HV CABLE ACCESSORY FOR 66~550kV
High Efficient, Green Energy Solution
LS Cable & System supplies various cables and materials used for power grids and communication networks around the world across all industries providing its top class technology and excellent quality. The company has also developed state of the art products, such as superconductors, HVDC and submarine cables that will lead the future energy industry.

LS spun off from LG in 2003 as a group specializing in electronics, electrical systems, energy and materials.
About us
Since the company was founded in 1962, we have developed, produced and sold cable-related solutions, contributing to the establishment of power grids and communications networks at home and abroad. Our cutting-edge products such as submarine, superconducting, HV/EHV and communication cable systems have been supplied to energy agencies, heavy electrical equipment manufacturers and telecommunication companies in North America, South America, Europe, Middle East and Asia, which have helped us to be recognized as a global leading company.

EHV Connection Division
We are one of the leading cable connection providers and have our own development and design institutions. We are able to provide customized products upon customer’s various requirements and conditions from our most efficient and convenient solutions. We provide customized training programs through our academy institution located in Korea. Our certified engineers are distinguished themselves in the fields over 50 countries in the world.

LS HV Cable Accessory for 66 ~ 550kV
As an extra high voltage cable and accessories manufacturer and a division of LS Cable, we never stop researching, designing, developing, and manufacturing products with the higher level of quality to address the ever-changing demands in everyday life as well as in the industry. Our quality control meets the most delicate requirements of international standards and the high level of quality is recognized both by local and international clients. Our commitment to develop and deliver solutions to address our customers’ needs and challenges keep our technology on the cutting edge and our know-how in the field more valuable, which our customers highly appreciate. We are looking forward to working with you.

Contents
- Pro-Con Outdoor Terminations
- Pro-Con Gas Insulated Terminations
- Pro-Con Transformer Terminations
- Smart Pre-molded Joints
- Reliable Oil filled accessories
- Fit Special accessories
- Various types of Link box
- Test termination
- Learning Academy for Training
- Tools for Jointing installation
HV Cable Accessory for 66 ~ 550kV

LS Pro-Con Outdoor Termination

Application Business
LS outdoor termination is based on pre-molded silicone rubber sleeve designed to fit with controlled interference over the cable insulation and able to follow the cable size variations with sufficient positive pressure to control the electrical stress by elastic retention of silicone material itself. The termination is filled with polyurethane oil up to optimized level where the electric stress is substantially reduced thereby not requiring an oil reservoir or monitoring system as additional maintenance expenses. The termination base plate and the cable's metallic sheath are electrically insulated from the supporting structure by means of stand-off insulators designed to withstand both mechanical and electrical stresses in services. Either porcelain or polymer hollow insulator can be supplied depending upon requests. They are currently available to the maximum allowable cable conductor size of 2500mm²

(Product Specification)
- For all types of XLPE insulated cables
- Porcelain & Polymer both available
- Without Pressurizing & Monitoring
- Configurable creepage distance design
- Self-supported type design
- Maintenance-free after installation

<table>
<thead>
<tr>
<th>Type</th>
<th>Insulator Type*</th>
<th>Creepage Distance &quot;L&quot;</th>
<th>Base Plate</th>
<th>Operating voltage</th>
<th>Cable size</th>
<th>Special Add-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSPG-01</td>
<td>Porcelain</td>
<td>1500</td>
<td>4000</td>
<td>Ø490</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-03</td>
<td>Porcelain</td>
<td>2000</td>
<td>6000</td>
<td>Ø490</td>
<td>150 ~ 170kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-05</td>
<td>Porcelain</td>
<td>2400</td>
<td>7200</td>
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<td>150 ~ 170kV</td>
<td>20052 – 20050</td>
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<tr>
<td>LSPG-07</td>
<td>Porcelain</td>
<td>2700</td>
<td>8400</td>
<td>Ø600</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-09</td>
<td>Porcelain</td>
<td>3500</td>
<td>11500</td>
<td>Ø270</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-11</td>
<td>Porcelain</td>
<td>4900</td>
<td>13000</td>
<td>Ø270</td>
<td>330 ~ 420kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-13</td>
<td>Porcelain</td>
<td>5000</td>
<td>16000</td>
<td>Ø270</td>
<td>330 ~ 420kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-15</td>
<td>Porcelain</td>
<td>5000</td>
<td>18700</td>
<td>Ø270</td>
<td>500 ~ 550kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-02</td>
<td>Polymer</td>
<td>1500</td>
<td>4000</td>
<td>Ø490</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-04</td>
<td>Polymer</td>
<td>2000</td>
<td>6400</td>
<td>Ø490</td>
<td>150 ~ 170kV</td>
<td>20052 – 20050</td>
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<tr>
<td>LSPG-06</td>
<td>Polymer</td>
<td>2400</td>
<td>7700</td>
<td>Ø490</td>
<td>150 ~ 170kV</td>
<td>20052 – 20050</td>
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<tr>
<td>LSPG-08</td>
<td>Polymer</td>
<td>2700</td>
<td>8900</td>
<td>Ø600</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-10</td>
<td>Polymer</td>
<td>3500</td>
<td>11700</td>
<td>Ø270</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-12</td>
<td>Polymer</td>
<td>4900</td>
<td>14000</td>
<td>Ø270</td>
<td>330 ~ 420kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-14</td>
<td>Polymer</td>
<td>5000</td>
<td>17000</td>
<td>Ø270</td>
<td>330 ~ 420kV</td>
<td>20052 – 20050</td>
</tr>
<tr>
<td>LSPG-16</td>
<td>Polymer</td>
<td>5100</td>
<td>18000</td>
<td>Ø270</td>
<td>500 ~ 550kV</td>
<td>20052 – 20050</td>
</tr>
</tbody>
</table>

*Flexible Type is order made designed upon request of installation conditions.

LS Pro-Con GIS Termination

Application Business
The construction of SF6 gas insulated termination is based on stress relief cone and epoxy resin housing. There are mechanical devices to maintain interface pressure for dry type and embedded insulating plate to isolate between cable sheath and GIS chamber thereby not requiring an oil reservoir as additional maintenance expenses. The dry type could be easily installed in any position. The dry type could be easily installed in any position. The wafer type GIS (Sheath Voltage Limiter) can be installed to protect epoxy insulating plate from switching impulse. The main insulation components are fully examined and tested in the factory. Design and scope of supply are fully complying with IEC 60897 and IEC 62271-209 and possibly adjusted to various needs of customers such as plug-in type. They are currently available to the maximum allowable cable conductor size of 2500mm²

(Product Specification)
- For all types of XLPE insulated cables
- Conventional & Plug-in types available
- All dimension can be customized for existing system
- Without Pressurizing & Monitoring
- Easy adaptation for all GIS types
- Maintenance-free after installation

<table>
<thead>
<tr>
<th>Type</th>
<th>Insulator Type according to IEC 62271-209</th>
<th>Base Plate</th>
<th>Operating voltage</th>
<th>Cable size</th>
<th>Special Add-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSPG-01</td>
<td>Conventional (Figure.4)</td>
<td>φ720</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-03</td>
<td>Conventional (Figure.4)</td>
<td>φ900</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-05</td>
<td>Dry (Figure.3)</td>
<td>φ320</td>
<td>123 ~ 170kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-07</td>
<td>Dry (Figure.3)</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-09</td>
<td>Purified     (Figure.4)</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-11</td>
<td>Purified     (Figure.4)</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-13</td>
<td>Purified     (Figure.4)</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-15</td>
<td>Purified     (Figure.4)</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-02</td>
<td>Plug-in Type</td>
<td>φ720</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-04</td>
<td>Plug-in Type</td>
<td>φ900</td>
<td>72.5 ~ 145kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-06</td>
<td>Plug-in Type</td>
<td>φ320</td>
<td>123 ~ 170kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-08</td>
<td>Plug-in Type</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-10</td>
<td>Plug-in Type</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
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<tr>
<td>LSPG-12</td>
<td>Plug-in Type</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
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</tr>
<tr>
<td>LSPG-14</td>
<td>Plug-in Type</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
<tr>
<td>LSPG-16</td>
<td>Plug-in Type</td>
<td>φ475</td>
<td>245 ~ 300kV</td>
<td>20052 – 20050</td>
<td></td>
</tr>
</tbody>
</table>

*Non-IEC Type for existing GIS is order made designed upon request of installation conditions.

Safety and Efficiency Always Lead to Right Solution

LSE Xtra High Voltage Accessory for 66~550kV

Manufacturing
LS Pro-Con is a Korean organization engaged in the manufacturing and distribution of electrical equipment for the construction of H/V, U/HV, and extra-HV power systems. LS Pro-Con offers a wide range of electrical equipment that is used in the power grid, such as substation equipment, cables, and accessories. The company has a strong focus on innovation, quality, and customer satisfaction. LS Pro-Con is committed to providing reliable and long-lasting products that meet the highest industry standards. The company operates under the principle of safety and efficiency always leading to the right solution.
**HV Cable Accessory for 66 ~ 550kV**

**LS Pro-Con Transformer Termination**

**Application Business**

The construction of oil immersed terminations is based on stress relief cone and epoxy housing. There are mechanical devices to maintain interface pressure for dry type and embodied insulating plate to isolate between cable sheath and Transformer chamber thereby not requiring an oil reservoir as additional maintenance expenses. The dry type could be easily installed in any position.

The main insulation components are fully examined and tested in the factory. Design and scope of supply are normally complying with EN 50299 and possibly adjusted to various needs of customers such as plug-in type if required, terminal lug can be supplied for TR design. They are currently available to the maximum allowable cable conductor size of 2500mm².

**Product Specification**

- For all types of XLPE insulated cables
- Conventional & Plug-in both available
- All dimension can be customized for existing system
- Without Pressurizing & Monitoring
- Easy adaptation for all Transformer types
- Maintenance free after installation

**Table: Insulator Type according to IEC 62271-209**

<table>
<thead>
<tr>
<th>Type</th>
<th>Insulator Type according to IEC 62271-209</th>
<th>Insulation Size (50299-1)</th>
<th>Base Plate</th>
<th>Operating Voltage</th>
<th>Cable size</th>
<th>Special Add-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSPO-01</td>
<td>Conventional</td>
<td>585</td>
<td>Φ270</td>
<td>725 ~ 100kV</td>
<td>300Q ~ 2500SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-02</td>
<td>Conventional</td>
<td>757</td>
<td>Φ320</td>
<td>125 ~ 170kV</td>
<td>300Q ~ 2500SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-03</td>
<td>Conventional</td>
<td>960</td>
<td>Φ382</td>
<td>245 ~ 300kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-04</td>
<td>Conventional</td>
<td>1400</td>
<td>Φ460</td>
<td>362 ~ 550kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-05</td>
<td>Conventional</td>
<td>310</td>
<td>Φ270</td>
<td>725 ~ 100kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-06</td>
<td>Conventional</td>
<td>470</td>
<td>Φ320</td>
<td>125 ~ 170kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-07</td>
<td>Conventional</td>
<td>620</td>
<td>Φ475</td>
<td>245 ~ 300kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
<tr>
<td>LSPO-08</td>
<td>Conventional</td>
<td>960</td>
<td>Φ460</td>
<td>362 ~ 550kV</td>
<td>2500SQ ~ 300SQ</td>
<td>Non-sheath sectioning</td>
</tr>
</tbody>
</table>

**HV Cable Accessory for 66 ~ 550kV**

**LS Smart Pre-molded Joint**

**Application Business**

The single piece pre-molded joint is based on silicone insulation embedded with two semi-conductive deflections and one HV electrode. Without mechanical devices, the interface pressure is safely maintained with elastic retention of material itself. Upon condition of the installation outer protective casing are designed especially. For sheath sectionalizing, proper insulating layer would be included to disconnect between phases. The main insulation and components are fully examined and tested in the factory. The simplified design along with easy and smart installation meets the various needs of customers. They are currently available to the maximum allowable cable conductor size of 2500mm².

**Product Specification**

- For all types of XLPE insulated cables
- One-piece pre-molded joint based on SIR
- Easy Installation for all laying condition
- Diversion free for differential cable size
- Optimized outer casing solutions

**Table: Special Add-on Operating Voltage**

<table>
<thead>
<tr>
<th>Type</th>
<th>Operating Voltage</th>
<th>Cable Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSPO-01</td>
<td>725 ~ 100kV</td>
<td>2500SQ ~ 300SQ</td>
</tr>
<tr>
<td>LSPO-02</td>
<td>125 ~ 170kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-03</td>
<td>245 ~ 300kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-04</td>
<td>362 ~ 550kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-05</td>
<td>362 ~ 550kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-06</td>
<td>725 ~ 100kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-07</td>
<td>125 ~ 170kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-08</td>
<td>245 ~ 300kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-09</td>
<td>362 ~ 550kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-10</td>
<td>725 ~ 100kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-11</td>
<td>125 ~ 170kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-12</td>
<td>245 ~ 300kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-13</td>
<td>362 ~ 550kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-14</td>
<td>725 ~ 100kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-15</td>
<td>125 ~ 170kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-16</td>
<td>245 ~ 300kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
<tr>
<td>LSPO-17</td>
<td>362 ~ 550kV</td>
<td>300SQ ~ 2500SQ</td>
</tr>
</tbody>
</table>

**Non-sheath sectioning**

- Transition free for Al to Cu conductor cable
- Maintenance free after installation

**Sheath sectioning**

- Easy Installation for all laying condition
- Diversion free for differential cable size

**Connection by sheathboth**

- *CD: Connection by sheathboth
- *OP: Embedded fiber optic joint box
- *SI: Sheath sectionalizing for Diversion**
Application Business
For maintenance of existing oil filled cable system, LS can provide all type of adjustable oil filled accessories, if required with spare oil filled cable. diversion case and transition case to XLPE system, LS oil filled accessories can be customized by means of special design with various of devices for oil feeding system. Design and scope of supply are fully complying with IEC 60141-1 and possibly adjusted needs of customers. Moreover for management of reliable cable system LS have a capability to be optimized system engineering service and diagnosis solutions for remaining life expectancy of existing oil filled cable system.

[Product Specification]
- For all types of low pressure oil insulated cables
- Immersed Craft & PPLP insulation paper depends on cable
- Complied with IEC 60141-1 specification
- Available to Spare, Diversion and Transition to XLPE
- All kinds of devices for oil feeding system
  - Pressure tank, oil gauge & alarm system, valve & connectors

Oil filled accessories
- Oil through joint
- Oil stop joint

Oil filled Outdoor Termination
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device

Oil filled GIS/TR. Termination
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device

Oil filled Stop Joint
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device

Application Business
For maintenance of existing oil filled cable system, LS can provide all type of adjustable oil filled accessories, if required with spare oil filled cable. diversion case and transition case to XLPE system, LS oil filled accessories can be customized by means of special design with various of devices for oil feeding system. Design and scope of supply are fully complying with IEC 60141-1 and possibly adjusted needs of customers. Moreover LS have a capability to be optimized system engineering service and diagnosis solutions for remaining life expectancy of existing oil filled cable system.

[Product Specification]
- For all types of transition, diversion, brunch case
- Various type of line-up depends on cable size
- Most of dimensions can be customized for existing
- Core differential Pre-molded makes slim fit size
- Shear bolt technology regardless of conductor material
- Very easy and convenient installation method

Oil filled Outdoor Termination
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device

Oil filled GIS/TR. Termination
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device

Oil filled Stop Joint
- Outdoor
  - 72.5 ~ 100kV
  - 123 ~ 170kV
  - 245 ~ 300kV
  - 362 ~ 420kV
- Cable size
  - 200SQ ~ 2500SQ
  - 400SQ ~ 2500SQ
- Special Add-on
  - Pressure tank for oil reservoir
  - Valve gauge panel
  - Alarm monitoring device
LS Various types of Link box

Application Business

Link Boxes are used at the end of cable termination to gain easy access to the cable metallic sheath and to limit the transient over-voltage induced on the metallic sheath by the lightning, switching operations and fault currents. Cross bonding link boxes allow metallic sheath to be transposed at cable joints with surge voltage suppression and reduction of circulation currents. Sheath voltage limiters (SVLs) in link box are the gapless ZnO arresters, which have the insulation resistance above 100MΩ at test voltage so that the sheath insulation can be checked without disconnection of SVL. The type of SVL would be designed depends on cable system requirements.

LS Cable System Test termination

Application Business

It is required test terminations for high voltage test on XLPE cables and accessories. LS can provide the most convincing solution for the test termination. L-series terminations are test terminations for heating cycle voltage test. Two GIS terminations assembled to both of the test termination and the test termination is filled by SF6 gas. The advantage of this termination type is that it is easier to make a closed test circuit compared with two outdoor terminations and enables applying test voltage under flowing current induced from current transformer. V-series terminations are test terminations only to apply test voltage to XLPE cable and accessories and consist of one set of voltage part and end part. The advantage of this termination type is that user can easily assemble between the test termination and XLPE cable by inserting the stress relief cone to the XLPE cable. Generally, the stress relief cone is rubber sleeve and SF6 gas is filled in the terminations after assembling. Specially the V-1200 test termination is for breakdown voltage test which is used to check of performance of the test object by raising voltage up to 1200kV. It is required to assemble with epoxy condenser and insulation paper, aluminum foil to reinforce the insulating performance. LS supply the assembly manual for using the test terminations.

<table>
<thead>
<tr>
<th>Type</th>
<th>Purpose for</th>
<th>Branch off</th>
<th>Box Type</th>
<th>Applied SVL (Uc)</th>
<th>Bonding Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSRO01</td>
<td>Link Box for Earthing</td>
<td>1-1WAY</td>
<td>Single Core</td>
<td>300kV</td>
<td>6500p</td>
</tr>
<tr>
<td>LSRO02</td>
<td>Link Box with SVL</td>
<td>1-1WAY</td>
<td>Single Core</td>
<td>600kV</td>
<td>15500p</td>
</tr>
<tr>
<td>LSRO03</td>
<td>Link Box for Earthing</td>
<td>3-1WAY</td>
<td>Single Core</td>
<td>345kV</td>
<td>600kV</td>
</tr>
<tr>
<td>LSRO04</td>
<td>Link Box with SVL</td>
<td>3-1WAY</td>
<td>Single Core</td>
<td>600kV</td>
<td>15500p</td>
</tr>
<tr>
<td>LSRO05</td>
<td>Link Box for Cross Bonding</td>
<td>3-1WAY</td>
<td>Single Core</td>
<td>600kV</td>
<td>15500p</td>
</tr>
<tr>
<td>LSRO06</td>
<td>Link Box for Bonding &amp; Earthing</td>
<td>3-1WAY</td>
<td>Single Core</td>
<td>600kV</td>
<td>15500p</td>
</tr>
<tr>
<td>LSRO07</td>
<td>Link Box for Bonding with SVL</td>
<td>3-1WAY</td>
<td>Single Core</td>
<td>600kV</td>
<td>15500p</td>
</tr>
</tbody>
</table>

*Customized design of test voltage, interface construction
*L-series: Making closed circuit to enable heating cycle voltage test (Applying voltage to test loop under flowing current)
*V-series: Convenient preparation for impulse / AC voltage test
*V-1200: Enabling electrical performance test for breakdown test

[Product Specification]
HV Cable Accessory for 66 ~ 550kV
LS Learning Academy for Training

To provide stable & reliable transmission system to customer, it is essential that providing best product with installation solution. LS Learning Academy have been providing the training service through optimized training course to satisfy for trainee’s requirements.

Training Course
Whatever trainee’s level, LS can do the planning for the graded training course as per participant’s group, level and experience.

<table>
<thead>
<tr>
<th>Group</th>
<th>Level</th>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jointers</td>
<td>Assistant</td>
<td>Jointer course I</td>
<td>4 weeks</td>
</tr>
<tr>
<td></td>
<td>Jointer</td>
<td>Jointer course II</td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>Chief Jointer</td>
<td>Jointer course I</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Engineers</td>
<td>Site Engineer</td>
<td>Basic engineer course</td>
<td>1 week</td>
</tr>
<tr>
<td></td>
<td>Project/Manager</td>
<td>Advanced engineer course</td>
<td>2 weeks</td>
</tr>
</tbody>
</table>

(T raining facility of LS Learning Academy)

Training Facility
The new-built training facility specialized for the practical training course enables the realization of key performance on site.

The Curriculum of training is provided for customizing of jointer and engineer course with proper education materials. After completions of training course successfully, certification could be awarded as well.

Training Curriculum

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Training plan for Jointer course</th>
<th>Training plan for Engineer course</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve technicians skill &amp; knowledge for EHV System</td>
<td>- Understand general theory of Extra High Voltage cable system</td>
<td>- Understand intensive theory of extra EHV cable system</td>
</tr>
<tr>
<td></td>
<td>- Be familiar with the Drawing, Manual and Check List</td>
<td>- Be familiar with the Drawing, Manual and Check List</td>
</tr>
<tr>
<td></td>
<td>- Have the skill for treatment Cable and Accessories</td>
<td>- Have the capability for risk &amp; quality management</td>
</tr>
<tr>
<td></td>
<td>- Foot proof through hands on practice</td>
<td></td>
</tr>
</tbody>
</table>

(EPC Partners)
The local jointers who will install LS cable accessory
(Client & End users)
The Maintenance & Operation technicians who employ Power electric utilities & company

(FPC Partners)
The local engineers who will manage PIT using LS Product
(Client & End users)
The design engineers, project managers, consultants who employ Power electric utilities & company

Purpose
- To improve engineer’s knowledge & project management
- To improve technician’s skill & knowledge for EHV System
- Be familiar with the Drawing, Manual and Check List
- Have the skill for treatment Cable and Accessories
- Foot proof through hands on practice

Target Group
- The local jointers who will install LS cable accessory
- The Maintenance & Operation technicians who employ Power electric utilities & company

Expected Result
- Be a certified jointer by LS to perform jointing work at site
- Be a skilled technician to perform jointing work by themselves in case of emergency or repairing works.
- Be a LS local partners as distributor or installer
- To be an expert for the extra high voltage cable system

Training Subject
- Understanding for the EHV Products and Installation
- Hands on practice for splicing & terminating work
- How to do on site test
- On the job training at actual installation site
- Cable & Accessory manufacture line tour

- Understanding for EHV Products, Engineering and Installation
- Watching on splicing & terminating work
- Maintenance work
- On the job training at actual installation site
- Cable & Accessory manufacture line tour

Educational Material
Certification
HV Cable Accessory for 66 ~ 550kV
LS Tools for Jointing installation

For most convenience and easy installation, LS can provide suitable various tools classified by special & general.

Special Tools
The special tool would be required to ensure best performance of LS cable accessories.

<table>
<thead>
<tr>
<th>ALL</th>
<th>Joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Pressure Pump set of compression for Cu conductor</td>
<td>Electric torque wrench of bolting for Al/Cu conductor</td>
</tr>
</tbody>
</table>

General Tools
The general tool would be used conventional however if required, LS can provide advanced one as below.

<table>
<thead>
<tr>
<th>ALL</th>
<th>Joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation stripper (Manual with chain block)</td>
<td>Grooving Tool</td>
</tr>
</tbody>
</table>

Tools Operation
During training course LS trainers would guide the using method of various tools for smart installation.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Specification</th>
<th>Applied for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Pressure Pump</td>
<td>700kgf/pump 100/150T on Head</td>
<td>Apply 100 ~ 150T on Head depending on conductor &amp; insulation</td>
</tr>
<tr>
<td>Electric torque wrench</td>
<td>150~300N/m torque</td>
<td>For all kinds of termination and joint</td>
</tr>
<tr>
<td>Sleeve Inserting tool</td>
<td>76kg, manual type</td>
<td>For all kinds of joint</td>
</tr>
<tr>
<td>Grooving Tool</td>
<td>42kg</td>
<td>For all kinds of joint</td>
</tr>
<tr>
<td>Edge Beveling Tool</td>
<td>0.1kg</td>
<td>For Ø50 ~ 130 diameter</td>
</tr>
<tr>
<td>Insulation stripper</td>
<td>3.2kg</td>
<td>For Ø60 ~ 120 diameter</td>
</tr>
<tr>
<td>Al Sheath Cutter</td>
<td>3.1kg</td>
<td>For Ø65 ~ 130 diameter</td>
</tr>
<tr>
<td>Belt Sander</td>
<td>28kg</td>
<td>Sand paper: 50W * 650L, #220 ~ 320</td>
</tr>
</tbody>
</table>

Tools Specification
The electrical power and ICT industries will play key roles in the future of the energy industry. In order to take the lead, these industries will require state-of-the-art technology to transmit large quantities of electric power over long distances without loss and innovative solutions for transmitting large amounts of data faster and reliably.

LS Cable & System focuses on R&D for securing core technologies for the future and continuously implements them. With increasing consumer demand to supply power to households and business that are integral to growth and production across the world, LS Cable & System is at the forefront of research and development on the future of the cable industry continuing its customer focus and manufacturing products.

LS Cable & System has secured advanced next-generation cable system technologies by investing R&D in telecommunication and industrial cables with a focus on the energy sector including extra high voltage and submarine cables. In particular, we are looking towards the future by primarily focusing on developing superconducting cable systems that can transmit large quantities of electricity without any power loss, world-best HVDC/HVAC submarine cable systems, environmentally-friendly DC distribution networks, and core components for electric vehicles as next-generation growth engines.

Conducting research for sustainable growth and customer’s future

Developing next-generation cable systems for the tomorrow of the energy industry
GLOBAL NETWORK

More than 60 Factories, Sales and Production Sites in 20 Countries.

- Factory
- Sales office
- Branch office
HV CABLE ACCESSORY FOR 66~550kV

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