






WILDLIFE AND ASSET PROTECTION

SELECTION GUIDE




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Chapter I Bus Insulation & Clearance Reduction

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HVBT

High Voltage Busbar Insulating Tape (5 - 15 kV)

FEATURES

- Superior UV resistance
- Insulates up to 35 kV
- Compatible with all other products in the Raychem MV insulation enhancement system
- Easy to apply using readily available equipment
- Suitable for both indoor and outdoor use
- Excellent anti-tracking properties
- Continuous operating temperature up to 90°C
- Extremely versatile and flexible at temperatures as low as -40°C, the 30% shrink ratio enables coverage of almost any shape
- Good thermal emissivity and contact with busbars means no derating is required
- Manufactured from non-halogen based materials, reducing the toxic and corrosive effects in the event of fire
- Can be stored indefinitely at temperatures up to 50°C without loss of performance

APPLICATIONS

- HVBT tape offers a simple and effective solution to the problems of retrofit insulation of busbars, particularly where existing equipment cannot be dismantled. It can be used for indoor and outdoor applications and is easily installed over a wide variety of shapes, including complex connections. May be used in applications up to 15 kV in accordance with ANSI/IEEE specifications and up to 36 kV in accordance with IEC Specifications

BENEFITS

- Protects against incidental/ accidental bridging caused by birds and animals. The HVBT adhesive layer fuses the tape layers but does not stick to the bus or hardware, providing environmental sealing while allowing fast, easy removal



Rectangular busbar

Bus Width	Recommended Product	Bus Length Insulated per Roll
1 (25)	HVBT-1-R-01 (B8)	2.5 (0.7)
2 (50)	HVBT-2-R-01 (B4)	3.3 (1.0)
3 (75)	HVBT-2-R-01 (B4)	2.2 (0.6)
4 (100)	HVBT-2-R-01 (B4)	1.6 (0.5)
6 (150)	HVBT-2-R-01 (B4)	1.0 (0.3)
8 (200)	HVBT-4-R-01 (B2)	1.6 (0.5)

Dimensions in inches (millimeters)

Square busbar

Bus Width	Recommended Product	Bus Length Insulated per Roll
1 x 1 (25)	HVBT-2-R-01 (B4)	4.0 (1.2)
2 x 2 (50)	HVBT-2-R-01 (B4)	2.0 (0.6)
3 x 3 (75)	HVBT-2-R-01 (B4)	1.3 (0.4)
4 x 4 (100)	HVBT-4-R-01 (B2)	2.0 (0.6)
6 x 6 (150)	HVBT-4-R-01 (B2)	1.3 (0.4)

Dimensions in inches (millimeters)

Round busbar

Bus Width	Recommended Product	Bus Length Insulated per Roll
0.5 (12)	HVBT-1-R-01 (B8)	5.0 (1.5)
1.0 (25)	HVBT-2-R-01 (B4)	5.0 (1.5)
2.0 (50)	HVBT-2-R-01 (B4)	2.5 (0.7)
3.0 (75)	HVBT-2-R-01 (B4)	1.5 (0.4)
4.0 (100)	HVBT-4-R-01 (B2)	2.5 (0.7)

Dimensions in inches (millimeters)

Ordering/Application Information

Catalog Number	Roll Width	Roll Length
HVBT-1-R-01 (B8)	1 inch	25 feet
HVBT-2-R-01 (B4)	2 inches	25 feet
HVBT-4-R-01 (B2)	4 inches	25 feet

- Select the appropriate catalog number for the application. Confirm selection with the following recommendations and HVBT tape dimensions:
 - HVBT-1-R is best for short lengths and small bus sizes.
 - HVBT-2-R is the most versatile width for general purpose use.
 - HVBT-4-R is useful for long lengths and larger bus sizes.
- HVBT may be suitable for applications with higher voltage than those listed (please contact your TE Connectivity representative for more information).
- To environmentally seal the bus, order S-1251-50-300-1 or S-1251-25-300-4 sealant strips separately
- Recommended application is to wrap the tape around the busbar using a two-thirds overlap
- Bolted connections require two layers of tape
- Standard package:
 - HVBT-1-R: 8 rolls/box
 - HVBT-2-R: 4 rolls/box
 - HVBT-4-R: 2 rolls/box
- Continuous operating temperature: 90 degrees Celsius
- Related Test reports: UVR-8023, EDR-5154

BBIT/BPTM

Busbar Insulating Tubing (5 - 35 kV)

FEATURES

- Tubes are extremely flexible which allows for easy positioning
- Have a high expansion ratio, so each size of tubing fits a range of busbar sizes
- Quick installation with the use of a gas torch or oven

APPLICATIONS

- Ideal for protection against accidental bridging caused by birds and other animals
- Can be used on straight or bent bars where clearance reduction or insulation are required
- Ideal for original equipment assembly, and for retrofit applications where access to one end is available

BENEFITS

- Easy installation
- Flexible
- Fits a range of busbar sizes
- Provides protection from accidental bridging

BBIT Tubing - BBIT (5 - 35 kV)



Catalog Number	Rectangular Bar (bus width)	Square Bar (each side)	Round Bar (diameter min-max)	Diameter as Supplied and Fully Recovered
BBIT-25/10-A/U	0.5 (12)		0.50 - 0.70 (12 - 18)	0.98 - 0.39 (25 - 10)
BBIT-40/16-A/U	1.0 (25)		0.70 - 1.10 (18 - 28)	1.57 - 0.63 (40 - 16)
BBIT-65/25-A/U	2.0 (50)	1.0 (25)	1.10 - 1.55 (28 - 40)	2.56 - 0.98 (65 - 25)
BBIT-100/40-A/U	3.0 (75)	2.0 (50)	1.75 - 2.45 (44 - 62)	3.94 - 1.57 (100 - 40)
BBIT-150/60-A/U	4.0 (100)	3.0 (75)	2.60 - 3.60 (66 - 91)	5.91 - 2.36 (150 - 60)
BBIT-175/80-A/U	5.0 - 6.0 (125 - 150)	4.0 (100)	3.45 - 4.75 (88 - 121)	6.89 - 3.15 (175 - 80)

Dimensions in inches (millimeters)

BPTM - BPTM (5 - 25 kV)

Catalog Number	Rectangular Bar		Square Bar		Round Bar		Diameter as Supplied and Fully Recovered
	5 - 15 kV	25 kV	5 - 15 kV	25 kV	5 - 15 kV	25 kV	
BPTM-15/6-A/U	N/A	N/A	N/A	N/A	0.26 - 0.52 (7 - 13)	0.26 - 0.52 (7 - 8)	0.59 - 0.24 (15 - 6)
BPTM-30/12-A/U	0.25 - 0.5 (12)		0.5 (12)	0.5 (12)	0.53 - 0.90 (14 - 23)	0.53 - 0.65 (14 - 16)	1.18 - 0.47 (30 - 12)
BPTM-50/20-A/U	1.0 (25)	1.0 (25)	1.0 (25)	N/A	0.90 - 1.35 (23 - 33)	0.90 - 1.10 (23 - 28)	1.97 - 0.79 (50 - 20)
BPTM-75/30-A/U	2.0 (50)	2.0 (50)	1.5 (38)	1.0 (25)	1.30 - 2.00 (33 - 51)	1.30 - 1.65 (33 - 42)	2.95 - 1.18 (75 - 30)
BPTM-100/40-A/U	3.0 (75)	3.0 (75)	2.0 (50)	1.5 (38)	1.75 - 2.75 (44 - 70)	1.75 - 2.30 (44 - 58)	3.94 - 1.57 (100 - 40)
BPTM-120/50-A/U	4.0 - 5.0 (100 - 127)	4.0 (100)	3.0 (75)	2.0 (50)	2.15 - 4.00 (55 - 102)	2.15 - 3.20 (55 - 81)	4.72 - 1.97 (120 - 50)
BPTM-175/70-A/U	6.0 - 7.0 (150 - 178)	5.0 - 6.0 (127 - 150)	4.0 (100)	3.0 (75)	3.20 - 5.50 (81 - 140)	3.20 - 4.40 (81 - 112)	6.88 - 2.75 (175 - 70)
BPTM-205/110-A/U	8.0 (200)	8.0 (200)	5.0 (127)	4.0 (100)	4.75 - 7.00 (120 - 178)	4.75 - 6.80 (120 - 174)	8.07 - 4.33 (205 - 110)
BPTM-235/130-A/U	12 (300)	10 (250)	6.0 (150)	6.0 (150)	5.70 - 8.45 (145 - 215)	5.70 - 8.07 (145 - 205)	9.25 - 5.12 (235 - 130)

Dimensions in inches (millimeters)

Ordering/Application Information

1. Select the appropriate Catalog number. Confirm selection with bus dimensions.
2. These products may be suitable for applications with higher voltages than those listed. Please contact your TE Connectivity representative for more information.
3. Rectangular bus thickness range is 1/4 to 5/8 inch.
4. Bolted connections require two layers of tubing or a fiber bolt pad.
5. To environmentally seal the bus at each end of the BBIT tubing, order S-1251-50-300-1 or S-1251-25-300-4 sealant strip separately
6. Standard package:
BBIT-25/10-A/U: 65'/box
BBIT-150/60-A/U: 50'/box

BBIT-40/16-A/U: 60'/box
BBIT-175/80-A/U: 50'/box
BBIT-65/25-A/U: 50'/box
BBIT-100/40-A/U: 50'/box
BPTM-235/132-A/U: 66'/box
All other BPTM sizes: 50'/box BBIT and BPTM are also available in bulk spooled quantities.

7. Related test reports:
BBIT-UVR-8136
UVR-8137
BPTM-UVR-8019

8. Minimum continuous length is 15 feet (4.5 meters)

HVIS

High Voltage Busbar Insulating Sheet (5 - 15 kV)

FEATURES

- Coated with adhesive that sticks to itself but nothing else
- Heat-shrinkable in two directions
- Compatible with other Wildlife and Asset Protection products or alone to prevent accidental bridging from birds and animals

APPLICATIONS

- Busbar tees
- Busbar elbows
- Other complex Busbar shapes

BENEFITS

- Easy to install high performance insulation
- Product is UV resistant
- Made of anti-tracking material
- Easily re-enterable

High Voltage Busbar Insulating Sheet



Catalog Number	Width	Length	Packaging
HVIS-05-(B3) NS	26 (660)	20 (508)	Sheet
HVIS-10-(B1) NS	26 (660)	33ft (10m)	Roll

Dimensions in inches/feet (millimeters/meters)

T Connection

Bus Width	Cut Size Needed	Number of Installations Per Sheet	Number of Installations per roll
1 (25)	11 x 9 (275 x 225)	4	88
2 (50)	13 x 10 (325 x 250)	4	78
3 (75)	16 x 11 (400 x 275)	2	48
4 (100)	18 x 13 (450 x 325)	2	44
6 (150)	22 x 17 (550 x 425)	1	23

Dimensions in inches(millimeters)

Elbow Connection

Bus Width	Cut Size Needed	Number of Installations Per Sheet	Number of Installations per roll
1 (25)	11 x 7 (275 x 175)	4	112
2 (50)	13 x 9 (325 x 225)	4	88
3 (75)	15 x 10 (375 x 250)	2	52
4 (100)	18 x 11 (450 x 275)	2	44
6 (150)	22 x 13 (550 x 325)	1	36

Dimensions in inches (millimeters)

Sheet (HVIS) Accessories

Catalog Number	Description	Standard Pack
HVIS-Flat (B12)	36" flat bracket for clamping HVIS on straight runs	12 each
HVIS-Angle (B12)	Angle brackets for clamping HVIS at 90 degree angles	12 each
HVIS-Clamp (B25)	Spring clamps to hold brackets on HVIS	25 each

Ordering/Application Information

1. Select the appropriate catalog number. Confirm selection with dimensions.
2. Busbars are assumed to be insulated to within one inch of the joint. Cut size should extend a minimum of four inches onto each leg of the joint before shrinking.
3. The above table should be used as a guide only; experiments to confirm final cut size. Table is based on 5/8-inch bus thickness period.
4. To environmentally seal each leg of the bus, order S-1251-50-300-1 or S-1251-25-300-4 sealant strips separately.
5. HVIS may be rated for applications up to 35 kV. Please contact your TE representative for more information.
6. Standard package:
HVIS-05: 3 sheets/box
HVIS-10: 1 roll/box
7. Related test report: EDR-5175

RRBB

Interphase Insulating Barrier Board

FEATURES

- Non-structural, interphase barrier
- Made from homogeneous polymer
- Easily fabricated into a shape
- Innovative cross-linking resistant material can be wiped clean after power-arc events resulting in no visible effects or surface damage
- Machining properties allow it to be cut and drilled for mounting without requiring special safety equipment
- Extremely durable

APPLICATIONS

- Protect switchgear cabinets against interphase flashovers
- UV Resistance makes it suitable for outdoor applications

BENEFITS

- Excellent track resistance, especially following a power arc
- Produces less nuisance dust than other boards
- Produces less tooling wear than other boards
- Extended life due to the excellent tracking resistant properties
- High durability makes boards resistant to damage from solvents, mechanical impact and general wear and tear

RRBB



Catalog Number	Width	Length	Thickness
RRBB-6-1.25Mx1.25M-(B3)	48 (1220)	48 (1220)	0.250 (6)
RRBB-2440/1220-6.2-BP	48 (1220)	96 (2440)	0.250 (6)

Dimensions in inches (millimeters)

Product Information

Related Test Report: EDR-5311

HVBC

High voltage Cable-to-Bus Insulation (5 - 15 kV)

FEATURES

- Kit contains heat-shrinkable insulating tubing and sealant strips for insulating and environmentally sealing high-voltage in-line cable-to-busbar connections
- Kit contains heat-shrinkable sealing boot for multiple cable connections

APPLICATIONS

- HVBC kits are used with TE's high voltage terminations, the diameter build-up over the cable is minimal
- HVBC may be used in applications up to 15 kV in accordance with ANSI/IEEE specifications, and up to 36 kV in accordance with IEC applications

BENEFITS

- Kit greatly simplifies field installation and eliminates the labor and skill needed for tape-and-putty methods
- Increases working space in cramped areas and allows up to four cable connectors

HVBC



Bus width: 2 - 4 inches	Bus width: 5 - 6 inches	Number of Cables	Cable Size Range (Min - Max)
HVBC-41	HVBC-61	1	#4 - 1000 kcmil
HVBC-42	HVBC-62	2	#4 - 1000 kcmil
HVBC-43	HVBC-63	3	#4 - 1000 kcmil
HVBC-44	HVBC-64	4	#4 - 1000 kcmil

Accessory

Accessory	Description
BP-46	Bolt Pad

Ordering/Application Information

1. Select the appropriate catalog number. Confirm selection with dimensions. One HVBC kit insulates one phase of an in-line cable-to-bus connection.
 - Maximum bolt length: 2 inches
 - Maximum busbar thickness: 5/8 inch
 - Maximum bare bus length: 9 inches
2. BBIT tubing, BPTM tubing, or HVBT tape, can be used to insulate the exposed busbar before installing the HVBC products.
3. Shielded cable must be terminated before installing the HVBC products; use TE's HVT terminations.
4. Standard package: 3 kits/box
5. Related test report: EDR-5103



Chapter II Substation

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BISG/BISG-24

Bus Isolation Squirrel Guard

FEATURES

- High voltage outdoor materials are used in the design
- Polymer is rugged, track resistant, UV-Stable, and ensures long-term performance regardless of environmental conditions
- Comes in red or gray colors
- Sizes range from two to five inches from the factory with "grill" desing allowing for easy field modifications

APPLICATIONS

- Substation equipment

BENEFITS

- The Isolation guard has reliably prevented animal-caused outages in electrical substation equipment for years
- Allow excellent visibility of switch blades and other components while providing resistance to power arcs and high winds
- Designed to allow one person to quickly and easily install with hot-sticks on vertical or horizontal mounted insulators

BISG



Catalog Number	Insulator Core Diameter Range	Overall Product Diameter	Color	Installation
BISG-60/115-02 (B10)	2.0 - 4.5 (60 - 115)	24	Red	De-energized
BISG-60/115-03-HOT (B10)	2.0 - 4.5 (60 - 115)	24	Red	Two stick (energized)
BISG-G-60/115-02 (B10)	2.0 - 4.5 (60 - 115)	24	Gray	De-energized
BISG-G-60/115-03-HOT (B10)	2.0 - 4.5 (60 - 115)	24	Gray	Two stick (energized)

BISG-24



Catalog Number	Insulator Core Diameter Range	Overall Product Diameter	Color	Installation
BISG-24-01 (B10)	2.5 - 5.0 (62 - 125)	24	Red	One stick (energized)
BISG-G-24-01 (B10)	2.5 - 5.0 (62 - 125)	24	Gray	One stick (energized)

Ordering/Application Information

1. Standard package: 10 BISG-60/115-02 | 10 BISG-24-01 assemblies per box. (one BISG will install on one insulator)
2. Related test report: EDR-5310, EDR-5517-Bus Insulator Squirrel Guard (BISG-24-01)

BCAC

Bushing Connection Animal Covers

FEATURES

- Specifically designed to prevent animal caused outages on bushing ranging from 15 to 35 kV
- Fast and easy installation
- Fit wide range of bushing and skirt diameters

APPLICATIONS

- Substations

BENEFITS

- TE's Raychem Insulation Covers have been preventing animal-caused outages for years
- Superior polymer provides long-term performance in all environments (material is rugged, non-tracking, and UV-Resistant)

BCAC



Catalog Number	Max Shed Diameter	Cover Height	Color
BCAC-5D/8 (B12)	4.8 (122)	8.0 (203)	Red
BCAC-7D/10 (B6)	6.8 (172)	10.5 (266)	Red
BCAC-8D/14 (B6)	8.0 (203)	14.0 (355)	Red
BCAC-G-5D/8 (B12)	4.8 (122)	8.0 (203)	Gray
BCAC-G-7D/10 (B6)	6.8 (172)	10.5 (266)	Gray
BCAC-G-8D/14 (B6)	8.0 (203)	14.0 (355)	Gray

BCAC-BYPASS



Catalog Number	Max Shed Diameter	Cover Height	Color
BCAC-BYPASS-01 (B6)	6.8 (172)	10.6 (266)	Red
BCAC-BYPASS-02 (B6)	8.0 (203)	14.0 (355)	Red

Ordering/Application Information

1. Standard package: 12 or 6 units per box, depending on size of cover. (One BCAC will install on one insulator)
2. Related Test Reports: EDR-5339, UVR-8209

BCAC-IC

Bushing Connection Inspection Substation Covers

FEATURES

- Visual inspection of connection and oil levels
- Conductors and leads exit easily through cover
- Robust latching and hinging mechanisms
- Reliable protection with enhanced features

APPLICATIONS

- Substations

BENEFITS

- All members of the Raychem Insulating Covers group has been preventing outages from all types of animals for years

BCAC-IC



Catalog Number	Std. Pack	Color	Insulator Core Range	Insulator Shed Range	Cover Size
BCAC-IC-5D/6 (B6)	6	Red	1.5 - 3.5 (38 - 89)	2.5 - 5.0 (63 - 127)	5.00 (127) diam., 6 (152) ht
BCAC-IC-7D/12 (B6)	6	Red	3.0 - 4.87 (76 - 124)	3.75 - 7.00 (95 - 178)	7.00 (178) diam., 12 (305) ht
BCAC-IC-8D/18 (B6)	6	Red	3.5 - 6.25 (90 - 160)	4.00 - 8.00 (100 - 200)	8.00 (200) diam., 18 (455) ht
BCAC-G-IC-5D/6 (B6)	6	Gray	1.5 - 3.5 (38 - 89)	2.5 - 5.0 (63 - 127)	5.00 (127) diam., 6 (152) ht
BCAC-G-IC-7D/12 (B6)	6	Gray	3.0 - 4.87 (76 - 124)	3.75 - 7.00 (95 - 178)	7.00 (178) diam., 12 (305) ht
BCAC-G-IC-8D/18 (B6)	6	Gray	3.5 - 6.25 (90 - 160)	4.00 - 8.00 (100 - 200)	8.00 (200) diam., 18 (455) ht
BCAC-G-IC-10.5D/20 (B6)	6	Gray	3.5 - 8.5 (90 - 215)	6 - 10.5 (150 - 267)	10.75 (273) diam., 20 (508) ht
BCAC-IC-10.5D/20 (B6)	6	Red	3.5 - 8.5 (90 - 215)	6 - 10.5 (150 - 267)	10.75 (273) diam., 20 (508) ht

Dimensions in inches (millimeters)

BCAC-IC-BYPASS

Catalog Number	Max Shed Diameter	Cover Height	Color
BCAC-IC-BYPASS-01 (B1)	7.0 (178)	12.00 (305)	Red
BCAC-G-IC-BYPASS-01 (B1)	7.0 (178)	12.00 (305)	Gray

Dimensions in inches (millimeters)

BCIC

Bushing Connection Insulating Covers

FEATURES

- Specifically designed to protect energized conductors or busbars from flashovers from contact with birds, squirrels and other wildlife
- Variety of shapes and sizes meant to provide a wide range of applications, including those listed and even more in addition

APPLICATIONS

- Substations
- Circuit breaker bushings us standoff insulators
- Capacitors
- Transformer bushings
- Voltage regulators
- Potential transformers

BENEFITS

- Long life span
- Installation can be done quickly in field by trimming entry and exit holes to required dimensions
- Can be re-entered for other maintenance needs and then reused, lowering overall lifetime costs

BCIC

Catalog Number	Height	Base Diameter	Other Measurements	Additional Notes	IMAGE 1	Illustration 1	Illustration 2
BCIC-4411 (B3)	10.6 (268)	6.0 (152) diam.	4.0 (102) inner diam.	4 (100) Bottom port opening			
BCIC-SG-101-H2 (B3)	12 (305)	4.5 (114) diam.	3 (72) inner diam.	1.125 (29) top diam. Bottom and top opening			
BCIC-9D/19-3 (B3)	18.5 (470)	4 (102) diam.	9 (229) side diam.	-			
BCIC-10D/18-3 (B3)	14 (356)	9 (229) diam.	7.75 (197) side diam.	17 (432) width			
BCIC-8D/6-3 (B3)	4.7 (119.4)	8.0 (203.2) diam.	5.00 (127) wide	5.40 (137.2) long, opening 2.75 (69.9) from bottom			
BCIC-3D/6-3 (B3)	3.5 (90.2)	2 (51) diam.	1.5 (38) L. side diam.	2.0 (51) R. side diam., 6.0 (152) width			
BCIC-5.5D/16-HO (B3)	17.1 (434)	3.2 (81) diam.	5.5 (140) top diam.	-			
BCIC-8D/15HO (B3)	16.2 (411)	8.0 (203.2) diam.	5.5 (140) top diam.	4.5 (114) middle section diam., 1.5 (38) between bottom and mid diam.			
BCIC-8D/18-HO (B3)	19.2 (488)	8.0 (203.2) diam.	5.5 (140) top diam.	4.5 (114) middle section diam., 1.5 (38) between bottom and mid diam.			
BCIC 8D/6-3 (B3)	4.8 (121.92)	8 (203.2)	6.5 (165.1) wide	Bottom port opening 6.75 diam., side opening 5.6 x 1.625			

Dimensions in inches (millimeters)

Catalog Number	Height	Base Diameter	Other Measurements	Additional Notes	IMAGE 1	Illustration 1	Illustration 2
BCIC-5.5D/11 (B3)	11.5 (292)	3.50 (89) diam.	5.50 (140) mid diam.	N/A			
BCIC-10D/18 (B3)	11.5 (292)	3.50 (89) diam.	5.50 (140) mid diam.	N/A			
BCIC-10D/18 (B3)	18 (457.2)	10 (254)	7.7 (195.58)	Bottom Port opening			
BCIC-0270-SCE (B3)	N/A	2.63 (67) diam.	13.3 (338) length	N/A			
BCIC-0370-SCE (B3)	N/A	3.63 (92) diam.	N/A	N/A			
BCIC-12/12/5-H (B3) BCIC-14/19-6-U (B3) BCIC-24/11/12-U (B3) BCIC-4/12/4-H (B3) BCIC-7/12/7-H (B3) BCIC-4/16/4-H (B3)	12 (305) 14 (356) 11 (279) 4 (102) 7 (178) 4 (102)	12 (305) 19 (483) 24 (610) 12 (305) 12 (305) 16 (406)	5 (127) 6 (142) 12 (304) 4 (102) 7 (178) 4 (102)				
BCIC-8D/6 (B3)	4.8 (121.92)	8 (203.2)	6.5 (165.1) wide	Supplied in two halves with no pre cut openings			
BCIC-8/12/2 (B3)	N/A	5.75 (146.1)	4.25 (108) inner diam.	12 (305) wide, 8 (203) long			
BCIC-13D/13-HO (B3)	13 (330)	13 (330)	7.5 (191) inner diam.	8.8 (224) top diam.			
BCIC-5D/6 (B3)	6 (152)	5 (127)	N/A	N/A			
BCIC-4D/4 (B3)	4 (102)	4 (102)	N/A	N/A			
BCIC-7.5D/18-3 (B3)	10.4 (264)	4.5 - 6.75 (114 - 171)	20 (508) length	7.5 (191) L diam., 2 - 4 (50 - 100) R diam.			

Dimensions in inches (millimeters)

Catalog Number	Height	Base Diameter	Other Measurements	Additional Notes	IMAGE 1	Illustration 1	Illustration 2
BCIC-SG-201 (B3)	8.05 (204.5)	5.25 (133.4) diam.	4.0 (102) Max side diam.	3.0 (76) base-joint height, 17.5 (445) width, 7.25 (184.2) depth			
BCIC-TR205-L (B3)	7.5 (191)	2.25 (57) diam.	17.0 (432) width	4.25 (108) side height			
BCIC-TR205-R (B3)	7.5 (191)	4.5 (114) diam.	1.25 (32) diam.	8.0 (203) joint width, 5.5 (140) joint height			
BCIC-3212-01 (B3)	3.5 (89)	4.125 (105) diam.	12 (305) wide	N/A			
BCIC-BYPASS (B1)	13.75 (349.25)	3.75 (95.25) diam.	19.00 (483) max distance	8.00 (203) top diam., 4.00 (102) connector diam., design has two columns connected with a cylinder			
BCIC-LATCH (B250)	.800 (20.32)	.700 (17.78) head diam.	N/A	Std. Pack: 250 Latches or 1000 Latches			

Dimensions in inches (millimeters)

MVFT

Medium Voltage Fusion Tape

FEATURES

- Self amalgamating
- Designed to combine the integrity of silicone polymer with the versatility of a wraparound product
- MVFT will stick to itself and other insulating materials, but will not adhere to metal or porcelain

APPLICATIONS

- Retrofit insulation of busbars
- Insulation when existing equipment can not be dismantled
- Suitable for indoor and outdoor use

BENEFITS

- Quick and easy to install
- Over-lapped layers amalgamate together, producing a complete seal
- A single layer of MVFT tape, two-thirds overlapped, will provide flashover protection to at least 15 kV and increases to 35 kV if second layer is added
- Selective sticking allows for easy removal for maintenance

MVFT



Catalog Number	Color	Width UOM: Inches (mm)	Supplied Length UOM: Yards (M)	Std. Pack
MVFT-G-2-12 (B4)	Gray	2 (50)	12 (11)	4 rolls

Rectangular busbar

Bus Width inches (mm)	Bus Length Insulated per Roll 2/3 Overlap feet (m)
1.0 (25)	8 (2.4)
2.0 (50)	4.7 (1.4)
3.0 (75)	3.1 (0.9)
4.0 (100)	2.3 (0.7)
6.0 (150)	1.4 (0.4)
8.0 (200)	0.4 (0.1)

Round Busbar

Bus Width inches (mm)	Bus Length Insulated per Roll 2/3 Overlap feet (m)
0.5 (12)	12.9 (3.9)
1.0 (25)	7.2 (2.2)
2.0 (50)	3.6 (1.1)
3.0 (75)	2.2 (0.7)
4.0 (100)	2.0 (0.6)

Square Busbar

Bus Width inches (mm)	Bus Length Insulated per Roll 2/3 Overlap feet (m)
1x1 (25)	5.7 (1.7)
2x2 (50)	2.8 (0.8)
3x3 (75)	1.9 (0.6)
4x4 (100)	1.7 (0.5)

Product Information

- EDR-5465 Medium Voltage Fusion Tape Qualification Report

MVCC

Medium Voltage Conductor Covers

FEATURES

- Made from non-tracking silicone material suitable for harsh medium voltage outdoor environments
- Covers are split for easy installation
- Four sizes available which fit conductors with diameters ranging up to 1.75 inch

APPLICATIONS

- Substation
- Suitable for up to 25 kV phase to ground

BENEFITS

- Provide high quality electrical insulation for substation leads and jumpers
- Flexibility allows installation on tight bends
- Specifically designed to prevent flashover caused by contact with birds and animals

MVCC



Catalog Number	Conductor Diameter Use Range UOM: inches (mm)	Color	Supplied Length UOM: feet (M)
MVCC-10/.40 (B100)	up to .450 (11)	Red	2 pieces at 50 (15.24)
MVCC-G-10/.40 (B100)	up to .450 (11)	Gray	2 pieces at 50 (15.24)
MVCC-19/0.750 (B50)	0.50 - 0.75 (12 - 19)	Red	2 pieces at 25 (7.6)
MVCC-G-19/0.750 (B50)	0.50 - 0.75 (12 - 19)	Gray	2 pieces at 25 (7.6)
MVCC-25/1.0 (B25)	0.75 - 1.125 (19 - 28)	Red	1 piece at 25 (7.6)
MVCC-G-25/1.0 (B25)	0.75 - 1.125 (19 - 28)	Gray	1 piece at 25 (7.6)
MVCC-45/1.75 x 4 (B24)	1.125 - 1.75 (28 - 44)	Red	6 pieces at 4 (1.2)
MVCC-G-45/1.75 x 4 (B24)	1.125 - 1.75 (28 - 44)	Gray	6 pieces at 4 (1.2)

Product Information

- EDR-5461 Medium voltage Conductor Cover Electrical Testing

BCIC-Angle Cover

Medium Voltage Conductor Covers

FEATURES

- Modular/ Wraparound product design
- Retrofit insulation on 3 to 4 inch angle busbars
- Insulation when existing equipment cannot be dismantled

APPLICATIONS

- Suitable for indoor and outdoor use

BENEFITS

- Quick and easy to install
- Over-lapped sections together, produce increased bus bar coverage
- The BCIC angle bus cover will provide flashover protection up to 35 kV.



Catalog Number	Color	Recommended Bus Bar inches (mm)	Supplied Length feet	Standard Pack pieces
BCIC-ANGLE-4X48 (B6)	Red	3 - 4 (75 - 100)	4	6
BCIC-G-ANGLE-4X48 (B6)	Gray	3 - 4 (75 - 100)	4	6

Test report:

- EDR-5594 BCIC-ANGLE-4X48 Electrical Testing



Chapter III Overhead

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BCIC

Raptor Protection Cover

FEATURES

- Designed to prevent raptor caused outages on medium voltage distribution lines
- Variety of polymeric and porcelain insulator configurations
- Bimaterial design allows for hot-stick insulation
- Main covers and extension arms are built with rigid clips to provide a reliable mechanical hold
- Flexible covers allow conductors to exit at up to 30 degree angles from any axis

APPLICATIONS

- Overhead

BENEFITS

- TE's insulating covers have a long history of succesful outage prevention and these covers are designed to provide the same great protection with additional features
- Up to 10 feet of coverage on conductor sizes ranging from #6 to 795 can be achieved when one cover and two arms are installed together
- Designed to nest over vibration dampers

BCIC



Catalog Number	Application	Conductor Range	Cover Length	Insulator Type/ANSI	Std. Pack
BCIC-G-PIN-556-01 (B6)	PIN Insulator	#6 - 556	42	55-2, 55-3, 55-4, 55-5	6
BCIC-G-SIMPIN-795-01 (B6)	PIN Insulator	#6 - 795	42	55-2, 55-3, 55-4, 55-5	6
BCIC-G-PIN-795-01 (B6)	PIN Insulator	#6 - 795	32	55-5, 55-6, 55-7, 56-1, 56-2, 56-3	6
BCIC-G-DPIN-795-01 (B6)	Double PIN Insulator	#6 - 795	41	55-5, 55-6, 55-7, 56-1, 56-2, 56-3	6
BCIC-G-DPIN-556-01 (B6)	Double PIN Insulator	#6 - 556	42	55-2, 55-3, 55-4, 55-5	6
BCIC-G-DSMPIN-795-01 (B6)	Double PIN Insulator	#6 - 795	42	55-5, 55-6, 55-7, 56-1, 56-2, 56-3	6
BCIC-G-HZ-795-XL (B6)	Horizontal Post	#6 - 795	29	Polymeric	6
BCIC-G-HZPOR/3.5D-795-01 (B6)	Horizontal Post	#6 - 795	29	Porcelain >35 kV	6
BCIC-G-HZPOR/4.5D-795-01 (B6)	Horizontal Post	#6 - 795	29	Porcelain 25 to 35 kV	6
BCIC-G-DE/CL-01 (B6)	Dead End	#6 - 795	27	Conductor	6
BCIC-G-ARM-48-01 (B12)	Extension ARM	#6 - 795	48	Conductor	12
BCIC-G-ARM-24-01 (B12)	Extension ARM	#6 - 795	24	Conductor	12

Dimensions in inches

Product Information

Related Test Report: EDR-55369 Raptor Protection Cover (BCIC-795) Mechanical/Electrical Evaluation, EDR-5311 Rigid Red Barrier Board Qualification, and EDR-5314 EMMAQUA Testing of BCIS

BCAC/BCIC

Distribution covers for Animal Protection

FEATURES

- Covers wide range of termination sizes
- Easy installation over the first termination skirt with no trimming required
- Feathered edges allow for conductor exits in both vertical and horizontal directions and provide true temperature of covered hardware under a thermal scan
- Advanced polymers are rugged, track resistant, UV resistant

APPLICATIONS

- Terminations
- Reclosures
- Lightning arresters
- Fuse Cut-outs

BENEFITS

- Extensive testing has ensured that the cover will not damage or deteriorate the terminations
- Can be installed on energized equipment
- Secured to the stud and the conductor to insure protection even in high winds
- The BCAC-G-CUTOUT is hot-stickable and easily clips onto cutout insulators between first and second skirt

BCIC | BCAC | BCAC-IC



Catalog Number	Hardware
BCAC-P-IC-50/6 (B6)	Transformer Bushing
BCAC-G-4D/13-2 (B18)	Terminations
BCAC-G-5D/8-01 (B12)	Transformer Bushing
BCAC-G-AR-5D-2 (B24)	Ohio Brass Arrester
BCAC-G-AR-4D-2 (B24)	TE Arrester
BCAC-G-AR-3.75D-2 (B24)	Cooper Arrester
BCAC-G-CUTOUT-100-01 (B12)	Fuse Cutout Switch (100 AMP) Porcelain Style
BCAC-G-CUTOUT-100-P (B12)	100-AMP/Polymeric (Hubbel & Cooper style)
BCAC-G-CUTOUT-FT (B3)	Fuse Cutout Switch (200 AMP) Porcelain style
BCAC-G-CUTOUT-FT-P (B3)	Fuse Cutout Switch (200 AMP) Polymeric style

Dimensions in inches (millimeters)



BCIC Reclosers

Recloser Covers

FEATURES

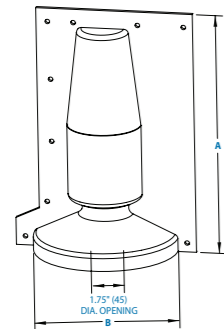
- One piece hinged design allows easy and quick installations
- Cover can be re-entered for maintenance needs and then reused

APPLICATIONS

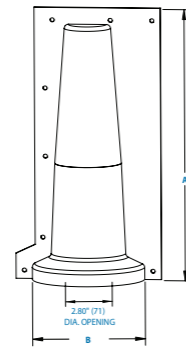
- Reclosers

BENEFITS

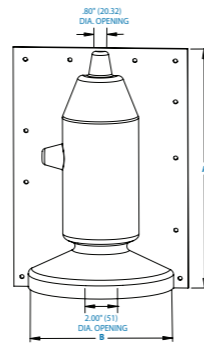
- Other products offered through TE can be purchased that insulate the leads and lightning arresters
- Years of reliable service and re-usable design lowers overall lifetime costs



BCIC-G-Reclosercover (B6)



BCIC-G-Recloser-100 (B6)



BCIC-G-Reclosure-200 (B6)

BCIC



Catalog Number	Height (A)	Max Skirt (B)	Fits Recloser Type
BCIC-G-Reclosercover (B6)	12.4 (315)	7.8 (198)	Cooper
BCIC-G-Recloser-100 (B6)	15.4 (390)	6.75 (171)	ABB
BCIC-G-Recloser-200 (B6)	14.5 (368)	8.5 (216)	Siemens

Dimensions in inches (millimeters)

Product Information

Related Test Report: EDR-5369 Raptor Protection cover (BCIC-795) Mechanical/Electrical Evaluation, EDR-5311 Rigid Red Qualification, EDR-5314 EMMAQUA Testing of BCIS

MVLC

Medium Voltage Line cover

FEATURES

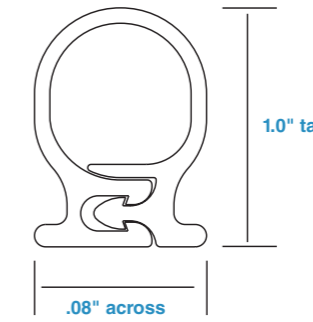
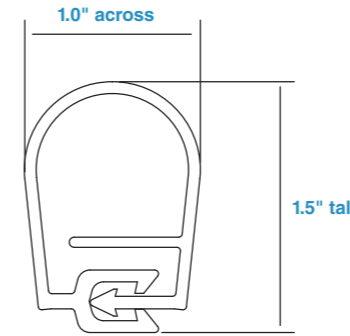
- Wrap-around cover
- Installation is possible on energized lines utilizing the MVLC tool which can be manually or automatically operated

APPLICATIONS

- Overhead conductors

BENEFITS

- Prevents electrical outages caused by incidental contact from tree branches or wildlife
- Can be applied selectively on problem spans to avoid costly conductor replacement



MVLC-Covers for overhead conductors



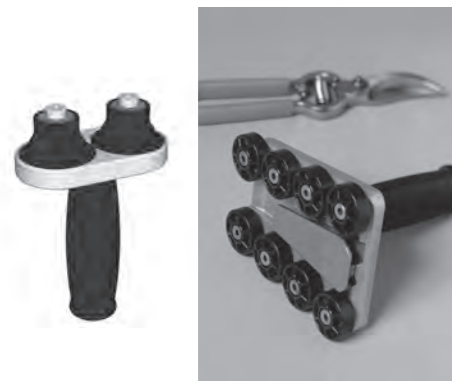
Product Size	Conductor Size
MVLC-14-A/U-C-100	#6 - 3/0 kcmil
MVLC-14-A/241-C-100	#6 - 3/0 kcmil
MVLC-18-A/U-C-75	#2 - 397 kcmil
MVLC-18-A/241-C-75	#2 - 397 kcmil

MVLC-Installation Tools for overhead conductors



Product Size	Conductor Size
MVLC-14-TOOL-100	for use with MVLC-14
MVLC-18-TOOL-03-2006	for use with MVLC-18
MVLC-Hydraul-Drill	non-impact hydraulic drill

MVLC- Covers & Installation Tools for substation use



Product Size	Conductor Size
MVLC-14-1830/U (B18)	package of 18 six foot lengths for 15 kV use
MVLC-14-1830/241 (B18)	package of 18 six foot lengths for 25 kV use
MVLC-18-1830/U (B18)	package of 18 six foot lengths for 15 kV use
MVLC-18-A/241-1830 (B18)	package of 18 six foot lengths for 25 kV use
MVLC-HAND-TOOL-14	hand tool for installing MVLC-14
MVLC-HAND-TOOL-02	hand tool for installing MVLC-18

Ordering/Application Information

- Overhead Conductors: Standard package for MVLC-14 is 330 feet (100m) continuous on a spool. Standard package for MVLC-18 is 247 feet (75m) continuous on a spool.
- Please contact your TE representative for use on 35 kV and other sizes
- Related Test Reports: EDR-5308, EDR-5309, EDR-5316
- MVLC TOOL contains the MVLC installation tool, MVLC cutters, drainage hole punch, hand crank, and a drive nut socket packaged in a protective bag
- MVLC can be installed at temperature above 0°C (32°F)

Product Performance

Test	MVLC-A/U / MVLC-A/241 (Sealed)		
AC withstand (dry) - 1minute	15 kV min / 25 kV min		
AC withstand (wet) - 1 minute	15 kV min / 25 kV min		
AC long term withstand (dry) - 4 hours	8.6 kV min / 14.4 kV min		
30 day thermal loading (8 hr at 130°; 16 hr off)	No MVLC deformation		
Conductor ampacity	82 - 89% of bare conductor ampacity		
Material Properties Per pps 3010/42	Test Method	Requirement	
Physical	Tensile Strength	ASTM D638	8 Mpa min 1150 psi min
	Ultimate Elongation	ASTM D638	200% min
	Abrasion Resistance	1000 cycles, 2068g	20% max thickness loss
Electrical	Low Temperature Impact	ASTM D746	No Cracking at -20°C
	Dielectric Strength	ASTM D149	217 kV/cm @ 1.27 mm 550 V/mil min @ 0.050"
	Tracking and Erosion Resistance	ASTM D2303 Step Voltage Method (Initiate at 2.5 kV)	No tracking or erosion to top surface or flame failure after: 200 minutes

BCIC-115-PH

Transmission Flashover Protection Cover

FEATURES

- Can be used on both porcelain disc and polymeric insulator designs
- Unique design allows the cover to rest on the lowest insulator for porcelain I string designs
- Made from robust BCIS high-voltage material that is rugged, non-tracking, and UV-Resistant polymer

APPLICATIONS

- 115 kV transmission lines

BENEFITS

- Long-term performance even in the most extreme environmental conditions
- Can be used on energized or de-energized installations



BCIC-115-PG

Catalog Number	Part Number	Length	Height	Insulator Range	Applications
BCIC-115-PH (B1)	111371-000	74 (1879.6)	15 (381)	9 - 12 (229 - 305)	Main cover
BCIC-Collar-50/280-5-BP	471716-000				Adapter collar for polymeric installations

Dimensions in inches (millimeters)

BCIC-AFD-01

Avian Flight Diverter

FEATURES

- Designed to prevent bird collisions with power lines
- Incorporates high reflectivity and "glow-in-the dark" applique's
- Easy to install, Hot-stickable, removeable
- Made from robust BCIC polymer that is rugged, non-tracking and UV resistant

APPLICATIONS

- Distribution and transmission lines

BENEFITS

- Long-term performance even in the most extreme environmental conditions
- Can be used on energized or de-energized installations

BCIC-AFD-01



Catalog Number	Description	Dimensions Width x Height	Conductor Size	Standard Pack
CU7208-000	BCIC-AFD-01 (B10)	4 x 3.5 (102 - 89)	#6 - 795	10

Dimensions in inches (millimeters)

Technical Report

EDR-5536, Rev. A



Chapter IV Contamination/Flashover Prevention

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HVCE

High Voltage Creepage Extenders

FEATURES

- Heat-shrinkable
- Resistant to conventional spray washing techniques
- Will withstand most normal handling, abuse, and extreme weather conditions

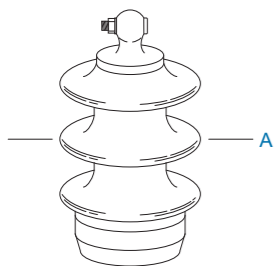
APPLICATIONS

- Insulators

BENEFITS

- Increases the flashover performance of insulators by reducing the surface electrical stress and leakage current and increasing the electric strength of the insulators

High Voltage Creepage Extenders



Catalog Number	Skirt Diameter of Insulator (Min-Max) (A)	Minimum Internal Diameter of HVCE (as supplied)	Nominal Creepage Extension Per Extender (in.)	Standard Pack (pcs/box)
HVCE 100/80-01 (B6)	3.20 - 3.90 (81 - 99)	4.50 (114)	4	6
HVCE 120/100-01 (B6)	3.90 - 4.70 (99 - 119)	5.30 (135)	4	6
HVCE 140/120-01 (B6)	4.70 - 5.50 (119 - 140)	6.10 (155)	4	6
HVCE 160/140-01 (B6)	5.50 - 6.30 (140 - 160)	7.00 (178)	4	6
HVCE 183/161-01 (B6)	6.30 - 7.20 (160 - 183)	8.00 (203)	4	6
HVCE 205/184-01 (B6)	7.20 - 8.10 (183 - 206)	9.00 (229)	4	6
HVCE 226/206-11 (B6)	8.10 - 8.90 (206 - 226)	9.40 (239)	4	3
HVCE 247/227-11 (B6)	8.90 - 9.70 (226 - 246)	10.30 (262)	4	3
HVCE 268/248-11 (B6)	9.70 - 10.50 (246 - 267)	11.10 (282)	4	3
HVCE 289/269-11 (B6)	10.50 - 11.40 (267 - 290)	11.90 (302)	4	3
HVCE 310/290-11 (B6)	11.40 - 12.20 (290 - 310)	12.70 (323)	4	3
HVCE 331/311-11 (B6)	12.20 - 13.00 (310 - 330)	13.60 (345)	4	3
HVCE 352/332-11 (B6)	13.00 - 13.90 (330 - 353)	14.40 (366)	4	
HVCE 373/353-11 (B6)	13.90 - 14.70 (353 - 373)	15.20 (386)	4	3
HVCE 394/374-11 (B6)	14.70 - 15.50 (373 - 393)	16.10 (409)	4	3

Dimensions in inches (millimeters)

Ordering/Application Information

1. Select the appropriate catalog number. Confirm selection with insulator skirt outer diameter (A)
2. Each HVCE extender adds a nominal 4 inches to the creepage length. As a general recommendation, TE advises a 20 percent increase in existing creepage distance. Use this formula to calculate the number of creepage extenders needed: Existing creepage distance in inches x 0.2 / 4 = Minimum number of HVCE creepage extenders recommended (i.e., 40 inches creepage x 0.2 / 4 = 2 HVCEs needed). Always round up to a whole number (i.e., 1.33 to 2 HVCE's)
3. For applications that do not fall within the ranges above, contact your local TE representative
4. HVCE does not upgrade the voltage class of the insulator.
5. Related test reports: UVR-8138, UVR-8144, UVR-8037, EDR-5350

HVCE-WA

Wraparound High voltage Creepage Extenders

FEATURES

- Wrap-around product design
- Adds six inches of creepage length

APPLICATIONS

- Insulators

BENEFITS

- Installs without having to disconnect equipment/conductors
- For use in highly contaminated applications

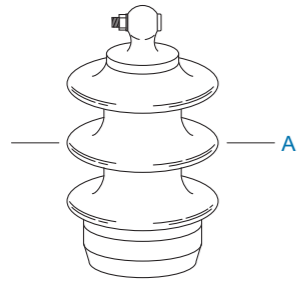
HVCE-WA



Catalog Number	Shed Diameter of Insulator (A)	Standard Pack
HVCE-WA-175-020-FT (B6)	6.90 (175)	6
HVCE-WA-206-01 (B6)	8.11 (206)	6
HVCE-WA-216-01 (B6)	8.50 (216)	6
HVCE-WA-221-01 (B6)	8.70 (221)	6
HVCE-WA-226-01 (B6)	8.90 (226)	6
HVCE-WA-227-01 (B6)	8.94 (227)	6
HVCE-WA-234-01 (B6)	9.21 (234)	6
HVCE-WA-244-01-FT (B6)	9.61 (244)	6
HVCE-WA-248-01 (B6)	9.76 (248)	6
HVCE-WA-251-01 (B6)	9.88 (251)	6
HVCE-WA-255-01 (B6)	10.04 (255)	6
HVCE-WA-267-01 (B6)	10.51 (267)	6
HVCE-WA-271-01 (B6)	10.67 (271)	6
HVCE-WA-280-01 (B6)	11.02 (280)	6
HVCE-WA-281-01 (B6)	11.06 (281)	6
HVCE-WA-287-01 (B6)	11.30 (287)	6
HVCE-WA-292-01 (B6)	11.50 (292)	6
HVCE-WA-303-01 (B6)	11.93 (303)	6
HVCE-WA-323-01 (B6)	12.72 (323)	6
HVCE-WA-326-01 (B6)	12.83 (326)	6
HVCE-WA-330-01 (B6)	13.00 (330)	3
HVCE-WA-336-01 (B6)	13.23 (336)	6
HVCE-WA-341-01 (B6)	13.39 (341)	6
HVCE-WA-348-01 (B6)	13.70 (348)	6

Dimensions in inches (millimeters)

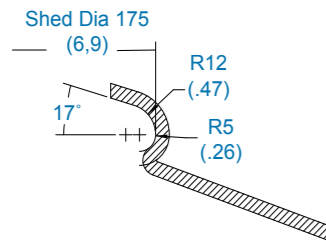
HVCE-WA



Catalog Number	Shed Diameter of Insulator (A)	Standard Pack
HVCE-WA-349-01 (B6)	13.74 (349)	6
HVCE-WA-356-01 (B6)	14.02 (356)	6
HVCE-WA-359-01 (B6)	14.13 (359)	3
HVCE-WA-364-01 (B6)	14.33 (364)	6
HVCE-WA-367-01 (B6)	14.45 (367)	6
HVCE-WA-372-01 (B6)	14.65 (372)	6
HVCE-WA-373-01 (B6)	14.68 (373)	6
HVCE-WA-377-01 (B6)	14.84 (377)	6
HVCE-WA-381-01 (B6)	15.00 (381)	6
HVCE-WA-392-01 (B6)	15.43 (392)	6
HVCE-WA-393-01 (B6)	15.47 (393)	6
HVCE-WA-406-01 (B6)	15.98 (406)	6
HVCE-WA-407-01 (B6)	15.98 (407)	6

Dimensions in inches (millimeters)

HVCE-WA



Catalog Number	Shed Diameter of Insulator (A)	Standard Pack
HVCE-WA-413-01 (B6)	16.26 (413)	6
HVCE-WA-421-01 (B6)	16.54 (421)	6
HVCE-WA-426-01 (B6)	16.77 (426)	6
HVCE-WA-429-01 (B6)	16.89 (429)	6
HVCE-WA-440-01 (B6)	17.32 (440)	6
HVCE-WA-442-01 (B6)	17.40 (442)	6
HVCE-WA-452-01 (B6)	17.60 (452)	6
HVCE-WA-457-01 (B6)	18.00 (457)	6
HVCE-WA-463-01 (B6)	18.23 (463)	6
HVCE-WA-482-01 (B6)	18.98 (482)	3
HVCE-WA-488-01 (B6)	19.21 (488)	6
HVCE-WA-490-01 (B6)	19.29 (490)	6
HVCE-WA-501-01 (B6)	19.72 (501)	6

Dimensions in inches (millimeters)

Ordering/Application Information

1. Each HVCE-WA Extender adds six inches to the creepage length. As a general recommendation, TE advises a 20 percent increase in existing creepage distance. Use this formula to calculate the number of creepage extenders needed:

Existing creepage distance in inches x 0.2 / 6 = Minimum number of HVCE creepage extenders recommended. (i.e., 60" x .2 / 6 = 2 HVCE-WAs needed). Always round up to a whole number (i.e., 1.33 - 2 HVCE's needed).

2. For Applications that do not fall within the ranges above, contact your TE representative.

3. HVCE does not upgrade the voltage class of the insulator

4. Related Test Reports: UVR-8152, EDR-5350 Related Installation Instructions: HVCE-WA

5. Installation Tool: HVCE-WA-TOOL

HVBS

High Voltage Booster Shed

FEATURES

- Spacers and short pegs which separate it from the porcelain skirt and insulator core
- Wraparound installation for rapid installation

APPLICATIONS

- Circuit breaker bushings
- Bus support insulators
- Surge arresters
- Transformer bushings

BENEFITS

- Prevents "Heavy Wetting" and ice-cascade-induced flashovers
- Made with advanced UV-resistant and anti-tracking polymer

HVBS



Catalog Number	Suitable Insulator Core	Medium Outside Insulator Skirt	Booster Shed Diameter Fully Installed
HVBS-770/310-01-M-BP	8.9 - 10.1 (227 - 257)	12.0 (304)	28.1 (713)
HVBS-740/280-01-M-BP	7.8 - 9.0 (199 - 229)	10.9 (276)	27.0 (685)
HVBS-710/250-02-M-BP	6.9 - 7.9 (175 - 201)	9.8 (249)	25.9 (657)
HVBS-685/225-01-M-BP	6.2 - 7.0 (158 - 178)	9.3 (235)	25.0 (634)
HVBS-665/205-01-M-BP	5.5 - 6.3 (140 - 160)	8.5 (216)	24.3 (616)
HVBS-625/155-01-M-BP	3.7 - 4.5 (94 - 114)	6.3 (161)	22.4 (569)

Dimensions in inches (millimeters)

Product Information

Related Test Report: UVR-8107 Qualification report for Booster Sheds

RRGS

Polymeric and Porcelain Rigid Red Guano Shield

FEATURES

- Designed to fit both porcelain bells and polymeric insulators
- Two piece design allows for quick installation

APPLICATIONS

- Vertical insulator strings

BENEFITS

- Protects insulators from bird streamers



RRGS

Catalog Number	Insulator Type	Shield Diameter
RRGS-35/470-FT (B12)	Polymeric	18
RRGS-35/600-FT (B12)	Polymeric	24
RRGS-35/470-M (B12)	Porcelain	18
RRGS-35/600-M (B12)	Porcelain	24

Dimensions in inches



Chapter V Accessories

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Primus-Sievert Torches

Primus-Sievert Siever-Matic Torch Materials

FH-3366-97-PS-HANDLE

Siever-Matic S auto ignite, auto shut-off torch handle



FEATURES

- Ergonomic design ensures comfortable operation
- Adjustable output
- Piezo ignition

FH-AD-3061-23-PS-REGULATOR

Works with torch handle FH-3366-97-PS-HANDLE above



FEATURES

- Adjustable from 14 - 57 PSI
- Fitting POL, UNF 9/16 inch LH
- Requires torch hose AD-1432 or AD-1434

FH-AD-3347-91-PS-BURN-1

Works with torch handle FH-3366-97-PS-HANDLE above



FEATURES

- Recommended especially for low voltage and general purpose products
- Tip diameter 1.0 inch 20,000BTU/hr

FH-AD-3341-91-PS-BURN1.5

Works with torch handle FH-3366-97-PS-HANDLE above



FEATURE

- Recommended especially for low voltage products and high voltage terminations and splices
- Tip diameter 1.5 inch 40,000BTU/hour

FH-AD-3348-91-PS-BURN-2

Works with torch handle FH-3366-97-PS-HANDLE above



FEATURES

- Recommended especially for Wildlife and Asset Protection products
- Tip diameter 2.0 inch 90,000BTU/hour

Bullfinch

Bullfinch Torch Materials

FH-2629-TORCH ASSY

Built-in ignitor recommended for all products



FEATURES

- General purpose, heavy-duty propane torch with comfortable grip
- Provides a clean burning flame for shrinking high voltage products or thick-wall low voltage products
- Output: approximately 30,000BTU/hour

FH-2629-ELECTRODE

Replacement ignitor for FH-2629

Torch Accessories

AD-1358-LPG-REGW/GAGE

Propane tank regulator with gauge (0 - 30 psi)



FEATURES

- Can also be used with Primus-Sievert or BullFinch products

Hoses



Name	Description	Features
AD-1432-ACD10FT-LPG-HOSE	10-foot LPG hose	
AD-1434-ACD30FT-LPG-HOSE	30-foot LPG hose	
AD-1460-ACD-HEAT-SHLDGPA	12 x 40	Woven of heat-resistant fabric with corner grommets Protects adjacent components from torch heat during installation of heat-shrinkable products in confined areas
AD-1563-ADAPTER	Valve to standard hose	For use with FH-2618A-1 propane torch if disposable cylinders are not used
AD-3015-04	Includes 4 ft. hose and regulator preset at 28 psi	Adapts Siever-Matic S FH-2649-PS-KIT or FH2629 for use with disposable 14.1 oz propane cylinders



Chapter VI Applications & Technical Specifications

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Protection, Repair and Maintenance

The Wildlife and Asset Protection family of products offers easy-to-install busbar insulation systems for both the field engineer and the manufacturer. These electrical insulation products provide flashover protection against the accidental bridging of conductors commonly caused by birds and animals.

The system is ideal for both enclosed and exposed bus work and for connections in switchgear lineups, substations, and other electrical apparatus. It also permits clearance reduction in many applications.

Excellent Electrical and Thermal Performance

Wildlife and asset protection products are manufactured from high dielectric strength, radiation-crosslinked, heat-shrinkable materials. The high-voltage materials are specially formulated to provide high resistance to arcing and tracking. All high-voltage and low-voltage materials provide high-thermal endurance throughout the range of switchgear operating temperatures. They offer field-proven reliability and long service life in harsh environments. In addition, these heat-shrink tubing, tape, and sheet products can be preformed and preshrunk in the customer's shop, allowing easy, quick installation in the field.

Compatibility with Other Insulating Materials

All wildlife and asset protection heat-shrinkable electrical insulation products are compatible with other solid switchgear insulating materials. Electrical insulating materials are not subject to stress crazing or embrittlement and are not adversely affected by common plasticizers used in conventional switchgear insulating materials.

Flame-retardant Materials

Most wildlife and asset protection heat-shrinkable electrical insulating materials pass the ANSI C37.20 switchgear insulation flammability tests.

Reduced Corrosive and Toxic Fumes

Wildlife and asset protection electrical insulation materials contain no chlorine compounds. This minimizes noxious and corrosive effects in case of equipment fault or fire.

For Protection, Repair, and Maintenance

Wildlife and asset protection heat-shrinkable electrical insulating tubes, tapes, and sheets provide a complete system for electrical repair and maintenance of enclosed or exposed buswork and for connections in switchgear and electrical equipment. They offer:

- Fast, easy installation and removal
- A flexible system to cover most conductor shapes and sizes
- Consistent, reliable installation
- Consistent electrical and thermal performance
- Proven corrosion protection
- Compatibility with conventional solid insulating materials
- Protection against flashovers

For the Electrical Equipment Manufacturers

The wildlife and asset protection system of insulation-enhancement components addresses the needs of electrical equipment manufacturers. The superior material properties and versatility of these components enhance the quality and reliability of the final product. Wildlife and asset protection electrical insulating materials feature:

- Low-hazard formulation
- Flexibility
- Track resistance
- Rugged, easy installation
- Excellent electrical and thermal performance
- Unlimited shelf life
- Corrosion protection of conductor
- TE assistance and support for testing and applications

Protection of Outdoor Equipment

Wildlife and asset protection electrical insulation products provide a complete system of insulation enhancement for high-voltage busbars and related equipment in outdoor substations and overhead lines. The system offers:

- Easy installation in the field
- Insulation for many different shapes, including busbars, joints, tees, insulators/bushing connections
- Flashover protection against accidental bridging
- Protection of wildlife and from wildlife-induced outages
- Excellent UV and weathering resistance
- Protection against corrosion
- Protection against incidental tree branch contact

Protection of Medium Voltage Products

Test and Performance Data

Material Properties	Test Method	Requirements	BBIT/BPTM	BCIC/HVIS	BCAC, HVCE-WA, HVBT, OLIT	HVCE	MVLC	BISG/RRBB
Volume Resistivity	ASTM D-257, IEC 93	ohm-cm min	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³
Dielectric Constant	ASTM D-150, IEC 250	Maximum	5	5	5	5	5	5
Dielectric Strength	ASTM D-149, IEC 243	V/mil at 1.3mm min V/mil at 1.5mm min V/mil at 2mm min V/mil at 2.5mm min V/mil at 3mm min	500 400 350	330	330	250	550	V/mil at 2.5mm min: 380

Thermal

Material Properties	Test Method	Requirements	BBIT/BPTM	BCIC/HVIS	BCAC, HVCE-WA, HVBT, OLIT	HVCE	MVLC	BISG/RRBB
Thermal Endurance	IEEE 1-1969, IEC 216	minimum	105°C	105°C	105°C**	110°C	105°C	
Accelerated aging for 168 hours	ISO 188	Tensile strength Ultimate elongation	1450 psi 300%	1450 psi 300%	1450 psi 300%	1100 psi 300%	1450 psi 100%	2450 psi 25%
		Aging Temperature	120°C	120°C	120°C	120°C	120°C	120°C

Chemical

Material Properties	Test Method	Requirements	BBIT/BPTM	BCIC/HVIS	BCAC, HVCE-WA, HVBT, OLIT	HVCE	MVLC	BISG/RRBB
Flammability	ANSI C37.20	Pass	Pass	Pass	Pass			
Water absorption	ISO/R 62, Procedure A	1% max after 14 days at 23°C	Pass	Pass	Pass	Pass	Pass	Pass
Low-temperature flexibility	ASTM D-2671, Procedure C	No cracking after 4 hours	Pass, -40°C	Pass, -40°C	Pass, -40°C	Pass, -40°C	Pass, -20°C	Pass, -40°C
Corrosion	Copper Mirror, ASTM D-2671, Procedure B	Passed visual inspection after 16 hours		Pass, 150°C	Pass, 150°C		Pass, 135°C	

Physical

Material Properties	Test Method	Requirements	BBIT/BPTM	BCIC/HVIS	BCAC, HVCE-WA, HVBT, OLIT	HVCE	MVLC	BISG/RRBB
Tensile Strength	ASTM D-638, ISO 37	psi. (min)	1450 < 4mm 1150 > 4mm	1450	1450	1150	1450	2450
Ultimate elongation	ASTM D-638, ISO 37	% minimum	300	300	300	300	200	25

NOTE : Blank spaces indicate that property was not measured during product qualification

*Each product's voltage rating will be displayed with its selection information

**Properties measured on backing material only. HVBT and OLIT have a 90°C maximum continuous operating temperature limit

Bus Insulation Technical Data

Table Background

This table indicates clearance differences for rectangular busbars without and with various wildlife and asset protection electrical insulation products. These spacings are derived from BIL, AC-withstand, DC-withstand, and discharge-extinction tests on a limited number of busbar configurations insulated with electrical insulation products.

Due to the wide range of possible busbar geometries, these spacings should not be adopted without actual testing by the user. Sharp electrodes and unusual geometries will require greater spacings.

Note: Phase-to-phase distances are reduced more than phase-to-ground distances because it is assumed that each phase is insulated

Busbar Data

System Voltage (kV)	BIL (kV)	Uninsulated Clearance (Indoor)		BBIT Clearance (Indoor)		BPTM, HVBT, and HVIS Clearance (Indoor)	
		A*	B**	A*	B**	A*	B**
15	95	7.5 (190)	5.0 (125)	2.2 (55)	2.6 (65)	3.4 (85)	4.2 (105)
25	125	10.5 (265)	7.5 (190)	2.8 (70)	4.0 (100)	4.5 (115)	6.0 (150)
35	150	12.5 (320)	9.5 (240)	5.6 (140)	7.5 (190)	6.5 (165)	8.0 (200)

Dimensions in inches (Millimeters)

- * Phase-to-phase
- ** Phase-to-Ground

Recommended Guide Specification

Please feel free to use the following in your design specification:

Insulation for energized bus components and connections shall consist of tubing, tape, and sheets that are factory-engineered to meet applicable switchgear performance requirements.

All insulation components shall be fabricated from flexible, cross-linked, heat-shrinkable polymeric materials formulated to provide high dielectric strength, adequate thermal endurance at bus operating temperatures, and tracking and erosion resistance.

The insulation materials shall contain no halogen compounds and be compatible without commercial, factory-installed bus insulation materials.

Materials shall be installable at temperatures as low as -40°F. Adhesive coatings on tape and sheet products shall not adhere to metal surfaces, thus permitting easy re-entry to the connections.

The insulation supplier shall furnish technical data to document design and performance to these requirements and functional testing of the complete insulation system in accordance with ANSI/IEEE C37.20.



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