

# 15 kV Class Fused Loadbreak Elbow Connector with Interchangeable Fuse Capability



## 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

• 15LFE200-082318-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 14.4 kV for 0.17 s after 10 consecutive successful switching operations

## DETAILED COMPOSITION OF THE CHARDON 15KV LOADBREAK FUSE ELBOW

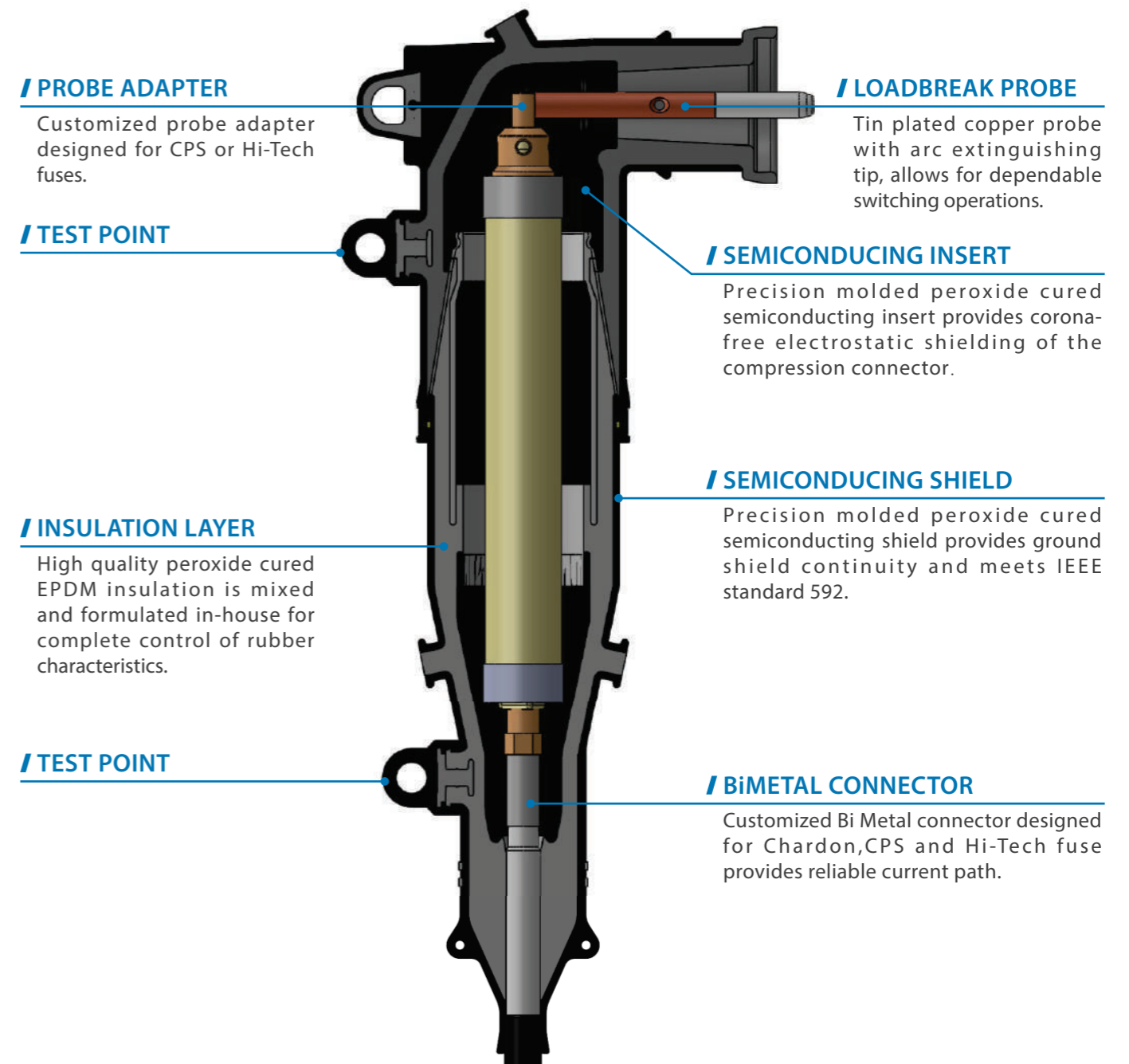


Fig 1: Detail Chardon Fuse Elbow Composition (CPS fuse installed)

## DETAILED COMPOSITION OF THE CHARDON 15 KV LOADBREAK FUSE ELBOW

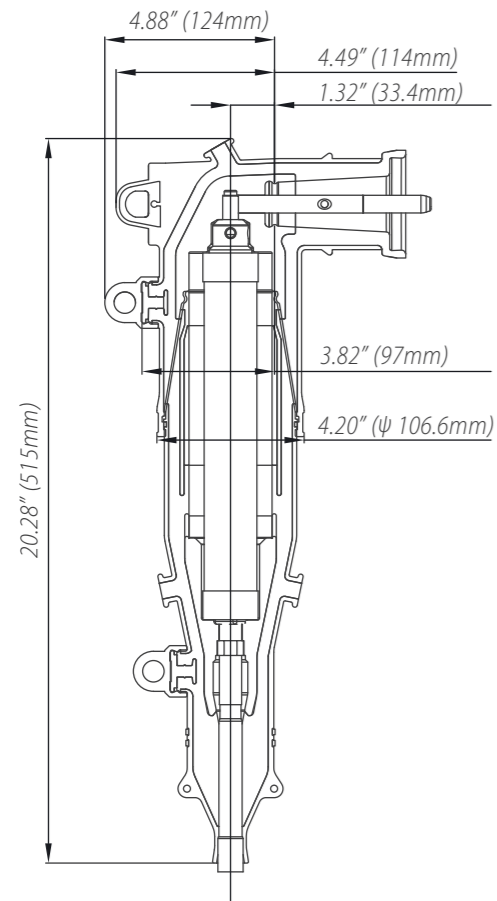


Fig 2: Dimension Info When CPS Fuse or Chardon Fuse Installed.

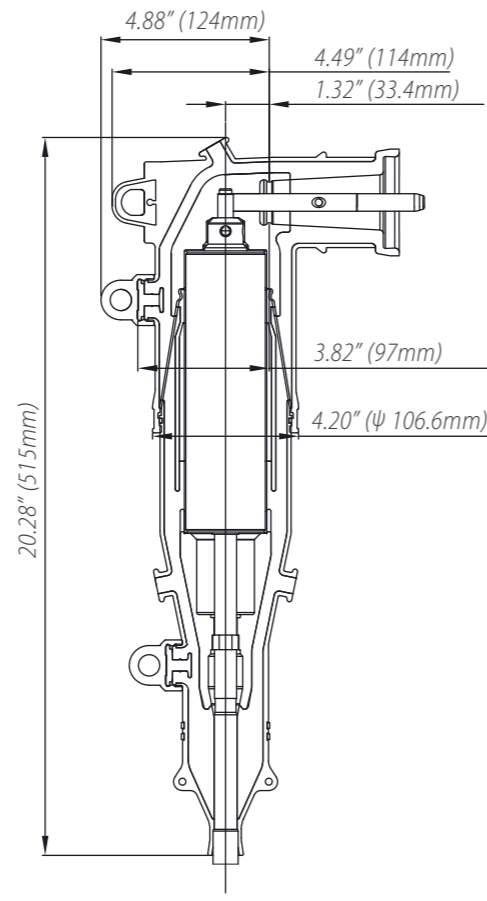


Fig 3: Dimension Info When Hi-Tech Fuse Installed.

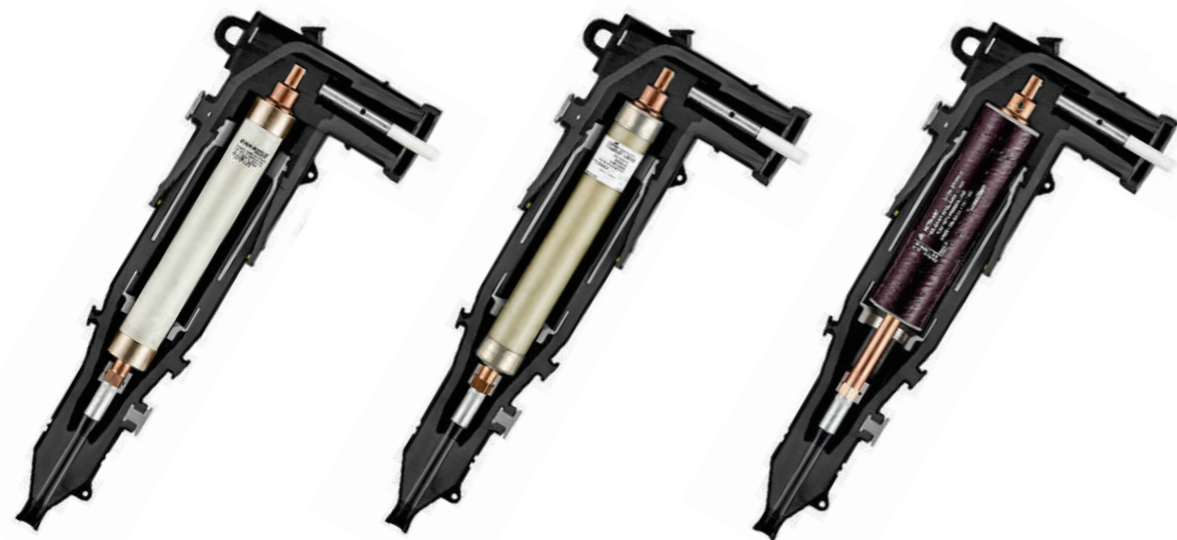


Fig 4: Chardon Fuse Elbow assemble with major fuses manufacturers.

## 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
<b>A</b>	0.610 - 0.823	15.50 - 20.90
<b>B</b>	0.720 - 0.985	18.29 - 25.02
<b>C</b>	0.920 - 1.185	23.37 - 30.10
<b>D</b>	1.040 - 1.305	26.42 - 33.15

### Conductor Code Table

CONDUCTOR CODE	Concentric or Compressed		Compact or Solid	
	AWG or kcmil	mm <sup>2</sup>	AWG or kcmil	mm <sup>2</sup>
<b>01</b>	#6	-	#4	-
<b>02</b>	#4	-	#3	25
<b>03</b>	#3	25	#2	35
<b>04</b>	#2	35	#1	-
<b>05</b>	#1	-	1/0	50
<b>06</b>	1/0	50	2/0	70
<b>07</b>	2/0	70	3/0	-
<b>08</b>	3/0	-	4/0	95
<b>09</b>	4/0	95	250	120
<b>10</b>	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 3/0 compression connector, order the following number : 15-LFE200T-B-HE08 .

## ORDERING INFORMATION

## CHARDON FUSES

### Conductor Code Table

Compression Lug Kit	Part Number
Hi-Tech Fuse Compression Lug	LFEK-HE + Conductor Code
Cooper Fuse Compression Lug	LFEK-CP + Conductor Code
Chardon Fuse Compression Lug	LFEK-CH + Conductor Code

Note:  
Elastimold, Hi-Tech, Easton 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 I <sup>2</sup> t (A <sup>2</sup> s)	Maximum Total I <sup>2</sup> t (A <sup>2</sup> s)	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	63	58	51
		65	CHFEF083065	19600	49700	16	89	84	80
80	CHFEF083080	26250	66300	16	107	101	96		

Table 2: 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 election is based on the continuous current rating of the fuses at 40°C. Fuses in listed Column A allow between 1.4 and 2 times the rated current of the transformer; those listed in Column B, allow 2 to 3 times the rated current of the transformer.  
(2) Recommended fuses meet in rush 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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