Loadbreak - Norma IEEE

Acessórios desconectáveis

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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-ETP600
15-LRTP600

PLUGUE DE REDUÇÃO PR - 15kV-600/200A

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APPLICATION

The Chardon Elbow Tap Plug (ETP) and Load Reducing Tap Plug (LRTP) are used to convert a standard 600A deadbreak interface to a standard 200A loadbreak interface.

The ETP is ideal for applications where a 200A tap is desired for test or ground purposes. The ETP is also ideal for adding a 200A tap to an existing 600A T-Body connector. The 200A interface allows for live test, visible ground, addition of a 200A tap, or installation of an elbow arrester.

The LRTP is ideal for applications where the termination will be separated to achieve a visible break and ground. Having the T-body and LRTP connected, as one unit, makes it easier to install and remove from the mating bushing interface. The 200A interface allows for live test, phasing, and visible ground. In addition, it can be used to add a 200A tap, or for the installation of an elbow arrester. The LRTP has a factory installed alignment guide with a shear pin that allows the alignment guide to disengage after installation. When the LRTP is screwed into the threaded insert of a bushing extender or threaded 600/900A compression connector, the alignment guide disengages once the proper amount of torque is applied.

Both the ETP and LRTP meet all the requirements of IEEE Standard 386, and are 200A three phase switching and three phase fault close rated.

The Chardon ETP and LRTP incorporate an all copper current path. This provides reliable and consistent performance under all conditions.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

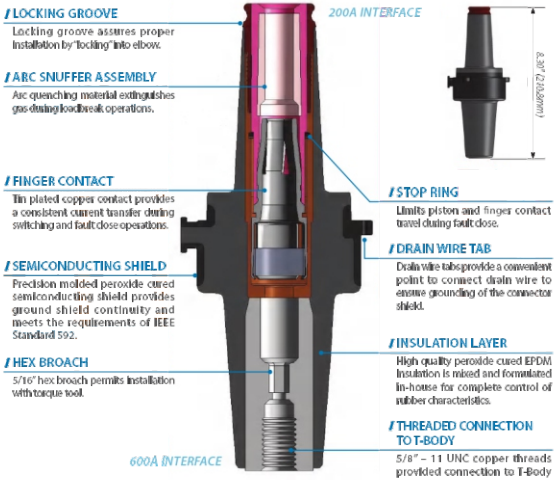
Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

CURRENT RATINGS

	Description	Amperes
600A Interface	**Continuous**	600 amps rms
	Short Time	• 25,000 amps rms symmetrical for 0.17 s • 10,000 amps rms symmetrical for 3.0 s
200A Interface	**Continuous**	200 amps rms
	Switching	10 operations at 200 amps rms at 14.4 kV
	Fault Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
	Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

*Note: System design and protection must recognize the ratings of 200A interface.

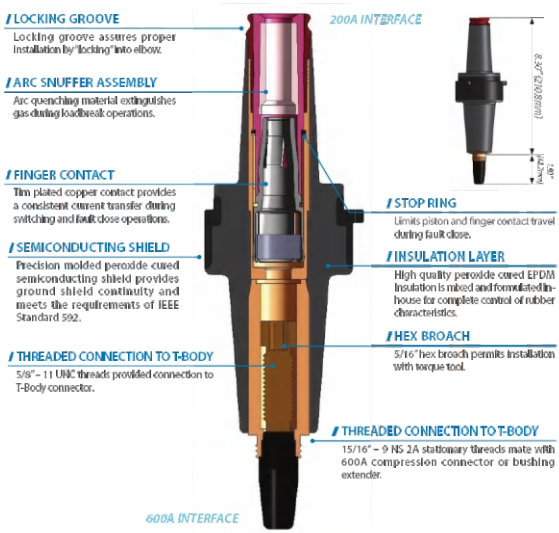
DETAILED COMPOSITION OF THE CHARDON ELBOW TAP PLUG (ETP)



ORDERING INFORMATION

15 kV, 600A Elbow Tap Plug	15-ETP600

DETAILED COMPOSITION OF THE CHARDON LOAD REDUCING TAP PLUG (LRTP)



ORDERING INFORMATION

15 kV, 600A Load Reducing Tap Plug	15-LRTP600

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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LBI200

PLUGUE DE INSERÇÃO SIMPLES PIS - 15kV-200A

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APPLICATION

The Chardon Bushing Insert threads onto a standard 200A bushing well. The combination of the bushing well and bushing insert perform the same function as a one piece integral loadbreak bushing, while providing the flexibility to change the bushing insert in the field, without taking the transformer or other apparatus out of service. The bushing insert and loadbreak elbows are the primary components in all ANSI/IEEE loadbreak connections.

The Chardon Bushing Insert incorporates an all copper current path. This provides reliable and consistent performance under all conditions.

The Chardon Bushing Insert meets all the requirements of IEEE Standard 386, and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. When installed with mating components, the bushing insert provides a fully shielded and fully submersible connection for loadbreak applications.

No special tools are required for installation. The bushing insert can be installed by hand or with the assistance of a torque tool. An internal hex broach allows for the installation by the torque tool.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

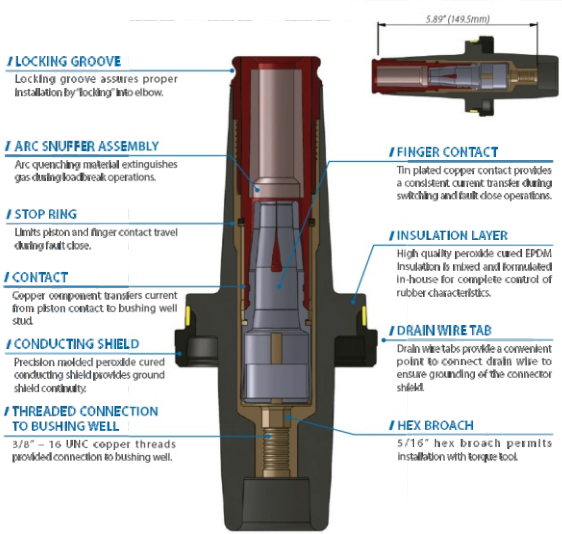
Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• 15RV-BHBEV010615

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 14.4 kV
Fault Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAILED COMPOSITION OF THE CHARDON LOADBREAK BUSHING INSERT



ORDERING INFORMATION

15 kV, 200A Loadbreak Bushing Insert	15-LBI200

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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LE200

TERMINAL DESCONECTÁVEL COTOVELO - TDC - 15kV-200A

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APPLICATION

The Chardon Loadbreak Elbow is a fully shielded, submersible and insulated termination for connecting underground cable to transformers, switchgear, and other apparatus equipped with loadbreak bushings, junctions, or other loadbreak connectors. The bushing insert and loadbreak elbows are the primary components in all ANSI/IEEE loadbreak connections.

The Chardon 15kV Loadbreak Elbow meets all the requirements of IEEE Standard 386, the interface design meets interface 7B (Fig 9 in IEEE Std 386-2016), and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. Chardon Loadbreak Elbows are molded using high quality peroxide-cured insulating and semi-conducting EPDM rubber. All insulating rubber is compounded in house, using Chardon developed proprietary formulations.

Chardon Loadbreak Elbows include a stainless steel pulling eye. An optional capacitive test point is available. Included with the elbow kit is a bi-metal or copper compression connector, and a tin plated copper probe with arc quenching tip.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV
- Test Point Voltage Test

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

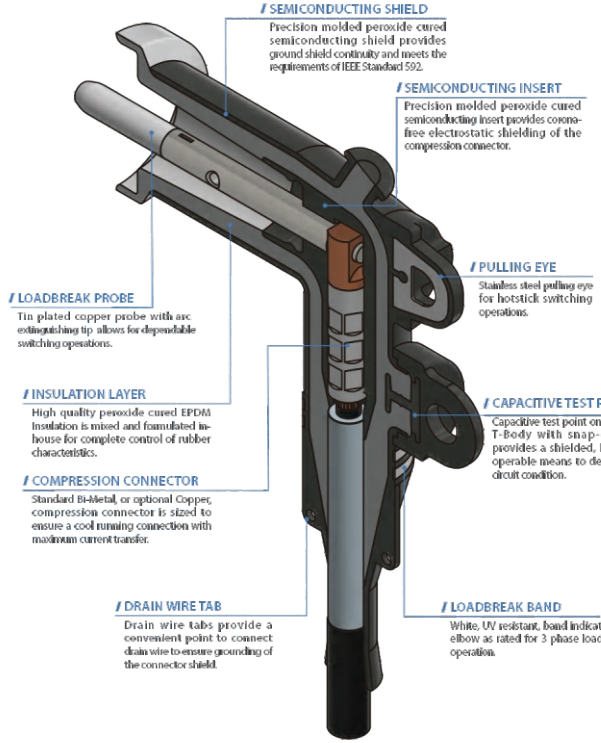
Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• Revision Date: 07.02.2024

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 14.4 kV
Fault Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAILED COMPOSITION OF THE CHARDON 15 KV LOADBREAK ELBOW



/ SEMICONDUCTING SHIELD
Precision molded peroxide cured semiconducting shield provides ground shield continuity and meets the requirements of IEEE Standard 592.

/ SEMICONDUCTING INSERT
Precision molded peroxide cured semiconducting insert provides corona-free electrostatic shielding of the compression connector.

/ PULLING EYE
Stainless steel pulling eye for hotstick switching operations.

/ LOADBREAK PROBE
Tin plated copper probe with arc extinguishing tip allows for dependable switching operations.

/ INSULATION LAYER
High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber characteristics.

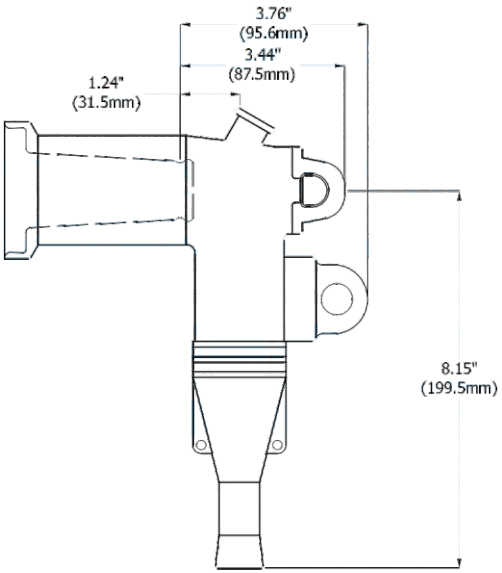
/ CAPACITIVE TEST POINT
Capacitive test point on molded T-Body with snap-on cap provides a shielded, hotstick operable means to determine circuit condition.

/ COMPRESSION CONNECTOR
Standard Bi-Metal, or optional Copper, compression connector is sized to ensure a cool running connection with maximum current transfer.

/ DRAIN WIRE TAB
Drain wire tabs provide a convenient point to connect drain wire to ensure grounding of the connector shield.

/ LOADBREAK BAND
White, UV resistant, band indicates the elbow as rated for 3 phase loadbreak operation.

DETAILED COMPOSITION OF THE CHARDON 15 kV LOADBREAK ELBOW



ORDERING INFORMATION

Chardon loadbreak Fuse Elbow kits are packaged in a heavy duty plastic bag.

Each elbow kit includes the following:

- Silicone Grease
- Plated Copper Probe
- Probe Installation Wrench
- Elbow
- Bi-Metal or Copper Compression Connector
- Installation Instructions

To order a Chardon 15 kV Fuse Elbow Kit, follow the steps below:

15-LE200	"W"	"X"	"Y"	"Z"

"W" = Enter T if want a Capacitive Test Point
"X" = Cable Range Code (A, B, C or D)
"Y" = Conductor Code (See table)
"Z" = Enter C if a Plated Copper Connector is Desired (Bi-metal are standard)

Note :
Bi-metal lug for use on copper and aluminum conductors. Copper lug for use on copper conductors only.

15 kV, 200A Loadbreak Cable Ranges (Insulation Diameter)

Cable Range Code	Inches	Millimeters
A	0.575 - 0.749	14.61 - 18.80
B	0.640 - 0.905	16.26 - 22.99
C	0.830 - 1.060	21.08 - 26.92
D	0.930 - 1.220	23.62 - 30.99

Conductor Code Table

CONDUCTOR CODE	Concentric or Compressed		Compact or Solid	
	AWG or kcmil	mm²	AWG or kcmil	mm²
01	#6	-	#4	-
02	#4	-	#3	25
03	#3	25	#2	35
04	#2	35	#1	-
05	#1	-	1/0	50
06	1/0	50	2/0	70
07	2/0	70	3/0	-
08	3/0	-	4/0	95
09	4/0	95	250	120
10	250	120	300	-

Example :
To order a standard Chardon 15 kV Loadbreak Elbow with a cable insulation diameter of 0.850", a 3/0 bi-metal compression connector, and a capacitive test point, order the following part number: 15-LE200TB08.

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CÓDIGO 15-LFE200

TERMINAL DESCONECTÁVEL COTOVELO - PORTA-FUSIVEIS 15kV-200A

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APPLICATION

The Chardon 15 kV Class Fused Loadbreak Elbow Connector combines a fully-shielded and insulated loadbreak elbow with full range current-limiting fuse protection. The Chardon Fused Loadbreak Elbow Connector provides a convenient and cost effective method to add fusing protection to underground distribution systems utilizing 200A, 15 kV Class loadbreak bushings. Designed as a hot stick operable switching device, it is tested at the maximum fuse rating in accordance with the IEEE 386 standard.The product is fully sealed and submersible.

Chardon Fused Loadbreak Elbow Connectors are molded using high quality peroxide-cured EPDM rubber, manufactured in Chardon's facilities, under strict quality controls. Standard features include a copper probe adapter, bi-metal connector, plated copper loadbreak probe and a stainless steel reinforced pulling-eye. The product is designed to accept a wide range of cable conductor and insulation sizes.

Chardon Fused Loadbreak Elbow Connectors are the ONLY fused elbow connectors on the market that can accept fuses manufactured by Cooper Power Systems (Eaton), Hi-Tech (ABB) and Chardon. This is accomplished by ordering the appropriate lug kit. This feature allows the customer an option which is not available on competitive products.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV
- Test Point Voltage Test

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• 15LFE2004082318-REV05

CURRENT RATINGS

Description	Test Parameters
Continuous	Fuse rating
Switching	10 operations at 200 amps rms at 14.4 kV
Fault Close	10,000 amps rms symmetrical at 14.4kV for 0.17 s after 10 consecutive successful switching operations

DETAILED COMPOSITION OF THE CHARDON 15KV LOADBREAK FUSE ELBOW

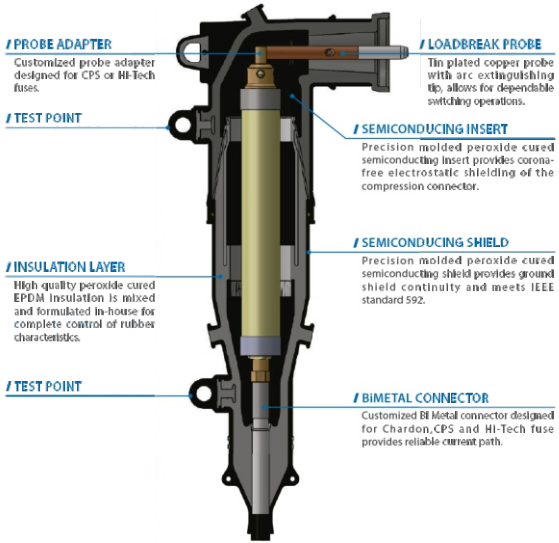

Fig 1: Detail Chardon Fuse Elbow Composition (CPS fuse installed)

DETAILED COMPOSITION OF THE CHARDON 15 KV LOADBREAK FUSE ELBOW

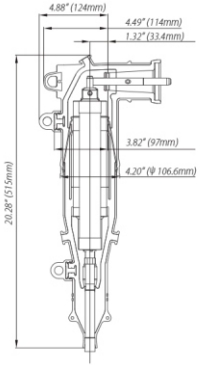

Fig 2: Dimension Info When CPS Fuse or Chardon Fuse Installed.

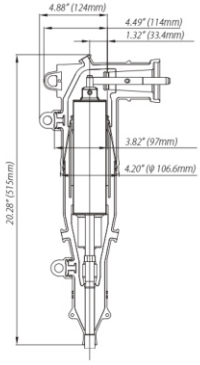

Fig 3: Dimension Info When Hi-Tech Fuse Installed.

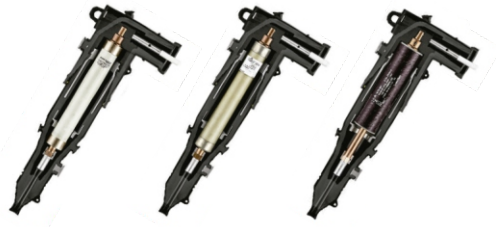

Fig 4: Chardon Fuse Elbow assemble with major fuses manufacturers.

ORDERING INFORMATION

Chardon Loadbreak Fuse Elbow kits are packaged in a heavy duty plastic bag.

Each elbow kit includes the following:

- Fused Elbow, Cable Housing
- Fused Elbow, Elbow Housing
- Compression Lug Kit
- Probe
- Hex Wrench
- Silicone Lubricant
- Towel
- Instruction Sheet

Note:
Current-limiting fuses sold separately. See "Chardon Fuses" below for fuse recommendations, electrical ratings and catalog numbers.

To order a Chardon 15 kV Fuse Elbow Kit, follow the steps below:

15-LFE200T	"X"	"Y"	"Z"

"X" = Enter Cable Range Code (A, B, C or D)

"Y" = If a Hi-Tech Fuse will be used in the Fused Elbow, Enter "HE".
If a Cooper Fuse will be used in the Fused Elbow, enter "CE".
If a Chardon Fuse will be used in the Fused Elbow, enter "CH".

"Z" = Enter Conductor Code (See Conductor Code Table Below)

Range Code	Inches	Millimeters
A	0.610 - 0.823	15.50 - 20.90
B	0.720 - 0.985	18.29 - 25.02
C	0.920 - 1.185	23.37 - 30.10
D	1.040 - 1.305	26.42 - 33.15

Conductor Code Table

CONDUCTOR CODE	Concentric or Compressed		Compact or Solid	
	AWG or kcmil	mm²	AWG or kcmil	mm²
01	#6	-	#4	-
02	#4	-	#3	25
03	#3	25	#2	35
04	#2	35	#1	-
05	#1	-	1/0	50
06	1/0	50	2/0	70
07	2/0	70	3/0	-
08	3/0	-	4/0	95
09	4/0	95	250	120
10	250	120	300	-

Example :
To order a Chardon 25 kV Loadbreak Fused Elbow with a cable insulation diameter of 0.850", using a Hi-tech fuse, and a #3 compression connector, order the following number : 15-LFE200T-B-HE08 .

Conductor Code Table

Compression Lug Kit	Part Number
Hi-Tech Fuse Compression Lug	LFEB-HTH → Conductor Code
Cooper Fuse Compression Lug	LFEK-CPS + Conductor Code
Chardon Fuse Compression Lug	LFEK-CH→ Conductor Code

Note:
Eaton's Hi-Tech, Eaton and Cooper, these brand names are property of their respective owners. All company, product and service names used in this catalog/ instruction sheet, are for identification purposes only. Use of these names, logos, and brands does not imply endorsement.

CHARDON FUSES

Table 1: Electrical Characteristics of the Elbow Fuses and Catalog Numbers

Electrical Characteristics of the Elbow Fuses

Voltage Class System(kV)	Nominal Fuse Voltage Rating(kV)	Nominal Fuse Current Rating(A)	Fuse Catalog Number	Minimum Melt I²t (A²s)	Maximum Total I²t (A²s)	Peak Arc Voltage (kV)	Maximum Continuous Current (A)		
							25°C	40°C	65°C
15	8.3	3	CHFEF083003	770	1700	33	4.9	4.7	4.2
		6	CHFEF083006	1390	3020	33	7.7	7.3	6.8
		8	CHFEF083008	1565	3600	33	8.3	7.9	8.5
		10	CHFEF083010	1760	3850	32	12.9	12.3	11.5
		12	CHFEF083012	1850	4100	32	15.7	15.2	14.6
		18	CHFEF083018	1950	7240	27	23.2	22.3	21.3
		20	CHFEF083020	2120	7800	27	23.3	22.5	21.4
		25	CHFEF083025	2438	9600	27	28.5	27.5	26.7
		30	CHFEF083030	7330	15800	27	34.5	32.8	31
		40	CHFEF083040	7970	23700	27	45	42.5	40.5
		45	CHFEF083045	9752	31200	27	68	58	51
		65	CHFEF083065	19600	49700	16	89	84	80
		80	CHFEF083080	26250	66800	16	107	101	96

Table 2a: Recommended Fuse Current Ratings for Transformer

Recommended Fuse Current Ratings for Transformer										
Nominal Fuse Rated Voltage	8.3kV									
1-Phase Transformer kVA	1-Phase Voltage Rating (kV) - Phase to Ground									
	2.4		4.16		4.8		7.2		7.62	
	A	B	A	B	A	B	A	B	A	B
10		8		6		6		6		6
15	8	10		8		8		6		6
25	12	20	10	12		10		8		8
37.5	20	25	12	18	10	12		10		10
50	25	40	18	20	12	20	10	12	10	12
75	40		20	30	20	30	12	20	12	20
100			30		30	40	25	30	18	25
167							40		30	40

3-Phase Transformer kVA	3-Phase Voltage Rating (kV)-Phase to Phase											
	2.4		4.16		4.8		8.32		12.47		13.2 to 14.4kV	
	A	B	A	B	A	B	A	B	A	B	A	B
15		8										
22.5		10		6		6						
30	10	12		8		8		6				
45	12	20	10	10		10		6				
75	20	30	12	18	12	18		8		6		6
100	40		18	25	12	20		12		8		6
112.5			20	25	20	25	10	12		10		8
150			30	40	20	30	12	20		12		10
200			40		30	40	18	25		12	10	12
225					40		20	30	12	20	12	18
300							30	40	18	25	18	25
500									30	40	30	40

Note:
(1) Fuses selection is based on the continuous current rating of the fuses at 40°C. Fuses in linked Column A allow between 1.4 and 2 times the rated current of the transformer; those linked in Column B allow 2 to 3 times the rated current of the transformer.
(2) Recommended fuses meet an inrush criteria of 12 times transformer full load current for 0.1 second and 25 times full load current for 0.01 second.
(3) Fuses meet cold load pick up criteria of 6 times transformer full load current for 1 second and 3 times full load current of 10 seconds.

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CÓDIGO 15-LFTI

PLUGUE DE INSERÇÃO DUPLO PID - 15kV-200A

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APPLICATION

The Chardon Loadbreak Feed Thru Insert threads onto a standard 200A bushing well and provides dual loadbreak bushing interfaces. It can convert radial-feed transformers to feedthru transformers and add in-line arrester protection if needed. The torque limit ratchet feature prevents the bushing well stud from breaking during installation. The ratchet feature allows users to rotate the feed thru insert for 360° to orient the feedthru insert in the desired position.

The Chardon Loadbreak Feed Thru Insert meets all the requirements of IEEE Standard 386, and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. When installed with mating components, the bushing insert provides a fully shielded and fully submersible connection for loadbreak applications.

PRODUCTION TESTS

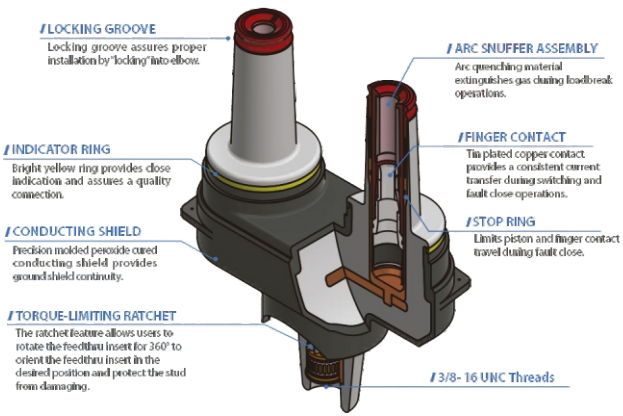
Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

DETAILED COMPOSITION OF THE CHARDON LOADBREAK FEED THRU INSERT



VOLTAGE RATINGS

Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• 15-LFTI200-050823-REV03

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 14.4 kV
Fault-Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

ORDERING INFORMATION

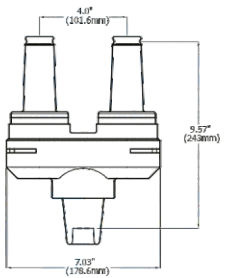
15kV,200A Loadbreak Feed Thru Insert	15-LFTI

Each kit contains:

- Rotatable Feed Thru Insert
- Shipping Cap (not for energized operation)
- Stainless Steel Bail Assembly
- Silicone Lubricant
- Installation Instruction Sheet

Replacement Part

Bail Assembly	15-BAIL-LFTI



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CÓDIGO 15-LIB130 / 15-LIB185

BUCHA DE LIGAÇÃO DE EQUIPAMENTO - BLE - 15kV-200A

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APPLICATION

The Chardon Integral Bushing is designed for installing to transformer, switchgear and other equipment and is used as a mating loadbreak connector for elbow, elbow arrester or grounding elbow. An integral skirt feature can be applied to oil or SF6 insulating equipment. It has arc extinction function to ensure the loadbreak application. The indicated ring on the interface can be easily known from outside if the installation is in place or not.

KEY FEATURES

- Provides a fully shielded and submersible connection when mate with the standard bushing.
- Meet ANSI/IEEE Std. 386 interface.
- No minimum phase clearance requirements.

VOLTAGE RATINGS AND CHARACTERISTICS

Description	
Standard Voltage Class	15kV
AC Withstand	39kV/5min
BIL and Full Wave Crest(Impulse)	95kV
Minimum Corona Voltage Level	15Kvs10pC

CURRENT RATINGS AND CHARACTERISTICS

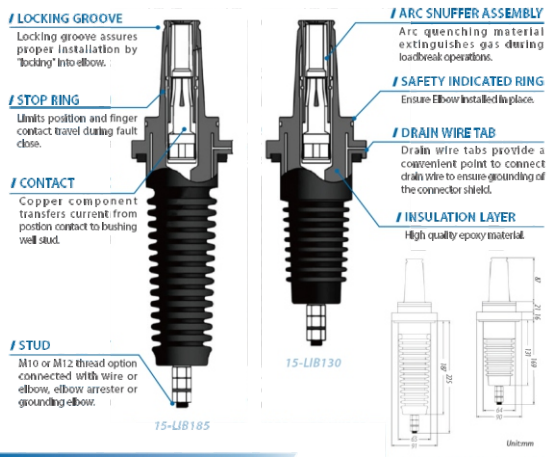
Description	Amperes
Continuous	200 A rms
Thermal Short Circuit	8.7KA/1s
Dynamic Short Circuit	21.2kA/10ms

PRODUCTION TESTS

Tests conducted in accordance with ANSI/IEEE Stnd.386, GB/T 12706.4

- Minimum Corona Voltage Level – 15kV <3pC (100% Test)
- AC Withstand – 42kV /1min (100% Test)
- BIL and Full Wave Crest (Impulse)– 95 kV (Sampling Test)

DETAILED COMPOSITION OF THE CHARDON LOADBREAK INTEGRAL BUSHING



ORDERING INFORMATION

15-LIB130 (Standard) / 15-LIB185 (Extended Length)

Standard M10 Thread Mild Steel-Zinc Dichromate plating Clamp	15-LIB130M103ZD
Standard M10 Thread Stainless Steel Clamp	15-LIB130M103SS
Standard M12 Thread Mild Steel-Zinc Dichromate plating Clamp	15-LIB130M123ZD
Standard M12 Thread Stainless Steel Clamp	15-LIB130M123SS
Extended Length M10 Thread Mild Steel-Zinc Dichromate plating Clamp	15-LIB185M103ZD
Extended Length M10 Thread Stainless Steel Clamp	15-LIB185M103SS
Extended Length M12 Thread Mild Steel-Zinc Dichromate plating Clamp	15-LIB185M123ZD
Extended Length M12 Thread Stainless Steel Clamp	15-LIB185M123SS

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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LIC200

RECEPTÁCULO ISOLANTE BLINDADO - RIB - 15kV-200A

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APPLICATION

The Chardon Protective Cap is an accessory product to other 15 kV, 200A products with loadbreak interfaces (bushing inserts, loadbreak junctions, feed thru inserts, etc.). It is designed to physically seal and electrically insulate loadbreak bushing interfaces. When installed on a loadbreak bushing interface, and properly grounded using the attached drain wire, the Loadbreak Protective Cap provides a submersible, fully shielded insulated cap for energized bushings.

The Loadbreak Protective Cap can be used for temporary or permanent applications.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

- Revision Date 12.21.2023

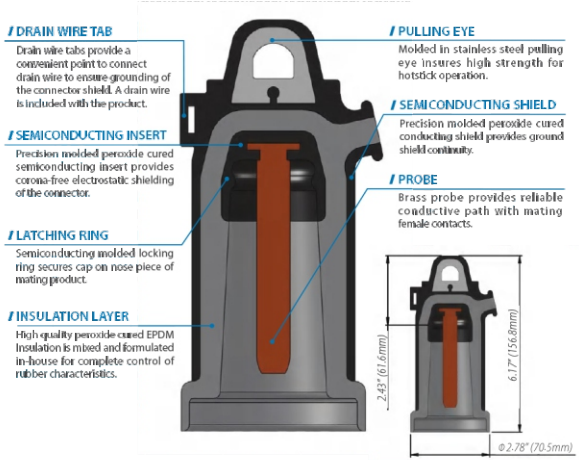
DETAILED COMPOSITION OF THE CHARDON LOADBREAK PROTECTIVE CAP

/ DRAIN WIRE TAB
Drain wire tabs provide a convenient point to connect drain wire to ensure grounding of the connector shield. A drain wire is included with the product.

/ SEMICONDUCTING INSERT
Precision molded peroxide cured semiconducting insert provides corona-free electrostatic shielding of the connector.

/ LATCHING RING
Semiconducting molded locking ring secures cap on nose piece of mating product.

/ INSULATION LAYER
High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber characteristics.



/ PULLING EYE
Molded in stainless steel pulling eye insures high strength for hotstick operation.

/ SEMICONDUCTING SHIELD
Precision molded peroxide cured conducting shield provides ground shield continuity.

/ PROBE
Brass probe provides reliable conductive path with mating female contacts.

ORDERING INFORMATION

15 kV, 200A Loadbreak Protective Cap	15-LIC200

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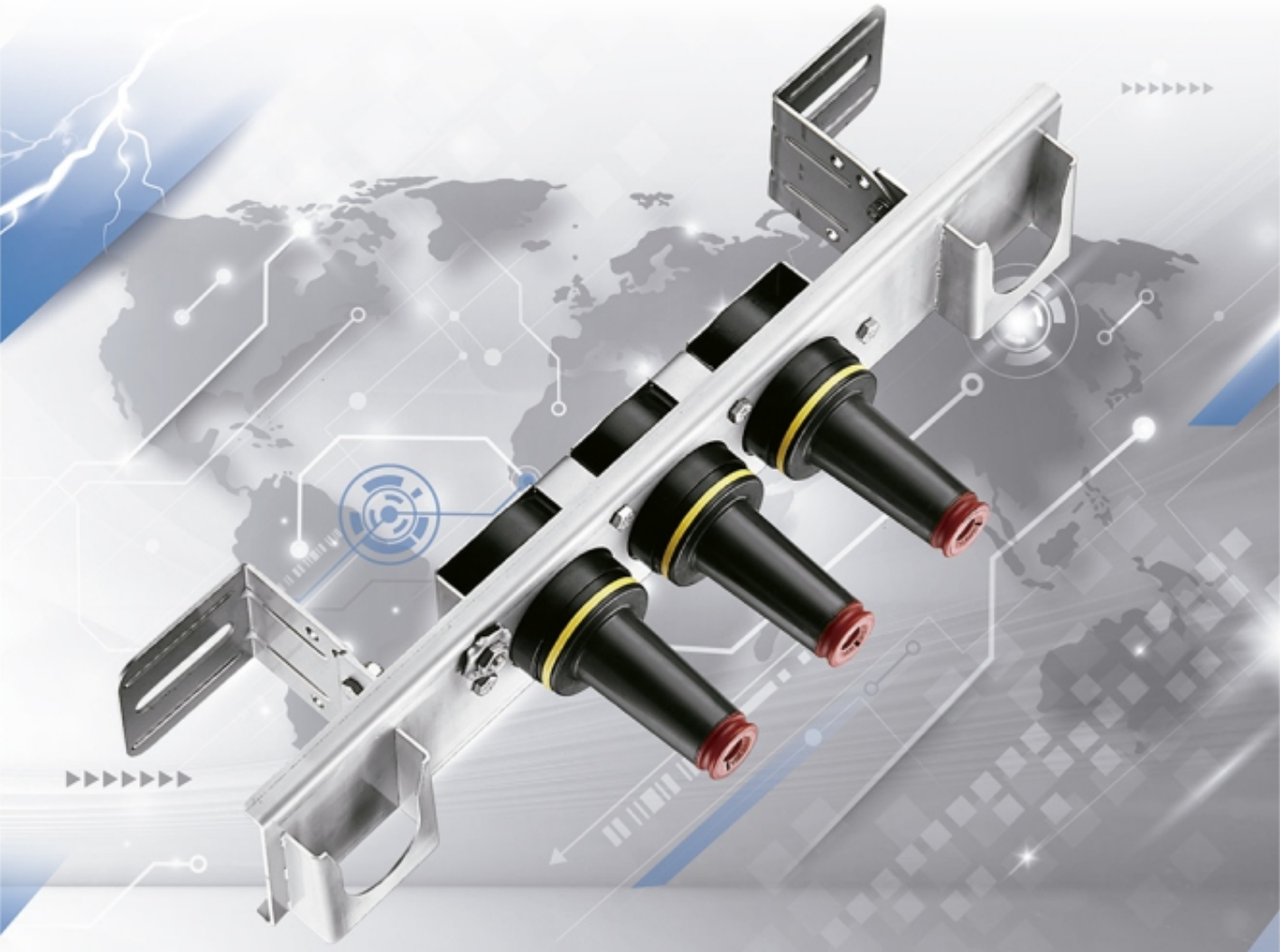
37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LJ200

BARRAMENTO DE DERIVAÇÃO 15kV-200A



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APPLICATION

The Chardon 200 A, 15 kV Class Loadbreak Junction provides two, three or four 8.3/14.4 kV loadbreak interfaces that are internally bused together and meet all requirements of IEEE Standard 386™ —Separable Insulated Connector Systems. Loadbreak junctions are used in pad-mounted apparatus, underground vaults, and other apparatus to sectionalize, establish loops, taps, or splices, and to facilitate apparatus changeouts.

Sectionalizing a cable run to find and isolate a cable fault is made easy when a loadbreak junction is used with 15 kV Class Loadbreak elbows and other accessories meeting the requirements of IEEE Standard 386™.

The Chardon Loadbreak design incorporates an all copper current carrying path, which provides reliable and consistent performance under all conditions.

The Chardon Loadbreak Junction meets all the requirements of IEEE standard 386, and is fullying interchangeable with competitor's products and mating products that also meet IEEE Standard 386. When installed with mating components, the loadbreak junction provides a fully shielded connection for loadbreak applications.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

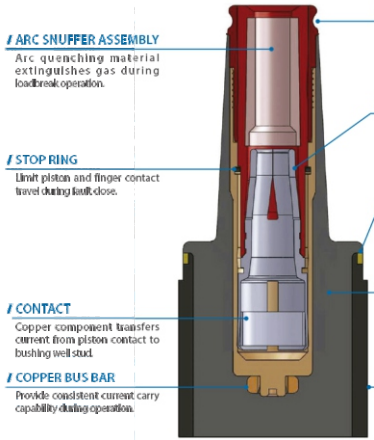
Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• 15LJ200-072718-REV08

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 14.4 kV
Fault Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAIL COMPOSITION OF THE CHARDON LOADBREAK JUNCTION



ORDERING INFORMATION

15kV, 200A Loadbreak Junction

Each kit contains:

- Loadbreak Junction (with mounted bracket or straps, depending on product ordered)
- Shipping Caps (not for energized operation)
- Silicone Lubricant
- Installation Instruction Sheet

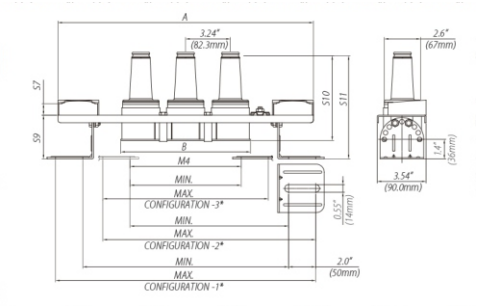
To order a Chardon 15 kV Fuse Elbow Kit, follow the steps below:

Part Description	Junction Only	Junction with bracket	Junction with U-Straps
15kV 200A Junction-2	15-LJ200F2	15-LJ200F2SS	15-LJ200F2U
15kV 200A Junction-3	15-LJ200F3	15-LJ200F3SS	15-LJ200F3U
15kV 200A Junction-4	15-LJ200F4	15-LJ200F4SS	15-LJ200F4U

Replacement Parts:

Description	Catalog Number
U-Strap Kit (1 Strap)	15/25-LJ200U
Stainless Steel Bracket -2 way	15-LJBKTF2
Stainless Steel Bracket -3 way	15-LJBKTF3
Stainless Steel Bracket -4 way	15-LJBKTF4

Junction with Bracket Dimensional Information

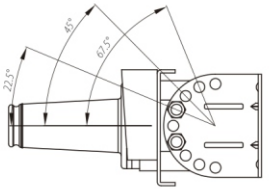


15kV	
Stacking Dimensions	
S7	0.8" (21mm)
S9	3.2" (81mm)
S10	6.1" (156mm)
S11	7.5" (191mm)
M4	See Dimensional Information

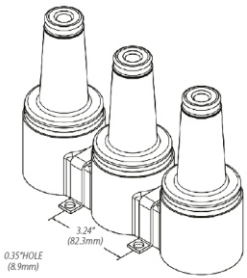
ORDERING INFORMATION

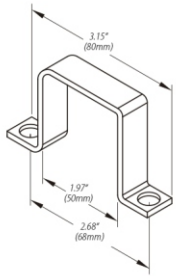
Number of Interfaces	Physical Dimensions In. (mm)		M4 Mounting Dimensions In.(mm)					
			Configuraation1		Configuraation2		Configuraation3	
	A	B	Min.	Max.	Min.	Max.	Min.	Max.
2	15.4 (390)	6.5 (164)	11.8 (300)	15.7 (400)	8.4 (213)	12.3 (313)	5.0 (126)	8.9 (226)
3	18.5 (470)	9.4 (239)	15.0 (380)	18.9 (480)	11.5 (293)	15.5 (393)	8.1 (206)	12.0 (306)
4	21.7 (550)	12.6 (321)	18.1 (460)	22.0 (560)	14.7 (378)	18.6 (473)	11.3 (286)	15.2 (386)

* Configuration 1. Both feet turned out.
Configuration 2. One foot turned out, one in.
Configuration 3. Both feet turned in.



Junction with U-straps Dimensional Information





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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LPFT200

PLUGUE DE BY-PASS - PBP 15kV-200A

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APPLICATION

The Chardon 200A, 15kV Class Loadbreak Portable Feed Thru is designed to be installed on a parking stand, attached to a transformer or other apparatus. Two bushing insert loadbreak interfaces can be mated with an elbow arrester, a loadbreak elbow, or an insulated cap. When mated with other products that meets IEEE Standard 386, the Portable Feed Thru provides a fully shielded, submersible connection for loadbreak operation.

The Chardon Portable Feed Thru meets all the requirements of IEEE Standard 386, and is fully interchangeable with competetior's products and mating products that also meet IEEE Standard 386. The indicating ring design eliminates the guesswork of loadbreak installation, it provides feedback to determine if the elbow is properly installed.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 11 kV
- AC 1 Minute Withstand – 34 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

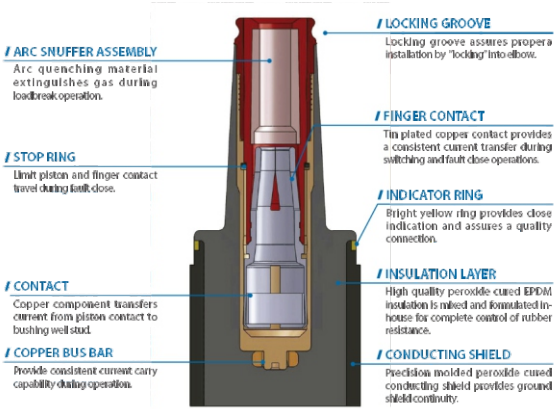
Voltage Class	15 kV
Max. Rating Phase to Phase	14.4 kV
Max. Rating Phase to Ground	8.3 kV
AC 1 Minute Withstand	34 kV
DC 15 Minute Withstand	53 kV
BIL and Full Wave Crest	95 kV
Minimum Corona Voltage Level	11 kV

• 15LPFT200-022719-REV01

CURRENT RATINGS

Description	Test Parameters
Continuous	200 ampsrms
Switching	10 operations at 200 amps rms at 14.4 kV
Fault Close	10,000 amps rms symmetrical at 14.4 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAILED COMPOSITION OF THE CHARDON LOADBREAK PORTABLE FEED THRU

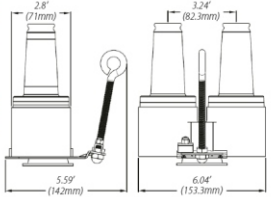


ORDERING INFORMATION

Each Portable Feed Thru kit includes the following:

- Portable Feed Thru with Bracket
- Shipping Caps (not for energized operation)
- Installation Instruction Sheet

15kV Loadbreak Portable Feed Thru	15-LPFT200



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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-ETP600

PLUGUE DE REDUÇÃO - PR 35kV-600/200A

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APPLICATION

The Chardon Elbow Tap Plug (ETP) is used to convert a standard 600A deadbreak interface deadbreak interface of to a standard 200A loadbreak interface.

The ETP is ideal for applications where a 200A tap is desired for test or ground purposes. The ETP is also ideal for adding a 200A tap to an existing 600A T-body connector. The 200A interface allows for live test, visible ground, addition of a 200A tap, or installation of an elbow arrester.

The Chardon ETP meets all the requirements of IEEE standard 386, and is 200A three phase switching and three phase fault close rated. Furthermore, it incorporates an all copper current path, which provides reliable and consistent performance under all conditions

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand –50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 KV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

CURRENT RATINGS

	Description	Amperes
600A Interface	**Continuous**	600A rms
	Short Time	• 25,000A rms symmetrical for 0.17 s • 10,000A rms symmetrical for 3.0 s
200A Interface	**Continuous**	200A rms
	Switching	10 operations at 200 amps rms at 36.6 kV
	Fault Close	10,000A rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations
	Short Time	• 10,000A rms symmetrical for 0.17s • 3,500A rms symmetrical for 3.0 s

Note :
System design and protection must recognize the ratings of 200A interface.

DETAILED COMPOSITION OF THE CHARDON ELBOW TAP PLUG (ETP)

/ LOCKING GROOVE

Locking groove assures proper installation by "locking" into elbow.

/ ARC SNUFFER ASSEMBLY

Arc quenching material extinguishes gas during loadbreak operations.

/ FINGER CONTACT

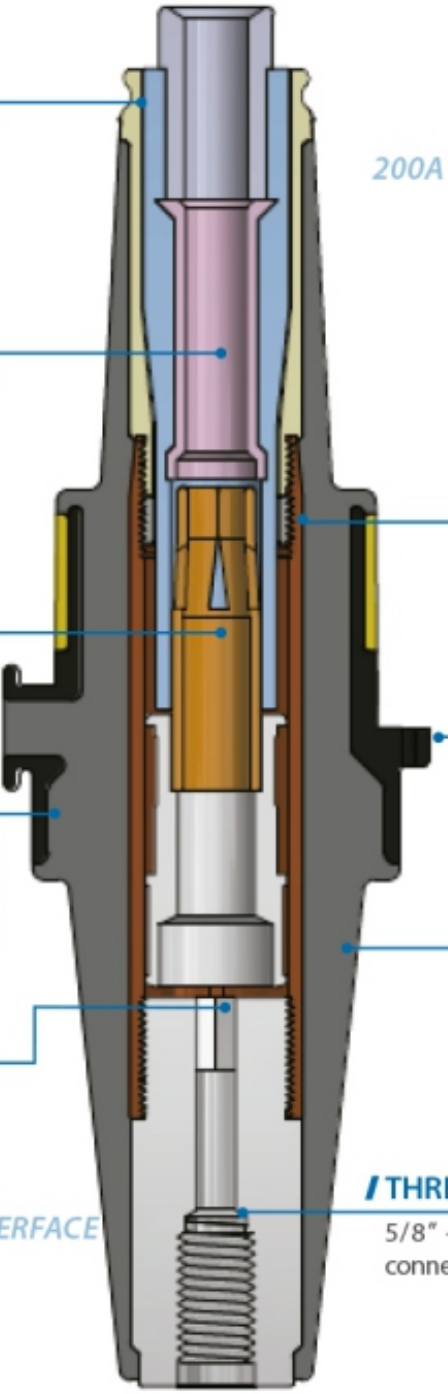
Tin plated copper contact provides a consistent current transfer during switching and fault close operations.

/ SEMICONDUCTING SHIELD

Precision molded peroxide cured semiconducting shield provides ground shield continuity and meets the requirements of IEEE Standard 592.

/ HEX BROACH

5/16" hex broach permits installation with torque tool.



/ STOP RING

Limits piston and finger contact travel during fault close.

/ DRAIN WIRE TAB

Drain wire tabs provide a convenient point to connect drain wire to ensure grounding of the connector shield.

/ INSULATION LAYER

High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber characteristics.

/ THREADED CONNECTION TO T-BODY

5/8" – 11 UNC copper threads provided connection to T-Body connector.

ORDERING INFORMATION

35 kV, 600A Elbow Tap Plug	35-ETP600

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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-LBI200

PLUGUE DE INSERÇÃO SIMPLES PIS - SMALL - 35kV-200A

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APPLICATION

The Chardon Bushing Insert threads onto a standard 200A bushing well.The combination of the bushing well and bushing insert perform the same function as a one piece integral loadbreak bushing, while providing the flexibility to change the bushing insert in the field, without taking the transformer or other apparatus out of service. The bushing insert and loadbreak elbows are the primary components in all ANSI/IEEE loadbreak connections.

The Chardon Bushing Insert incorporates an all copper current path. This provides reliable and consistent performance under all conditions.

The Chardon 35kV Bushing Insert meets all the requirements of IEEE Standard 386, the interface design meets interface 7B (Fig 9 in IEEE Std 386-2016) and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. When installed with mating components, the bushing insert provides a fully shielded and fully submersible connection for loadbreak applications.

No special tools are required for installation. The bushing insert can be installed by hand or with the assistance of a torque tool. An internal hex broach allows for the installation by the torque tool.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

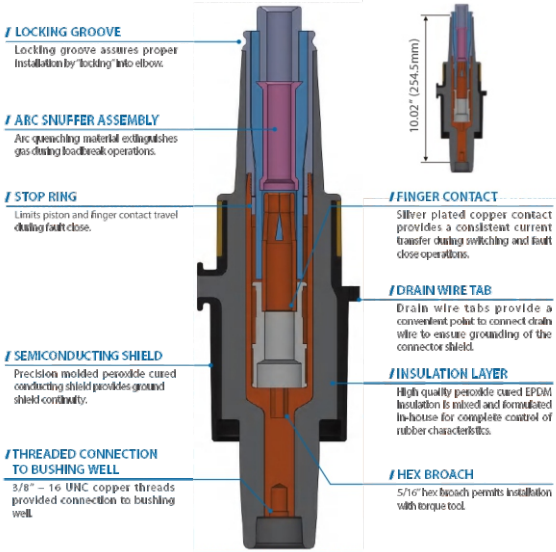
Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

• 35-LBI200-1P0124-REV01

CURRENT RATINGS

Description	Test Parameters
Continuous	200A rms
Switching	10 operations at 200A rms at 36.6 kV
Fault Close	10,000A rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000A rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAILED COMPOSITION OF THE CHARDON LOADBREAK BUSHING INSERT



/ LOCKING GROOVE
Locking groove assures proper installation by "locking" into elbow.

/ ARC SNUFFER ASSEMBLY
Arc quenching material extinguishes gas during loadbreak operations.

/ STOP RING
Limits piston and finger contact travel during fault close.

/ SEMICONDUCTING SHIELD
Precision molded peroxide cured conducting shield provides ground shield continuity.

/ THREADED CONNECTION TO BUSHING WELL
3/8" – 16 UNC copper threads provided connection to bushing well.

/ FINGER CONTACT
Silver plated copper contact provides a consistent current transfer during switching and fault close operations.

/ DRAIN WIRE TAB
Drain wire tabs provide a convenient point to connect drain wire to ensure grounding of the connector shield.

/ INSULATION LAYER
High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber characteristics.

/ HEX BROACH
5/16" hex broach permits installation with torque tool.

ORDERING INFORMATION

35 kV, 200A Loadbreak Bushing Insert	35-LBI200

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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-LE200

TERMINAL DESCONECTÁVEL COTOVELO - TDC - SMALL 35kV-200A

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APPLICATION

The Chardon Loadbreak Elbow is a fully shielded, submersible and insulated termination for connecting underground cable to transformers, switchgear, and other apparatus equipped with loadbreak bushings, junctions, or other loadbreak connectors. The bushing insert and loadbreak elbows are the primary components in all ANSI/IEEE loadbreak connections.

The Chardon 35kV Loadbreak Elbow meets all the requirements of IEEE Standard 386, the interface design meets interface 7B (Fig 9 in IEEE Std 386-2016), and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. Chardon Loadbreak Elbows are molded using high quality peroxide-cured insulating and semi-conducting EPDM rubber. All insulating rubber is compounded in house, using Chardon developed proprietary formulations.

Chardon Loadbreak Elbows include a stainless steel pulling eye. An optional capacitive test point is available. Included with the elbow kit is a bi-metal or copper compression connector, and a tin plated copper probe with an arc quenching tip.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV
- Test Point Voltage Test

Tests conducted in accordance with Chardon manufacturing process requirements:

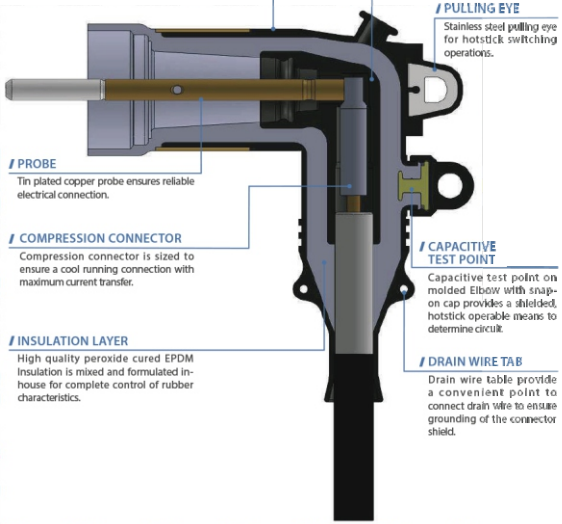
- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

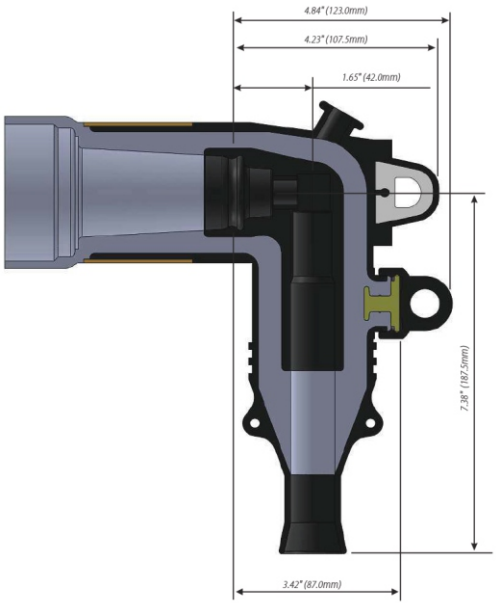
Voltage Class	35 kv
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 60 Hz 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

• Revision Date: 07/02/2024

DETAILED COMPOSITION OF THE CHARDON 35 KV SMALL INTRFACE LOADBREAK ELBOW



DETAILED COMPOSITION OF THE CHARDON 35 KV SMALL INTRFACE LOADBREAK ELBOW



ORDERING INFORMATION

Chardon Loadbreak Fuse Elbow kits are packaged in a heavy duty plastic bag.

Each elbow kit includes the following:

- Silicone Grease
- Plated Copper Probe
- Probe Installation Wrench
- Bi-Metal or Copper Compression Connector
- Installation Instructions Sheet
- Elbow

To order a Chardon 35 kV Elbow Kit, follow the steps below:

35-LE200	"W"	"X"	"Y"	"Z"

"W" = Enter T if want a Capacitive Test Point

"X" = Cable Range Code (C,D,E or F)

"Y" = Conductor Code (See table)

"Z" = Enter C if a Plated Copper Connector is Desired (Bi-metal are standard)

35 kV, 200A Loadbreak Cable Ranges (Insulation Diameter)

Cable Range Code	Inches	Millimeters
C	0.846 - 1.051	21.5 - 26.7
D	0.976 - 1.181	24.8 - 30.0
E	1.087 - 1.311	27.6 - 33.3
F	1.232 - 1.469	31.3 - 37.3

Conductor Code Table

CONDUCTOR CODE	Concentric or Compressed		Compact or Solid	
	AWG or kcmil	mm²	AWG or kcmil	mm²
01	#6	-	#4	-
02	#4	-	#3	25
03	#3	25	#2	35
04	#2	35	#1	-
05	#1	-	1/0	50
06	1/0	50	2/0	70
07	2/0	70	3/0	-
08	3/0	-	4/0	95
09	4/0	95	250	120
10	250	120	300	-

Example :
To order a standard Chardon 35 kV Loadbreak Elbow with a cable insulation diameter of 28 mm, a 3/0 bi-metal compression connector and a capacitive test point, order the following part number: 35-LE200TD08.

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CÓDIGO 35-LFE200

TERMINAL DESCONECTÁVEL COTOVELO PORTA FUSÍVEIS 35kV-200A

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APPLICATION

The Chardon 35 kV Class Fused Loadbreak Elbow Connector combines a fully-shielded and insulated loadbreak elbow with full range current-limiting fuse protection. The Chardon Fused Loadbreak Elbow Connector provides a convenient and cost effective method to add fusing protection to underground distribution systems utilizing 200 A, 35 kV Class loadbreak bushings. Designed as a hot stick operable switching device, it is tested at the maximum fuse rating in accordance with the IEEE 386-2006 standard. The product is fully sealed and submersible.

Chardon Fused Loadbreak Elbow Connectors are molded using high quality peroxide-cured EPDM rubber, manufactured in Chardon's facilities, under strict quality controls. Standard features include a copper probe adapter, bi-metal connector, plated copper loadbreak probe and a stainless steel reinforced pulling-eye. The product is designed to accept a wide range of cable conductor and insulation sizes.

Chardon Fused Loadbreak Elbow Connectors are the ONLY fused elbow connectors on the market that can accept fuses manufactured by Cooper Power Systems (Eaton) and HI-Tech (ABB). This is accomplished by ordering the appropriate lug kit. This feature allows the customer an option which is not available on competitive products.

PRODUCT TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV
- Test Point Voltage Test

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

• Revision Date: 08.07.2024

CURRENT RATINGS

Description	Test Parameters
Continuous	Fuse rating
Switching	10 operations at 200 amps rms at 36.3 kV
Fault Close	10,000 amps rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations

DETAILED COMPOSITION OF THE CHARDON 35 kV LOADBREAK FUSE ELBOW

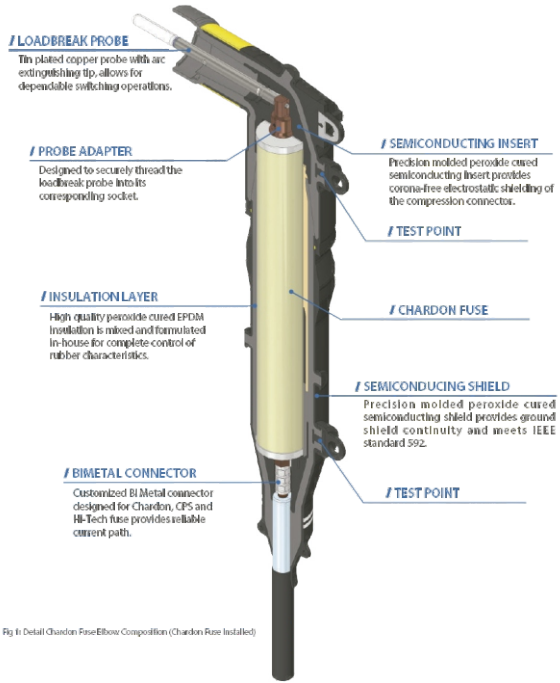
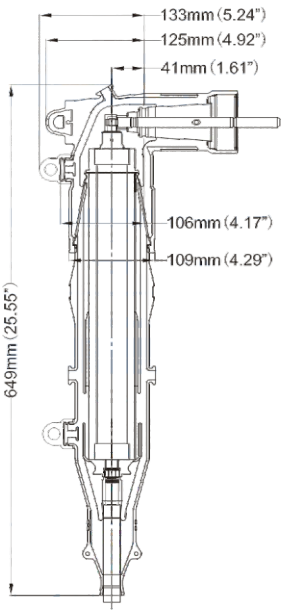


Fig 1: Detail Chardon Fuse Elbow Composition (Chardon Fuse Installed)

CHARDON 35 kV LOADBREAK FUSE ELBOW DRAWING



ORDERING INFORMATION

Chardon Loadbreak Fuse Elbow kits are packaged in a heavy duty plastic bag.

Each elbow kit includes the following:

- Fused Elbow, Cable Housing
- Fused Elbow, Elbow Housing
- Compression Lug Kit
- Probe
- Hex Wrench
- Silicone Grease
- Towel
- Installation Instruction Sheet

Note:
Current-limiting fuses sold separately. See "Chardon Fuses" below for fuse recommendations, electrical ratings and catalog numbers.

To order a Chardon 35 kV Fuse Elbow Kit, follow the steps below:

35-LFE200T	"X"	"Y"	"Z"

"X" = Enter Cable Range Code (A, B, C or D)

"Y" = If a Hi-Tech Fuse will be used in the Fused Elbow, Enter "HE".
If a Cooper Fuse will be used in the Fused Elbow, enter "CP".
If a Chardon Fuse will be used in the Fused Elbow, enter "CH".

"Z" = Enter Conductor Code (See Conductor Code Table Below)

Range Code	Inches	Millimeters
C	0.846 - 1.051	21.50 - 26.70
D	0.976 - 1.181	24.80 - 30.00
E	1.087 - 1.311	27.60 - 33.30
F	1.232 - 1.469	31.30 - 37.30

Conductor Code Table

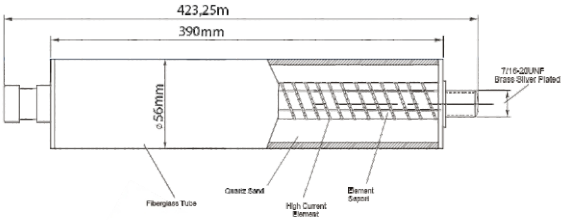
CONDUCTOR CODE	Concentric or Compressed		Compact or Solid	
	AWG or kcmil	mm²	AWG or kcmil	mm²
01	#6	-	#4	-
02	#4	-	#3	25
03	#3	25	#2	35
04	#2	35	#1	-
05	#1	-	1/0	50
06	1/0	50	2/0	70
07	2/0	70	3/0	-
08	3/0	-	4/0	95
09	4/0	95	250	120
10	250	120	300	-

Example :
To order a Chardon 35 kV Loadbreak Fused Elbow with a cable insulation diameter of 0.850", using a Hi-tech fuse, and a 3/0 compression connector, order the following number : 35-LFE200T-HE08 .

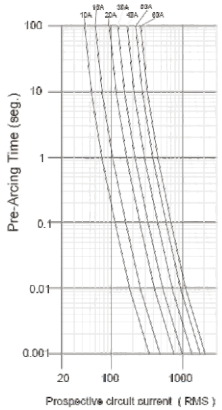
Replacement Parts

Compression Lug Kit	Part Number
Chardon Fuse Compression Lug	LFE-CH + Conductor Code

CHARDON FUSES



Electrical Characteristics of the Elbow Fuses						
Voltage Class System (kV)	Nominal Fuse Voltage Rating (kV)	Nominal Fuse Current Rating (A)	I^2t (A^2s)		Peaking Capacity (kA)	Peak arc voltage (kV)
			Pre-arc I^2t	Clearing I^2t		
35	23	10	400	1116	50	60
		16	1000	2555	50	60
		20	1680	4380	50	60
		25	2500	6225	50	60
		30	5390	13800	50	60
		40	6240	16856	50	60
		50	10000	24900	50	60
		60	14500	36900	50	60



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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-LIC200

RECEPTÁCULO ISOLANTE BLINDADO - RIB - 35kV-200A

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APPLICATION

The Chardon Protective Cap is an accessory product to other 35 kV, 200A products with loadbreak interfaces (bushing inserts, loadbreak junctions, feed thru inserts, etc.). It is designed to physically seal and electrically insulate loadbreak bushing interfaces. When installed on a loadbreak bushing interface, and properly grounded using the attached drain wire, the Loadbreak Protective Cap provides a submersible, fully shielded insulated cap for energized bushings.

The Loadbreak Protective Cap can be used for temporary or permanent applications.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

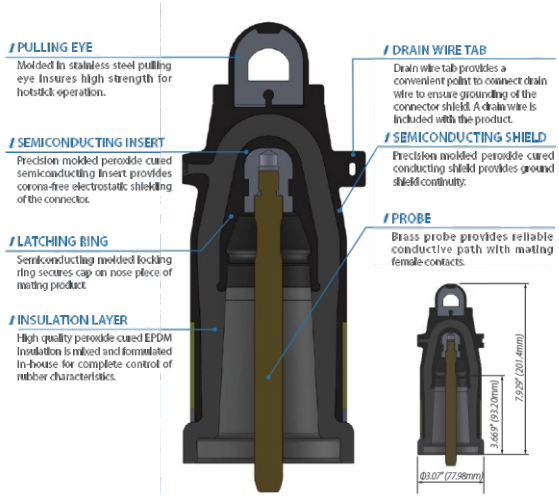
- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

• 35LIC200-112519-REV02

DETAILED COMPOSITION OF THE CHARDON LOADBREAK PROTECTIVE CAP



ORDERING INFORMATION

35 kV, 200A Loadbreak Protective Cap	35-LIC200

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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-LJ200

BARRAMENTO DE DERIVAÇÃO 35kV-200A

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APPLICATION

The Chardon 200 A, 35 kV Class Loadbreak Junction provides two, three or four 21.1/36.6 kV loadbreak interfaces that are internally bused together and meet all requirements of IEEE Standard 386™ — Separable Insulated Connector Systems. Loadbreak Junctions are used in pad-mounted apparatus, under-ground vaults, and other apparatus to sectionalize, establish loops, taps, or splices, and to facilitate apparatus changeouts.

Sectionalizing a cable run to find and isolate a cable fault is made easy when a loadbreak junction is used with 35 kV Class Loadbreak elbows and other accessories meeting the requirements of IEEE Standard 386™. The Chardon Loadbreak design incorporates an all copper current carrying path, which provides reliable and consistent performance under all conditions.

The Chardon Loadbreak Junction meets all the requirements of IEEE standard 386, and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386. When installed with mating components, the loadbreak junction provides a fully shielded connection for loadbreak applications.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

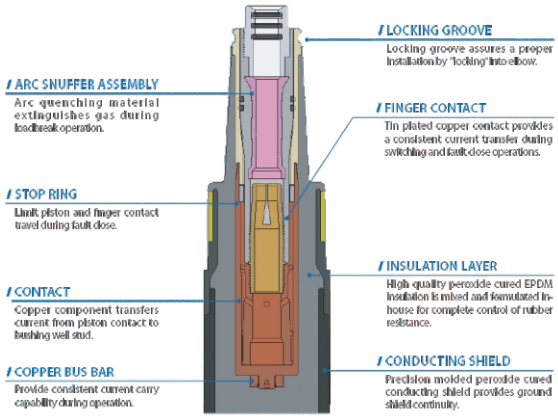
Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

• 35-LJ200-100220-REV01

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 36.6 kV
Fault Close	10,000 amps rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAIL COMPOSITION OF THE CHARDON LOADBREAK JUNCTION



ORDERING INFORMATION

Each kit contains:

- Loadbreak Junction (with mounted bracket or straps, depending on product ordered)
- Shipping Caps (not for energized operation)
- Silicone Grease
- Installation Instruction Sheet

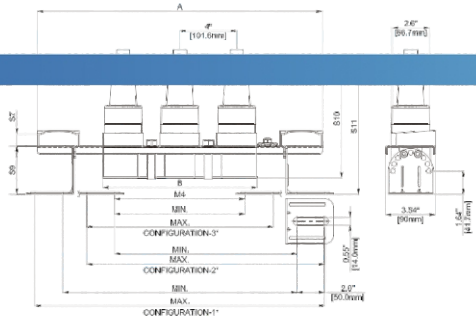
Loadbreak Junction Part Numbers

Part Description	Junction Only	Junction with bracket	Junction with U-Straps
35kV 200A Junction-2	35-LJ200F2	35-LJ200F2SS	35-LJ200F2U
35kV 200A Junction-3	35-LJ200F3	35-LJ200F3SS	35-LJ200F3U
35kV 200A Junction-4	35-LJ200F4	35-LJ200F4SS	35-LJ200F4U

Replacement Parts

Description	Catalog Number
U-Strap Kit (1 Strap)	35-LJ200U
Stainless Steel Bracket -2 way	35-LJBKTF2
Stainless Steel Bracket-3 way	35-LJBKTF3
Stainless Steel Bracket -4 way	35-LJBKTF4

Junction with Bracket Dimensional Information

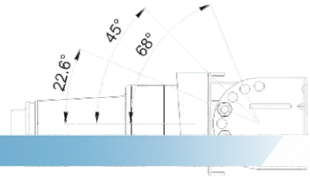


35kV	
Stacking Dimensions	
S7	0.8" (21mm)
S9	3.4" (86.5mm)
S10	8.3" (211.6mm)
S11	9.5" (240.6mm)
M4	See Dimensional

ORDERING INFORMATION

Number of Interfaces	Physical Dimensions In. (mm)		M4 Mounting Dimensions In.(mm)					
			Configuraation1		Configuraation2		Configuraation3	
	A	B	Min.	Max.	Min.	Max.	Min.	Max.
2	16.1 (410)	7.2 (184)	12.6 (320)	16.5 (420)	9.2 (233)	13.1 (333)	5.7 (146)	9.7 (246)
3	20.1 (510)	10.9 (277)	16.5 (420)	20.5 (520)	13.1 (333)	17.0 (433)	9.7 (246)	13.6 (346)
4	24.0 (610)	14.9 (379)	20.5 (520)	24.4 (620)	17.0 (433)	21.0 (533)	13.6 (346)	17.6 (446)

* Configuration 1. Both feet turned out.
Configuration 2. One foot turned out, one in.
Configuration 3. Both feet turned in.



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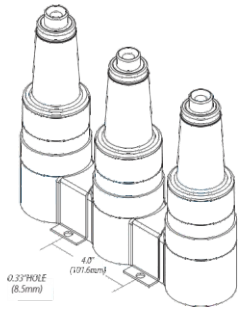
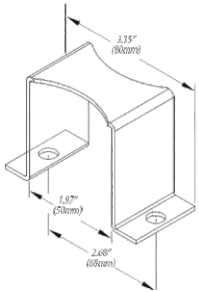
Junction with U-straps Dimensional Information





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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 35-LPFT200

PLUGUE DE BY-PASS - PBP 35kV-200A

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APPLICATION

The Chardon 200A, 35kV Class Loadbreak Portable Feed Thru is designed to be installed on a parking stand, attached to a transformer or other apparatus. Two bushing insert loadbreak interfaces can be mated with an elbow arrester, a loadbreak elbow, or an insulated cap. When mated with other products that meets IEEE Standard 386, the portable feed thru provides a fully shielded, submersible connection for loadbreak operation.

The Chardon Portable Feed Thru meets all the requirements of IEEE Standard 386, and is fully interhcangeable with competetior's products and mating products that also meet IEEE Standard 386. The indicating ring design eliminates the guesswork of loadbreak installation, it provides feedback to determine if the elbow is properly installed.

PRODUCTION TESTS

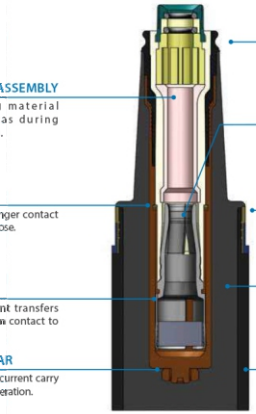
Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

DETAILED COMPOSITION OF THE CHARDON LOADBREAK PORTABLE FEED THRU



ARC SNUFFER ASSEMBLY
Arc quenching material extinguishes gas during loadbreak operation.

STOP RING
Limit piston and finger contact travel during fault close.

CONTACT
Copper component transfers current from piston contact to another surface.

COPPER BUS BAR
Provide consistent current carry capability during operation.

LOCKING GROOVE
Locking groove assures propera installation by "locking" into elbow.

FINGER CONTACT
Tin plated copper contact provides a consistent current transfer during switching and fault close operations.

INDICATOR RING
Bright yellow ring provides close indication and assures a quality connection.

INSULATION LAYER
High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber resistance.

CONDUCTING SHIELD
Precision molded peroxide cured conducting shield provides ground shield continuity.

VOLTAGE RATINGS

Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

- 35LPFT200-060723-REV01

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 36.3 kV
Fault Close	10,000 amps rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

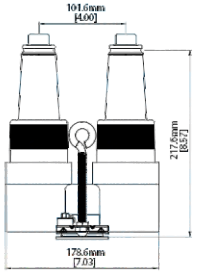
ORDERING INFORMATION

Each Portable Feed Thru kit includes the following:

- Portable Feed Thru
- Shipping Cap (not for energized operation)
- Stainless Steel Bail Assembly
- Installation Instruction Sheet

To order the 35kV Class Portable Feed Thru Kit, use the P/N below:

35kV Loadbreak Portable Feed Thru	35-LPFT200



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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-LEA/25-LEA/35-LEA

TERMINAL DESCONECTÁVEL COTOVELO PARA-RAIOS 15/25/35kV-200A

APPLICATION

The Chardon Elbow Arrester combines metal oxide varistor module in a rubber elbow to provide overvoltage system protection. The Chardon Elbow Arrester housing design meets IEEE 386 standard. It is molded with high quality peroxide-cured insulating and semi-conducting rubber and is fully interchangeable with competitors' products that also meet IEEE standard 386.

Chardon Elbow Arresters are used on underground systems in pad-mounted transformer and entry cabinets, vaults switching devices and other insulations to provide shielded deadfront arrester protection. Installing Chardon Elbow Arrester at both ends of an open point on a loop system and the end of a radial system protect equipment and extend cable life.

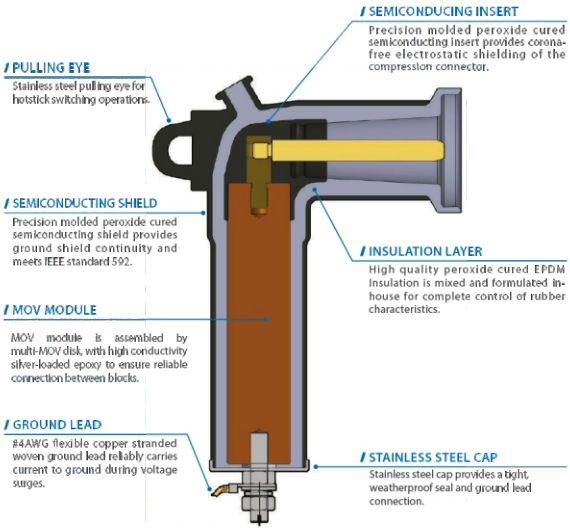
PRODUCTION TEST OF ELBOW ARRESTER

- Partial Discharge Test
- Voltage at 1mA
- Leakage Current
- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

PRODUCTION TEST OF MOV MODULE

- Partial Discharge Test
- Voltage at 1mA
- Leakage Current
- Batch High-current, Short-duration test
- Batch Thermal Stability test
- Batch Aging test
- Physical Inspection

DETAILED COMPOSITION OF THE CHARDON ELBOW ARRESTERS



• Revision date: 11-01-2023

Table 1

Electrical Characteristics							
Duty Cycle Voltage Rating (kV)	MCOV (kV)	Equivalent Front of Wave (kV Crest)	Maximum Discharge Voltage (kV Crest) 8/20µs Current Wave				
			1.5kA	3kA	5kA	10kA	20kA
3	2.55	11.0	9.0	9.7	10.4	11.4	13.0
6	5.1	22.0	18.0	19.4	20.8	22.7	26.0
9	7.65	31.7	26.0	28.0	30.0	32.8	37.4
10	8.4	33.0	27.0	29.1	31.2	34.1	38.9
12	10.2	41.5	33.9	36.6	39.2	42.9	48.9
15	12.7	51.8	42.4	45.7	49.0	53.6	61.1
18	15.3	62.2	50.9	54.9	58.8	64.3	73.4
21	17.0	66.0	54.0	58.2	62.4	68.2	77.9
24	19.5	77.0	63.0	67.9	72.8	79.6	90.8
27	22.0	87.2	71.4	76.9	82.4	90.1	103
30	24.4	97.1	79.5	85.7	91.8	100.0	115.0
36	29.0	116.0	95.3	103.0	110.0	120.0	137.0

Table 2

System Voltage (kV rms)		Commonly Applied Arrester Duty-cycle(MCOV) Voltage Rating (kV rms) on Distribution System		
Nominal Voltage	Maximum Voltage Range B	4-Wire Multigrounded Neutral Wye	3-Wire Low Impedance Grounded	Delta and 3-wire High Impedance Grounded
2.4	2.54	-	-	3(2.55)
4.16 Y/2.40	4.40 Y/2.54	3(2.55)	6(5.1)	6(5.1)
4.26	4.40	-	-	6(5.1)
4.80	5.08	-	-	6(5.1)
6.90	7.26	-	-	9(7.65)
8.32 Y/4.80	8.80 Y/5.08	6(5.1)	9(7.65)	-
12.00 Y/6.93	12.7 Y/7.33	9(7.65)	12(10.2)	-
12.47 Y/7.20	13.20 Y/7.62	9(7.65) or 10(8.4)	15 (12.7)	-
13.20 Y/7.62	13.97 Y/8.07	10(8.4)	15 (12.7)	-
13.80 Y/7.97	14.52 Y/8.388	10(8.4) and 12(10.2)	15 (12.7)	-
13.80	14.52	-	-	18(15.3)
20.76 Y/12.00	22.00 Y/12.70	15 (12.7)	-	-
22.86 Y/12.00	22.00 Y/12.70	15 (12.7)	-	
24.94 Y/14.40	26.40 Y/15.24	18 (15.3)	-	-
27.60 Y/15.935	29.255 Y/1689	21 (17.0)	-	-

PROTECTIVE CHARACTERISTICS

The protective characteristics of the elbow arrester are shown in Table 1.

GENERAL APPLICATION RECOMMENDATION

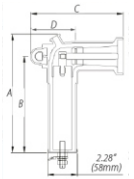
The rating of an arrester is the maximum power frequency line-to-ground voltage at which the arrester is designed to pass an operating duty-cycle test. Table 2 provides a general application guide for the selection of the proper arrester rating for a given system voltage and system grounding configuration as outlined in the IEEE Std C62.22 standard application guide.

To ensure that the arrester ratings will not be exceeded, CHARDON GROUP application engineers are available to make recommendations.

PERFORMANCE TEST CHARACTERISTICS

The Elbow Arrester consistently withstands the following design test:

- Duty Cycle Test
- High-current, Short-duration Discharge test
- Low-Current, Long-Duration Discharge test



ORDERING INFORMATION

IEEE Std 386 Standard Interface	Duty Cycle (kV)	MCOV Rating (kV)	A (mm)	B (mm)	C (mm)	D (mm)	Catalog Number
15kV	3	2.55	232	189	181	88	15-LEA3
	6	5.1	232	189	181	88	15-LEA6
	9	7.65	232	189	181	88	15-LEA9
	10	8.4	232	189	181	88	15-LEA10
	12	10.2	232	189	181	88	15-LEA12
	15	12.7	232	189	181	88	15-LEA15
	18	15.3	232	189	181	88	15-LEA18
25kV	10	8.4	232	189	195	100	25-LEA10
	12	10.2	232	189	195	100	25-LEA12
	15	12.7	232	189	195	100	25-LEA15
	18	15.3	232	189	195	100	25-LEA18
	21	17.0	308	264	195	100	25-LEA21
35kV (Small Interface)	10	8.4	232	189	195	100	35-LEA10
	18	15.3	232	189	195	100	35-LEA18
	21	17.0	308	264	195	100	35-LEA21
	24	19.5	308	264	195	100	35-LEA24
	27	22.0	308	264	195	100	35-LEA27
	30	24.4	348	306	195	100	35-LEA30
	36	29.0	348	306	195	100	35-LEA36

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REDES ELÉTRICAS SUBTERRÂNEAS

37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

CÓDIGO 15-SOB200
25-SOB200
35-SOB200

PLUGUE ISOLANTE BLINDADO PIB - 15/25/35kV-200A

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APPLICATION

The Chardon Insulated Standoff Bushing, available in 15 kV, 25 kV, and 35 kV, meets the IEEE 386 standards. Made of quality peroxide-cured EPDM rubber, it provides a reliable loadbreak interface. In the field, it aids in isolating energized cables and allows both temporary and permanent parking of loadbreak elbows aligned with IEEE 386. When mated with similarly rated products, it serves as a fully-shielded, submersible separable connector. Built with a stainless steel eyebolt and base bracket, it's suitable for mounting on the apparatus parking stand.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386:

Voltage Class	15 kV	25 kV	35 kV
Minimum Corona Voltage Level (kV rms)	11	19	26
AC 1 Minute Withstand (kV rms)	34	40	50

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

Voltage Class	15 kV	25 kV	35 kV
Max. Rating Phase to Phase (kV rms)	14.4	26.3	36.6
Max. Rating Phase to Ground (kV rms)	8.3	15.2	21.1
AC 1 Minute Withstand (kV rms)	34	40	50
DC 15 Minute Withstand (kV rms)	53	78	103
BIL and Full Wave (kV crest)	95	125	150
Minimum Corona Voltage Level (kV rms)	11	19	26

ORDERING INFORMATION

15 kV, 200A Insulated Standoff Bushing	15-SOB200
25 kV, 200A Insulated Standoff Bushing	25-SOB200
35 kV, 200A Insulated Standoff Bushing	35-SOB200

•Revision Date: 11/02/2023

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37 ANOS EXPERIÊNCIA E INOVAÇÃO CONSTANTE.

REDES ELÉTRICAS SUBTERRÂNEAS

CÓDIGO 35-LFTI

PLUGUE DE INSERÇÃO DUPLO PID - 35kV-200A

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APPLICATION

The Chardon Loadbreak Feed Thru Insert threads onto a standard 200A bushing well and provides dual loadbreak bushing interfaces. It can convert radial-feed transformers to feed thru transformers and add in-line arrester protection if needed. The torque limit ratchet feature prevents the bushing well stud from breaking during installation.
The ratchet feature allows users to rotate the feed thru insert for 360° to orient the feed thru insert in the desired position. The Chardon Loadbreak Feed Thru Insert meets all the requirements of IEEE Standard 386, and is fully interchangeable with competitor's products and mating products that also meet IEEE Standard 386.
When installed with mating components, the Feed Thru Insert provides a fully shielded and fully submersible connection for loadbreak applications.

PRODUCTION TESTS

Tests conducted in accordance with IEEE/ANSI Standard 386.

- Minimum Corona Voltage Level – 26 kV
- AC 1 Minute Withstand – 50 kV

Tests conducted in accordance with Chardon manufacturing process requirements:

- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

VOLTAGE RATINGS

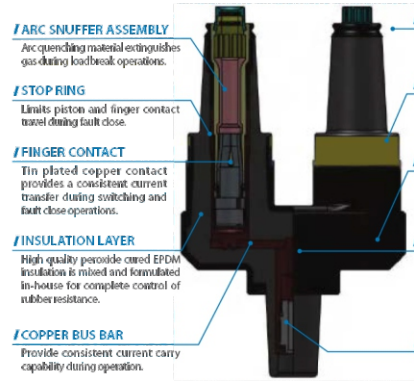
Voltage Class	35 kV
Max. Rating Phase to Phase	36.6 kV
Max. Rating Phase to Ground	21.1 kV
AC 1 Minute Withstand	50 kV
DC 15 Minute Withstand	103 kV
BIL and Full Wave Crest	150 kV
Minimum Corona Voltage Level	26 kV

* 35-LFTI200-060223-REV02

CURRENT RATINGS

Description	Test Parameters
Continuous	200 amps rms
Switching	10 operations at 200 amps rms at 36.6 kV
Fault Close	10,000 amps rms symmetrical at 36.6 kV for 0.17 s after 10 consecutive successful switching operations
Short Time	• 10,000 amps rms symmetrical for 0.17 s • 3,500 amps rms symmetrical for 3.0 s

DETAILED COMPOSITION OF THE CHARDON LOADBREAK FEED THRU INSERT



ARC SNUFFER ASSEMBLY
Arc quenching material extinguishes gas during loadbreak operations.

STOP RING
Limits piston and finger contact travel during fault close.

FINGER CONTACT
Tin plated copper contact provides a consistent current transfer during switching and fault close operations.

INSULATION LAYER
High quality peroxide cured EPDM insulation is mixed and formulated in-house for complete control of rubber resistance.

COPPER BUS BAR
Provide consistent current carry capability during operation.

LOCKING GROOVE
Locking groove assures proper installation by "locking" into elbow.

INDICATOR RING
Bright yellow ring provides close indication and assures a quality connection.

CONDUCTING SHIELD
Precision molded peroxide cured conducting shield provides ground shield continuity.

TORQUE-LIMITING RATCHET
The ratchet feature allows users to rotate the feedthru insert for 360° to orient the feedthru insert in the desired position and protect the stud from damaging.

3/8- 16 UNC Threads

ORDERING INFORMATION

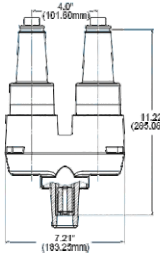
35kV,200A Loadbreak Feed Thru Insert	35-LFTI

Each kit contains:

- Rotatable Feed Thru Insert
- Shipping Cap (not for energized operation)
- Stainless Steel Bail Assembly
- Silicone Lubricant
- Installation Instruction Sheet

Replacement Part

Bail Assembly	35-BAIL-LFTI



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