



# MVCC CONDUCTORS

Medium Voltage Covered Conductors (MVCC)





**ABOUT**

# APAR

APAR Industries Limited founded in 1958, APAR Industries Limited is a diversified billion-dollar conglomerate with a strong presence in over 140 countries.

- World's largest aluminium and alloy conductor manufacturer
- 3<sup>rd</sup> largest transformer oil manufacturer,
- India's largest manufacturer of renewable and specialty cables.

APAR also offers over 350 grades of speciality oils, lubricants, speciality automotive products and polymers.

For over six decades, we have been delivering tomorrow's solutions today. We are a trusted brand among global transformer OEMs, power utilities, global EPC majors, automotive OEMs and telecommunication companies to deliver cost-effective quality products and services. As we continue to increase our market presence and share, our products enjoy a significant domestic and global market share.



OUR CATALYST FOR

# INNOVATION



## APAR CABLES

We produce the largest range of speciality cables and renewable cables in India which are used in a wide spectrum of industry verticals like renewable energy - solar & wind, oil & gas, railways, nuclear power, defence & shipbuilding, public & private utilities, industrial applications and telecommunication. We have a growing segment of light-duty cables and house wiring available across India.



## APAR CONDUCTORS

As the world's largest manufacturer of conductors with loyal customers in 140+, we offer a full range of both conventional and new-generation speciality conductors.

Today our conductor's business focuses on the premiumization of a range of products and is a leading provider of highly safe and efficient specialized turnkey solutions.

### Some of APAR's highlighted offerings:

- **Medium Voltage Covered Conductors (MVCC)**
- **Power Transmission conductors**
- **Petroleum Specialties (Power Oil, Automotive, Industrial and food and pharmaceutical application).**
- **Power Cable, Elastomeric Cable, E-Beam irradiated cables, and Optical Fibre cables Cables.**
- **The leading manufacturer of new generation High-Temperature **Low Sag (HTLS)/High-performance Conductors.****
- **Copper product Railways (Contact wires, Catenary Wires, Droppers, Jumper etc.)**
- **CTC plant for CTC and PICC ( Paper Insulated Copper Conductor), EPICC Enamel Covered Paper Insulated Copper Conductor) for Transformer manufacturing companies.**
- **Bus Bar Products ( Bus bar flat bars, Rods, Strips/ foils, Sections)**
- **APAR Anushakti house wire best-in-class, powered by e-beam technology, heat resistant at 105°C, melt-resistant, with 50 years of life**



# MEDIUM VOLTAGE COVERED CONDUCTOR

# MVCC

**NO MORE POWER OUTAGES DUE TO BAD WEATHER**  
(A boon for continuous & process industries)

Overhead power distribution lines with bare conductors have several technical and environmental limitations, which cause frequent domestic and industrial electric outages.

Power failures are often caused by weather phenomena such as lightning, rain, snow, ice, wind, and even dust settling or tree branches contacting bare conductors. These cause power interruptions and outages and can even spark short circuits and fires.

“ Presenting **APAR Medium Voltage Covered Conductors**, a permanent and long-lasting solution to such power failures, providing an uninterrupted power supply 24/7 in Domestic and Industrial power lines. ”

## BENEFITS



### 100% safe from Power line tripping:

- Monsoons humidity and high wind zones
- High Dust or Sandstorm areas
- If conductors clash with each other even under high wind conditions



### Ideal solution for distribution line passing through:

- Forest, vegetation, animal life
- Polluted areas, chemical zones and coastal areas
- Overhead lines close to residential and commercial premises
- Ideal for Road /Rail/river crossing of overhead lines



### The insulation on conductors increases the life of overhead conductor



### Operating temperature up to 95°C allows handling high loads





## ANTI TRACKING PROPERTIES OF

# MVCC

Anti-Tracking Cable jacketing has been specially designed to meet the outdoor conditions & performance requirements of medium voltage power cables. The material has an excellent resistance to arc, corrosion inhibitor, fungicide activity, oil resistance, weather conditions like humidity, pollution, presence of salt in atmosphere etc.

- **Applicable Standards** : SS-EN 50397-1, BS EN 50182, IS 398-2, IS 398-4, IEC 61089
- **Available Voltages** : 11KV / 22KV / 33KV / 66KV / 110KV / 132KV
- **Type Tested** : CPRI –Bangaluru / ERDA –Vadodara

## FEATURES

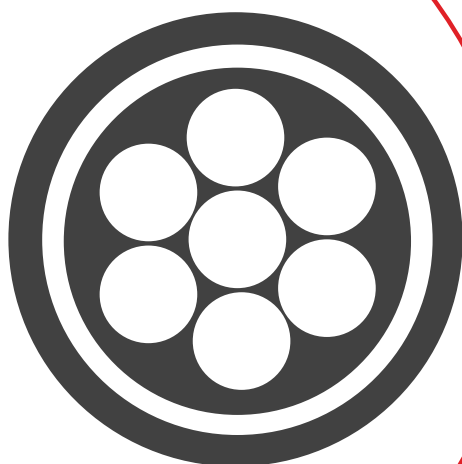


- **Conductor** : Longitudinally water tight ACSR/AAAC/AL-7/AL or high temperature conductor
- **Conductor Screen**: Water swellable semi-conducting tape (if required) and extruded semi-conducting compound
- **Inner Insulation**: XL PE
- **Outer Insulation**: UV protected and anti-tracking black coloured XLPE / HDPE
- **Conductor screen, inner insulation and outer insulation coextruded and bonded together.**



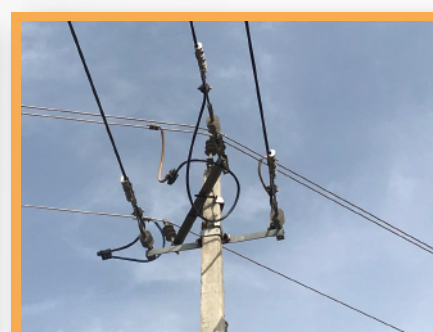
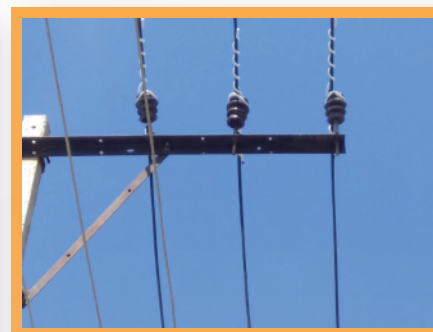
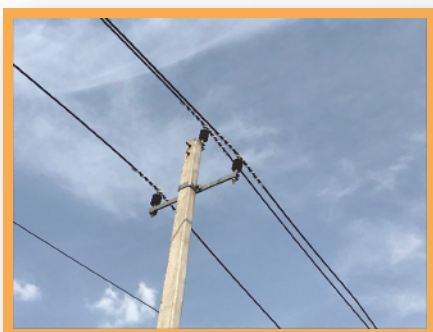
# RANGE DIAGRAM

# COVERED CONDUCTOR



- 1** OUTER INSULATION WITH UV & TRACK RESISTANCE XLPE
- 2** INNER INSULATION OF XLPE WITHOUT CARBON (BLACK)
- 3** EXTRUDED SEMI CONDUCTING LAYER
- 4** EXTRUDED LONGITUDINAL WATER BLOCKING LAYER
- 5** STRANDED CIRCULAR ALL ALUMINIUM ALLOY CONDUCTOR (WATER BLOCKED)

## INSTALLTION

























## BENEFITS OF

# MVCC CONDUCTOR

-  Reduced operation and maintenance cost and reduced right of way
-  Reduced Conductor Slashing
-  Reduce power interruptions and outages
-  No Interruptions by contact of tree branches or creepers
-  Phase to Phase conductor distance can be reduced which can reduce the tower related costs.
-  No faults due to clashing of phase conductors during wind and stormy conditions
-  Negligible Leakage Current on surface of the Covered Conductors
-  Protect big birds and animals: Peacocks, Flamingos, elephants
-  Better reliability under bad weather conditions like heavy snow fall, windy or stormy conditions
-  Increasing the power distribution network reliability
-  Ideal for installation in forest areas and bird sanctuaries
-  Low EMF, good for Electronic Surveillance
-  Effectively used in difficult terrain and in densely populated areas
-  Lower total cost of ownership over the life cycle compared to underground cables or Aerial Bunched cables
-  Cheaper alternative to underground cables and ABC cables
-  The pole span of ABC cables are short, as the full cable weight has to be carried by a single messenger conductor
-  Same corridor of an old bare overhead line can be used for covered conductors
-  Covered conductor is self- supporting and can have pole spans of 60 to 70 meters



# AL59 ACS

# COVERED CONDUCTOR

Covered Conductors (as per EN 50397-1:2006) is widely accepted and installed in various DESCOMS of India who are using the AAAC/ACSR Covered conductors and Apar is regularly supplying them either directly/or through EPC our 11KV and 33KV AAAC/ACSR covered conductors.

This solution is working perfectly and satisfactory in Gujarat, Sikkim, Assam and is now under procurement process under the RDSS scheme with many utilities in India.

Working on our mission "Tomorrow's Solution Today" Apar is offering High Current carrying capacity and low resistivity Covered Conductor AL59 ACS tested by **GVNLT and IIT –Gandhi Nagar (R&D Cell)**.

**STANDARDS USED:** SS: 424 08 13, SS: 424 08 14, IEC 61232, EN 50397-1:2006, EN 50182

## BENEFITS OF AL59 ACS COVERED CONDUCTOR

- 1 15% to 20% more ampacity with the same sag & less working tension as compared to ACSR
- 2 Better Mechanical Properties
- 3 Better Electrical Properties
- 4 Better Resistance to Corrosion
- 5 Improved Sag
- 6 Economically Suitable, Low resistivity in comparison of AAAC, hence lower losses
- 7 Better Strength for the longer Spans + can be string up to 60 Mtrs, hence saving of No. of poles in the network
- 8 Better Strength for the longer Spans + can be string up to 60 Mtrs, hence saving of No. of poles in the network
- 9 Outer Layer: XLPE UV and Track Protected
- 10 Temperature: Threshold temperature up to 105°C
- 11 Lower cross-section, reduced diameter and weight make it easy to handle and installation
- 12 Higher mechanical stress can reduce the SAG, by maintaining the F.O.S at Pole during stringing



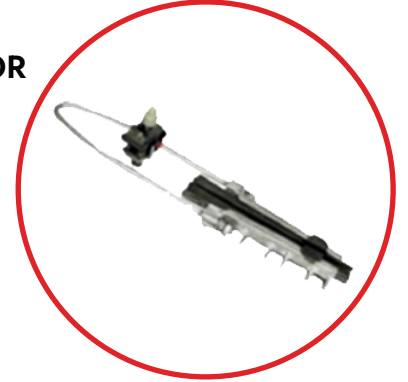


# COVERED CONDUCTOR ACCESSORIES

*All accessories complies with EN-50397-2*

## ANCHORING (DEAD-END) CLAMPS FOR MV COVERED CONDUCTOR

- Ready to use clamp for easy installation without removing or opening components
- Thermoplastic wedges ensuring the right tightening of the cable without damaging the outside sheath
- These clamps are automatically fitted with a tracking protection kit.



## ANCHORING (DEAD-END) CLAMPS FOR MV COVERED CONDUCTOR

- For attachment of covered conductors to rigid insulators with integrated stringing
- Use temperature: -30·C to 70·C



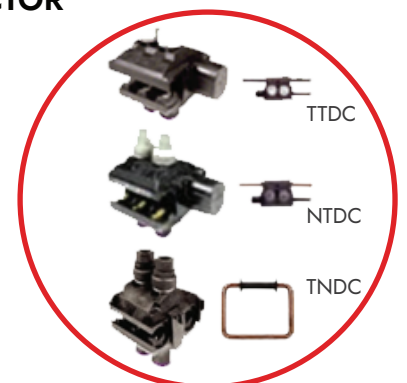
## SUSPENSION CLAMP FOR MV COVERED CONDUCTOR

- Made of insulating material with climatic resistance which provides an additional Insulation between the pole and the cable
- Locking and clamping of the bundle by a thermoplastic bolt with fusible wing nut. Provision for removal and further installation



## INSULATION PIERCING CONNECTORS FOR MV COVERED CONDUCTOR

- Waterproof connector equipped with galvanised bolts and double shearhead technology. Piercing is simultaneous on main and tap and reconstitute cable covering
- For covered to covered IPC (TTDC) and Bare to Covered IPC (NTDC) the insulation of the tap cable end is reconstituted with a waterproof end cap.
- The tapping connector (TNDC) allows either a tapping connection with adapted connector, or a short circuit on phases.

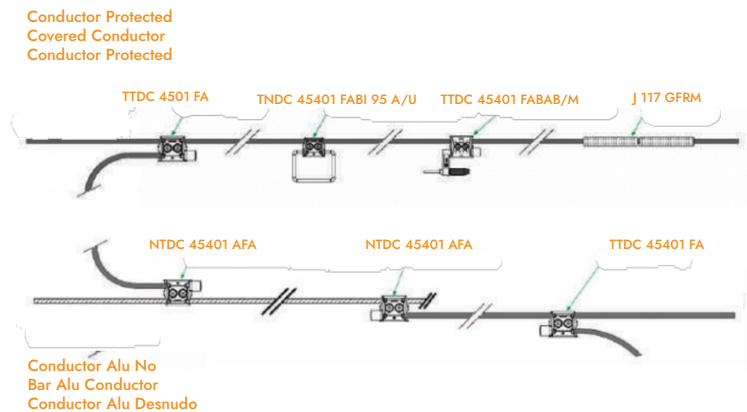
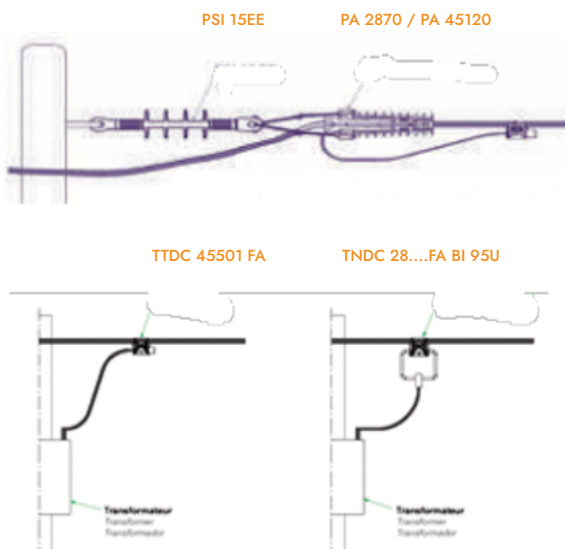


## PRE INSULATED JUNCTION SLEEVES FOR MV COVERED CONDUCTOR

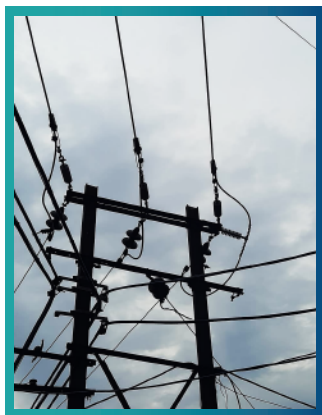
- Pre insulated aluminum alloy junction sleeves for AAAC, AAC or ACSR covered conductors ensures Connection water-tightness assured by a soft joint.



## SCHEMATIC REPRESENTATION



## PAN INDIA INSTALLATION



66 KV MVCC  
Installation at  
Ettmanur Kottayam KSEBL Kerla



11 KV at PGVCL  
Magrol Coconut Grooves



33 KV at  
KSEBL Kerla Evacuation Solar



33 KV at TORRENT  
Bhavnagar Evacuation  
Wind Power





# APAR INDUSTRIES LIMITED

# CONTACT US



## E-BEAM

Solar PV Cables,  
Wind Mill Cables,  
Ship Wiring Cables,  
Locomotive Cables,  
Control & Flexible Cable,  
PVC Winding wires,  
Automotive Wires,  
Specialty Cables.

## ELECTRICAL

PVC Cables UPTO 1.1 KV,  
XLPE Cables UPTO 33KV,  
ABC Cables upto 33kv,  
Instrumentation Cables,  
Concentric Core Cables,  
Flexible cables & wires,  
FR/FRLS/LSOH Cables,  
Under Water Cables,  
Fire Survival Cables.

## ELASTOMER

Trailing Cables,  
Locomotive Cables,  
Ship Wiring Cables,  
EPR, Silicon & EVA Cables.  
Wind Mill Cables,  
Welding Cables,  
LFH Cables & Wires,  
Fire Survival Cables,  
Mining Cables.

## TELECOM

Optical Fiber Cables,  
Armored Optic Fiber cables,  
Railway signaling cables  
Indoor Telephonic Cables,  
Composite Cables with OFC,  
Fire Survival Cables OFC,  
Cat3/Cat 5 LAN Cables,  
Torpedo Cables,  
Tow Cables.

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