Heatshrink Terminations
7.2 to 36kV

- Tested to international standards
- Competitive pricing
- Identical to heatshrink systems currently in use, therefore no jointer retraining required
- Thousands already installed worldwide
- Full supporting accessory range

**SINGLE CORE XLPE 7.2kV TERMINATIONS**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>PART NUMBER</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-7.2X-A</td>
<td>25-50mm²</td>
<td>1TES-7.2X-A</td>
<td></td>
</tr>
<tr>
<td>1TIS-7.2X-B</td>
<td>70-185mm²</td>
<td>1TES-7.2X-B</td>
<td></td>
</tr>
<tr>
<td>1TIS-7.2X-C</td>
<td>240-300mm²</td>
<td>1TES-7.2X-C</td>
<td></td>
</tr>
<tr>
<td>1TIS-7.2X-D</td>
<td>400-500mm²</td>
<td>1TES-7.2X-D</td>
<td></td>
</tr>
<tr>
<td>1TIS-7.2X-E</td>
<td>630-1000mm²</td>
<td>1TES-7.2X-E</td>
<td></td>
</tr>
</tbody>
</table>

**THREE CORE XLPE 7.2kV TERMINATIONS**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>PART NUMBER</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-7.2X-A</td>
<td>25-50mm²</td>
<td>3TES-7.2X-A</td>
<td></td>
</tr>
<tr>
<td>3TIS-7.2X-B</td>
<td>70-120mm²</td>
<td>3TES-7.2X-B</td>
<td></td>
</tr>
<tr>
<td>3TIS-7.2X-C</td>
<td>150-240mm²</td>
<td>3TES-7.2X-C</td>
<td></td>
</tr>
<tr>
<td>3TIS-7.2X-D</td>
<td>300-500mm²</td>
<td>3TES-7.2X-D</td>
<td></td>
</tr>
</tbody>
</table>

**SINGLE CORE XLPE 12kV TERMINATIONS**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>PART NUMBER</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-12X-A</td>
<td>16-35mm²</td>
<td>1TES-12X-A</td>
<td></td>
</tr>
<tr>
<td>1TIS-12X-B</td>
<td>50-95mm²</td>
<td>1TES-12X-B</td>
<td></td>
</tr>
<tr>
<td>1TIS-12X-C</td>
<td>120-240mm²</td>
<td>1TES-12X-C</td>
<td></td>
</tr>
<tr>
<td>1TIS-12X-D</td>
<td>300-500mm²</td>
<td>1TES-12X-D</td>
<td></td>
</tr>
<tr>
<td>1TIS-12X-E</td>
<td>630-800mm²</td>
<td>1TES-12X-E</td>
<td></td>
</tr>
</tbody>
</table>

**THREE CORE XLPE 12kV TERMINATIONS**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>PART NUMBER</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-12X-A</td>
<td>16-25mm²</td>
<td>3TES-12X-A</td>
<td></td>
</tr>
<tr>
<td>3TIS-12X-B</td>
<td>35-95mm²</td>
<td>3TES-12X-B</td>
<td></td>
</tr>
<tr>
<td>3TIS-12X-C</td>
<td>120-240mm²</td>
<td>3TES-12X-C</td>
<td></td>
</tr>
<tr>
<td>3TIS-12X-D</td>
<td>300-500mm²</td>
<td>3TES-12X-D</td>
<td></td>
</tr>
</tbody>
</table>
# Heatshrink Terminations

## 7.2 to 36kV

### SINGLE CORE XLPE 17.5kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-17.5X-A</td>
<td>25-70mm²</td>
<td>1TES-17.5X-A</td>
</tr>
<tr>
<td>1TIS-17.5X-B</td>
<td>95-185mm²</td>
<td>1TES-17.5X-B</td>
</tr>
<tr>
<td>1TIS-17.5X-C</td>
<td>240-400mm²</td>
<td>1TES-17.5X-C</td>
</tr>
<tr>
<td>1TIS-17.5X-D</td>
<td>500-630mm²</td>
<td>1TES-17.5X-D</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE 17.5kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-17.5X-A</td>
<td>25-70mm²</td>
<td>3TES-17.5X-A</td>
</tr>
<tr>
<td>3TIS-17.5X-B</td>
<td>95-185mm²</td>
<td>3TES-17.5X-B</td>
</tr>
<tr>
<td>3TIS-17.5X-C</td>
<td>240-400mm²</td>
<td>3TES-17.5X-C</td>
</tr>
</tbody>
</table>

### SINGLE CORE XLPE 24kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-24X-A</td>
<td>25-35mm²</td>
<td>1TES-24X-A</td>
</tr>
<tr>
<td>1TIS-24X-B</td>
<td>50-95mm²</td>
<td>1TES-24X-B</td>
</tr>
<tr>
<td>1TIS-24X-C</td>
<td>120-185mm²</td>
<td>1TES-24X-C</td>
</tr>
<tr>
<td>1TIS-24X-D</td>
<td>240-300mm²</td>
<td>1TES-24X-D</td>
</tr>
<tr>
<td>1TIS-24X-E</td>
<td>400-630mm²</td>
<td>1TES-24X-E</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE 24kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-24X-A</td>
<td>25-35mm²</td>
<td>3TES-24X-A</td>
</tr>
<tr>
<td>3TIS-24X-B</td>
<td>50-95mm²</td>
<td>3TES-24X-B</td>
</tr>
<tr>
<td>3TIS-24X-C</td>
<td>120-185mm²</td>
<td>3TES-24X-C</td>
</tr>
<tr>
<td>3TIS-24X-D</td>
<td>240-300mm²</td>
<td>3TES-24X-D</td>
</tr>
</tbody>
</table>

### SINGLE CORE XLPE 36kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-36X-A</td>
<td>35-70mm²</td>
<td>1TES-36X-A</td>
</tr>
<tr>
<td>1TIS-36X-B</td>
<td>95-185mm²</td>
<td>1TES-36X-B</td>
</tr>
<tr>
<td>1TIS-36X-C</td>
<td>240-400mm²</td>
<td>1TES-36X-C</td>
</tr>
<tr>
<td>1TIS-36X-D</td>
<td>500-630mm²</td>
<td>1TES-36X-D</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE 36kV TERMINATIONS

<table>
<thead>
<tr>
<th>PART NUMBER INDOOR</th>
<th>CABLE RANGE</th>
<th>PART NUMBER OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-36X-A</td>
<td>35-70mm²</td>
<td>3TES-36X-A</td>
</tr>
<tr>
<td>3TIS-36X-B</td>
<td>95-185mm²</td>
<td>3TES-36X-B</td>
</tr>
<tr>
<td>3TIS-36X-C</td>
<td>240-400mm²</td>
<td>3TES-36X-C</td>
</tr>
</tbody>
</table>
# Heatshrink Terminations

## 7.2 to 36kV

### SINGLE CORE PILC 12kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-12P-A</td>
<td>50-95mm²</td>
<td>1TES-12P-A</td>
</tr>
<tr>
<td>1TIS-12P-B</td>
<td>120-240mm²</td>
<td>1TES-12P-B</td>
</tr>
<tr>
<td>1TIS-12P-C</td>
<td>300-400mm²</td>
<td>1TES-12P-C</td>
</tr>
<tr>
<td>1TIS-12P-D</td>
<td>500-800mm²</td>
<td>1TES-12P-D</td>
</tr>
</tbody>
</table>

### THREE CORE PILC 12/17.5kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-12P-A</td>
<td>25-50mm²</td>
<td>3TES-12P-A</td>
</tr>
<tr>
<td>3TIS-12P-B</td>
<td>70-95mm²</td>
<td>3TES-12P-B</td>
</tr>
<tr>
<td>3TIS-12P-C</td>
<td>120-185mm²</td>
<td>3TES-12P-C</td>
</tr>
<tr>
<td>3TIS-12P-D</td>
<td>240-400mm²</td>
<td>3TES-12P-D</td>
</tr>
</tbody>
</table>

### SINGLE CORE PILC 24kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-24P-A</td>
<td>25-50mm²</td>
<td>1TES-24P-A</td>
</tr>
<tr>
<td>1TIS-24P-B</td>
<td>70-185mm²</td>
<td>1TES-24P-B</td>
</tr>
<tr>
<td>1TIS-24P-C</td>
<td>240-300mm²</td>
<td>1TES-24P-C</td>
</tr>
<tr>
<td>1TIS-24P-D</td>
<td>400-630mm²</td>
<td>1TES-24P-D</td>
</tr>
</tbody>
</table>

### THREE CORE PILC 24kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-24P-A</td>
<td>25-50mm²</td>
<td>3TES-24P-A</td>
</tr>
<tr>
<td>3TIS-24P-B</td>
<td>70-95mm²</td>
<td>3TES-24P-B</td>
</tr>
<tr>
<td>3TIS-24P-C</td>
<td>120-185mm²</td>
<td>3TES-24P-C</td>
</tr>
<tr>
<td>3TIS-24P-D</td>
<td>240-300mm²</td>
<td>3TES-24P-D</td>
</tr>
</tbody>
</table>

### SINGLE CORE PILC 36kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-36P-A</td>
<td>50-95mm²</td>
<td>1TES-36P-A</td>
</tr>
<tr>
<td>1TIS-36P-B</td>
<td>120-185mm²</td>
<td>1TES-36P-B</td>
</tr>
<tr>
<td>1TIS-36P-C</td>
<td>240-400mm²</td>
<td>1TES-36P-C</td>
</tr>
<tr>
<td>1TIS-36P-D</td>
<td>500-630mm²</td>
<td>1TES-36P-D</td>
</tr>
</tbody>
</table>

### THREE CORE PILC 36kV TERMINATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Indoor Cable Range</th>
<th>Outdoor Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-36P-A</td>
<td>35-70mm²</td>
<td>3TES-36P-A</td>
</tr>
<tr>
<td>3TIS-36P-B</td>
<td>95-185mm²</td>
<td>3TES-36P-B</td>
</tr>
<tr>
<td>3TIS-36P-C</td>
<td>240-400mm²</td>
<td>3TES-36P-C</td>
</tr>
</tbody>
</table>
Heatshrink Terminations for use on XLpe and Paper Cables 1.9/3.6kV

In conditions of high humidity, chemical and dust contamination, it is recommended that red anti-track materials are used for extra reliability and long term service.

### SINGLE CORE PILC/XLPE INDOOR/OUTDOOR TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>TAIL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1TIS-3.6A</td>
<td>25-70mm²</td>
<td>300mm</td>
</tr>
<tr>
<td>1TIS-3.6B</td>
<td>95-300mm²</td>
<td>300mm</td>
</tr>
<tr>
<td>1TIS-3.6C</td>
<td>400-630mm²</td>
<td>300mm</td>
</tr>
</tbody>
</table>

### 3 CORE PILC/XLPE INDOOR/OUTDOOR TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>TAIL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TIS-3.6A</td>
<td>25-70mm²</td>
<td>600mm</td>
</tr>
<tr>
<td>3TIS-3.6B</td>
<td>95-185mm²</td>
<td>600mm</td>
</tr>
<tr>
<td>3TIS-3.6C</td>
<td>240-400mm²</td>
<td>600mm</td>
</tr>
</tbody>
</table>

Heatshrink Terminations For LV Pilc Cables 0.6/1kV

### 3/4 CORE PILC TERMINATION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>TAIL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 4-35-600-3</td>
<td>4-35mm²</td>
<td>600mm</td>
</tr>
<tr>
<td>SPS 4-35-1000-3</td>
<td>4-35mm²</td>
<td>1000mm</td>
</tr>
<tr>
<td>SPS 50-150-600-3</td>
<td>50-150mm²</td>
<td>600mm</td>
</tr>
<tr>
<td>SPS 50-150-1000-3</td>
<td>50-150mm²</td>
<td>1000mm</td>
</tr>
<tr>
<td>SPS 185-300-600-3</td>
<td>185-300mm²</td>
<td>600mm</td>
</tr>
<tr>
<td>SPS 185-300-1000-4</td>
<td>185-300mm²</td>
<td>1000mm</td>
</tr>
</tbody>
</table>

Table above lists part number for 3 core kits, if 4 core, last digit should read - 4

Example SPS 50-150-600-4

Note:- Picture shows outdoor earthing components. If indoor type, the gland kit selected normally takes care of the earthing requirements.
Heatshrink Terminations  
Xlpe/Swa/Pvc Cables 0.6/1kV

**Note:** Standard Tail Length if Core Tubes are required is 600mm. Terminations for single core cables will be lug seal only.

### Earthing Accessories

If earthing of the armours is required, suffix **E1**=Indoor  **EO**=Outdoor

### Example

If a 4 core 185mm² Xlpe/Swa/Pvc termination with indoor earthing is required the part number would be:-

SPS 185-300-4XE1

Bolt on earth glands are also available and are listed on pages 15 and 16.

### Test Reports

Independent test reports are available upon request.

---

#### 2 CORE TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 4-35-2X</td>
<td>4-35mm²</td>
</tr>
<tr>
<td>SPS 35-150-2X</td>
<td>35-150mm²</td>
</tr>
<tr>
<td>SPS 150-400-2X</td>
<td>150-400mm²</td>
</tr>
</tbody>
</table>

#### 3 CORE TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 4-16-3X</td>
<td>4-16mm²</td>
</tr>
<tr>
<td>SPS 16-35-3X</td>
<td>16-35mm²</td>
</tr>
<tr>
<td>SPS 50-150-3X</td>
<td>50-150mm²</td>
</tr>
</tbody>
</table>

#### 4 CORE TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 4-35-4X</td>
<td>4-35mm²</td>
</tr>
<tr>
<td>SPS 50-150-4X</td>
<td>50-150mm²</td>
</tr>
<tr>
<td>SPS 185-300-4X</td>
<td>185-300mm²</td>
</tr>
</tbody>
</table>
Coldshrink Terminations
7.2 to 36kV

Shrink Polymer Systems now offer a Coldshrink system that is available for both Indoor and Outdoor applications for voltage range 7.2 to 36kV.

The main features of the range are as follows:-

- **Easy to install with removable spiral system**
- **No gas torches or special tools needed**
- **Tested to International standards**
- **Manufactured from high grade Silicone**

Coldshrink type Termination products are designed to make the installation of medium voltage Cable accessories as simple as possible.

Manufactured from Liquid Silicone Rubber and mounted on a removable/collapsible “Spiral Type” Carrier, components can be easily positioned and fitted in seconds without the need for heat and naked flames which normally involve gas torches and potentially dangerous propane gas bottle on site.

With Termination Boxes becoming ever more compact, Coldshrink components that can be more easily fitted and which provide an even wall thickness and constant radial pressure on the prepared Cable will, it is envisaged, become the standard over the coming years.
Coldshrink Terminations
Product Selection Charts

Single Core

<table>
<thead>
<tr>
<th>SINGLE CORE (1)</th>
<th>TERMINATION (T)</th>
<th>INDOOR (I) OUTDOOR (E)</th>
<th>COLD SHRINK (CS)</th>
<th>VOLTAGE (kV)</th>
<th>POLYMERIC (X)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>7.2 / 12 / 17.5</td>
<td>X</td>
<td>25-50</td>
<td>70-120</td>
<td>150-240</td>
<td>300-400</td>
<td>500-630</td>
</tr>
<tr>
<td>1</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>24</td>
<td>X</td>
<td>25-50</td>
<td>70-120</td>
<td>150-240</td>
<td>300-400</td>
<td>500-630</td>
</tr>
<tr>
<td>1</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>36</td>
<td>X</td>
<td>95-150</td>
<td>185-300</td>
<td>400</td>
<td></td>
<td>500-630</td>
</tr>
</tbody>
</table>

3 Core

<table>
<thead>
<tr>
<th>3 CORE (3)</th>
<th>TERMINATION (T)</th>
<th>INDOOR (I) OUTDOOR (E)</th>
<th>COLD-SHRINK (CS)</th>
<th>VOLTAGE (kV)</th>
<th>POLYMERIC (X)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>7.2 / 12 / 17.5</td>
<td>X</td>
<td>25-50</td>
<td>70-120</td>
<td>150-240</td>
<td>300-400</td>
</tr>
<tr>
<td>3</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>24</td>
<td>X</td>
<td>25-50</td>
<td>70-120</td>
<td>150-240</td>
<td>300-400</td>
</tr>
<tr>
<td>3</td>
<td>T</td>
<td>I or E</td>
<td>CS</td>
<td>36</td>
<td>X</td>
<td>95-150</td>
<td>185-300</td>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

Note:- Single Core kits contain 3 x Single Phases

Order Examples

<table>
<thead>
<tr>
<th>Termination</th>
<th>Cable Type / Size</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor 15kV</td>
<td>Single Core Xlpe 95mm²</td>
<td>1TICS-17.5X-B</td>
</tr>
<tr>
<td>Indoor 12kV</td>
<td>3 Core Xlpe 95mm²</td>
<td>3TICS-12X-B</td>
</tr>
<tr>
<td>Outdoor 17.5kV</td>
<td>3 Core Xlpe 150mm²</td>
<td>3TECS-17.5X-C</td>
</tr>
<tr>
<td>Outdoor 36kV</td>
<td>Single Core Xlpe 400mm²</td>
<td>1TECS-36X-C</td>
</tr>
</tbody>
</table>

Please specify Transformer / Switchgear Box length (Base plate to Lug fixing point at time of ordering)
Technical Data
Heatshrink Terminations / Joints 7.2 to 36kV

### Summary of test voltages

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Voltage</th>
<th>Rated Voltage UₗU (Uₘ) kV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3.8/6.6 (7.2)</td>
</tr>
<tr>
<td>Humidity and salt fog</td>
<td>1.25 Uₗ</td>
<td>5</td>
</tr>
<tr>
<td>Partial discharge</td>
<td>1.73 Uₗ</td>
<td>6.5</td>
</tr>
<tr>
<td>Heating cycle voltage and AC voltage / 15 min and 500 hrs</td>
<td>2.5Uₗ</td>
<td>9.5</td>
</tr>
<tr>
<td>AC voltage / 1 min</td>
<td>4Uₗ</td>
<td>15</td>
</tr>
<tr>
<td>AC voltage / 5 min</td>
<td>4.5Uₗ</td>
<td>17</td>
</tr>
<tr>
<td>DC voltage / 15 min</td>
<td>6Uₗ</td>
<td>23</td>
</tr>
<tr>
<td>Impulse (peak)</td>
<td>-</td>
<td>60</td>
</tr>
</tbody>
</table>

### Test sequence and requirements

<table>
<thead>
<tr>
<th>Test</th>
<th>Test clause of EN 61442</th>
<th>Test sequence</th>
<th>Test requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC voltage dry</td>
<td>5</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AC voltage dry</td>
<td>4</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Partial discharge at ambient temperature</td>
<td>7</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Impulse voltage at elevated temperature</td>
<td>6</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Heating cycle voltage in air</td>
<td>9</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Partial discharge at elevated and ambient temperature</td>
<td>7</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thermal short circuit (screen)</td>
<td>10</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thermal short circuit (conductor)</td>
<td>11</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Dynamic short circuit</td>
<td>12</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Impulse voltage at ambient temperature</td>
<td>6</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AC voltage dry</td>
<td>4</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Examination [2]</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Shrink Polymer Systems test and qualify our products to the criteria above as outlined in Cenelec standards HD 628 S1 and 629.1 S2:2006. This testing criteria also encompasses VDE 0278 and IEC 60502
Kit Contents - Single Core Heatshrink Terminations for XLpe or Epr Cables 7.2 to 36kV

**INDOOR**

<table>
<thead>
<tr>
<th>Kit Contents</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Track Core Tubes</td>
<td>3</td>
</tr>
<tr>
<td>Stress Control Tubes</td>
<td>3</td>
</tr>
<tr>
<td>Yellow Stress Relief Tape for Screen Ends</td>
<td>3</td>
</tr>
<tr>
<td>Red Mastic Sealing Tape</td>
<td>1</td>
</tr>
<tr>
<td>De-Grease Tissues</td>
<td>3</td>
</tr>
<tr>
<td>Box, Label, Instructions</td>
<td>1</td>
</tr>
</tbody>
</table>

**OUTDOOR**

<table>
<thead>
<tr>
<th>Kit Contents</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Track Core Tubes</td>
<td>3</td>
</tr>
<tr>
<td>Stress Control Tubes</td>
<td>3</td>
</tr>
<tr>
<td>Stress Relief Tape</td>
<td></td>
</tr>
<tr>
<td>Red Mastic Sealing Tape</td>
<td></td>
</tr>
<tr>
<td>De-Grease Tissues</td>
<td>3</td>
</tr>
<tr>
<td>Rain Sheds</td>
<td>Qty *</td>
</tr>
<tr>
<td>Box, Label, Instructions</td>
<td>Qty 1</td>
</tr>
</tbody>
</table>

*See Table for Number of Sheds*

<table>
<thead>
<tr>
<th>PER PHASE</th>
<th>INDOOR</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2kV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>12kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>17.5kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>24kV</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>36kV</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

**OPTIONAL ACCESSORIES**

- Earth Spring Kit for Cu Tape Screens
- Bushing Protection Boots
- Bolt on Heatshrink Earth Gland
- Stand Off Bracket/Insulators
- Armour Earthing (Outdoor)
- MV Water Blocked Lugs
- MV Mechanical Shearbolt Lugs
Kit Contents - Single Core Heatshrink Terminations for Pilc Cables 7.2 to 36kV

**KIT CONTENTS**

- **ANTI-TRACK CORE TUBES** QTY 3
- **OIL BARRIER TUBES** QTY 3
- **STRESS CONTROL TUBES** QTY 3
- **YELLOW STRESS RELIEF TAPE FOR SCREEN ENDS** QTY 3
- **RED MASTIC SEALING TAPE** QTY 1
- **DE-GREASE TISSUES** QTY 3
- **BOX, LABEL, INSTRUCTIONS** QTY 1

**OPTIONAL ACCESSORIES**

- BUSHING PROTECTION BOOTS
- BOLT ON HEATSHRINK EARTH GLAND
- STAND OFF BRACKET/INSULATORS
- ARMOUR/LEAD EARTHING (OUTDOOR)
- MV WATER BLOCKED LUGS
- MV MECHANICAL SHEARBOLT LUGS

**KIT CONTENTS**

- **ANTI-TRACK CORE TUBES** QTY 3
- **OIL BARRIER TUBES** QTY 3
- **STRESS CONTROL TUBES** QTY 3
- **YELLOW STRESS RELIEF TAPE FOR SCREEN ENDS** QTY 3
- **RED MASTIC SEALING TAPE** QTY 1
- **DE-GREASE TISSUES** QTY 3
- **BOX, LABEL, INSTRUCTIONS** QTY 1

**OPTIONAL ACCESSORIES**

- BUSHING PROTECTION BOOTS
- BOLT ON HEATSHRINK EARTH GLAND
- STAND OFF BRACKET/INSULATORS
- ARMOUR/LEAD EARTHING (OUTDOOR)
- MV WATER BLOCKED LUGS
- MV MECHANICAL SHEARBOLT LUGS

**PER PHASE**

<table>
<thead>
<tr>
<th>PER PHASE</th>
<th>INDOOR</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2kV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>12kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>17.5kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>24kV</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>36kV</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
Kit Contents - 3 Core Heatshrink Terminations for XLPE or EPR Cables 7.2 to 36kV

**KIT CONTENTS**

**INDOOR**

- Anti-Track Core Tubes QTY 3
- Stress Control Tubes QTY 3
- Yellow Stress Relief Tape for Screen Ends QTY 3
- 3 Core Breakout Boot QTY 1
- Red Mastic Sealing Tape QTY 1
- De-Grease Tissues QTY 3
- Box, Label, Instructions QTY 1

**OUTDOOR**

- Anti-Track Core Tubes QTY 3
- Stress Control Tubes QTY 3
- Yellow Stress Relief Tape for Screen Ends QTY 3
- 3 Core Breakout Boot QTY 1
- Red Mastic Sealing Tape QTY 1
- De-Grease Tissues QTY 3
- Rain Sheds QTY *
- Box, Label, Instructions QTY 1

**OPTIONAL ACCESSORIES**

- Earth Spring Kit for Cu Tape Screens
- Bushing Protection Boots
- Bolt on Heatshrink Earth Gland
- Stand Off Bracket/Insulators
- Armour Earthing (Outdoor)
- MV Water Blocked Lugs
- MV Mechanical Shear Bolt Lugs

*See Table for Number of Sheds*

**PER PHASE**

<table>
<thead>
<tr>
<th>PHASE</th>
<th>INDOOR</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2kV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>12kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>17.5kV</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>24kV</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>36kV</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
Kit Contents - 3 Core Heatshrink Terminations for Pilc or Picas Cables 7.2 to 36kV

**KIT CONTENTS**

**INDOOR**

- ANTI-TRACK CORE TUBES QTY 3
- OIL BARRIER CLEAR TUBES QTY 3
- STRESS CONTROL TUBES QTY 3
- YELLOW STRESS RELIEF TAPE (IF SCREENED CABLE) QTY 3
- MASTIC CRUTCH WEDGE QTY 1
- 3 CORE CONDUCTIVE BOOT QTY 1
- MASTIC SEALING TAPE ROLL QTY 1
- RED MASTIC SEALING TAPE QTY 1
- DE-GREASE TISSUES QTY 2
- BOX, LABEL, INSTRUCTIONS QTY 1

**OUTDOOR**

- ANTI-TRACK CORE TUBES QTY 3
- OIL BARRIER CLEAR TUBES QTY 3
- STRESS CONTROL TUBES QTY 3
- YELLOW STRESS RELIEF TAPE (IF SCREENED CABLE) QTY 3
- MASTIC CRUTCH WEDGE QTY 1
- 3 CORE CONDUCTIVE BOOT QTY 1
- MASTIC SEALING TAPE ROLL QTY 1
- RED MASTIC SEALING TAPE QTY 1
- DE-GREASE TISSUES QTY 2
- STRAIN RELIEF TRI SHED QTY 1
- RAIN SHEDS QTY *
- BOX, LABEL, INSTRUCTIONS QTY 1

* SEE TABLE FOR NUMBER OF SHEDS

<table>
<thead>
<tr>
<th>PER PHASE</th>
<th>INDOOR</th>
<th>OUTDOOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2kV</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12kV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>17.5kV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>24kV</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>36kV</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**OPTIONAL ACCESSORIES**

- BUSHING PROTECTION BOOTS
- BOLT ON HEATSHRINK EARTH GLAND
- STAND OFF BRACKET/INSULATORS
- ARMOUR/LEAD EARTHING (OUTDOOR)
- MV WATER BLOCKED LUGS
- MV MECHANICAL SHEARBOLT LUGS
# Bushing Protection Boots

## 7.2 to 36kV

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RABK 1-2</td>
<td>16-300mm²</td>
<td>7.2-17.5kV</td>
</tr>
<tr>
<td>RABK 3</td>
<td>400-800mm²</td>
<td>7.2-17.5kV</td>
</tr>
<tr>
<td>RABK 1-2(24)</td>
<td>35-240mm²</td>
<td>24kV</td>
</tr>
<tr>
<td>RABK 4</td>
<td>50-630mm²</td>
<td>36kV</td>
</tr>
</tbody>
</table>

## Solderless Earth Kits for Copper Tape Screens 7.2 to 36kV

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>12kV</th>
<th>17.5kV</th>
<th>24kV</th>
<th>36kV</th>
<th>PART NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2kV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-50</td>
<td>25-50</td>
<td>25-50</td>
<td>---</td>
<td>---</td>
<td>SPS 204</td>
</tr>
<tr>
<td>70-95</td>
<td>70-95</td>
<td>70-95</td>
<td>35-50</td>
<td>---</td>
<td>SPS 205</td>
</tr>
<tr>
<td>120-240</td>
<td>120-240</td>
<td>120-240</td>
<td>95-185</td>
<td>50-70</td>
<td>SPS 206</td>
</tr>
<tr>
<td>300-630</td>
<td>300-630</td>
<td>300-630</td>
<td>240-500</td>
<td>95-300</td>
<td>SPS 207</td>
</tr>
<tr>
<td>800-1000</td>
<td>800-1000</td>
<td>800-1000</td>
<td>630-800</td>
<td>400-630</td>
<td>SPS 208</td>
</tr>
</tbody>
</table>

IF 3 CORE SYSTEM SUFFIX PART NUMBER (3C)

IF 1 CORE SYSTEM SUFFIX PART NUMBER (1C)

EG: 70-95mm² KIT FOR 3 CORE 12kV CABLE WOULD BE SPS 205(3C)

NOTE: MOISTURE/SOLDER BLOCK IS INCORPORATED IN EACH BRAID.

FOR CABLE SIZES NOT LISTED PLEASE CONTACT SHRINK POLYMER SYSTEMS.
Shrink Polymer Systems now offer our own universal medium voltage cold applied bushing protection boot for switchgear and transformer connections.

Manufactured from high grade silicone, the boot is very flexible and just one size covers right angle or straight connections for cable sizes 35-400mm².

In addition to being longer than existing designs in the market which helps when being used with longer barrel lugs such as shearbolt connectors, the seals at both the bushing end and cable clamping end have been improved.

**Part Number: SPCAB 35-400**
Bolt on Heatshrink Earth Gland Kits
7.2 to 36kV

- Designed for use with a wide range of cable boxes
- Stud spacings to BS 2562
- Cast integral earth allows for use with medium voltage installations
- All cable types catered for
- Smaller gland has dual stud fixings size X and Y to BS 2562

STEEL GLANDS FOR THREE CORE CABLES

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>7.2kV</th>
<th>12kV</th>
<th>17.5kV</th>
<th>24kV</th>
<th>36kV</th>
<th>PART NO</th>
<th>CABLE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDUCTOR SIZE (mm²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-150</td>
<td>16-95</td>
<td>16-95</td>
<td>35-50</td>
<td>---</td>
<td>SPS 180</td>
<td>XLPE</td>
<td></td>
</tr>
<tr>
<td>185-400</td>
<td>120-400</td>
<td>120-400</td>
<td>70-300</td>
<td>35-185</td>
<td>SPS 193</td>
<td>XLPE</td>
<td></td>
</tr>
<tr>
<td>16-70</td>
<td>16-70</td>
<td>16-70</td>
<td>16-70</td>
<td>---</td>
<td>SPS 318</td>
<td>PILC</td>
<td></td>
</tr>
<tr>
<td>95-150</td>
<td>95-150</td>
<td>95-150</td>
<td>95-150</td>
<td>---</td>
<td>SPS 319</td>
<td>PILC</td>
<td></td>
</tr>
<tr>
<td>185-300</td>
<td>185-300</td>
<td>185-300</td>
<td>185-300</td>
<td>50-240</td>
<td>SPS 320</td>
<td>PILC</td>
<td></td>
</tr>
<tr>
<td>25-185</td>
<td>25-185</td>
<td>25-185</td>
<td>---</td>
<td>---</td>
<td>SPS 452</td>
<td>PICAS</td>
<td></td>
</tr>
<tr>
<td>240-400</td>
<td>240-400</td>
<td>240-400</td>
<td>---</td>
<td>---</td>
<td>SPS 453</td>
<td>PICAS</td>
<td></td>
</tr>
</tbody>
</table>

ALUMINIUM GLANDS FOR SINGLE CORE CABLES

For single core Xlpe aluminium wire armoured cables and single core lead sheathed cables, the main bolt on gland body is manufactured from aluminium.

The kits listed below are generally supplied as a set of three. Additional components are similar to those within the kits shown on page 16.

<table>
<thead>
<tr>
<th>PART NO</th>
<th>CABLE RANGE</th>
<th>CABLE TYPE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 560</td>
<td>50-630mm²</td>
<td>XLPE/AWA</td>
<td>7.2-36kV</td>
</tr>
<tr>
<td>SPS 561</td>
<td>120-1000mm²</td>
<td>PILC</td>
<td>12kV</td>
</tr>
</tbody>
</table>
Bolt on Gland Components

Standard Gland Unit

The standard gland is the SPS 180 and SPS 193, they are intended for use on three core xlpe/swa cable.

Kit Contents
1) Steel gland body Qty 1
2) Thick wall adhesive lined tube Qty 1
3) Gland body fixing pack Qty 1
4) Armour clamps Qty 2
5) Cleaning tissue Qty 1
6) Installation instruction sheet Qty 1

Earth Kit For Pilc Cables

For paper insulated or xlpe cables with a lead sheath, an additional earth kit is included with the main gland kit listed above.

Additional Kit Contents
1) Thick wall adhesive lined tube Qty 1
2) Copper earth strap Qty 1
3) Constant force roll spring Qty 1
4) Cleaning tissue Qty 1
5) Installation instructions Qty 1

Earth Kit For Picas Cables

For paper insulated cables with a corrugated aluminium sheath, an additional earth kit is included with the main gland kit listed above.

Additional Kit Contents
1) Thick wall adhesive lined tube Qty 1
2) Copper earth strap Qty 1
3) Perforated tinned copper strip Qty 1
4) Armour clamps Qty 2
5) Cleaning tissue Qty 1
6) Installation instructions Qty 1

Insulating Plate

If Insulating Plate is required for CT applications or separate earthing, an additional kit is required which contains a pre-drilled Insulating plate complete with Insulated fixings see Part Number: SPS 464
Outdoor Armour Earth Kits for Single Core and 3 Core Cables 3.3 to 36kV

In installations where an earth gland is not fitted or on outdoor pole mounted installations, armour earthing kits can be supplied for all cable types up to 36kV.

TYPICAL KIT CONTENTS FOR XLPE INSULATED CABLES
1) Armour support rings
2) Armour clamps
3) Insulated copper earth wire/Braids
4) Mastic sealant tape
5) Adhesive lined heatshrink sealing tube
6) Cable cleaning tissues
7) Installation instructions

TYPICAL KIT CONTENTS FOR PAPER INSULATED CABLES
As above but with the addition of a copper earth strap and stainless steel roll spring/s for Pilc or perforated tinned copper strip for Picas cables.

Reference numbers are obtained by taking the termination part number and substituting TIS (Termination, indoor, shrink) or TES (Termination, outdoor, shrink) with OAE (outdoor armour earthing).

Examples:-
1) If the cable is 3 core 12kV Pilc 95mm² the kits required for indoor installations are as follows:-
   Termination kit 3TIS-12P-B
   Armour Earth kit 3OAE-12P-B
   The same armour earth kit would be used on outdoor installations.

2) If the cable is single core 36kV XLPE 400mm² the kits required for outdoor installations are as follows:-
   Termination kit 1TES-36X-C
   Armour Earth kit 1OAE-36X-C
   The same armour earth kit would be used on indoor installations.
Stand Off Brackets and Insulators

Where terminations are to be mounted on outdoor installations, Shrink Polymer Systems can offer a range of high quality stand off insulators for voltages up to 36kV.

The Polymeric Insulator consists of a Fibreglass Core covered with a weather resistant Polymeric Shedded Sleeve. These Insulators offer superior performance in polluted environments, are flame/arc resistant and UV stable. Where as Porcelain type can be easily damaged, Polymeric type Insulators are less prone to damage by Vandals.

Tests On Composite Insulators IEC 1109
Electrical Qualification BS 383
Environmental Testing IEC 1109 annexC
Creepage Distance Ratios IEC 815
Thermal Endurance IEC 60216
Metalwork Protective Coating BS 729

12-17.5kV TYPE PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>17.5kV</td>
</tr>
<tr>
<td>Impulse Voltage Withstand</td>
<td>125kV</td>
</tr>
<tr>
<td>Wet Voltage With Stand</td>
<td>50kV</td>
</tr>
<tr>
<td>Creepage Distance</td>
<td>450mm</td>
</tr>
<tr>
<td>Weight Each</td>
<td>0.85kg</td>
</tr>
<tr>
<td>Cantilever Deflection at 1kN Load</td>
<td>18mm</td>
</tr>
</tbody>
</table>

INSULATORS PART NO: SPS 465
BRACKET PART NO: SPS 316

33kV TYPE PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>33kV</td>
</tr>
<tr>
<td>Impulse Voltage Withstand</td>
<td>170kV</td>
</tr>
<tr>
<td>Wet Voltage With Stand</td>
<td>75kV</td>
</tr>
<tr>
<td>Creepage Distance</td>
<td>1050mm</td>
</tr>
<tr>
<td>Weight Each</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Cantilever Deflection at 1kN Load</td>
<td>25mm</td>
</tr>
</tbody>
</table>

INSULATORS PART NO: SPS 509
BRACKET PART NO: SPS 317
Medium Voltage Termination
Observations

Indoor 3 Core Xlpe Termination Installed Using
Alternative Improved Clearance Dimensions

Picture 1 shows the termination in varying stages of completion. Please note:- The installation instruction provided with each kit details both the standard cable preparation details and the dimensions for the improved clearance option.

Observations

1. Shows the application of the mastic melt tape to the bushing and to the metalwork. This not only ensures an additional moisture seal but improves impulse voltage withstand levels from 75 to 95kV.

2. Shows the application of the red anti-track sealant tape over the lug barrel.

3. Shows the position of the stress control tube which in this example has been fitted in a higher position up the core with the following additional benefits:-
   A) Improved clearance dimensions between phases at the top of stress control tubes, which also gives the user the ability to core cross whilst still retaining the required clearances.
   B) Not only does it save the installer time because less screen material is removed, it makes it far easier to use screen removal tools in between the cores.
   C) It is easier to use a gas torch between the cores at a higher point, resulting in the increased likelihood that even shrinkage of both stress control and anti-track tube is achieved at the end of the screen point.

4. Shows the installation of the right angle bushing protection boot. A shorter skirt version is also available for short bushings.
Medium Voltage Termination

Observations

Indoor 3 Core Pilc Termination Installed With Optional Improved Clearance/Core Crossing Kit

Picture 2 shows the termination in varying stages of completion. Please note:- The improved clearance/core crossing kit is an optional item that can be ordered in addition to the standard termination.

Observations

1  Shows the installation of a right angle bushing protection boot. A shorter skirt version is also available for where short bushings exist.

2  Shows the centre phase anti-track tube having been fitted. The tube is printed with both size and batch code.

3  Shows the application of the mastic melt tape to the bushing and to the metalwork. This not only ensures an additional moisture seal but improves impulse voltage withstand levels from 75 to 95kV.

4  Shows the application of the red anti-track sealant tape being applied to the lug barrel.

5  In order to improve phase to phase clearance dimensions under normal circumstances, or when a core cross is applied, conductive tubes are fitted to each core. This allows you to fit the stress control tubes at a higher position.

6  Shows the position of the stress control tube which in this case has been fitted in a higher position up the core with the following additional benefits:-

   A) Improved clearance dimensions between phases at the top of stress control tubes, which also gives the user the ability to core cross whilst still retaining the required clearances.

   B) It is easier to use a gas torch between the cores at a higher point, resulting in the increased likelihood that even shrinkage of both stress control and anti-track tube is achieved at the end of screen point.
Universal Heatshrink / Resin Combination Joint For 7.2 to 12kV Cables

- Suits 3 Core Xlpe/Pilc/Picas Cables or Transition combinations Complete with Tapered range taking Mechanical Connectors, High Impact Shell and Twin Pack Polyurethane Resin
- Offers the superior insulation benefits of Heatshrink combined with Resin for environmental protection
- Designed and tested to BS7888 and Cenelec HD 628 S1 and HD 629 S1, ASTA test report available

Shrink Polymer Systems now offer from stock, a Universal Heatshrink Joint complete with Mechanical Shearbolt Connectors, High Impact Shell, Twin Pack Polyurethane Resin and full Earthing accessories for Xlpe, Pilc and Picas Cable combinations.

The standard Joint comes complete with modules that enable all Cable types and sizes to be catered for. This is ideal for Distributors who wish to cut down their stock levels and Contractors that cannot be sure of the exact Cables they will encounter on site.

Note:- Due to the modular nature of the Joint, if cable type is known, modules can be omitted at ordering stage to reduce initial price.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CONDUCTOR SIZE</th>
<th>CABLE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPUJ 12U 35-70-3</td>
<td>35-70mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPUJ 12U 95-185-3</td>
<td>95-185mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPUJ 12U 185-300-3</td>
<td>185-300mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPUJ 12X 35-70-3</td>
<td>35-70mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPUJ 12X 95-185-3</td>
<td>95-185mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPUJ 12X 185-300-3</td>
<td>185-300mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPUJ 12PX 35-70-3</td>
<td>35-70mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPUJ 12PX 95-185-3</td>
<td>95-185mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPUJ 12PX 185-300-3</td>
<td>185-300mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPUJ 12P 35-70-3</td>
<td>35-70mm²</td>
<td>PILC/PICAS</td>
</tr>
<tr>
<td>SPUJ 12P 95-185-3</td>
<td>95-185mm²</td>
<td>PILC/PICAS</td>
</tr>
<tr>
<td>SPUJ 12P 185-300-3</td>
<td>185-300mm²</td>
<td>PILC/PICAS</td>
</tr>
</tbody>
</table>

Notes:-
Items 1-3 are the Universal type, items 4-12 have only the required modules.
Trifurcating Joints are available. Example - 3c 95mm² Pilc to 3 x Single Core 95mm² Xlpe = SPUJ 12PX-95-185-3-TRIF
Universal Heatshrink
Range Taking Joint For 7.2 to 12kV Cables

- Suits 3 core XLpe/Pilc/Picas cables or transition Complete with tapered range taking mechanical connectors
- Modular in design
- Can be installed vertically
- Trifurcating applications catered for
- Tested to BS 7888 and Cenelec HD 628 S1 and HD 629 S1

Shrink Polymer Systems now offer a Universal Heatshrink Joint complete with Mechanical Shearbolt Connectors and full Earthing accessories for XLpe, Pilc and Picas Cables. Based on the Uniset Heatshrink / Resin Combination Joint, Heatshrink Outer Tubes are used instead of Outer Shell and Resin. The Joints are therefore lower in cost, quicker to install and can be installed on uneven planes including vertical installations.

Where the Cables are known, only the modules required can be supplied to further reduce cost. Mechanical Connectors can be substituted for Compression Connectors if preferred.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CONDUCTOR SIZE</th>
<th>CABLE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 12U 35-70-3</td>
<td>35-70mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPAJ 12U 95-185-3</td>
<td>95-185mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPAJ 12U 185-300-3</td>
<td>185-300mm²</td>
<td>XLPE/PILC/PICAS</td>
</tr>
<tr>
<td>SPAJ 12X 35-70-3</td>
<td>35-70mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPAJ 12X 95-185-3</td>
<td>95-185mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPAJ 12X 185-300-3</td>
<td>185-300mm²</td>
<td>XLPE</td>
</tr>
<tr>
<td>SPAJ 12PX 35-70-3</td>
<td>35-70mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPAJ 12PX 95-185-3</td>
<td>95-185mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPAJ 12PX 185-300-3</td>
<td>185-300mm²</td>
<td>TRANSITION</td>
</tr>
<tr>
<td>SPAJ 12P 35-70-3</td>
<td>35-70mm²</td>
<td>PILC/PICAS</td>
</tr>
<tr>
<td>SPAJ 12P 95-185-3</td>
<td>95-185mm²</td>
<td>PILC/PICAS</td>
</tr>
<tr>
<td>SPAJ 12P 185-300-3</td>
<td>185-300mm²</td>
<td>PILC/PICAS</td>
</tr>
</tbody>
</table>

Notes:-
Items 1-3 are the Universal type, items 4-12 have only the required modules.
Trifurcating Joints are available. Example - 3c 95mm² Pilc to 3 x Single Core 95mm² XLpe = SPAJ 12PX-95-185-3-TRIF
### THREE CORE XLPE 17.5kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 17.5X-35-70-3</td>
<td>17.5kV</td>
<td>35-70mm²</td>
</tr>
<tr>
<td>SPAJ 17.5X-95-185-3</td>
<td>17.5kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPAJ 17.5X-240-300-3</td>
<td>17.5kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE 24kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 24X-35-70-3</td>
<td>24kV</td>
<td>35-70mm²</td>
</tr>
<tr>
<td>SPAJ 24X-95-185-3</td>
<td>24kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPAJ 24X-240-300-3</td>
<td>24kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 36X-35-70-3</td>
<td>36kV</td>
<td>35-70mm²</td>
</tr>
<tr>
<td>SPAJ 36X-95-185-3</td>
<td>36kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPAJ 36X-240-300-3</td>
<td>36kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

**Note:**

For Trifurcating applications (3 core jointing to 3 x single core) add the letters "TRIF" in the Part Number. Example: SPAJ 36X-95-185-3-TRIF
# Three Core PILC Heatshrink Joints

### THREE CORE PILC 17.5kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 17.5P-25-50-3</td>
<td>17.5kV</td>
<td>25-50mm²</td>
</tr>
<tr>
<td>SPAJ 17.5P-70-95-3</td>
<td>17.5kV</td>
<td>70-95mm²</td>
</tr>
<tr>
<td>SPAJ 17.5P-120-185-3</td>
<td>17.5kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 17.5P-240-400-3</td>
<td>17.5kV</td>
<td>240-400mm²</td>
</tr>
</tbody>
</table>

### THREE CORE PILC 24kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 24P-25-35-3</td>
<td>24kV</td>
<td>25-35mm²</td>
</tr>
<tr>
<td>SPAJ 24P-50-95-3</td>
<td>24kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPAJ 24P-120-185-3</td>
<td>24kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 24P-240-300-3</td>
<td>24kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

### THREE CORE PAPER INSULATED 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 36P-50-95-3</td>
<td>36kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPAJ 36P-120-185-3</td>
<td>36kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 36P-240-300-3</td>
<td>36kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

Note: For Trifurcating applications (3 core jointing to 3 x single core) add the letters "TRIF" after part number. Example: SPAJ 36P-120-185-3-TRIF
3 Core XLPE to PILC Transition Heatshrink Joints 17.5 to 36kV

### THREE CORE XLPE TO PILC 17.5kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 17.5PX-25-50-3</td>
<td>17.5kV</td>
<td>25-50mm²</td>
</tr>
<tr>
<td>SPAJ 17.5PX-70-95-3</td>
<td>17.5kV</td>
<td>70-95mm²</td>
</tr>
<tr>
<td>SPAJ 17.5PX-120-185-3</td>
<td>17.5kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 17.5PX-240-400-3</td>
<td>17.5kV</td>
<td>240-400mm²</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE TO PILC 24kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 24PX-25-35-3</td>
<td>24kV</td>
<td>25-35mm²</td>
</tr>
<tr>
<td>SPAJ 24PX-50-95-3</td>
<td>24kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPAJ 24PX-120-185-3</td>
<td>24kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 24PX-240-300-3</td>
<td>24kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

### THREE CORE XLPE TO PILC 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAJ 36PX-50-95-3</td>
<td>36kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPAJ 36PX-120-185-3</td>
<td>36kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPAJ 36PX-240-300-3</td>
<td>36kV</td>
<td>240-300mm²</td>
</tr>
</tbody>
</table>

Note:-
For Trifurcating applications (3 core jointing to 3 x single core) add the letter "TRIF" after part number. Example: SPAJ 36PX-120-185-3-TRIF
# Single Core Heatshrink Joints

## 7.2 to 36kV

### SINGLE CORE XLPE 7.2/12kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 12X-25-70-1</td>
<td>12kV</td>
<td>25-70mm²</td>
</tr>
<tr>
<td>SPJ 12X-95-185-1</td>
<td>12kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPJ 12X-185-300-1</td>
<td>12kV</td>
<td>185-300mm²</td>
</tr>
<tr>
<td>SPJ 12X-400-630-1</td>
<td>12kV</td>
<td>400-630mm²</td>
</tr>
<tr>
<td>SPJ 12X-800-1</td>
<td>12kV</td>
<td>800mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE XLPE 17.5kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 17.5X-25-70-1</td>
<td>17.5kV</td>
<td>25-70mm²</td>
</tr>
<tr>
<td>SPJ 17.5X-95-185-1</td>
<td>17.5kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPJ 17.5X-185-300-1</td>
<td>17.5kV</td>
<td>185-300mm²</td>
</tr>
<tr>
<td>SPJ 17.5X-400-630-1</td>
<td>17.5kV</td>
<td>400-630mm²</td>
</tr>
<tr>
<td>SPJ 17.5X-800-1</td>
<td>17.5kV</td>
<td>800mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE XLPE 24kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 24X-25-70-1</td>
<td>24kV</td>
<td>25-70mm²</td>
</tr>
<tr>
<td>SPJ 24X-95-185-1</td>
<td>24kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPJ 24X-185-300-1</td>
<td>24kV</td>
<td>185-300mm²</td>
</tr>
<tr>
<td>SPJ 24X-400-630-1</td>
<td>24kV</td>
<td>400-630mm²</td>
</tr>
<tr>
<td>SPJ 24X-800-1</td>
<td>12kV</td>
<td>800mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE XLPE 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 36X-25-70-1</td>
<td>36kV</td>
<td>25-70mm²</td>
</tr>
<tr>
<td>SPJ 36X-95-185-1</td>
<td>36kV</td>
<td>95-185mm²</td>
</tr>
<tr>
<td>SPJ 36X-185-300-1</td>
<td>36kV</td>
<td>185-300mm²</td>
</tr>
<tr>
<td>SPJ 36X-400-630-1</td>
<td>36kV</td>
<td>400-630mm²</td>
</tr>
</tbody>
</table>

**Notes:** If Cable is Armoured (AWA), Aluminium Cage is supplied and Part Number becomes SPAJ. If long Cable runs, Cross Bonding kits maybe required, see Page 28 for details.
### SINGLE CORE PAPER INSULATED 12kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 12P-50-95-1</td>
<td>12kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPJ 12P-120-185-1</td>
<td>12kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPJ 12P-240-400-1</td>
<td>12kV</td>
<td>240-400mm²</td>
</tr>
<tr>
<td>SPJ 12P-500-630-1</td>
<td>12kV</td>
<td>500-630mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE PAPER INSULATED 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 36P-50-95-1</td>
<td>36kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPJ 36P-120-185-1</td>
<td>36kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPJ 36P-240-400-1</td>
<td>36kV</td>
<td>240-400mm²</td>
</tr>
<tr>
<td>SPJ 36P-500-630-1</td>
<td>36kV</td>
<td>500-630mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE PAPER TO XLPE 12kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 12PX-50-95-1</td>
<td>12kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPJ 12PX-120-185-1</td>
<td>12kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPJ 12PX-240-400-1</td>
<td>12kV</td>
<td>240-400mm²</td>
</tr>
<tr>
<td>SPJ 12PX-500-630-1</td>
<td>12kV</td>
<td>500-630mm²</td>
</tr>
</tbody>
</table>

### SINGLE CORE PAPER TO XLPE 36kV JOINTS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>VOLTAGE</th>
<th>CABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPJ 36PX-50-95-1</td>
<td>36kV</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>SPJ 36PX-120-185-1</td>
<td>36kV</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>SPJ 36PX-240-400-1</td>
<td>36kV</td>
<td>240-400mm²</td>
</tr>
<tr>
<td>SPJ 36PX-500-630-1</td>
<td>36kV</td>
<td>500-630mm²</td>
</tr>
</tbody>
</table>

**Notes:**
- If Cable is Armoured (AWA), Aluminium Cage is supplied and Part Number becomes SPAJ. If long Cable runs, Cross Bonding kits maybe required, see Page 28 for details.
Earthing arrangements on Single Core Cables with Aluminium Wire Armours (AWA)

If Single Core Aluminium Wire Armoured (AWA) Cables are earthed only at one end, a voltage will appear at the other end. If both ends are earthed, circulating currents will be induced. How much will depend on a number of factors:-

* Length of the cable run
* The current in the cable conductor and its frequency 50Hz or 60Hz
* The proximity of the other two cables, assuming a 3 phase system
* The mutual inductance per phase

The current can be calculated using the following method:

Where

\[ I_c = \frac{V}{Z} \]  

\[ I_c \text{ in Amps} \]

On long cable runs potentially lethal over voltages can be induced and standard earthing methods do not provide adequate protection. A simple method to reduce or eliminate this effect is to divide the Cable run into three equal sections and install Cross Bond Kits. Kits are available from SPS.

Note: Installer would be well advised to obtain the parameters of the Cable being installed from the Cable manufacturer to enable values of induced voltage and current for a given situation.
Medium Voltage Busbar Tube

- Substantially improves clearance dimensions within installations
- Highly flexible for use on straight or angled bars
- Available on spools for reduced waste

Shrink Polymer Systems BMT and BTT are red medium and thick wall unlined heatshrinkable tubes designed to insulate busbar systems up to voltages of 36kV and to protect against flashover. The insulation value of both medium Wall (BMT) and thick wall (BTT) allows substantial reductions in Ph-Ph and Ph-E clearances compared with air Insulated systems.

**Busbar Tube Size Selection**

The for guidance only, the user should always determine the optimum size. The maximum wall thickness (‘T’) shown, is only achieved as a result of full recovery in Air. The actual wall thickness will vary depending on the size of the Busbar profile.

<table>
<thead>
<tr>
<th>EXP DIA</th>
<th>'T' (mm)</th>
<th>REC DIA</th>
<th>'W' (mm)</th>
<th>RECTANGULAR BUSBAR 'X' = (a+b) mm</th>
<th>'D' (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX RECOVERED WALL THICKNESS</td>
<td>W = LAID FLAT WIDTH</td>
<td>X' RANGE</td>
<td>D' RANGE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MEDIUM WALL BUSBAR TUBE SPOOL SIZE 15 mtr**

<table>
<thead>
<tr>
<th>EXP/ REC</th>
<th>REC 'T' (mm)</th>
<th>EXP 'W' (mm)</th>
<th>X' RANGE (mm)</th>
<th>D' RANGE (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMT 30/12</td>
<td>2.0</td>
<td>47</td>
<td>35-22</td>
<td>25-14</td>
</tr>
<tr>
<td>BMT 35/14</td>
<td>2.0</td>
<td>55</td>
<td>38-25</td>
<td>28-16</td>
</tr>
<tr>
<td>BMT 40/16</td>
<td>2.0</td>
<td>63</td>
<td>42-28</td>
<td>32-18</td>
</tr>
<tr>
<td>BMT 50/20</td>
<td>2.0</td>
<td>78</td>
<td>60-35</td>
<td>40-22</td>
</tr>
<tr>
<td>BMT 65/25</td>
<td>2.0</td>
<td>102</td>
<td>85-44</td>
<td>55-27</td>
</tr>
<tr>
<td>BMT 75/30</td>
<td>2.0</td>
<td>117</td>
<td>94-52</td>
<td>60-32</td>
</tr>
<tr>
<td>BMT 100/40</td>
<td>2.0</td>
<td>157</td>
<td>125-70</td>
<td>80-42</td>
</tr>
</tbody>
</table>

**THICK WALL BUSBAR TUBE SPOOL SIZE 15mtr**

<table>
<thead>
<tr>
<th>EXP/ REC</th>
<th>REC 'T' (mm)</th>
<th>EXP 'W' (mm)</th>
<th>X' RANGE (mm)</th>
<th>D' RANGE (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTT 30/12</td>
<td>2.3</td>
<td>47</td>
<td>30-22</td>
<td>25-14</td>
</tr>
<tr>
<td>BTT 40/16</td>
<td>2.5</td>
<td>63</td>
<td>42-28</td>
<td>32-18</td>
</tr>
<tr>
<td>BTT 50/20</td>
<td>2.5</td>
<td>78</td>
<td>60-35</td>
<td>40-23</td>
</tr>
<tr>
<td>BTT 65/25</td>
<td>2.5</td>
<td>102</td>
<td>85-44</td>
<td>55-28</td>
</tr>
<tr>
<td>BTT 75/30</td>
<td>2.6</td>
<td>117</td>
<td>94-52</td>
<td>60-33</td>
</tr>
<tr>
<td>BTT 85/35</td>
<td>2.6</td>
<td>133</td>
<td>105-60</td>
<td>70-38</td>
</tr>
<tr>
<td>BTT 100/40</td>
<td>2.6</td>
<td>157</td>
<td>120-70</td>
<td>80-44</td>
</tr>
<tr>
<td>BTT 120/50</td>
<td>3.0</td>
<td>188</td>
<td>140-85</td>
<td>100-55</td>
</tr>
<tr>
<td>BTT 150/60</td>
<td>3.5</td>
<td>235</td>
<td>160-100</td>
<td>120-65</td>
</tr>
</tbody>
</table>
Typical Clearances of Busbars with BMT and BTT

The following table indicates possible clearance reductions as a result of using BMT or BTT to insulate Busbars compared with un-insulated Bars in Air.

<table>
<thead>
<tr>
<th>RATED VOLTAGE (kV)</th>
<th>BMT MEDIUM WALL BUSBAR TUBE</th>
<th>BMT MEDIUM WALL BUSBAR TUBE</th>
<th>UN-INSULATED BUSBARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ph-E (mm)</td>
<td>Ph-Ph (mm)</td>
<td>IEC 71-2 Ph-E IN AIR (mm)</td>
</tr>
<tr>
<td></td>
<td>ROUND PROFILE</td>
<td>RECTANGULAR PROFILE</td>
<td>UN-INSULATED BUSBARS</td>
</tr>
<tr>
<td>12</td>
<td>60</td>
<td>70</td>
<td>120</td>
</tr>
<tr>
<td>17.5</td>
<td>80</td>
<td>100</td>
<td>160</td>
</tr>
<tr>
<td>24</td>
<td>120</td>
<td>145</td>
<td>220</td>
</tr>
<tr>
<td>36</td>
<td>200</td>
<td>280</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>BTT THICK WALL BUSBAR TUBE</td>
<td>BTT THICK WALL BUSBAR TUBE</td>
<td>UN-INSULATED BUSBARS</td>
</tr>
<tr>
<td></td>
<td>Ph-E (mm)</td>
<td>Ph-Ph (mm)</td>
<td>IEC 71-2 Ph-E IN AIR (mm)</td>
</tr>
<tr>
<td></td>
<td>ROUND PROFILE</td>
<td>RECTANGULAR PROFILE</td>
<td>UN-INSULATED BUSBARS</td>
</tr>
<tr>
<td>12</td>
<td>40</td>
<td>45</td>
<td>120</td>
</tr>
<tr>
<td>17.5</td>
<td>60</td>
<td>65</td>
<td>160</td>
</tr>
<tr>
<td>24</td>
<td>90</td>
<td>100</td>
<td>220</td>
</tr>
<tr>
<td>36</td>
<td>160</td>
<td>190</td>
<td>320</td>
</tr>
</tbody>
</table>

**Criteria Influencing Electrical Performance**

1. Insulation wall thickness
2. Available Ph-Ph and Ph-Earth clearance
3. Busbar chamber geometric configuration
4. Busbar profile
Medium Voltage Busbar Tube

- Substantially improves clearance dimensions within switchgear installations
- Flexible for use on straight or angled bars
- Available on spools to reduce waste

Shrink Polymer Systems BTMC and BTMI are medium and thick wall black unlined heatshrink tubes designed to insulate 12kV busbar systems and to protect against flashover.

The insulation value of both medium wall (BTMC) and thick wall (BTMI) enable substantial reductions in Ph-Ph and Ph-E clearances compared with air insulated systems.

Table 1 is for guidance only, the user should always determine the optimum size. The maximum wall thickness (‘T’) shown, is only achieved as a result of full recovery in Air. The actual wall thickness will vary depending on the size of the Busbar profile.
Anti-Track Busbar Insulation Tape

- Reduces busbar clearance dimensions
- Protects against accidental flash over
- Adhesive coated
- Easy to apply
- Ideal for tee sections on busbar installations

Shrink Polymer Systems product type SPBT is a cross linked polyolefin anti-track busbar insulation tape designed for use in medium voltage busbar insulation applications.

Available in three widths and coated with an anti-track sealant, it is ideal for use in restricted access areas and an ideal partner to our range of medium and thick wall heatshrinkable busbar insulation tubings types BMT and BTT.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>WIDTH</th>
<th>ROLL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPBT 25</td>
<td>25mm</td>
<td>10mtr</td>
</tr>
<tr>
<td>SPBT 50</td>
<td>50mm</td>
<td>10mtr</td>
</tr>
<tr>
<td>SPBT 100</td>
<td>100mm</td>
<td>10mtr</td>
</tr>
</tbody>
</table>

**Physical Properties**

- **Tensile Strength**: ASTM D412, ISO 37, 1200 psi (8.3Mpa)
- **Elongation**: ASTM D412, ISO 37, 370%
- **Heat Shock**: ASTM D2671, No cracking or flowing (4hrs at 225°C)
- **Low Temperature Flexibility**: ASTM D2671, No cracking (4hrs at -40°C)
- **Flammability**: ANSI C37.20, ASTM D2671, Pass

**Electrical Properties**

- **Dielectric Strength**: ASTM D149, 380V/mil (15kV/mm)
- **Surface Resistance**: ASTM D257, 510 x 10^9 ohm
- **Volume Resistivity**: ASTM D257, 2.23 x 10^13 ohm-cm
- **Dielectric Constant**: ASTM D-150, 3.4
- **Tracking Tests**: ANSI C37.20, Non-tracking
- **Weathering**: ASTM G53, Non-tracking after 3 hrs

**Adhesive Properties**

- **Adhesive softening point**: ASTM E-281, 100°C
- **Low Temp Flexibility**: STM C12, -25°C
- **Tracking Tests**: ANSI C37.20, ASTM D2303, Non-Tracking
Medium Voltage
Termination Components

Anti-Track Heatshrink Tubing
Shrink Polymer Systems type AT Anti-Track Tube is used primarily for Insulation on Medium Voltage Power Cable Termination systems up to 36kV.

Available in seven different sizes with shrink ratios of 3 to 1, all Cable sizes are catered for in each Voltage Class.

Additionally AT Anti-Track is self extinguishing and is inherently LSF, therefore it can be used where fire sensitive installations are required.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>EXPANDED DIA (mm)</th>
<th>RECOVERED DIA (mm)</th>
<th>WALL THICKNESS (mm)</th>
<th>REEL SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 30/10</td>
<td>30</td>
<td>10</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 35/12</td>
<td>35</td>
<td>12</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 45/18</td>
<td>45</td>
<td>18</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 54/24</td>
<td>54</td>
<td>24</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 60/29</td>
<td>60</td>
<td>29</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 76/38</td>
<td>76</td>
<td>38</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 100/49</td>
<td>100</td>
<td>49</td>
<td>3.0</td>
<td>15mtr</td>
</tr>
</tbody>
</table>

Anti-track Mastic Sealant Tape
Shrink Polymer Systems A100 product is a red mastic melt tape sealant with anti-track properties. It is mainly used for sealing purposes within medium voltage terminations but can easily be utilised as an additional seal in other low and medium voltage applications.

A100 is 25mm wide, 0.8mm thick and comes as standard in 300mm lengths although other lengths are available.

Anti-track Rain Sheds
Rain Sheds are used to increase the creepage length on medium voltage terminations. Three sizes are available.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>D (mm)</th>
<th>DIA (d) EXP (mm)</th>
<th>DIA (d) REC (mm)</th>
<th>C (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARS 35/12</td>
<td>95</td>
<td>35</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>ARS 60/20</td>
<td>120</td>
<td>60</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>ARS 75/30</td>
<td>140</td>
<td>75</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>ARS 120/45</td>
<td>200</td>
<td>120</td>
<td>45</td>
<td>35</td>
</tr>
</tbody>
</table>
**Medium Voltage Termination and Joint Components**

**Stress Control Heatshrink Tube**

Heatshrink stress control tube is a special high perimitivity material that is used extensively within medium voltage joints and terminations to control the electrical stress field lines.

SCT stress control is available on rolls or cut to length to suit voltage and conductor size.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>EXPANDED DIA (mm)</th>
<th>RECOVERED DIA (mm)</th>
<th>WALL THICKNESS (mm)</th>
<th>REEL SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCT 26/12</td>
<td>26</td>
<td>12</td>
<td>2.5</td>
<td>25 mtr</td>
</tr>
<tr>
<td>SCT 30/15</td>
<td>30</td>
<td>15</td>
<td>2.7</td>
<td>25 mtr</td>
</tr>
<tr>
<td>SCT 45/20</td>
<td>45</td>
<td>20</td>
<td>2.8</td>
<td>20 mtr</td>
</tr>
<tr>
<td>SCT 50/25</td>
<td>50</td>
<td>25</td>
<td>2.9</td>
<td>20 mtr</td>
</tr>
<tr>
<td>SCT 65/30</td>
<td>65</td>
<td>30</td>
<td>3.1</td>
<td>20 mtr</td>
</tr>
<tr>
<td>SCT 95/45</td>
<td>95</td>
<td>45</td>
<td>3.2</td>
<td>20 mtr</td>
</tr>
</tbody>
</table>

**Medium Voltage Dual Wall Tube**

Shrink Polymer Systems product code DWMV is a dual wall combined Insulation/Semi-Conductive tube designed for use within medium voltage joint systems up to 33kV.

**Advantages**
- Bonded construction means no air voids between insulation layer and improved electrical performance
- Reduces the number of tubes used within a joint making it more user friendly
- Also available in cut lengths

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>EXPANDED DIA (mm)</th>
<th>RECOVERED DIA (mm)</th>
<th>WALL THICKNESS (mm)</th>
<th>STANDARD LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWMV 45/15</td>
<td>45</td>
<td>15</td>
<td>6.5</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 55/18</td>
<td>55</td>
<td>18</td>
<td>6.5</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 65/25</td>
<td>65</td>
<td>25</td>
<td>6.5</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 85/30</td>
<td>85</td>
<td>30</td>
<td>6.5</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 100/38</td>
<td>100</td>
<td>38</td>
<td>6.5</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 120/45</td>
<td>120</td>
<td>45</td>
<td>7.0</td>
<td>1mtr</td>
</tr>
<tr>
<td>DWMV 140/50</td>
<td>140</td>
<td>50</td>
<td>7.0</td>
<td>1mtr</td>
</tr>
</tbody>
</table>
Medium Voltage Breakout Boots

Shrink Polymer Systems offer two different types of heatshrink medium voltage breakout boot. One is produced from anti-track material making it suitable for polymeric terminations up to 33kV.

The other is manufactured from a semi-conductive compound and is suitable for both polymeric and paper insulated terminations up to 33kV.

Where a cable incorporates additional cores, eg extra signal or fibre optic cores please advise as specials can be accommodated.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LEGS</th>
<th>TYPE</th>
<th>SKIRT DIA.(mm)</th>
<th>LEG DIA. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>EXP</td>
<td>REC</td>
</tr>
<tr>
<td>SCB 60/24</td>
<td>3</td>
<td>SEMI-CON</td>
<td>60</td>
<td>24</td>
</tr>
<tr>
<td>SCB 80/38</td>
<td>3</td>
<td>SEMI-CON</td>
<td>80</td>
<td>38</td>
</tr>
<tr>
<td>SCB 110/50</td>
<td>3</td>
<td>SEMI-CON</td>
<td>110</td>
<td>50</td>
</tr>
<tr>
<td>SCB 125/57</td>
<td>3</td>
<td>SEMI-CON</td>
<td>125</td>
<td>57</td>
</tr>
</tbody>
</table>

A more detailed specification is available upon request.

Medium Voltage Termination and Joint Components
**TS 31785Y HV Stress Control Tape**

Shrink Polymer Systems TS 31785Y is a high permittivity yellow butyl stress relief tape that is used within heatshrinkable joint and termination systems up to voltages of 36kV.

The tape is ideally suited to both paper and polymeric insulated cables and is used over the connector area and at end of screen points.

TS 31785Y used in conjunction with heatshrink tubing has a flow/void filling characteristic and adheres well to most surfaces.

As standard TS 31785Y is supplied in widths of 25mm x 10mtr rolls. Other lengths are available upon request.

---

**4SC HV Stress Control Tape**

Shrink Polymer Systems 4SC HV stress tape is a special cross linked grey butyl tape suitable for continuous operation between -40 to +130°C.

The sealant is a soft, tacky, pliable material with the ability to ‘wet out’ to a wide variety of rubbers, plastics and metals.

4SC HV can be used as a filler to smooth out sharp or sudden transitions or configurations in high voltage stress areas within electric cables. The tape will also provide a moisture proof seal when used with heatshrink tubing.

4SC HV is 25mm in width, 3mm thick and available on 7.6 mtr (25ft) rolls or in strips cut to length.
Roll springs provide a reliable method of solderless earthing in low and medium voltage heatshrink joint and termination systems.

The springs listed below are all standard stock items. We are happy to quote you for any alternative if full details are provided.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>INNER DIA (mm)</th>
<th>WIDTH (mm)</th>
<th>LENGTH (mm)</th>
<th>APPLICATION RANGE (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF1</td>
<td>7.39</td>
<td>9.50</td>
<td>200</td>
<td>9-12</td>
</tr>
<tr>
<td>CF2</td>
<td>9.22</td>
<td>12.70</td>
<td>250</td>
<td>12-16</td>
</tr>
<tr>
<td>CF3</td>
<td>15.5</td>
<td>15.90</td>
<td>216</td>
<td>16-23</td>
</tr>
<tr>
<td>CF4</td>
<td>18.47</td>
<td>15.90</td>
<td>400</td>
<td>22-30</td>
</tr>
<tr>
<td>CF5</td>
<td>22.17</td>
<td>19.00</td>
<td>400</td>
<td>28-38</td>
</tr>
<tr>
<td>CF6</td>
<td>25.91</td>
<td>25.40</td>
<td>711</td>
<td>36-42</td>
</tr>
<tr>
<td>CF7</td>
<td>35.05</td>
<td>25.40</td>
<td>610</td>
<td>42-56</td>
</tr>
<tr>
<td>CF8</td>
<td>44.00</td>
<td>20.00</td>
<td>935</td>
<td>54-80</td>
</tr>
</tbody>
</table>

A wide range of copper earth straps/socks are available from stock and can be cut to the required length. Solder blocks can be applied and braids can be insulated with heatshrink sleeving if desired.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLTB 7.5</td>
<td>FLAT TINNED COPPER EARTH STRAP 7.5mm² CSA</td>
</tr>
<tr>
<td>FLTB 16</td>
<td>FLAT TINNED COPPER EARTH STRAP 16mm² CSA</td>
</tr>
<tr>
<td>FLTB 25</td>
<td>FLAT TINNED COPPER EARTH STRAP 25mm² CSA</td>
</tr>
<tr>
<td>TCB 12.5</td>
<td>TUBULAR TINNED COPPER EARTH SOCK 7.5mm²CSA</td>
</tr>
<tr>
<td>TCB 25</td>
<td>TUBULAR COPPER EARTH SOCK 25mm ID BY 16mm² CSA</td>
</tr>
<tr>
<td>TCB 50</td>
<td>TUBULAR COPPER EARTH SOCK 50mm ID BY 25mm² CSA</td>
</tr>
<tr>
<td>KM 50</td>
<td>TINNED COPPER SCREENING BANDAGE 50mm WIDTH</td>
</tr>
</tbody>
</table>
MV Copper Crimp Lugs and Ferrules

- Suitable for use up to 19/33kV
- The absence of an inspection hole makes both type 2A and Ca suitable for outdoor use
- Type 2A has extended lug barrel for heavy duty use
- Good cost savings on the 2A range
- Compatible with the majority of tooling on the market today

Series CA-M, 2A-M terminal lugs and MT ferrules are designed for use for applications up to 36kV.

They are manufactured from high purity copper tube, annealed and tin plated.

A full range of tooling is available upon request and confirmation can be provided as to the compatibility of using existing tooling by calling Shrink Polymer Systems.

<table>
<thead>
<tr>
<th>CONDUCTOR SIZE (mm²)</th>
<th>PART NUMBER CA RANGE</th>
<th>PART NUMBER 2A RANGE</th>
<th>PART NUMBER FERRULE</th>
<th>PART NUMBER FERRULE (BLOCKED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>---</td>
<td>2A3-M--</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>25</td>
<td>CA 25-M--</td>
<td>2A5-M--</td>
<td>MT 25TD</td>
<td>MT 25GC</td>
</tr>
<tr>
<td>35</td>
<td>CA 40S-M--</td>
<td>2A7-M--</td>
<td>MT 40S-TD</td>
<td>MT 40S-GC</td>
</tr>
<tr>
<td>50</td>
<td>CA 50S-M--</td>
<td>2A10-M--</td>
<td>MT 50S-TD</td>
<td>MT 50S-GC</td>
</tr>
<tr>
<td>70</td>
<td>CA 70S-M--</td>
<td>2A14-M--</td>
<td>MT 70S-TD</td>
<td>MT 70S-GC</td>
</tr>
<tr>
<td>95</td>
<td>CA 95S-M--</td>
<td>2A19-M--</td>
<td>MT 95S-TD</td>
<td>MT 95S-GC</td>
</tr>
<tr>
<td>120</td>
<td>CA 150R-M--</td>
<td>2A24-M--</td>
<td>MT 150R-TD</td>
<td>MT 150R-GC</td>
</tr>
<tr>
<td>150</td>
<td>CA 150S-M--</td>
<td>2A30-M--</td>
<td>MT 150S-TD</td>
<td>MT 150S-GC</td>
</tr>
<tr>
<td>185</td>
<td>CA 200R-M--</td>
<td>2A37-M--</td>
<td>MT 200R-TD</td>
<td>MT 200R-GC</td>
</tr>
<tr>
<td>240</td>
<td>CA 315R-M--</td>
<td>2A48-M--</td>
<td>MT 315R-TD</td>
<td>MT 315R-GC</td>
</tr>
<tr>
<td>300</td>
<td>CA 315S-M--</td>
<td>2A60-M--</td>
<td>MT 315S-TD</td>
<td>MT 315S-GC</td>
</tr>
<tr>
<td>400</td>
<td>2A80-M--</td>
<td>2A80-M--</td>
<td>MT 400-TD</td>
<td>---</td>
</tr>
<tr>
<td>500</td>
<td>2A100-M--</td>
<td>2A100-M--</td>
<td>MT 500-TD</td>
<td>---</td>
</tr>
<tr>
<td>630</td>
<td>2A120-M--</td>
<td>2A120-M--</td>
<td>MT 630-TD</td>
<td>---</td>
</tr>
<tr>
<td>800</td>
<td>2A160-M--</td>
<td>2A160-M--</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1000</td>
<td>2A200-M--</td>
<td>2A200-M--</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Specify stud fixing on lugs i.e. 95mm² type 2A lug M10 stud would be part number 2A19-M10
## MV Aluminium Crimp Lugs and Ferrules

### ALUMINIUM TYPE AA

<table>
<thead>
<tr>
<th>CONDUCTOR SIZE (mm²)</th>
<th>PART NUMBER</th>
<th>PART NUMBER</th>
<th>PART NUMBER</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AA</td>
<td>CAA</td>
<td>FERRULE</td>
<td>FERRULE (BLOCKED)</td>
</tr>
<tr>
<td>16</td>
<td>AA 16-M</td>
<td>CAA 16-M</td>
<td>MTMA 16-1</td>
<td>MTMA 16-GC</td>
</tr>
<tr>
<td>35</td>
<td>AA 35-M</td>
<td>CAA 35-M</td>
<td>MTMA 35-1</td>
<td>MTMA 35-GC</td>
</tr>
<tr>
<td>50</td>
<td>AA 50-M</td>
<td>CAA 50-M</td>
<td>MTMA 50-1</td>
<td>MTMA 50-GC</td>
</tr>
<tr>
<td>70</td>
<td>AA 70-M</td>
<td>CAA 70-M</td>
<td>MTMA 70-1</td>
<td>MTMA 70-GC</td>
</tr>
<tr>
<td>95</td>
<td>AA 95-M</td>
<td>CAA 95-M</td>
<td>MTMA 95-1</td>
<td>MTMA 95-GC</td>
</tr>
<tr>
<td>120</td>
<td>AA 120-M</td>
<td>CAA 120-M</td>
<td>MTMA 120-1</td>
<td>MTMA 120-GC</td>
</tr>
<tr>
<td>150</td>
<td>AA 150-M</td>
<td>CAA 150-M</td>
<td>MTMA 150-1</td>
<td>MTMA 150-GC</td>
</tr>
<tr>
<td>185</td>
<td>AA 185-M</td>
<td>CAA 185-M</td>
<td>MTMA 185-1</td>
<td>MTMA 185-GC</td>
</tr>
<tr>
<td>240</td>
<td>AA 240-M</td>
<td>CAA 240-M</td>
<td>MTMA 240-1</td>
<td>MTMA 240-GC</td>
</tr>
<tr>
<td>300</td>
<td>AA 300-M</td>
<td>CAA 300-M</td>
<td>MTMA 300-1</td>
<td>MTMA 300-GC</td>
</tr>
<tr>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>630</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### BI-METALIC TYPE CAA

- Suitable for use up to 36kV
- The absence of an inspection hole makes both AA and CAA lugs suitable for outdoor use
- Compatible with the majority of tooling on the market today

Series AA aluminium lugs, CAA bi-metal crimp lugs and MTMA ferrules are designed for use up to 36kV.

They are manufactured from high purity aluminium of a purity greater than 99.5%. The barrels are capped and filled with grease to avoid oxidisation of the aluminium.

A full range of tooling is available upon request and confirmation can be provided as to the compatibility of using existing tooling by calling Shrink Polymer Systems.

Specify stud fixing on lugs i.e. 95mm² type CAA lug M12 stud would be part number CAA95-M12
Shrink Polymer Systems offers a range of high quality mechanical shearbolt lugs and ferrules for use on medium voltage cables to 36kV.

Multiple shear head bolts with defined torque guarantees ensure the necessary contact pressure and tensile strength of the connectors. The range has successfully passed tests to IEC 1238-1 and have been tested with our own medium voltage joints to BS 7888 and Cenelec 628 S1 and 629.1 S1.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PRODUCT TYPE</th>
<th>CABLE RANGE (mm²)</th>
<th>STUD SIZE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>209-109</td>
<td>BLOCKED CONNECTOR</td>
<td>35-70 SECTOR STRANDED</td>
<td>---</td>
<td>95mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25-95 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209-110</td>
<td>BLOCKED CONNECTOR</td>
<td>70-185 SECTOR STRANDED</td>
<td>---</td>
<td>125mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-240 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209-111</td>
<td>BLOCKED CONNECTOR</td>
<td>120-185 SECTOR STRANDED</td>
<td>---</td>
<td>140mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-300 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209-113</td>
<td>BLOCKED CONNECTOR</td>
<td>185-300 SECTOR STRANDED</td>
<td>---</td>
<td>170mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>185-400 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209-114</td>
<td>BLOCKED CONNECTOR</td>
<td>300-400 SECTOR STRANDED</td>
<td>---</td>
<td>210mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300-630 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>298-307</td>
<td>BLOCKED LUG</td>
<td>35-70 SECTOR STRANDED</td>
<td>M12 OR M16</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25-95 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208-039</td>
<td>BLOCKED LUG</td>
<td>70-185 SECTOR STRANDED</td>
<td>M12 OR M16</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-240 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208-041</td>
<td>BLOCKED LUG</td>
<td>120-185 SECTOR STRANDED</td>
<td>M12 OR M16</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120-300 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>298-340</td>
<td>BLOCKED LUG</td>
<td>95-240 SECTOR STRANDED</td>
<td>M12 OR M16</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>95-400 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208-043</td>
<td>BLOCKED LUG</td>
<td>300-400 SECTOR STRANDED</td>
<td>M16</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300-630 CIRCULAR STRANDED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
One of the main factors in termination and joint failure is the poor removal of the semi-conductive screen on polymeric cables.

Shrink Polymer Systems can offer a wide variety of tools to assist in this essential task.

The BP 1A and 2A are intended for use with polymeric cables that have ‘strippable’ semi-conductive screen layers.

The spring loaded adjustable blade allows for circumferential as well as vertical scoring for clean removal of the screen with no damage to the underlying primary insulation.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CORE O/D</th>
<th>SPARE BLADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP 1A</td>
<td>19-31mm</td>
<td>34230</td>
</tr>
<tr>
<td>BP 2A</td>
<td>32-50mm</td>
<td>34230</td>
</tr>
</tbody>
</table>

The WS 9A is intended for use with bonded type semi-conductive screen layers. It shaves the screen layer off in a spiral pattern without damage to the primary insulation below.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE O/D</th>
<th>SPARE BLADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS 9A</td>
<td>14-57mm</td>
<td>CB 40X</td>
</tr>
</tbody>
</table>

The WS15 is intended for use with polymeric cables that have ‘strippable’ semi-conductive screen layer. It is ideal for use in confined spaces i.e removing the screen near the crutch of a 3 core xlpe cable where other tools may not fit.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE O/D</th>
<th>SPARE BLADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS 15</td>
<td>17.5-44mm</td>
<td>CB 16</td>
</tr>
</tbody>
</table>
Heatshrink Joints to suit Low Voltage Cables type XLpe/Swa/Pvc 0.6/3.3kV

- Meets the jointing requirements of BS6910 part 1, test report available
- Unlimited shelf life
- Slim profile, can be mounted vertically
- Allows for immediate backfill
- Zero halogen, fire resistant and non armoured types are also available

Shrink Polymer Systems type SPA heatshrink joint kits are intended for use with Pvc and xlpe non screened cables for voltages up to 3.3kV.

The system comprises of adhesive lined connector insulation tubes, Heavy duty armour cage (copper mesh on the smallest joints), armour support rings, armour clamps and an outer thick wall adhesive lined heatshrink tube.

The single core joints contain a heavy duty Aluminium cage if the cable has aluminium wire armours.

Many thousands of joints are installed worldwide including critical locations such as ministry of defence, department of transport and subsea offshore sites.

**HEATSHRINK JOINTS TO SUIT SINGLE CORE XLPE/AWA/PVC**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA 50-95-1</td>
<td>50-95mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 120-185-1</td>
<td>120-185mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 240-300-1</td>
<td>240-300mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 400-630-1</td>
<td>400-630mm²</td>
<td>0.6/3.3kV</td>
</tr>
</tbody>
</table>

**HEATSHRINK JOINTS TO SUIT XLPE/SWA/PVC**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA 1.5-2.5-</td>
<td>1.5 - 2.5mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA 4-6-</td>
<td>4 - 6mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA 10-16-</td>
<td>10 - 16mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA 25-50-</td>
<td>25 - 50mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 70-95-</td>
<td>70 - 95mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 120-185-</td>
<td>120 - 185mm²</td>
<td>0.6/3.3kV</td>
</tr>
<tr>
<td>SPA 240-300-</td>
<td>240 - 300mm²</td>
<td>0.6/3.3kV</td>
</tr>
</tbody>
</table>

To denote number of cores, add number to end of reference. Example: 12 core 2.5mm² = SPA 1.5-2.5-12
A range of joints are also available for jointing both pilc to xlpe transition and pilc to pilc cables. These joints offer the same benefits and comprise of similar components to those in the polymeric range, with the addition of breakout boots, core tubes and earthing for the lead sheath on paper cables.

- Meets the jointing requirements of BS6910 part 1, test report available
- Unlimited shelf life
- Slim profile, can be mounted vertically
- Allows for immediate backfill
- Zero halogen, fire resistant and non armoured types are also available

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAP 16-35-3</td>
<td>16 - 35mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPAP 50-95-3</td>
<td>50 - 95mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPAP 120-150-3</td>
<td>120 - 150mm²</td>
<td>600/1000V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAP 16-35-4</td>
<td>16 - 35mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPAP 50-95-4</td>
<td>50 - 95mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPAP 120-150-4</td>
<td>120 - 150mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPAP 185-300-4</td>
<td>185 - 300mm²</td>
<td>600/1000V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 386</td>
<td>16 - 35mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPS 910</td>
<td>50 - 95mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPS 440</td>
<td>120 - 150mm²</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPS 350</td>
<td>185 - 300mm²</td>
<td>600/1000V</td>
</tr>
</tbody>
</table>
Low Voltage Resin Joints

- Supplied complete with mechanical connectors and earthing
- Injection Moulded high impact Polycarbonate Shells with unique clip together system
- Joints for Straight, Mains Branch and Service Branch available
- Tested to BS7888, all kits conform to BS6910 and VDE0278 with Test Report available upon request

Shrink Polymer Systems now offer a high quality range of Low Voltage Resin Joints in both Straight and Branch format. Kits are supplied complete with full Earthing accessories, Mechanical Connectors and high quality twin pack polyurethane resin.

Kits are available from stock and cover cable sizes from 1.5-400mm² (See selection charts). Generous space is allowed which avoids the need to step up sizes and a unique clip together feature on the Shells eliminates resin spillage.

Kits conform to the latest International standards. A copy of the test report is available upon request.

### Selection Chart for LV Straight Joints - Armoured Cables

<table>
<thead>
<tr>
<th>Cable Size (mm²)</th>
<th>Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>S4</td>
</tr>
<tr>
<td>2.5</td>
<td>S10</td>
</tr>
<tr>
<td>4</td>
<td>S16</td>
</tr>
<tr>
<td>6</td>
<td>S25</td>
</tr>
<tr>
<td>10</td>
<td>S50</td>
</tr>
<tr>
<td>16</td>
<td>S120</td>
</tr>
<tr>
<td>25</td>
<td>S240</td>
</tr>
<tr>
<td>35</td>
<td>S400</td>
</tr>
</tbody>
</table>

### Selection Chart for LV Straight Joints - Non Armoured Cables

<table>
<thead>
<tr>
<th>Cable Size (mm²)</th>
<th>Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>S4</td>
</tr>
<tr>
<td>2.5</td>
<td>S10</td>
</tr>
<tr>
<td>4</td>
<td>S16</td>
</tr>
<tr>
<td>6</td>
<td>S25</td>
</tr>
<tr>
<td>10</td>
<td>S50</td>
</tr>
<tr>
<td>16</td>
<td>S120</td>
</tr>
<tr>
<td>25</td>
<td>S240</td>
</tr>
<tr>
<td>35</td>
<td>S400</td>
</tr>
</tbody>
</table>
### Selection Chart for LV Branch Joints - Armoured Service Cables

<table>
<thead>
<tr>
<th>Cable Size (mm²)</th>
<th>1.5</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
<th>35</th>
<th>50</th>
<th>70</th>
<th>95</th>
<th>120</th>
<th>150</th>
<th>185</th>
<th>240</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit Number</td>
<td>SB 4</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 10</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 25</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 50</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 120</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 240</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 400</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Selection Chart for LV Branch Joints - Non Armoured Service Cables

<table>
<thead>
<tr>
<th>Cable Size (mm²)</th>
<th>1.5</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
<th>35</th>
<th>50</th>
<th>70</th>
<th>95</th>
<th>120</th>
<th>150</th>
<th>185</th>
<th>240</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit Number</td>
<td>SB 4</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 10</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 25</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 50</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 120</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 240</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB 400</td>
<td>Main cable</td>
<td>Service cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Selection Chart for LV Branch Joints

<table>
<thead>
<tr>
<th>Cable Size (mm²)</th>
<th>25</th>
<th>35</th>
<th>50</th>
<th>70</th>
<th>95</th>
<th>120</th>
<th>150</th>
<th>185</th>
<th>240</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit Number</td>
<td>MB 50</td>
<td>Main cable</td>
<td>Branch cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB 120</td>
<td>Main cable</td>
<td>Branch cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB 240</td>
<td>Main cable</td>
<td>Branch cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MB 400</td>
<td>Main cable</td>
<td>Branch cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Low Voltage Zero Halogen Cable Joints
For limited Fire Hazard Cables

- Fire tested and compliant with London underground standards 2-0100-002 or the fire safety of materials and E4156 for the cable standard
- Slim profile and unlimited shelf life
  Complete with range taking mechanical shearbolt connectors
- Full range of joints available for all cable types including power and multicore cables

Shrink Polymer Systems can now offer a range of heatshrink joints suitable for both single and multicore low smoke fume zero halogen cables.

Developed for London Underground for use within the tunnels and above surface, the system incorporates flame retardant, non halogen polyolefin heatshrink tubing with a meltable inner liner that itself has excellent flame retardant properties with reduced acid gas emission and smoke generation.

The system incorporates a flexible outer fire barrier tube that provides a high degree of fire resistance. For installations outside of the tunnels this can be omitted.

For ease of use, the range comes complete with range taking mechanical shearbolt connectors. Slim in profile the joints can be installed in horizontal and vertical planes and have an unlimited shelf life.

<table>
<thead>
<tr>
<th>HEATSHRINK JOINTS TO SUIT 1-4 CORE XLPE/SWA/LSOH</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART NUMBER</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-</td>
</tr>
<tr>
<td>SPA NHF 4-6-</td>
</tr>
<tr>
<td>SPA NHF 10-16-</td>
</tr>
<tr>
<td>SPA NHF 25-50-</td>
</tr>
<tr>
<td>SPA NHF 70-95-</td>
</tr>
<tr>
<td>SPA NHF 120-185-</td>
</tr>
<tr>
<td>SPA NHF 240-300-</td>
</tr>
<tr>
<td>SPA NHF 400-630-</td>
</tr>
<tr>
<td>SPA NHF 800-1000-</td>
</tr>
</tbody>
</table>

Notes:
1. For non armoured joints, omit letter (A) from the part number
2. Add last digit to part number to indicate number of cores
Fire resistant cables are usually installed where vital electrical circuits are required to continue operating in the event of a fire. Shrink Polymer Systems can provide joint kits to suit these cable types for both single and multicore configurations.

In addition to utilizing LSF/Zero halogen heatshrink tubes and fire barrier tubes, the joints incorporate mica tape over each of the cores. Mica tape is a slit silica tape constructed from 96% pure SiO$_2$ silica fiber, coated one side with a pressure sensitive adhesive backing that facilitates installation. The adhesive decomposes at high temperatures, leaving a perfectly taped core.

Suitable for use at 1800°F (982°C), and able to withstand short term exposure up to 3000°F (1650°C), mica tape when combined with our proven zero halogen joint range, enables the joint to work in these extreme conditions.

Contact us for more details.

---

HEATSHRINK JOINTS TO SUIT MULTICORE XLPE/SWA/LSOH

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA NHF 1.5-2.5-5</td>
<td>5 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-7</td>
<td>7 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-12</td>
<td>12 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-19</td>
<td>19 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-27</td>
<td>27 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-37</td>
<td>37 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-48</td>
<td>48 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
<tr>
<td>SPA NHF 1.5-2.5-61</td>
<td>61 core 1.5 - 2.5mm$^2$</td>
<td>600/1000V</td>
</tr>
</tbody>
</table>

Notes:-
1. For non armoured joints, omit letter (A) from the part number
2. Add last digit to part number to indicate number of cores

---

Low Voltage Zero Halogen Cable Joints For Fire Resistant Cables

- Designed for use where low smoke fume or fire resistance is essential
- Designed to meet the general requirements of IEC 331 and VDE 0472 for fire resistance and test method ASTM D-350 method B for flammability
- Joints available for all types of LV and MV cables
Airfield Lighting Heatshrink Joint Kits

- A full range of heatshrink joint kits for all airfield ground lighting cables
- Approved by DOE/PSA for use on military airfields and BAA for UK civil airfields
- Thousands of joints installed worldwide on both military and civil airfields

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE TYPE</th>
<th>CONNECTOR TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 1003</td>
<td>NEW PRIMARY 6mm² JOINT (REPLACES SPS 029)</td>
<td>NON INSULATED</td>
</tr>
<tr>
<td>SPS 029U</td>
<td>PRIMARY 6mm² TO ITSELF OR 8AWG</td>
<td>NON INSULATED</td>
</tr>
<tr>
<td>SPS 036</td>
<td>SECONDARY 2 CORE 2.5-6mm²</td>
<td>INSULATED</td>
</tr>
<tr>
<td>SPS 1004</td>
<td>PRIMARY ARMoured 6mm² TO NON ARMoured 6mm²</td>
<td>NON INSULATED</td>
</tr>
<tr>
<td>SPS 1005</td>
<td>PRIMARY CU BRAIDED 6mm² ARMoured (REPLACES SPS 037)</td>
<td>NON INSULATED</td>
</tr>
<tr>
<td>SPS 1005</td>
<td>PRIMARY BRASS TAPE 6mm² ARMoured (REPLACES SPS 038)</td>
<td>NON INSULATED</td>
</tr>
</tbody>
</table>

Traffic Control Cable Heatshrink Joint Kits

- A comprehensive range of heatshrink joints for traffic, motorway and communication cables
- Approved by department of transport and traffic control systems unit London
- Incorporates our unique black melt tape for superior internal moisture sealing

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>TO SUIT CABLE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 013</td>
<td>LOOP TO ARMoured FEEDER (1 PAIR)</td>
</tr>
<tr>
<td>SPS 021</td>
<td>LOOP TO ARMoured FEEDER (2 PAIR)</td>
</tr>
<tr>
<td>SPS 022</td>
<td>LOOP TO ARMoured FEEDER (3 PAIR)</td>
</tr>
<tr>
<td>SPS 023</td>
<td>LOOP TO ARMoured FEEDER (4 PAIR)</td>
</tr>
<tr>
<td>SPS 012</td>
<td>LOOP TO NON ARMoured (1 PAIR) TWIN FLEX</td>
</tr>
<tr>
<td>SPS 018</td>
<td>4-8 MULTICORE SWA</td>
</tr>
<tr>
<td>SPS 019</td>
<td>12, 16-20 MULTICORE SWA</td>
</tr>
<tr>
<td>SPS 020</td>
<td>FEEDER TO FEEDER 1-2 PAIR SWA</td>
</tr>
<tr>
<td>SPS 017</td>
<td>LOOP TO LOOP (10 PER PACK)</td>
</tr>
<tr>
<td>SPS 031</td>
<td>3, 4 PAIR TO 2, 3, 4 PAIR WITH 1 PAIR OFF</td>
</tr>
<tr>
<td>SPS 047</td>
<td>7-8 CORE TEMPORARY TRAFFIC LIGHT CABLE (LUX TYPE)</td>
</tr>
<tr>
<td>SPS 148</td>
<td>2 PAIR TELEPHONE (MOTORWAY)</td>
</tr>
<tr>
<td>SPS 035</td>
<td>20-30 PAIR TELECOM (MOTORWAY)</td>
</tr>
<tr>
<td>SPS 162</td>
<td>30 PAIR UNINTERUPT (MOTORWAY)</td>
</tr>
<tr>
<td>SPS 167</td>
<td>SPLIT CONCENTRIC 10mm² (MOTORWAY)</td>
</tr>
<tr>
<td>SPS 168</td>
<td>SPLIT CONCENTRIC 25mm² (MOTORWAY)</td>
</tr>
</tbody>
</table>
Standard heatshrink end caps are often used to seal cable ends. However where cables are live, heatshrink live pot end kits should be used. Each core is separately sealed using small end caps and a screen bandage is applied to re-instate earth fault protection. Finally a thick wall outer heatshrink cap is applied marked with a live flash symbol.

Kits are available for xlpe and paper insulated cables although any cable type can be catered for if details are given.

The table below shows only the popular 4 core kits, for 2 or 3 core kits the codes should be changed by substituting the figure 4 shown after the cable range to either 2 or 3. **Example:** For a 3 core xlpe kit 35mm², the correct code should be POT 4-35-3X

<table>
<thead>
<tr>
<th>PART NUMBER PILC CABLE</th>
<th>CABLE RANGE (mm²)</th>
<th>PART NUMBER XLPE CABLE</th>
<th>CABLE RANGE (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POT 4-35-4PB</td>
<td>4 CORE 4-35</td>
<td>POT 4-35-4X</td>
<td>4 CORE 4-35</td>
</tr>
<tr>
<td>POT 50-150-4PB</td>
<td>4 CORE 50-150</td>
<td>POT 50-150-4X</td>
<td>4 CORE 50-150</td>
</tr>
<tr>
<td>POT 185-300-4PB</td>
<td>4 CORE 50-150</td>
<td>POT 185-300-4X</td>
<td>4 CORE 50-150</td>
</tr>
</tbody>
</table>
The HCS series of Heatshrinkable Cable Entry Glands were developed to provide a cost effective method of providing a weatherproof seal on a wide variety of Cables.

The Glands are manufactured in accordance with MIL-1-81765/1 and MIL-1-23053/15 specifications and provide a flame retarded adhesive lined body along with a male threaded part to enable fixture to the Gland Plate.

The range comprises six different sizes as detailed below.

<table>
<thead>
<tr>
<th>REF NO</th>
<th>CABLE O/D MAX</th>
<th>CABLE O/D MIN</th>
<th>BULKHEAD THICKNESS MAX</th>
<th>LENGTH REC</th>
<th>DRILL HOLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCS 1</td>
<td>12mm</td>
<td>4mm</td>
<td>6mm</td>
<td>95mm</td>
<td>26mm</td>
</tr>
<tr>
<td>HCS 2</td>
<td>17mm</td>
<td>7mm</td>
<td>6mm</td>
<td>95mm</td>
<td>26mm</td>
</tr>
<tr>
<td>HCS 3</td>
<td>26mm</td>
<td>13mm</td>
<td>6mm</td>
<td>100mm</td>
<td>35mm</td>
</tr>
<tr>
<td>HCS 4</td>
<td>38mm</td>
<td>19mm</td>
<td>6mm</td>
<td>130mm</td>
<td>51mm</td>
</tr>
<tr>
<td>HCS 4s</td>
<td>53mm</td>
<td>19mm</td>
<td>10mm</td>
<td>170mm</td>
<td>60mm</td>
</tr>
<tr>
<td>HCS 5</td>
<td>70mm</td>
<td>36mm</td>
<td>6mm</td>
<td>200mm</td>
<td>88mm</td>
</tr>
</tbody>
</table>

Six sizes cover cable diameters from 4mm through to 70mm

Provides a watertight seal and secure fixing to gland plate/box

Ideal for non armoured (except picas) power or fibre optic cables

Approved and used by various UK regional electricity companies for use on 95-300mm² 11kV picas cables

Flame retardant

The HCS series of Heatshrinkable Cable Entry Glands were developed to provide a cost effective method of providing a weatherproof seal on a wide variety of Cables.

The Glands are manufactured in accordance with MIL-1-81765/1 and MIL-1-23053/15 specifications and provide a flame retarded adhesive lined body along with a male threaded part to enable fixture to the Gland Plate.

The range comprises six different sizes as detailed below.
Nylon Compression Glands

NG nylon glands are ideal alternatives to high cost brass glands. They are particularly suited to the glanding of single core non-armoured power cables from 0.6 to 36kV and provide an IP 68 weatherproof seal.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>THREAD</th>
<th>CLAMPING RANGE</th>
<th>TO SUIT SINGLE CORE 600/1000V XLPE/PVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG 25</td>
<td>25mm</td>
<td>13-18mm</td>
<td>50-95mm²</td>
</tr>
<tr>
<td>NG 32</td>
<td>32mm</td>
<td>17.5-25mm</td>
<td>120-185mm²</td>
</tr>
<tr>
<td>NG 40</td>
<td>40mm</td>
<td>24.5-31.5mm</td>
<td>240-300mm²</td>
</tr>
<tr>
<td>NG 50s</td>
<td>50mm</td>
<td>31-37mm</td>
<td>400-500mm²</td>
</tr>
<tr>
<td>NG 50</td>
<td>50mm</td>
<td>36.5-43mm</td>
<td>630mm²</td>
</tr>
<tr>
<td>NG 63s</td>
<td>63mm</td>
<td>42.5-50mm</td>
<td>800mm²</td>
</tr>
<tr>
<td>NG 63</td>
<td>63mm</td>
<td>48.5-55mm</td>
<td>1000mm²</td>
</tr>
</tbody>
</table>

Heatshrink Cable Repair and Busbar Tape

- Low cost option for repairs to damaged cable sheaths
- Ideal for use on busbar tee sections
- Available in various widths

Shrink Polymer Systems type AT heatshrink tape is manufactured from modified polyethylene and coated on one side with a meltable adhesive. It has a number of uses but the main ones include cable sheath repair and the insulation of busbar tee sections.

The tape should firstly be secured with the tab tape supplied, then applied turn by turn whilst shrinking with a suitable heat source.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>WIDTH</th>
<th>ROLL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 25-5</td>
<td>25mm</td>
<td>5mtr</td>
</tr>
<tr>
<td>AT 25-15</td>
<td>25mm</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 50-5</td>
<td>50mm</td>
<td>5mtr</td>
</tr>
<tr>
<td>AT 50-15</td>
<td>50mm</td>
<td>15mtr</td>
</tr>
<tr>
<td>AT 75-5</td>
<td>75mm</td>
<td>5mtr</td>
</tr>
<tr>
<td>AT 75-15</td>
<td>75mm</td>
<td>15mtr</td>
</tr>
</tbody>
</table>
Shrink Polymer Systems
Cable Installation Materials – 24 volts to 36 kV

Low Voltage Heatshrink Breakout Boots

Made from cross linked polyolefin and adhesive coated, these breakouts can be used in wide variety of applications.

The sizes listed below are available from stock, other sizes available upon request.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>LEGS</th>
<th>SKIRT DIA (mm)</th>
<th>LEG DIA (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EXP</td>
<td>REC</td>
</tr>
<tr>
<td>2CB 30/12</td>
<td>2</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>2CB 40/16</td>
<td>2</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>2CB 60/23</td>
<td>2</td>
<td>60</td>
<td>23</td>
</tr>
<tr>
<td>3CB 38/16</td>
<td>3</td>
<td>38</td>
<td>16</td>
</tr>
<tr>
<td>3CB 60/25</td>
<td>3</td>
<td>60</td>
<td>25</td>
</tr>
<tr>
<td>3CB 80/38</td>
<td>3</td>
<td>80</td>
<td>38</td>
</tr>
<tr>
<td>4CB 40/15</td>
<td>4</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>4CB 65/26</td>
<td>4</td>
<td>65</td>
<td>26</td>
</tr>
<tr>
<td>4CB 82/37</td>
<td>4</td>
<td>82</td>
<td>37</td>
</tr>
<tr>
<td>4CB 100/47</td>
<td>4</td>
<td>100</td>
<td>47</td>
</tr>
<tr>
<td>4CB 125/52</td>
<td>4</td>
<td>125</td>
<td>52</td>
</tr>
<tr>
<td>5CB 80/33</td>
<td>5</td>
<td>80</td>
<td>33</td>
</tr>
<tr>
<td>5CB 100/42</td>
<td>5</td>
<td>100</td>
<td>42</td>
</tr>
</tbody>
</table>

Made from a semi-rigid cross linked polyethylene material which offers excellent weathering and abrasion resistance.

A full range of LV live pot end kits are also available for most cable types, see page 49 for more details.

Low Voltage Heatshrink End Caps

- Adhesive lined to prevent water ingress
- Thick wall for extra strength and durability
- UV stable
- A range of live pot end kits available

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE DIA. (mm)</th>
<th>EXPANDED DIA. (mm)</th>
<th>RECOVERED DIA. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C12-4</td>
<td>4-7</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>C14-5</td>
<td>5-9</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>C25-8.5</td>
<td>9-20</td>
<td>25</td>
<td>8.5</td>
</tr>
<tr>
<td>C35-16</td>
<td>17-30</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>C40-15</td>
<td>16-35</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>C55-26</td>
<td>27-48</td>
<td>55</td>
<td>26</td>
</tr>
<tr>
<td>C75-36</td>
<td>37-65</td>
<td>75</td>
<td>36</td>
</tr>
<tr>
<td>C100-52</td>
<td>55-88</td>
<td>100</td>
<td>52</td>
</tr>
<tr>
<td>C120-60</td>
<td>65-105</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>C145-60</td>
<td>65-130</td>
<td>145</td>
<td>60</td>
</tr>
<tr>
<td>C160-82</td>
<td>85-145</td>
<td>160</td>
<td>82</td>
</tr>
</tbody>
</table>

Shrink Polymer Systems end caps are made from a semi-rigid cross linked polyethylene material which offers excellent weathering and abrasion resistance.
Heatshrink Wraparound Repair Sleeves

- Reliable repair of damaged cable sheaths
- Suitable for use with both LV, MV and telecom cable applications
- Thermochromatic paint applied to assist with proper shrinkage

Stainless Steel Rail Type

Wraparound repair sleeves offer an easy to apply effective solution for the repair of damage to outer sheaths for all cable types.

Used extensively worldwide to provide the outer protection and sealing of telecommunication cables, they are equally useful for power cable joint outer sealing reducing trench excavation.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>EXP DIA (mm)</th>
<th>REC DIA (mm)</th>
<th>LENGTH (mtr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWRS 42/10</td>
<td>42</td>
<td>10</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 50/15</td>
<td>50</td>
<td>15</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 75/22</td>
<td>75</td>
<td>22</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 105/30</td>
<td>105</td>
<td>30</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 146/38</td>
<td>146</td>
<td>38</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 198/55</td>
<td>188</td>
<td>55</td>
<td>1000mm</td>
</tr>
<tr>
<td>SWRS 210/60</td>
<td>210</td>
<td>60</td>
<td>1000mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Ageing</td>
<td>168 hrs at 150 + 2°C</td>
<td>Min 13.7MPa</td>
</tr>
<tr>
<td>Bursting Strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>Electrode Surface Dia: 6mm</td>
<td>Min 12kV/mm</td>
</tr>
<tr>
<td></td>
<td>Weight 50 + gms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voltage Steps 2kV/20sec</td>
<td></td>
</tr>
<tr>
<td>Spit Resistance</td>
<td>Temp 200+ 2°C</td>
<td>No splitting</td>
</tr>
<tr>
<td></td>
<td>Test Time 23 + 3 secs</td>
<td></td>
</tr>
<tr>
<td>Carbon Content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UV Res of Outer Layer</td>
<td>Heating Rate 20°C/min</td>
<td>Min 2.6+0.25%</td>
</tr>
<tr>
<td></td>
<td>Gas Flow Rate 300cc/min</td>
<td></td>
</tr>
<tr>
<td>Cold Crack Resistance</td>
<td>Test Temp &lt; 40°C</td>
<td>No Cracking</td>
</tr>
<tr>
<td>Adhesive Peel Strength</td>
<td>-PE at 23+2°C</td>
<td>Min 100N/25mm</td>
</tr>
<tr>
<td></td>
<td>-PB at 23+2°C</td>
<td></td>
</tr>
<tr>
<td>Shear Strength</td>
<td>At 23+2°C</td>
<td>Min 200N</td>
</tr>
</tbody>
</table>
Connector Patch Tape

- Quick and easy to apply
- Excellent electrical properties
- Tough heavy duty PVC backing
- Completely watertight when bonded
- No heat required
- Used in conjunction with resin joint kits

Shrink Polymer Systems type SP 50D connector insulation patch tape is ideally suited for the insulation of connectors within cable joint systems.

Made from heavy duty PVC and coated with mastic on one side, it can easily be cut to shape or size to suit the particular style of connector. Another benefit is that the application requires no heat as the patch tape seals to itself upon contact, creating a reliable moisture proof connection.

SP 50D Tape is available in 15mtr rolls in widths up to 900mm and can be cut to size to suit individual requirements.

<table>
<thead>
<tr>
<th>Physical Properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Backing Colour</td>
<td>Black</td>
</tr>
<tr>
<td>Backing Type</td>
<td>PVC</td>
</tr>
<tr>
<td>Backing Thickness</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>375 microns</td>
<td></td>
</tr>
<tr>
<td>Total Thickness</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>1.1 mm</td>
<td></td>
</tr>
<tr>
<td>Elongation</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>300%</td>
<td></td>
</tr>
<tr>
<td>Tape Strength</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>9 N/mm</td>
<td></td>
</tr>
<tr>
<td>Adhesion (180° Peel) To Self</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>3.5 N/mm</td>
<td></td>
</tr>
<tr>
<td>Tear Strength</td>
<td>ASTM D1004</td>
</tr>
<tr>
<td>25/30 N</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical Properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric Strength</td>
<td>ASTM D1000</td>
</tr>
<tr>
<td>30kV</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>ASTM D257</td>
</tr>
<tr>
<td>10¹² ohm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp Range in Service</td>
<td>-30 to +75°C</td>
</tr>
<tr>
<td>Temp Range in Storage</td>
<td>Up to 35°C</td>
</tr>
</tbody>
</table>
Available in a wide variety of colours

Flame retardant as standard but zero halogen types also available

Shrink ratio 2/1 but 3/1 and 4/1 can also be supplied

Continuous operating temperature range -55°C to +125°C

An extensive range of thin wall tube is available, including types for zero halogen, high shrink ratio, teflon, kynar and pvc applications. Please enquire if not listed.

The materials are generally supplied on reels but can also be supplied in cut lengths, please check with Shrink Polymer Systems.

### STANDARD FLAME RETARDANT TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>SHRINK RANGE</th>
<th>WALL THICKNESS</th>
<th>REEL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWM 12</td>
<td>0.6-1.2mm</td>
<td>0.45mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 16</td>
<td>0.8-1.6mm</td>
<td>0.50mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 24</td>
<td>1.2-2.4mm</td>
<td>0.55mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 32</td>
<td>1.6-3.2mm</td>
<td>0.55mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 48</td>
<td>2.4-4.8mm</td>
<td>0.55mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 64</td>
<td>3.2-6.4mm</td>
<td>0.65mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>TWM 95</td>
<td>4.8-9.5mm</td>
<td>0.65mm</td>
<td>150mtr</td>
</tr>
<tr>
<td>TWM 127</td>
<td>6.4-12.7mm</td>
<td>0.65mm</td>
<td>100mtr</td>
</tr>
<tr>
<td>TWM 191</td>
<td>9.5-19.1mm</td>
<td>0.80mm</td>
<td>100mtr</td>
</tr>
<tr>
<td>TWM 254</td>
<td>12.7-25.4mm</td>
<td>0.95mm</td>
<td>100mtr</td>
</tr>
<tr>
<td>TWM 320</td>
<td>16-32mm</td>
<td>1.05mm</td>
<td>50mtr</td>
</tr>
<tr>
<td>TWM 381</td>
<td>19.1-38.1mm</td>
<td>1.05mm</td>
<td>50mtr</td>
</tr>
<tr>
<td>TWM 508</td>
<td>25.4-50.8mm</td>
<td>1.30mm</td>
<td>50mtr</td>
</tr>
<tr>
<td>TWM 762</td>
<td>38.1-76.2mm</td>
<td>1.30mm</td>
<td>25mtr</td>
</tr>
<tr>
<td>TWM 1016</td>
<td>50.8-101.6mm</td>
<td>1.40mm</td>
<td>25mtr</td>
</tr>
</tbody>
</table>

* SPECIFY COLOUR REQUIRED

### GREEN / YELLOW STRIPED TYPE

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>SHRINK RANGE</th>
<th>WALL THICKNESS</th>
<th>REEL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGY 64</td>
<td>3.2-6.4mm</td>
<td>0.64mm</td>
<td>300mtr</td>
</tr>
<tr>
<td>SGY 95</td>
<td>4.8-9.5mm</td>
<td>0.64mm</td>
<td>150mtr</td>
</tr>
<tr>
<td>SGY 127</td>
<td>6.4-12.7mm</td>
<td>0.64mm</td>
<td>150mtr</td>
</tr>
<tr>
<td>SGY 191</td>
<td>9.5-19.1mm</td>
<td>0.76mm</td>
<td>100mtr</td>
</tr>
<tr>
<td>SGY 254</td>
<td>12.7-25.4mm</td>
<td>0.89mm</td>
<td>50mtr</td>
</tr>
<tr>
<td>SGY 381</td>
<td>19.1-38.1mm</td>
<td>1.02mm</td>
<td>50mtr</td>
</tr>
</tbody>
</table>
Shrink Polymer Systems type TMC and TMI medium and thick wall tube, is used primarily within a wide variety of heatshrink joint and termination systems to provide excellent insulation and sealing properties even when operating in the most severe locations.

Medium wall provides more flexibility whilst thick wall provides yet more strength and durability.

Where extreme diameters are encountered, we are able to offer heatshrink tubes and other heatshrink products that can insulate diameters up to 1520mm. Further details are available upon request.

- High resistance to abrasion, corrosion and chemicals
- Meets the requirements of ESI 09-11
- Adhesive lined ensures fully watertight seal
- Up to 4/1 shrink ratio as standard 6/1 ratio also available
- Used in direct buried or under water applications
- Major approvals held
### MEDIUM WALL PRODUCT

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>SHRINK RANGE</th>
<th>WALL THICKNESS FULL RECOVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMI 9-3</td>
<td>3-9mm</td>
<td>2.0mm</td>
</tr>
<tr>
<td>TMI 13-4</td>
<td>4-13mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 22-6</td>
<td>6-22mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 28-6</td>
<td>6-28mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 33-8</td>
<td>8-33mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 45-12</td>
<td>12-45mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 55-16</td>
<td>16-55mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 75-22</td>
<td>22-75mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 95-25</td>
<td>25-95mm</td>
<td>4.0mm</td>
</tr>
<tr>
<td>TMI 115-34</td>
<td>34-115mm</td>
<td>3.0mm</td>
</tr>
<tr>
<td>TMI 140-42</td>
<td>42-140mm</td>
<td>3.0mm</td>
</tr>
<tr>
<td>TMI 205-65</td>
<td>65-205mm</td>
<td>3.0mm</td>
</tr>
</tbody>
</table>

### THICK WALL PRODUCT

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>SHRINK RANGE</th>
<th>WALL THICKNESS FULL RECOVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMI 9-3</td>
<td>3-9mm</td>
<td>2.0mm</td>
</tr>
<tr>
<td>TMI 13-4</td>
<td>4-13mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 22-6</td>
<td>6-22mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 28-6</td>
<td>6-28mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 33-8</td>
<td>8-33mm</td>
<td>2.5mm</td>
</tr>
<tr>
<td>TMI 45-12</td>
<td>12-45mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 55-16</td>
<td>16-55mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 75-22</td>
<td>22-75mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 95-25</td>
<td>29-95mm</td>
<td>4.1mm</td>
</tr>
<tr>
<td>TMI 130-36</td>
<td>36-130mm</td>
<td>4.3mm</td>
</tr>
<tr>
<td>TMI 160-55</td>
<td>55-160mm</td>
<td>4.3mm</td>
</tr>
<tr>
<td>TMI 200-65</td>
<td>65-200mm</td>
<td>4.3mm</td>
</tr>
</tbody>
</table>

STANDARD LENGTHS AVAILABLE
- MEDIUM WALL 1200 and 1500mm
- THICK WALL 1200 and 1500mm
- Other lengths available on request

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>ASTM D638</td>
<td>14.0MPa</td>
</tr>
<tr>
<td>Ultimate Elongation</td>
<td>ISO 37</td>
<td>&gt;400%</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>IEC 216</td>
<td>-55°C to +110°C</td>
</tr>
<tr>
<td>Min Shrink Temperature</td>
<td>---</td>
<td>120°C</td>
</tr>
<tr>
<td>Longitudinal Change</td>
<td>UL 224</td>
<td>± 10%</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>ISO/R1183</td>
<td>1.1</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>IEC 243</td>
<td>&gt;20kV/mm</td>
</tr>
<tr>
<td>Elongation after Heat Ageing</td>
<td>ISO 37</td>
<td>&gt;300%</td>
</tr>
<tr>
<td>Heat Shock</td>
<td>ASTM D2671</td>
<td>No dripping, flowing without cracking</td>
</tr>
<tr>
<td>(4 hrs at 225°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Temperature Flexibility</td>
<td>ASTM D1693</td>
<td>No cracking or splitting</td>
</tr>
<tr>
<td>(4 hrs at -55°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Absorption</td>
<td>ISO 62</td>
<td>&lt;0.15%</td>
</tr>
<tr>
<td>Fluid Resistance</td>
<td>ISO 1817, ISO 37</td>
<td>Good to excellent</td>
</tr>
<tr>
<td>Various Fluids</td>
<td>MIL-1-23053</td>
<td></td>
</tr>
</tbody>
</table>
Medium / Thick Wall Zero Halogen Adhesive Lined Heatshrink Tube

- Sizes available from 3mm expanded diameter up to 120mm and lengths of up to 1.2mtr
- 3/1 shrink ratio
- Joint kits available for all cable types utilising W3-NH material

Shrink Polymer Systems can now offer from stock, W3 NH which is a flexible high-grade dual-wall flame-retardant, non-halogen, polyolofin heatshrink tubing. It has a meltable inner liner that itself has excellent flame-retardantcy with reduced acid gas emission and smoke generation. It complies with the strictest standards required within the mass-transit engineering industry.

For moisture and environmental protection of harnesses and connectors in all smoke sensitive areas such as surface or underground public transport, rail vehicles, tunnels, power plants, hospitals, airports and submarines where smoke generation and toxic emissions must be kept to a minimum for safety reasons.

The same tube is incorporated within a wide variety of heatshrinkable joints available for all cable types.

<table>
<thead>
<tr>
<th>PART NO</th>
<th>INTERNAL DIA EXP (mm)</th>
<th>INTERNAL DIA REC (mm)</th>
<th>WALL THICKNESS REC (mm)</th>
<th>STANDARD LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>W3 NH 3/1</td>
<td>3</td>
<td>1</td>
<td>0.96</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 6/2</td>
<td>6</td>
<td>2</td>
<td>1.19</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 9/3</td>
<td>9</td>
<td>3</td>
<td>1.27</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 12/4</td>
<td>12</td>
<td>4</td>
<td>1.40</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 19/6</td>
<td>19</td>
<td>6</td>
<td>1.80</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 24/8</td>
<td>24</td>
<td>8</td>
<td>2.50</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 40/13</td>
<td>40</td>
<td>13</td>
<td>2.50</td>
<td>1200mm</td>
</tr>
<tr>
<td>W3 NH 50/19</td>
<td>50</td>
<td>19</td>
<td>4.00</td>
<td>550mm</td>
</tr>
<tr>
<td>W3 NH 75/25</td>
<td>75</td>
<td>25</td>
<td>3.00</td>
<td>610mm</td>
</tr>
<tr>
<td>W3 NH 120/40</td>
<td>120</td>
<td>40</td>
<td>3.00</td>
<td>1200mm</td>
</tr>
</tbody>
</table>

Note:- Cut lengths available upon request
Special Tapes

Self Amalgamating Tape
Shrink Polymer Systems type SP 130 is a high quality self amalgamating tape with excellent electrical properties. It adheres very well to most surfaces and provides a high abrasion resistant moisture proof seal.

SP 130 is 0.75mm thick and comes on a 10 mtr roll, it is available in both 25 and 38mm widths.

Black Melt Void Filling Tape
Shrink Polymer Systems tape type 212D is a black mastic tape that is used within joint kits to provide an effective internal moisture seal. When heat is applied to the joint, the tape melts and flows within, filling any voids. The tape is also used within a number of submersible heatshrink joint kits supplied to various offshore oil companies.

212D is generally supplied as follows:-
Length 300mm
Width 50mm
Thickness 2mm

Zero Halogen Melt Tape
Shrink Polymer Systems type SCMT 25 is a zero halogen adhesive melt tape that is primarily used in conjunction with heatshrink tubes, mouldings and zero halogen low smoke fume applications within cable joint systems.

SCMT 25 is generally supplied on a 50mtr roll with a width of 25mm. It can also be supplied in cut lengths if preferred.
Low Voltage Copper Crimp Lugs and Ferrules

- Manufactured in the UK from the highest quality seamless copper tube to BS 2871/C106
- Designed, manufactured and tested to comply with BS 4579
- Special non standard products can be supplied to suit a multitude of different applications

<table>
<thead>
<tr>
<th>CONDUCTOR SIZE (mm²)</th>
<th>PART NUMBER SINGLE HOLE LUG</th>
<th>PART NUMBER 2 HOLE LUG</th>
<th>PART NUMBER 4 HOLE LUG</th>
<th>FERRULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>T6-M-</td>
<td>---</td>
<td>---</td>
<td>F6</td>
</tr>
<tr>
<td>10</td>
<td>T10-M-</td>
<td>---</td>
<td>---</td>
<td>F10</td>
</tr>
<tr>
<td>16</td>
<td>T16-M-</td>
<td>---</td>
<td>---</td>
<td>F16</td>
</tr>
<tr>
<td>25</td>
<td>T25-M-</td>
<td>---</td>
<td>---</td>
<td>F25</td>
</tr>
<tr>
<td>35</td>
<td>T35-M-</td>
<td>---</td>
<td>---</td>
<td>F35</td>
</tr>
<tr>
<td>50</td>
<td>T50-M-</td>
<td>---</td>
<td>---</td>
<td>F50</td>
</tr>
<tr>
<td>70</td>
<td>T70-M-</td>
<td>T70-2-M-</td>
<td>T70-4-M-</td>
<td>F70</td>
</tr>
<tr>
<td>95</td>
<td>T95-M-</td>
<td>T95-2-M-</td>
<td>T95-4-M-</td>
<td>F95</td>
</tr>
<tr>
<td>120</td>
<td>T120-M-</td>
<td>T120-2-M-</td>
<td>T120-4-M-</td>
<td>F120</td>
</tr>
<tr>
<td>150</td>
<td>T150-M-</td>
<td>T150-2-M-</td>
<td>T150-4-M-</td>
<td>F150</td>
</tr>
<tr>
<td>185</td>
<td>T185-M-</td>
<td>T185-2-M-</td>
<td>T185-4-M-</td>
<td>F185</td>
</tr>
<tr>
<td>240</td>
<td>T240-M-</td>
<td>T240-2-M-</td>
<td>T240-4-M-</td>
<td>F240</td>
</tr>
<tr>
<td>300</td>
<td>T300-M-</td>
<td>T300-2-M-</td>
<td>T300-4-M-</td>
<td>F300</td>
</tr>
<tr>
<td>400</td>
<td>T400-M-</td>
<td>T400-2-M-</td>
<td>T400-4-M-</td>
<td>F400</td>
</tr>
<tr>
<td>500</td>
<td>T500-M-</td>
<td>T500-2-M-</td>
<td>T500-4-M-</td>
<td>F500</td>
</tr>
<tr>
<td>630</td>
<td>T630-M-</td>
<td>T630-2-M-</td>
<td>T630-4-M-</td>
<td>F630</td>
</tr>
<tr>
<td>800</td>
<td>T800-M-</td>
<td>T800-2-M-</td>
<td>T800-4-M-</td>
<td>F800</td>
</tr>
<tr>
<td>1000</td>
<td>T1000-M-</td>
<td>---</td>
<td>T1000-4-M-</td>
<td>F1000</td>
</tr>
</tbody>
</table>

The above products are all from our heavy duty range, we can also supply products from the standard range where cost consideration is of primary importance.

Low Voltage Mechanical Shearbolt Connectors

LV shearbolt connectors are ideal for situations where exact conductor sizes are not known or where joining copper to aluminium conductors.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>CABLE RANGE (mm²)</th>
<th>LENGTH (mm)</th>
<th>HEIGHT (mm)</th>
<th>WIDTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UST 95-2</td>
<td>16-95</td>
<td>88</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>UST 185-2</td>
<td>16-185</td>
<td>110</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>UST 300-2</td>
<td>95-300</td>
<td>120</td>
<td>38</td>
<td>41</td>
</tr>
</tbody>
</table>
Miscellaneous Tools

Gas Torch Kits

Two gas torch kits are available complete with burner heads that were specifically developed for use with heatshrink products.

SPS 201

This kit features an auto ignite handle, hot air burner head, hose and fittings and adaptors so that standard propane cylinders or the ultra portable primus 2000 cylinders can be used.

SPS 202

The kit comes with the standard handle and heatshrink burner head, cylinder adaptor and hose and fittings.

Ratchet Cable Cutter - Part Number SPCC 380

The SPCC 380 is a hand operated ratchet tool that is designed to cut non steel wire armoured copper and aluminium cables up to 35mm diameter (300mm² LV Xlpe/Pvc cable approx). The precision ground blades provide long service life and the tool also features a safety catch.

Length 340mm
Weight 1.2kg

Other models are available upon request.

Ratchet Crimp Tool Part Number CR 1

The CR 1 is a high quality tool designed for use with pre-insulated crimp terminals ranging from 0.5-6mm² (Reds, Blues and Yellows). Its unique feature is that the dies are equal both sides which eliminates the danger of applying an insulation crimp to the terminal itself.

Ratchet Crimp Tool Part Number CRN 1

The CRN 1 is a high quality tool designed for use with non-insulated crimp terminals ranging from 0.25-10mm². The CRN 1 has been approved by Doe/Psa for use with our airfield lighting heatshrink joint kits.
# Cable Conversion Chart

<table>
<thead>
<tr>
<th>IMPERIAL (&quot;)</th>
<th>AWG</th>
<th>METRIC (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0045</td>
<td>12-10</td>
<td>2.9</td>
</tr>
<tr>
<td>0.007</td>
<td>12-10</td>
<td>4.5</td>
</tr>
<tr>
<td>0.01</td>
<td>12-10</td>
<td>6.5</td>
</tr>
<tr>
<td>0.0145</td>
<td>8</td>
<td>9.4</td>
</tr>
<tr>
<td>0.0225</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>0.04</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>0.06</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>0.075</td>
<td>1/0</td>
<td>50</td>
</tr>
<tr>
<td>0.1</td>
<td>2/0</td>
<td>70</td>
</tr>
<tr>
<td>0.15</td>
<td>3/0</td>
<td>95</td>
</tr>
<tr>
<td>0.2</td>
<td>4/0</td>
<td>120</td>
</tr>
<tr>
<td>0.25</td>
<td>300MCM</td>
<td>150</td>
</tr>
<tr>
<td>0.3</td>
<td>400MCM</td>
<td>185</td>
</tr>
<tr>
<td>0.35</td>
<td>500MCM</td>
<td>240</td>
</tr>
<tr>
<td>0.4</td>
<td>600MCM</td>
<td>260</td>
</tr>
<tr>
<td>0.5</td>
<td>600MCM</td>
<td>300</td>
</tr>
<tr>
<td>0.55</td>
<td>—</td>
<td>350</td>
</tr>
<tr>
<td>0.6</td>
<td>800MCM</td>
<td>400</td>
</tr>
<tr>
<td>0.75</td>
<td>1000MCM</td>
<td>500</td>
</tr>
<tr>
<td>1.0</td>
<td>1200MCM</td>
<td>630</td>
</tr>
<tr>
<td>1.25</td>
<td>1500MCM</td>
<td>800</td>
</tr>
<tr>
<td>1.5</td>
<td>2000MCM</td>
<td>1000</td>
</tr>
</tbody>
</table>
Minimum clearances required for indoor termination kits.

Check the cable box for minimum clearances and refer to table 1 below. If actual dimension ‘A’ and ‘B’ is less than the value given, a bushing boot must be fitted.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Minimum air clearances for terminations in cable boxes in accordance with BS 164 Class A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum system voltage, phase to phase (kV)</td>
</tr>
<tr>
<td></td>
<td>Minimum air clearance between live metal ‘A’ (mm)</td>
</tr>
<tr>
<td></td>
<td>Minimum air clearance between live metal and earth ‘B’ (mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Minimum air clearances for terminations in cable boxes in accordance with BS 164 Class A. with bushing boots fitted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum system voltage, phase to phase (kV)</td>
</tr>
<tr>
<td></td>
<td>Minimum air clearance between live metal ‘A’ (mm)</td>
</tr>
<tr>
<td></td>
<td>Minimum air clearance between live metal and earth ‘B’ (mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Minimum clearance between cores and between cores and earth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum system voltage, phase to phase (kV)</td>
</tr>
<tr>
<td></td>
<td>Minimum clearance ‘C’ (mm) measured from top of Stress Tubes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Minimum clearance between top of the Stress Control tubing and base of the cable lug.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum system voltage, phase to phase (kV)</td>
</tr>
<tr>
<td></td>
<td>Minimum clearance ‘D’ (mm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Impulse voltage withstand for indoor terminations, installed with bushing boots, on bushings in accordance with BS2562.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum system voltage, phase to phase (kV)</td>
</tr>
<tr>
<td></td>
<td>Impulse withstand voltage (kV)</td>
</tr>
</tbody>
</table>

Page 63