



*Saves Your Energy*

# Accessories for Low Voltage Distribution Networks

**Tested efficiency**



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# Ensto in short

Ensto is a family business and international cleantech company specializing in the development, manufacture and marketing of electrical systems and supplies for the distribution of electrical power as well as electrical applications. We are committed to lasting sustainable development and our goal is to be the world's leading company in green energy efficiency and distribution. Our products are environmentally friendly, energy efficient and leave a minimum carbon footprint. Ensto has three key business units: Ensto Utility Networks, Ensto Industrial Solutions, and Ensto Building Technology.

## A wide selection of reliable and durable products

Ensto Utility Networks offers comprehensive solutions for overhead and underground distribution of electricity. Our products are built to withstand the toughest conditions on earth and are tested according to international standards. Durable products mean uninterrupted service, lower maintenance costs and, above all, satisfied customers.

## Production

Ensto Utility Networks offers accessories and solutions for:

- Low voltage overhead lines focused on Aerial Bundled Cable Systems
- Medium voltage overhead lines (for bare and covered conductor lines)
- Low and medium voltage underground cable networks
- Power quality
- Network automation

## Expert in testing

Our products are tested according to the toughest national and international standards - actually, we test even beyond standard requirements. Ensto has fully equipped and calibrated testing laboratory in-house, where both components and products are continuously tested. We also work in cooperation with many international test laboratories and use well-known external laboratories for certification testing.

## Ensto Solutions for low voltage overhead lines

Ensto has developed solutions and integrated product packages for various low voltage ABC (Aerial Bundled Cable) systems since the early 1960's. These solutions are designed to meet the local conditions and requirements taking into account the urban, rural, forested areas, density of population, climatic conditions, available investments etc. All accessories have been developed and tested in close collaboration with electricity power companies. Our assortment includes special products required by each system and a wide range of products for all systems.

Ensto's low voltage solutions cover:

- Four Core system (page 7)
- Insulated Messenger Wire system (IMWS) (page 9)
- Uninsulated Messenger Wire system (AMKA) (page 11)

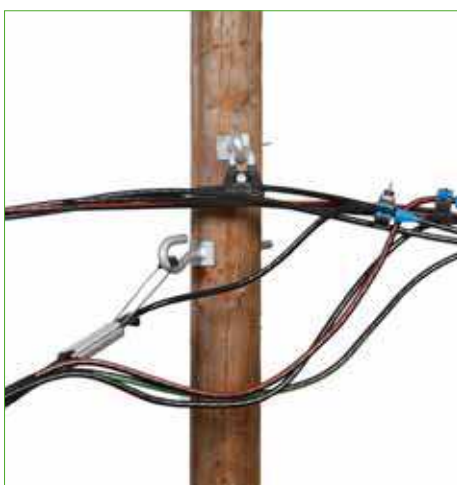
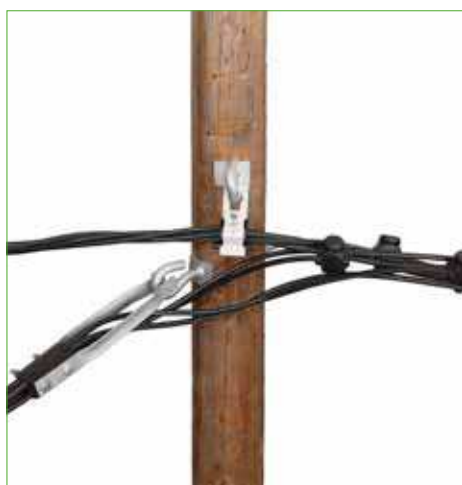
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## Properties and Typical Values of LV ABC (Aerial Bundle Cable) Overhead Line Systems Realized with Ensto Fittings

CHARACTER / CRITERIA	FOUR CORE SYSTEM	INSULATED NEUTRAL MESSENGER WIRE	UNINSULATED NEUTRAL MESSENGER WIRE
Description	Four equal aluminium alloy conductors including phase – and neutral conductors. The cable can also have separate conductors for street lighting.	Insulated aluminium phase conductors. Insulated aluminium alloy messenger wire, which is also the neutral conductor. The cable can also have separate conductors for street lighting.	Insulated aluminium phase conductors. Bare aluminium alloy messenger wire, which is also the neutral conductor. The cable can also have separate conductors for street lighting.
Minimum breaking loads for the conductor	4x35 mm <sup>2</sup> = 22.4 kN 4x50 mm <sup>2</sup> = 33.2 kN 4x70 mm <sup>2</sup> = 45.3 kN 4x95 mm <sup>2</sup> = 60.8 kN 4x120 mm <sup>2</sup> = 75.2 kN	3x35 mm <sup>2</sup> + 54.6 mm <sup>2</sup> = 16.0 kN 3x70 mm <sup>2</sup> + 54.6 mm <sup>2</sup> = 16.0 kN 3x120 mm <sup>2</sup> + 70.0 mm <sup>2</sup> = 17.7 kN	3x35 mm <sup>2</sup> + 50 mm <sup>2</sup> = 14.7 kN 3x70 mm <sup>2</sup> + 95 mm <sup>2</sup> = 27.9 kN 3x120 mm <sup>2</sup> + 95 mm <sup>2</sup> = 27.9 kN
Sharing of mechanical load	Mechanical load applied in all conductors.	Messenger wire carries all mechanical load.	Messenger wire carries all mechanical load.
Tensile strength of wires of conductor (N/mm <sup>2</sup> )	All conductors 160 N/ mm <sup>2</sup>	Neutral 300 N/ mm <sup>2</sup> Phases 120 N/ mm <sup>2</sup>	Neutral 300 N/ mm <sup>2</sup> Phases 120 N/ mm <sup>2</sup>
Risk of neutral breaking under unexpected loads like falling trees etc.	The neutral is unlikely to break alone, if the installation is made properly. High mechanical strength.	The neutral may break alone, if not provided with weak links. Risk to personnel and apparatus due to risen phase voltage and high potential in neutral, if the earthing is not made properly.	The neutral is reinforced, but it may break alone. Risk to personnel and apparatus due to risen phase voltage and high potential in neutral, if the earthing is not made properly.
Live line work	No special requirements	No special requirements	No special requirements. Uninsulated neutral may have touch voltage in poor earthing conditions. Proper earthing is essential.
Connectors	Same connector can be used for all cores.	Sometimes different connectors for phases and neutral.	Sometimes different connectors for phases and neutral.
Risk of corrosion in the neutral	Reduced risk	Reduced risk	Potential risk in extreme climatic conditions.
Installation methods	No special tools or methods. Suspension clamps with incorporated pulleys available.	No special tools or methods. Pulleys are needed.	No special tools or methods. Pulleys are needed. Economical fittings





# Four Core System

Since the 1970's the Four Core System has been adapted in many Central and North European countries e.g. in Austria, Germany, Ireland, United Kingdom, Poland, Hungary, Russia and Scandinavia. The four insulated conductors that share the tensile load equally, have a size range of 16 to 185 mm<sup>2</sup>. They are made of aluminum with a relatively high tensile strength. Therefore, the breaking load of the cable is relatively high, as well. Insulation of the cores is typically made of XLPE or PE. The cable can be supplied with one or two insulated conductors for street lighting. Read more about the Ensto solutions for four core systems on pages 16–18.



## Ensto Four Core Products in Norway

Trollfjord Kraft As has used Ensto solutions from the beginning of the EX cable. The company has been extremely pleased with Ensto's Four Core products as their reliability has been proven in practice many times. Moreover, the installers have given good feedback because the products are so easy to install which, in fact, saves their time and energy.

The company has also had an easy-going relationship with the Ensto staff, and the information flow has been very sufficient. Trollfjord Kraft As are very satisfied with Ensto's solutions and have not had any problems with Ensto's products.





# Insulated Messenger Wire System (IMWS)

An insulated messenger wire cable consists of one to five black, weather resistant, high density or cross-linked, polyethylene insulated conductors twisted around an insulated aluminum alloy messenger (typical tensile strength 300 N/mm<sup>2</sup>). The Ensto portfolio for Insulated Messenger Wire System, Ensto IMWS, includes connectors, tension and suspension clamps, pole fuse switches and various pole support and earthing accessories. Our competitiveness is based on long-term customer relations resulting in safe systems for the most demanding circumstances using durable products. We take care of our customers and offer the best solutions on an individual basis. Ensto solutions for Insulated Messenger Wire System are covered on pages 19–20.



## Regular deliveries to Surinam

Surinam has adopted the advanced distribution network model with ABC cables in low voltage lines as a national standard. Thus, the old lines are gradually being replaced by new ABC lines.

For over a decade, one of Ensto's main customers in Surinam has been energy supply company EBS N.V. Moreover, Hedi Infra N.V., a sister company of Hedi Trading, has been a contractor for EBS N.V. for years. According to Hedi Infra N.V., the high-quality Ensto IMWS materials are a vital part of the new generation distribution network.



# Uninsulated Messenger Wire System (AMKA)

Ensto has developed solutions and integrated product packages for various Low Voltage ABC (Aerial Bundled Cable) systems since the early 1960's. The solutions are designed to meet the international and local standards and take into account the special requirements of the urban, rural and forested areas, density of population, climatic conditions, available investments etc. The AMKA System is a reliable, safe and easy way to build a low voltage overhead line system. Because of the small amount of components and short poles it is easy to build and preferred by many professionals. AMKA is used e.g. in Finland, Estonia, Hungary, Russia and Turkey. Ensto offers a complete product package developed especially for the AMKA System. The products are easy to install and have been proven to last for decades even in the severe Northern climatic conditions. Ensto solutions for Uninsulated Messenger Wire System are introduced on pages 21–22.



## ABC project in India

In the second half of 2008 Ensto was involved in building a low tension aerial bundled (LT AB) line in Gujarat Vihar, Delhi. Ensto offered their new customers the effective Ensto network building concept, as well as help in the mechanical and electrical planning. Moreover, Ensto provided the electricians with an extensive theoretical and practical training package and also supplied the necessary products for the project, such as pole fuse switch disconnectors, insulation piercing connectors, tension and suspension clamps and underground cable joints & terminations.



# Ensto SLIW 50 - a new generation of connectors

Ensto offers a revolutionary family of connectors. The SLIW 50 connector family exemplifies our role as a global leader in insulation piercing connector technology. The connectors are a result of close cooperation with our clients. Moreover, when developing the connectors, a special attention was given to superb usability, easy installation and good materials.

As a whole, the connectors represent the new Ensto design which combines modern appearance with high quality.



## Connectors

Ensto connectors have been used around the world since the mid 1960's.

Our connectors are designed to resist corrosion and bimetallic electrochemical reactions and to endure varying mechanical tensions and other forces detrimental to the connection. Our portfolio includes:

- Weather- and waterproof insulation piercing connectors
- Parallel groove connectors for both Al/Al and Al/Cu conductors
- Insulating covers for the connectors
- Busbar connectors, cable lugs, cable joints

Technical information about Ensto Connectors can be found on pages 22-30.



### Copper Bars

Copper bars are used together with busbar connectors to connect Cu- or Al- conductors to high- or low-voltage transformer bushings. It is important to brush and grease the Al-connection. Flat copper bars are tin-plated to reduce corrosion between aluminium and copper. The copper bars and connectors are delivered separately. Read more about Copper Bars on page 31.



### Bird Protectors

Environmental aspects are increasingly important when building an electricity network today. Ensto is working together with electricity utilities and environmental experts to find ways to protect wildlife from electricity distribution network. Read more about Bird protectors on page 31.



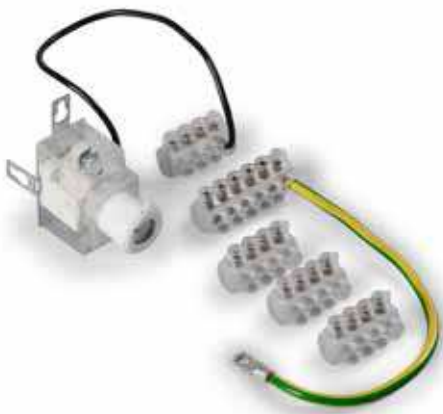
### Cable Lugs, Earthing Connectors and Earthing Bars

The cable lugs are used for terminating conductors of 1 kV cables. Because of the shear head bolt construction, no crimping tools are needed. The lugs are water tight and suitable for solid and stranded, sector shaped and circular conductors. Earthing connectors are used for the connection of earthings in pole transformer stations. The earthing conductors can be connected to the bar by using KG connectors. Read more on pages 32-33.



### Pole Fuse Switch Disconnectors

Pole fuse switch disconnectors are used for protecting low-voltage networks. They combine the functions of a fuse, a switch and a disconnecter. Pole fuse switches are easy to use as they can be operated from the ground by using a rod. They are also reliable and work for decades even in the most severe conditions. Their reliability and safety has been proved in numerous tests in accordance with IEC and national standards. We manufacture 160 A and 400 A pole fuse switches. Read more about Pole Fuse Switch Disconnectors on pages 34-37.



### Lamp Post Fixtures

Lamp post fixtures are used for connecting and branching aluminium and copper cables in lamp posts and cable cabinets. The fixtures are insulated. Read more about Lamp post fixtures on pages 38-40.



### Fixing Materials for Pole and Wall Mount

AB cables have usually a single layer of insulation only. They are not intended to be installed directly to the supporting surface. The wall mount fittings and the distance clips make it possible to install cables on various surfaces horizontally and vertically. Read more on pages 40-42.



### Suspension Hooks

AB cables are suspended on wooden, concrete or steel poles and walls. Every support requires its own tensioning device. The Ensto hook program has a solution for all needs and tensions required. The installation is easy and quick and no special tools are needed. Read more about Suspension Hooks on pages 42-44.



### Stay Wire Accessories and Pole Base Reinforcers

Ensto offers supporting stay wire sets, pole base reinforcers, and pole hats. We have a variety of standardized sets available, which makes the material handling easy and speeds up the line erection process. Ensto's pole base reinforcers increase the life time of the poles. Read more on pages 45-46.



### Tools

Ensto's tool selection includes products that are especially designed to fit the needs of network installers. Together with our customers we have developed many tools to facilitate the installation work. When installers use tools that fit and are designed for their work, a reliable installation can be made safely. Furthermore, a well-made installation has great impact on the service life and reliability of the network. Read more about Tools on pages 46-49.

# Product information

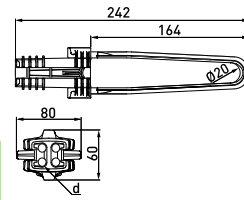
## Ensto Products for Four Core System

### Tension Clamps

#### Tension clamp SO243

The SO243 is a tension clamp for four core service connections - made from weather durable and mechanically reliable polymeric plastic. The light weight design of SO243 provides extremely easy and quick anchoring of LV overhead cables - either to poles or walls by means of standard hooks. No tools are required during the installation.

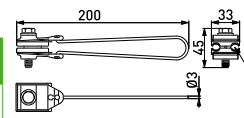
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO243	6418677437977	2-4 x (6-25)	5.3-9.1		2.0	0.07	50



#### Tension clamps SO157.1 and SO158.1

SO157.1 is used for the anchoring of a two core overhead cable to poles or walls by means of standard hooks. SO158.1 is used for the tensioning of a four core overhead cable to poles or walls by means of standard hooks.

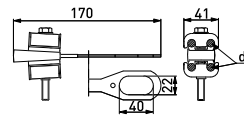
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO157.1	6418677414558	2x(16-35)	7.0-10.2	22	2x16mm <sup>2</sup> 3.4 kN / 2x25mm <sup>2</sup> 6 kN / 2x35mm <sup>2</sup> 7.2 kN	0.080	50
SO158.1	6418677411618	4x(16-35)	7.0-10.2	22	4x16mm <sup>2</sup> 5.5 kN / 4x25mm <sup>2</sup> 8.75 kN / 4x35mm <sup>2</sup> 11.2 kN	0.085	50



#### Tension clamps SO80 and SO80.225

SO80 is used for the anchoring of a four core and SO80.225 of a 2-core overhead cable to poles or walls by means of standard hooks. The clamps are equipped with a spring to make the installation easier.

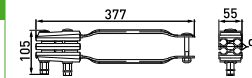
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO80	6418677405037	4x(16-25)	7.0-9.0	25	2x16mm <sup>2</sup> 3.4 kN / 4x16mm <sup>2</sup> 6.8 kN / 2x25mm <sup>2</sup> 5.4 kN / 4x25mm <sup>2</sup> 8.75 kN	0.23	50
SO80.225	6418677405044	2X(16-25)	7.0-9.0	25	2x16mm <sup>2</sup> 3.4 kN / 2x25mm <sup>2</sup> 5.4 kN	0.20	50
SO80S	6438100304546	4X(16-25)	7.0-9.0	25	2x16mm <sup>2</sup> 3.4 kN / 4x16mm <sup>2</sup> 6.8 kN / 2x25mm <sup>2</sup> 5.4 kN / 4x25mm <sup>2</sup> 8.75 kN	0.23	50



#### Tension clamp SO234S

For the termination of four core overhead cables. The tension clamp is equipped with shearhead nuts.

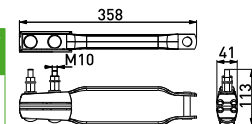
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO234S	6418677442339	4x(50-120)	10.8-16.7	44	4x50mm <sup>2</sup> 27kN / 4x70mm <sup>2</sup> 37 kN / 4x95mm <sup>2</sup> 37 kN / 4x120mm <sup>2</sup> 37 kN	1.3	10



#### Tension clamp SO274S

Tension clamp for the termination of 4 core overhead cables. The tension clamp is equipped with shear-head nuts.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO274S	6418677446696	4x(25-50)	7.0 -10.2	44	4x25mm <sup>2</sup> 13 kN / 4x35mm <sup>2</sup> 17.8 kN / 4x50mm <sup>2</sup> 25 kN	1.0	10



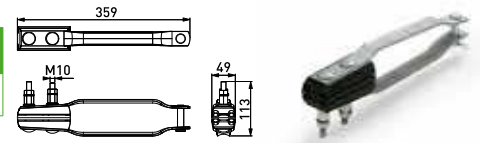


# Ensto Products for Four Core System

## Tension clamp SO275S

Tension clamp for the termination of 4 core overhead cables. The tension clamp is equipped with shear head nuts.

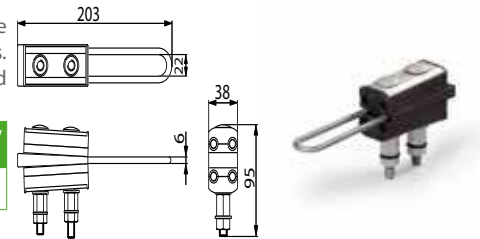
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO275S	6418677446719	4 x (50-70)	11.6-13.2	44	4x50 mm <sup>2</sup> (25.0 kN), 4x70 mm <sup>2</sup> (36.0 kN)	1.22	10



## Tension clamp SO118.425S

For the termination of four core LV AB cable with a hook fixing. Clamp is equipped with shear-head nuts. The clamps have strong springs which keep the clamp in an open position during the installation of conductors. The clamping action functions through wedges. The body is made of weather resistant aluminium alloy and the plastic parts of special fibreglass reinforced plastic.

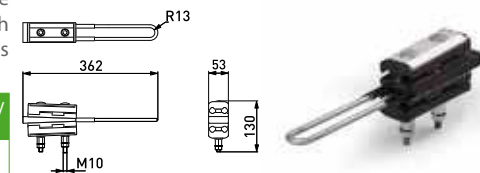
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO118.425S	6418677442261	4x(25-35)	8.4-9.2	44	4x25mm <sup>2</sup> 14.5 kN / 4x35mm <sup>2</sup> 20 kN	0.465	25



## Tension clamps SO118.1201S

For the termination of 4-core LV AB cable with hook fixing. The clamps have strong springs which keep the clamp in an open position during the installation of conductors. The clamping action functions through wedges. The body is made of weather resistant aluminium alloy and the plastic parts of special fibreglass reinforced plastic.

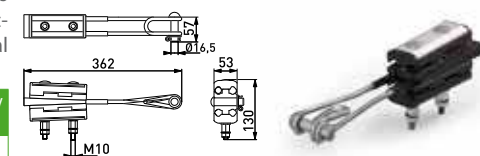
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO118.1201S	6418677442247	4x(50-120)	10.8-16.7	44	4x50 mm <sup>2</sup> - 23kN / 4x70 mm <sup>2</sup> - 33kN / 4x95 mm <sup>2</sup> - 35kN / 4x120 mm <sup>2</sup> - 35kN	1.20	10



## Tension clamp SO118.1202S

For the termination of 4-core LV AB cable with hook or universal fixing. The clamps have strong springs which keep the clamp in an open position during the installation of conductors. The clamping action functions through wedges. The body is made of weather resistant aluminium alloy and the plastic parts of special fibreglass reinforced plastic.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO118.1202S	6418677442254	4x50-120	10.8-16.7	44	4x50 mm <sup>2</sup> 27 kN / 4x95-120 mm <sup>2</sup> 35 kN	1.38	10

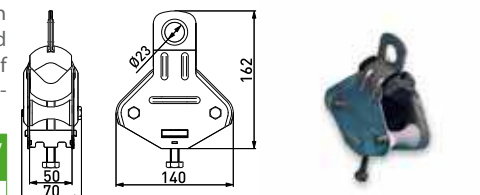


# Suspension Clamps

## Suspension clamp SO99

Used for the installation and suspension of cables from poles in straight lines and at angles of up to 90° with 4x25 mm<sup>2</sup> and 4x50 mm<sup>2</sup> cables or up to 60° with 4x95 mm<sup>2</sup> cables. The body is made of hot-dip galvanized steel, and there is a stainless steel reinforced ring in the hook attachment. The integral rollers are made of weather resistant plastic. At angles exceeding 30°, the use of an additional roller set ST26.99 is recommended to use with the clamp.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO99	6418677405181	4 x (25-95)	18-39	12	18	0.825	10

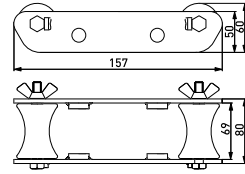


# Ensto Products for Four Core System

## Extension roller ST26.99

This additional roller set fits easily onto the SO99 clamp. It is used when angles exceed 30 degrees.

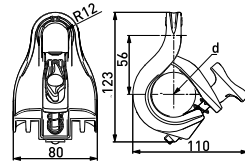
TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST26.99	6418677405501	2.3	10



## Suspension clamp SO270

For the installation and suspension of four core ABC cables from poles with standard hook attachment. For straight lines and, depending on cross-section, angles up to 15/30 degrees. Structure itself provides installation without tools. Clamp including composite parts is protected from wearing in hook attachment point.

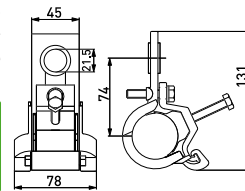
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO270	6418677441875	2x(25-35), 4x(16-120)	12-42	5	7	0.150	25



## Suspension clamps SO130 and SO130.02

SO130 is used for the installation and suspension of LV ABC cables to poles with standard hook attachment. For straight lines and angles up to 30° 4x(25-120 mm<sup>2</sup>) and 60° 4x(25-50). Thanks to the integrated construction, no extra parts are needed for the installation. The body is made of corrosion proof aluminium and the inserts of weather resistant plastic. SO130.02 is equipped with a wing nut.

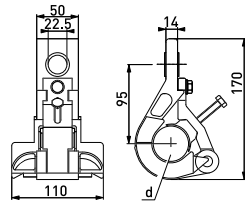
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO130	6418677404306	2-4x(25-50) ≤ 60° / 2-4x(25-120) ≤ 30°	12-28 ≤ 60° / 12-42 ≤ 30°	10	18	0.294	25
SO130.02	6418677419201	2-4x(25-50) ≤ 60° / 2-4x(25-120) ≤ 30°	12-28 ≤ 60° / 12-42 ≤ 30°	10	18	0.31	25



## Suspension clamps SO136 and SO136.02

For the installation and suspension of four core LV ABC cables to poles with standard hook attachment. For straight lines and angles up to 90°. No extra parts are needed for the installation. SO136.02 is equipped with a wing nut.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	TIGHTENING TORQUE Nm	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO136	6418677404368	2-4x(25-120) ≤ 90°	12-42	10	40	0.730	10
SO136.02	6418677419225	2-4x(25-120) ≤ 90°	12-42	10	40	0.745	10



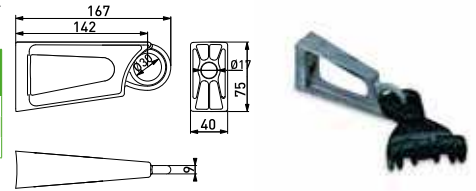
# Ensto Products for Insulated Messenger Wire System

## Suspension Clamps

### Suspension clamp SO260

For suspending of LV ABC cables in an insulated messenger wire system (IMWS). Suitable for every climatic conditions. Bracket is pre installed.

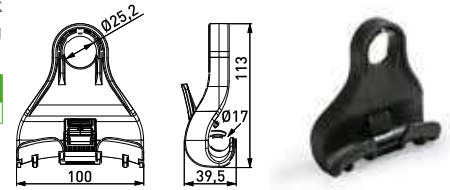
TYPE	EAN	BRACKET	MESSENGER mm <sup>2</sup>	MESSENGER DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO260	6418677418914	with bracket	25-95	8.5-15.5	12	0.37	20
SO260.1	6418677419058	without bracket	25-95	8.5-15.5	12	0.16	50
SO260.2	6418677419065	only bracket			15.5	0.21	50



### Suspension clamp SO265.1

For suspending of LV ABC cables in an insulated messenger wire system (IMWS) with standard hook installation. Easy to install without tools. The messenger is placed to the groove and locked with the locking part. Clamp equipped with wear protection plate.

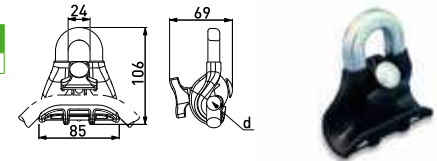
TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO265.1	6418677419553	16-95	7.5-15.5	12	0.1	20



### Suspension clamp SO69.95

The suspension clamp is used for the suspension of the insulated messenger in straight lines and at angles up to 90°.

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO69.95	6418677414572	16-95	7.0-16.5	22	0.244	50



## Tension Clamps

### Tension clamps SO250

SO250 series consists of clamps for different messenger cross sections suitable for various climatic conditions. The clamps are easy to install without tools and are available for both bracket and hook installation to wooden, concrete or steel poles. Clamps are supplied with or without the bracket.

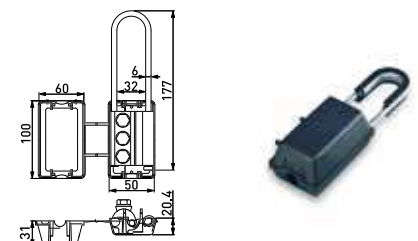
TYPE	EAN	BRACKET	MESSENGER mm <sup>2</sup>	MESSENGER DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO250	6418677418679	with bracket	50-70	11-14	15	0.58	10
SO250.01	6418677418617	without bracket	50-70	11-14	15	0.47	25
SO251	6418677418693	with bracket	95	15-15.5	15	0.58	10
SO251.01	6418677418709	without bracket	95	15-15.5	15	0.47	25
SO252	6418677418716	with bracket	25-35	8.5-11	12	0.58	10
SO252.01	6418677418723	without bracket	25-35	8.5-11	12	0.47	25
SO253	6418677418907	only bracket			22	0.11	25



### Tension clamp SO65.1

Used for the termination of insulated messenger wires. Insulation shall be peeled off before installation.

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO65.1	6418677404849	16-70	4.9-9.8	18.6(70mm <sup>2</sup> )	0.296	50

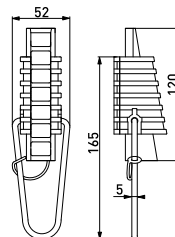


## Ensto Products for Insulated Messenger Wire System

### Tension clamp SO95

Used for the tensioning of all cables dia. 11-19 mm with round shape. Light weight, no loose parts. The clamp is easy to install, without cutting the cable. The body is made of weather and UV-radiation resistant thermoplastic and the bail of hot-dip galvanized steel.

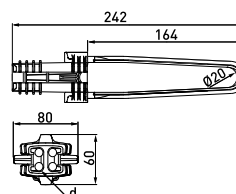
TYPE	EAN	CABLE DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO95	6418677405174	11-19	2.5 (54 mm <sup>2</sup> )	0.1	50



### Tension clamp SO243

The SO243 is a tension clamp for four core service connections - made from weather durable and mechanically reliable polymeric plastic. The light weight design of SO243 provides extremely easy and quick anchoring of LV overhead cables - either to poles or walls by means of standard hooks. No tools are required during the installation.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CABLE DIA. mm	SMFL kN	WEIGHT (kg)	PACK./pcs
SO243	6418677437977	2-4 x (6-25)	5.3-9.1	2.0	0.07	50



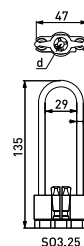
# Ensto Products for Uninsulated Messenger Wire System (AMKA)

## Tension Clamps

### Tension clamps SO3 and SO4

Used for tensioning of an uninsulated messenger (AMKA).

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	COLOUR CODE	WEIGHT (kg)	PACK./pcs
SO3.16	6418677414541	16	4.8	4	-	0.105	50
SO3.25	6418677404597	25	5.8	6.6	Orange	0.103	50
SO3.35	6418677404603	35	6.8	9.3	Red	0.103	50
SO3.50	6418677404627	50	8.0	13.2	Yellow	0.103	50
SO4.70	6418677404733	70	9.6	18.6	White	0.237	50
SO4.95	6418677404740	95	11.3	18.6	Black	0.237	50



### Tension clamp SO28

The messenger is fitted, the clamp opened, directly into the groove without cutting.

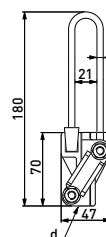
SMFL various messenger cross-sections:

25 mm<sup>2</sup> - 6.6 kN

35 mm<sup>2</sup> - 9.3 kN

50 mm<sup>2</sup> - 13.2 kN

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SO28	6418677404580	25-50	5.8-8.0	13.2	20	0.247	50



### Tension clamp SO141

For anchoring of LV ABC with uninsulated messenger (AMKA). The messenger is fitted, the clamp opened, directly into the groove without cutting. Clamp is equipped with eye for cable hoist.

SMFL for various messenger cross-sections are as follows:

- 16 mm<sup>2</sup> - 4.3 kN

- 25 mm<sup>2</sup> - 6.6 kN

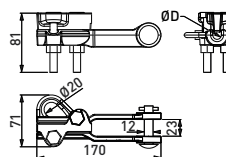
- 35 mm<sup>2</sup> - 9.3 kN

- 50 mm<sup>2</sup> - 13.2 kN

- 70 mm<sup>2</sup> - 18.6 kN

- 95 mm<sup>2</sup> - 25.1 kN

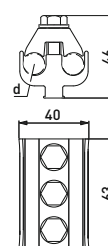
TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SO141	6418677404405	16-95	4.9-11.3	25.1	44	0.46	25



### Terminal clamps SN2.2, SN3.3 and SN3.31

Terminal clamps are used for the termination of aluminium conductors to poles or walls.

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SN2.2	6418677404009	AAAC 16-50	4.4-8.3	13.2 (50 mm <sup>2</sup> )	20	0.096	100
SN3.3	6418677404016	AAAC 50-70	7.9-10	18.6 (70 mm <sup>2</sup> )	20	0.18	50
SN3.31	6418677416170	AAAC 50-95	7.9-11.7	25.1 (95 mm <sup>2</sup> )	26	0.18	50



### Tension clamp SO65

Used for tensioning of AAAC or uninsulated messenger wires (AMKA).

SMFL for various messenger cross-sections:

16 mm<sup>2</sup> - 4.3 kN

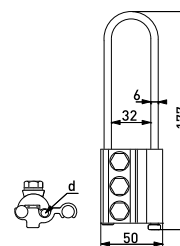
25 mm<sup>2</sup> - 6.6 kN

35 mm<sup>2</sup> - 9.3 kN

50 mm<sup>2</sup> - 13.2 kN

70 mm<sup>2</sup> - 18.6 kN

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SO65	6418677404832	16-70	4.9-9.8	18.6 (70 mm <sup>2</sup> )	25	0.23	50



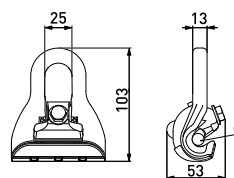
# Ensto Products for Uninsulated Messenger Wire system (AMKA)

## Suspension Clamps

### Suspension clamp SO214

Used for the suspension of overhead cables with uninsulated messenger in straight lines and angles up to 90°.

TYPE	EAN	MESSENGER mm <sup>2</sup>	MESSENGER mm	SMFL kN	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SO214	6418677410666	16-95	5.8-13	25	48	0.248	50



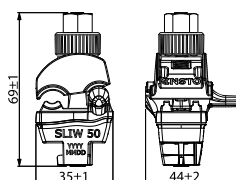
## Ensto Connectors

### Insulation Piercing Connectors

#### Waterproof insulation piercing connector SLIW50

SLIW50 is used with insulated aluminium or copper conductors. Fully insulated bolt provides safe live line working. Both main and branch conductor insulations are pierced by single bolt action. Test voltage 6 kV/50 Hz/1 min in water. Connector's design enables hot line installation without peeling insulation from conductor.

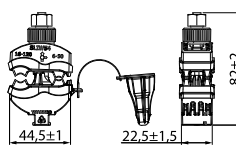
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW50	6438100303921	10 - 50	1.5 - 10	6.1-12.5 / 3.0 - 7.0	0.05	120



#### Waterproof insulation piercing connector SLIW54

SLIW54 is used with insulated aluminium or copper conductors. Fully insulated bolt provides safe live line working. Both main and branch conductor insulations are pierced by single bolt action. Test voltage 6 kV/50 Hz/1 min in water. Connector's design enables hot line installation without peeling insulation from conductor.

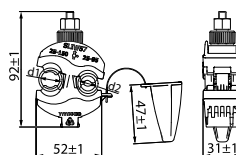
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW54	6438100303785	16-120	6-50	7.0-17.6 / 4.0-12.1	0.085	60



#### Waterproof insulation piercing connector SLIW57

SLIW57 is used with insulated aluminium or copper conductors. Fully insulated bolt provides safe live line working. Both main and branch conductor insulations are pierced by single bolt action. Test voltage 6 kV/50 Hz/1 min in water. Connector's design enables hot line installation without peeling insulation from conductor.

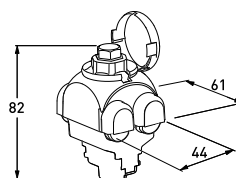
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW57	6438100303686	25-150	25-95	8.4-18.5 / 8.4-15.2	0.113	60



#### Waterproof insulation piercing connector SLIP12.05

The SLIP12.05 is used with all connections of insulated aluminium and copper main and branch conductors up to 1000VAC. The design enables hot line installation. Equipped with shear head screw.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP12.05	6418677441783	1.5-50	1.5-50	3-12.1	0.1	50

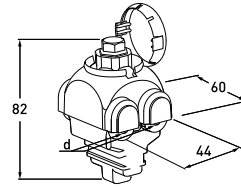


# Ensto Connectors

## Insulation piercing connector SLIP12.1

The SLIP12.1 is used with all connections of insulated aluminium and copper main and branch conductors up to 1000VAC. The design enables hot line installation. Equipped with shear head screw.

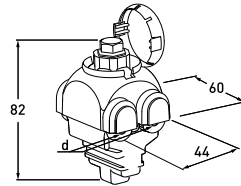
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP12.1	6418677429033	10-95	1.5-50	3-16	0.1082	50



## Insulation piercing connector SLIP12.127

SLIP12.127 is for all connections of uninsulated aluminium or copper main and insulated branch conductors up to 1000VAC. Equipped with shear head screw.

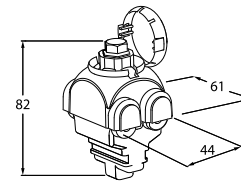
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP12.127	6418677446023	10-70	1.5-50	3.0-12.1	0.108	50



## Insulation piercing connector SLIP22.1

The SLIP22.1 is for all connections of insulated aluminium and copper main and branch conductors up to 1000VAC. The design enables hot line installation. The shear head is insulated from the bolt and the connector body. Equipped with shear head screw.

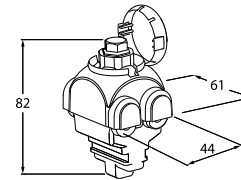
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP22.1	6418677403842	Al 10-95 / Cu 1.5-70	Al 10-95 / Cu 1.5-70	3.0-16.0	0.124	50



## Insulation piercing connector SLIP22.127

SLIP22.127 is for all connections of uninsulated aluminium and copper main and insulated branch conductors up to 1000VAC. Equipped with shear head screw.

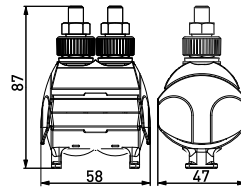
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP22.127	6418677416194	Al 25-95 / Cu 2.5-70	Al 2.5-95 / Cu 1.5-70	6.5-16.0 / 3.0-16.0	0.120	50



## Insulation piercing connectors SLIP32.2 and SLIP32.21

The SLIP32.2 is for all connections of insulated aluminium and copper main and branch conductors up to 1000 VAC. The design enables hot line installation. The shear head is insulated from the bolt and the connector body. SLIP32.21 is for all connections of uninsulated aluminium and copper main and insulated branch conductors up to 1000 VAC. Equipped with shear head screw.

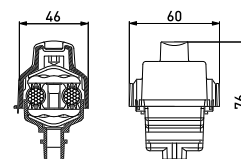
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIP32.2	6418677442001	Al 16-150 / Cu 16-150	Al 16-120 / Cu 16-95	7.0-19.0	0.150	50
SLIP32.21	6418677442018	Al/Cu 16-150	Al 16-120 / Cu 16-95	7-19	0.15	50



## Insulation piercing connector SL11.118

Universal connector for all combinations of aluminium and copper main and branch connectors. SL11.118 is for PEX insulated conductor.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./ pcs
SL11.118	6418677403538	Al 10-95 / Cu 1.5-70	Al 10-95 / Cu 1.5-70	3.0-16.0	26	0.121	50

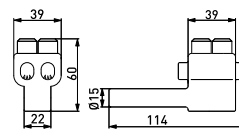


# Ensto Connectors

## Multitap Insulation piercing connectors SL29.4 and SL29.8

Multitap connector is especially designed to be used with universal piercing connectors e.g. SL11.118 and SLIP22.1 up to 1000 V a.c. to facilitate several out-going conductors. Each branch conductor can be connected with a separate screw.

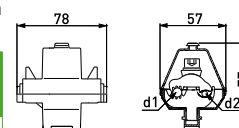
TYPE	EAN	FOR CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SL29.4	6418677403682	Cu 2x(1.5-25) and/or Al 2x(10-35)	3-10.9	15	0.150	50
SL29.8	6418677403699	Cu 4x(1.5-25) and/or Al 4x(10-35)	3-10.9	15	0.270	25



## Insulation piercing connectors SL9.11 and SL9.2

SL9.11 is equipped with springs made of stainless steel to make the installation easier. SL9.11 is with one bolt. SL9.22 is equipped with a threaded hole for a surge arrester. The design enables hot line installation without peeling the insulation of the conductor.

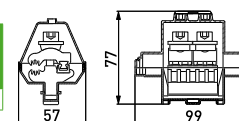
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	d1 mm	d2 mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SL9.11	6418677403804	Al 16-120	Al 16-35	7-18	4.6-7.5	20	0.1	50
SL9.21	6418677403828	Al 16-120	Al 16-95	7-18	4.6-12	20	0.163	50
SL9.22	6418677403835	Al 16-120	Al 16-95	7-18	4.6-12	20	0.15	50



## Insulation piercing connector SM6.21

Used for aluminium to copper connections. SM6.21 is equipped with springs made of stainless steel to make the installation easier. SM6.21 has teeth in the main side only.

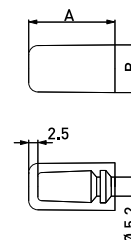
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	d1 mm	d2 mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SM6.21	6418677403989	Al 16-95	Cu 6-35	7-16	2.8-7.5	20	0.16	50



## End caps PK99

Grease filled end caps are used for preventing water entry from the end of the branch cable.

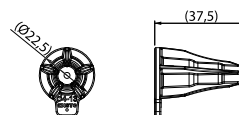
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
PK99.025	6418677400995	10-25	7.0-9.4	0.003	1000
PK99.050	6418677401008	35-50	9.8-12.0	0.004	500
PK99.095	6418677401015	70-95	12.9-16.0	0.007	400
PK99.2595	6418677401039	25-95 (120)	8.4-18.0	0.006	300



## End caps PK553 and PK555

End caps are used for preventing water entry into the end of the branch cable.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
PK553	6438100306892	4-50	4.0-13.0	0.0042	120
PK555	6438100306908	25-150	8.0-19.0	0.0072	120



PK555

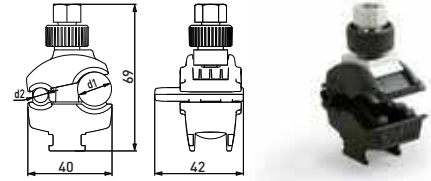


# Ensto Connectors

## Waterproof insulation piercing connector SLIW11.1

SLIW11.1 is used with insulated aluminium or copper conductors. Fully insulated bolt provides safe live line working. Both main and branch conductor insulations are pierced by single bolt action. Test voltage 6 kV/50 Hz/1 min in water. Connector's design enables hot line installation without peeling insulation from conductor.

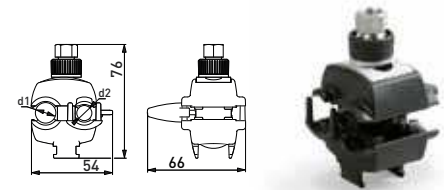
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW11.1	6418677403866	Al/Cu 16-95	Al/Cu 1.5-10	7.0-16.1 / 2.2-7.0	0.054	60



## Waterproof insulation piercing connector SLIW15.1

SLIW15.1 is used with insulated Al or Cu conductors. Fully insulated bolt provides safe live line working. Both main and branch conductor insulations are pierced by single bolt action. Shear head bolt and end cap are insulated. Test voltage 6 kV/50 Hz/1 min in water.

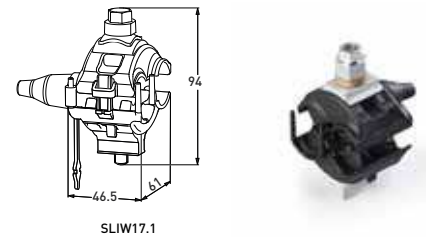
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW15.1	6418677410734	Al/Cu 16-95	Al/Cu 6-50	6.9-16.1 / 5.9-12.1	0.0816	50



## Waterproof insulation piercing connectors SLIW17.1 and SLIW17.2

The connector is used in all connections with insulated aluminium or copper conductors. The design enables live line installation without peeling the insulation of the conductors. Test voltage 6 kV/50 Hz/1 min in water.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
SLIW17.1	6418677414398	Al/Cu 25-150	Al 25-95 / Cu 25-70	7.0-18.0	0.126	50
SLIW17.2	6418677414688	Al/Cu 25-150	Al 25-150 / Cu 25-120	7.0-18.0	0.260	50

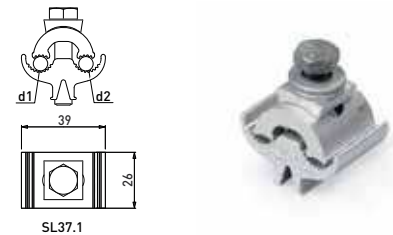


# Aluminium to Aluminium Parallel Groove Connectors

## Aluminium to aluminium connectors SL37.1 and SL37.2

Non tension aluminium to aluminium connector SL37.1 is equipped with one M8 bolt. Non tension aluminium to aluminium connector SL 37.2 is equipped with two M8 bolts.

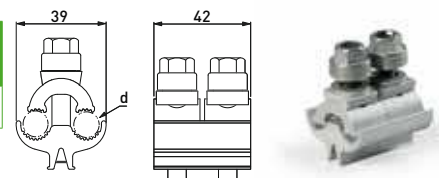
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL37.1	6418677414404	Al 6-95	Al 6-95	3.0-13.0 / 3.0-13.0	22	SP15	0.055	200
SL37.2	6418677414411	Al 6-95	Al 6-95	3.0-13.0 / 3.5-13.0	22	SP15	0.1	50



## Aluminium to aluminium connectors SL37.201

Non tension aluminium to aluminium connector SL37.201 is equipped with two M8 shear head bolts.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL37.201	6418677414602	Al 6-95	Al 6-95	3.0-13.0 / 3.5-13.0	22	SP15	0.1	50

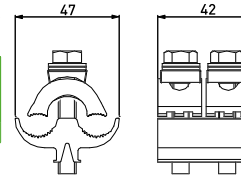


# Ensto Connectors

## Aluminium to aluminium connectors SL39.2

Non tension aluminium to aluminium LV and MV connections. The SL39.2 connector is suitable for AAC, AAAC and ACSR conductors. Equipped with two M8 bolts.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL39.2	6418677419607	Al 16-150	Al 16-150	4.5-17.5	22	SP15	0.12	50



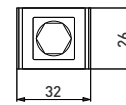
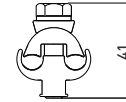
SL39.2



## Aluminium to aluminium connector SL2.11

SL2.11 is brushed and prepared with a joint compound and thus, only the conductors need brushing and greasing. The connector is packed in individual plastic bags. Non tension aluminium to aluminium connections.

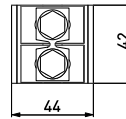
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL2.11	6418677403606	Al 16-50	Al 16-50	4.6-8.6	20	SP14	0.052	200



## Aluminium to aluminium connectors SL4.21, SL4.25 and SL8.21

SL4.21 and SL8.21 are brushed and prepared with joint compound and thus, only the conductors need brushing and greasing. SL4.25 is equipped with springs to make installation easier.

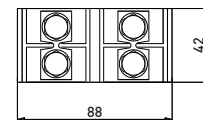
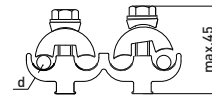
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL4.21	6418677403736	Al 16-120	Al 16-120	4.21-13.2	20	SP15	0.13	50
SL4.25	6418677403750	Al 16-120	Al 16-120	4.6-13.5	20	SP15	0.128	50
SL8.21	6418677403781	Al 50-240	Al 50-240	7.7-20.0	44	SP16	0.29	25



## Multi-connector SL19.4

Branching of 1-3 out-going cables, max. Al 120 mm<sup>2</sup>.

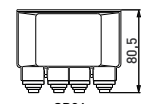
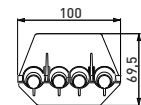
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL19.4	6418677403583	Al 16-120	Al 16-120	4.6-13.5	20	SP24, SP25	0.25	25



## Insulation covers SP24 and SP25

SP24 is used for the branching of 1-3 out-going cables, max. 120 mm<sup>2</sup> Al. The insulation cover is made of weather and UV-radiation resistant thermoplastic. SP24 has cable outlets only in one end. Suitable for SL19.4. SP25 is used for the branching of 1-3 out-going cables, max. 120 mm<sup>2</sup> Al. The insulation cover is made of weather and UV-radiation resistant thermoplastic. SP 25 has cable outlets in both ends.

TYPE	EAN	FOR CONNECTORS	WEIGHT (kg)	PACK./ pcs
SP24	6418677405259	SL19.4	0.04	25
SP25	6418677408175	SL19.4	0.040	25



SP24



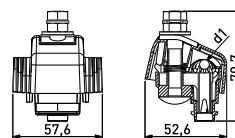
# Ensto Connectors

## Surge Arresters

### Surge arresters with insulation piercing connectors SE45

SE45 serie includes a piercing connector specially designed for surge arrester. This connector is used when installing the surge arrester on insulated LV overhead lines. It can be installed on insulated Al/Cu conductors with cross section range 10-150 mm<sup>2</sup>.

TYPE	EAN	SURGE ARRESTER	CONTINUOUS OPERATING VOLTAGE V	RATED DISCHARGE CURRENT kA	DISCONNECTOR	WEIGHT (kg)	PACK./pcs
SE45.128-10	6418677428937	SGA128-10	280	10	-	0.22	20
SE45.144-10	6418677428944	SGA144-10	440	10	-	0.22	20
SE45.166-10	6418677428951	SGA166-10	660	10	-	0.22	20
SE45.328-10	6418677432767	SGA328-10	280	10	+	0.22	20
SE45.344-10	6418677433382	SGA344-10	440	10	+	0.22	20
SE45.366-10	6418677433399	SGA366-10	660	10	+	0.22	20



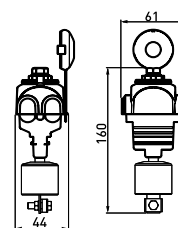
SE 45.1



### Surge arresters with insulation piercing connectors SE46

The design of SE46 serie enables installation on insulated conductor and branch connection, the same connector is used for both. Connector can be installed on insulated Al conductors with cross section range 10 - 95 mm<sup>2</sup> and Cu conductors with cross section range 1.5 - 70 mm<sup>2</sup> and branch connection with the same range of conductors.

TYPE	EAN	SURGE ARRESTER	CONTINUOUS OPERATING VOLTAGE V	RATED DISCHARGE CURRENT kA	DISCONNECTOR	WEIGHT (kg)	PACK./pcs
SE46.128-10	6418677429002	SGA128-10	280	10	-	0.25	20
SE46.144-10	6418677429019	SGA144-10	440	10	-	0.25	20
SE46.166-10	6418677429026	SGA166-10	660	10	-	0.25	20
SE46.328-10	6418677432774	SGA328-10	280	10	+	0.25	20
SE46.344-10	6418677433405	SGA344-10	440	10	+	0.25	20
SE46.366-10	6418677433412	SGA366-10	660	10	+	0.25	20



SE 46.1

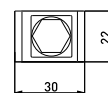


## Aluminium to Copper Parallel Groove Connectors

### Aluminium to copper connectors SM1.11, SM2.11, SM2.21, SM2.25 and SM4.21

The connectors are brushed and prepared with joint compound; thus only the conductors need brushing and greasing. SM2.25 is equipped with springs to make the installation easier.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SM1.11	6418677403880	Al 10-50	Cu 1.5-10	3.5-8.6 / 1.35-3.6	20	SP14	0.054	200
SM2.11	6418677403903	Al 16-95	Cu 2.5-25	4.6-10.0 / 2.3-6.5	20	SP15	0.084	100
SM2.21	6418677403927	Al 16-120	Cu 6-35	4.6-13.2 / 2.8-7.5	20	SP15	0.14	50
SM2.25	6418677403941	Al 16-120	Cu 6-35	4.6-13.2 / 2.8-7.5	20	SP15	0.137	50
SM4.21	6418677403965	Al 50-240	Cu 10-95	8.6-20.0 / 3.5-12.5	44	SP16	0.326	25



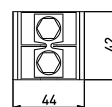
SM1.11



### Aluminium / copper to aluminium / copper connectors SL4.26, SL14.2 and SL37.27

For Al or Cu to Al or Cu connections where no mechanical tension is involved. The body is made from tin plated aluminium alloy, and the bolts are hot-dip galvanized steel.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL4.26	6418677403767	Al/Cu 16-120	Al 16-120 / Cu 16-95	4.6-14	20	SP15	0.125	50
SL14.2	6418677403552	Al/Cu 50-240	Al 50-185 / Cu 50-150	7.7-20	44	SP16	0.28	25
SL37.17	6418677436116	Al/Cu 6-95	Al 6-95 / Cu 6-70	3-13	22	SP15	0.055	
SL37.27	6418677416118	Al/Cu 6-95	Al/Cu 6-95	3-13	22	SP15	0.1	50
SL39.27	6418677438905	Al/Cu 16-150	Al 16-150 / Cu 10-120	4.5-17.5	22	SP15	0.120	50



SL4.26

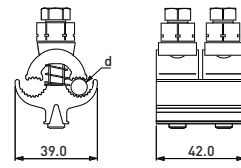


# Ensto Connectors

## Aluminium / copper to aluminium / copper connectors SL37.271

Non tension aluminium/copper to aluminium/copper connections. SL37.271 is for Al or Cu connections where no mechanical tension is involved. The body is made of tin plated aluminium alloy, and the bolts are shear head bolts which are hot-dip galvanized steel.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL37.271	6418677450273	Al/Cu 6-95	Al 6-95 / Cu 6-70	3.0-13.0	22	SP15	0.11	50



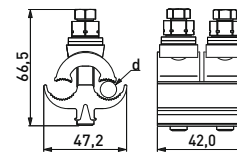
SL37.271



## Aluminium / copper to aluminium / copper connectors SL39.271

Non tension aluminium to aluminium LV and MV connections. The SL39.271 connector is suitable for AAC, AAAC and ACSR conductors. Equipped with two M8 shear head bolts.

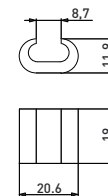
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	PLASTIC COVER	WEIGHT (kg)	PACK./ pcs
SL39.271	6418677450280	Al/Cu 16-150	Al 16-150, Cu 10-120	4.5-17.5	22	SP15	0.13	50



## Copper to copper crimp connector SE36

SE36 is for copper to copper connections where also mechanical tension can be involved. The massive C-formed connector secures continuous electrical contact and low resistance.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./ pcs
SE36	6418677402043	Cu 10-25	-		0.019	100



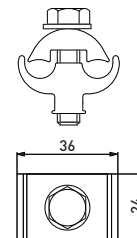
SE36



## Copper to copper connector SE12.1

The SE12.1 is for copper to copper connections where no mechanical tension is involved or for the connection of an earthing conductor. The connector is made of copper and the bolt is stainless steel.

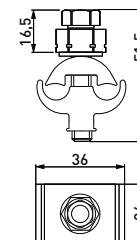
TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./ pcs
SE12.1	6418677401831	Cu 16-70	Cu 10-50	4.5-10.7	20	0.116	100



## Copper to copper connector SE12.101

The SE12.101 is for copper to copper connections where no mechanical tension is involved or for the connection of an earthing conductor. The connector is made of copper and the bolt is stainless steel with shear head nut.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./ pcs
SE12.101	6418677450136	Cu 16-70	Cu 10-50	4.5-10.7	20	0.121	100



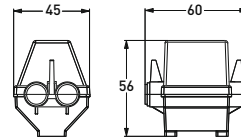
# Ensto Connectors

## Covers

### Insulating cover SP14

SP14 is used as a connector cover. The cover has to be installed so that the drain hole for ambient water is downwards. The cover is made of UV-radiation and weather resistant thermoplastic. Suitable for SM1.1, SM1.11, SL2.11.

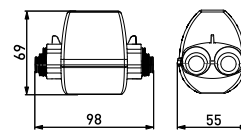
TYPE	EAN	FOR CONNECTORS	WEIGHT (kg)	PACK./pcs
SP14	6418677405204	SM1.1; SM1.11; SL2.1; SL2.11	0.014	100



### Insulating cover SP15

SP15 is used as a connector cover. The cover has to be installed so that the drain hole for ambient water is downwards. The cover is made of UV-radiation and weather resistant thermoplastic. Suitable for SM2.1, SM2.11, SM2.2, SM2.21, SM2.25, SL4.2, SL4.21, SL4.25, SL4.26, SL37.1, SL37.2, SL39.2

TYPE	EAN	FOR CONNECTORS	WEIGHT (kg)	PACK./pcs
SP15	6418677405211	SM2.xx; SL3.xx; SL4.xx; SL37.xx, SL39.xx	0.031	100



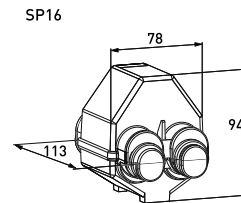
SP15



### Insulating cover SP16

SP16 is used as a connector cover. The cover has to be installed so that the drain hole for ambient water is downwards. The cover is made of UV-radiation and weather resistant thermoplastic. Suitable for SM4.2, SM4.21, SL8.2, SL8.21, SL14.2, SL25.2, series SEW20, SEW21.

TYPE	EAN	FOR CONNECTORS	WEIGHT (kg)	PACK./pcs
SP16	6418677410208	SM4.xx; SL8.xx; SL14.2; SL25.2; SEW20.xx; SEW21.xx	0.037	50



SP16



## Automatic tension joints

### Automatic tension joints and joint kits

The automatic joint is reliable and quick to make. No tools are needed for the installation and the with the colour code, you can find the correct size easily. The wedges ensure a safe joint.

TYPE	EAN	FOR CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	COLOUR CODE	WEIGHT (kg)	PACK./ pcs
CIL63	6418677414220	35 - 50	5.81-8.64	orange / red	0.155	25
CIL64	6418677414237	70 - 95	9.27-12.06	yellow / grey	0.278	25
CIL65	6418677414244	120 - 150	12.75-14.86	pink / black	0.478	25
CIL71	6418677417726	-	14.73-18.40	green / brown	0.840	10
CIL72	6418677418440	-	18.8-21.7	blue / green	1.08	10
Joint kits						
CIL66	6418677414251	insulated messenger 35 - 50	5.81-8.6	orange/red	0.26	1
CIL67	6418677414268	insulated messenger 70-95	9.27-12.06	yellow/black	0.47	1
CIL68	6418677414275	insulated messenger 120-150	12.75-14.86	pink/black	0.79	1

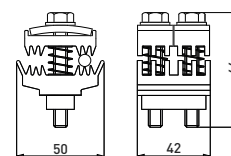


## Busbar Connectors

### Busbar Connector KG71

The KG71 is used for connecting insulated Al- and Cu-conductors without stripping to aluminium busbars in distribution boards, disconnectors, medium and low voltage transformer bushings. Max thickness of the bar 7.5 mm.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG71	6418677400322	Al 16-120 / Cu 10-95	6-18	20	7.5	2 x M8	0.205	50

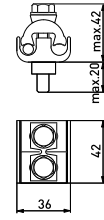


# Ensto Connectors

## Busbar connectors KG6.1, KG41 and KG16

For connecting Al-conductors to aluminium busbars or tin plated copper busbars in distribution boards, disconnectors, medium and low voltage transformer bushings.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG6.1	6418677400308	Al 16-70	4.6-10.2	20	10	2 x M8	0.12	50
KG41	6418677400230	Al 2x (16-120)	4.6-14	20	7.5	2 x M8	1.6	50
KG16	6418677400131	Al 16-120	4.6-14	40	10	2 x M10	0.258	25



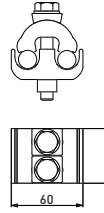
KG6.1



## Busbar Connector KG43

The KG43 connector is used for connecting Al-conductors to aluminium busbars or tin plated copper busbars in distribution boards, disconnectors, medium and low voltage transformer bushings. Max thickness of the bar 10 mm.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG43	6418677400254	Al 50-240	7.7-20	40	10	2 x (M10x75)	0.329	25



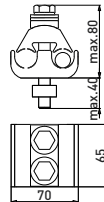
KG43



## Busbar connectors KG26 and KG26.4

The KG26 and KG26.4 connectors are used for connecting Al-conductors to aluminium busbars or tin plated copper busbars in distribution boards, disconnectors, medium and low voltage transformer bushings.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG26	6418677400209	Al 120-300	14-22.5	70	15	2 x M12	0.745	10
KG26.4	6418677400216	4 x Al 70-120	9.3-14	70	15	2 x M12	0.805	10



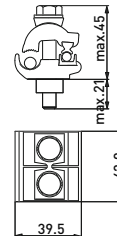
KG26



## Busbar connector KG44

The KG 44 connector is used for connecting Al/Cu-conductors to aluminium busbars or tin plated copper busbars in distribution boards, disconnectors, medium and low voltage transformer bushings. Max thickness of the bar 7.5 mm.

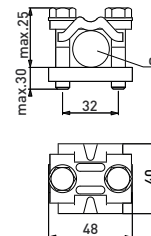
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG44	6418677400261	Al 16-120 / Cu 6-35	Al 4.4-12.8 / Cu 2.8-7.5	20	7.5	2 x M8	0.173	50



## Busbar connector KG20

For connecting Cu-conductors to copper busbars in distribution boards, disconnectors, medium and low voltage transformer bushings.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	MAX THICKNESS OF THE BAR mm	BOLTS	WEIGHT (kg)	PACK./ pcs
KG20	6418677400186	Cu 16-185	4.5-17.5	22	7.5	2 x M8	0.153	50



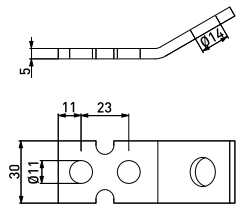
# Copper Bars & Bird Protectors

## Copper Bars

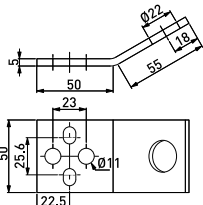
### Copper bars

Copper bars are used together with busbar connectors to connect Cu- or Al- conductors to high- or low voltage transformer bushings. It is important to brush and grease the Al-connections. Flat copper bars are tin-plated to reduce corrosion between aluminium and copper. The copper bars and connectors are delivered separately.

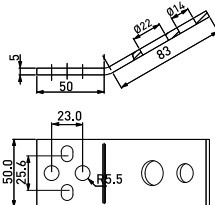
TYPE	EAN	BUSBAR CROSS SECTION mm <sup>2</sup>	MAX CURRENT A	HOLE DIAMETER mm	FOR CONNECTORS	WEIGHT (kg)	PACK./ pcs
PSS10	6418677401138	150	400	14	All except KG26	0.097	100
PSS85	6418677401350	250	600	22	KG6, KG16, KG41, KG43, KG44, KG20	0.21	50
PSS85.5	6418677401367	250	600	14/22	KG6, KG16, KG41, KG43, KG44, KG20	0.266	50
PSS310	6418677401220	400	950	22	KG26	0.414	100
PSS127	6418677401183	150	400	14	All except KG26	0.145	50
PSS242	6418677401190	250	600	22	All except KG26 and KG20	0.349	25
PSS309	6418677401213	400	950	22	KG26, KG20	0.62	25
PSS309.5	6418677406560	400	950	14/22	KG26, KG20	0.683	1
PSS242.5	6418677401206	250	600	14/22	All except KG26	0.393	25



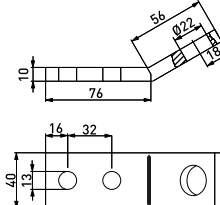
PSS10



PSS85



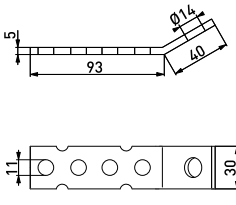
PSS85.5



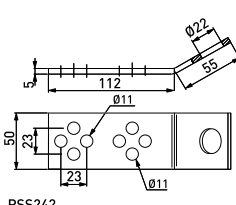
PSS310



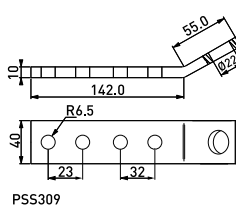
PSS310



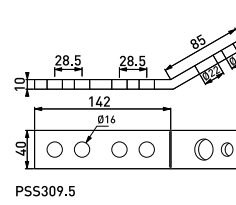
PSS127



PSS242



PSS309



PSS309.5



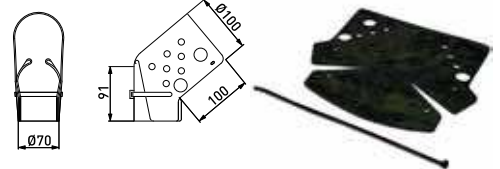
PSS127

## Bird protectors

### Flexible bird protector set SP38.3

Flexible cover for low voltage bushings, transformers and motors. Easy tie fixing. Made of weather and UV resistant rubber. Delivered in complete sets of 3 pcs.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
SP38.3	6418677405297	0.4	10

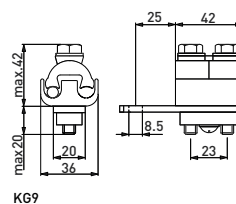


# Cable Lugs, Cable Joints, Earthing Connectors and Earthing Bars

## Cable lugs KG9, KG17 and KG18

Used for connecting Al-conductors to distribution boards, components and flat bars. The connections have to be brushed and greased. The aluminium parts of the cable lugs are made of corrosion-resistant aluminium alloy with a tensile strength of 300 N/mm<sup>2</sup>. The bolts are hot-dip galvanized and of 8.8. The copper bars are tin-plated.

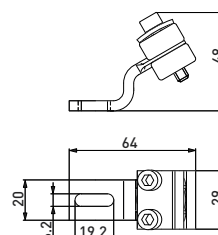
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
KG9	6418677400346	Al 2x(16-70)	4.5-10.2	20	0.19	50
KG17	6418677400155	Al 2 x (35-120)	6.6-14	40	0.36	25
KG18	6418677400179	Al 2 x (50-240)	7.7-20	40	0.465	20



## Cable lug KG50

Used for connecting Al or Cu conductors to Al or Cu bars in distribution boards and components.

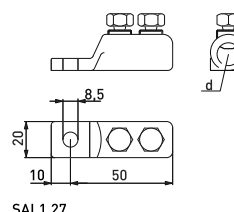
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
KG50	6418677400278	1x16-95 / 2x16-35	4.5-12.5	10	0.101	100



## Shear head bolt cable lugs SAL

The cable lugs are used for terminating conductors of 1 kV cables. Because of the shear head bolt construction no crimping tools are needed. The required torque is achieved by tightening the bolt until it breaks off. The lugs are water tight and they are suitable both for aluminium and copper conductors, solid and stranded, sector shaped and circular.

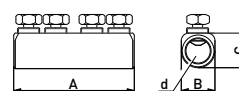
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	HOLE DIAMETER mm	WEIGHT (kg)	PACK/ PCS
SAL1.27	6418677401404	Al/Cu 6-50	8.5	0.039	100
SAL1.271	6418677401411	Al/Cu 6-50	10.3	0.038	100
SAL1.272	6418677401428	Al/Cu 6-50	12.5	0.038	100
SAL2.2	6418677401435	Al 50-95	10.5	0.078	100
SAL2.27	6418677401442	Al/Cu 50-95	10.5	0.087	100
SAL2.272	6418677401459	Al/Cu 50-95	12.5	0.079	100
SAL3.2	6418677401466	Al 95-185	12.5	0.14	50
SAL3.27	6418677401473	Al/Cu 95-185	12.5	0.141	50
SAL3.272	6418677401480	Al/Cu 95-185	17	0.135	50
SAL4.2	6418677401497	Al 150-300	12.5	0.312	50
SAL4.27	6418677401503	Al/Cu 150-300	12.5	0.324	50
SAL4.271	6418677416163	Al/Cu 150-300	14	0.33	50
SAL4.272	6418677401510	Al/Cu 150-300	17	0.307	50



## Cable connectors with shear head bolts

The connectors are used for jointing conductors of 1 kV cables. Because of the shear head bolt construction no crimping tools are needed. The required torque is achieved by tightening the bolt until it breaks off. The connectors are water tight and they are suitable both for aluminium and copper conductors, solid and stranded, sector shaped and circular. The core insulation may be as well plastic as paper.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	WEIGHT (kg)	PACK/ PCS
SJ0.47	6418677418464	Al/Cu 6-25	0.015	100
SLJ1.27	6418677458187	Al/Cu 6-50	0.034	100
SLJ1.47	6438100306663	Al/Cu 6-50	0.122	100
SLJ2.27	6418677458194	Al/Cu 35-95	0.067	100
SLJ2.47	6438100306670	Al/Cu 35-95	0.239	100
SLJ3.47	6418677459726	Al/Cu 95-240	0.278	50
SLJ4.47	6418677459733	Al/Cu 150-300	0.382	50



## Earthing connector set SE15

SE15 consists of earthing connector SM2.24, earthing connector support PSS116, and two fixing bolts for wooden poles.

TYPE	EAN	MAIN CONDUCTOR mm <sup>2</sup>	BRANCH CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK/ pcs
SM2.24	6418677403934	Fe / Al 16-120	Cu 6-35	4.5-14.0 / 2.8-7.5	20	0.18	25
PSS116	6418677401176	-	-	-	-	0.153	50
SE15	6418677401848	Fe/Al 16-120	Cu 6-35	4.5-14.0 / 2.8-7.5	20	0.37	25



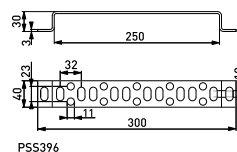


# Cable Lugs, Cable Joints, Earthing Connectors and Earthing Bars

## Earthing bars PSS396 and PSS396.1

Used for the connection of earthings in pole transformer stations. The earthing conductors can be connected to the bar by using KG connectors as follows: Cu 16-185 mm<sup>2</sup> : KG20, Al 16-120 mm<sup>2</sup> : KG16, Al 50-240 mm<sup>2</sup> : KG43.

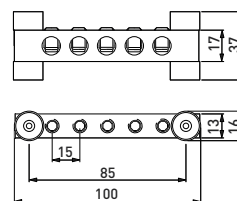
TYPE	EAN	BUSBAR CROSS SECTION mm <sup>2</sup>	CONNECTORS	WEIGHT (kg)	PACK./pcs
PSS396	6418677401237	50	5 pcs	0.291	50
PSS396.1	6418677401244	50	3 pcs	0.216	50



## Earthing bar PSS431

Used for the connection of earthings in pole transformer stations. The busbars and the screws are tin-plated copper.

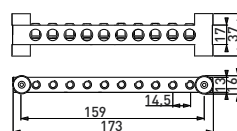
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
PSS431	6418677401251	5 x 50	10	0.11	25



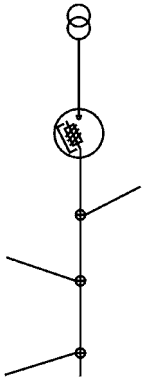
## Earthing bar PSS874

The PSS874 is used to connect earthing conductors in transformer stations.

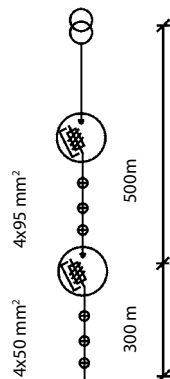
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
PSS874	6418677446085	10 x 50	10	0.2	25



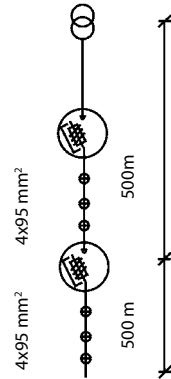
# Pole Fuse Switch Disconnectors



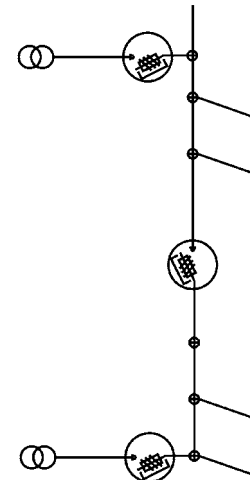
Protection of an outgoing feeder in a transformer substation.



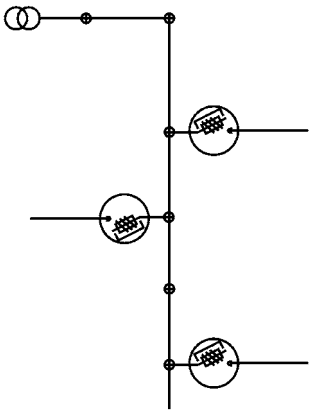
Sectionalising, decreased cross-section



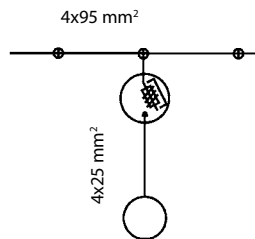
Sectionalising, short circuit protection



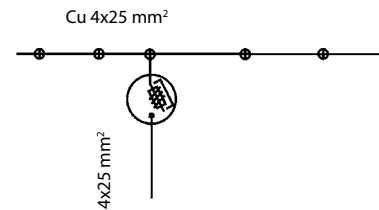
Ring main



Protection of a consumer feeder



Connection of a temporary consumer



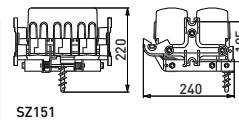
Protection between bare conductors and insulated overhead cables or underground cable

## Pole fuse switch disconnectors 160 A 415 V

### Pole fuse switches SZ151 and SZ152

These pole fuse switches include separate terminal covers for incoming and outgoing conductors, thus making the installation safer.

TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ151	6418677405884	3	Al 2x(16-120) / Cu 2x(10-95)	6xKG71	4.18	1
SZ152	6418677405891	3	Al 2x(16-120)	6xKG41	4.18	1
SZ152.01	6418677405907	3+PEN connector	Al 2x(16-120)	6xKG 41+1xKG 71	4.5	1
SZ152.02	6418677405914	3	Al(16-120) and Cu (6-35)	6xKG44	4.3	1



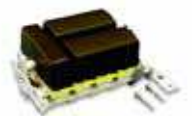
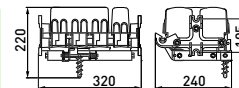
SZ151



### Pole fuse switches SZ157 and SZ156

These pole fuse switches include separate terminal covers for incoming and outgoing conductors, thus making installation safer. N-pole is permanently connected.

TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ157	6418677405952	3+N	Al 2x(16-120) or Cu 2x(10-95)	8xKG 71	5.9	1
SZ156	6418677405938	3+N	Al 2x(16-120)	8xKG41	4.185	1
SZ156.02	6418677405945	3+N	Al (16-120) and Cu (6-35)	8xKG44	4.185	1

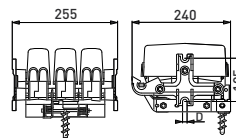


# Pole Fuse Switch Disconnectors

## Pole fuse switch SZ51

The plastic covers separate different phases from each other, thus in-coming and out-going terminals are under same cover. Connectors included 6 x KG41, poles 3.

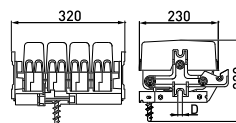
TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ51	6418677406034	3	Al 2x(16-120)	6xKG41	4.185	1



## Pole fuse switches SZ56 and SZ56.1

The plastic covers separate different phases from each other, thus incoming and outgoing terminals are under same cover. N-pole is permanently connected. The fourth pole is opened and closed together with the other phase-poles.

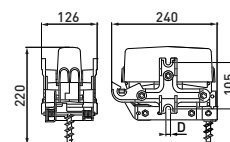
TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ56	6418677406058	3+N	Al 2x(16-120)	8xKG41	5.6	1
SZ56.1	6418677406065	4	Al 2x(16-120)	8xKG41	5.2	1



## Pole fuse switch SZ50.1

For protecting overhead cables and underground cables in LV networks. Connectors included 2 x KG41, poles 1.

TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ50.1	6418677406027	1	Al 2x(16-120)	2 x KG41	2.3	1

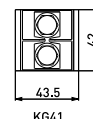
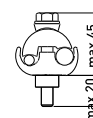


## Connectors for 160 A pole fuse switches: KG41, KG44 and KG71

Pole fuse switches can be supplied with or without connectors:

- KG 41 for Al conductors
- KG 71 insulation piercing connector
- KG 44 for Al/Cu conductors, for both Al and Cu conductors

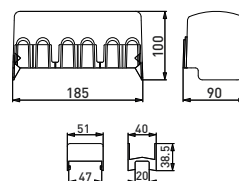
TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
KG41	6418677400230	Al 2x (16-120)	4.6-14	20	1.6	50
KG44	6418677400261	Al 16-120 / Cu 6-35	Al 4.4-12.8 / Cu 2.8-7.5	20	0.173	50
KG71	6418677400322	Al 16-120 / Cu 10-95	6-18	20	0.205	50



## Terminal cover sets SP42 for 160 A pole fuse switches

Pole fuse switches SZ151, SZ152, SZ156 and SZ157 include separate terminal covers for in-coming and out-going conductors, thus making installation safer. The plastic covers of SZ50, SZ51, SZ55 and SZ56 can also be replaced by terminal cover sets SP42. The set consists of 2 pcs PMR1502 (terminal cover) and 3 pcs PMR1503 (middle cover).

TYPE	EAN	WEIGHT (kg)	PACK./pcs
SP42	6418677408199	0.200	10



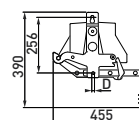
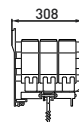
# Pole Fuse Switch Disconnectors

## Pole fuse switch disconnectors 400 A 500 V

### Pole fuse switch SZ41

The rating of the pole fuse switch is AC 22B 400 A 500 V according to IEC 60947-3/EN 60947-3 and the size of the fuse link is 2. The fuse switch can be supplied with a choice of connectors. Connectors included 6 x KG43, poles 3.

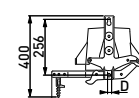
TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ41	6418677405976	3	Al 2x(50-240)	6 x KG43	10.108	1



### Pole fuse switches SZ46 and SZ46.1

N-pole is permanently connected. The fourth pole is opened and closed together with the other phase-poles.

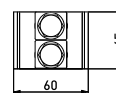
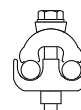
TYPE	EAN	NUMBER OF POLES	CONDUCTOR SIZE mm <sup>2</sup>	CONNECTORS INCLUDED	WEIGHT (kg)	PACK./pcs
SZ46	6418677405990	3+N	Al 2x(50-240)	8xKG43	13.4	1
SZ46.1	6418677406010	4	Al 2x(50-240)	8xKG43	13.2	1



### Connectors for 400 A pole fuse switches: KG43, KG43.6, KG36 and KG20

Pole fuse switches SZ41, SZ46 and SZ46.1 are equipped with Al-connectors KG43. The connectors can be replaced with Al/Cu-connectors KG36 or tin-plated Al/Cu-connector KG43.6 or Cu-connectors KG20.

TYPE	EAN	CONDUCTOR SIZE mm <sup>2</sup>	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
KG43	6418677400254	Al 50-240	7.7-20	40	0.329	25
KG43.6	6418677412462	Al/Cu 50-240	7.7-20	44	0.32	25
KG36	6418677400223	Al 50-240 / Cu 10-95	Al 7.7-20 / Cu 3.5-12.5	44	0.34	25
KG20	6418677400186	Cu 16-185	4.5-17.5	22	0.153	50



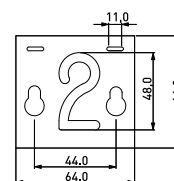
KG43



### Marking sets for pole fuse switches

The marking set consists of an aluminium fastening bar PEM216 and plastic number plates PEM242.X. We have a wide selection of number plates, here are few examples.

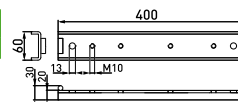
TYPE	EAN	DIMENSIONS mm	PLATE NO.	WEIGHT (kg)	PACK./pcs
PEM216	6418677400421	250 x 30 x 3	-	0.120	50
PEM242.25	6418677411830	145x60x1.5	25 A	0.018	50
PEM242.400	6418677400629	145x60x1.5	400 A	0.018	50
PEM241.1	6418677400445	64.0 x 64.0 x 3.0	1	0.007	100
PEM241.6	6418677400520	64.0 x 64.0 x 3.0	6	0.007	100



### Multi-bracket PEK49

Used for the attachment of pole fuse switches to steel, concrete and wooden poles by screw or band fixing. The bracket is made of hot-dip galvanized steel.

TYPE	EAN	FOR POLE FUSE SWITCHES	WEIGHT (kg)	PACK./pcs
PEK49	6418677400414	160 A or 400 A	1.556	1

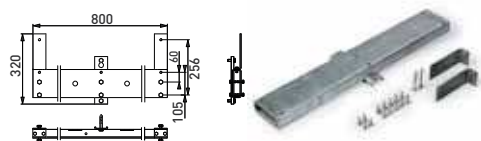


# Pole Fuse Switch Disconnectors

## Mounting racks PEK43 and PE43.1

Used for the attachment of several 160 A and 400 A pole fuse switches to the same pole. The mounting racks are made of hot-dip galvanized steel.

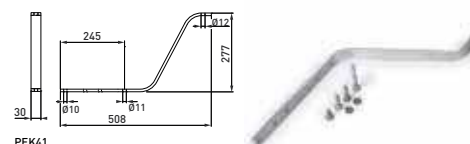
TYPE	EAN	FOR POLE FUSE SWITCHES	WEIGHT (kg)	PACK./pcs
PEK43	6418677400391	5x160 A or 2x160 A and 2x400 A	9.005	1
PEK43.1	6418677400407	2x160 A and 2x400 A	7.4	1



## Mounting racks PEK41 and PEK42

The mounting rack is made of aluminium and used for the installations of two pole fuse switches on the same pole.

TYPE	EAN	FOR POLE FUSE SWITCHES	WEIGHT (kg)	PACK./pcs
PEK41	6418677400377	2x160 A	0.567	1
PEK42	6418677400384	2x400 A or 1 X 400 A and 1x160 A	0.79	1



## Operating rod ST33

Pole fuse switches can be operated from the ground by using the operating rod ST33.

TYPE	EAN	LENGTH m	WEIGHT (kg)	PACK./pcs
ST33	6418677405532	2/1.3	1	1



## Voltage indicator ST97

Used for checking the fuses of pole fuse switches, without climbing the pole and opening the fuse switch. By using operating rod, the antenna of the voltage detector is pushed into the voltage measuring opening of the fuse switch.

If the fuse holder is live, the small LED is lit. A live conductor can also be detected by touching the insulation of a phase conductor with the voltage indicator.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
ST97	6418677408670	Voltage indicator	0.319	1
ST97.1	6418677408687	Voltage indicator with carrying case	0.4	1
ST97.2	6418677408694	Carrying case for ST 97	0.060	1
ST97.3	6418677408700	Voltage indicator with buzzer	0.342	1



## Direction of rotation indicator CT1 for 400 V lines

The direction of rotation of the three-phase system can be determined without peeling the conductor insulation. Safe for direct connections to live lines. Displays a missing phase, suitable for determining phase difference. Watertight construction. Carrying case included.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
CT1	6418677408762	1.318	1



# Pole Fuse Switch Disconnectors

## Earthing devices ST196.2 and 197.2

Earthing devices are used for temporary earthing of the low-voltage network during installation work by attaching the earthing device to the pole fuse switch. Suitable for 160 A pole fuse switches. Conductor is included. Short-circuit current 9 kA/1 s. Comes with an earthing conductor Cu 35 mm<sup>2</sup> of 3 meter and a connector.



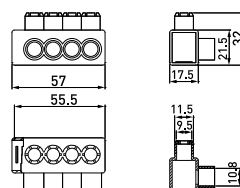
TYPE	EAN	FOR POLE FUSE SWITCHES	NUMBER OF POLES	WEIGHT (kg)	PACK./pcs
ST196.2	6418677417436	For SZ51, SZ152	3	2.8	1
ST197.2	6418677432705	For SZ56, SZ56.1, SZ156	4	2.8	1

# Lamp Post Fixtures

## Branching connector KE10

The connectors can be used for aluminum and copper conductors. Tightening torque is 10 Nm. The connectors are used either inside metal poles or in separate boxes.

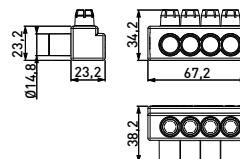
TYPE	EAN	FOR CONDUCTOR mm <sup>2</sup>	CONDUCTOR DIAMETER mm	COLOUR	WEIGHT (kg)	PACK./pcs
KE10.1	6418677400049	4 x (Al 10-35 / Cu 1.5-25)	1.7-9.0	transparent	0.044	50
KE10.3	6418677400063	6 x (Al 10-35 / Cu 1.5-25)	1.7-9.0	transparent	0.065	50
KE10.504	6418677400087	4 x (Al 10-50 / Cu 2.5-35)	2.0-10.2	transparent	0.058	50
KE10.504N	6418677455421	4 x (Al 10-50 / Cu 2.5-35)	2.0-10.2	blue	0.045	50
KE10.506	6418677400094	6 x (Al 10-50 / Cu 2.5-35)	2.0-10.2	transparent	0.070	50



## Cover for KE10.504(N)

PMR2635.4 is a protecting cover for connectors KE10.504 & KE10.504N. It is a quick and easy-to-install slip-on cover which is especially designed for installations where double insulation is a requirement. It can also be used as protection against water, for instance in places where water condensation is a problem.

TYPE	EAN	DEPTH mm	HEIGHT mm	LENGTH mm	WEIGHT (kg)	PACK./pcs
PMR2635.4	6418677456077	40	51	80	0.022	40



## Branching connector sets SV15, SV15.5 and SV50.11

SV15 includes three, SV15.5 four phase connectors KE10.1, one neutral connector KE10.3 and an 16 mm<sup>2</sup> earth wire of 0.35 m with a cable lug. SV50 includes three phase connectors KE10.504, one neutral connector KE10.506 and a 16 mm<sup>2</sup> earth wire of 0.35 m with a cable lug. SV50.11 includes also fuse base SVV1.10.

TYPE	EAN	PARTS	WEIGHT (kg)	PACK./pcs
SV15	6418677405624	3xKE10.1+ KE10.3	0.270	10
SV15.5	6418677405716	4xKE10.1 + KE10.3	0.304	10
SV50	6418677405808	3xKE10.504 + KE10.506	0.315	10
SV50.11	6418677405815	SV50 + SVV1.10	0.52	10



## Fuse bases SVV1.10 and SVV1.06

The fuse base has a transparent cover with openings for making connections. Fuse base according to standard CEE 16 25A II. Fuse included.

TYPE	EAN	FUSE MAX A	WEIGHT (kg)	PACK./pcs
SVV1.10	6418677405839	1x10/25	0.283	10
SVV1.06	6418677405822	1x6/25	0.265	10



# Lamp Post Fixtures

## Circuit breakers SVV3 and SVV3.2

TYPE	EAN	RATED CURRENT (A)	WEIGHT (kg)	PACK./pcs
SVV3	6418677405853	10	0.190	10
SVV3.2	6418677405877	2x10	0.3	10



## Lamp post fixtures SV15.06, SV15.065, SV15.11 and SV15.115

SV15.06 includes three phase connectors, SV15.065 includes four phase connectors. Additionally both fixtures include KE10.1, one neutral connector KE10.3, a 16 mm<sup>2</sup> earth wire of 0.35 m with a cable lug and fuse base SVV1.06. SV15.11 includes three, SV15.115 four phase connectors. Additionally both include KE10.1, one neutral connector KE10.3, a 16 mm<sup>2</sup> earth wire of 0.35 m with a cable lug and fuse base SVV1.10.

TYPE	EAN	PARTS	WEIGHT (kg)	PACK./pcs
SV15.06	6418677405631	SV15 + SVV1.06	0.57	10
SV15.065	6418677405648	SV15.5 + SVV1.06	0.611	10
SV15.11	6418677405662	SV15 + SVV1.10	0.56	10
SV15.115	6418677405686	SV15.5 + SVV1.10	0.6	10
SV15.12	6418677405693	SV15 + SVV3	0.484	10
SV15.125	6418677405709	SV15.5 + SVV3	0.6	10



## Fuse fixtures including connector, SV29.25 and SV29.63

Used for protection of service cables and street lighting in ABC network. The set includes a connector and a fuse fixture.

TYPE	EAN	CONNECTORS INCLUDED	FUSE MAX A	WEIGHT (kg)	PACK./pcs
SV29.2511	6418677432835	SL11.11	25	0.321	10
SV29.6311	6418677432842	SL11.11	63	0.475	10
SV29.2522	6418677432859	SLIP22.1	25	3.69	10
SV29.6322	6418677432866	SLIP22.1	63	0.468	10



## Fuse fixtures without connector SV29.25 and SV29.63

Used for protection of service cables and street lighting in ABC network. Can be used together with insulation piercing connectors SL11.11, SLIP22.1 and SLIW11.1. Fuse is not included.

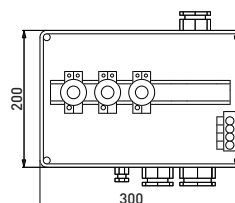
TYPE	EAN	CONNECTORS INCLUDED	FUSE MAX A	WEIGHT (kg)	PACK./pcs
SV29.25	6418677432873	-	25	0.230	10
SV29.63	6418677432880	-	63	0.384	10



## Fuse boxes SK180.25 and SK180.63

The fuse boxes SK180.25 (25 A) and SK180.63 (63 A) are ready-equipped in the factory. The feeder cable is max. 50 mm<sup>2</sup> Al/Cu.

TYPE	EAN	CABLE DIAMETER mm	WIDTH mm	HEIGHT mm	DEPTH mm	WEIGHT (kg)	PACK./pcs
SK180.25	6418677403453	22-32 / 2 x 16-25	300	200	130	2.319	1
SK180.63	6418677403460	22-32 / 2 x 16-25	300	200	130	2.709	1



SK180.25

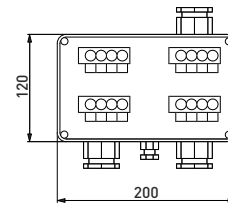


# Lamp Post Fixtures

## Branch boxes SK175 and SK180

The branch boxes SK175 (35 mm<sup>2</sup>) and SK180 (50 mm<sup>2</sup>) are equipped with separate connectors. The connectors are tin-plated, so they can be used for both Al and Cu cables. The SK 175 includes four KE10.1 connectors and the SK180 includes four KE10.504 connectors.

TYPE	EAN	CABLE DIAMETER mm	WIDTH mm	HEIGHT mm	DEPTH mm	WEIGHT (kg)	PACK./pcs
SK175	6418677403439	2 x 16-25	200	120	86	0.682	8
SK180	6418677403446	2 x 22-32 / 16-25	300	200	130	2.04	1



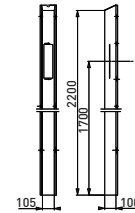
SK175



## Branch box SK160

Lamp Post Cabinet SK160. Hot galvanized steel cabinet.

TYPE	EAN	INCLUDING	WEIGHT (kg)	PACK./pcs
SK160	6418677403378	-	9.5	1



SK160

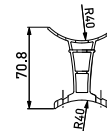


# Fixing Materials for Pole and Wall Mount

## Distance clip SO75.100

SO75.100 is used to attach underground cables to wooden, steel or concrete poles.

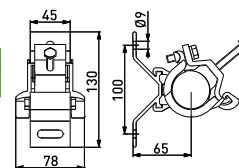
TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./pcs
SO75.100	6418677421730	45-100	All surfaces	50		0.105	



## Wall mounted clamp SO125

Used for the anchoring and suspension of the 2-4-core LV ABC-cables to wooden, stone, brick or concrete walls in straight lines and angles up to 30°.

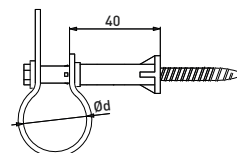
TYPE	EAN	CONDUCTOR DIAMETER mm	TIGHTENING TORQUE Nm	WEIGHT (kg)	PACK./pcs
SO125	6418677404238	Ø12-44	10	0.33	25



## Distance nails SO70

Used for the attachment of an overhead cable or a conductor to a pole or a wall. The nails are designed so that the installed cable does not come into contact with the pole or wall surface. The plastic parts are made of heat and UV-radiation resistant materials and the metal parts are protected against corrosion. Distance from the surface 40 mm.

TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./pcs
SO70	6418677404863	12-47	wooden surfaces	40	body and band only	0.015	100
SO70.11	6418677404870	12-47	Wooden surfaces	40	5 inch nail/137 mm	0.035	250
SO70.13	6418677404894	12-47	Hard walls	40	6x110 screw, 10x50 plug	0.045	250
SO70.16	6418677414695	12-47	Wooden surfaces	40	6.7x120 screw	0.045	250
SO70.17	6418677404917	12-47	Hard walls	40	6.7x120 screw, 10x50 plug	0.055	250
SO70.19	6418677431272	12-47	Hard walls	40	5.5x125 nail, 10x50 plug	0.050	100



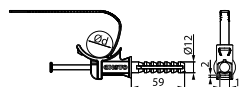


# Fixing Materials for Pole and Wall Mount

## Distance nail SO277

SO277 is for the installation on facades all bundles fitted with neutral conductor as specified in standard NF C 33-040.

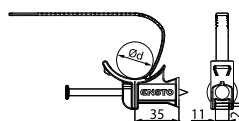
TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO277	6418677448461	30-48	hard walls	35	5x100 nail, 12x60 plug	0.031	25



## Distance nail SO277.1

SO277.1 is for the installation on wooden poles insulated bundles.

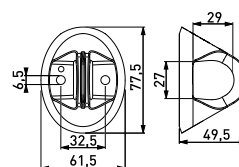
TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO277.1	6418677448478	14.8-50	wooden surfaces	35	5.1x90 nail	0.030	25



## Light Pole Bracket SO279

Used with bands for pole installation and with screws for wall installation.

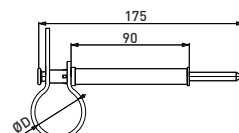
TYPE	EAN	SMFL kN	WEIGHT (kg)	PACK./ pcs
SO279	6418677452246	2	0.036	50



## Distance nail SO71 and perforated band SO71.1

Used for the attachment of an overhead cable or a conductor to wooden surfaces. SO70 includes one perforated band SO71.1, but can also be used with two perforated bands. Distance from the surface 90 mm.

TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO71	6418677404924	12-47	wooden surfaces	90	7 inch / 175 mm	0.051	100
SO71.1	6418677404948					0.010	100



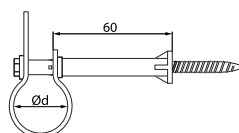
SO71



## Distance nails SO76

Distance nails SO76 are used for attachment of an overhead cable or a conductor to a wooden pole or a wall. The nails are designed so that the installed cable does not come into contact with the pole or wall surface. Distance from the surface 60 mm.

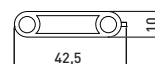
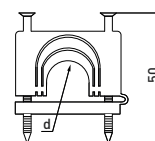
TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO76	6418677446382	12-47	-	60	Body and band only	0.017	250
SO76.11	6418677446399	12-47	Wooden surfaces	60	5.5x145 nail	0.047	100
SO76.19	6418677446429	12-47	Hard walls	60	5.5x145 nail, 10x50 plug	0.060	100



## Multi-cleat SO103

For the attachment of cables or tubes to wooden surfaces or hard walls. Manufactured of weather and UV-radiation resistant thermoplastic, nails are electrical galvanized.

TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO103	6418677404023	16-25	Wooden surfaces, hard walls	0/5	50x2.5	0.010	500

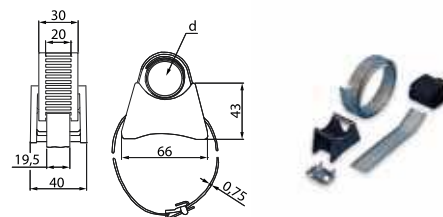


## Fixing Materials for Pole and Wall Mount

### Distance clips S079.1 and S079.5

Used for the attachment of an overhead cable or a conductor to metal and concrete poles. Distance from surface 25 mm.

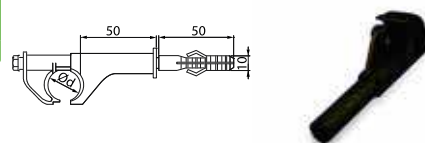
TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
S079.1	6418677405006	Distance clip	With 1000 mm band	25
S079.5	6418677405013	Distance clip	Without band	50



### Distance nail SO42.1

Used for the attachment of an overhead cable or a conductor to a pole or a wall.

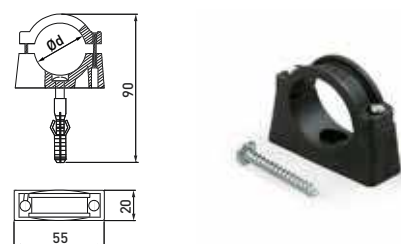
TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
SO42.1	6418677411762	3-13	wooden surfaces	50	6.7x160	0.035	50



### Distance clips S072.1 and S072.2

Used for the attachment of an underground or a service cable to a wooden or a concrete wall.

TYPE	EAN	CABLE DIA. mm	USED FOR	DISTANCE FROM SURFACE mm	SCREW/NAIL mm	WEIGHT (kg)	PACK./ pcs
S072.1	6418677404979	27-32	Wooden surfaces	8	5x50	0.020	250
S072.2	6418677404986	27-32	Hard walls	8	5x50 + plug 8x40	0.022	250

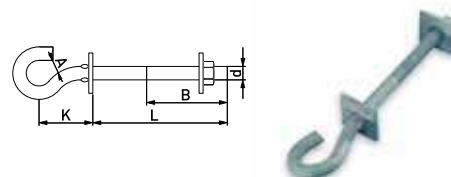


## Suspension Hooks

### Suspension hooks through the pole SOT15

The suspension hook is used with insulated overhead cables or service cables. The hook is made of hot dip galvanized steel.

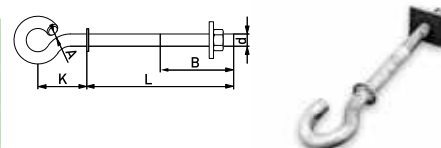
TYPE	EAN	d	L mm	B mm	A mm	K mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
SOT15.82	6418677410291	M12	200	120	18	60	4.8	1.5	0.42	25
SOT15.92	6418677410307	M12	240	120	18	60	4.8	1.5	0.46	25
SOT15.8	6418677410314	M16	200	120	18	70	9.6	2.4	0.8	20
SOT15.9	6418677410321	M16	240	120	18	70	9.6	2.4	0.86	20
SOT15.10	6418677410338	M16	320	120	18	70	9.6	2.4	0.99	20



### Suspension hooks through the pole SOT21

The suspension hook is used with insulated overhead cables or service cables. The hook is of hot dip galvanized steel.

TYPE	EAN	d	L mm	B mm	A mm	K mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
SOT21.16	6418677407901	M16	200	120	20	80	11.9	2.4	0.78	20
SOT21.116	6418677407895	M16	240	120	20	80	11.9	2.4	0.84	20
SOT21.216	6418677407925	M16	320	120	20	80	11.9	2.4	0.97	20
SOT21	6418677407840	M20	200	120	20	80	14.5	4.6	1.22	20
SOT21.1	6418677410376	M20	240	120	20	80	14.5	4.6	1.32	20
SOT21.2	6418677407918	M20	320	120	20	80	14.5	4.6	1.51	20
SOT21.3	6418677410383	M20	350	120	20	80	14.5	4.6	1.58	20

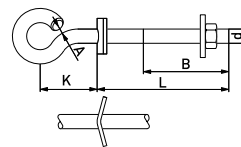


# Suspension Hooks

## Suspension hooks through the pole SOT21.0

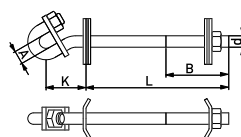
The suspension hook is used with insulated overhead cables or service cables. The hook is of hot dip galvanized steel.

TYPE	EAN	d	L mm	B mm	A mm	K mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
SOT21.0	6418677407857	M20	200	120	20	80	14.5	4.6	1.22	20
SOT21.01	6418677407864	M20	240	120	20	80	14.5	4.6	1.39	20
SOT21.02	6418677407871	M20	320	120	20	80	14.5	4.6	1.51	20
SOT21.03	6418677407888	M20	350	120	20	80	14.5	4.6	1.58	20



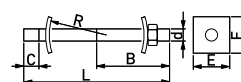
## Suspension hooks through the pole SOT101

TYPE	EAN	d	L mm	B mm	A mm	K mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
SOT101.1	6418677410277	M20	250	110	24	70	30.6	6.7	1.7	10
SOT101.2	6418677410284	M20	310	140	24	70	30.6	6.7	1.8	10



## Double arming bolts SOT4

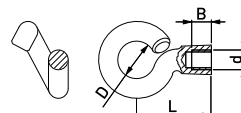
TYPE	EAN	d	L mm	B mm	C mm	R mm	E mm	WEIGHT (kg)	PACK./pcs
SOT4.8	6418677410079	M16	240	120	25	100	60	0.5	20
SOT4.9	6418677407994	M16	280	120	25	100	60	0.61	20
SOT4.10	6418677407956	M16	360	120	25	100	60	0.69	20
SOT4.5	6418677407963	M20	240	120	25	100	60	0.6	20
SOT4.6	6418677407970	M20	280	120	25	100	60	0.72	20
SOT4.7	6418677407987	M20	360	120	25	100	60	0.87	20



## Nut hooks PD2.3 and PD2.2

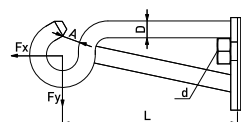
Used when a parallel line is required. Also used as tension hooks.

TYPE	EAN	d	D mm	L mm	A mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
PD2.3	6418677401060	M16	38	76	20	15.4	2.0	0.383	25
PD2.2	6418677401053	M20	38	76	20	15.5	4.0	0.55	25



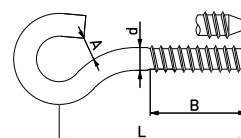
## Nut hooks for external angles PD3.3, PD3.2 and SOT74

TYPE	EAN	d	D mm	L mm	A mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
PD3.3	6418677406355	M16	16	206	20	9.7	6.2	1.23	10
PD3.2	6418677406348	M20	20	200	20	13.3	8.6	1.9	10
SOT74	6418677408021	M24	25	290	24	24.6	19.5	3.4	10



## Screw hooks with wood thread SOT1.1, SOT16.10 and SOT16.12

TYPE	EAN	d	L mm	B mm	A mm	TEST LOAD Fx/kN	TEST LOAD Fy/kN	WEIGHT (kg)	PACK./pcs
SOT16.12	6418677410062	Ø12	165	85	16	5.3	4.1	0.24	50
SOT16.10	6418677407833	Ø16	170	90	16	8.8	6.6	0.44	30
SOT1.1	6418677407826	Ø20	165	85	18	16.6	12.9	0.73	40

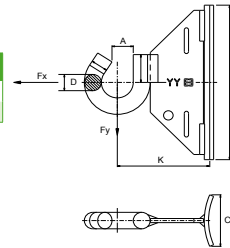


# Suspension Hooks

## Band hooks SOT29 and SOT39

Used for steel and concrete poles. The band hooks are mounted on poles by using band and buckles.

TYPE	EAN	D mm	A mm	K mm	H mm	C mm	SMFL Fx/kN	SMFL Fy/kN	WEIGHT (kg)	PACK./pcs
SOT29	6418677413544	Ø16	18	85	150	45	17.8	12.5	0.71	25
SOT39	6418677413551	Ø20	18	91	150	45	27.7	17.7	0.74	25



## Universal hooks SOT76 and plate hooks SOT28

Plate hook SOT28 is for wall installations. Universal hook SOT76 is used with bands for pole and with screws for wall installations:

Delivery includes:

SOT28, Hook without any screws.

SOT28.1, Hook and six slotted round head wood screws, 6.7x160/60 DIN 96, Soft wall.

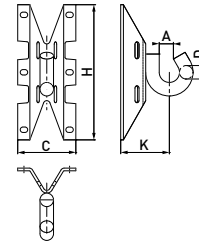
SOT28.2, Hook and six hexagon head wood screws 6x50 DIN 571 and six plastic plugs 10x50, Concrete.

SOT 28.3, Hook and six hexagon head wood screws 6x50 DIN 571, Wood.

SOT76, Hook without screws.

SOT76.2, Hook and six hexagon head wood screws 6x50 DIN 571 and six plastic plugs 10x50.

TYPE	EAN	D mm	A mm	K mm	H mm	C mm	SMFL Fx/kN	SMFL Fy/kN	WEIGHT (kg)	PACK./pcs
SOT28	6418677413506	Ø16	18	67	200	96	17.4	13.3	0.67	25
SOT28.1	6418677413513	Ø16	18	67	200	96	17.4	13.3	0.84	25
SOT28.2	6418677413520	Ø16	18	67	200	96	17.4	13.3	0.74	25
SOT28.3	6418677413537	Ø16	18	67	200	96	17.4	13.3	0.735	25
SOT76	6418677413582	Ø16	18	67	200	96	16.6	12.6	0.61	25
SOT76.2	6418677419287	Ø16	18	67	200	96	16.6	12.6	0.65	25



## Band COT37 and buckle COT36 for band hooks

Installation with tightening tool CT42.

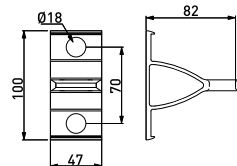
TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
COT37	6418677412196	Steel band	19 mm x 0.75 mm x 25 m, AISI301	2.875
COT36	6418677412189	Steel buckle	for band COT37	0.013



## Bracket for tension clamp SO253 and bracket for suspension clamp SO260.2

SO253 is a bracket for anchoring. Made of corrosion resistant aluminium alloy. The bracket is easy to install with screws as no special tools are needed. SO260.2 is a bracket for suspension clamp.

TYPE	EAN	SMFL kN	WEIGHT (kg)	PACK./pcs
SO253	6418677418907	22	0.11	25
SO260.2	6418677419065	15.5	0.21	50

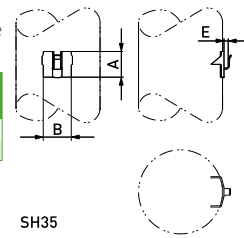


# Stay Wire Accessories and Pole Base Reinforcers

## Stay wire attachment fittings SH35 and SH187

Used for the attachment of stay wires to wooden poles. The plates are employed to prevent the stay wire from cutting into the pole.

TYPE	EAN	STAY WIRE mm <sup>2</sup>	ROPE DIAMETER mm	A mm	B mm	E mm	WEIGHT (kg)	PACK./pcs
SH35	6418677402203	25	Ø6.36	55	60	9	0.079	100
SH187	6418677402128	25-67	Ø6.36 - 10.60	100	95	11	0.2	50

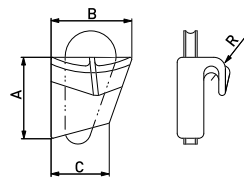


SH35

## Stay wire clamps CHLK25 and SH517

Used for the attachment of the upper end of the stay wire to the pole.

TYPE	EAN	STAY WIRE mm <sup>2</sup>	ROPE DIAMETER mm	A mm	B mm	C mm	R mm	SMFL kN	PACK./pcs
CHLK25	6418677410772	25	Ø6.36	49	49	35	4.5	32	50
SH517	6418677414657	52-68	Ø9.20 - 10.60	60	60	48	6	95	25

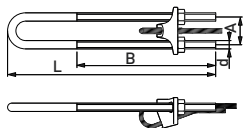


CHLK25

## Stay wire clamps CHK25.1 and SH49

Used for the attachment of the lower end of stay wire to anchor rod or other similar foundation accessories.

TYPE	EAN	STAY WIRE mm <sup>2</sup>	ROPE DIAMETER mm	A mm	B mm	d mm	L mm	SMFL kN	WEIGHT (kg)	PACK./pcs
CHK25.1	6418677406294	25	Ø6.36-6.40	40	200	M12	300	32	0.715	20
SH49	6418677430022	25-68	Ø6.36-10.60	50		M16	300	88 (68 mm <sup>2</sup> )	1.57	25



CHK25.1

## Stay wire sets SHS25P

The pre-assembled stay sets result in better logistics, smaller storage quantities and easier handling. The sets include a stay wire, a wedge clamp, black and yellow stay wire marks, fixing plates and a stay wire clamp or a stay iron with thimble.

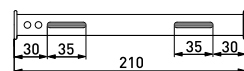
TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
SHS25P.110L	6418677407635	Upper end clamp, length 11.0 m	4.3	1
SHS25P.135L	6418677407659	Upper end clamp, length 13.5 m	5.0	1
SHS25P.110R	6418677407642	Upper end iron, length 11.0 m	4.9	1
SHS25P.135R	6418677407666	Upper end iron, length 13.5 m	5.6	1



## Stay wire mark sets SH25, SH144 and SH45

Used for the marking of all stay wires. In the case of a previously installed stay wire, marks can be added by simply splitting the plastic marks and pressing them around the wire. The combination of 6 yellow and 6 black marks guarantees good visibility. The material is weather and UV-radiation resistant plastic.

TYPE	EAN	STAY WIRE mm <sup>2</sup>	INSIDE DIAMETER mm	Total length mm	WEIGHT (kg)	PACK./pcs
SH25	6418677402173	Fe 25	15	12x210=2520	0.19	25
SH144	6418677402081	Fe 67	25	12x210=2520	0.407	10
SH45	6418677402210	Fe 185	35	12x210=2520	0.54	5



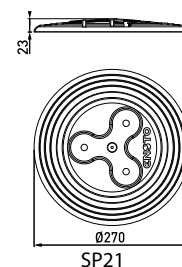
SH25



## Pole hats SP21, SP20, SP18 and SP19

Used for the protection of the tops of wooden poles. Fixed with hot-dip galvanised nails (provided in the package). Made of weather and UV-radiation resistant plastic.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
SP20	6418677405242	Diameter 170 mm	0.054	100
SP18	6418677405228	Diameter 190 mm	0.062	100
SP19	6418677405235	Diameter 230 mm	0.082	100
SP21	6418677452208	Diameter 270 mm	0.106	20



SP21



## Stay Wire Accessories and Pole Base Reinforcers

### Pole base reinforcing sets SH0, SH1, SH2 and SH3

To reinforce wooden pole bases, weakened by decay or damage at ground level. Reinforcing sets are an economical, easy and safe way to increase the lifetime of wooden poles.

TYPE	EAN	D mm	L mm	BOLTS	POLE DIAM. mm	WEIGHT (kg)	PACK./pcs
SH0	6418677406782	160	1500	M12 x 120	130-170	19.5	1
SH1	6418677406799	200	1500	M12 x 120	170-210	24.0	1
SH2	6418677407123	250	1500	M12 x 120	210-260	39.0	1
SH3	6418677414466	300	1500	M12 x 120	260-300	50.0	1



### Anvil ST53

Anvil is used in driving pole base reinforcers into the ground.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST53	6418677408649	21.0	1



### Tightener ST55

It is easy to pull the reinforcer channels against the pole with the tightener. While ST55 holds the channels in place, reinforcer tying bands can be readily put in their place around the reinforcer channels.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST55	6418677408663	2.9	1



## Tools

### Wire brush ST18

In aluminium connections it is important to remove the Al-oxide from the aluminium surfaces by using a wire brush. Use of joint compound SR 1 prevents further re-oxidation. ST18.2 is the case for ST18.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST18	6418677405440	0.072	1
ST18.2	6418677405457	0.022	1



### Joint compound SR1

Used for the prevention of oxidation on aluminium surfaces. The use of the wire brush and joint compound SR1 reduces the contact resistance. It also protects the connection from corrosion. There are no skin irritating ingredients in the grease.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
SR1	6418677405402	0.254	25



## Tools

### Ratchet wrench CT164

For installation of connectors and suspension fittings. The wrench body is made of steel and the grip of oil resistant rubber. The wrench is double-sided 13 and 17 mm.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
CT164	6418677414213	0.254	20



### Torque wrench ST30

For tightening connectors and fittings with standard sockets. With aluminium connectors, it is essential that the bolts are tightened by using the correct torque. ST30 is a high quality adjustable wrench with a wide torque range. The read-outs are given in Nm and lbs.-ft. Socket adaptor mount 1/2". Tightening torque is 8-54 Nm.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST30	6418677408755	0.89	10



### Sockets for torque wrench ST30: ST12, ST13 and ST115

TYPE	EAN	SOCKET SIZE (mm), FORM	WEIGHT (kg)	PACK./pcs
ST12	6418677411557	17 mm, hexagonal	0.066	20
ST13	6418677411564	13 mm, hexagonal	0.056	20
ST115	6418677414138	19 mm, hexagonal	0.075	20



### Allen key ST32

Approved also for insulation piercing connectors with conductors live.

TYPE	EAN	SOCKET SIZE (mm), FORM	WEIGHT (kg)	PACK./pcs
ST32	6418677405525	6 mm, allen key	0.079	25



### Fork wrench ST34

The ST34 is for holding the connector while tightening the bolts. Approved also for insulation piercing connectors with live conductors.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
ST34	6418677405549	0.337	25



### Wedges ST31 and ST192

During the installation of connectors the phase conductors of an insulated overhead cable can be separated by using wedges. The wedge can also be used when installing suspension clamps.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
ST31	6418677405518	Two plastic wedges	0.109	10
ST192	6418677408588	Plastic wedge for LV ABC	0.14	10



## Tools

### Wedges PMR87 and PM154

During the installation of connectors, the phase conductors of an insulated overhead cable can be separated by using wedges. These wedges are left on the cable even after the installation.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
PMR87	6418677408830	Wedge tool	4x95 mm <sup>2</sup> , plastic	0.022 250
PM154	6418677408816	Distance wedge	4x50 mm <sup>2</sup> , plastic	0.017 500



### Wire stringing wheels ST26.1, ST26.11, ST26.22 and ST26.33

Used for pulling in overhead cables. ST26.1, ST26.33 and ST26.11 are used for straight lines and small angles up to 30 degrees. Double pulley ST26.22 is used for larger angles up to 90 degrees.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
ST26.1	6418677408625	Stringing wheel	Cable groove 50 mm, nylon	1.458 10
ST26.11	6418677410116	Stringing wheel	Cable groove 50 mm, nylon, with chain attachment	3.9 3
ST26.22	6418677410123	Stringing wheel	Cable groove diameter 50 mm, nylon with chain attachment, double pulley	6.25 3
ST26.33	6418677410130	Stringing wheel	Cable groove 77 mm, aluminium	2.172 5



### Tightening tool CT42

CT42 is a special tool which is used for tightening the steel band COT37.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
CT42	6418677412332	1.95	1



### Pole climbing irons CT2

Made of Al-alloy. The irons can be adjusted with different sizes of wooden poles.

TYPE	EAN	POLE DIAM. mm	WEIGHT (kg)	PACK./pcs
CT2	6418677408786	140-300	4.2	1



### Pole climbing irons ST155

Made of alloyed and heat-refined steel. The welded and forged areas of the irons, are tested for cracks. Irons ST155 are supplied with straps.

TYPE	EAN	POLE DIAM. mm	WEIGHT (kg)	PACK./pcs
ST155.8	6418677408304	Max. 200	2.6	1
ST155.11	6418677408281	Max. 280	2.7	5
ST155.14	6418677408298	Max. 350	2.8	1



### Come along clamps ST102 for four core cables

For tensioning overhead line spans of four core cables. The grips cover a wide range of diameters and can apply high-tension force. ST102 uses an articulated construction. It is easy to mount and change on the line.

TYPE	EAN	DESCRIPTION	WEIGHT (kg)	PACK./pcs
ST102.50	6418677430770	Come along clamp	4x25-50 mm <sup>2</sup>	2.3 1
ST102.95	6418677430787	Come along clamp	4x70-95 mm <sup>2</sup>	4.31 1
ST102.120	6418677430794	Come along clamp	4x120 mm <sup>2</sup>	4.3 1





## Tools

### Come along clamps CT102 and CT105

For tensioning both bare and covered conductors overhead line spans. The grips cover a wide range of diameters and make a good fixing and high tension force.

TYPE	EAN	CONDUCTOR DIAMETER mm	WEIGHT (kg)	PACK./pcs
CT102.501	6418677409196	7.87-13.46	1.7	1
CT102.1201	6418677409189	13.46-18.80	3.77	1
CT105.20	6418677416132	4-20	2.75	10
CT105.35	6418677416149	3-8	0.828	1
CT105.70	6418677416156	5-10	1.16	1



### Pulling grip CT103

Pulling grips are made of high-grade galvanised steel wire, in a double weave construction for safe and secure cable pulling. Grip length 600 mm.

TYPE	EAN	DIAMETER mm	SMFL kN	WEIGHT (kg)	PACK./pcs
CT103.35	6418677412073	20-30	22	0.232	1
CT103.50	6418677412080	30-40	36	0.303	1
CT103.95	6418677412097	40-50	54	0.586	1



### Dynamometer ST112

Used for setting the correct tension on all kinds of overhead line conductors. The dynamometers are light-weight and compact. They have a built-in measuring dial with scales according to the maximum load.

TYPE	EAN	MAXIMUM LOAD kg	STEP (kg)	WEIGHT (kg)	PACK./pcs
ST112.1	6418677414152	1000	20	1.179	1
ST112.2	6418677414169	2000	50	1.2	1
ST112.3	6418677414176	3000	50	2.3	1



### Cable hoist ST116 and CT116

Ratchet puller for line tensioning.

TYPE	EAN	LIFT HEIGHT m, SINGLE/DOUBLE WIRE	CAPACITY kg, SINGLE/DOUBLE WIRE	WEIGHT (kg)	PACK./pcs
ST116	6418677414183	3/1.5	500/1000	4.53	1
ST116.1	6418677414190	4/2	750/1500	5.000	1
CT116.3	6418677412158	4.57 (15 Ft) / 2.29 (7.5 Ft)	454 (1000 lbs) / 908 (2000 lbs)	6.39	1
CT116.7	6418677412165	9.15 (30 Ft) / 4.58 (15 Ft)	680 (1500 Lbs) / 1360 (3000 Lbs)	7.02	1



### Swivel for conductor linking CT104

Swivels are essential for effective pulling operation of underground cables and overhead conductors. The swivels are fitted with bearings to prevent build up of twist and loops in the cable or pulling rope. Rope dia. 10 mm, working tension 10 kN.

TYPE	EAN	WEIGHT (kg)	PACK./pcs
CT104	6418677412103	0.45	20



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