DESCRIPTIVE BULLETIN

ReliaGear™ busway

Lighter, smaller, easier to modify

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ReliaGear™ busway

ReliaGear™ busway brings the combined benefits of the proven Spectra™ series busway, the sophisticated technology of the SACE® Tmax® circuit breaker, and fused switch in a plug-in unit to the busway market. This best-of-both-worlds offering is a custom-designed, modular electrical power distribution system and is available in both feeder and plug-in styles.

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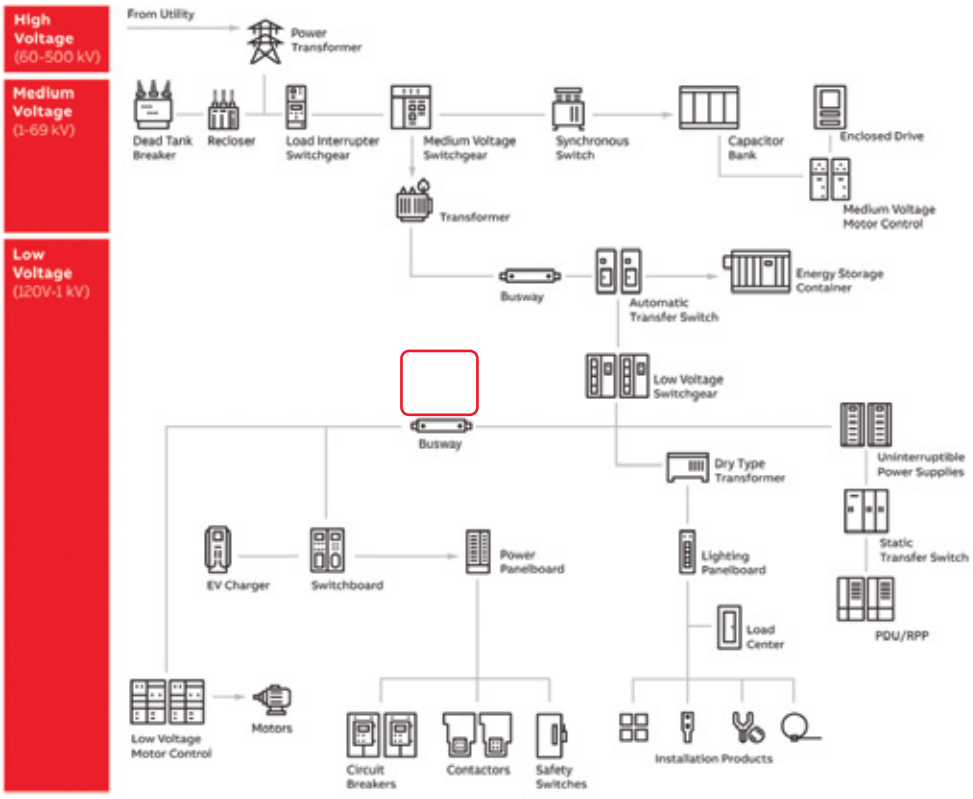
01
Typical distribution pictogram layout



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01

ReliaGear busway replaces the typical wire and conduit in most applications while offering reduced installed costs and improved reliability. Since ReliaGear™ busway is lighter than wire and conduit, it's easier to handle and hang. Its compact design is ideal for applications where space is critical and eliminates the time-consuming tasks of stripping, preparing and pulling wire.

All of these advantages translate into lower delivery costs, simple storage and handling, lower total installed costs, and increased space for more equipment. ReliaGear busway provides maximum flexibility.

In contrast to the fixed nature of wire and conduit, busway will grow as facilities expand. Due to its modular design, busway runs can be easily added, or disassembled and relocated with minimal effort. The greatest testimonial to ABB busway is actual field experience. ABB is a market leader and preferred product for a wide variety of demanding applications. Many of our busway products are still being used in these environments after more than 30 years.

From every point of view – flexibility, performance and initial cost – ReliaGear busway is the clear choice for your next installation.

Overview

ReliaGear busway is a light weight, custom designed modular electrical power distribution system available up to 5000 A, in both feeder and plug-in styles.

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ReliaGear busway
epoxy insulation view

ABB has integrated the latest breaker technology into the busway plug-in unit. SACE Tmax XT circuit breakers and Ekip trip units provide accurate protection, metering, and enhanced communication capabilities that continue to solidify the ReliaGear busway solution as second-to-none.

ReliaGear busway was developed based on feedback from customers and structured focus groups. Customers asked for lighter and smaller power bus systems that were flexible enough to expand or realign in facilities as needs changed. They needed higher amperage tap-offs and the ability to isolate sections without taking the entire structure off-line.

Customers also wanted the latest breaker and fusible technology bus plug-in units with joints that were sturdy, safe and easy to maintain, but flexible enough to accommodate late-point installation issues.

Easy installation

Modular, flexible, fast
- Light weight aluminum housing
- Lightest Busway in the Industry
- Future expansion flexibility
- Smaller bus plug-in unit footprints
- Installs up to 4 times faster and cheaper than cable and conduit

Outstanding reliability

Connections you can depend on
- SACE Tmax XT with Ekip trip units provide accurate protection, metering, and enhanced communication capabilities
- Exclusive Blue Coat™ epoxy insulation provides the industry's longest insulation life of 50+ years, reduces risk of failure, and enables busway to perform across a wide temperature spectrum

Enhanced safety

The next level of protection
- Standard double-headed bolts provide visual indication of tightened joints
- Joint-Guard protection simplifies periodic maintenance by indicating when a joint needs tightening
- Higher short-circuit ratings and lower voltage drop

Simpler is better

ABB produced a compact design resulted in these improvements over wire and conduit installations:
- 50% minimum decrease in size
- Up to 50% decrease in weight
- Increased adaptability and versatility
- Higher short circuit ratings
- Improved installation and operational safety
- Fully tested and certified to UL, ANSI, CSA and ASTA standards

Key features and benefits

Smaller size

ReliaGear™ busway dimensions begin at 4.5"x4.4" for 225-800 ampere ratings, and range up to only 4.5"x29.75" for the highest ratings. A single drop-rod hanger per 10-foot section can be used for ratings up to 2000 amp for aluminum busway and 2500 amp for copper busway.

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03
Common application – 2000 amp, 600 volt, 3 phase / 4 wire and nuts. Requirements: 12, 500 MCM cables in 6" rigid conduit.

Decreased weight
In the same 1200 amp, 3 wire application, aluminum busway weighs only 8 lbs./foot vs. 19 lbs./foot with copper wire and EMT conduit. This dramatically saves on structural weight allowance making more efficient distribution designs possible and reduces installation time (per NECA labor standards).

Frequent high amperage tap-offs
A bolted power take off device provides up to 1600 amps protection at every joint, plug-in or feeder. Additionally, tap-off provisions on standard busway allow for 10 locations per 10 foot section. These features offer maximum flexibility in designing or modifying distribution systems.

Section isolation without long shutdowns
Removable isolation joints allow an operator to cleanly and safely remove a section of busway and allow the remaining system to come back on-line. This allows ease of maintenance and modification with minimal facility downtime.

IBC 2015 and OSHPD Seismic certification standard
ReliaGear™ busway can be used in seismic conditions without restrictions, special bracing, connections to equipment, or hangers. This saves on installation time and costs due to additional components.

Virtually no maintenance
When fully torqued, Belleville joint washers have a high deflection, losing only 14% of their contact force over an expected 50 year life. This prevents overheating joints – the primary cause of busway maintenance.

Flexibility
ReliaGear plug-in busway has tap-off provisions at 24-inch intervals on both sides, leaving a total of ten locations per 10-foot section. This allows safe and quick connection of a switch (up to 600 amp) or circuit breaker (up to 800 amp). Load-side cable connections from the busway circuit breaker, fuse or plug-in unit to the equipment are short and direct.

A ReliaGear busway plug-in unit can be installed or removed safely within a matter of minutes. The plug-assist and position plug-in unit locators simplify operation, ensuring a safe and positive connection. In addition, a ±1/2" adjustability built into every ReliaGear™ busway joint allows greater freedom during installation and adjustment.

Safe operation
ReliaGear busway has many features that ensure safe operation by personnel:

- **Conductors that are fully enclosed**
  Ensures the highest standards for safety are maintained per UL guidelines
- **Polarized plug-in units**
  Polarized engagement of the plug-in unit to the busway provides the installer with positive plug/phase alignment
- **Plug-in units on installation are automatically grounded**
  First-Make-Last-Break type contactors help protect the user during installation and removal of bus plug-in units
- **Cover, device and plug-interlocks**
  Helps to protect the installer by prohibiting the opening of the plug-in unit door or removal when the plug-in unit is in the ON position
- **Provision for padlocking the plug-in unit in the OFF position**
  With up to 3 lock positions per plug-in unit, this product fully supports Lock-Out/Tag-Out (LOTO) programs to prevent unauthorized user access to the electrical distribution system
- **Integral housing ground**
  The all-aluminum housing forms a complete 360° high level ground path for ground faults and serves as a continuous bond between busway sections, fittings and bus plug-in units

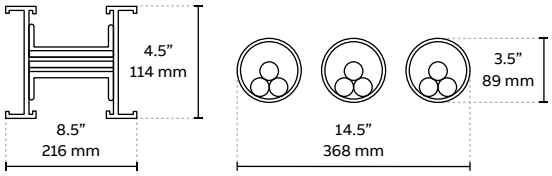

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Table 1: Compact size

Amperes	AL	CU
225-600	4.38	4.38
800	5.63	4.38
1000	6.13	5.00
1200	7.00	5.63
1350	8.50	6.13
1600	9.25	7.00
2000	11.00	8.50
2500	15.50	10.25
3000	18.00	15.00
4000	23.00	18.00
5000	-	21.50
6000	-	29.75

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

Table 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
4000	25	30	42	52
5000	-	-	58	74
6000	-	-	-	86

Pounds / 1 foot run: Representative for aluminum and copper housings with 3 wire and 4 wire applications.

Longevity and durability

Insulation is at the heart of any electrical distribution system, and a durable, long-life epoxy insulation is used in ReliaGear™ busway. ReliaGear™ busway 130° C Class B epoxy insulation is unique in the world of low- voltage busway. Epoxy insulation has been in use with busway for the past 30 years.

When compared to PVC and Mylar, test results show that epoxy has a significantly longer life (50 years), higher impact strength (150 lbs) and superior chemical and water resistance. Epoxy is impervious to acids, alkalis, acetones, machining oils and lubricants commonly found in industrial environments. Epoxy-coated busway tested for flammability were rated self-extinguishing by UL laboratories. This is in contrast to PVC, which emits poisonous fumes in a fire. The Belleville spring joint design has been tested in over 35 years of field experience.

Once properly tightened, it does not have to be retightened each year, as some manufacturers recommend. It only requires a periodic visual inspection.

Fully tested

ReliaGear busway has undergone thorough testing according to ANSI/UL 857, NEMA BU-1, federal specification W-B-811b, CSA and ASTA. Testing included (but was not limited to) heat rise, short circuit and ground fault.

Seismic certification

The complete standard commercial offering of ReliaGear busway is certified for IBC 2015 Seismic conditions as witnessed and approved (by the tests performed) at Wyle Laboratories in Huntsville, Alabama. The maximum acceptable parameters are below.

Table 3: Parameters according to vertical riser and horizontal configurations

Maximum acceptable parameters	Vertical	Horizontal
Edgewise and flatwise orientation	✓	✓
Ratings	5000A CU; 4000A AL	6000A CU; 4000A AL
Voltage	600V	600V
Distribution plug-in unit and feeder	✓	✓
Standard hangers	✓	✓
Hanger spacing	16 feet	10 feet
Full threaded drop rod	✓	✓
Drop rod connection	N/A	x[1]
Bus plug-in units	✓	✓
Fittings	✓	✓
Cable tap boxes	✓	✓
End boxes	✓	✓
All applications approved	✓	✓
Proximity to walls	x[1]	x[1]

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

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Installation labor costs
Aluminum housing

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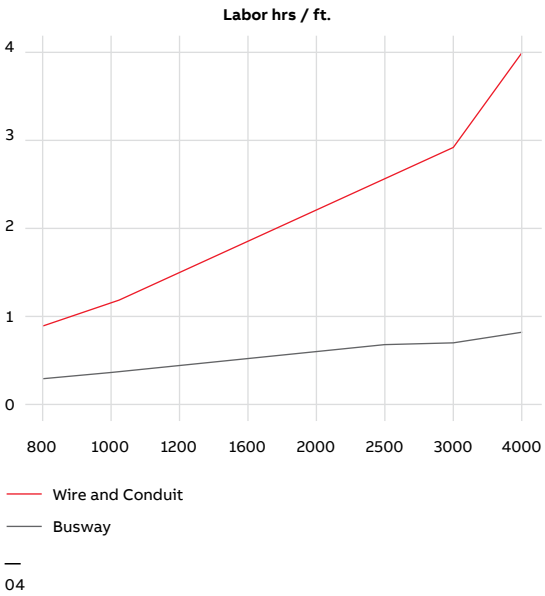
05
Installation labor costs
Copper housing



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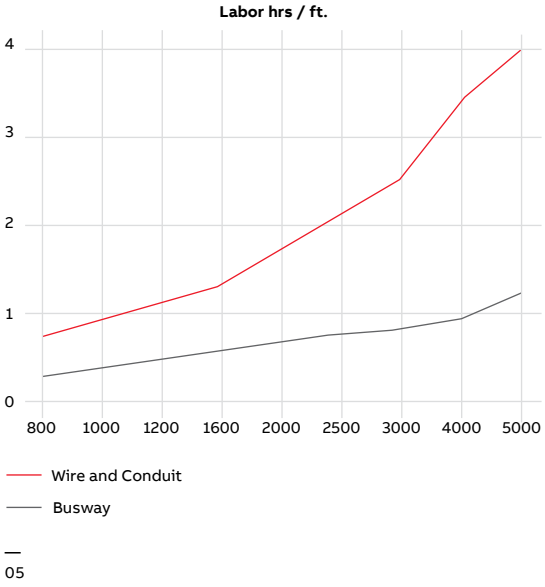

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ReliaGear busway plug-in units labor measurements are the same as feeder labor measurements

Adaptability and versatility
A wide variety of ReliaGear busway options are available to fit specific applications. Most applications will fall into four categories.

- **Service entrance**
  Brings power from utility transformers into a main disconnect or distribution switchboard
- **Single load**
  A long horizontal busway run that feeds a single load, such as a switchboard or motor control center
- **Multiple load**
  Used where power requirements are distributed over a large area, such as with production machinery
- **Riser**
  Vertical run to economically feed high-rise buildings

ReliaGear busway is available in both silver-plated aluminum and tin-plated copper at amperage capacities of 225-6000 AC and 600-8000 DC for low voltage applications. Variations and components are available for all indoor, drip-proof and outdoor applications. ABB also offers a wide variety of tap-off devices, of which fusible switches and molded case circuit breakers are the most common. Busway plug-in units available in OS and OT fusible switch, XT2 , XT4 , XT5 and XT7 breaker frames providing the following features and benefits:

- Latest fusible and breaker technology
- Better efficiency, smaller size, light weight bus plug-in unit
- Higher short-circuit ratings
- Lower voltage drop

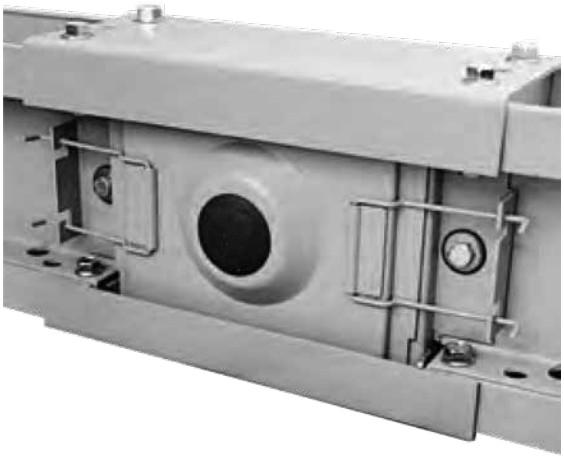
Higher integrity and reliability benefits:

- Innovation and communication capabilities
- SACE Tmax XT improved switch mechanism/ space gains in inches
- Broader range of interrupt ratings on many frames @ 100 kA
- 100 percent rated up to 600 A and 80 percent for 800 A plug-in unit. PTO 1200 A at 100 percent rated
- SACE Tmax XT is optimized for renewables and data center markets and enhancing the protection with Ekip dip and G touch

Weather protection

ReliaGear busway provides optimum performance in even the most severe weather environments.

- WeatherShield Epoxy Joint Insulators are designed for long life and help to reduce maintenance. Joint bolt access is via easily removeable, UL listed/CSA certified rain-tight santoprene plugs
- In addition to our standard housing draw holes, extra drainage channels through die cast housing spacers help eliminate standing water near joints
- Gasketing materials and sealants are rated for extreme temperatures (-40° to 250° F and -40° to 200° F respectively) and are tested to verify superior UV resistance and excellent stability when subjected to long term thermal aging. The joint shield, as shown in the photo below, 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



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Splash-proof applications: Innovative Joint Shield design provided with drip-proof, splash-proof and outdoor bus

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07
Outdoor applications: Complete outdoor run of ReliaGear busway

Table 4: Weather joint protection

Construction type	IEC degree required	Joint insulator
Indoor		
Feeder (NEMA 1), Plug-in unit, Riser	IP-40	Standard
Drip Proof		
Feeder, Plug-in unit, Riser	IP-43	Standard
Splash Proof		
Feeder, Plug-in unit, Riser	IP54/55	Weathershield
Outdoor		
Feeder (NEMA 3R)	IP65/66	Weathershield

Double-headed

Break Off joint bolt
This bolt is the standard joint bolt offering for all ReliaGear busway.

- When the bolt is properly tightened, the outer head will break off removing the bright red label sandwiched underneath. This will help eliminate any errors of omission during installation by giving a quick visual inspection
- No torque wrench is required for initial installation
- The bolt is reusable after the top head is broken off by using a standard torque wrench on the second bolt head

Joint-Guard torque-color indicator bolt
The exclusive Joint-Guard bolt acts as a protection system which 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, but even after repeated tightening and loosening so often required during installation. And it will keep on working that way for years to come.

The optional Joint-Guard simplifies periodic maintenance with visual inspection – even from a distance. This bolt eliminates labor-intensive re-torquing and gets even easier when combined with the superior torque-retention design of the Belleville washer. Both elements deliver the best solution for your maintenance program.

How Joint-Guard 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.

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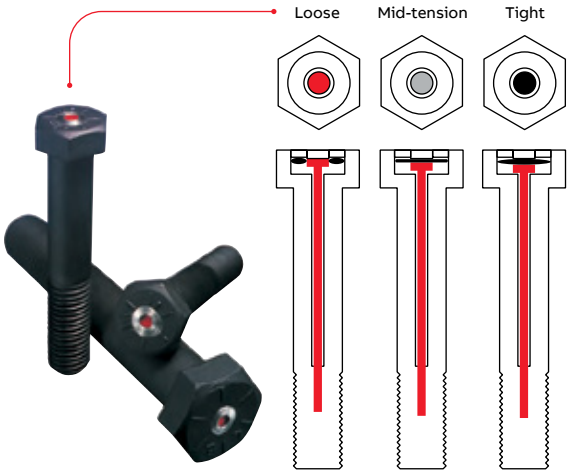
Break Off joint bolt



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Joint-Guard torque-color indicator bolt

ReliaGear™ busway plug-in unit

Benefits and features

Safe: Light weight aluminum housing allows for safe, easy installation. Standard double-headed bolts with bright red indicator label provide visual indication of tightened joints. Optional Joint-Guard protection simplifies periodic maintenance by indicating when a joint needs tightening.

Smart: SACE Tmax XT circuit breakers and Ekip trip units provide accurate protection, metering, and enhanced communication capabilities.

Sustainable: Exclusive Blue Coat™ epoxy insulation provides the industry's longest insulation life of 50+ years, reduces risk of failure, and enables busway to perform across a wide temperature spectrum.

Key differentiators

- Rotary handle with LOTO built-in
- Modern design, clean outside and inside
- Fewer parts (switches, breakers, rotary handles and lugs)
- No yokes and handle linkage parts
- Improved weather protection design; indoor IP40 and IP54/55 (splash/drip)
- Clear line-side cover allows for better inspection of strap connections
- Mylar labels are higher quality, longer lasting
- Fusible J Class plugs; no fuse clips needed
- G90 steel; no painted or plated parts inside the plug-in unit
- Better access to Neutral and Ground lugs
- Better access to fuses

OS Fusible (Class J) switch plug-in unit 30 A – 600 A

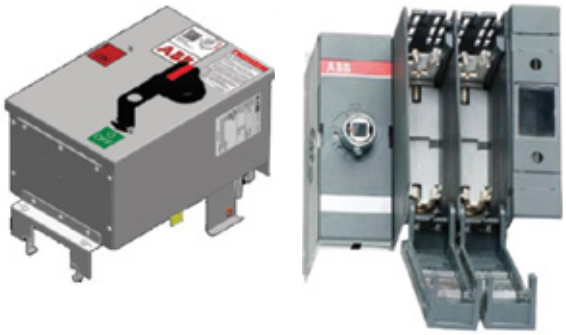


Table 5: Class J fuse selection in plug-in unit

Max. Amperage	Max. Voltage	Short circuit rating ka	Fuse class
30 A	600 Vac	200 kA	J
60 A	600 Vac	200 kA	J
100 A	600 Vac	200 kA	J
200 A	600 Vac	200 kA	J
400 A	600 Vac	200 kA	J
600 A	600 Vac	125 kA*	J

*OS 600 A J Class fusing short circuit rating is at 125 kA; use OT 600 A with J Class fusing for 200 kA

This plug-in unit accept class J fuses only. When used with class J fuses, this switch is suitable for use on a circuit capable of delivering. Not more than 200 kA at 600 volts (AC) maximum. Short circuit rating of a busway system is limited to lowest short circuit rating of any busway or plug-in unit installed.

OT Fusible (Class H or R) switch plug-in units 30 A – 600 A and 600 A (Class J)

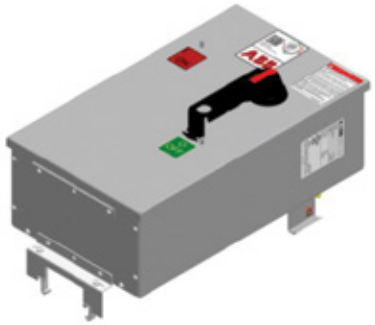


Table 6: Class H fuse selection in plug-in unit

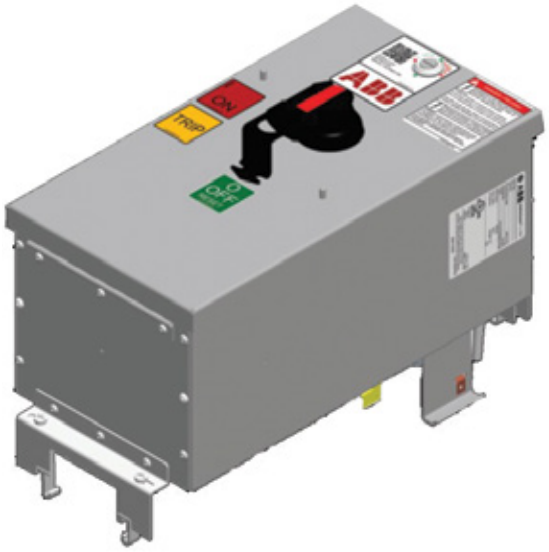
Max. Amperage	Max. Voltage	Max. Voltage	Short circuit rating ka	Fuse class
30 A	250 Vac	600 Vac	10 kA	H
60 A	250 Vac	600 Vac	10 kA	H
100 A	250 Vac	600 Vac	10 kA	H
200 A	250 Vac	600 Vac	10 kA	H
400 A	250 Vac	600 Vac	10 kA	H
600 A	250 Vac	600 Vac	10 kA	H

Table 7: Class R fuse in plug-in unit

Max. Amperage	Max. Voltage	Max. Voltage	Short circuit rating ka	Fuse class
30 A	250 Vac	600 Vac	200 kA	R
60 A	250 Vac	600 Vac	200 kA	R
100 A	250 Vac	600 Vac	200 kA	R
200 A	250 Vac	600 Vac	200 kA	R
400 A	250 Vac	600 Vac	200 kA	R
600 A	250 Vac	600 Vac	200 kA	R/J

This plug-in unit accepts class H or R fuses only. When used with Class H fuses, this switch is suitable for use on a circuit capable of delivering not more than 10 kA at 600 volts (AC) maximum. Short circuit rating of a busway system is limited to lowest short circuit rating of any busway or plug-in unit installed. When used with class R fuses, this switch is suitable for use on a circuit capable of delivering not more than 200 kA at 600 volts (AC) maximum. Short circuit rating of a busway system is limited to lowest short circuit rating of any busway or plug-in unit installed.

SACE Tmax XT circuit breaker plug-in units 15 A-800 A



This plug-in unit accepts SACE Tmax XT2 , XT4 , XT5 and XT7 breaker frames rated up to 600 Volts (AC) maximum. This circuit breaker plug-in units are suitable for use on a circuit capable of delivering maximum interrupting rating 100 kAIC @ 480 V and 100% rated up to 800 A. With optional thermal magnetic, basic and advanced electronic trip units depending on the XT type used.

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Table 8: Circuit breaker busway plug-in units

					XT frame IC ratings		
Construction	**SACE Tmax Frame**	**Trip ratings (amps)**	**Old Frame Type**	**Trip ratings (amps)**	240 V	380, 415 and 480V	600V
	XT2N	15-125	SEHA	15-150	65	25	18
	XT4N	70-250	SFHA	70-250	65	35	22
	XT5N	250-500	SGHA	250-600	65	35	25
Low Tier	XT7S	300-800	SKHA	300-800	65	50	25
	XT2S	15-125	SELA	15-150	100	65	25
	XT4S	70-250	SFLA	70-250	100	65	25
	XT5S	250-500	SGLA	250-600	100	65	42
Mid Tier	XT7H	300-800	SKLA	300-800	100	65	42
	XT2L	15-125	SEPA	15-150	200	100	35
	XT4L	70-250	SFPA	70-250	200	100	50
	XT5L	250-500	SGPA	250-600	200	65	42
High Tier	XT7L	300-800	SKPA	300-800	200	65	42

- **Outstanding technology**
  Continuity of service and equipment protection – SACE Tmax XT sets standards when extreme breaking capacity is needed. Sharing the same logics, interfaces and features regardless of operating voltage and environmental conditions. Embedding the most advanced protection into the smallest of frames.
- **Top-level products**
  Absolute attention to detail, with style – from design to manufacturing, SACE Tmax XT sets standards for edge technologies. Almost a century of research and experience means top-level products that are ready to face future challenges.

Plug-in unit molded case circuit breakers options




	SACE Tmax XT2	SACE Tmax XT4	SACE Tmax XT5	SACE Tmax XT7
	Small, reliable, versatile. High performing circuit breaker for all standard applications	Capable of supporting both simple and extremely complex operations	Compact, powerful and flexible. Shows the world what a circuit breaker of the future can do	The ultimate choice. Deals with heavy-duty demands effortlessly
At a glance	125 A frame up to 600 V	250 A frame up to 600 V	600 A frame up to 600 V	1200 A frame up to 600 V
	Thermal magnetic, basic and advanced electronic trip units	Thermal magnetic, basic and advanced electronic trip units	Thermal magnetic, basic and advanced electronic trip units	Basic and advanced electronic trip units
	Maximum interrupting rating 100 kAIC @ 480 V	Maximum interrupting rating 100 kAIC @ 480 V	Maximum interrupting rating 100 kAIC @ 480 V	Maximum interrupting rating 100 kAIC @ 480 V
		100% rated up to 250 A	100% rated up to 600 A	80% rated up to 800 A

Molded case circuit breakers trip unit options



Thermal magnetic	EKIP DIP	EKIP TOUCH
Basic protection against overloads and short-circuits are needed	First level electronic trip unit for greater protection selection	Advanced electronic trip unit with high accuracy measurements and digital display
When you just need “a circuit breaker”	Ground fault protection is required	Communications
		Metering (1% power and energy accuracy)… Ekip G Touch
		Common automation and supervision system integrations
		Monitoring via the Cloud

ReliaGear busway plug-in unit SACE Tmax XT
Interrupting ratings and trip unit types

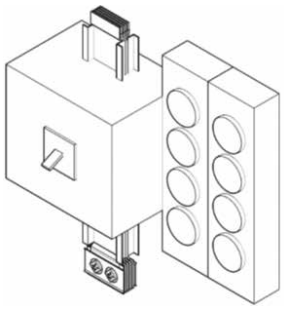
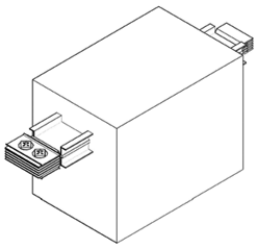
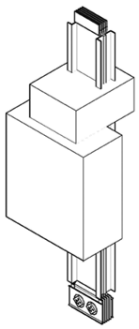
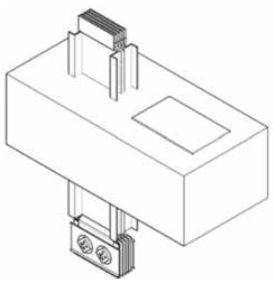
ReliaGear busway plug-in unit SACE Tmax XT




					XT2			XT4			XT5			XT7		
Frame size			(A)			125			250			600				
Poles			(No.)			3			3			3				
Rated voltage	50/60 Hz		(V)			480			600			600				
				N	**S**	**L**	**N**	**S**	**L**	**N**	**S**	**L**	**N**	**S**	**L**
Interrupting ratings	240		(kA)	65	100	200	35	65	25	65	100	200	100	50	42
	380		(kA)	25	65	100	35	65	100	35	65	65	65	50	65
	415		(kA)	25	65	100	35	65	100	35	65	65	65	50	65
	480		(kA)	25	65	100	35	65	100	35	65	65	65	50	65
	600		(kA)	18	25	35	22	25	50	25	42	42	42	25	42
Trip units for power distribution															
TMF						•(<80 A)									
TMA						•(<80-125 A)			•(STD)			•(STD)			
Ekip Dip									•			•			•(STD)
Ekip Touch									•			•			•

Ekip Dip/Touch have LSI & G options

PTOs

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— 11
— 12
— 13

— 10
Meter-mod PTOs
In-line device with Spectra G or K frame circuit breaker

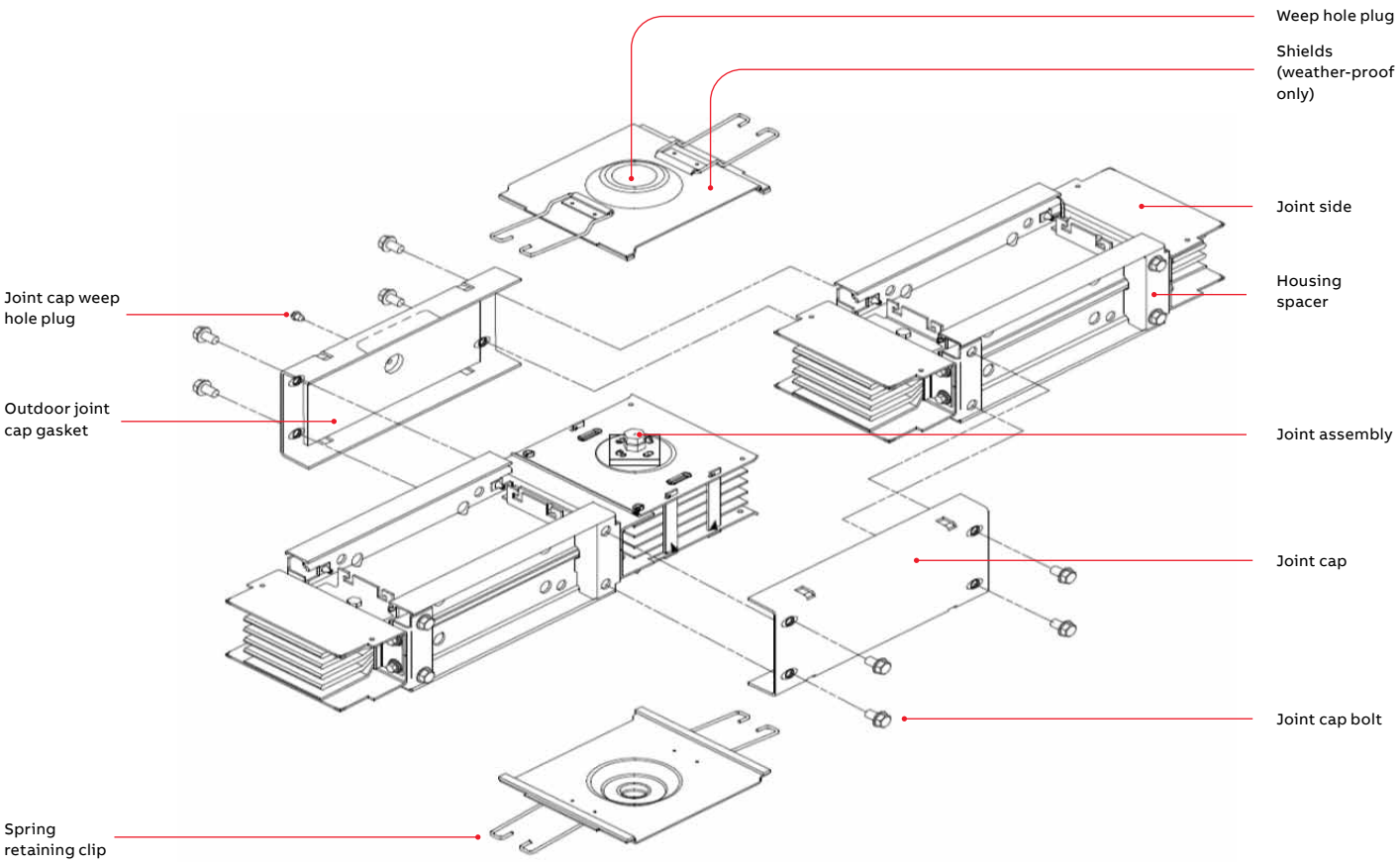
— 11
Adapter/reducer cubicle (With overcurrent device)
Breaker and Fusible options available

— 12
Feeder PTOs
Breaker and Fusible options available
600 A max-Fusible
1600 A max Breaker

— 13
Mini center cable tap box (No device)
Available in ratings 1600 A and above
Max tap off rating = 1600 A

Contact factory for PTO dimensions. Spectra G/K frame breakers are being obsoleted and replaced with ABB XT breakers. Likewise, QMR switches will be replaced with ABB OS/OT switches. Additional details will be provided later.

New outdoor design: Simpler, easier to install and fewer errors



Simplified joint covers with integral spring-latch clamping (replaces up to 28 bolts)

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14
Single-phase transformer tap box

—
15
End cable tap box

—
16
Center cable tap box

—
17
Alternate cable tap box

—
18
Three-phase transformer tap box

—
19
Edgewise elbow

—
20
Flatwise elbow

—
21
Edgewise offset

—
22
Flatwise offset

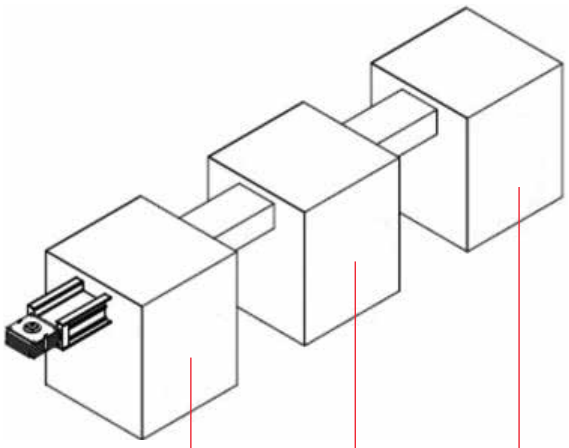
—
23
Combination elbow

—
24
Flatwise tee

—
25
Edgewise "box" tee

—
26
Expansion length

Tap boxes



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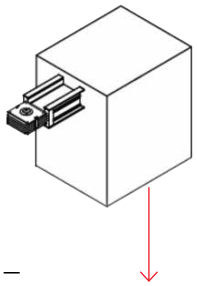

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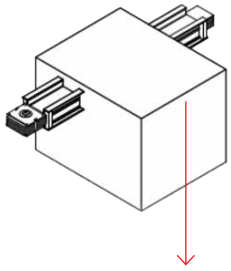

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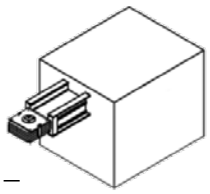

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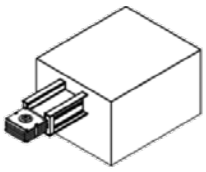

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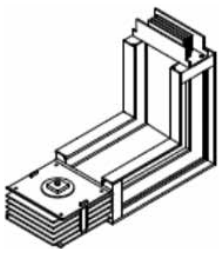
Fittings



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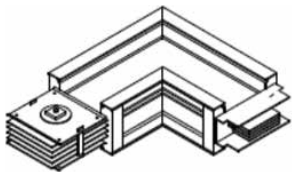

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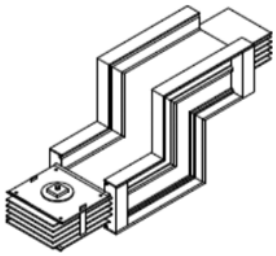

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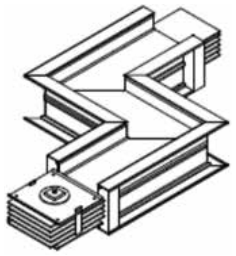

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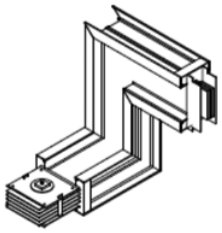

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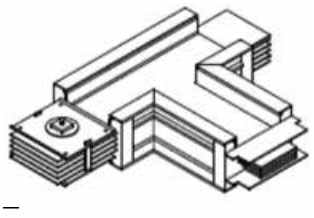

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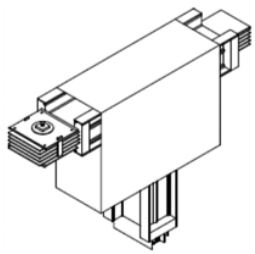

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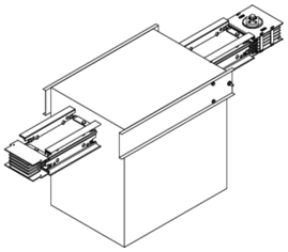

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- On packing slip, boxes with a stub will appear as (2) different items. Example:
  - 059 Box
  - 059A Stub
- These items will be shipped assembled, not separately
- Custom tap boxes also available, this includes lug type/quantity, special size, additional cutouts
- Contact factory for sizes and lug type and quantity. Information also available in 1VAL098201-TG

Special considerations should be given to the effects of thermal expansion. The +/-1" expansion may be necessary for vertical or horizontal applications of 150 feet or more. The +/-2" expansion is required when the busway run is long and may cross a building.

Contact Requisition/Application Engineering for specific applications.

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27
Busway orientation

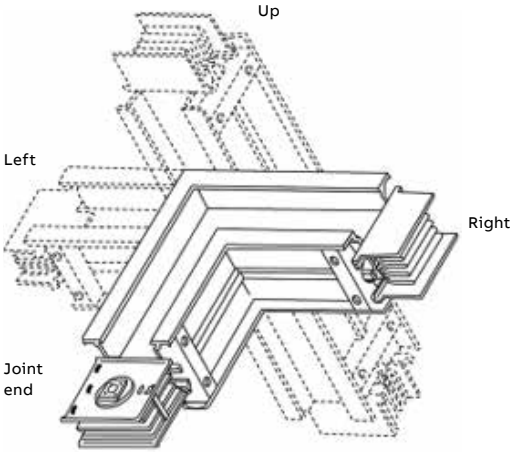
—
28
Flanged end stub
with lugs

—
29
Flanged end stub

—
30
Phase transposition
and no-fuse reducer

—
31
Phase transportation in
switchboard application

—
32
Phase transposition
used in riser applications
with plug-in units



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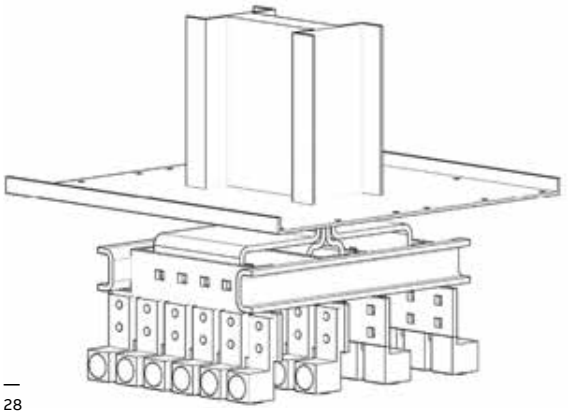

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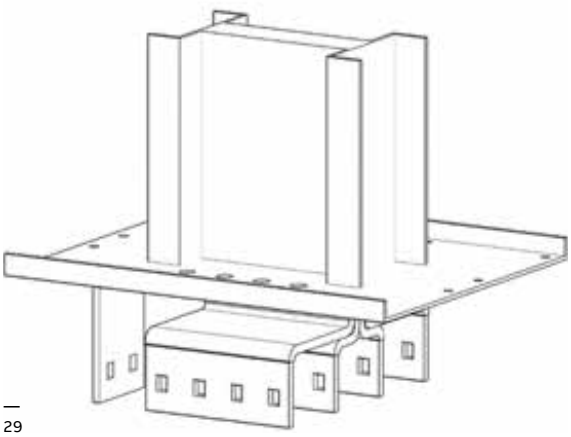

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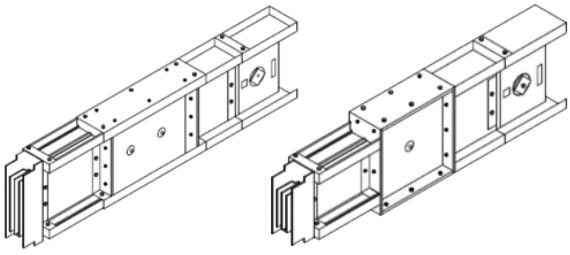

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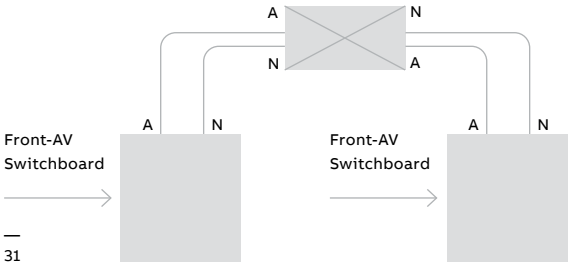
30
Phase transposition **No-fuse reducer**

Phase transpositions

Phase transpositions are used in layouts where the phasing needs to be relocated due to some of the following conditions

- When connecting two pieces of gear and fronts are facing same direction
- When transitioning from horizontal busway to vertical busway and plug-in units are orientated in a certain position in electrical rooms (typically busway is perpendicular from the wall, leaving only one side usable)



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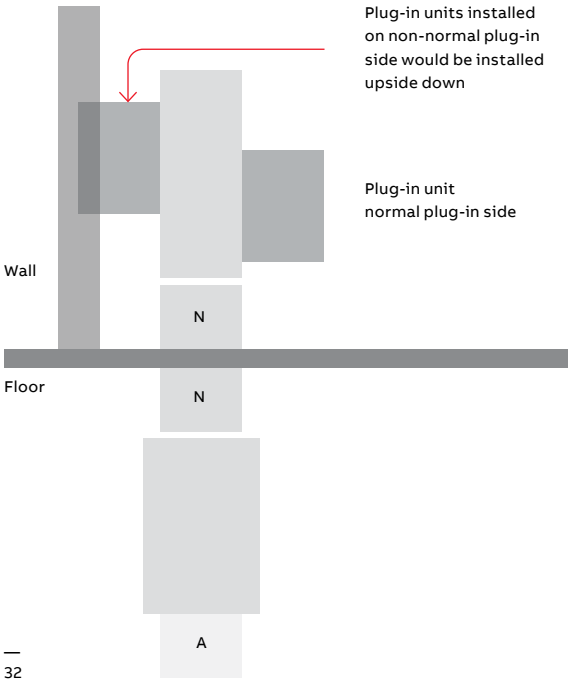

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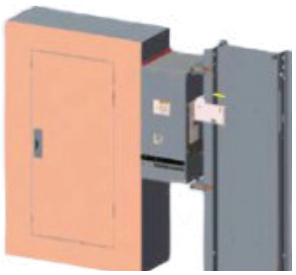
Panel plug

Features

- **Alignment pin:** locates the busway panel plug in the correct position only
- **Sliding feature:** while the panel secures to the wall, this feature allows the busway to freely move to account for thermal expansion of the busway
- **Left/right mounting:** available to be mounted
- **Polarization:** vertical busway is engineered with A Phase in front, so the phase matching between the busway panel plug and the riser busway is always intact
- **One design:** the stab enclosure plug-in unit is geometrically the same for 150-400 A panel plug-in units
- **Compression terminals:** we use compression terminals in our connections between the panelboard and the plug stab asm. Conversely to mechanical terminals, compression terminals do not require re-torqueing over time, so less maintenance is needed
- **Delivery:** this unit ships complete and ready to install from busway plant



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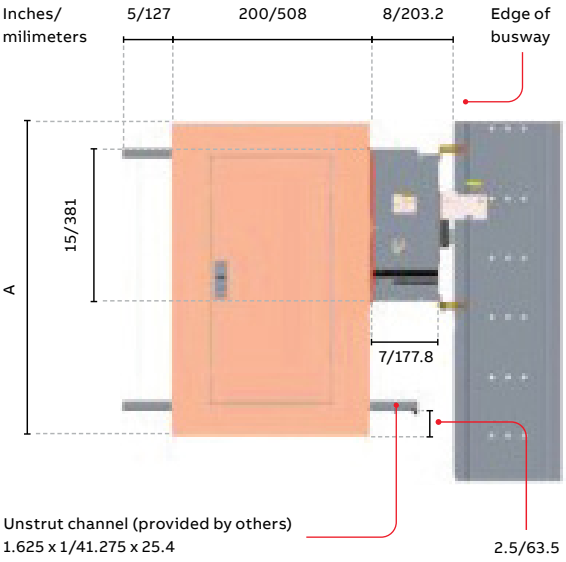

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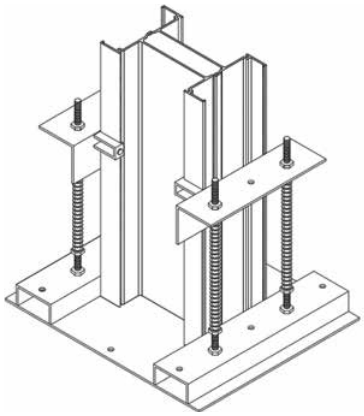
Hangers



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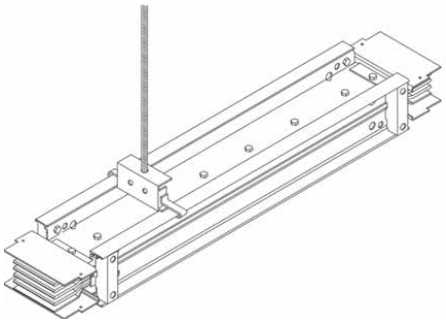

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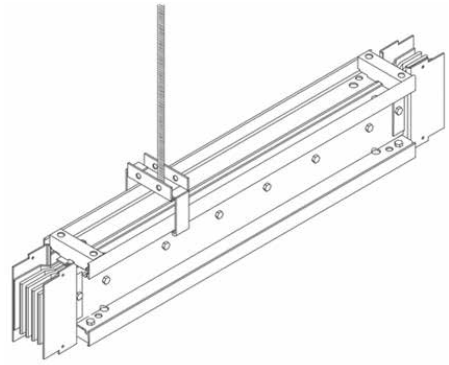

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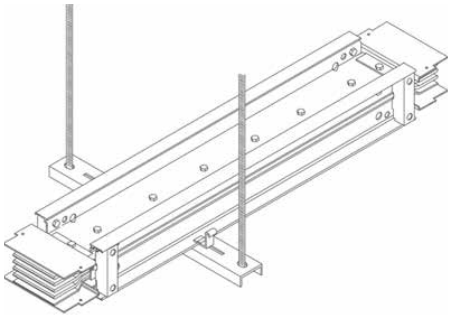

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38

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33
Busway panel plug

—
34
Busway panel plug
front view

—
35
Spring riser hangers
- vertical busway

—
36
Clevis style hangers
(Flatwise horizontal
busway)
Max-1600 A Cu./
2000 A Al.

—
37
Clevis style hangers
(Edgewise horizontal
busway) Max-2000 A Cu.

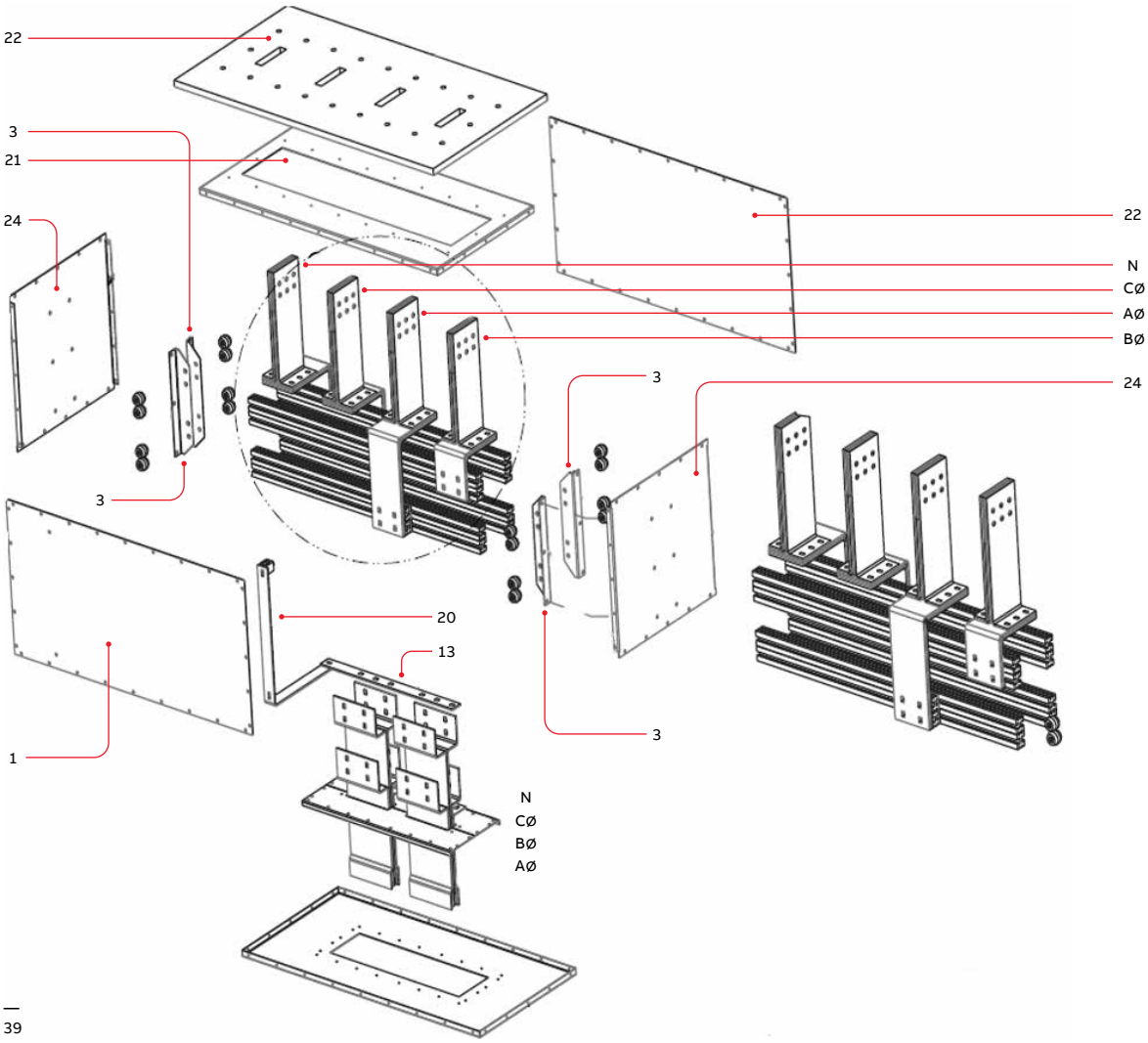
—
38
Trapeze style hangers-
horizontal busway

—
39
Special vault connection

Specials

Special connections are available through the busway factory. These connections are used in many different applications. Some of the connections we have available are:

- **Vault/utility company terminations** – checked and approved by your local codes so the exact specifications are met
- **Special requirements on cable tap boxes** – these usually involve customer requiring different lugs than our standard offering (compression vs. mechanical) or larger size/quantity. Our standard lug is #2-600MCM mechanical
- **PTO's** – we offer a variety of power take-offs using several different devices, both fusible and breaker options available. Check with factory for exact offerings
- **Connections to competitors gear** – we have the ability to make a connection to a board, even if it's not ABB gear



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Guide form specifications

Drawing notes for ReliaGear 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 loosenings 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.

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 ReliaGear.

Plug-in units
Where shown on plans, furnish and install busway plug-in units of the types and ratings indicated. When applicable, plug-in units 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-in unit body to busway housing before stabs make power contact. Provide grounding terminal inside plug-in unit 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.

Operating switch type plug-in units 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 plug-in units 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-in units assists shall be furnished on all plug-in units over 200 amps that will mechanically engage or disengage the plug-in unit from the busway, but only when the plug-in unit is in the "OFF" position.

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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)

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41
Field check procedures

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 Figure 75
- To qualify for shipment of field check piece shipments within 7 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 7-day shipping schedule. For elbows, mark up drawings and attach to this form. Elbows do not qualify for the 7-day shipping schedule
- In addition to the 7 working days until shipment, allow for delivery time to the construction site
- Contact an ABB Account Manager if air delivery is required
- Contact the Selmer order center for cycle times for elbows or more than 5 pieces

7-day field check piece procedure

ReliaGear busway only

To place an order, send this form to your local account manager

To: _____

From: _____

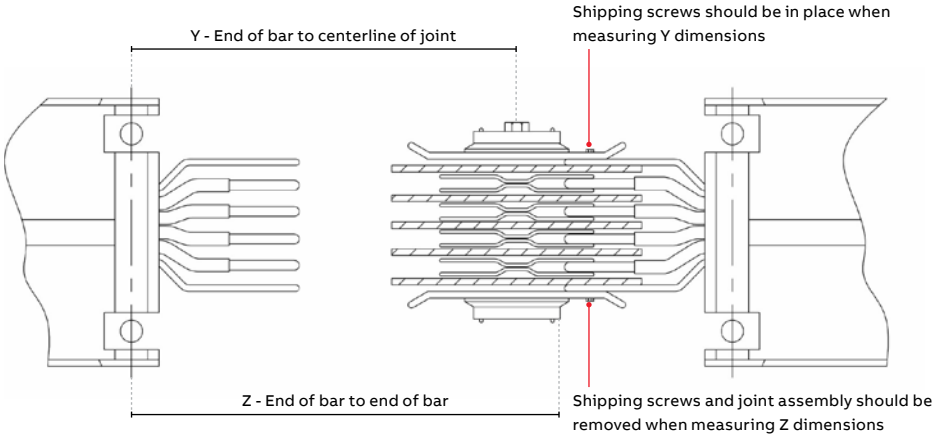
Job name: _____

Date: _____

Phone: _____

SO #: _____

Field check piece	Amperes	Run #	3W/ 4W/ G	90° elbows (either “Y” or “Z”) Y	Z
1					
2					
3					
4					
5					



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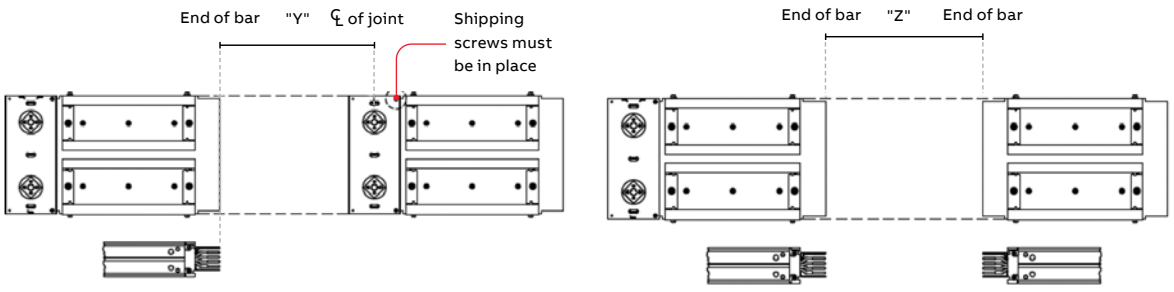

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305 Gregson Drive
Cary, NC 27511 USA
abb.com/contacts

abb.com/lowvoltage

1VAL098201-DB Rev B June 2023