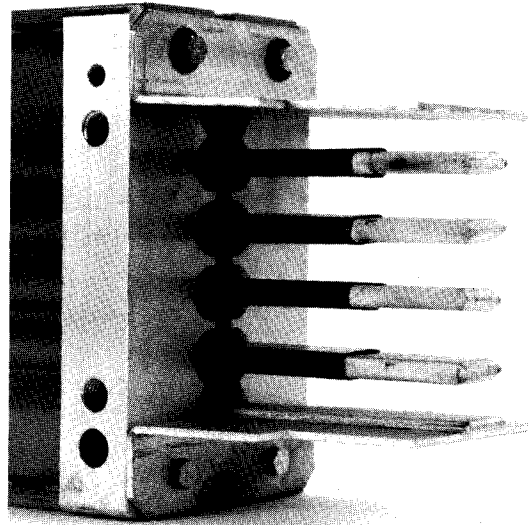


Fig. 5-5. Spectra Series™ LowAmp Busway is available with copper or aluminum bus bars. An optional internal ground bus (copper only) is available. Normally, the busway housing will serve as a ground path.

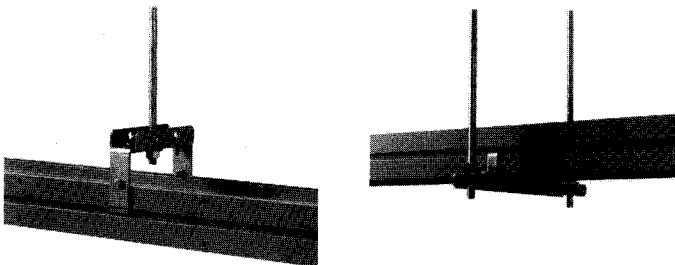


Fig. 5-2 & 5-3. Optional clevis or trapeze type hangers available. For vertical riser applications, spring hangers are required to support the busway at each floor.

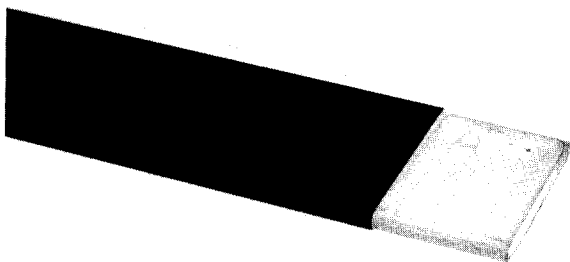


Fig. 5-4. Aluminum or copper bus bars are epoxy coated using the exclusive UL Class B listed, 130°C, 50-year life, Blue Coat™ epoxy bus bar insulation system.

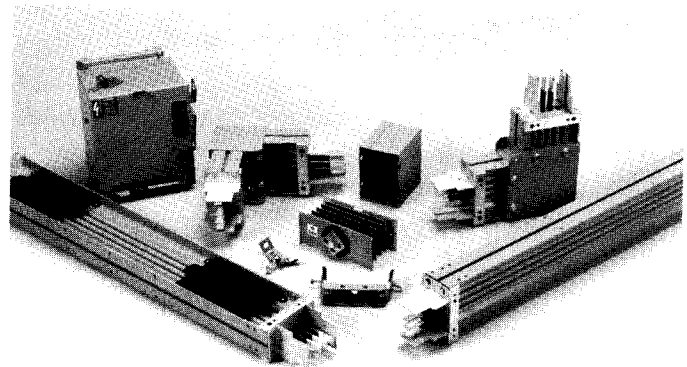
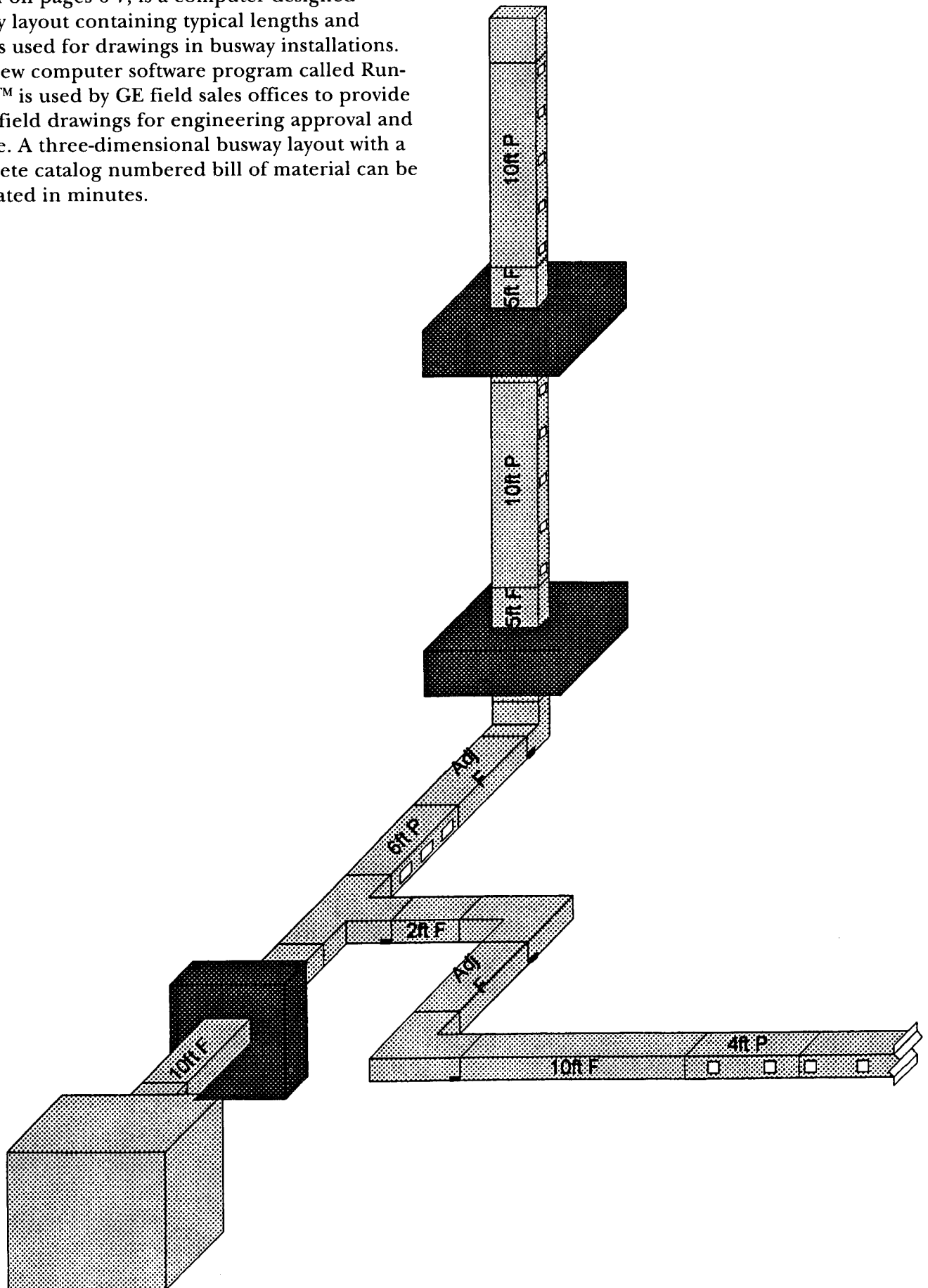


Fig. 5-6. Spectra Series™ LowAmp Busway is reusable. Reposition machinery on the plant floor and Spectra Series™ LowAmp Busway can be easily disassembled and rearranged to fit your requirements. Or, move to another location and take your electrical system with you.



Shown on pages 6-7, is a computer designed busway layout containing typical lengths and fittings used for drawings in busway installations. This new computer software program called Run-A-Bus™ is used by GE field sales offices to provide quick field drawings for engineering approval and release. A three-dimensional busway layout with a complete catalog numbered bill of material can be generated in minutes.



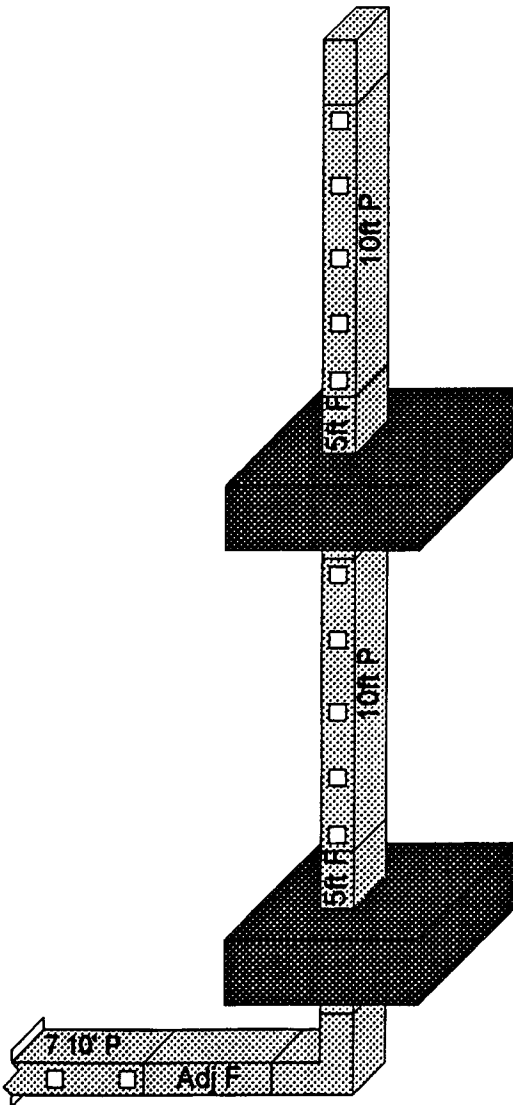
**Typical Bill Of Material Generated
By Run-A-Bus™ Software**

Requisition #: _____

Run #1 consists of:

Spectra LowAmp Busway, 800 Amps,
copper, 3 phase 4 wire, 100% N, Grd

Qty	Description	
3	LF4GC08ASST	Adjustable Feeder
2	LF4GC08EBST	End Box
2	LF4GC08ERST	Flat Elbow
2	LF4GC08EUST	Edge Elbow
1	LF4GC08SL02	2' Feeder
4	LF4GC08SL05	5' Feeder
2	LF4GC08SL10	10' Feeder
1	LF4GC08TBST	End CTB
1	LF4GC08TRST	Flat Tee
1	LP4GC08SL04	4' Plug-In
1	LP4GC08SL06	6' Plug-In
11	LP4GC08SL10	10' Plug-In
4	SLSR5	Spring Hanger
5	SLWF5	Wall/Floor Flange



**Typical Title Block Generated
By Run-A-Bus™ Software**

Job Name: _____

Location: _____

Contractor: _____

Distributor: _____

PO No.: _____ **Action:** _____

ED&C Sales Engr.: _____

Requisition#: _____



Voltage Drop: Plug-in Or Feeder

Spectra Series™ LowAmp busway has excellent low-voltage-drop values. Minimum reactance (X) is due to close bar spacings, and a non-magnetic housing. Values shown are identical for plug-in and feeder.

60 Hz values are 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 per 100 foot $V_d = \text{amps load} \times \sqrt{3} (R \cos \theta + X \sin \theta)$, where $\cos \theta = \text{Power Factor}$.

Table 8.1 Voltage Drop: Plug-in Or Feeder

Bar Material	Rated Low Amps	Bar Width x .250" Thickness	Ohms x 10 ³ /100 ft Line-to-Neutral			Voltage Drop – Concentrated Load [Ⓢ] Line-to-Line/100 Ft @ 100% Rated Load, 25°C Amb.							
						Power Factor							
			R	X	Z	.3	.4	.5	.6	.7	.8	.9	1.0
AU	225	0.750	9.11	3.75	9.85	2.46	2.76	3.04	3.3	3.53	3.72	3.83	3.55
	400	1.125	6.38	3.12	7.1	1.69	1.87	2.04	2.19	2.32	2.42	2.46	2.21
	600	1.750	4.32	2.35	4.92	3.68	4.03	4.36	4.65	4.89	5.06	5.11	4.49
	800	2.875	2.73	1.73	3.23	3.42	3.71	3.97	4.19	4.36	4.46	4.45	3.78
CU	225	0.750	5.1	3.75	6.33	1.99	2.13	2.26	2.36	2.43	2.47	2.43	1.99
	400	0.750	5.58	3.75	6.72	1.82	1.96	2.09	2.2	2.28	2.33	2.31	1.93
	600	1.125	3.86	3.12	4.96	2.15	2.29	2.41	2.5	2.56	2.58	2.51	2.01
	800	1.750	2.53	2.35	3.45	2.08	2.19	2.29	2.35	2.39	2.38	2.29	1.75

Ⓢ For plug-in distributed loads divide by 2

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

Integrated Housing Ground Resistance

Spectra Series™ LowAmp busway all-aluminum housing provides an extremely low impedance ground path with less resistance than internal ground bus bars for both copper and aluminum systems.

Spectra Series™ LowAmp busway's integrated housing ground resistance values exceed NEC 250-95 standards for minimum ground conductors.

Plug-in outlet grounding uses a plated aluminum bar attached to the housing for superior ground continuity through the system and to the plug stab.

An internal copper ground bus bar (50% capacity, .125" thick) is also available for low ground path impedance and a complete copper system.

Table 8.2 Integrated Housing Ground Resistance

Bar Width	dc Resistance Ohms x 10 ³ /100 Ft @ 75°C		
	Integrated Housing Ground	50% Aluminum Internal Ground Bus [Ⓢ]	50% Copper Internal Ground Bus [Ⓢ]
0.750	0.65	18.67	10.74
1.125	0.64	12.44	7.16
1.750	0.61	8.00	4.60
2.875	0.57	4.87	2.80

Ⓢ Spectra Series™ LowAmp Busway is not available with an internal aluminum ground bus bar. The housing satisfies 50% ground bus conductor requirements.

Short-Circuit Ratings

Spectra Series™ LowAmp busway uses a unique insulated through bolt joint system, providing predictable, consistent strength and high short-circuit ratings.

The ratings shown below are UL listed 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, and one second.

The short-circuit rating of the busway system with protective devices that are part of the busway,

Table 9.1 Short-Circuit Ratings Plug-In and Feeder

Amp. Rating	Aluminum (kA)			Copper (kA)		
	3 Cycles	1 Sec.	3 Secs.	3 Cycles	1 Sec.	3 Secs.
225	30	11	6	30	17	10
400	42	17	10	30	17	10
600	50	28	16	42	25	15
800	50	50	29	50	42	24

such as power takeoffs and reducers, is equal to the lower of the short-circuit rating of the protective device or the busway with which the fitting is used. For example, a fusible power takeoff rated 200,000 amps rms sym. with Class J fuses when installed on a busway rated 50,000 amps rms sym. would have a rating of 50,000 amps rms sym.

Standard short-circuit busway ratings can be given a higher UL Listed short-circuit rating when protected by specific J, T, and R Class fuses as shown below.

Table 9.2 Maximum Fuse Sizes For Increased Short Circuit Protection

Amp. Rating	Max Fuse Sizes For Increased Short Circuit Rating					
	100kA			200kA		
	"J"	"T"	"R"	"J"	"T"	"R"
Aluminum						
225	600	800	200	400	400	200
400	600	800	400	600	800	400
600	600	800	600	600	800	400
800	600	800	600	600	800	400
Copper						
225	600	800	200	400	400	200
400	600	800	200	400	400	200
600	600	800	400	600	800	400
800	600	800	600	600	800	400

Standards

Spectra Series™ LowAmp busway conforms to the latest revisions of: NEMA BU-1; ANSI/UL 857; federal spec W-B-811b.

Table 9.3 International Electrical Code - Degrees of Protection (PER IEC 529)

Spectra Series Busway Type	Designation	Nameplate Marking
Indoor	IP409	(INDR)
Dripproof		
Flat	IP439	DRP-PRF
Vertical Riser	IP549	DRP-PRF



Busway Operation in Higher Ambient Temperatures

Spectra Series™ LowAmp busway may be operated continuously at its assigned ratings without exceeding the maximum hot-spot temperature rise of 55°C, provided the ambient temperature does not exceed 40°C. For higher ambient temperatures the ratings should be reduced by applying the appropriate multiplier per Table 10.1.

Busway Operation at Other Frequencies

Spectra Series™ LowAmp busway continuous current ratings are for 50/60 Hz frequency. For 400Hz operation, de-rating is required.

Busway Transverse Barrier

Spectra Series™ LowAmp busway is available with an optional transverse barrier in all feeder straight lengths. The transverse barrier provides a smoke barrier, and when used with a UL listed 3-Hr building fire stop material, will offer a 3-Hr fire rating.

Busway Proximity Structures

Fig. 10.1 below shows busway proximity to structures. It illustrates the possible positions of busways relative to walls and to each other. Table 10.2 has curves and derating multipliers for the busway not to exceed 55°C rise.

If the 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 that current and the acceptable life will all have to be taken into account to determine if the installation is acceptable.

Table 10.1 Ambient Temperatures

Ambient Temperature Degrees C	Multiplier
40	1.00
45	0.95
50	0.90
55	0.85
60	0.80
65	0.74
70	0.67

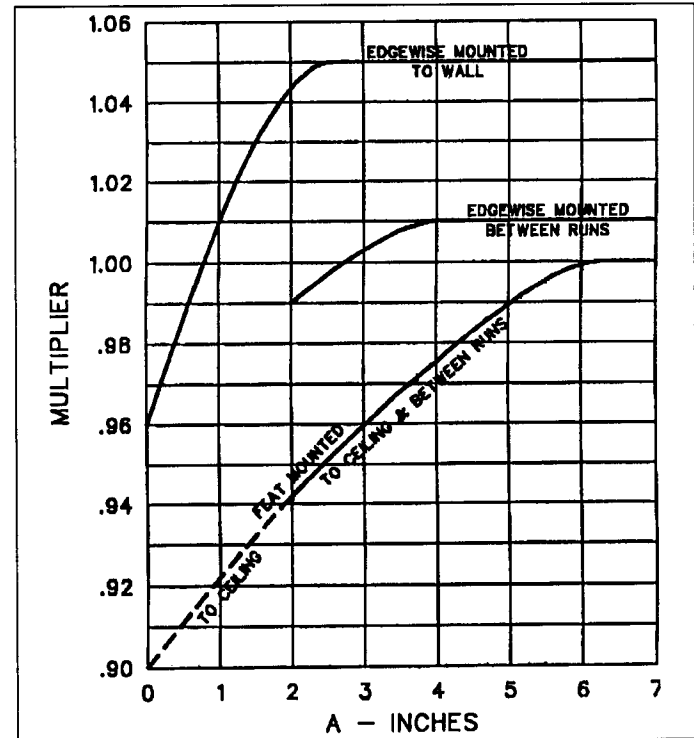


Fig. 10.2 Derating Multipliers

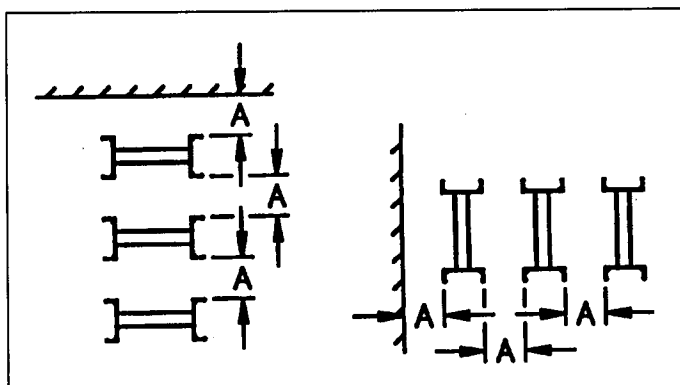
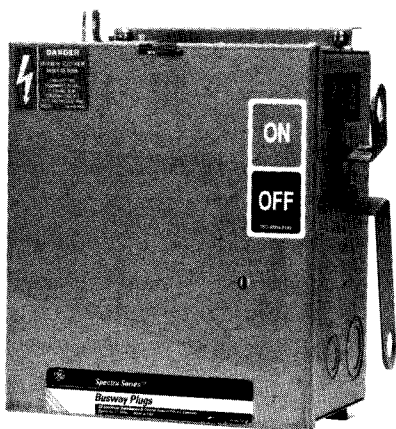


Fig. 10.1 Busway Positions

Busway Plugs



Switch-operated fusible plugs are equipped with type QMR quick-make, quick-break mechanisms, in ratings from 30 to 400 amps, 240 to 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 250 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. Optional on lower ratings.
- 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 up to three padlocks with a 5/16-inch shank).
- A handle that can be mounted either on the side or the 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.

- Rating plug that simplifies factory floor and equipment changeovers because plug has trip/amp interchangeability.
- True digital rms sensing providing more accurate and reliable trip interruption.
- High interrupting rating that satisfies high IC requirements up to 100kA IC @ 480V.

Table 11.1 Recommended Type QMR Fusible Switch Combinations

Fusible Switch		Fuse		Short-Circuit Rating in Amperes rms Symmetrical
Type	Amp-eres	U/L Class	Description	
QMR	30-400	H	One-Time	10,000
		R	Current Limiting	200,000
		J	Current Limiting Rejection	200,000

Table 11.2 Fusible Plug Horsepower Ratings[Ⓢ]

Device Rating In Amperes	3-Phase Horsepower Ratings					
	With NEC Fuses			With Time Delay Functions		
	240 Volts	480 Volts	600 Volts	240 Volts	480 Volts	600 Volts
30	3	5	7½	10	20	20
60	7½	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

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

Table 11.3 Circuit Breaker Plug Interrupting Ratings[Ⓢ]

Circuit Breaker		Trip Range Rating in Amperes	Interrupting Ratings in Thousand Amperes rms Symmetrical		
Frame	Number of Poles		120V or 240V	480V	600V
Standard Frames					
TEB	1,2,3	15-100	10	-	-
TED	1	15-50	14	-	-
TED4	2,3	15-100	18	14	-
TED6	3	15-150 [Ⓢ]	18	14	14
Low-Tier Frames					
SEDA	2-3	15-150	18	14	14
SEHA	2-3	15-150	65	25	18
SFHA	2-3	70-250	65	25	18
Mid-Tier Frames					
SELA	2-3	15-150	100	65	25
SFLA	2-3	70-250	100	65	25

Ⓢ These are maximum ratings regardless of the busway rating.

Ⓢ 110-150 amp trip ratings are available for 3-pole only.



Busway Plugs (Cont'd)

Table 12.1 Molded Case Circuit Breakers (Outer Dimensions)

Type	Frame	Trip Range	Voltage Rating	Dimension (Inches)			Fig. No.
				W	L	D	
Standard and Hi-Break®	TEB	15-100	240	11	13	8	12.2
	TED, THED	15-100	600				
	TED, THED	110-150	600				
Low- and Mid-Tier	SED, SEH, SEL	15-150	480	11	13	8	12.2
	SFH, SFL	70-225	600				

Table 12.2 Fusible Switches (Outer Dimensions)

Type	Ampere Rating	Voltage Rating	Dimension (Inches)			Fig. No.		
			W	Length			D	
				Standard Gutter	Extended Gutter			
QMR	30	240 and 600	11¼	13	18¾	8¾	12.2	
	60			18¾	NA			8¾
	100				18¾			
	200			16				24½
400	20½	18¾	NA	18¾				

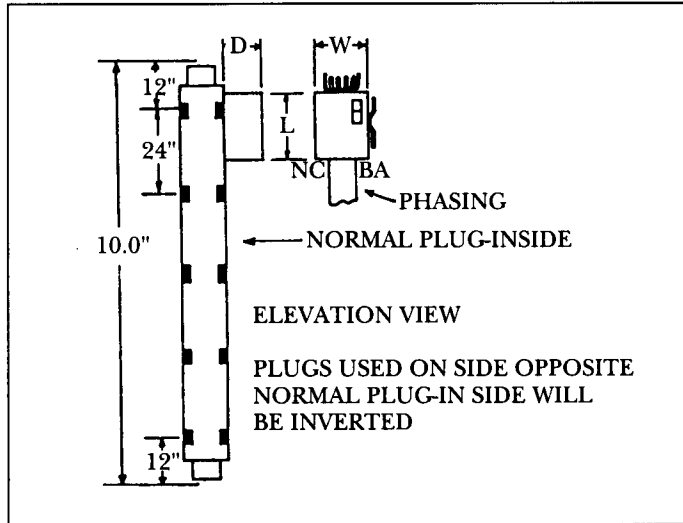


Fig. 12.1 Typical Vertical Application

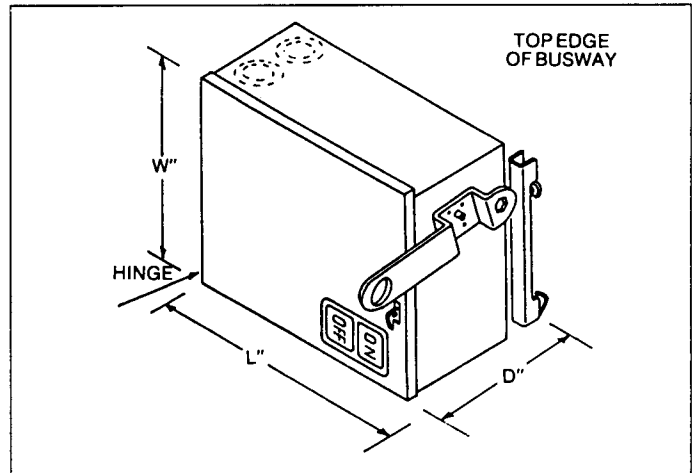


Fig. 12.2 Door Hinges at Left End. All Dimensions are Shown Over Largest Part of Plug.

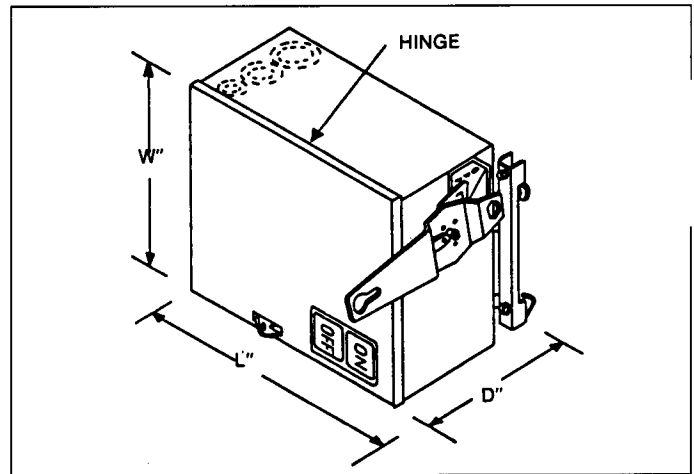


Fig. 12.3 Door Hinges at Top. All Dimensions are Shown Over Largest Part of Plug.

Busway Plugs (Cont'd)

If plug assist is required on the 100-amp frame sizes, add suffix 'P' to Catalog Number. Drip proof is available on all bus plugs and should be specified when using drip proof busway. To add drip proof to the bus plug, add suffix 'I' to the catalog number.

A grounding stab to engage internal or integrated housing ground bus is provided as standard on all LowAmp Bus Plugs. Mating stab is standard on Spectra Series™ LowAmp Plug-in Busway.

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

Table 13.1 Circuit Breaker Plugs

Frame TypeⓄ	Trip	3-Wire Catalog Number	4-Wire Catalog Number
Standard Frames			
TEB 240V=10	15	SL31EBG	SL41EBG
	20	SL32EBG	SL42EBG
	30	SL33EBG	SL43EBG
	40	SL34EBG	SL44EBG
	50	SL35EBG	SL45EBG
	60	SL36EBG	SL46EBG
	70	SL37EBG	SL47EBG
TED4 240V=18 480V=14	15	SL31ED4G	SL41ED4G
	20	SL32ED4G	SL42ED4G
	30	SL33ED4G	SL43ED4G
	40	SL34ED4G	SL44ED4G
	50	SL35ED4G	SL45ED4G
	60	SL36ED4G	SL46ED4G
	70	SL37ED4G	SL47ED4G
TED6 240V=18 480V=14 600V=14	15	SL31ED6G	SL41ED6G
	20	SL32ED6G	SL42ED6G
	30	SL33ED6G	SL43ED6G
	40	SL34ED6G	SL44ED6G
	50	SL35ED6G	SL45ED6G
	60	SL36ED6G	SL46ED6G
	70	SL37ED6G	SL47ED6G
100	SL310ED6G	SL410ED6G	

Ⓞ IC Rating in rms sym. kA

Table 13.1 Circuit Breaker Plugs (Cont'd)

Frame TypeⓄ	Trip	3-Wire Catalog Number	4-Wire Catalog Number	
Low-Tier Frames				
SEDA	15	SL31SEDG	SL41SEDG	
	20	SL32SEDG	SL42SEDG	
	30	SL33SEDG	SL43SEDG	
	40	SL34SEDG	SL44SEDG	
	50	SL35SEDG	SL45SEDG	
	60	SL36SEDG	SL46SEDG	
	240V=18	70	SL37SEDG	SL47SEDG
	480V=14	80	SL38SEDG	SL48SEDG
	600V=14	90	SL39SEDG	SL49SEDG
		100	SL310SEDG	SL410SEDG
SEHA	110	SL311SEDG	SL411SEDG	
	125	SL312SEDG	SL412SEDG	
	150	SL315SEDG	SL415SEDG	
	15	SL31SEHG	SL41SEHG	
	20	SL32SEHG	SL42SEHG	
	30	SL33SEHG	SL43SEHG	
	40	SL34SEHG	SL44SEHG	
	50	SL35SEHG	SL45SEHG	
	60	SL36SEHG	SL46SEHG	
	240V=65	70	SL37SEHG	SL47SEHG
480V=25	80	SL38SEHG	SL48SEHG	
600V=18	90	SL39SEHG	SL49SEHG	
	100	SL310SEHG	SL410SEHG	
SFHA	110	SL311SEHG	SL411SEHG	
	125	SL312SEHG	SL412SEHG	
	150	SL315SEHG	SL415SEHG	
	70	SL37SFHG	SL47SFHG	
	90	SL39SFHG	SL49SFHG	
	100	SL310SFHG	SL410SFHG	
	110	SL311SFHG	SL411SFHG	
	125	SL312SFHG	SL412SFHG	
	150	SL315SFHG	SL415SFHG	
	240V=65	175	SL317SFHG	SL417SFHG
480V=25	200	SL320SFHG	SL420SFHG	
600V=18	225	SL322SFHG	SL422SFHG	
	250	SL325SFHG	SL425SFHG	
Mid-Tier Frames				
SELA	15	SL31SELG	SL41SELG	
	20	SL32SELG	SL42SELG	
	30	SL33SELG	SL43SELG	
	40	SL34SELG	SL44SELG	
	50	SL35SELG	SL45SELG	
	60	SL36SELG	SL46SELG	
	240V=100	70	SL37SELG	SL47SELG
	480V=65	80	SL38SELG	SL48SELG
	600V=25	90	SL39SELG	SL49SELG
		100	SL310SELG	SL410SELG
SFLA	110	SL311SELG	SL411SELG	
	125	SL312SELG	SL412SELG	
	150	SL315SELG	SL415SELG	
	70	SL37SFLG	SL47SFLG	
	90	SL39SFLG	SL49SFLG	
	100	SL310SFLG	SL410SFLG	
	110	SL311SFLG	SL411SFLG	
	125	SL312SFLG	SL412SFLG	
	150	SL315SFLG	SL415SFLG	
	240V=100	175	SL317SFLG	SL417SFLG
480V=65	200	SL320SFLG	SL420SFLG	
600V=25	225	SL322SFLG	SL422SFLG	
	250	SL325SFLG	SL425SFLG	
Low- and Mid-Tier Frames Without Rating Plug				
SEDA	15-30	SL301SEDG	SL401SEDG	
	40-60	SL302SEDG	SL402SEDG	
	70-100	SL303SEDG	SL403SEDC	
	110-150	SL304SEDG	SL404SEDC	
SEHA	15-30	SL301SEHG	SL401SEHG	
	40-60	SL302SEHG	SL402SEHG	
	70-100	SL303SEHG	SL403SEHG	
	110-150	SL304SEHG	SL404SEHG	
SFHA	70-225	SL300SFHG	SL400SFHG	
SELA	15-30	SL301SELG	SL401SELG	
	40-60	SL302SELG	SL402SELG	
	70-100	SL303SELG	SL403SELG	
	110-150	SL304SELG	SL404SELG	
SFLA	70-225	SL300SFLG	SL400SFLG	

Ⓞ IC Rating in rms sym. kA



Busway Plugs (Cont'd)

Table 14.1 Enclosure Only (Order circuit breakers separately)

Frame Type	Trip	3-Wire Catalog Number	4-Wire Catalog Number
E	100 A max.	SL3100EG	SL4100EG
F	225 A max.	SL3225FG	SL4225FG

Table 14.2 Switch-Operated Fusible Plug with QMR Interrupter (Fuses Not Included)

Volts ac	Amps	3-Wire Catalog Number	4-Wire Catalog Number
240	30	SL321RG	SL421RG
	60	SL322RG	SL422RG
	100	SL 323RG	SL423RG
	200	SL324RG	SL424RG
480/600	400	SL325RG	SL425RG
	30	SL361RG	SL461RG
	60	SL362RG	SL462RG
	100	SL363RG	SL463RG
	200	SL364RG	SL464RG
	400	SL365RG	SL465RG

Table 14.3 Options for Switch-Operated Fusible Plugs

Description	UL Listed
Factory installed Class R fuse clips Add "R" suffix to Catalog Number	YES
Factory installed Class J fuse clips Add "J" suffix to Catalog Number	YES

Table 14.4 Adapter Kits Spectra Series™ LowAmp to Spectra Series (Ground Stabs Included)

Amps	Catalog Number
30-100	SLSB1G
200-225	SLSB4G
400	SLSB5G

Table 14.5 Adapter Kits Spectra Series™ (style 2 shipped after 5/95) to Spectra Series™ LowAmp (Ground Stabs Included)

Amps	Catalog Number
30-100	SBSL1G
200-225	SBSL4G
400	SBSL5G

Table 14.6 Adapter Kits Armor-Clad (style 8 shipped after 5/95) to Spectra Series™ LowAmp (Ground Stabs Included)

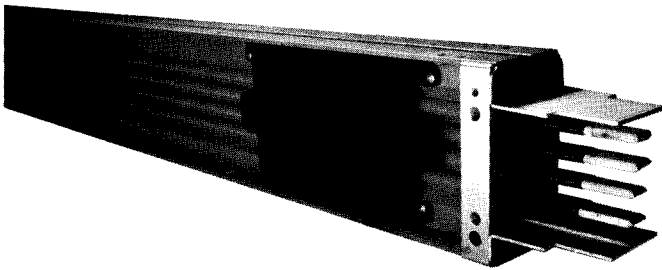
Amps	Catalog Number
30-100	ACSL1G
200-225	ACSL4G
400	ACSL5G

Miscellaneous Plug Modifications

- **Plug Assist-Standard** for plugs over 100 amperes. Add suffix "P" to the catalog number for plugs 100 amperes and below.
- **Drip Resistant Plugs**-Includes cover and stab base gasketing. Busway must be ordered as drip resistant. Add suffix "I" to plug catalog number.

Dimensions

STRAIGHT LENGTHS: Plug-in and Feeder



Plug-in Straight Length Shown

Spectra Series™ LowAmp busway is available in ratings from 225-800 amps in both feeder and plug-in using common joint and housing parts. One standard flatwise, clevis type hanger (see Fig. 5.1) is provided with each straight length.

Plug-in lengths are available in 4-, 6- and 10-foot lengths and feeder lengths are available in 2, 3, 5 and 10-foot lengths. The $\pm 5/8$ inch adjustable, removable joint is attached to one end of each section.

Plug-in busway has up to 10 unobstructed, usable plug outlets. Trapeze hanger positions may obstruct some openings.

The plug outlet shutter mechanism is molded of tough, impact and chemical resistant polycarbonate thermoplastic.

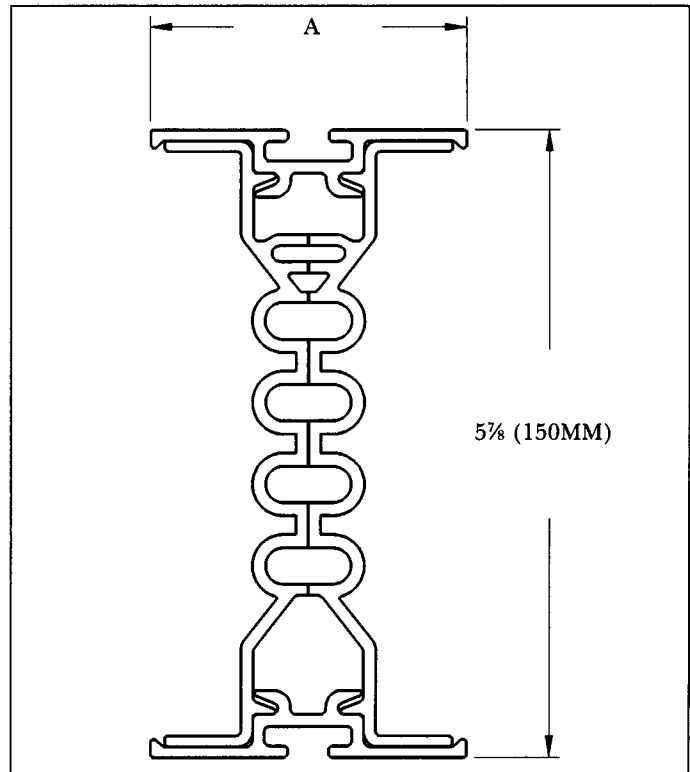


Fig. 15.1 One Bar Per Phase Plug-in and Feeder

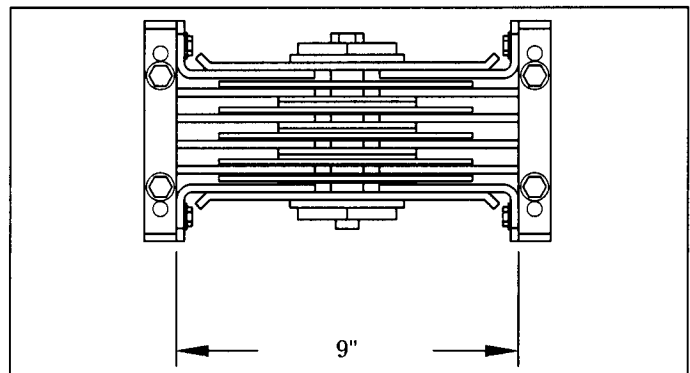


Fig. 15.2 Joint Assembly Offers Field Adjustability of $\pm 5/8$ ". Figure Shows Nominal Dimension.

Table 15. 1 Straight Lengths Plug-in and Feeder (all bus is UL listed @ 600 Volts)

Bar Material	Rated Load Amps	"A" Width		Bar Sizes Width x Thickness (Inches)	DC Ampere Rating [ⓐ]	Approx. Weight			
		Inches	mm			lbs./ft.		Kg/M	
						3-wire	4-wire	3-wire	4-wire
Al	225	3	76	.750 x .250	225	5.1	5.4	7.6	8.0
	400	3 $\frac{3}{8}$	86	1.125 x .250	600	5.8	6.0	8.6	8.9
	600	4	102	1.750 x .250	800	7.0	7.5	10.4	11.2
	800	5	127	2.875 x .250	1200	9.1	10.0	13.5	14.9
Cu	225	3	76	.750 x .250	225	6.6	7.4	9.8	11.0
	400	3	76	.750 x .250	600	6.6	7.4	9.8	11.0
	600	3 $\frac{3}{8}$	86	1.125 x .250	800	8.1	9.2	12.1	13.7
	800	4	102	1.750 x .250	1200	10.5	12.2	15.6	18.2

[ⓐ] DC bus is 4-wire with "+ - + -" polarity



Dimensions (Cont'd)

STRAIGHT LENGTHS: Plug-in

Horizontal runs of plug-in busway will be furnished with the phase Ø side label on the bottom of the bus bar stack so that the plug ON/OFF position pointer and labels will be visible from the floor. Operating handles will be 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.

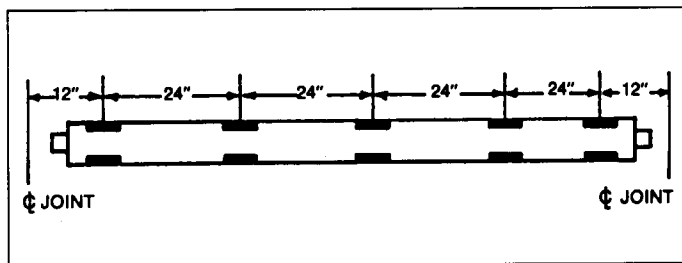


Fig. 16.1 Plug Outlet Locations

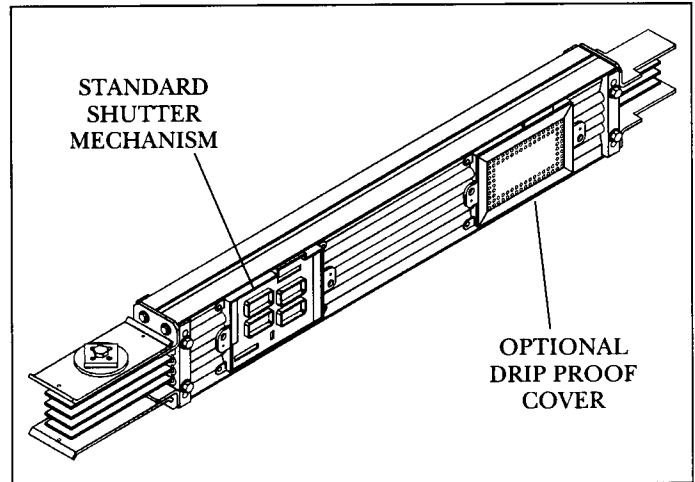


Fig. 16.2 Four Foot Plug-in Length

Dimensions (Cont'd)

FITTINGS – ELBOWS, TEES AND OFFSETS

Spectra Series™ LowAmp busway has a complete family of standard catalog fittings to meet virtually all layout requirements using the compact minimum sizes shown.

Nomenclature for completely defining the turn is accomplished by looking into the joint end with phase Ø side facing down on the busway. Using this guideline, a right elbow turns right, an up elbow turns up, etc.

Every piece of busway is labeled to maintain proper phasing. Unless otherwise noted, all turn dimensions are defined from the centerline of the joint end to the centerline of the busway. Fig. 17.1-17.6 show dimensions for elbow, tee and offset fittings.

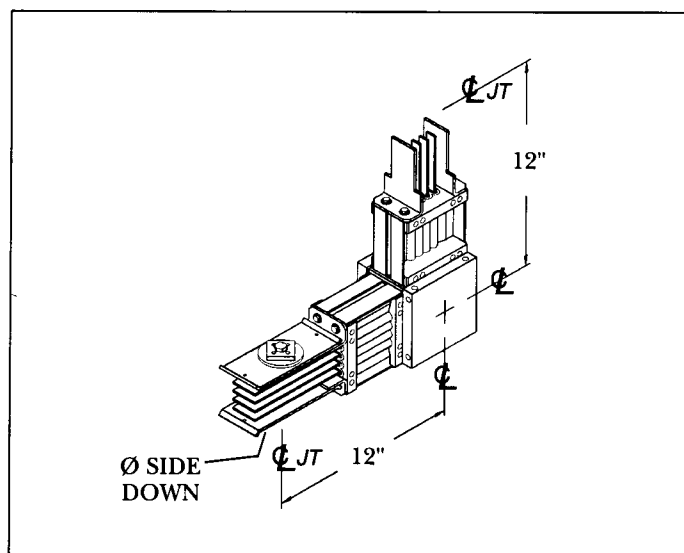


Fig. 17.1 Up Elbow Shown (Down Elbow Reversed)

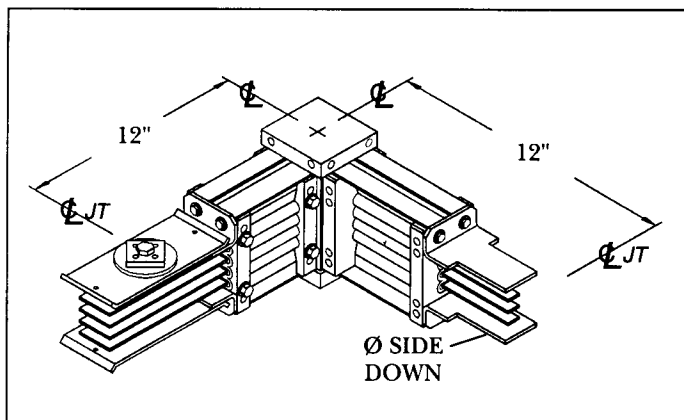


Fig. 17.2 Right Elbow Shown (Left Elbow Reversed)

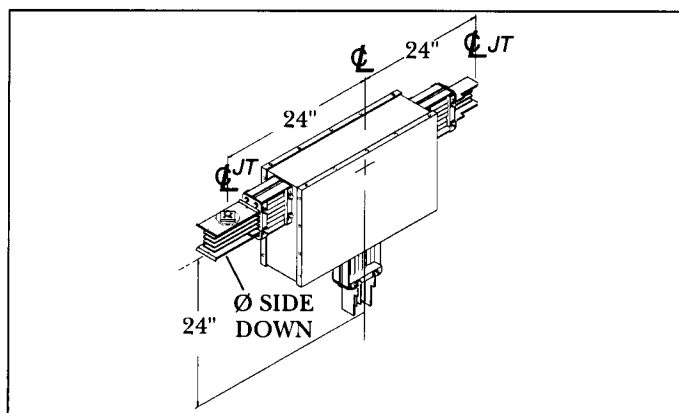


Fig. 17.3 Down Tee Shown (Up Tee Reversed)

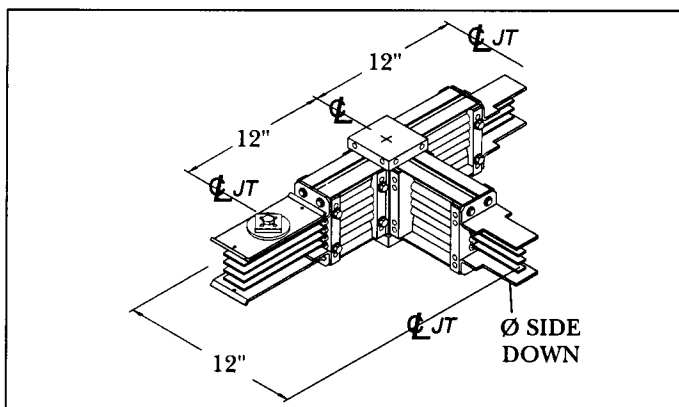


Fig. 17.4 Right Tee Shown (Left Tee Reversed)

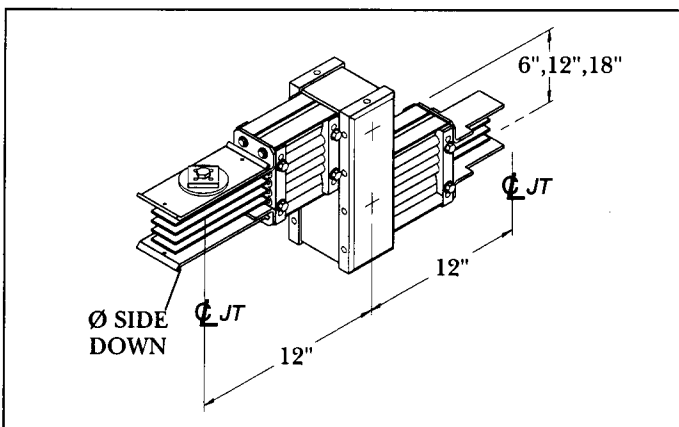


Fig. 17.5 Down Offset Shown (Up Offset Reversed)

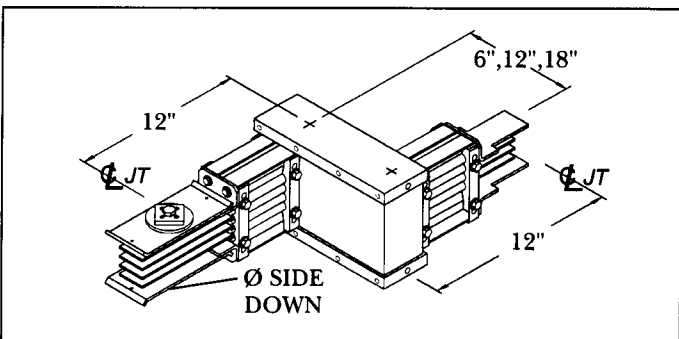
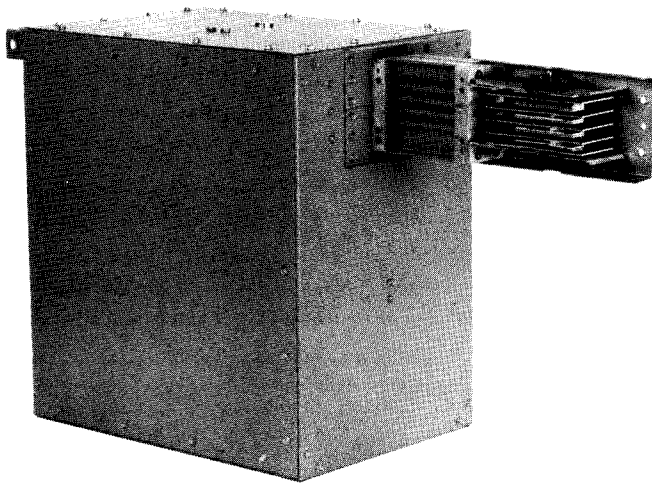


Fig. 17.6 Right Offset Shown (Left Offset Reversed)



Dimensions (Cont'd)

FITTINGS – CABLE TAP BOXES



Spectra Series™ LowAmp tap boxes are used where a run of busway is fed by cable and conduit. The corner post design permits removal of up to three side walls for cable access/entrance, and for greater flexibility and installation ease. Universal lug terminal plates will accept almost all NEMA and non-NEMA mechanical and compression lugs without field modification (Max 1 7/8" wide).

End Cable Tap Boxes

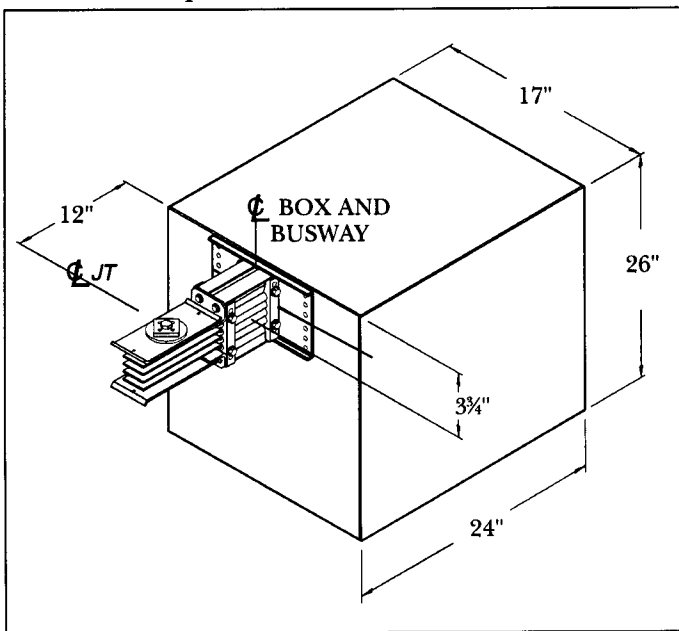


Fig. 18.1 End Tap Box: Feeder or Plug-in

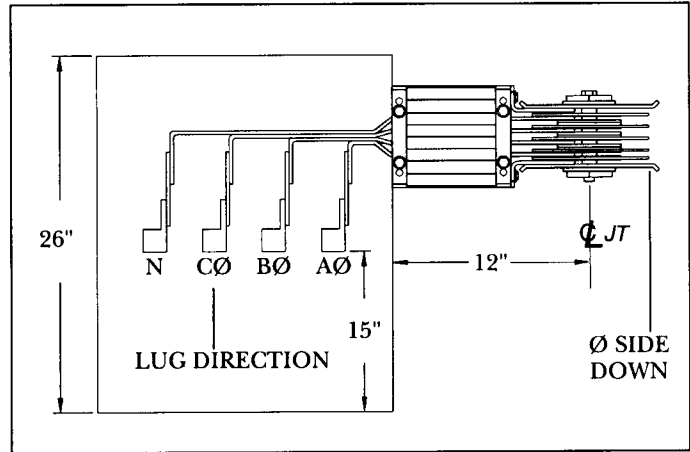


Fig. 18.2 Standard End Tap Box Down Position, Side View

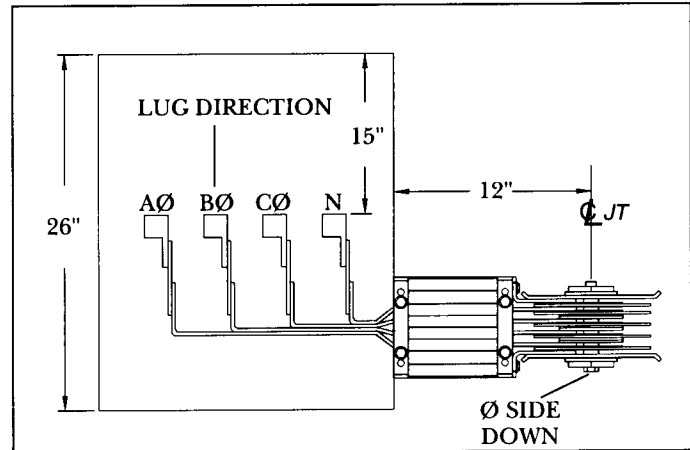


Fig. 18.3 Inverted End Tap Box Up Position, Side View

Table 18.1 Lugs Per Phase End Tap Box

Amps	Number of #2-600 MCM Lugs Per Ø N, & GRD
225	1
400	2
600	2
800	3

Dimensions (Cont'd)

FITTINGS – CABLE TAP BOXES (CONT'D)

Center Cable Tap Boxes

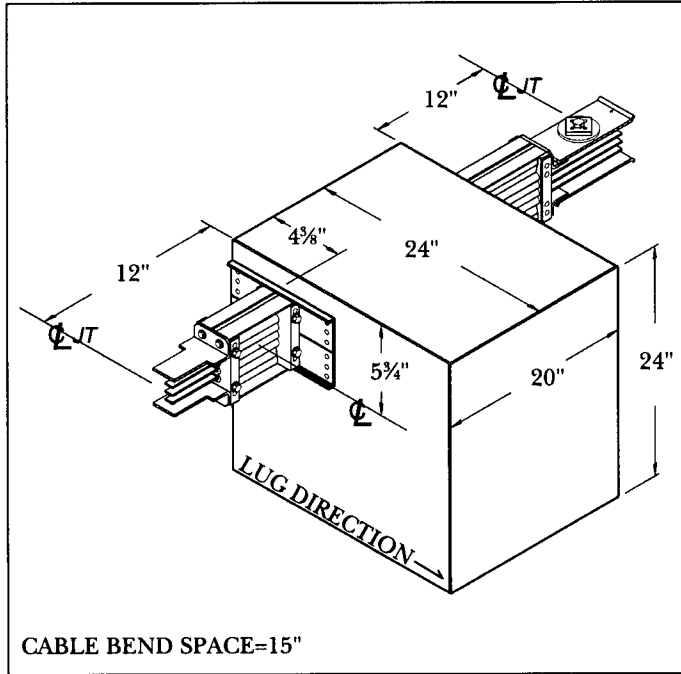


Fig. 19.1 Center Tap Box: Feeder or Plug-in

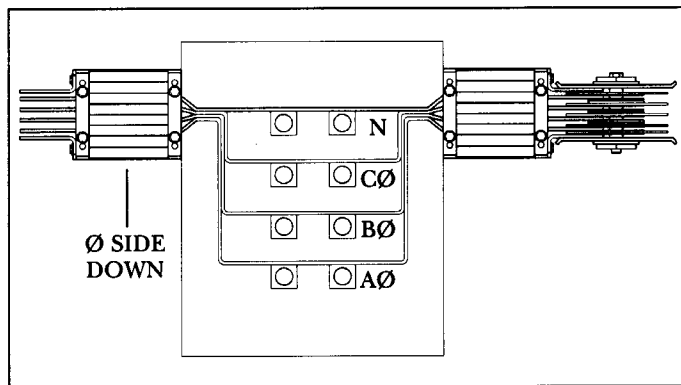


Fig. 19.2 Standard Center Tap Box Down Position, Side View

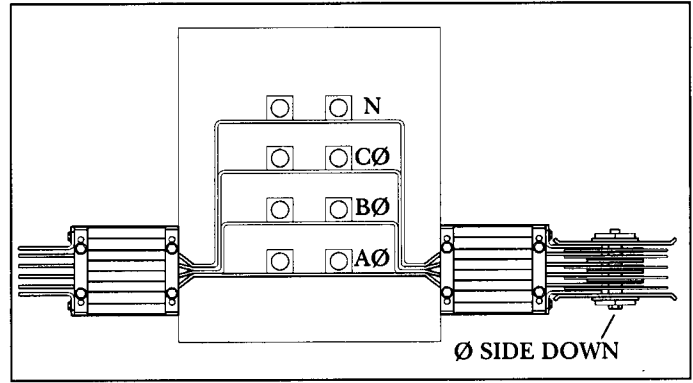


Fig. 19.3 Inverted Center Tap Box Up Position, Side View

Table 19.1 Lugs Per Phase Center Tap Box

Amps	Number of #2-600 MCM Lugs Per Ø N, & GRD
225	1
400	2
600	2
800	3

Dimensions (Cont'd)

FLANGED ENDS-WITHOUT LUGS

The standard flanged end stub provides a universal stub for field "Hard Bus" connections. See flanged end with lugs for cable connections.

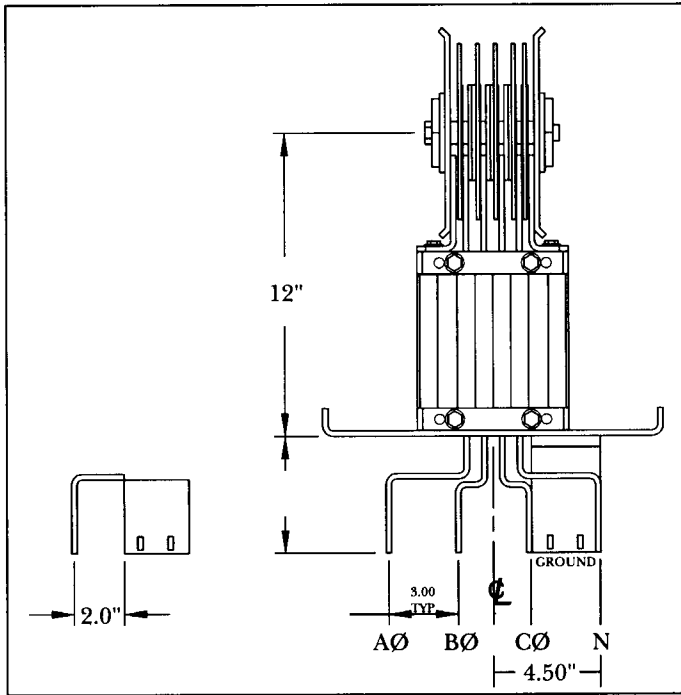


Fig. 20.1 Flanged End Without Lugs

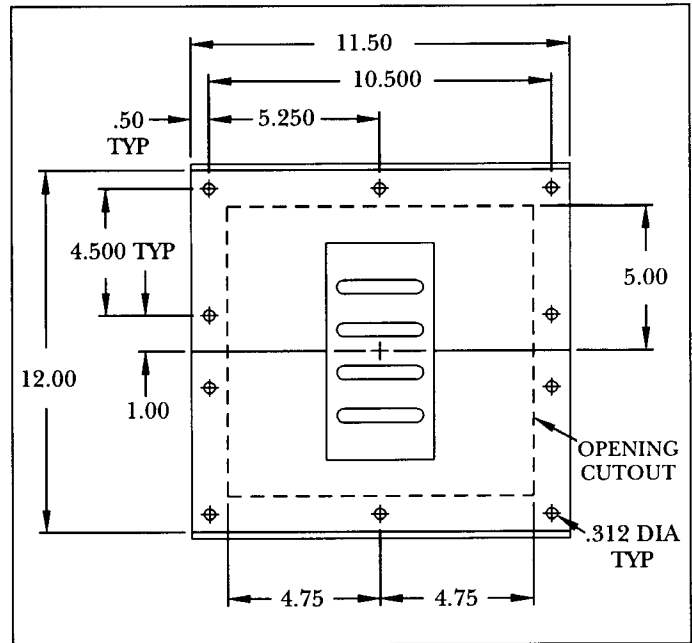


Fig. 20.3 Flanged End Without Lugs - Cutout and Hole Drilling Pattern

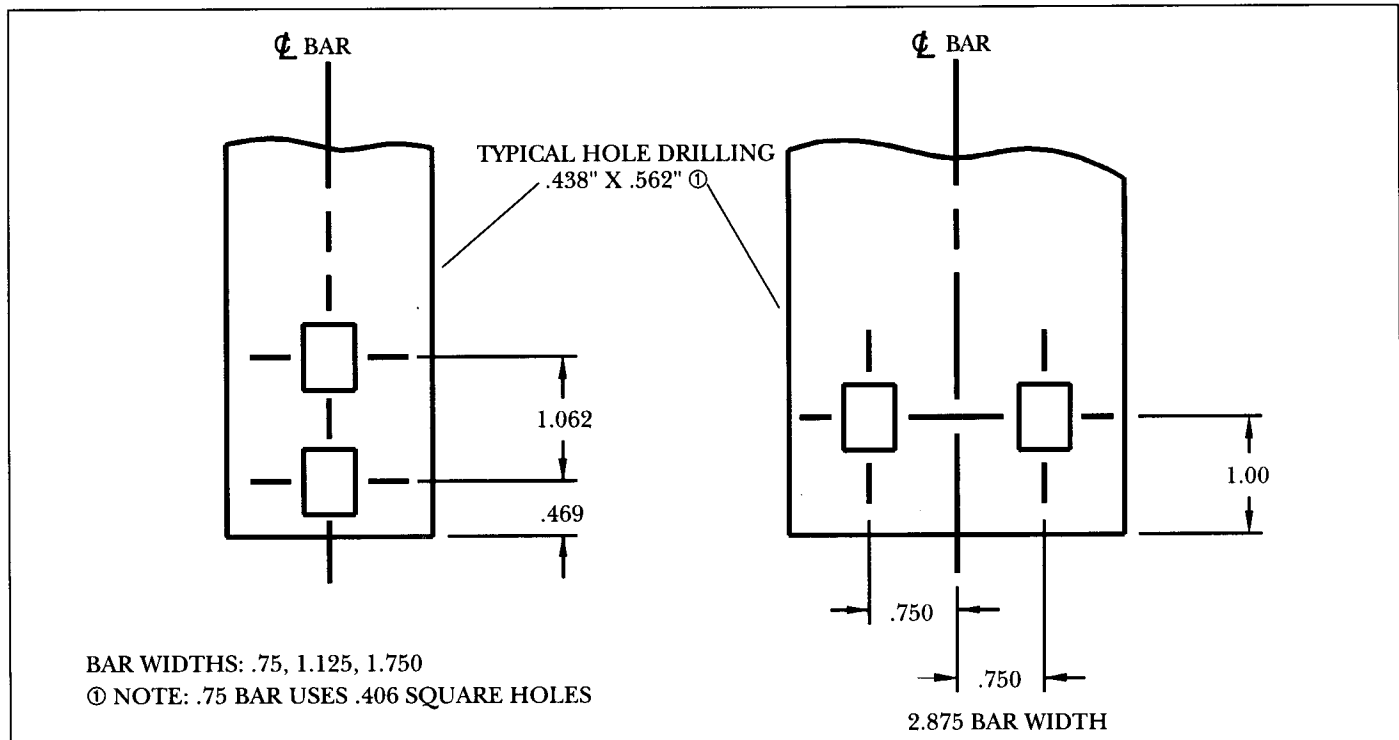


Fig. 20.2 Flanged End Bus Bar Hole Pattern

Dimensions (Cont'd)

FLANGED ENDS-WITH LUGS

Flanged end with lugs are provided with standard #2-600MCM mechanical lugs (see Table 21.1) or they will accept all NEMA lugs up to 1 7/8" wide.

NOTE: Refer to company when special lugs are required.

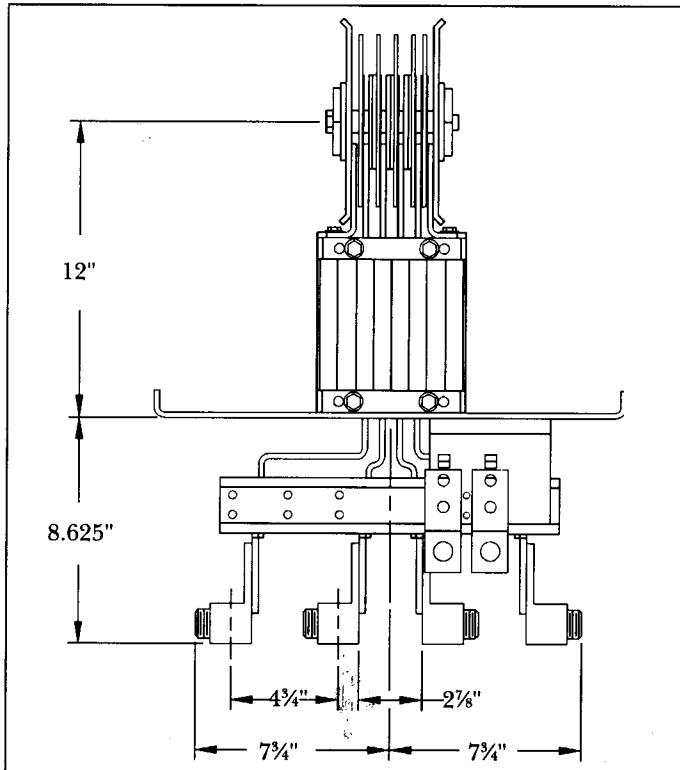


Fig. 21.1 Flanged End With Lugs (View A)

Table 21.1 Lugs Supplied

Amps	Number of #2-600 MCM Lugs Per Ø N, & GRD
225	1
400	2
600	2
800	3

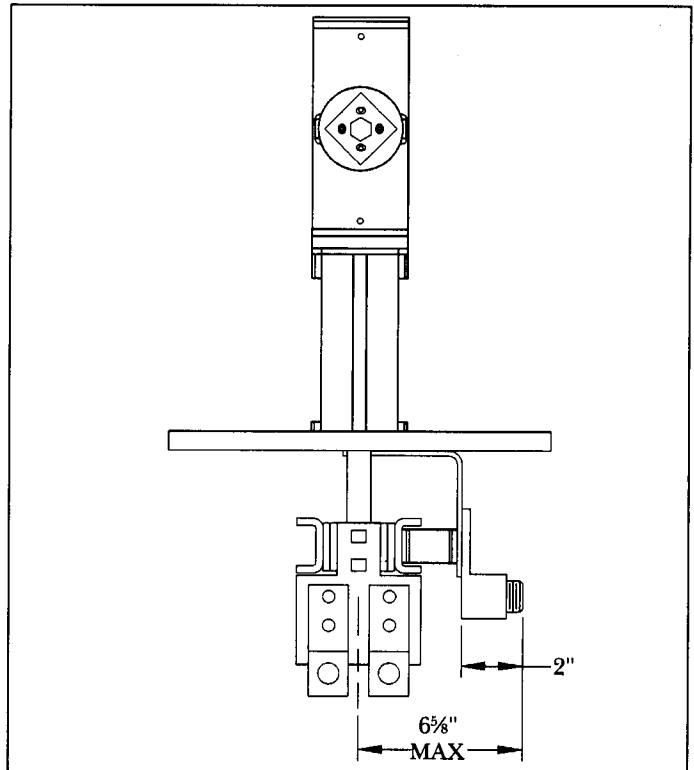


Fig. 21.2 Flanged End With Lugs (View AA)

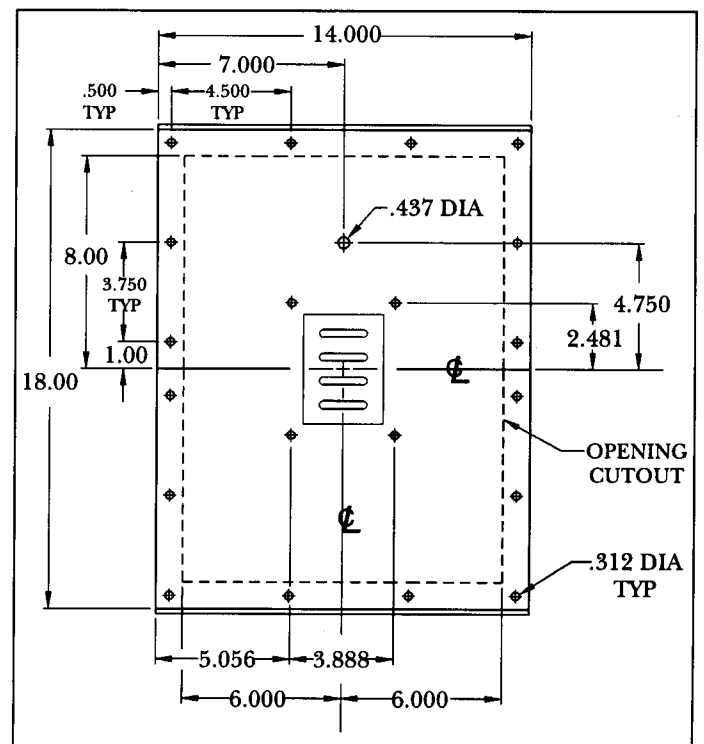


Fig. 21.3 Flanged End With Lugs - Cutout and Hole Drilling Pattern



Dimensions (Cont'd)

EXPANSION LENGTHS

Thermal/Building Expansion $\pm 2"$

Consideration should be given to the effects of thermal expansion. The expansion fitting **may be necessary** for long straight runs of 150 feet or more, particularly if the busway is not free at the ends of the run. The use of an expansion fitting is also required when the busway run crosses a building expansion joint. Refer to company for dimensions.

ADJUSTABLE STRAIGHT LENGTH

The Spectra Series™ LowAmp adjustable straight length offers additional flexibility, reducing the need for exact field measurements, providing on site, on time field flexibility. The adjustable straight length uses the unique features of the joint through bolt and belleville spring washer assembly, to provide positive pressure over the adjustable portion of the adjustable straight length, allowing $\pm 6"$ adjustability, from a nominal 54" to either 48" or 60".

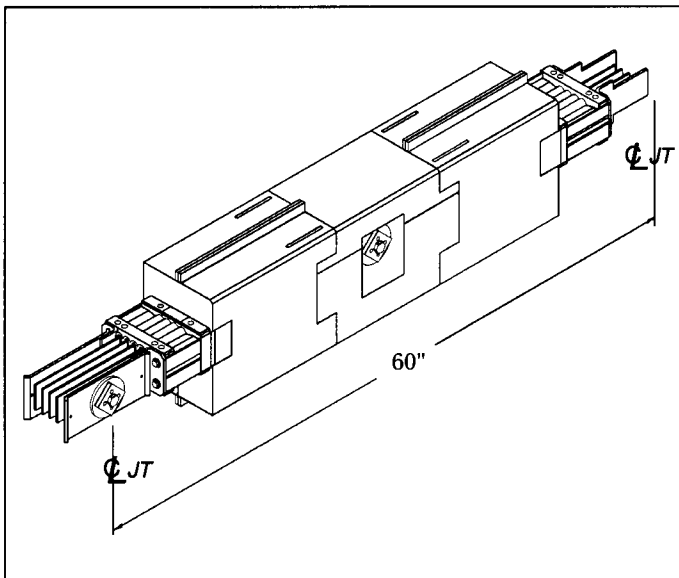


Fig. 22.2 Adjusted from Nominal 54" to Max. Adjusted 60"

Busway Adapters

The Spectra Series™ LowAmp busway adapter is used to convert existing GE-Spectra or Armor-Clad busway to LowAmp busway. Joint center line to joint center line dimension will be 36", refer to factory for further dimensional information.

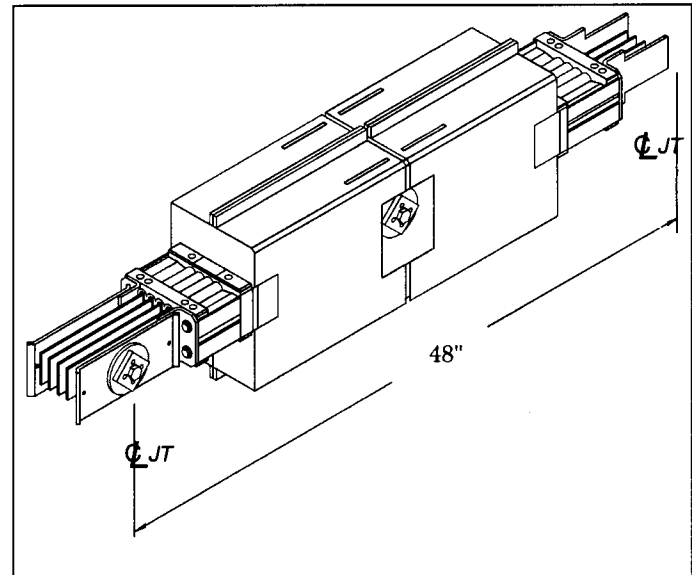


Fig. 22.3 Adjusted from Nominal 54" to Min. Adjusted 48"

Dimensions (Cont'd)

TRANSPOSITION LENGTHS

A total phase transposition is available where applications require phasing to be reversed prior to entering equipment.

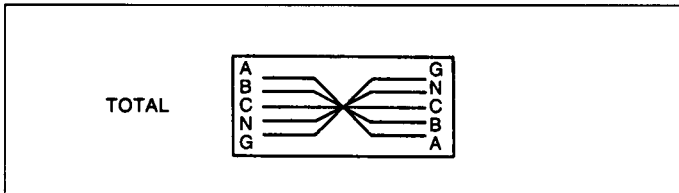


Fig. 23.1

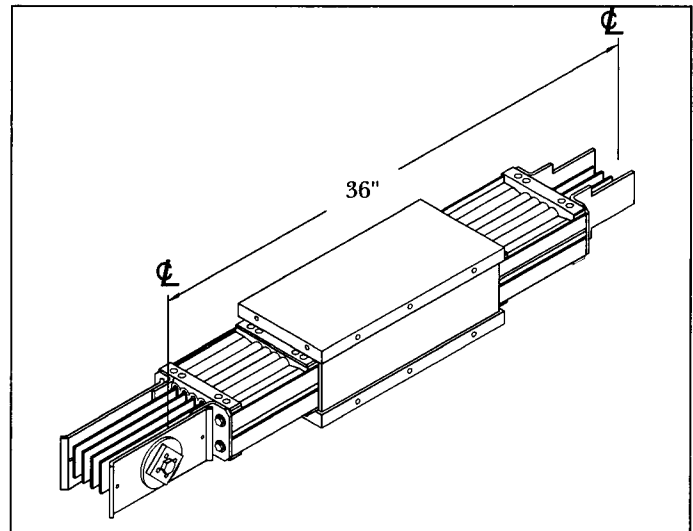


Fig. 23.2 Transposition Length

REDUCERS

Per NEC 364-11, a no-fuse reduced busway shall not exceed 50 feet in length and have a current rating at least $\frac{1}{3}$ the previous section rating, industrial use only. Commercial applications require protection in all application (1993 NEC).

Reducers/Adapter Cubicles

Fused and circuit breaker reducer cubicles are used in applications requiring a protective device when reducing from one ampere bus to another.

Fused and circuit breaker adapter cubicles are used when lugs are required on the line side of the protective device with bus on the load side. Refer to company for dimensions.

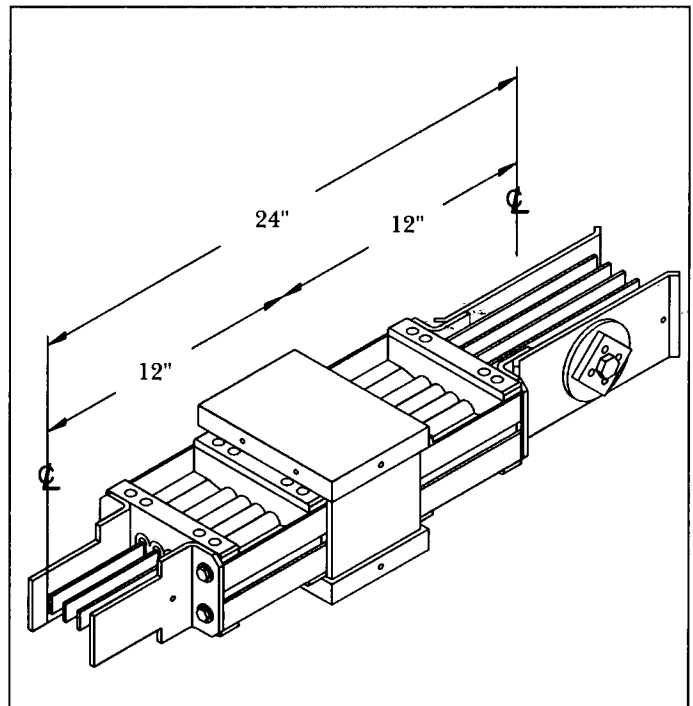
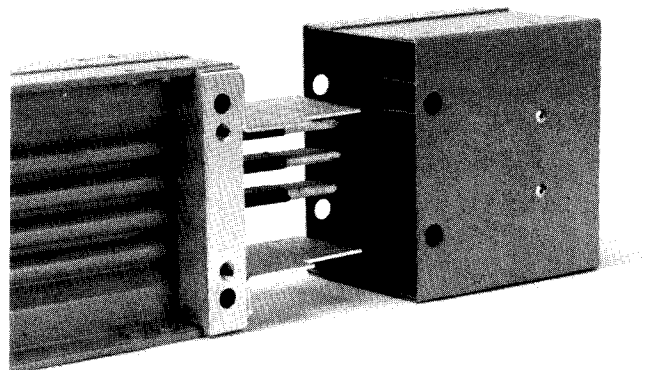


Fig. 23.3 No Fuse Reducer



Dimensions (Cont'd)

END BOXES



End Boxes are required to terminate busway runs. No joint assembly is required, and the end surface of the box is even with the joint centerline. See Table 15.1 for "A" dimension. Box is secured via joint cap bolts.

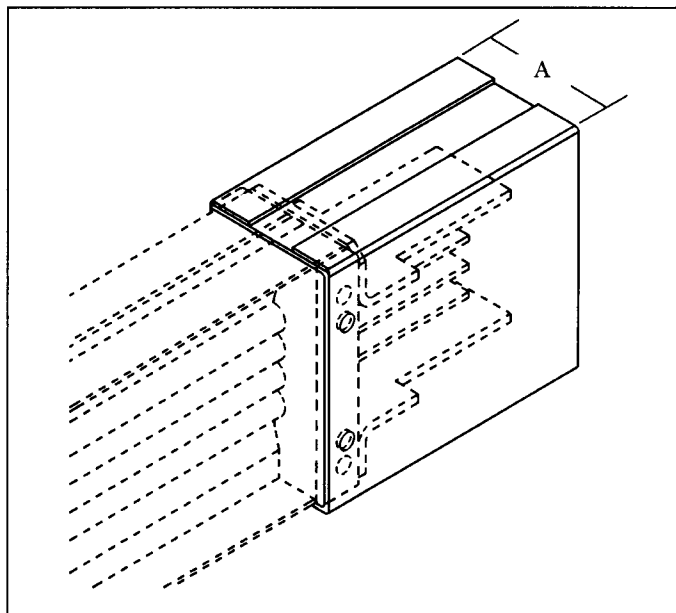


Fig. 24.1 End Box

FLOOR/WALL FLANGES

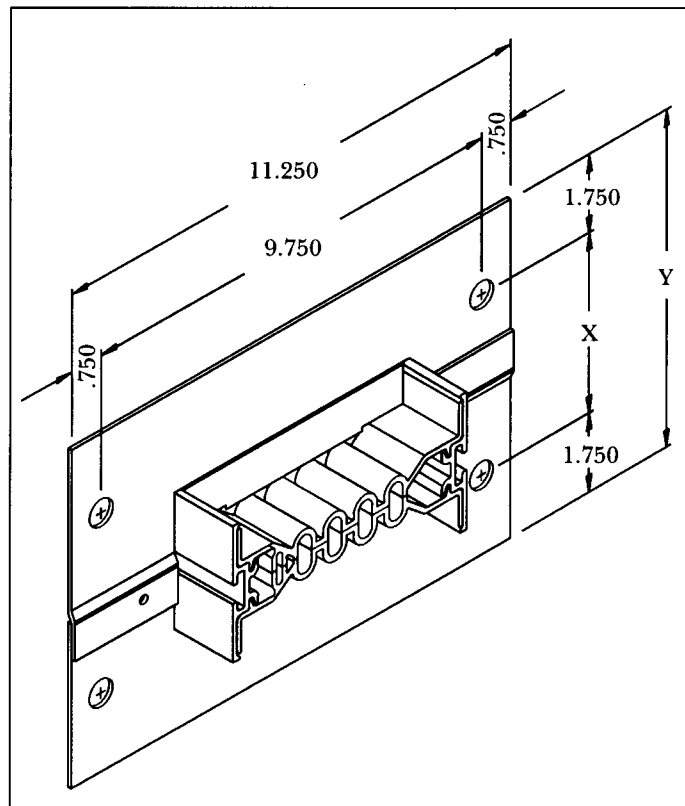


Fig. 24.2 Floor/Wall Flange Cutout and Drilling Detail

Table 24.1 Floor/Wall Flange

Bar Width	X	Y
.750	5.000	8.500
1.125	5.375	8.875
1.750	6.000	9.500
2.875	7.125	10.625

NOTE: Floor or Wall opening should provide 1/2" clearance all around the Busway.

Dimensions (Cont'd)

HANGERS

Horizontal Mounting

One standard clevis type flatwise hanger is furnished with each straight length. Edgewise clevis and edgewise/flatwise trapeze hangers are optionally available. Drop rods are not furnished.

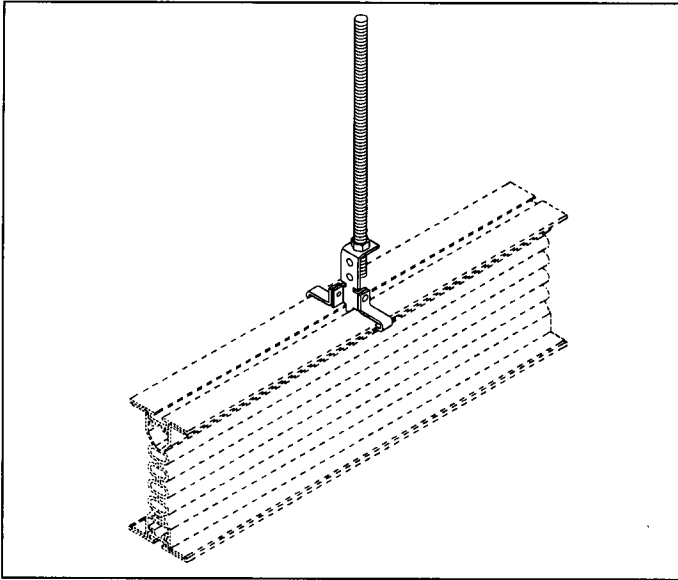


Fig. 25.1 (Standard) Flatwise Hanger Shipped with each Straight Length

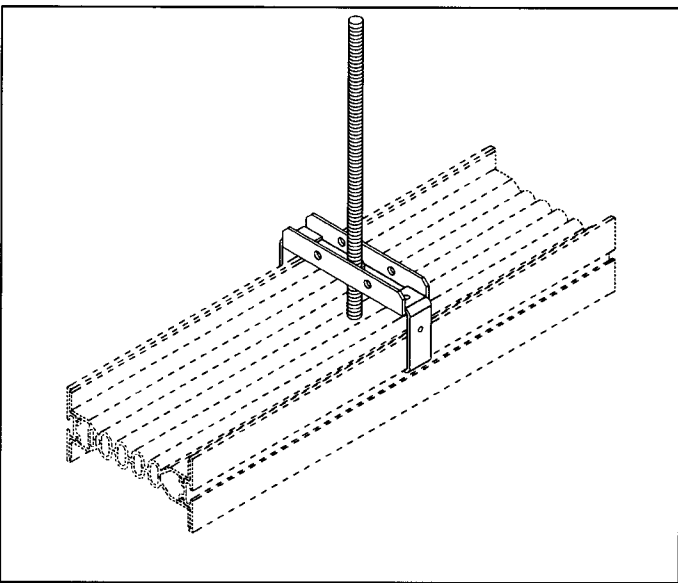


Fig. 25.2 Clevis Hanger for Edgewise Mounting

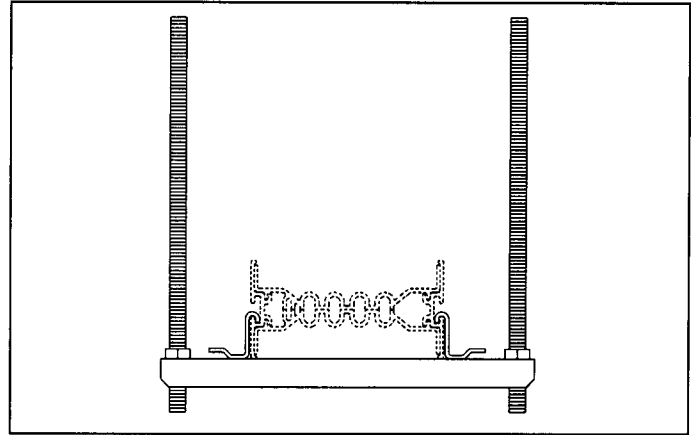


Fig. 25.3 Trapeze Hanger for Edgewise Mounting

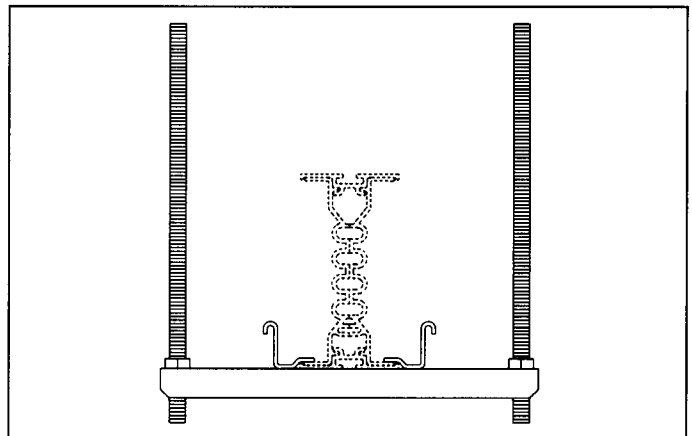


Fig. 25.4 Trapeze Hanger for Flatwise Mounting

Vertical Mounting

Spring hangers are required to support the busway at each floor. When the floor-to-floor span is over 16 feet, support for the spring hanger should be provided. Simple adjustment procedures are included with installation instructions. Mounting holes align with floor flanges.

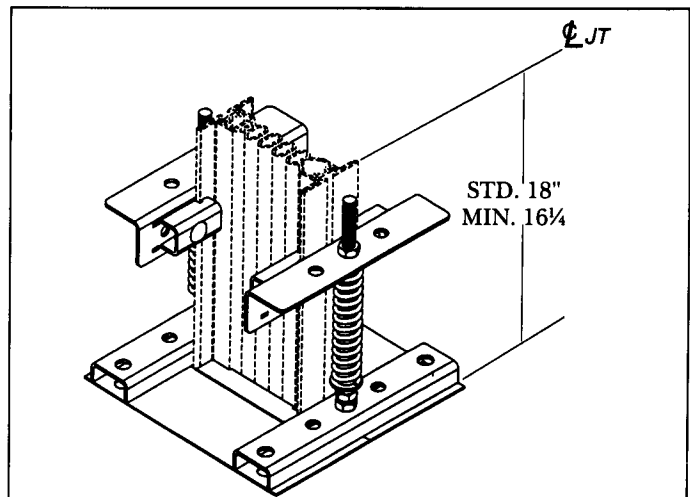


Fig. 25.5 Vertical Spring Riser Hanger



Spectra Series™ LowAmp Busway Catalog Numbering System

Product	Description	Code
	Spectra LowAmp	L
Type	Feeder Plug-in	F P
Service	3PH, 3W 3PH, 4W 100%Neutral	3 4
Ground	Integrated Housing Internal Bus (A)	H G
Conductor	Copper Aluminum	C A

L F 3 H C 02 SL 02 B

Type	Code
Indoor	Blank
Transverse Barrier (D)	B

Type	Feet	Code
Feeder	2	02
	3	03
	5	05
	10	10
Plug-In	4	04
	6	06
	10	10
Fittings	NA	ST
Offsets:		
6"		06
12"		12
18"		18
Reducers:		
No Fuse		NF
Fused QMR	240V	F2
	600V	F6
Circuit Breaker		
225A-22K-TFJ		FJ
225A-22K-TFK		FK
225A-25K-THFK		HF
400A-30K-TJJ	NA	JJ
400A-30K-TJK4		K4
400A-35K-THJK4		H4
600A-30K-TJK6		K6
600A-35KTHJK6		H6
600A-30K-TJ4V		J4
600A-35K-THJ4V		HV
600A-65K-TJL4V		L4
800A-30K-TKM8		M8
800A-35K-THKM8		H8
800A-30K-TK4V	KV	
800A-35K-THK4V	HK	
800A-65K-TKL4V	HL	

Amps	Code
225	02
400	04
600	06
800	08

Configurations	Code
Straight Length	SL
Elbow-Left	EL
Elbow-Right	ER
Elbow-Up	EU
Elbow-Down	ED
Center Cable Tap Box-Up	CT
Center Cable Tap Box-Down	CB
End Cable Tap Box-Up	TT
End Cable Tap Box-Down	TB
End Box	EB
Flanged End	FE
Flanged End w/Lugs	FL
Adjustable Straight Length	AS
Expansion Length-Up	XU
Expansion Length-Down	XD
Total Phase Transposition	TF
Tee-Right	TR
Tee-Left	TL
Tee-Up	TU
Tee-Down	TD
Off Set-Up	OU
Off Set-Down	OD
Off Set-Right	OR
Off Set-Left	OL
Adapter Cubicles Lugs line end (B)	AC
Reducer Cubicles Load Amps of:	
(B) 600 Amp	R6
(B) 400 Amp	R4
(B) 225 Amp	R2
Busway Adapter	
Spectra Bus	SB
Armor-Clad Style 3 Bolt End	BE
Armor-Clad Style 3 Slot End	SE
Busway Stubs (600-800) (C)	
Spectra/AV Line Switchboard	SA
AKD8/Powerbreak	AK
MCC 8000 LineMC	
Panelboards	PA

- (A) Available w/copper bus bars only.
- (B) Specify Primary rating for Reducer/Adapter in the Amp Code location of the catalog number.
- (C) Requires drawing for layout configuration, and must be coordinated with equipment plant.
- (D) Item available in feeder construction only (use with fire barrier and wall/floor flange for 3 hour fire rating).

Drawing Notes for Spectra Series™ LowAmp 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 output whether distributed, or concentrated load.
- 5) Bus bar material (aluminum or copper).
- 6) Location of all fittings. As required by NEC (National Electrical Code)
- 7) Limiting dimensions of busway width and depth where passing through walls or floors or around obstructions.
- 8) Mounting position of busway (flatwise, edge-wise, 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, UL, NOM, and IEC. All components of the busway 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.

Busway shall be adequately braced to withstand, without damage or permanent distortion, short-circuit currents of the magnitude shown on the drawings when tested in accordance with UL standards. 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 visually 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 spring washers shall be provided to give positive pressure over complete contact area. Plug-in and feeder joints shall use identical parts.

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.

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

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

Horizontal runs of busway shall be UL Listed for hanging on 10-foot 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' 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 type, Spectra Series™ LowAmp Busway.

Plug-in Busway Specifications

Plug-in busway shall be identical to feeder construction and performance except:

There shall be five dead-front automatic shutter type, plug outlets per side, per 10-foot length. All outlets shall be usable simultaneously.



Plugs

Where shown on plans, furnish and install busway plugs of the types and ratings indicated. When applicable, plugs shall be UL and CSA 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. A ground stab to engage grounding tab on busway shall be provided. An internal ground bus shall be provided when required. Provide means for padlocking cover and operating handle in "OFF" position. The operating handle shall be easily moved from end to side or visa 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 an 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 the 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 100 amps that will mechanically engage or disengage the plug from the busway, but only when the plug is in the "OFF" position.



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