POLYCAB

CORPORATE OFFICE

POLYCAB INDIA LTD.
21st Floor, The Ruby, 29, Tulsi Pipe Rd., Dadar West, Mumbai, Maharastra 400028

Ph.: +91 22 24327070-74
Fax: +91-22-2432 7075, Toll free: 1800 267 0008
Email: enquiry@polycab.com

www.polycab.com

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facebook.com/polycabind | twitter.com/polycabIndia | linkedin.com/company/polycab | youtube.com/@PolycabInd

POLYCAB

MEDIUM VOLTAGE COVERED **CONDUCTOR**

POLYCAB MVCC – Power Supply with Protection

About Us

Polycab India Limited is one of the leading companies in the electrical industry and the largest manufacturer of wires and cables in India. Along with a strong presence in India, we also serve customers across the world.

Our vision is to always think ahead and prepare for the future. Guided by our tagline, "Ideas. Connected." we create innovative products that make life easier and connect people to a brighter tomorrow.

Our brand promise, "Connecting all to a brighter future," is inspired by the rising sun, which brings hope, energy, and new possibilities. Just like the morning sun lights up the world, we believe our products and services add value and brightness to the lives of our customers.

As a market leader, Polycab offers a wide range of products, including fans, switches, water heaters, switchgears, luminaires for homes, offices, and industries, as well as solar panels, conduits and accessories, and modern home automation solutions.

Company Profile

India's No. 1 in Wires & Cables

Polycab India Limited is the country's largest manufacturer of Wires and Cables, with a growing presence in Fast Moving Electrical Goods (FMEG). Our wide product range caters to residential, commercial, industrial, and infrastructure needs. With a strong distribution network and trusted partnerships, Polycab has become a preferred choice for millions of customers across India and abroad.

Strong Global Presence

Polycab has built a solid reputation not only in India but across international markets. Today, our products reach customers in over 70 countries, delivering world-class quality and innovative solutions wherever electricity powers progress.

Trusted Quality Standards

Polycab products and manufacturing processes meet globally recognized quality standards. Our facilities are certified with IS 9001, ISO 14001, and OHSAS 18001, while our central laboratory is accredited by NABL and UL. Products also comply with BIS, BASEC, UL, and IEC standards, ensuring world-class reliability.

Innovation for the Future

We continuously invest in research, technology, and infrastructure to deliver future-ready solutions. From energy cables to smart home automation systems, Polycab focuses on anticipating customer needs and driving innovation in the electrical industry.

Commitment to Excellence

Quality lies at the core of Polycab's operations. Our advanced manufacturing facilities, robust testing processes, and certified systems ensure that every product meets the highest safety and performance benchmarks. This commitment reflects our mission of **"Connecting all to a brighter future."**

APPLICABLE STANDARDS:
Generally, Conf. to BS EN : 50397-1, BSEN : 50182, IS 398-2, IS 398 Pt-4, IEC 61089, IEC 61232, SS 4240813, SS 4240814.

AVAILABLE VOLTAGE:
11 kV / 22 kV / 33 kV

Medium Voltage Covered Conductor (MVCC)

A Medium Voltage Covered Conductor (MVCC) is an overhead conductor that has a layer of insulating material, usually made of cross-linked polyethylene (XLPE) or similar compounds, covering the aluminum conductor. Unlike bare conductors, MVCC provides extra protection against short circuits, tree contacts, and environmental damages.

Key Benefits of MVCC

- Anti Tracking
- Economical
- Improved Safety
- Corrosion Resistance
- > 10000 KM Supply
- Protection Against Vandalism

Application of MVCC

The Medium Voltage Covered Conductor (MVCC) is emerging as one of the best replacements for Overhead Bare Conductors (ACSR) and Aerial Bunched Cables in power transmission and distribution systems in several parts of the world. The use of covered conductors, which are similar to SAC (Space Aerial Bunch Cables), can be seen in countries like South Korea, Japan, Iran, Myanmar, and certain regions of Australia. So far, it has had a very successful journey.

1. **Rural & Forested Areas**
   - Prevents faults and outages from tree or branch contact.
   - Ideal for forested and green zones.

2. **Critical Environmental Stress Regions**
   - Suitable for regions with high pollution, moisture, or corrosive elements.
   - Improves system longevity and reliability.

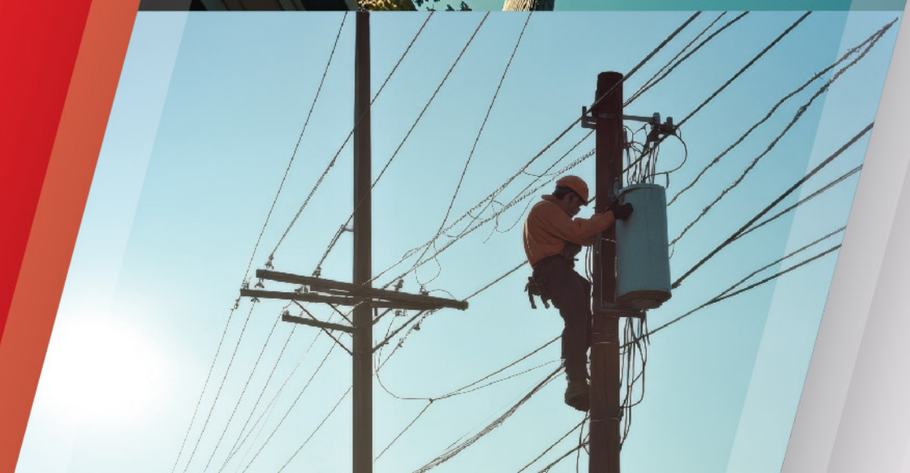
3. **Overhead Electrical Power Distribution Systems**
   - Used to deliver medium-voltage power from substations to end users.
   - Insulation protects against moisture, pollutants, and electrical faults.

4. **Upgrading Existing Lines**
   - Easy retrofit with minimal changes and cost.

5. **Adverse Weather Conditions**
   - Performs well in storms, rain, and snow.

6. **Wildlife Protection**
   - Prevents electrocution of birds and animals.

7. **Temporary & Emergency Use**
   - Quick, safe deployment for temporary setups.



8. **Urban and Suburban Regions**
   - Enhances aesthetics and safety.
   - Reduces risk of accidental contact with live parts.

9. **Coastal and Harsh Weather Zones**
   - Protects against salt, humidity, and extreme weather.
   - Reduces corrosion and environmental degradation.

10. **Altitude Based Installations**
    - Withstands snow, ice, and harsh weather in mountainous regions.
    - Ensures consistent performance in elevated terrains.

11. **Renewable Energy Development Programs**
    - Used in solar and wind farms for internal and grid connections.
    - Ensures safe and efficient medium-voltage transmission.

12. **Rail Network Electrification**
    - Powers trains in electrified railway systems.
    - Reduces electrical interference and enhances operational safety.

13. **Industrial Infrastructure**
    - Distributes power within industrial zones.
    - Insulation resists damage from chemicals and harsh conditions.

Difficulties Faced While Using Bare **Conductors**

- Power loss occurs due to a large number of joints.
- Frequent outages happen because of temporary tree contact.
- Maintaining safe phase-to-phase clearances is difficult.
- Conductor clashing often leads to tripping.
- A larger Right of Way (ROW) is required.
- The electromagnetic field affects electronic surveillance systems.
- There is also a high risk of electrocution to birds, animals, and humans.

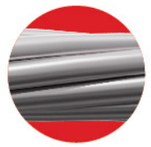
Solution is MVCC

Covered conductors consist of a conductor with insulation or a protective covering made of cross-linked polyethylene (XLPE). This insulation or covering serves the critical purpose of shielding the conductor, thereby reducing the risk of accidental contact with other covered conductors or with grounded parts such as tree branches.

In comparison to fully insulated conductors, this covering is thinner, but it is sufficient to temporarily withstand phase-to-earth voltage.

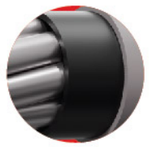
MVCC Construction Overview

Common Layers in MVCC:



Conductor: AAAC/AL-7/AL-59 & AL 59 ACS

Water Blocking Layer: Extruded longitudinal

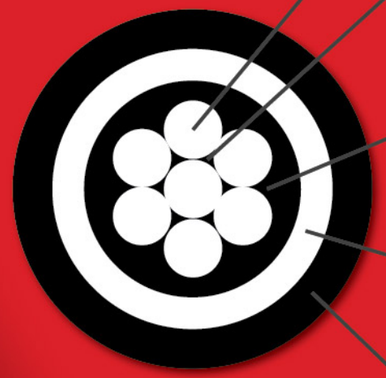


Shielding: Semi-conducting layer

Insulation: XLPE (without carbon black)

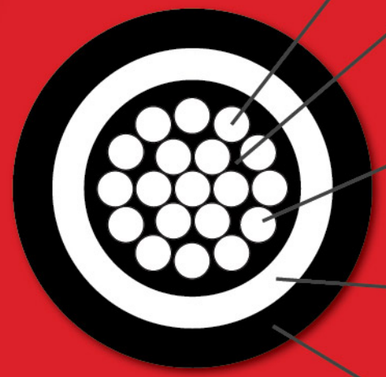
Outer Covering: HDPE/XLPE with UV protection & anti-tracking

MVCC – AL 59 ACS Type Conductor



1. AL 59 ACS Conductor
2. Extruded longitudinal water blocking layer
3. Extruded semi conducting layer
4. XLPE Insulation (Without carbon black)
5. Outer cover with UV protection and anti-tracking properties HDPE/XLPE

MVCC – AAAC Type



1. All Aluminum Alloy Conductor (AAAC / AL-7 /AL-59)
2. Extruded longitudinal water blocking layer
3. Extruded semi conducting layer
4. XLPE Insulation (Without carbon black)
5. Outer cover with UV protection and anti-tracking properties HDPE/XLPE

Advantages of MVCC over Bare Conductors

1. Minimized Disruption Risk

- Minimizes faults from trees, animals, and weather.
- Enhance system reliability.

2. Aesthetics & Urban Planning

- Enables compact and visually appealing installations.
- Supports modern infrastructure design.

3. Vegetation & Wildlife Protection

- Reduces faults from plant or animal contact
- Ideal for green zones and wildlife corridors.

4. Anti-Corrosion Properties

- Suitable for coastal and industrial areas
- Lowers maintenance needs.

5. Low Electromagnetic Interference

- Minimizes EMI in sensitive or tech-heavy environments.

6. High-Performance Reliability

- Insulation reduces failures and disruptions
- Increases uptime and performance

7. Flexibility in Routing

- Allows tighter clearances and easier installation
- Ideal for complex layouts

8. Vandal-Resistant Design

- Insulation deters tampering and damage in public areas

9. Maintenance & Durability

- Less wear and tear
- Longer service life and lower maintenance costs

10. Environmental Regulatory Compliance

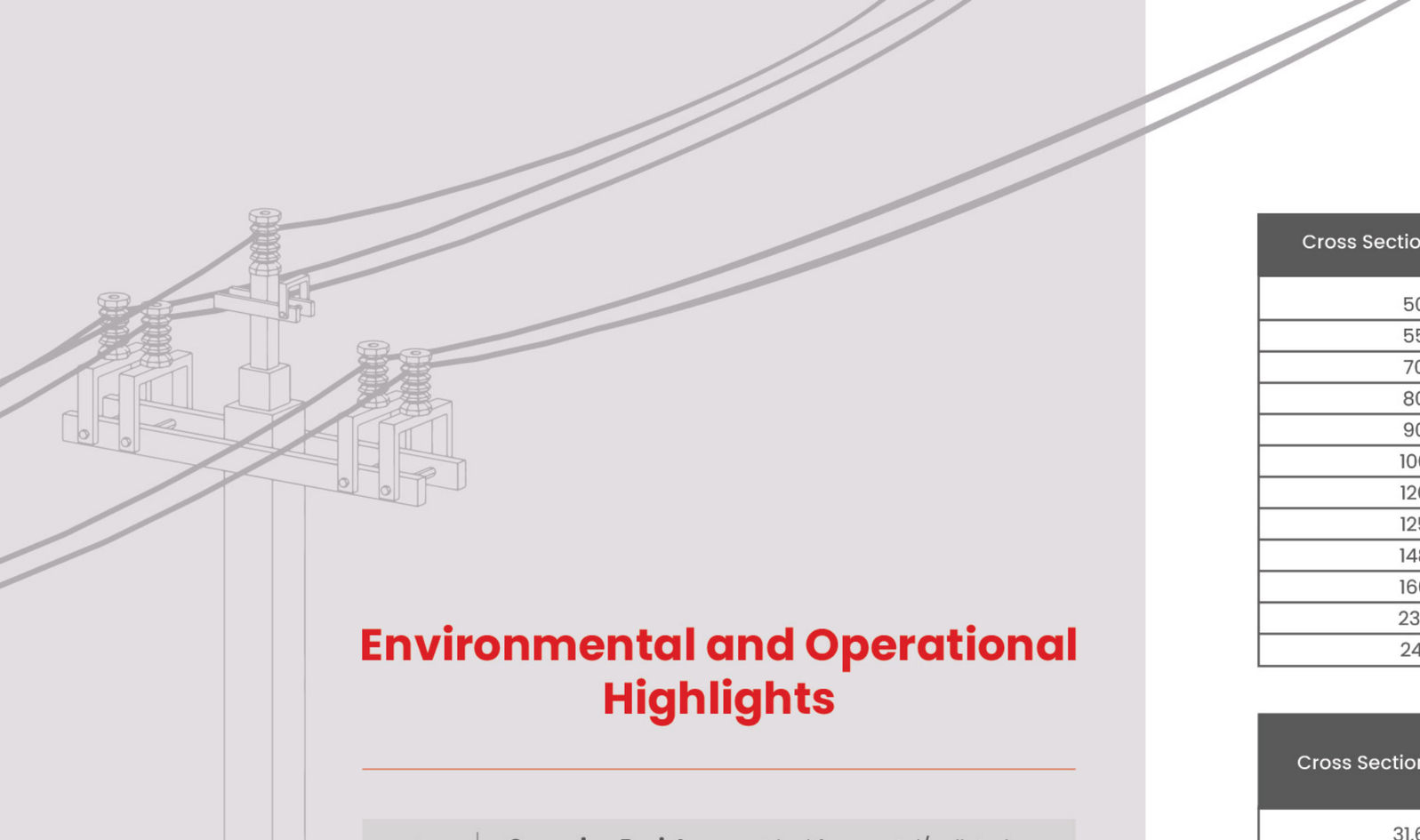
- Supports eco-friendly infrastructure
- Helps meet regulatory standards

11. Reduced Environmental Impact

- Protects against pollution and corrosion
- Extends conductor life and reduces replacements

12. Improved Safety

- Prevents accidental contact with live parts
- Essential in urban and suburban areas



Environmental and Operational Highlights

Corrosion Resistance - Ideal for coastal/polluted zones

Track Resistance - MVCC equipped with anti-tracking properties to ensure un-interrupted power supply

Compact Installation – Narrower ROW, closer pole spacing

Low Maintenance – Fewer faults, reduced costs

Retrofit Capability – Easy upgrade on existing lines

Technical Details

Cross Section (Sq mm)	Construction	Type
50	7 Strands	AAAC / AL-7 / AL-59
55	7 Strands	AAAC / AL-7 / AL-59
70	7 Strands	AAAC / AL-7 / AL-59
80	7 Strands	AAAC / AL-7 / AL-59
90	7 Strands	AAAC / AL-7 / AL-59
100	7 Strands	AAAC / AL-7 / AL-59
120	19 Strands	AAAC / AL-7 / AL-59
125	19 Strands	AAAC / AL-7 / AL-59
148	19 Strands	AAAC / AL-7 / AL-59
160	19 Strands	AAAC / AL-7 / AL-59
232	19 Strands	AAAC / AL-7 / AL-59
241	19 Strands	AAAC / AL-7 / AL-59

Cross Section (Sq mm)	Construction		Type
	AL 59	ACS	
31.6	6 - Strands	1 - Strands	AL-59 ACS
52.88	6 - Strands	1 - Strands	AL-59 ACS
78.82	6 - Strands	1 - Strands	AL-59 ACS
104.98	6 - Strands	1 - Strands	AL-59 ACS
158	30 - Strands	7 - Strands	AL-59 ACS
241	30 - Strands	7 - Strands	AL-59 ACS

Sr. No.	Cable Attributes	UOM	Construction		
			11KV	22 KV	33 KV
1	Aluminium Alloy wire	Sq. mm	As Per Requirement		
2	Extruded Longitudinal Water Blocking Layer	mm	As Required to make Water Blocked Arrangement		
3	Extruded Semi Conductive Layer	mm	Nominal thickness		
			0.3	0.3	0.3
4	Inner Insulation XLPE (without carbon black)	mm	1.2	1.32	2.43
5	Outer Covering HDPE/XLPE with UV protection & anti-tracking	mm	1.1	1.1	1.2

MVCC Cable Accessories

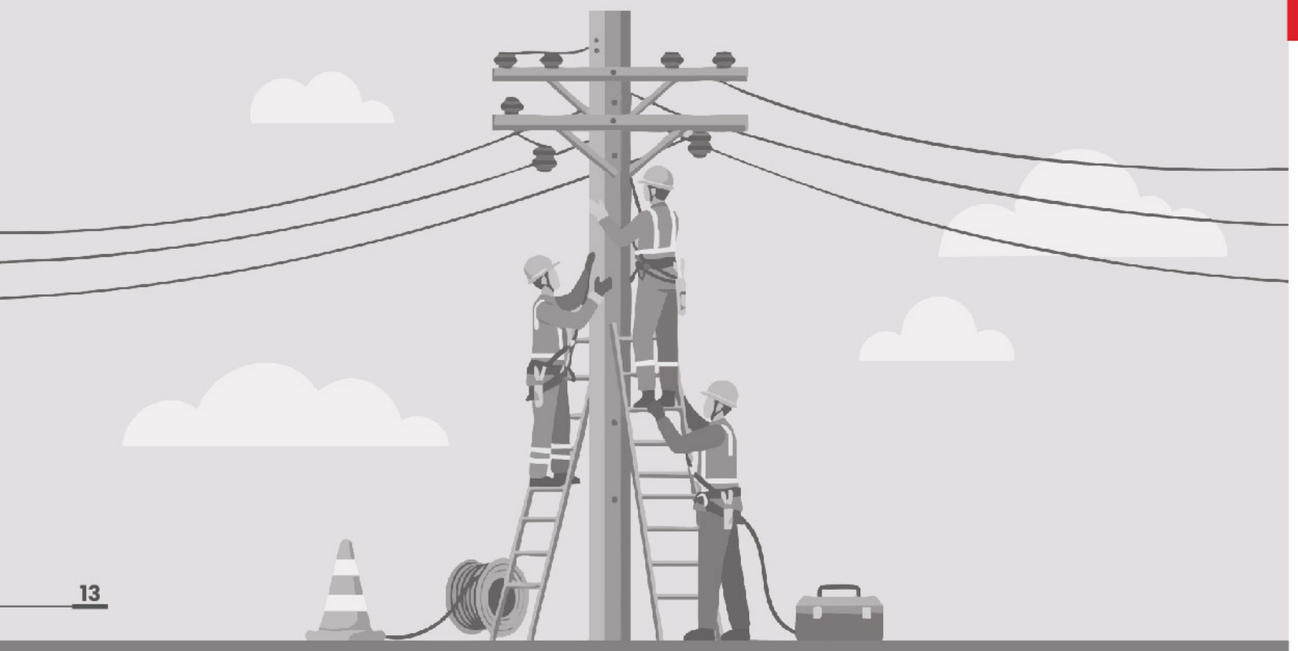
It is very important and crucial to install medium voltage covered conductors by proper use of its exclusive accessories and skill technicians. Accessories ensures safety, reliability and long time performance of the covered conductor.

Accessories must select as per covered conductor voltage and cross-section sizes for proper installation and performance.

All accessories should comply with EN-50397-2.

Few major lists of covered conductor accessories are

1. Suspension clamp assembly
2. Tension Clamp Assembly
3. Insulator cable ties
4. Insulation piercing connector
5. Insulation piercing connector for earthing
6. Mid Span full tension automatic Joints



Suspension Clamps

For supporting a length of MVCC at an intermediate pole in a length, with large angle of deviation with a disc insulator. They ensure safe suspension of conductors while maintaining mechanical integrity and preventing insulation damage.

Key Features:

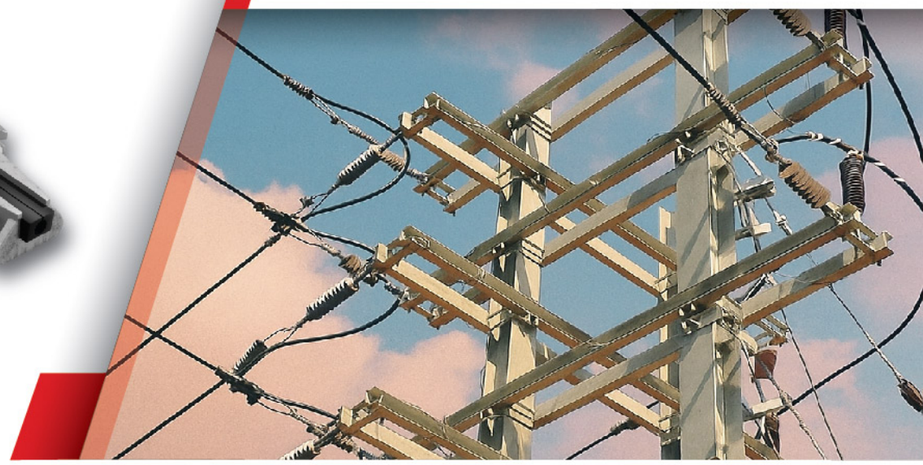
- Provides reliable support and reduces mechanical stress on MVCC.
- Suitable for both straight-line and light-angle configurations.
- Made of an insulating material which has climatic resistance properties.
- Locking and clamping are done by a thermoplastic bolt with the help of a fusible wing nut.

Tension Clamp Assembly

For fitting onto a pole for tensioning at the beginning or end of a length of MVCC, or for anchoring while a major change in direction of covered conductor. They ensure secure mechanical fixation while maintaining the integrity of the insulated conductor.

Key Features:

- High mechanical strength and long-term reliability.
- Made from UV-resistant and weatherproof materials for outdoor use.
- Suitable for straight lines, angle poles, and termination points.
- Withstands extreme conditions, leading to long life, safety, low maintenance and reduced lifetime cost.

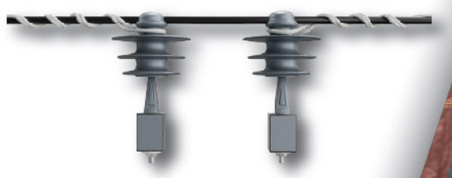


Insulation Cable Ties

For supporting and aligning MVCC at an intermediate pole in a length, with small angle of deviation. The Insulator Clamp hold the MVCC in its position on top of the pin or post insulator. They provide safe positioning of conductors, ensure mechanical stability and prevent conductor displacement under wind or mechanical load.

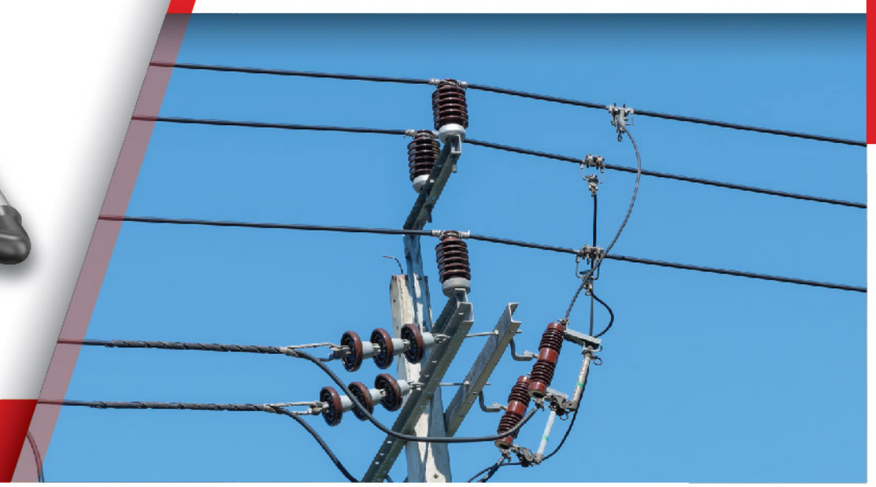
Key Features:

- Provides a firm grip while maintaining conductor insulation integrity.
- Resistant to UV, corrosion, and harsh weather conditions.
- Suitable for straight-line and light-angle poles.
- Long service life with low maintenance requirements.



Insulation Piercing Connector for Earthing

For Temporary Earthing Provision from MVCC Cable for maintenance purpose.



Insulation Piercing Connectors (IPC)

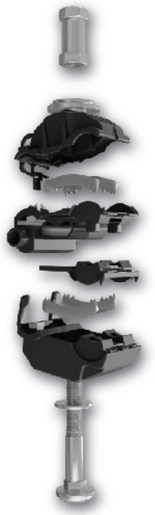
For main to main or main to tap for MVCC networking connection. This connector is to ensure the electrical characteristics within the required limits, while ensuring necessary insulation protection against tracking and water penetration on MVCC.

They provide a safe, reliable, and maintenance-free connection for:

MVCC to MVCC (line branching)
MVCC to insulated service cables
MVCC to equipment connections

Key Features:

- Easy and safe installation without stripping the conductor insulation.
- Provides excellent electrical contact and mechanical strength.
- Self-sealing system prevents water ingress and ensures long-term reliability.
- Corrosion-resistant and suitable for outdoor applications.



Mid Span Full Tension Automatic joints

Mid-span tension joints for jointing MVCC over a span. Maintaining perfect electrical connections, low resistance with provides mechanical strength and does not allow ingress of water inside the conductor. They provide safe, Sealed and durable connections, ensuring continuity of both conductor and insulation.

Key Features:

- It is used for AAAC, AAC, ACSR Covered Conductor to ensure the water tightness assured by a soft joint Connection.
- Excellent resistance to UV, moisture and environmental conditions.
- provides insulation restoration equivalent to the original MVCC Covering.

NOTES