Thorne & Derrick
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www.powerandcables.com

Nexans

High Voltage Accessories
up to 72.5 kV
Technical instructions and application information

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Attention: Before first design in please contact manufacturer.

Impact wrenches have to be approved by Nexans! Depending on different conductor material or conductor type, indicated values may differ from test values acc. to IEC 61238-1. The use of fine stranded conductors has to be approved by Nexans Power Accessories Germany GmbH.

Our responsibilities are only those listed in the latest edition of “General Terms and Conditions for the Supply of Products and Services of the Electrical and Electronics Industry”. If requested we provide a copy.

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Hof, April 2015
Nexans Power Accessories Germany GmbH
Specialist for connection technology and cable accessories

Nexans Power Accessories Germany GmbH has been a leader in pre-assembled cable accessories for more than 55 years. The company is part of the Nexans Power Accessories Business Group and is represented in more than 40 countries worldwide.

A medium-sized enterprise with outstanding know-how in the sector of connection technology, we are embedded in the French Nexans group to complete its portfolio to the global specialist for cables and cabling systems.

Nexans brings energy to life through an extensive range of cables and cabling solutions that deliver increased performance for our customers worldwide. Nexans’ teams are committed to a partnership approach that supports customers in four main business areas: Power transmission and distribution (submarine and land), Energy resources (Oil & Gas, Mining and Renewables), Transportation (Road, Rail, Air, Sea) and Building (Commercial, Residential and Data Centers).

Nexans Power Accessories Germany GmbH is specialized in manufacturing of low, medium and high voltage accessories as well as mechanical connectors and cable lugs.

In the headquarters in Hof, the GPH standard product range of compression or mechanical connectors and cable lugs is developed and manufactured as well as customized solutions. At a second location, the focus concentrates on kitting of cable accessories from 1 kV up to 170 kV and the assembly of customized jumper cables for medium voltage applications.

With the brand name Euromold we are a European market leader for medium voltage accessories. Longtime know-how and technological advance in this area was successfully transferred into high voltage applications. We provide a complete range of cold-shrinkable and slip-on accessories, e.g. premoulded terminations and joints for cables and epoxy bushings for transformers and switchgears, up to 170 kV. For low and medium voltage applications, a series of Nexans heat-shrinkable terminations and joints up to 42 kV is available. The product range is completed by dedicated installation tools and customized product trainings in our own premises.

Nexans Power Accessories have set industrial and European product standards. Quality and environmental awareness are vital elements of our corporate philosophy and management system. Besides our certification according to DIN EN ISO 9001 we are acting certified in the scope of environmental protection and industrial safety.
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</tr>
<tr>
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</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>
**Application**
Separable tee shape connector designed to connect polymeric insulated cable to equipment (transformers, switchgears, ...). Also connects cable to cable when using the appropriate mating parts.

**Technical characteristics**
- The thick conductive EPDM jacket provides a total safe to touch screen which ensures safety for personnel.
- Each separable connector is tested for AC withstand and partial discharge prior to leaving the factory.

**Design**
1. Conductive EPDM insert
2. Conductive EPDM jacket
3. Insulating EPDM layer moulded between insert and jacket
4. Type F interface ref. CENELEC EN 50180 and 50181
5. Conductor connector (hexagonal crimping or bolted type)
6. Basic insulating plug
7. Cable reducer
8. Conductive EPDM cap
9. Stud + nut + washer
10. Earthing lead
11. Heat-shrinkable sleeve

The screen break design enables cable outer sheath testing without removing or dismantling the connector.

**Specifications and standards**
The R909TB/G separable tee connector is type tested acc. to IEC 60840.

<table>
<thead>
<tr>
<th>Separable connector type</th>
<th>Max. operating voltage $U_m$ (kV)</th>
<th>Continuous current $I_n$ (A)</th>
<th>Conductor cross-section** (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R909TB/G</td>
<td>72.5</td>
<td>1250*</td>
<td>min 95 max 1200</td>
</tr>
</tbody>
</table>

* When installed on an appropriate equipment bushing.
** Indicative for cables with 10 mm insulation wall thickness.

For detailed electrical ratings please see page 29-30.
Kit contents
The complete R909TB/G tee connector kit comprises 1x the following components:

- Connector housing R909BT/G
- Stud + nut + washer
- Basic insulating plug R900BIPA + rubber cap
- Cable reducer R972CA
- Conductor contact 900TMBP
- Conductor contact 900TBC-X

The kit also comprises:
- installation instructions
- silicone grease
- sealing mastic
- gloves
- roll adhesive tape
- heat-shrinkable sleeve

Ordering instructions
To order the tee connector, select the ordering part number which gives you the best centering of your core insulation diameter and substitute X using Table X, according to your conductor size and type.

Order example:
The copper wire screened cable is 72.5 kV, 800 mm² round stranded aluminium with a diameter over XLPE core insulation of 58 mm after preparation and 50 mm² copper wire screen. Order R909TB/G-50-800.1200-14-5 + 50x10 KU-V tee connector kit.

For screen wire cable lug please see page 17-18.

Table W

<table>
<thead>
<tr>
<th>Ordering part number</th>
<th>Ø over core insulation* (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
</tr>
<tr>
<td>3 x R909TB/G-25-X</td>
<td>27</td>
</tr>
<tr>
<td>3 x R909TB/G-30-X</td>
<td>32.5</td>
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<tr>
<td>3 x R909TB/G-37-X</td>
<td>40</td>
</tr>
<tr>
<td>3 x R909TB/G-43-X</td>
<td>46.5</td>
</tr>
<tr>
<td>3 x R909TB/G-46-X</td>
<td>49.5</td>
</tr>
<tr>
<td>3 x R909TB/G-50-X</td>
<td>54</td>
</tr>
<tr>
<td>3 x R909TB/G-53-X</td>
<td>57</td>
</tr>
<tr>
<td>3 x R909TB/G-58-X</td>
<td>62.5</td>
</tr>
</tbody>
</table>

* after cable preparation

Table X

<table>
<thead>
<tr>
<th>Conductor size (mm²)</th>
<th>Aluminium and Copper conductor (RMV)</th>
<th>Copper conductor (RMV)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bolted</td>
<td>DIN hexagonal</td>
</tr>
<tr>
<td>95</td>
<td>95.240-14-5</td>
<td>95(K)M-11-2</td>
</tr>
<tr>
<td>120</td>
<td>120(K)M-11-2</td>
<td>120(K)M-11-2</td>
</tr>
<tr>
<td>150</td>
<td>150(K)M-11-2</td>
<td>150(K)M-11-2</td>
</tr>
<tr>
<td>185</td>
<td>185(K)M-11-2</td>
<td>185(K)M-11-2</td>
</tr>
<tr>
<td>240</td>
<td>240(K)M-11-2</td>
<td>240(K)M-11-2</td>
</tr>
<tr>
<td>300</td>
<td>300(K)M-11-2</td>
<td>300(K)M-11-2</td>
</tr>
<tr>
<td>400</td>
<td>400(K)M-11-2</td>
<td>400(K)M-11-2</td>
</tr>
<tr>
<td>500</td>
<td>500(K)M-11-2</td>
<td>500(K)M-11-2</td>
</tr>
<tr>
<td>630</td>
<td>630(K)M-11-2</td>
<td>630(K)M-11-2</td>
</tr>
<tr>
<td>800</td>
<td>800(K)M-11-2</td>
<td>800(K)M-11-2</td>
</tr>
<tr>
<td>1000</td>
<td>1000(K)M-11-2</td>
<td>1000(K)M-11-2</td>
</tr>
<tr>
<td>1200</td>
<td>1200(K)M-11-2</td>
<td>1200(K)M-11-2</td>
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<tr>
<td>400.630-14-5</td>
<td>185.400-14-5</td>
<td></td>
</tr>
</tbody>
</table>

RMV: round stranded compacted conductors
R909PB/G
Coupling connector
for 909TB/G tee connector

72.5 kV
1250 A* 
1800 A**

$U (U_m)$

60-69 (72.5) kV

Application
Separable coupling connector (bolted type) for dual cable arrangement. It has been designed to be used with R909TB/G separable tee connector. The arrangement might be extended by multiple coupling connectors.

Technical characteristics
• The thick conductive EPDM jacket provides a total safe to touch screen which ensures safety for personnel.
• Each separable connector is tested for AC withstand and partial discharge prior to leaving the factory.

Design
1. Interface designed to fit R909TB/G
2. Bus for R909PB/G (contact rod and stud)
3. Conductor connector (hexagonal crimping or bolted type)
4. Conductive EPDM insert
5. Conductive EPDM jacket
6. Insulating EPDM layer moulded between the insert and the jacket
7. Cable reducer
8. Conductive EPDM cap
9. Basic insulating plug
10. Earthing lead
11. Heat-shrinkable sleeve

The screen break design enables cable outer sheath testing without removing or dismantling the connector.

Specifications and standards
The R909PB/G coupling connector is type tested acc. to IEC 60840.

<table>
<thead>
<tr>
<th>Separable connector type</th>
<th>Max. operating voltage $U_m$ (kV)</th>
<th>Continuous current $I_n$ (A)</th>
<th>Conductor cross-section*** (mm$^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R909PB/G</td>
<td>72.5</td>
<td>1250*/1800**</td>
<td>95</td>
</tr>
</tbody>
</table>

* When installed on an appropriate equipment bushing.
** Daisy chain arrangement.
*** Indicative for cables with 10 mm insulation wall thickness.

For detailed electrical ratings please see page 29-30.
Kit contents
The complete R909PB/G coupling connector kit comprises
1x the following components:

- Connector housing R909BP/G
- Contact rod and stud
- Cable reducer R972CA
- Conductor contact 900TMBC
- Roll adhesive tape
- Silicone grease
- Sealing mastic
- Gloves
- Heat-shrinkable sleeve

For use with copper wire screened cables. No further earthing device is necessary.

Components can be ordered individually.

When installed on an appropriate equipment bushing: 1250 A continuously.

When in a daisy chain arrangement or similar: 1800 A continuously.

Ordering instructions
To order the coupling connector, select the ordering part number which gives you the best centering of your core insulation diameter and substitute X using Table X, according to your conductor size and type.

Order example:
The copper wire screened cable is 72.5 kV, 800 mm² round stranded aluminium with a diameter over XLPE core insulation of 58 mm after preparation and 50 mm² copper wire screen.
Order R909PB/G-50-800.1200-14-5 + 50 x 10 KU-V coupling connector kit.

For screen wire cable lug please see page 17-18.

Table W

<table>
<thead>
<tr>
<th>Ordering part number</th>
<th>Ø over core insulation* (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
</tr>
<tr>
<td>3 x R909PB/G-25-X</td>
<td>27</td>
</tr>
<tr>
<td>3 x R909PB/G-30-X</td>
<td>32.5</td>
</tr>
<tr>
<td>3 x R909PB/G-37-X</td>
<td>40</td>
</tr>
<tr>
<td>3 x R909PB/G-43-X</td>
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<tr>
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<td>57</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

* after cable preparation

Table X

<table>
<thead>
<tr>
<th>Conductor size (mm²)</th>
<th>Aluminium and Copper conductor (RMV)</th>
<th>Copper conductor (RMV)</th>
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<tr>
<td>95</td>
<td>95.240-14-5</td>
<td>95(K)M-11-2</td>
</tr>
<tr>
<td>120</td>
<td>120.140-14-5</td>
<td>120(K)M-11-2</td>
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<td>150</td>
<td>150.185-14-5</td>
<td>150(K)M-11-2</td>
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<td>185</td>
<td>185.240-14-5</td>
<td>185(K)M-11-2</td>
</tr>
<tr>
<td>240</td>
<td>240.300-14-5</td>
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<td>300</td>
<td>300.400-14-5</td>
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<td>400</td>
<td>400.500-14-5</td>
<td>400(K)M-11-2</td>
</tr>
<tr>
<td>500</td>
<td>500.630-14-5</td>
<td>500(K)M-11-2</td>
</tr>
<tr>
<td>630</td>
<td>630.800-14-5</td>
<td>630(K)M-11-2</td>
</tr>
<tr>
<td>800</td>
<td>800.1200-14-5</td>
<td>800(K)M-11-2</td>
</tr>
<tr>
<td>1000</td>
<td>1000.1200-14-5</td>
<td>1000(K)M-11-2</td>
</tr>
<tr>
<td>1200</td>
<td>1200.1200-14-5</td>
<td>1200(K)M-11-2</td>
</tr>
</tbody>
</table>

RMV: round stranded compacted conductors
900SA-CD
Interface F
Surge arrester
72.5 kV

Application
Surge arrester designed to protect 72.5 kV class components, including transformers, equipment, cable and accessories from high voltage surges resulting from lightning or switching.

Technical characteristics
- This surge arrester is a metal oxide varistor surge arrester in an elbow configuration.
- Each separable surge arrester is tested for AC withstand and partial discharge prior to leaving the factory.

U (Uₘₚ)
60-69 (72.5) kV

Design
1. Type F interface ref.
   CENELEC EN 50180 and 50181
2. Bus for 909PB/G (contact rod and stud)
3. Conductive EPDM insert
4. Metal oxide valve elements
5. Conductive EPDM jacket
6. Insulating EPDM layer moulded between the insert and the jacket
7. Steel cap
8. Earthing connection
9. Earthing lead

It has been designed to be used with the R909TB/G separable tee connector.

Specifications and standards
The 900SA-CD surge arresters meet the test requirements of IEC 60099-4 and EN 60099-4.

<table>
<thead>
<tr>
<th>Surge arrester type</th>
<th>Nominal discharge current Iₙ (kA)</th>
<th>Rated voltage Uₘₚ (kV)</th>
<th>Max. continuous operating voltage* Uₘₚ (kV)</th>
<th>Iₚₚ Rated short-circuit current (kA, 0.2s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>900SA-10-74-CD20</td>
<td>10</td>
<td>74</td>
<td>59.2</td>
<td>20</td>
</tr>
<tr>
<td>900SA-10-74-CD31.5</td>
<td>10</td>
<td>74</td>
<td>59.2</td>
<td>31.5</td>
</tr>
</tbody>
</table>

* Other voltage on request.

For detailed electrical ratings please see page 29-30.
Kit contents
The complete 900SA-CD surge arrester kit comprises 1x the following components:

- Surge arrester 900SA-CD
- Support 900SA

The kit also comprises:
- Installation instructions
- Silicone grease and nylon vent rod
- Gloves and wiper
- Contact rod and stud

Surge arrester 900SA-CD + Support 900SA = 900SA-10-74-CD20 surge arrester kit

Surge arrester 900SA-CD + Cover 900SA = 900SA-10-74-CD31.5 surge arrester kit

Ordering instructions
For rated short-circuit current 31.5 kA, 0.2s order the surge arrester kit 900SA-10-74-CD31.5.

Support 900SA
To support the weight of the surge arrester.

Cover 900SA
To obtain an increased short circuit level up to 31.5 kA.
To support the weight of the surge arrester.
### R900BE/G
**Interface F**  
**Bushing extender**  
Up to 72.5 kV  
1250 A*

**Technical characteristics**
- The thick conductive EPDM jacket provides a total safe to touch screen which ensures safety for personnel.  
- Each bushing extender is tested for AC withstand and partial discharge prior to leaving the factory.

**U (∈U_m)  
60-69 (72.5) kV**

**Application**
The separable bushing extender R900BE/G provides an extension piece to allow cables to stand away from equipment (transformers, switchgears, ...). It is used in conjunction with R909PB/G, supplied with an earthing lead.

**Design**
1. Conductive EPDM insert  
2. Conductive EPDM jacket  
3. Insulating EPDM layer moulded between insert and jacket  
4. Type F interface ref. CENELEC EN 50180 and 50181  
5. Earthing lead

For use with connectors, bushings and connecting plugs with interface F as described by CENELEC EN 50180 and 50181.

* When installed on an appropriate equipment bushing.

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### R900DR-B/G
**Interface F**  
**Dead-end receptacle**  
Up to 72.5 kV

**Technical characteristics**
- Each dead-end receptacle is tested for AC withstand and partial discharge prior to leaving the factory.

**U (∈U_m)  
60-69 (72.5) kV**

**Application**
Fits over a bushing with a type F interface to provide dead-end facility. The dead-end receptacle R900DR-B/G is supplied with an earthing lead.

**Design**
1. Type F interface ref. CENELEC EN 50180 and 50181  
2. Bushing extender R900BE/G  
3. Stud + nut + washer  
4. Basic insulating plug  
5. Conductive EPDM cap

Order R900DR-B/G for 72.5 kV applications.
POSSIBLE ARRANGEMENTS

**Interface F**

### R909TB/G

Single cable arrangement

- Tee connector: R909TB/G

### R909TB/G + R909PB/G

Dual cable arrangement

- Tee connector: R909TB/G
- Coupling connector: R909PB/G

### R909TB/G + 900SA-CD

Single cable arrangement with surge arrester

- Tee connector: R909TB/G
- Surge arrester: 900SA-CD

### R909TB/G + R909PB/G + 900SA-CD

Dual cable arrangement with surge arrester

- Tee connector: R909TB/G
- Coupling connector: R909PB/G
- Surge arrester: 900SA-CD
R900AR-6 / R900AR-8
Interface F
Equipment bushing

Technical characteristics
Each bushing is tested for AC withstand and partial discharge prior to leaving the factory.

72.5 kV
Up to 630 A

U (U_m)
60-69 (72.5) kV

Specifications and standards
The bolted type equipment bushings R900AR-X/J are moulded epoxy insulated parts with type F interface acc. to CENELEC EN 50180.

The bushing R900AR-X/J is type tested acc. to IEC 60840 and IEC 60137.

Note:
The connection has to be encapsulated by an electrode of adequate design.

<table>
<thead>
<tr>
<th>Equipment bushing type</th>
<th>Interface type</th>
<th>Max. operating voltage U_m (kV)</th>
<th>Current I_r (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R900AR-6/J</td>
<td>F2</td>
<td>72.5</td>
<td>630</td>
</tr>
<tr>
<td>R900AR-8/J</td>
<td>F2</td>
<td>72.5</td>
<td>630</td>
</tr>
</tbody>
</table>

For detailed electrical ratings please see page 29-30.
**R900AR-X/J Bushing**

- bushing interface
- fixing studs
- fixing flange
- EN 50180-3
- stud clamp
- equipment
- sealing gasket
- equipment connection

**Bushing clamping kit**

To order the bushing clamping kit with DIN style fixing flange, simply specify KBCDS-400.

Contents:
- 1 x fixing flange DIN style
- 6 x stud clamp
- 1 x sealing gasket

**Fixing dimensions**

- M12
- 60
- 30
- Dia. 105
- Dia. 171
- 6 fixing studs

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Phone: +49 9281 8306-0 • E-Mail: kundenzentrum.hof@nexans.com • www.nexans-power-accessories.com
AFN72
Slip-on termination for indoor and outdoor use
72.5 kV

1. Application
   Dry type, non size sensitive terminations for use indoors, outdoors and exposed to prolonged sunshine and other weather conditions. To connect polymeric insulated cable to equipment and for the outdoor terminating onto overhead lines or bus bars.

2. Technical characteristics
   - Its compact and modular design supports the suitability for different pollution levels.
   - All termination housings are tested for AC withstand and partial discharge prior to leaving the factory.

3. Design
   1. Longitudinally sealed mechanical cable lug (topbolt or crimped cable lugs available on request)
   2. Water sealing cover
   3. Silicone shed modules providing different pollution levels
   4. Silicone housing with sheds and integrated conductive silicone rubber insert providing stress relief for the cable
   5. Water sealing mastic
   6. Earthing clamp
   7. Earthing lug

4. Specifications and standards
   The AFN72 slip-on termination is type tested acc. to IEC 60840, and meets the requirements of IEC/TS 60815-3; SPS class d and e.
   According to IEC 60112:
   CTI > 600

<table>
<thead>
<tr>
<th>Termination type</th>
<th>Max. operating voltage $U_m$ (kV)</th>
<th>$\varnothing$ over core insulation (mm)</th>
<th>Conductor cross-section* (mm$^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>min.</td>
<td>max.</td>
</tr>
<tr>
<td>AFN72</td>
<td>72.5</td>
<td>31,5</td>
<td>82</td>
</tr>
</tbody>
</table>

* Indicative for cables with 10 mm insulation wall thickness.

For detailed electrical ratings please see page 29-30.
Kit contents
A kit always comprises:
+ 1 termination housing
+ modules with sheds
+ conductor cable lug
+ screen wire cable lug
+ water sealing sleeve
+ installation instructions
+ special lubricant
+ wiper
+ earthing clamp
+ water sealing mastic
+ adhesive tape

Ordering instructions
To order the termination, select
the ordering part number
which gives you the best
centering of your core insula-
tion diameter and substitute
X
using Table X, according to
your conductor cable lug size
and type and add the screen
wire cable lug.

Order example:
One outdoor termination for a
72.5 kV - 630 mm² stranded
aluminium cable with 50 mm²
copper wire screen to be used
in pollution class environment d.
The diameter over core insulation
is 54 mm.

Order
AFN72-6-D + C400-630x16 + 1070/1x10MS
For screen wire cable lug please see page 17-18.

Table 1 - Classification and dimensions

<table>
<thead>
<tr>
<th>Ordering part number termination</th>
<th>Ø over core insulation* (mm)</th>
<th>Ø D (mm)</th>
<th>Length LAFN (mm)</th>
<th>Creepage distance (mm)</th>
<th>Site pollution survev (SPS) class**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min.</td>
<td>max.</td>
<td>min.</td>
<td>max.</td>
<td>LAFN</td>
</tr>
<tr>
<td>AFN72-4-D-X</td>
<td>31.5</td>
<td>41</td>
<td>127</td>
<td>127</td>
<td>915</td>
</tr>
<tr>
<td>AFN72-4-E-X</td>
<td>31.5</td>
<td>41</td>
<td>127</td>
<td>127</td>
<td>1040</td>
</tr>
<tr>
<td>AFN72-5-D-X</td>
<td>39.0</td>
<td>47</td>
<td>127</td>
<td>127</td>
<td>915</td>
</tr>
<tr>
<td>AFN72-5-E-X</td>
<td>39.0</td>
<td>47</td>
<td>127</td>
<td>127</td>
<td>1040</td>
</tr>
<tr>
<td>AFN72-6-D-X</td>
<td>46.0</td>
<td>55</td>
<td>127</td>
<td>127</td>
<td>915</td>
</tr>
<tr>
<td>AFN72-6-E-X</td>
<td>46.0</td>
<td>55</td>
<td>127</td>
<td>127</td>
<td>1040</td>
</tr>
<tr>
<td>AFN72-7-D-X</td>
<td>53</td>
<td>60</td>
<td>172</td>
<td>172</td>
<td>805</td>
</tr>
<tr>
<td>AFN72-7-E-X</td>
<td>53</td>
<td>60</td>
<td>172</td>
<td>172</td>
<td>965</td>
</tr>
<tr>
<td>AFN72-8-D-X</td>
<td>59</td>
<td>67</td>
<td>172</td>
<td>172</td>
<td>805</td>
</tr>
<tr>
<td>AFN72-8-E-X</td>
<td>59</td>
<td>67</td>
<td>172</td>
<td>172</td>
<td>965</td>
</tr>
<tr>
<td>AFN72-9-D-X</td>
<td>66</td>
<td>73</td>
<td>172</td>
<td>172</td>
<td>805</td>
</tr>
<tr>
<td>AFN72-9-E-X</td>
<td>66</td>
<td>73</td>
<td>172</td>
<td>172</td>
<td>965</td>
</tr>
<tr>
<td>AFN72-10-D-X</td>
<td>72</td>
<td>82</td>
<td>172</td>
<td>172</td>
<td>805</td>
</tr>
<tr>
<td>AFN72-10-E-X</td>
<td>72</td>
<td>82</td>
<td>172</td>
<td>172</td>
<td>965</td>
</tr>
</tbody>
</table>

* after cable preparation
** acc. to IEC/TS 60815-3: 2008

To determine the total termination length:
Total Length L = LAFN + LCL + 10 mm
For detailed information see next pages.
### Mechanical conductor cable lug with shear-off-head bolts

**Table X**

<table>
<thead>
<tr>
<th>Ordering part number</th>
<th>Conductor cross-section Aluminium (mm²)</th>
<th>Conductor cross-section Copper (mm²)</th>
<th>Length L&lt;sub&gt;C&lt;/sub&gt;</th>
<th>Dimensions (mm)</th>
<th>Palm hole diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conductor cross-section Copper (mm²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rm(v)</td>
<td>re</td>
<td>rm(v)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C95-240 x 16</td>
<td>95-240</td>
<td>95-240</td>
<td>95</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>C185-400 x 16</td>
<td>185-400</td>
<td>185-400</td>
<td>120</td>
<td>26</td>
<td>42</td>
</tr>
<tr>
<td>C400-630 x 16</td>
<td>400-630</td>
<td>400-630</td>
<td>130</td>
<td>34</td>
<td>52</td>
</tr>
<tr>
<td>C630-1000 x 20</td>
<td>630-1000</td>
<td>630-1000</td>
<td>165</td>
<td>41</td>
<td>65</td>
</tr>
<tr>
<td>C800-1200 x 20</td>
<td>800-1200</td>
<td>800-1200</td>
<td>170</td>
<td>45</td>
<td>72</td>
</tr>
</tbody>
</table>

Other cable lugs on request

### Screen wire cable lug, Cu compression type acc. to DIN 46235

**KU-V**

<table>
<thead>
<tr>
<th>Ordering part number</th>
<th>Conductor cross-section (mm²) strand.</th>
<th>Dimensions (mm)</th>
<th>Palm hole diameter (mm)</th>
<th>Die code no.</th>
<th>Number of compressions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conductor cross-section (mm²)</td>
<td>Palm hole size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rm(v)</td>
<td>d l b</td>
<td>mech.</td>
<td>hydr.</td>
<td></td>
</tr>
<tr>
<td>16 x 10 KU-V</td>
<td>16</td>
<td>5.5 36 17.0 21.0</td>
<td>10.5 13.0</td>
<td>8</td>
<td>2 1</td>
</tr>
<tr>
<td>25 x 10 KU-V</td>
<td>25</td>
<td>7.0 38 17.0 19.0</td>
<td>10.5 13.0</td>
<td>10</td>
<td>2 1</td>
</tr>
<tr>
<td>35 x 10 KU-V</td>
<td>35</td>
<td>8.2 42 19.0 21.0</td>
<td>10.5 13.0</td>
<td>12</td>
<td>2 1</td>
</tr>
<tr>
<td>50 x 10 KU-V</td>
<td>50</td>
<td>10.0 52 22.0 24.0</td>
<td>10.5 13.0</td>
<td>14</td>
<td>3 1</td>
</tr>
<tr>
<td>70 x 10 KU-V</td>
<td>70</td>
<td>11.5 55 24.0 24.0</td>
<td>10.5 13.0</td>
<td>16</td>
<td>3 1</td>
</tr>
<tr>
<td>95 x 10 KU-V</td>
<td>95</td>
<td>13.5 65 28.0 28.0</td>
<td>10.5 13.0</td>
<td>18</td>
<td>4 2</td>
</tr>
<tr>
<td>120 x 10 KU-V</td>
<td>120</td>
<td>15.5 70 32.0 32.0</td>
<td>10.5 13.0</td>
<td>20</td>
<td>4 2</td>
</tr>
</tbody>
</table>
| 1) These cable lugs differ from DIN 46235.
Mechanical screen wire cable lug with shear-off-head bolts

### 1070/1x...MS

<table>
<thead>
<tr>
<th>Ordering part number screen wire cable lug</th>
<th>Copper in (mm²)</th>
<th>Flat wire Aluminium</th>
<th>Dimensions mm</th>
<th>Palm hole dia. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Quantity</td>
<td>Dimension</td>
<td>l</td>
</tr>
<tr>
<td>1070/1 x 10 MS</td>
<td>10-50</td>
<td>3-13</td>
<td>1 mm x 5,2 mm</td>
<td>39</td>
</tr>
<tr>
<td>1070/1 x 12 MS</td>
<td>10-50</td>
<td>3-13</td>
<td>1 mm x 5,2 mm</td>
<td>41</td>
</tr>
</tbody>
</table>

For use with copper wire screened cables. No further earthing device is necessary.

For use with other cable types. Please contact our representative.

All accessories available with mechanical or compression conductor connector.
**Application**
FEV72.5 terminations are suitable for outdoor installation on single core XLPE cables. This high quality outdoor termination with composite insulator filled with insulating fluid, is optionally equipped with arcing horn and flat terminal connector.

**Technical characteristics**
- Optimised for mechanical connecting stalk
- Premoulded and factory tested EPDM stress cone
- Insulated arrangement, disconnectable earth lead
- Frequency 50 Hz, conductor cross-section 185 - 2000 mm²
- For diameter over core insulation up to 81 mm

**FEV72.5**
Outdoor termination with composite insulator for single core XLPE HV cables

**Design**
1. Mechanical connecting stalk
2. Lock nut
3. Head plate
4. Composite insulator
5. EPDM stress cone
6. Sealing flange
7. Base plate
8. Cable gland
9. Support insulator
10. Silicone oil
11. Heat-shrinkable tube
12. Arcing horn (optional)
13. Cable clamp
   (set includes 2 pieces)

**Connecting stalk**

<table>
<thead>
<tr>
<th>Diameter $\phi d$ (mm)</th>
<th>Conductor cross-section $mm^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\phi 30$</td>
<td>185 - 630</td>
</tr>
<tr>
<td>$\phi 40$</td>
<td>800 - 1200</td>
</tr>
<tr>
<td>$\phi 50$</td>
<td>1400 - 1800</td>
</tr>
<tr>
<td>$\phi 60$</td>
<td>2000</td>
</tr>
</tbody>
</table>
**Specifications and Standards**

ESC series EPDM stress cones have been qualified as part of outdoor, switchgear and transformer termination.

**Premoulded EPDM Stress Cones (ESC-Series)**

**Termination type** | **Max. operating voltage (kV)** | **Height (mm)** | **Weight per piece (kg)** | **Oil volume (l)** | **Creepage distance (mm)**
---|---|---|---|---|---
FEV72,5-1.8VIn | 72.5 | 1145 | 60 | 15 | 1800
FEV72,5-2.5VIn | 72.5 | 1168 | 65 | 14 | 2560

Other variants available on request.

For detailed electrical ratings please see page 29-30.

---

**Application**

Premoulded EPDM stress cones are used for more than 30 years on cables with extruded insulation. Euromold’s ESC range of high voltage stress cones is designed based on the long experience with moulded dielectrical components.

The stress control is provided by a semi-conductive EPDM deflector on which the insulating part of the stress cone is moulded under high pressure. Stress cones are suitable to terminate cables with extruded insulation from 72.5 kV up to 550 kV in insulators filled with insulating fluid (gas or oil).

---

**Specifications and Standards**

ESC series EPDM stress cones are in compliance with national and international specifications and can be adapted to special customer requirements. Therefore, all technical specification are purely for information purposes only. For your specific requirements, please do not hesitate to contact us.

**International:**
- IEC 60840

**National:**
- DIN VDE 0276-632

---

**Stress cone ESC-Series (Size)** | **Ø over core insulation* (mm)** | **Conductor cross-section 72 kV cable \[t_{ins}= 10 \text{ mm}\] (mm)**
---|---|---
E0 | 35 - 42 | 120 - 240
E1 | 41 - 48 | 240 - 400
E2 | 47 - 55 | 400 - 630
E3 | 53 - 61 | 630 - 1000
E4 | 60 - 72 | 1000 - 1600
E5 | 70 - 81 | 1600 - 2000
**72MSJ**

Slip-on single core straight joint with mechanical connectors

72.5 kV

**Application**

Non size sensitive slip-on single core straight joint made of silicone, optimized for mechanical connectors. For jointing copper wire screened polymeric cable to be laid in air or directly buried. The product is fully screened and fully submersible.

**Technical characteristics**

- All joint bodies are tested for AC withstand and partial discharge prior to leaving the factory.
- Outer cover made of heat-shrinkable tubes

**U (Uₘ)***

60-69 (72.5) kV

**Design**

1. Mechanical conductor connector
2. Premoulded silicone joint body
3. Heat-shrinkable protective cover
4. Mechanical screen wire connector
5. Vapour barrier

**Specifications and standards**

The slip-on single core straight joint 72MSJ is type tested acc. to IEC 60840.

<table>
<thead>
<tr>
<th>Straight joint type</th>
<th>Max. operating voltage Uₘ (kV)</th>
<th>ø over core insulation (mm)</th>
<th>Conductor cross-section* (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72MSJ-3</td>
<td>72.5</td>
<td>34.5 – 47</td>
<td>120 – 400</td>
</tr>
<tr>
<td>72MSJ-4</td>
<td>72.5</td>
<td>47 – 63</td>
<td>400 – 1000</td>
</tr>
</tbody>
</table>

* Indicative for cables with 10 mm insulation wall thickness.

For detailed electrical ratings please see page 29-30.
Kit contents
A kit always comprise:
1 x mechanical conductor connector
1 x premoulded joint body
1 x mechanical screen connector
1 x Vapor barrier sleeve

Ordering instructions
To order the joint, select the joint type which gives you the best centering of your core insulation diameter and add the conductor connector and the screen wire connector.

Order example:
One straight joint for a 72.5 kV XLPE insulated cable with 630 mm² aluminum stranded conductor and 50 mm² copper wire screen. The diameter over core insulation is 54 mm.

Order
72MSJ-4+M400.630+D25.150

For use with copper wire screened cables. No further earthing device is necessary.
For use with other cables types. Please contact our representative.
Joining cables of different sizes possible.
72MSJ-x-SB
Slip-on single core straight joint with mechanical connectors and integrated screen sectionalizing for cross-bonding application
72.5 kV

Application
Non size sensitive slip-on single core straight joint made of silicone, optimized for mechanical connectors. For jointing copper wire screened polymeric cable to be laid in air or directly buried. The product is fully screened and fully submersible.

Technical characteristics
- All joint bodies are tested for AC withstand and partial discharge prior to leaving the factory.
- Outer cover made of heat-shrinkable tubes
- Also for single-bonding-cables available

U (U_m)
60-69 (72.5) kV

Design
1. Mechanical conductor connector
2. Premoulded silicone joint body
3. Coaxial cross-bonding cable
4. Vapour barrier
5. Mechanical screen wire connector
6. Shield break
7. Branch clip
8. Heat-shrinkable protective cover

Specifications and standards
The slip-on single core straight joint 72MSJ-x-SB is type tested acc. to IEC 60840.

<table>
<thead>
<tr>
<th>Straight joint type</th>
<th>Max. operating voltage U_m (kV)</th>
<th>Ø over core insulation (mm)</th>
<th>Conductor cross section* (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72MSJ-3-SB</td>
<td>72.5</td>
<td>34.5 47</td>
<td>120 – 400</td>
</tr>
<tr>
<td>72MSJ-4-SB</td>
<td>72.5</td>
<td>47 63</td>
<td>400 – 1000</td>
</tr>
</tbody>
</table>

* Indicative for cables with 10 mm insulation wall thickness.
For detailed electrical ratings please see page 29-30.
Kit contents
A kit always comprise:
1 x mechanical conductor connector
1 x pre-moulded joint body
2 x mechanical screen connector
1 x Vapor barrier sleeve
1 x Semi-conductive tape
1 x branch clip (2 x for use with single bonding cables)
+ Copper woven fabric tape
+ Adhesive tape
+ Sealing mastic
+ Heat-shrinkable tubes
+ Installation instruction

Ordering instructions
To order the joint, select the joint type which gives you the best centering of your core insulation diameter and add the conductor connector and the screen wired connector.

For coaxial cross-bonding cable please indicate: -SB1

Order example:
One straight joint for a 72.5 kV XLPE insulated cable with 630 mm² aluminum stranded conductor and 50 mm² copper wire screen. The diameter over core insulation is 54 mm. Used with coaxial cross-bonding cable with 95 mm² copper conductor.

Order 72MSJ-4-SB1 +M400.630+D16.95

For single bonding-cables please indicate: -SB2

Order example:
One straight joint for a 72.5 kV XLPE insulated cable with 630 mm² aluminum stranded conductor and 50 mm² copper wire screen. The diameter over core insulation is 54 mm. Used with two single bonding-cables with 120 mm² copper conductor.

Order 72MSJ-4-SB2 +M400.630+D25.150

Kit contents
1 x mechanical conductor connector
1 x pre-moulded joint body
2 x mechanical screen connector
1 x Vapor barrier sleeve
1 x Semi-conductive tape
1 x branch clip (2 x for use with single bonding cables)
+ Copper woven fabric tape
+ Adhesive tape
+ Sealing mastic
+ Heat-shrinkable tubes
+ Installation instruction

Ordering instructions
To order the joint, select the joint type which gives you the best centering of your core insulation diameter and add the conductor connector and the screen wired connector.

For coaxial cross-bonding cable please indicate: -SB1

Order example:
One straight joint for a 72.5 kV XLPE insulated cable with 630 mm² aluminum stranded conductor and 50 mm² copper wire screen. The diameter over core insulation is 54 mm. Used with coaxial cross-bonding cable with 95 mm² copper conductor.

Order 72MSJ-4-SB1 +M400.630+D16.95

For single bonding-cables please indicate: -SB2

Order example:
One straight joint for a 72.5 kV XLPE insulated cable with 630 mm² aluminum stranded conductor and 50 mm² copper wire screen. The diameter over core insulation is 54 mm. Used with two single bonding-cables with 120 mm² copper conductor.

Order 72MSJ-4-SB2 +M400.630+D25.150
### Mechanical conductor connector with shear-off-head bolts

**M120-300**

<table>
<thead>
<tr>
<th>Ordering part number mechanical connector</th>
<th>Conductor cross-section Aluminium (mm²)</th>
<th>Conductor cross-section Copper (mm²)</th>
<th>Length L</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M120-300</td>
<td>120-300</td>
<td>120-300</td>
<td>142</td>
<td>25 38 67</td>
</tr>
<tr>
<td>M185-400</td>
<td>185-400</td>
<td>185-400</td>
<td>170</td>
<td>26 42 82</td>
</tr>
<tr>
<td>M300-500</td>
<td>300-500</td>
<td>300-500</td>
<td>200</td>
<td>34 52 94</td>
</tr>
<tr>
<td>M400-630</td>
<td>400-630</td>
<td>400-630</td>
<td>200</td>
<td>34 52 94</td>
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<tr>
<td>M630-1000</td>
<td>630-1000</td>
<td>630-1000</td>
<td>220</td>
<td>41 65 105</td>
</tr>
<tr>
<td>M800/1000</td>
<td>800/1000</td>
<td>800/1000</td>
<td>220</td>
<td>37/41 60 105</td>
</tr>
<tr>
<td>M800-1200</td>
<td>800-1200</td>
<td>800-1200</td>
<td>220</td>
<td>45 72 105</td>
</tr>
</tbody>
</table>

**Mechanical screen wire connector with shear-off-head bolts**

**D25-150 SV-T-V-K**

<table>
<thead>
<tr>
<th>Ordering part number mechanical screen wire connector</th>
<th>Conductor cross-section Copper rm (mm²)</th>
<th>Number of bolts</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D16-95 SV-T-V-K</td>
<td>16-95</td>
<td>2</td>
<td>55 25 14.0</td>
</tr>
<tr>
<td>D25-150 SV-T-V-K</td>
<td>25-150</td>
<td>2</td>
<td>70 28 17.0</td>
</tr>
</tbody>
</table>
Mechanical screen wire cable lug with shear-off-head bolts

1070MS

<table>
<thead>
<tr>
<th>Ordering part number screen wire connector</th>
<th>Copper in (mm²)</th>
<th>Flat wire Aluminium</th>
<th>Dimensions mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1070MS</td>
<td>10-50</td>
<td>3-13</td>
<td>40 16 10,5</td>
</tr>
</tbody>
</table>

Joint installation tool

- Installation tool will be supplied with joint kit
- Slip on tool to slide the joint body onto the prepared cable core
- Assembly rings for pushing the joint body on parking position and to final position
- Support tube keeps the joint body straight while sliding
Cable preparation tools for installation

Multitool LHV1

1. Multitool LHV1 Base unit
   Article number: 16050050
   • Base unit with universal adaptation to different cable diameters (40 mm – 130 mm), adjustable feed position in the range of 0° to 10°, two handles.
   • Peel-adapter and blade to peel the extruded semi-conductive layer over XLPE core insulation.
   • Set of rollers with a smooth running surface.
   • Cutting adapter with 22 mm blade for depositing the XLPE core insulation, incl. one replacement blade.
   • Carrying case with appropriate foam pads for base unit plus option 1 and 2.

2. Option 1 for LHV1 Base unit
   Article number: 16050051
   • Peel adapter, with suspension and 1 mm cutting limit for peeling the semi-conductive layer on cable outer sheath.
   • Set of rollers with profiled running surface.

3. Option 2 for LHV1 Base unit
   Article number: 16050052
   • Cutting Adapter for grooves
   • Profiled knife
   • 10 mm grooving knife
   • Set of rollers with soft plastic running surface
   • Plastic prism
Multitool LHV1
Tool case, fully assembled

- Carrying case with appropriate foam pads
- Fully assembled with base unit, peel and cutting adapter (option 1 und 2)
## ELECTRICAL CHARACTERISTICS

### R909TB/G, R909PB/G

<table>
<thead>
<tr>
<th>Connector and coupling connector type</th>
<th>Partial discharge (&lt;5pC)</th>
<th>Power frequency withstand voltage</th>
<th>Lighting impulse voltage (1,2x50µs)</th>
<th>Rated short time withstand current</th>
<th>Rated peak withstand current</th>
</tr>
</thead>
<tbody>
<tr>
<td>R909TB/G</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
<td>32.5 kA/3s</td>
<td>84 kA</td>
</tr>
<tr>
<td>R909PB/G</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
<td>32.5 kA/3s</td>
<td>84 kA</td>
</tr>
</tbody>
</table>

### 900SA-CD

<table>
<thead>
<tr>
<th>Surge arrester type</th>
<th>Nominal discharge current Iₙ</th>
<th>Line discharge class</th>
<th>Energy withstand capability</th>
<th>Partial discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>900SA-CD</td>
<td>10 kA</td>
<td>2</td>
<td>Min 4.25 kJ/kVUr</td>
<td>&lt;5pC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surge arrester type</th>
<th>Steep current residual voltage [10 kA, 1/20 µs] (kV)</th>
<th>Lighting current residual voltage [8/20 µs] (kV)</th>
<th>Switching impulse residual voltage [8/20 µs] (kV)</th>
<th>High current impulse withstand (kA)</th>
<th>Rated short-circuit current Iₛᵣ (kA, 0.2s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>900SA-10-74-CD20</td>
<td>213</td>
<td>187</td>
<td>197</td>
<td>213</td>
<td>160</td>
</tr>
<tr>
<td>900SA-10-74-CD31.5</td>
<td>213</td>
<td>187</td>
<td>197</td>
<td>213</td>
<td>160</td>
</tr>
</tbody>
</table>

### R900AR-6 / R900AR-8

<table>
<thead>
<tr>
<th>Equipment bushing type</th>
<th>Partial discharge (&lt;10 pC)</th>
<th>Power frequency withstand voltage</th>
<th>Lighting impulse voltage (1,2x50µs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R900AR-6</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
</tr>
<tr>
<td>R900AR-8</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
</tr>
</tbody>
</table>

### AFN72

<table>
<thead>
<tr>
<th>Termination type</th>
<th>Partial discharge (&lt;5 pC)</th>
<th>Power frequency withstand voltage</th>
<th>Impulse voltage (1,2x50µs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFN72</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
</tr>
</tbody>
</table>
### FEV72.5

<table>
<thead>
<tr>
<th>Termination type</th>
<th>Max. operating voltage $U_m$ (kV)</th>
<th>Impulse voltage (kV)</th>
<th>Nominal leakage path (mm)</th>
<th>Arcing distance (mm)</th>
<th>AC withstand voltage (kV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEV72.5-1.8Vln</td>
<td>72.5</td>
<td>325</td>
<td>1860</td>
<td>775</td>
<td>90</td>
</tr>
<tr>
<td>FEV72.5-2.5Vln</td>
<td>72.5</td>
<td>325</td>
<td>2560</td>
<td>755</td>
<td>90</td>
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</tbody>
</table>

### 72MSJ, 72MSJ-x-SB

<table>
<thead>
<tr>
<th>Joint type</th>
<th>Partial discharge (&lt;5 pC)</th>
<th>Power frequency withstand voltage</th>
<th>Impulse voltage (1,2x50µs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72MSJ</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
</tr>
<tr>
<td>72MSJ-x-SB</td>
<td>54 kV</td>
<td>90 kV/30 min</td>
<td>325 kV</td>
</tr>
</tbody>
</table>