3M™ High Voltage Cable Accessories
For 115kV, 123kV, 138kV and 145kV Applications

Your Trusted Connection
A Cable Accessory Expert

Cable accessories are a critical part of the electrical network. As the voltage class increases, so do the challenges faced on the job site. In order to ensure the reliability of your network, you need a cable accessory expert, you need 3M.

For nearly 40 years, 3M has been providing dependable solutions for low and medium voltage installations. 3M has developed a core technology platform for constructing cable accessories. Now, this proven technology is available for high voltage applications up to 138 kv (IEEE) / 145 kV (IEC).

A Trusted Supplier

3M offers more than high voltage cable accessories. We provide peace of mind. 3M has provided reliable cable accessories with a consistent track record around the globe. Every pre-molded component (joint body and stress cone) is 100% electrical factory tested and every solution is backed by the strong reputation 3M commands in the industry. If you’re ready to work with a supplier you can trust, you’re ready to work with 3M.

We’re with you in the trenches

Even the most innovative technology will have little benefit, unless it is matched to the application and correctly applied. That’s why all 3M high voltage cable accessories are backed by a global network of technical support, sales and supply chain specialists. Their expertise is always available to help suggest alternatives for you to evaluate and select a solution optimized for your requirements – with training, installation assistance, custom configurations and more. 3M offers kit consultation to help meet each project’s individual needs.
3M™ Dry Termination
TD Family for up to 123kV Applications

Description
• Push-on dry termination, for indoor or outdoor installations

Applications
• Conductor size up to 2,500 kcmil (1,000mm²)
• Can accommodate a variety of pollution classes and lengths
• Not self-supporting, requires holding structure

Features
• Light weight
• Dry design – does not require liquid dielectric
• Can be installed at any angle or inverted
• Silicone modular termination
• No special maintenance required
• Proven push-on technology

Example of installation on overhead line tower
3M™ Wet Silicone Termination TS Family for up to 145kv Applications

Description
- Self-supporting, outdoor termination with silicone insulator

Applications
- Conductor size up to 2,000 kcmil (1,200 mm²)
- Can accommodate a variety of pollution classes and lengths
- Maximum installation angle of 30°

Features
- One-piece pre-molded silicone stress cone
- Light-weight construction, approximately 1/3 the weight of most porcelain terminations
- Easier handling, transportation and installation than porcelain insulator
- Hydrophobic silicone materials provide excellent environmental performance
- Smooth surface enables self-cleaning properties
- Less sensitive to earthquakes, vibrations and thermal variations
- Internal shear bolt connection eliminates need for crimp-type connections

Optional
- Arcing horns
- Variety of lengths available

3M™ Wet Porcelain Termination TP Family for up to 145kV Applications

Description
- Self-supporting, outdoor termination with porcelain insulator

Applications
- Conductor size up to 2,000 kcmil (1,200 mm²)
- Can accommodate a variety of pollution classes and lengths
- Maximum installation angle of 30°

Features
- One-piece pre-molded silicone stress cone
- Short built-in length
- Porcelain insulator
- Good environmental performance
- Internal shear bolt connection eliminates need for crimp-type connections

Optional
- Arcing horns
- Variety of lengths available
**Description**
- Pre-molded “dry-type” termination for gas-insulated-switchgears and transformers

**Applications**
- Conductor size up to 2,000 kcmil (1,200 mm²)
- Available for short (470 mm / 18.5 in) and long (757 mm / 29.8 in) installation lengths

**Features**
- One-piece silicone rubber stress cone
- Resin insulator can be mounted to GIS equipment at manufacturer’s location
- Dry design – does not require liquid dielectric

**Optional**
- Corona shield for transformer connection
- Socket
Description
• One-piece, push-on silicone rubber joint for in-line and cross bond applications with different re-jacketing and grounding options

Applications
• Conductor size up to 2,000 kcmil (1,200mm²)
• In-line and cross bond design available

Features
• One piece silicone rubber push-on joint body
• Shear bolt connector included
• Connectors for round compacted or round segmented cable available
• Flexible design accommodates different shielding and cable re-jacketing systems

Optional
• Re-jacketing with heat shrink or resin-filled enclosure
• Metal housing
• Link boxes for a variety of grounding systems

Available Grounding Systems
• Removable links
• Surge voltage limiters (SVL)
• Cross bond boxes
Tools
The right tools for cable preparation and installation are essential to ensure long-term reliability of the network. 3M is available to discuss the appropriate standard and special tools required for your installation.

Cable Preparation
These tools are recommended to prepare the cable for all installations
- Straightening bar, angle-type
- Heating sleeve with temperature control unit
- Roll-type peeling device
  - SH 80: for cables with max diameter over outer semicon of 80mm
  - SH 130: for cables with max diameter over outer semicon of 130mm

Accessory Installation Tools
3M high voltage cable accessories must be installed using installation tools specifically designed for each accessory. Reference the chart below for specific information about the tools required for each product.

Special Installation Tools for High Voltage Cable Accessories

<table>
<thead>
<tr>
<th>Tools</th>
<th>TD</th>
<th>TS &amp; TP</th>
<th>TG D/S &amp; TG D/L</th>
<th>SC &amp; SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al chain block YALE 750 kg (without plate)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Al-clamp</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Inset for mounting device TG/TP/TS (according to cable cross section)</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation frame for SC/SS (2 sizes available)</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Installation rod</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Lubrication tool</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Mounting device SC/SS</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mounting device TG includes handles (according to cable cross section)</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mounting device TG/TP/TS</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mounting device TD includes handles (according to cable cross section)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swap wrench</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
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</tbody>
</table>

Note: Alternative installation tools are also available. Contact 3M for more information.
## Certification & Selection Guide for 3M™ Terminations and Joints

<table>
<thead>
<tr>
<th>Product</th>
<th>IEEE 115 kV</th>
<th>IEC 123 kV</th>
<th>IEEE 138 kV</th>
<th>IEC 145 kV</th>
<th>Applicable Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Termination</td>
<td>TD 115</td>
<td>TD 123</td>
<td></td>
<td></td>
<td>IEC 60840</td>
</tr>
<tr>
<td>Porcelain Wet Termination</td>
<td>TP 115</td>
<td>TP 123</td>
<td>TP 138</td>
<td>TP 145</td>
<td>IEC 60840</td>
</tr>
<tr>
<td>Silicone Wet Termination</td>
<td>TS 115</td>
<td>TS 123</td>
<td>TS 138</td>
<td>TS 145</td>
<td>IEC 60840</td>
</tr>
<tr>
<td>GIS Short</td>
<td>TG D/S 115</td>
<td>TG D/S 123</td>
<td>TG D/S 138</td>
<td>TG D/S 145</td>
<td>IEC 60840</td>
</tr>
<tr>
<td>GIS Long</td>
<td>TG D/L 115</td>
<td>TG D/L 123</td>
<td>TG D/L 138</td>
<td>TG D/L 145</td>
<td>IEC 60840</td>
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<tr>
<td>In-Line Joint</td>
<td>SS 115</td>
<td>SS 123</td>
<td>SS 138</td>
<td>SS 145</td>
<td>IEC 60840</td>
</tr>
<tr>
<td>Cross Bond Joint</td>
<td>SC 115</td>
<td>SC 123</td>
<td>SC 138</td>
<td>SC 145</td>
<td>IEC 60840</td>
</tr>
</tbody>
</table>

Note: All cross sectional drawings represent typical product construction, grounding design can be adapted for different cable constructions.

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**Important Notice**

All cross sectional drawings represent typical product construction, installation materials may vary. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

**Warranty; Limited Remedy; Limited Liability.**

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