

# CHARDON

GROUP

## PRODUCT GUIDE



**EBM** **EBERHARDT-MARTIN**  
Innovative Cost Effective T&D Solutions

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The Chardon Group is a leading ISO 9001 manufacturer of medium voltage power products. In 2018, Chardon will celebrate 24 years of providing high quality, low cost power products for utility systems worldwide.

Chardon is the third largest manufacturer of IEEE/ANSI cable accessories in the world. We are also a growing force in the IEC cable accessory market, as we continue to develop new products for that market. We are one of the few cable accessory manufacturers that compound our own EPDM formulations. All of the formulations in use today were developed by Chardon. In addition to using these formulations for our own products, all of our OEM customers have approved Chardon developed compounds for use in their products. In addition to EPDM, we also have the capability to mold products in ESP (EPDM – Silicone hybrid), Solid Silicone, and Liquid Silicone materials.

In 2009 we redesigned our line of ANSI/IEEE 600 amp cable accessories from 15 kV through 35 kV. In 2010 we began the redesign of our line of ANSI/IEEE 200 amp loadbreak cable accessories. In 2011 and 2012 we achieved full interchangeability with Elastimold, Cooper and TE (Tyco) products at 15 kV and 25 kV. All of our switching and fault close testing was conducted at Powertech Labs, Inc., in Vancouver, Canada. As far as we know, Chardon is the only “non-US” manufacturer to achieve full interchangeability with the major competitors in this market. Chardon is also the only “non-US” based manufacturer to have its products on virtually every utility distribution system in the USA (through our OEM customers). In 2012 Chardon began development of IEC cable accessory products. We see that line of products as a natural progression as we grow our business.

In 2014, we started the development of our new switchgear product line. We have assembled some of the best technical talent in the industry to drive this product line. Our first product – a 15 kV, 3 phase vacuum recloser – completed certification testing at KERI labs in South Korea. Certification and introduction of 27 kV and 38 kV reclosers was com-





pleted in 2015.

Today, Chardon has facilities in Taiwan, China, South Korea, Mexico, and Brazil. We may not be large as some of our competitors, but we pride ourselves on being able to offer high quality products, and a very competitive price, with the shortest lead times in the industry. As the acknowledged low-cost manufacturer of high quality, fully interchangeable cable accessory products, we are aggressively moving to expand our global reach. We currently manufacture IEEE/ANSI and IEC cable accessory products for several major international companies, serving markets around the globe.

Today's Chardon is stronger than ever! Chardon is continually upgrading and improving our facilities. We are committed to meeting – and exceeding – the requirements of our customers! Chardon welcomes inquiries from around the world. Our best sales tool is having you visit our facilities and see our capabilities first hand.

Why not see what Chardon can do for you?



# CKMR Series Recloser

By Chardon group

Chardon Korea is proud to offer the CKMR recloser that combines cutting-edge technology, competitive pricing and outstanding customer service. CKMR three- phase recloser provides reliable, economical overcurrent protection plus the benefits of state-of- the-art design optimized for automation, advanced metering and monitoring & remote control for distribution circuits rated through 38kV, 800A continuous current, 16kA symmetrical interrupting. Its single-tank construction allows a more compact and lightweight design and simplifies installation time on power poles or in substations.

## Applications:

- Distribution Recloser
- Substation Circuit breaker
- Distribution & Substation Automation
- Distributed Automatic Transfer
- Automatic Network Reconfiguration

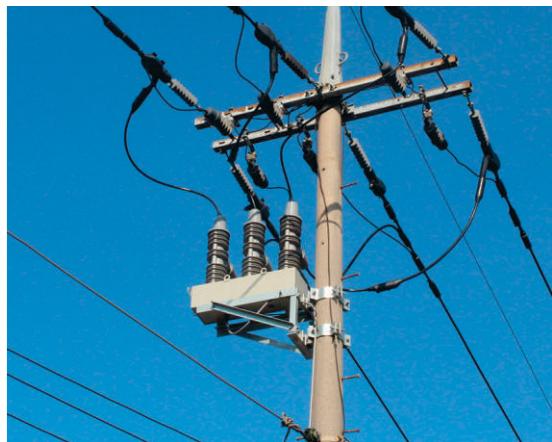
CKMR Recloser comes with two different control options: FTU-R200 and SEL- 651R. The control cabinet of the FTU-R200 controller has an embedded RTU which can be interfaced to your SC DA system over different communications protocols: DNP3, Modbus, IEC 61850, IEC-101, IEC-104. No additional RTU, modem, power supplies, batteries or enclosures are necessary.

## Key Features:

- Ø Designed, tested and built per IEEE C37.60 and IEC 62271-111 standards.
- Ø Voltage is measured on all six (6) bushings using encapsulated resistive voltage sensors.
- Ø Current is measured on all three (3) phases with embedded 1,000:1 ratio CTs with low current detection capability. Current Setting Range: Phase Fault Pickup (10Amp 1,600Amp), Ground (Earth) Fault Pickup (2Amp 1,600Amp).
- Ø Magnetic actuator with bi-stable mechanism, no power required to hold contacts in open or closed position.
- Ø RS232 ports, RS485, 10/100 Base-T Ethernet and Fiber Optic ports are also available for SCADA communication.

## Upon request, Chardon Korea will deliver:


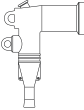

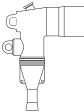
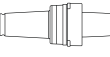
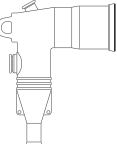
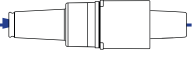
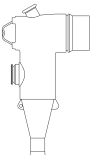
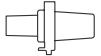
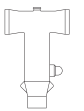

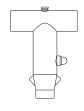
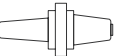
- Factory based training and on-site field training available designed for participants to become proficient in installation, commissioning and operation.
- Installation-Ready Assembly Solutions with all accessories such as: wildlife protectors, lighting arresters, PT, User ID Markers preassembled prior to shipment to ease the installation process





# Standard Interfaces for Separable Connectors, Components and Equipment Bushings

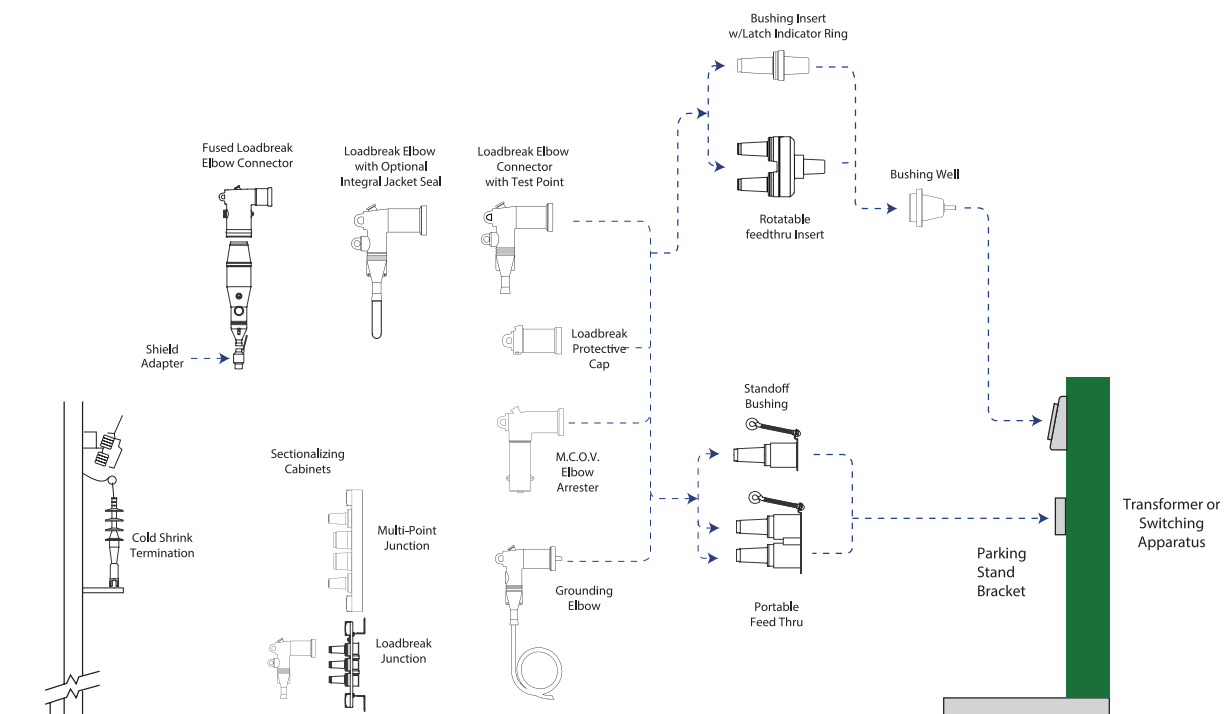
IEEE Standards 386 defines the specific interface dimensions that 200 Amp and 600 Series elbows, inserts, junctions, equipment bushings and any mating components must conform to ensure interchangeability. The table below provides information concerning the types of interfaces for various applications and is useful to ensure proper matching of components.

BRUSHING INTERFACE		VOLTAGE CLASS	INTERFACE DESCRIPTION
 CH200BW		15kV, 25kV and 35kV	200-Amp Bushing Well Interface 8.3kV, 15.2kV and, 21.1kV
 15-LE200T	 15-LBI200	15kV	200-Amp Loadbreak 8.3kV and 8.3kV/14.4kV
 25-LE200T	 25-LBI200	25kV	200-Amp Loadbreak 15.2kV and 15.2kV/26.3kV
 35-LE200T	 35-LBI200	35kV	200-Amp Loadbreak 21.1kV and 21.1kV/36.3kV
 25-DE200	 25-DBI200	15kV and 25kV	200-Amp Deadbreak 8.3kV and 15.2kV
 15/25-TB600T	 15/25-AB600	15kV and 25kV	600-Amp Deadbreak 8.3kV and 15.2kV
 35-TB600T	 35-AB600	35kV	600-Amp Deadbreak 21.1kV



# 200A Loadbreak Connectors

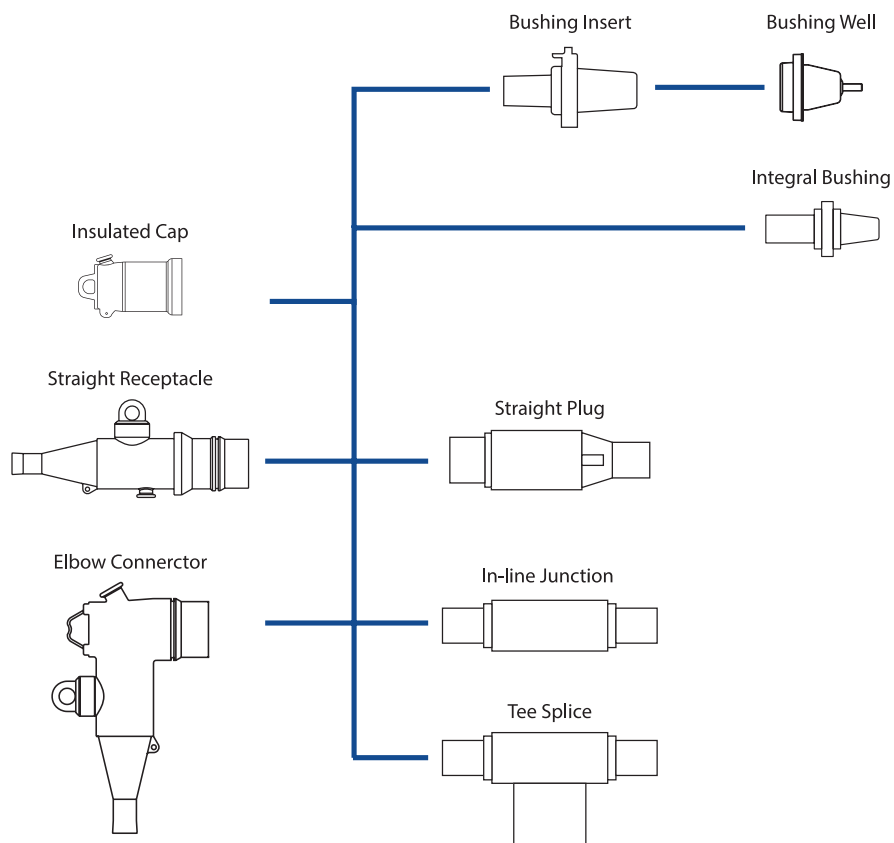
Chardon 200 Amp Loadbreak Connectors and Accessories provide a safe, efficient method to connect and disconnect cable to equipment on utility distribution systems. Loadbreak connectors are ideal for energized operations using standard hotstick tools. Chardon Loadbreak Connectors are submersible, fully shielded, plug-in terminations, used for connecting underground cable to transformers, switchgear, sectionalizing cabinets and junctions. Chardon loadbreak connectors are molded using high-quality, peroxide-cured EPDM insulation for extended life and reliable field performance. All Chardon 200 Amp Loadbreak Connectors meet the electrical, mechanical, and dimensional requirements of IEEE Standard 386-2006™ standard, and are fully interchangeable with other major manufacturers currently complying with the IEEE Standard 386™ standard.





# 200A Deadbreak Connectors

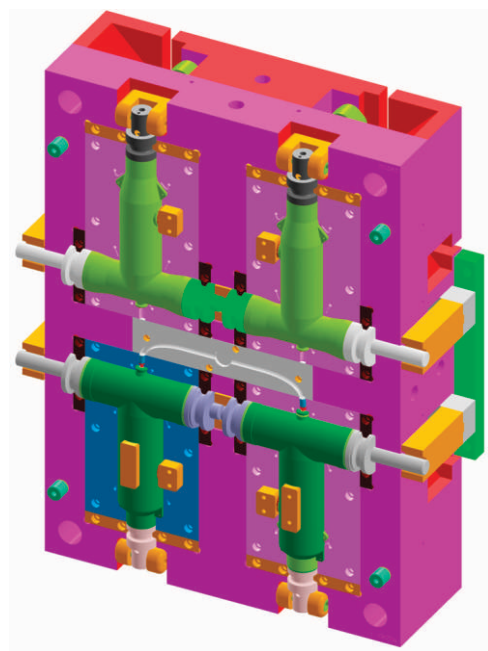
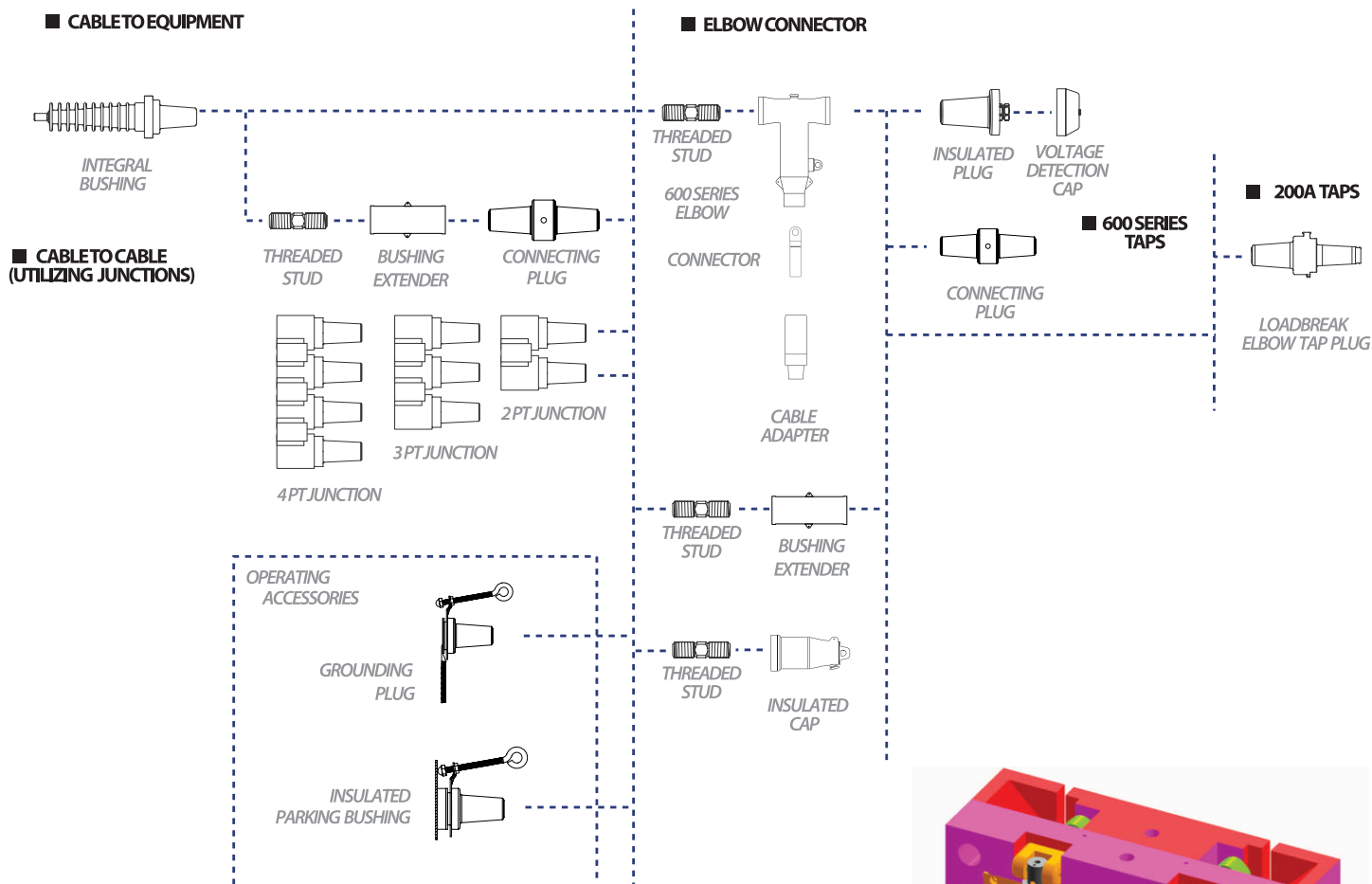
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# 600A/900A Deadbreak Connectors

Chardon 600 Amp/900 Amp Deadbreak Connectors are used for deadfront underground installations on 600 Amp/900 Amp primary feeders and network circuits. They provide a completely shielded, deadfront, fully submersible cable connection for medium voltage apparatus – such as transformers, switchgear, etc., and can also be used to make splices, junctions, taps and terminations for main underground, distribution feeders. De-energized connectors can easily be connected and disconnected using standard hand tools in accordance with Chardon installation instructions and standard safety procedures. A 900 Amp continuous rating can be achieved when used with a bi-metal or copper compression connector and all copper mating components including apparatus bushings or junctions. All Chardon 600 Amp Deadbreak Connectors meet the electrical, mechanical, and dimensional requirements of IEEE Standard 386-2006™ standard, and are fully interchangeable with other major manufacturers currently complying with the IEEE Standard 386™ standard.





# Fused Elbows/Fuses

Chardon f200 Amp Loadbreak Fused Elbows combine the advantages of a full range current limiting fuse with the convenience of hot stick operable, loadbreak elbow switching. The Fused Loadbreak Elbow provides a fast, convenient and cost effective way to add fused protection to a distribution system without adding a new piece of switchgear, or replacing existing sectionalizing equipment. Chardon Load-

break Fused Elbows are molded using high-quality, peroxide-cured EPDM insulation for extended life and reliable field performance. All Chardon 200 Amp Loadbreak Fused Elbows meet the electrical, mechanical, and dimensional requirements of IEEE Standard 386-2006™ standard, and are fully interchangeable with other major manufacturers currently complying with the IEEE Standard 386™ standard.



***Chardon 200 Amp Loadbreak Fused Elbows are the most versatile fused elbows on the market. With competitor's products you must use their own fuse. With Chardon you have a choice. You can use the Chardon fuse, or fuses from our competitors! Nobody can compete with Chardon when it comes to offering you the best value in the industry!***



This application shows a Chardon MultiPoint Junction with Chardon Fused Elbows next to a competitor's Fused Elbow.



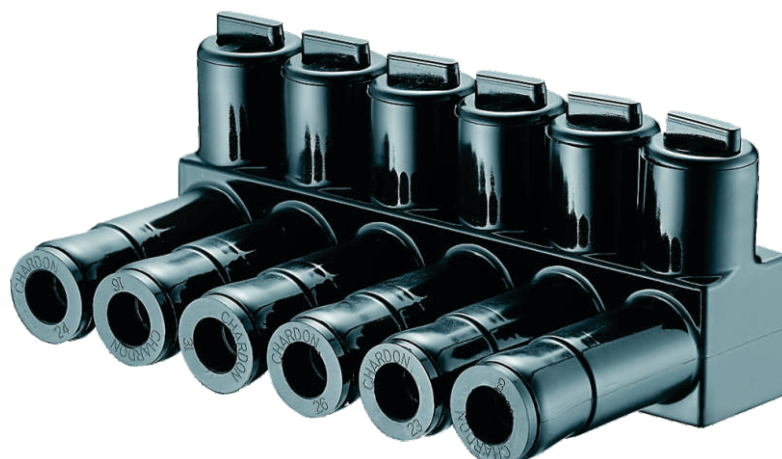
## Multi-Point Junctions

Chardon 200 Amp/600 Amp Multi Point Junctions are available in 2, 3, 4, 5, or 6 point configurations, with 15 kV, 25 kV, and 35 kV ratings. Chardon Multi Point Junctions give the user maximum flexibility, allowing any combination of 200 Amp bushing well and 600 Amp bushing interface. The junction's design can eliminate, or minimize, the requirements for 200 Amp elbows and 600 Amp T-bodies. The EPDM molded body, with a stainless-steel bracket, is fully shielded, deadfront, and submersible. Chardon Multi Point Junctions provide a convenient, compact design for connecting, looping, and taping of 600 Amp and 200 Amp T-bodies, elbows, and other accessories at a common location where flexibility and operability are important. The products are ideally suited for subsurface, padmount, indoor and outdoor vault applications.



## Low Voltage Connectors

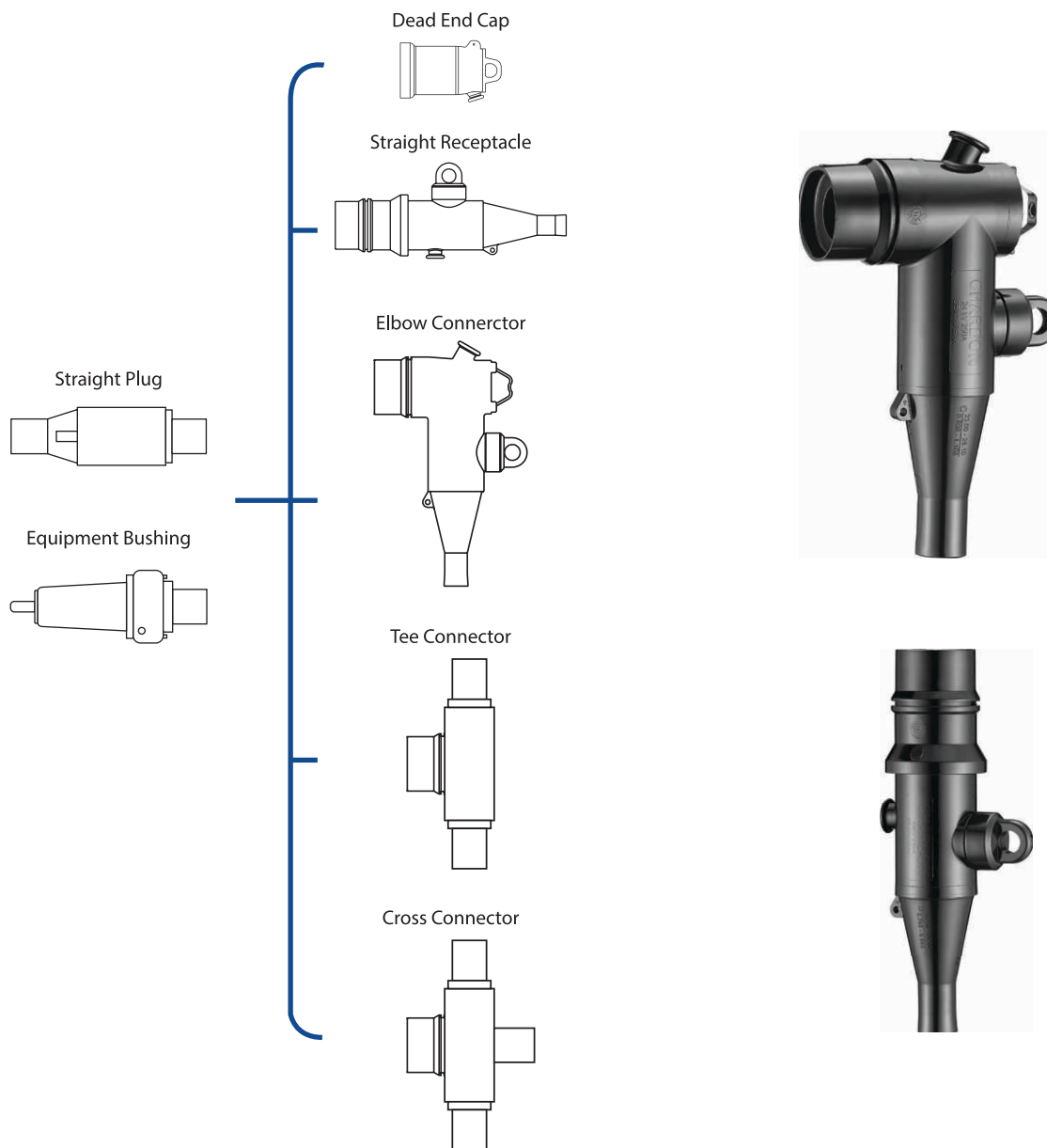
Chardon Submersible Low Voltage Connectors meet the requirements of IEEE/ANSI C119.1 and C119.4 standards. The design incorporates an aluminum alloy buss bar for reliable conductivity and strength. The adaptable cable sleeve design allows application on a wide range of conductor sizes. High quality EPDM insulation rubber provides excellent resistance to UV, Ozone, Acids, and Alkalis.





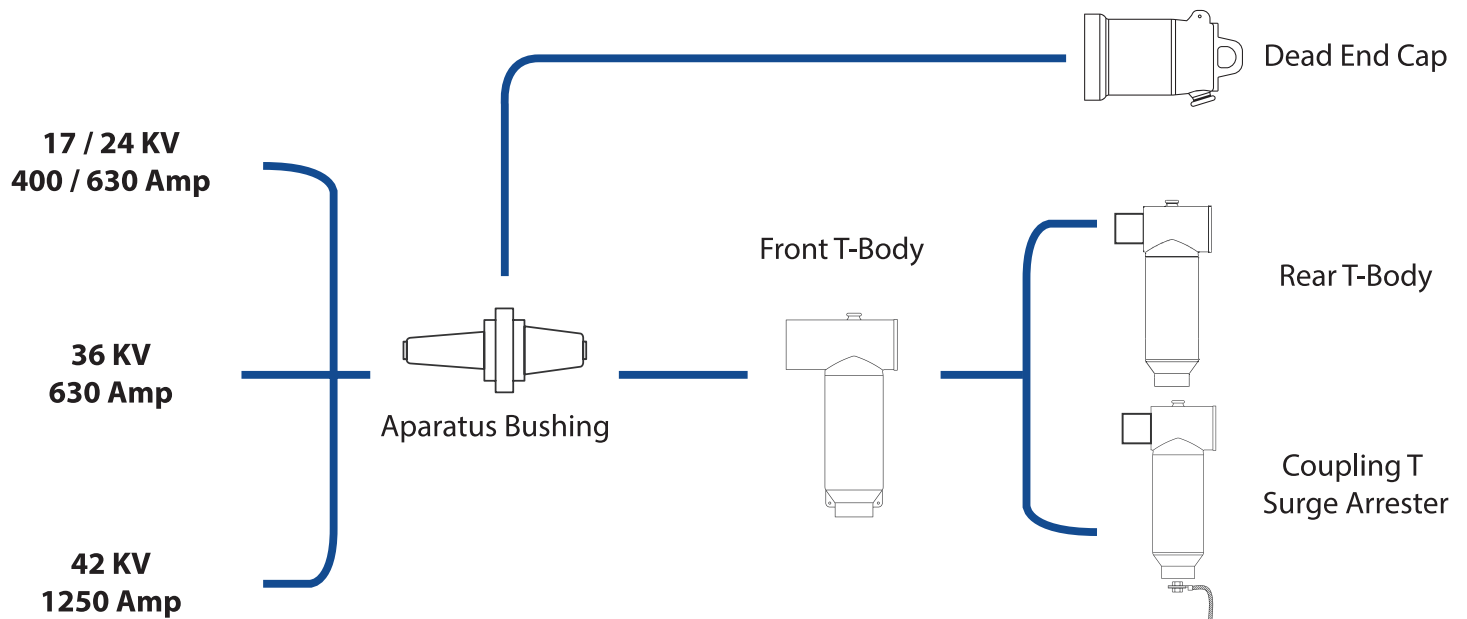
# IEC Interface “A” Deadbreak Connectors

Chardon 17.5 kV/24 kV 250 Amp Deadbreak Connectors and Accessories provide a safe, efficient method to connect and disconnect cable to equipment on utility distribution systems. Chardon Deadbreak Connectors are submersible, fully shielded, plug-in terminations, used for connecting underground cable to transformers, switchgear, sectionalizing cabinets and junctions. Chardon Deadbreak Connectors are molded using high-quality, peroxide-cured EPDM insulation for extended life and reliable field performance. All Chardon 250 Amp Deadbreak Connectors meet the electrical, mechanical, and dimensional requirements of the applicable IEC/CENELEC standard(s), and are fully interchangeable with other major manufacturers currently complying with the same IEC/ CENELEC standard(s),



# IEC Interface “C” Deadbreak Connectors

Chardon Interface “C” Deadbreak Connectors and Accessories provide a safe, efficient method to connect and disconnect cable to equipment on utility distribution systems. Chardon Deadbreak Connectors range from 17.5 kV/24 kV to 42 kV, with current ratings from 400 Amps to 1,250 Amps. All Chardon products are submersible, fully shielded, plug-in terminations, used for connecting underground cable to transformers, switchgear, sectionalizing cabinets and junctions. Chardon Deadbreak Connectors are molded using high-quality, peroxide-cured EPDM insulation for extended life and reliable field performance. All Chardon Deadbreak Connectors meet the electrical, mechanical, and dimensional requirements of the applicable IEC/CENELEC standard(s), and are fully interchangeable with other major manufacturers currently complying with the same IEC/CENELEC standard(s),





# Connectors

Chardon offers a variety of compression and shear bolt connectors to meet your requirements. Compression connectors are offered in aluminum (600 Amp/ 630 Amp only), bi-metal, and (tin plated) copper.

## 200 Amp/ 250 Amp Compression Connectors

Compression connectors are available in all copper or bi-metal designs. All connectors are designed for use with either aluminum or copper conductors.



## 600 Amp/ 630 Amp Compression Connectors

Compression connectors are available in all aluminum, all copper (for 900A applications), or bi-metal designs. All are available with threaded and unthreaded holes. All connectors are designed for use with either aluminum or copper conductors.



## 600 Amp/ 630 Amp Shear Bolt Connectors

Chardon Shear Bolt Connectors are designed for use in low and medium voltage connections. The only tool required is a standard torque ratchet wrench with a hexagonal socket. No crimping tools are required. The connector is manufactured from high conductivity aluminum for heavy duty application. The cable entrance is chamfered inside to provide easy insertion of cable. The shear bolts used in the connector ensure the correct torque and optimal contact force, and ensure a reliable current path.



# Cold Shrink Products

## Terminations

Chardon Cold Shrink Terminations offer easy installation and reliable performance when terminating indoor and outdoor medium voltage cable. Made from high quality, UV resistant, silicone rubber, the Chardon Cold Shrink Terminations offer a combination of durability and high performance in the field.

Chardon Cold Shrink Terminations include a stress controlling rubber housing, preassembled on a plastic “hold out” tube. As the plastic hold out is removed, the stress relief housing shrinks onto the cable. Chardon terminations are easy to install, and have a wide application range. No tools, or heat sources, are required. Chardon terminations are designed to last the entire life of the cable.

Chardon Cold Shrink Terminations are designed to withstand voltages up to 35 kV. They are tested according to IEEE/ANSI 48 standard.



## Joints

Chardon Cold Shrinkable Jacket Seals are designed to seal the end of XLP, EPR or similar solid dielectric insulated power cables. The Cold Shrinkable Jacket Seal can be used when installing elbows or other cable accessories. The spiral tube design allows the users to remove the inner tube easily during installation. The rubber tube provides sealing and protection on jacketed concentric neutral cable. No additional tools are required for installation..



## Bayonet Fuse Holders

Chardon Bayonet Fuse Holders are used to protect transformers, switchgear, and distribution systems. They are designed for use in oil filled (or approved equivalents) single phase and three phase padmount transformers, switchgear, and submersible transformers. The assemblies combine the ease of hotstick operation with the safety of deadfront construction.



## Bayonet Isolation Links

The Chardon Isolation Link is used in series with bayonet type expulsion fuses to provide extra protection during re-fusing operations. Isolation links are not fuses and do not have an interrupting rating. During a low impedance transformer failure, the isolation link will melt so that the opened primary circuit of a failed transformer cannot be re-energized by the utility line crew. Chardon isolation links are fully interchangeable with links of other manufacturers.



## 600/630 Amp Apparatus Bushings

Chardon offers a variety of epoxy bushing for IEEE/ANSI and IEC applications. Chardon apparatus bushings can be installed in switchgear, or other equipment, and used in conjunction with T-body connectors and arresters. The products are fully insulated and submersible.





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