SUPREME & CO

FITTINGS

OF

LV AERIAL BUNDLE CONDUCTOR
LV AERIAL BUNDLED CABLE SYSTEM

1. Overhead distribution line system can be categorized as either low voltage or medium voltage.

2. Low voltage lines have an operating voltage up to 1kv.

3. They may be either bare or covered.

In Aerial application fully insulated ABC are being increasingly as the almost only alternative to bare overhead or underground system in different parts of the world because of their outstanding features.
FEATURES

• The conductors are fully insulated.
• More than one conductor is part of the bundle. Commonly they are four comprising of three phases and one neutral messenger. Very often 5th conductor can be used for street lighting is also part of the bundle.
• They are self-supporting and suspended between supports- (generally existing poles.)
• They can be installed through forest areas without cutting of aisles prescribed for overhead lines.
• ABC bundle & accessories being fully insulated protect linemen actively as the design is touch proof.
• Prescribed clearance required for Bare Conductors under NEC/NESC/VDE/EDF codes not applicable here and the same may be reduced without limitation as long as insulation does not become vulnerable to mechanical damage.
Advantages

Supreme has been developing fittings for low and medium voltage insulated overhead cable systems and have experience of supplying them to different utilities all over the world. These accessories can be divided into mechanical and electrical accessories. Electrical components like connectors are almost common to different kind ABC cable systems generally found over the world. Accessories used for mechanical tensioning and support are however dependent on type of ABC system being used.

The impetus for this increasing use has been provided by the need being felt to have secondary distribution lines which are

1. Cost effective
2. Safe to users & linemen against accidental contact
3. Environment-friendly on account of lesser incidence of forest fires from accidental tree contact
4. Less vulnerable to illegal tapping
5. Easier to install in congested areas, fully water proof, corrosion free
6. Lesser right of way problem on account of reduced earth to phase, Phase to phase & phase to ground wire clearances.
Major Cost savings and Advantages:

This system also makes it possible to use existing or common pole of other services like telecom or CATV without causing EMI disruption in their services or the risk of over voltage. One of the biggest argument in its favor is the empirical evidence showing dramatically reduced incidence of power outages wherever this systems is in use.

Covered medium voltage lines are can be constructed both by way of using

A) Covered conductor which is not fully insulated with phase separation being maintained using polymer spacers.

B) Fully insulated MV aerial bundled cables.

For Supreme fittings & accessories we provide below the salient features and important mechanical/electrical reference values for different low voltage ABC systems
Types of Insulated overhead cable systems

**Finnish System**
Insulated aluminium phase conductors. Bare aluminium alloy messenger wire, which is also the neutral conductor. The cable can also have separate conductors for street lighting.

**French System**
Insulated aluminium phase four equal aluminium alloy conductors, includes phase- and neutral conductors. The cable can also have separate conductors for street lighting. Insulated aluminium alloy messenger wire, which is also the neutral conductor. The cable can also have separate conductors for street lighting.

**German System**
Four equal aluminium alloy conductors, includes phase- and neutral conductors. The cable can also have separate conductors for street lighting.
<table>
<thead>
<tr>
<th>Features</th>
<th>Finnish System</th>
<th>French System</th>
<th>German System</th>
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</thead>
<tbody>
<tr>
<td>Rated MFL for conductors</td>
<td>3x35mm.sq.+50mm.sq.=14.7 kN</td>
<td>3x35mm.sq.+54.6mm.sq.=16.6 kN</td>
<td>4x25mm.sq. = 16.7 kN</td>
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<td></td>
<td>3x70mm.sq.+95mm.sq.=27.9kN</td>
<td>3x70mm.sq.+54.6mm.sq.=16.6 kN</td>
<td>4x50mm.sq. = 33.2kN</td>
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<td></td>
<td>3x120mm.sq.+95mm.sq.=27.9kN</td>
<td>3x120mm.sq.+70mm.sq.=20.5kN</td>
<td>4x70mm.sq. = 45.3kN</td>
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<td></td>
<td></td>
<td>4x95mm.sq. = 60.8kN</td>
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<td></td>
<td></td>
<td>4x120mm.sq. = 75.1kN</td>
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<tr>
<td>Distribution of mechanical load</td>
<td>Messenger wire carries all mechanical load</td>
<td>Messenger wire carries all mechanical load</td>
<td>Mechanical load applied in all conductors.</td>
</tr>
<tr>
<td>Tensile strength of wires of conductor (N/mm.sq.)</td>
<td>Neutral 300N/mm.sq. Phase 120N/mm.sq.</td>
<td>Neutral 300N/mm.sq. Phase 120N/mm.sq.</td>
<td>All conductors 160N/mm.sq.</td>
</tr>
<tr>
<td>Messenger Failure and Earthing</td>
<td>The neutral is reinforced, but it may break</td>
<td>The neutral may break alone, if not provided with</td>
<td>The neutral is unlikely to break alone, if the</td>
</tr>
<tr>
<td>considerations</td>
<td>singularly as sole core under tension. Risk to</td>
<td>weak links. Risk to personnel and apparatus due</td>
<td>installation is made properly. High</td>
</tr>
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<td></td>
<td>personal and apparatus due to rise in phase voltage</td>
<td>to rise inphase voltage and high potential in</td>
<td>mechanical strength.</td>
</tr>
<tr>
<td></td>
<td>and high potential in neutral, if not</td>
<td>neutral, if the earthing is not made properly.</td>
<td></td>
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<td></td>
<td>properly earthed.</td>
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<tr>
<td>Live line work</td>
<td>Normal requirments. Uninsulated neutral may have</td>
<td>Normal requirment</td>
<td>Normal requirment</td>
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<td></td>
<td>touch voltage in poor earthing conditions. Proper</td>
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<td>earthing is essential.</td>
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<tr>
<td>Risk of corrosion in the neutral</td>
<td>Potential risk in extreme climate conditions</td>
<td>Reduced risk</td>
<td>Reduced risk</td>
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</table>
LV ABC cables may be suspended with the help of hooks attached to concrete, wood or steel or wall poles by any of followings methods:

1. Use of various type of Hooks bolts & nuts through Drilled holes on Poles.
2. Use of wood / Coach screw type hooks for wooden Poles
3. Suspension of hooks on pole clamps for Steel / Concrete/ rail/ tubular/ Poles where Drilling holes on poles are not practical
4. Use of suspension/tension brackets which are banded to poles where holes or screwing on poles is not practical.
5. Use of hook Plates with expansion plugs & Screws for use on walls.

In case of 5 above very often a range of cleats and distance clips and nails may also be used. Plastic multi cleats are provided for Attachment of cables to wooden surface or hard walls. Distance nails are designed to prevent the installed cable to come into contact with pole or wall surface.