

EDITION 2010

# CABLE SYSTEMS

**Cable fittings for high voltage networks**

# THE POWER CONNECTION

CABLE SYSTEMS | COMPONENTS | OVERHEAD LINES | RAILWAY CATENARY SYSTEMS



# Cable Fittings for High Voltage Networks.

Our range of cable accessories offers solutions for virtually all applications in the area of high-voltage engineering up to 300 kV. All accessories use silicone rubber as insulating medium because of its outstanding properties. We offer components and complete systems, as well as worldwide installation and advisory services.

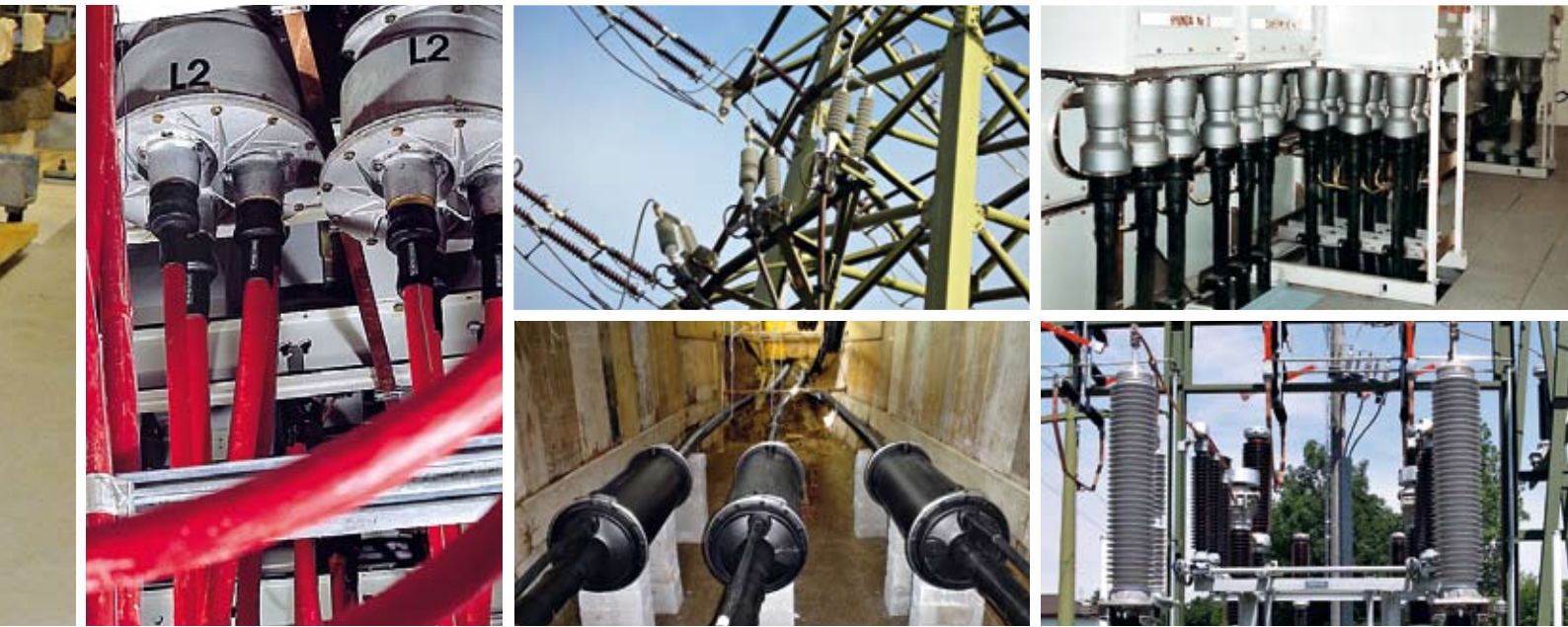
## **HV-CONNEX. A Dry, Separable Connector System for High-Voltage Networks.**

CONNEX meets all your requirements to an universal system of separable connectors: fully insulated with metal housing and providing touch-proof properties. It is maintenance-free, suitable for outdoor use and waterproof. This means CONNEX can be used even in the most extreme conditions.

HV-CONNEX components for high-voltage systems up to 245 kV are factory tested and are surprisingly simple to install. Complex oil and gas work during installation and commissioning of transformers is finally a thing of the past.

## **IXOSIL Cable Terminations.**

The comprehensive range of terminations suits all applications: the use of silicone rubber as the insulating medium means they are ideally suited to outdoor use, and special designs for indoor use are available as well. In addition, oil-filled and dry models are also available. Standard components with porcelain insulators complete the range.



### **IXOSIL Slip-on Joints.**

IXOSIL silicone-rubber joints can be used to join all XLPE and EPR insulated cables within the 72.5 kV to 300 kV voltage range. There are two designs: the compact, one-piece version and a threepart version for connecting cables of different types and diameters.

### **IXOLINE. Factory-Assembled Cables Ready-to-Use.**

IXOLINE cable links are supplied with IXOSIL or CONNEX terminations. No special tools are required for installation. Result: increased efficiency in less time and at lower cost.

### **Silicone – a Key Material in High-Voltage Engineering.**

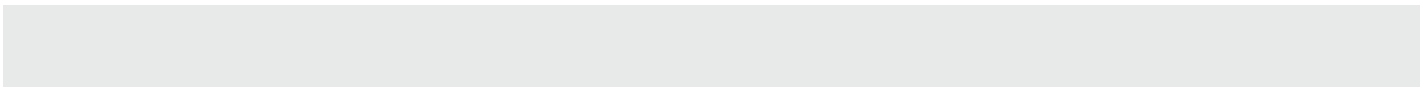
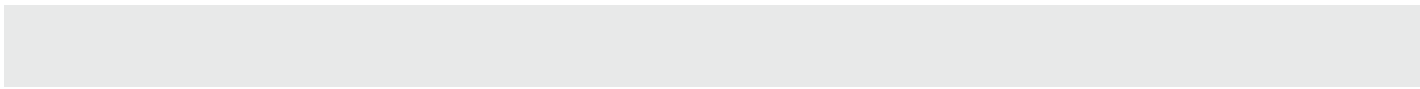
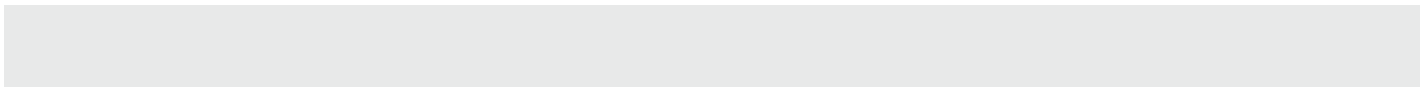
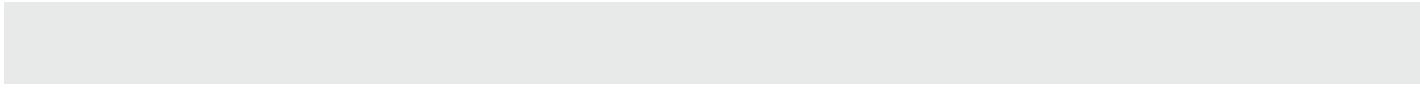
Water, dirt, grease and oil-resistant, completely maintenance-free, shock-resistant and unbreakable: silicone rubber is the perfect material for cable terminations and far superior to traditional materials such as porcelain. When used as a stress-relief device in sealed applications, silicone evens out temperature variations and unevenness in the cable surface much better than harder materials such as EPDM do. Dangerous partial discharges caused by air gaps are safely avoided. PFISTERER makes silicone products primarily using advanced LSR (Liquid Silicone Rubber) designs; special variations are designed using RTV (room-temperature vulcanising silicone).

### **Worldwide Installation Services.**

The installation of high-voltage components requires knowledge and care. We share our know-how in practical applications training courses. If requested we can of course carry out the installation by ourselves for you, wherever in the world you may be.



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## IXOSIL Slip-on Joint

IXOSIL slip-on joints consist mainly of prefabricated silicone rubber parts. This ensures the secure and efficient connection of two plastic-insulated cables (XLPE, EPR). The proven slip-on technique ensures a minimum in installation time and a maximum of operational reliability. The proven material used complies with all electrical, mechanical and thermal requirements for rebuilding the insulation of a cable. The IXOSIL slip-on joint is available in a one-piece or a three-piece version and can be used to connect both copper and aluminium cables. Both joint versions are available in several versions which are differentiated in the numerous combinations of the specific types listed below, with regard to screen treatment, water diffusion barriers and protective housing.

### Screen treatment

Type designation DO: no screen version

Type designation DE: screen version earthing tap on one side

Type designation XL: screen version with 2 single-wire bonding leads

Type designation XK: screen version with 1 concentric bonding cable

### Water diffusion barrier

Type designation F: aluminium foil water diffusion barrier

Type designation M: copper metal housing water diffusion barrier

### Protective housing

Type designation S: heat-shrinkable sleeve housing

Type designation G: PE protective housing

Type designation R: heat-shrinkable sleeve housing with repair collar

Detailed information regarding the type designation is required when placing your order.



## One-piece Slip-on Joint

The one-piece MSA slip-on joint is available for a voltage range from 72,5 kV to 300 kV. Due to the one-piece construction the joints are extremely compact in size. The space required in a joint bay is therefore reduced to a minimum. Each size of silicone body covers a wide range of cable insulation diameters.



**Material:**

Joint body: silicone rubber

**Conductor connection:**

compressed or screwed

**Note:**

The weight depends on the diameter of the cable insulation (prepared) and the type of design.

The joints are tailored according to the customer's specification. Thus, more detailed technical information including dimensions are only available on request.

Max. operating voltage	Standards	Rated voltage	Rated lightning impulse withstand voltage (BIL)	Partial discharge measurement	Conductor cross section	Diameter over cable insulation (prepared)	Net weight approx.
$U_m$ (kV)		U (kV)	(kV)	(pC)	(mm <sup>2</sup> )	(mm)	(kg)
72.5	IEC60840	60 - 69	325	< 5	150 - 1200	37 - 87	72 - 90
123	IEC60840	110 - 115	550	< 5	240 - 2000	45 - 103	50 - 130
145	IEC60840	132 - 138	650	< 5	240 - 2000	45 - 103	80 - 160
170	IEC60840	150 - 161	750	< 5	240 - 2000	45 - 103	80 - 160
245	IEC62067	220 - 230	1050	< 5	240 - 2000	69 - 102	80 - 200
300	IEC62067	275 - 287	1050	< 5	240 - 2000	69 - 102	80 - 220

## Three-piece Slip-on Joint

The three-piece MSA slip-on joint is available for voltages from 72,5 kV to 170 kV. The well-tried three-piece construction of this joint enables cables of different types and dimensions to be connected. For example a 630 mm<sup>2</sup> EPR cable can be connected to a 500 mm<sup>2</sup> XLPE cable.



**Materials:**

Joint body: silicone rubber

**Conductor connection:**

compressed or screwed

**Note:**

The joints are tailored according to the customer's specifications. Thus, more detailed technical information are available on request.

Max. operating voltage	Standards	Rated voltage	Rated lightning impulse withstand voltage (BIL)	Partial discharge measurement	Conductor cross section	Diameter over cable insulation (prepared)	Net weight approx.
$U_m$ (kV)		U (kV)	(kV)	(pC)	(mm <sup>2</sup> )	(mm)	(kg)
72.5	IEC60840	60 - 69	325	< 5	on request	on request	on request
123	IEC60840	110 - 115	550	< 5	on request	on request	on request
145	IEC60840	132 - 138	650	< 5	on request	on request	on request
170	IEC60840	150 - 161	750	< 5	on request	on request	on request



## Outdoor Cable Termination (Composite)

ESS terminations are available for a voltage range from 72,5 kV to 300 kV with various creepage distances. A glass fibre reinforced tube equipped with silicone sheds provides highest mechanical strength. The FRP tube is filled with an insulating compound. An easy-to-fit head armature completes the ESS to a maintenance-free system.

### Material:

Insulator: composite hollow insulator (silicone-sheded FRP tube)  
Stress relief cone: silicone rubber

### Conductor connection:

compressed or screwed

### Optional accessories:

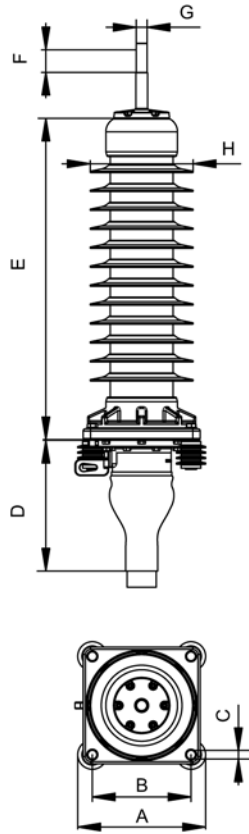
Earthing set

### Note:

Optional material is not within scope of supply and has to be ordered separately.

<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	72.5	123	145	170	245	300
<b>Standards</b>		IEC60840 IEC60815	IEC60840 IEC60815	IEC60840 IEC60815	IEC60840 IEC60815	IEC62067 IEC60815	IEC62067 IEC60815
<b>Rated voltage</b>	<b>U (kV)</b>	60 - 69	110 - 115	132 - 138	150 - 161	220 - 230	275 - 287
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	325	550	650	750	1050	1050
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5	< 5	< 5	< 5	< 5

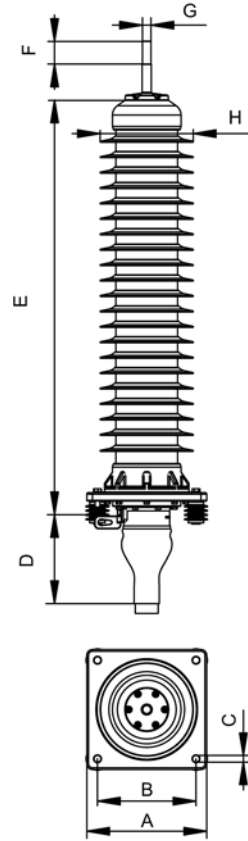
## ESS72



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS72-C19	95-2000	37 - 84	120	60	1813	3	25
ESS72-C23	95-2000	37 - 84	120	62	2248	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS72-C19	320 (420)	270 (345)	19	~550	882	100	30,40,50	282
ESS72-C23	320 (420)	270 (345)	19	~550	882	100	30,40,50	282

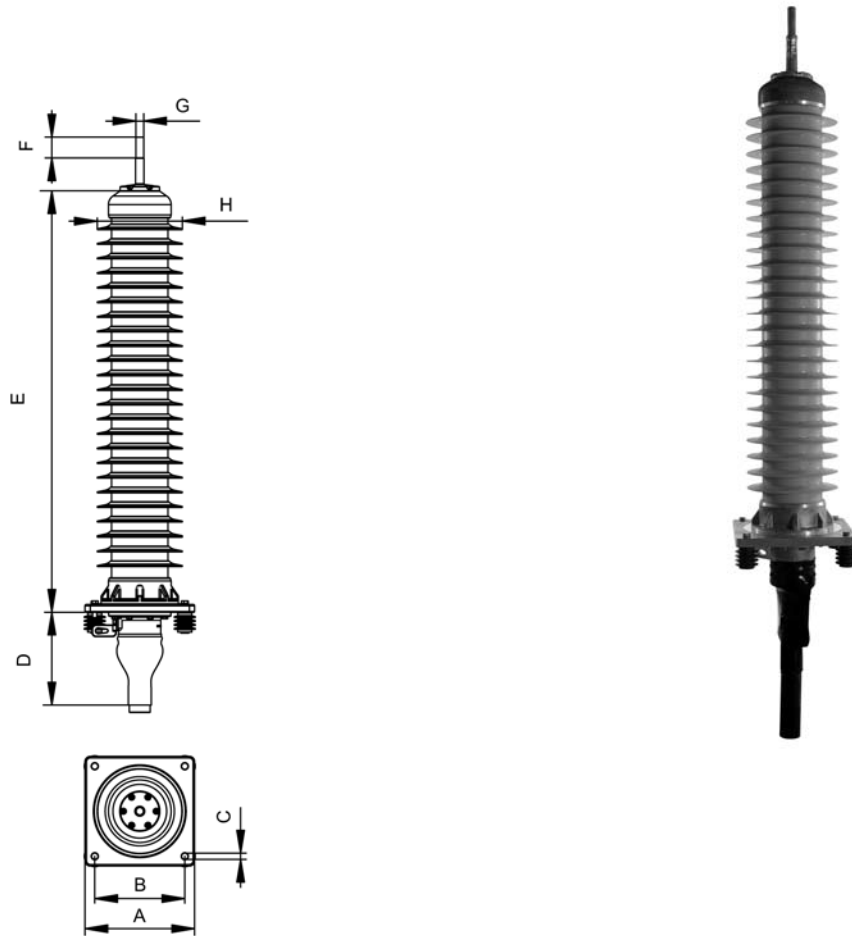
## ESS123



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS123-C31	150-1600	46 - 96	120	104	3075	3	25
ESS123-C34	150-2000	46 - 99	120	105	3383	3	25
ESS123-C39	150-1600	46 - 96	120	98	3813	4	31
ESS123-C42	150-2000	46 - 99	120	125	4194	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS123-C31	420 (320, 500)	345 (270, 400)	19	~550	1402	100	30,40,50	326
ESS123-C34	420 (500)	345 (400)	19	~550	1412	100	30,40,50	376
ESS123-C39	420 (320, 500)	345 (270, 400)	19	~550	1402	100	30,40,50	326
ESS123-C42	420 (500)	345 (400)	19	~550	1412	100	30,40,50	416

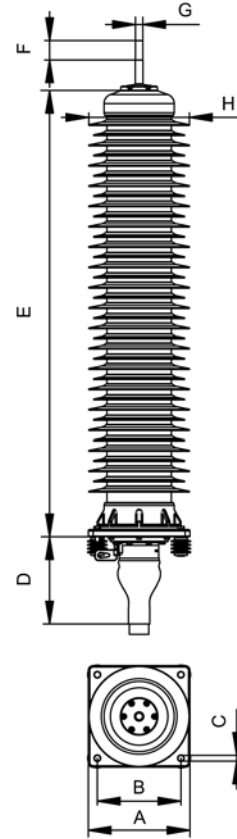
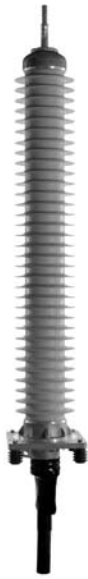
## ESS145



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS145-C37	150-1200	46 - 84	120	111	3625	3	25
ESS145-C40	150-2000	46 - 99	120	128	3988	3	25
ESS145-C45	150-1200	46 - 84	120	118	4495	4	31
ESS145-C50	150-2000	46 - 99	120	144	4945	4	31
ESS145-C72	150-2000	46 - 99	120	206	7178	-	45
ESS145-C72	1600 - 3000	82 - 118	170	-	7178	-	45
ESS145-C88	1600 - 3000	82 - 118	170	-	8880	-	55

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS145-C37	420 (500)	345 (400)	19	~550	1612	100	30,40,50	326
ESS145-C40	420 (500)	345 (400)	19	~550	1622	100	30,40,50	376
ESS145-C45	420 (500)	345 (400)	19	~550	1612	100	30,40,50	326
ESS145-C50	420 (500)	345 (400)	19	~550	1622	100	30,40,50	416
ESS145-C72	420 (500)	345 (400)	19	~550	2232	100	30,40,50	416
ESS145-C72	600 (500)	345 (400)	19	-	2232	100	50	416
ESS145-C88	600 (500)	345 (400)	19	-	2232	100	50	416

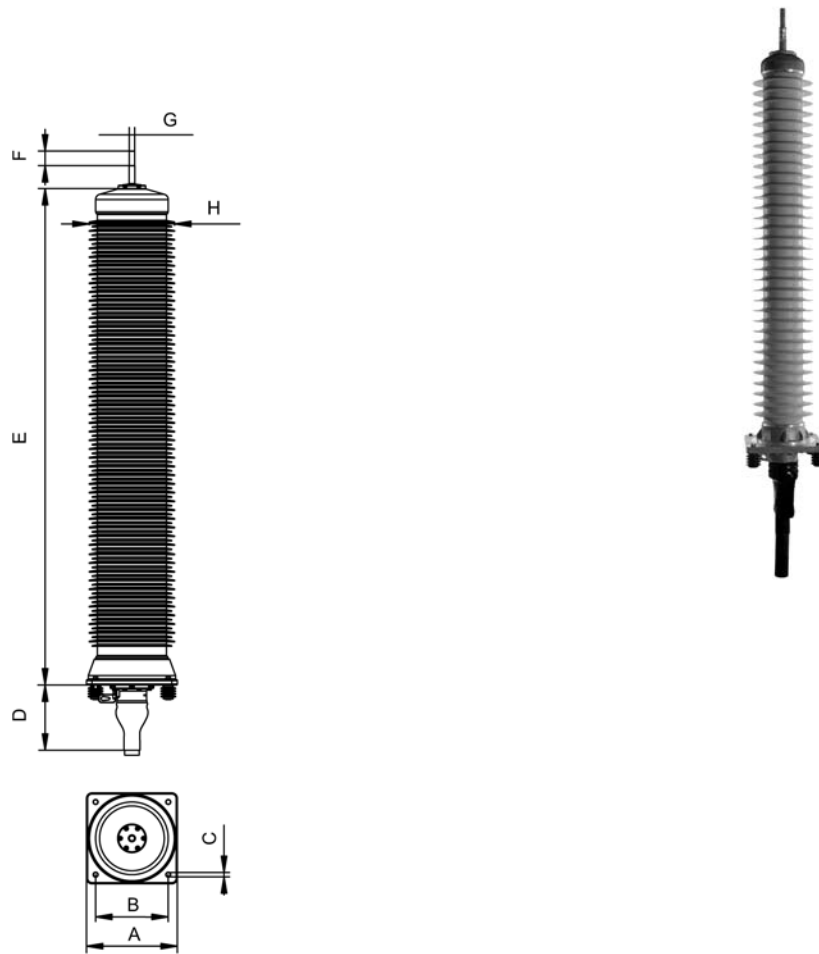
## ESS170



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS170-C47	150-2000	46 - 99	120	155	4675	3	25
ESS170-C58	150-2000	46 - 99	120	175	5797	4	31
ESS170-C72	150-2000	49 - 99	120	206	7106	-	38

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS170-C47	500 (420)	400 (345)	19	~550	1842	100	30,40,50	376
ESS170-C58	500 (420)	400 (345)	19	~550	1842	100	30,40,50	416
ESS170-C72	500 (420)	400 (345)	19	~550	2232	100	30,40,50	416

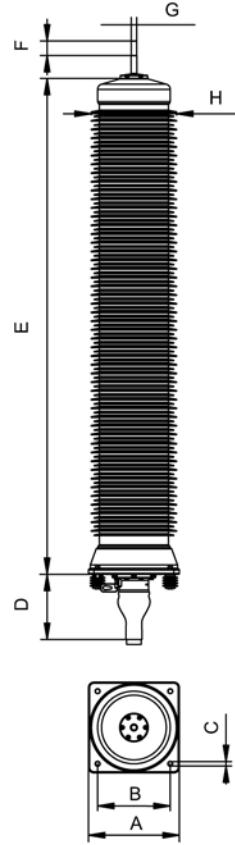
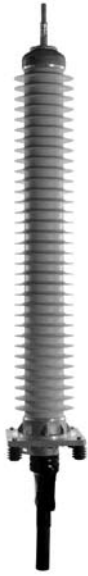
## ESS245



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS245-C84	240-2000	52 - 99	120	321	8355	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS245-C84	500	400	19	~550	2729	100	30,40,50	470

## ESS300



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESS300-C83	240 - 2000	52 - 99	120	321	8250	3	25

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESS300-C83	500	400	19	~550	2729	100	30,40,50	470

≡

ESS



## Outdoor Cable Termination (Porcelain)

The ESP termination can be supplied for voltages from 72,5 kV to 300 kV. The ESP stress relief system is the same as that of the ESS termination.

### Material:

Insulator: Porcelain  
Stress relief cone: silicone rubber

### Conductor connection:

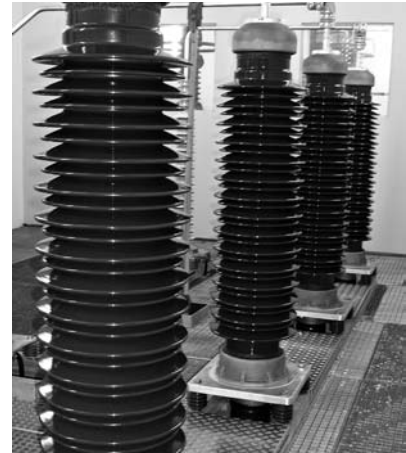
compressed or screwed

### Optional accessories:

Earthing set, spark conductors

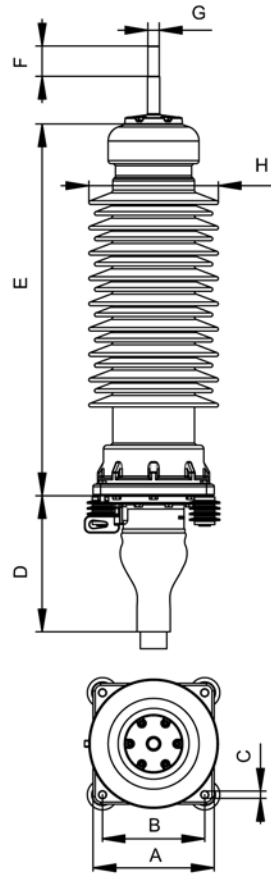
### Note:

Optional material is not within scope of supply and has to be ordered separately.



Max. operating voltage	U <sub>m</sub> (kV)	72.5	123	145	170	245	300
Standards		IEC60840	IEC60840	IEC60840	IEC60840	IEC62067	IEC62067
		IEC60815	IEC60815	IEC60815	IEC60815	IEC60815	IEC60815
Rated voltage	U (kV)	60 - 69	110 - 115	132 - 138	150 - 161	220 - 230	275 - 287
Rated lightning impulse withstand voltage (BIL)	(kV)	325	550	650	750	1050	1050
Partial discharge measurement	(pC)	< 5	< 5	< 5	< 5	< 5	< 5

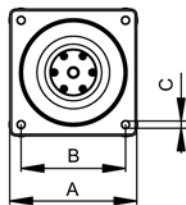
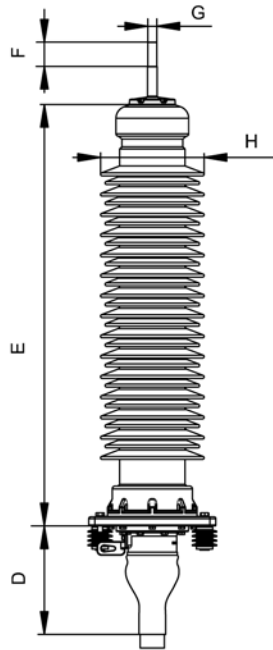
## ESP72



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP72-C23	95-2000	37 - 84	120	132	2270	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP72-C23	320 (420)	270 (345)	19	~550	982	100	30,40,50	342

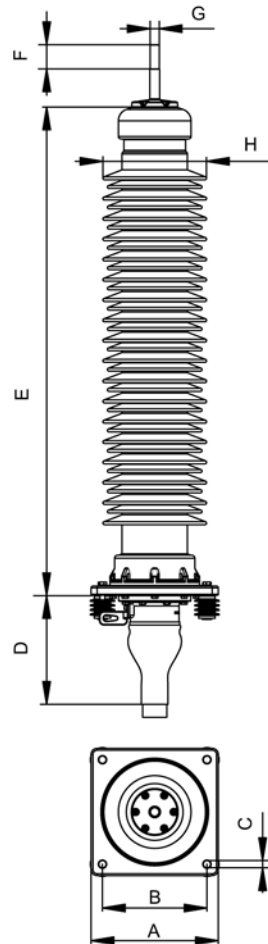
## ESP123



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP123-C39	150-1600	46 - 94	120	200	3813	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP123-C39	420 (320, 500)	345 (270, 400)	19	~550	1392	100	30,40,50	342

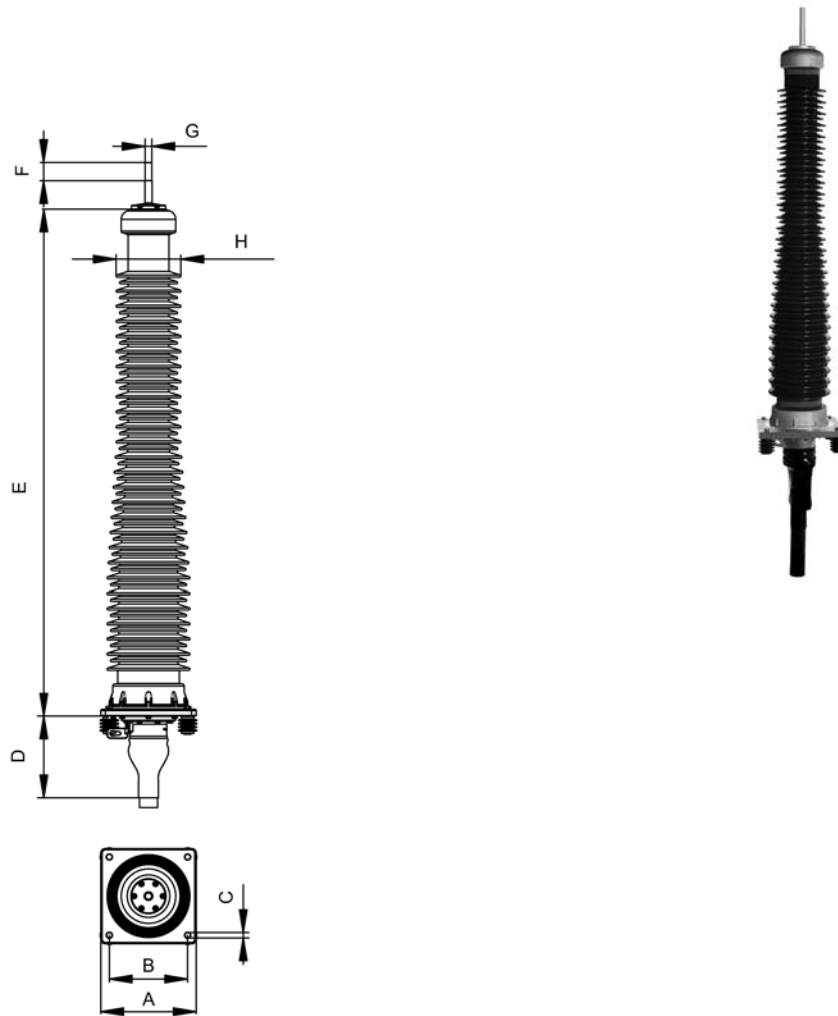
## ESP145



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP145-C45	150-1200	46 - 84	120	220	4540	4	31
ESP145-C50	150-2000	46 - 99	120	250	4994	4	31
ESP145-C58	150-2000	46 - 99	120	315	5828	-	36
ESP145-C73	150-2000	46 - 99	120	330	7335	-	45

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP145-C45	420 (500)	345 (400)	19	~550	1612	100	30,40,50	342
ESP145-C50	420 (500)	345 (400)	19	~550	1631	100	30,40,50	390/310
ESP145-C58	500 (420)	400 (345)	19	~550	2232	100	30,40,50	365/285
ESP145-C73	500 (420)	400 (345)	19	~550	2232	100	30,40,50	390/310

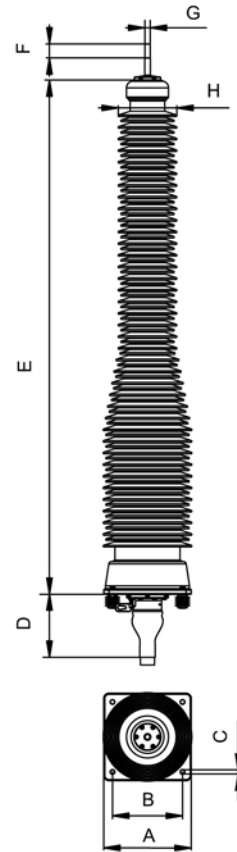
## ESP170



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP170-C58	150-2000	46 - 99	120	421	5828	4	31
ESP170-C73	150-2000	46 - 99	120	465	7335	-	38

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP170-C58	500 (420)	400 (345)	19	~550	2232	100	30,40,50	365/285
ESP170-C73	500 (420)	400 (345)	19	~550	2232	100	30,40,50	390/310

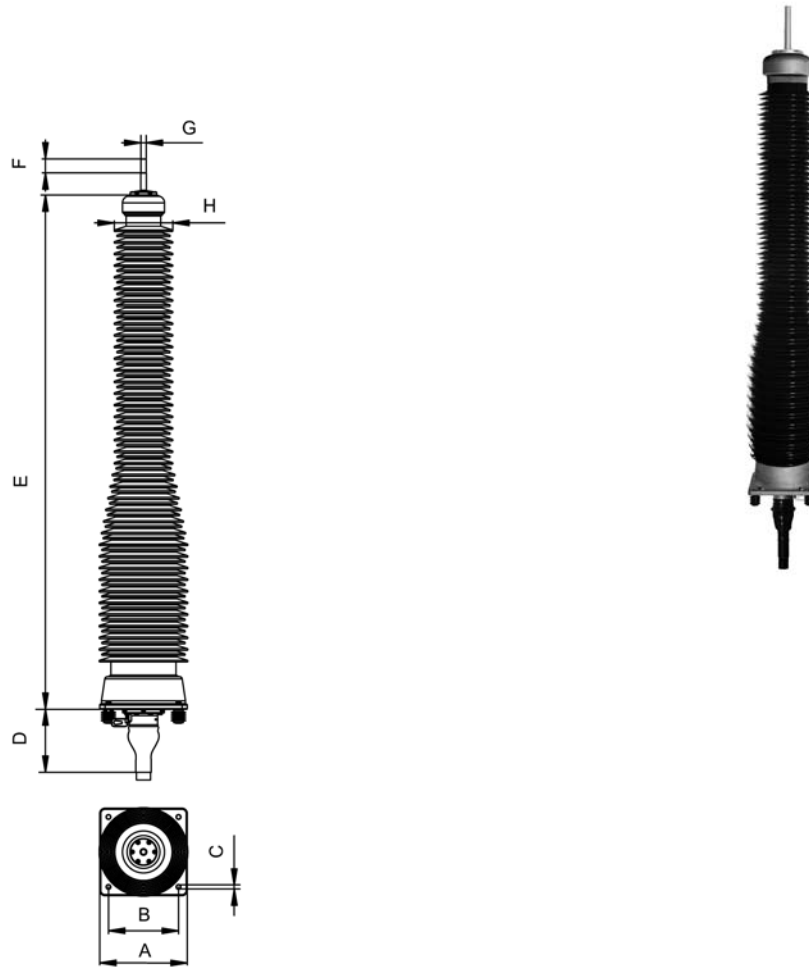
## ESP245



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP245-C103	240-2000	52 - 99	120	705	10339	-	38

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP245-C103	500	400	19	~550	2941	100	30,40,50	334/506

## ESP300



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESP300-C103	240-2000	52 - 99	120	705	10339	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
ESP300-C103	500	400	19	~550	2941	100	30,40,50	334/506



## Flexible Outdoor Cable Termination

ESF flexible terminations are dry, slip-on terminations for modular assembly. The use of silicone sheds makes them ideally suited for applications in outdoor installations and are available for a voltage range from 52 kV to 145 kV. Medium voltage versions for 10 kV, 20 kV and 30 kV are available on request.

**Material:**

Insulator: silicone rubber  
 Stress relief cone: silicone rubber

**Conductor connection:**

compressed or screwed

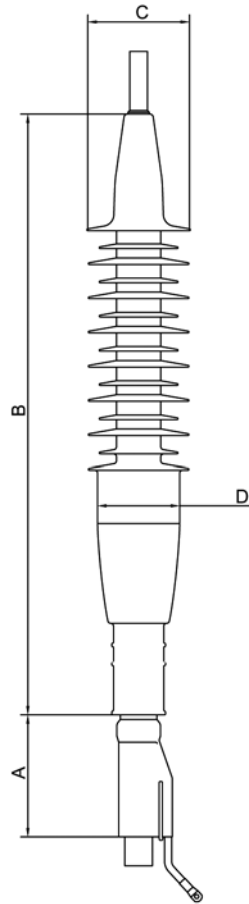
**Note:**

Various connection options  
 Pollution class 1 (16 mm/kV) on request

<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	52	72.5	123	145
<b>Standards</b>		IEC60840 IEC60815	IEC60840 IEC60815	IEC60840 IEC60815	IEC60815
<b>Rated voltage</b>	<b>U (kV)</b>	45 - 47	60 - 69	110 - 115	132 - 138
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	250	325	550	550
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5	< 5	< 5



## ESF52

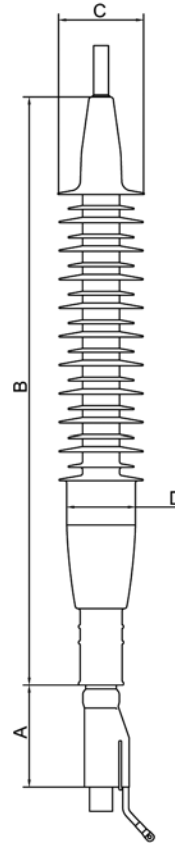


ESF

Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESF52-C11	95-1000	28 - 76.2	10	1040	2	20
ESF52-C13	95-1000	28 - 76.2	12	1300	3	25
ESF52-C17	95-1000	28 - 76.2	13	1612	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESF52-C11	~250	~764	213 - 222	110 - 135
ESF52-C13	~250	~824 - 884	213 - 222	110 - 135
ESF52-C17	~250	~944 - 1004	213 - 222	110 - 135

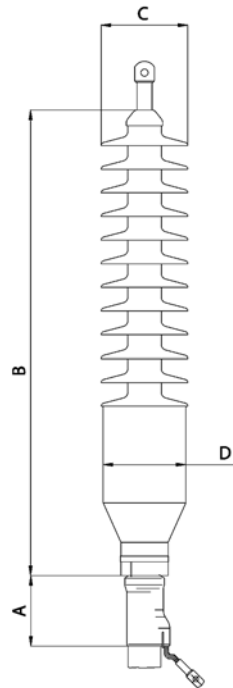
## ESF72



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESF72-C15	95-1000	28 - 76.2	12	1450	2	20
ESF72-C19	95-1000	28 - 76.2	14	1813	3	25
ESF72-C23	95-1000	28 - 76.2	17	2248	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESF72-C15	~250	~884 - 944	213 - 222	110 - 135
ESF72-C19	~250	~1004 - 1064	213 - 222	110 - 135
ESF72-C23	~250	~1184 - 1244	213 - 222	110 - 135

## ESF123

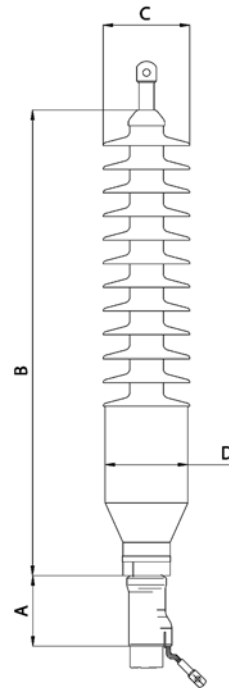


ESF

Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESF123-C25	95-1000	28 - 76.2	19	2460	2	20
ESF123-C31	95-1000	28 - 76.2	21	3075	3	25
ESF123-C39	95-1000	28 - 76.2	22	3813	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESF123-C25	~250	~1300 - 1360	190	180
ESF123-C31	~250	~1480 - 1600	190	180
ESF123-C39	~250	~1480 - 1600	190	180

## ESF145



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
ESF145-C29	240-1000	52.7 - 92.3	20	2900	2	20
ESF145-C37	240-1000	52.7 - 92.3	23	3625	3	25
ESF145-C45	240-1000	52.7 - 92.3	24	4495	4	31

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESF145-C29	~250	~1480	220	210
ESF145-C37	~250	~1720 - 1780	220	210
ESF145-C45	~250	~2020 - 2140	220	210

## Outdoor Cable Termination (Dry Type)

The EST termination is ideally suited for outdoor and indoor use. It is available for voltages from 72,5 kV to 145 kV and consists of one flexible ESF termination and three post insulators. It contains no liquid insulating materials, can be installed in any position and is self-supporting.

The EST is of modular construction for rapid, easy installation. The base plate design allows installations on existing units.

### Material:

Insulator: silicone shielded fibre glass reinforced rod

Stress relief cone: silicone rubber

Shed material: silicone rubber

### Conductor connection:

compressed or screwed

### Note:

Various connection options

Versions in pollution class 1 (16mm/kV) on request

The terminations are tailored according to the customer's specifications. Thus, more detailed technical information are available on request.



<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	72.5	123	145
<b>Standards</b>		IEC60815 IEC60840	IEC60815 IEC60840	IEC60815
<b>Rated voltage</b>	<b>U (kV)</b>	60 - 69	110 - 115	132 - 138
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	325	550	550
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5	< 5



**EST72**

Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
EST72-C15	95-1000	28 - 76.2	63	1450	2	20
EST72-C19	95-1000	28 - 76.2	65	1813	3	25
EST72-C23	95-1000	28 - 76.2	68	2248	4	31

## EST123



EST

Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
EST123-C25	95-1000	28 - 76.2	53	2460	2	20
EST123-C31	95-1000	28 - 76.2	58	3075	3	25
EST123-C39	95-1000	28 - 76.2	66	3813	4	31

## EST145



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	minimal creepage distance (mm)	Pollution class	Pollution class (mm/kV)
EST145-C29	240-1000	52.7 - 92.3	64	2900	2	20
EST145-C45	240-1000	52.7 - 92.3	76	4495	4	31
EST145-C37	240-1000	52.7 - 92.3	69	3625	3	25



## Flexible Indoor Cable Termination

ESK terminations are dry, modular, slide-on terminations for 52 kV and 72,5 kV. The use of silicone shields makes them ideally suited for applications in indoor installations.

### Material:

Stress relief cone: silicone rubber  
Shed material: silicone rubber

### Conductor connection:

compressed or screwed.

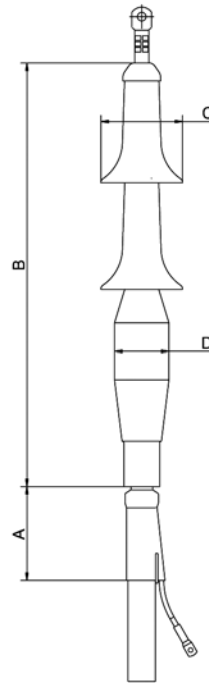
### Note:

Various connection options  
The creepage distance depends on the diameter of the prepared cable insulation



<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	52	72.5
<b>Standards</b>		IEC60815	IEC60815
<b>Rated voltage</b>	<b>U (kV)</b>	45	60
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	250	350
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5

## ESK52



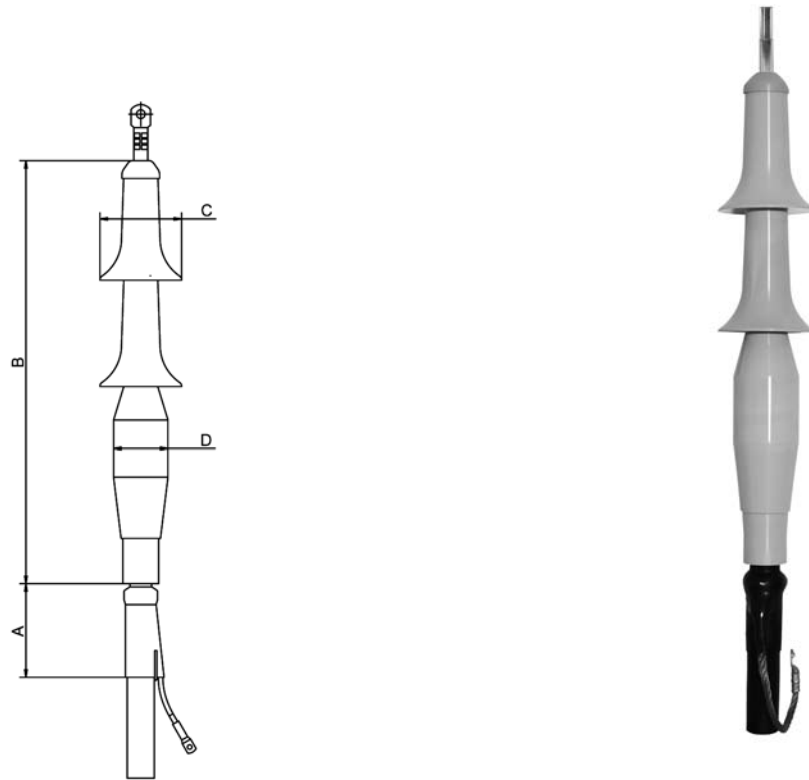
Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	min. creepage distance (mm)	Number of sheds
ESK52-N1	95-1000	28 - 76.2	8	758 - 800	1
ESK52-N2	95-1000	28 - 76.2	10	1031 - 1100	2

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESK52-N1	~250	700	140-200	110-135
ESK52-N2	~250	935	140-200	110-135

ESK

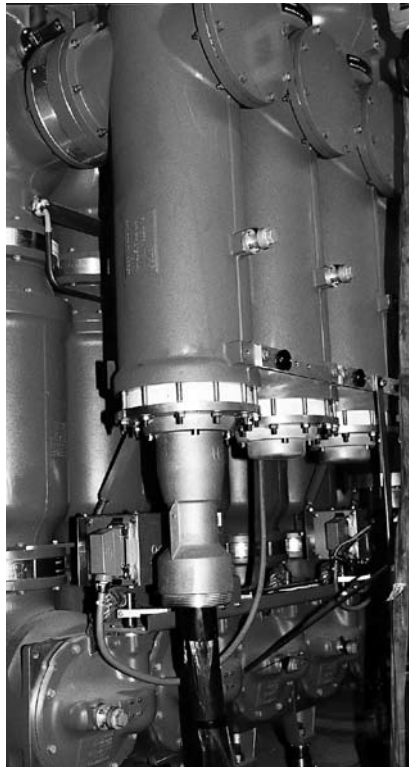
ESK

## ESK72



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	Net weight approx. (kg)	min. creepage distance (mm)	Number of sheds
ESK72-N2	95-1000	28 - 76.2	10	1031 - 1100	2
ESK72-N3	95-1000	28 - 76.2	12	1303 - 1400	3

Product designation	A (mm)	B (mm)	C (mm)	D (mm)
ESK72-N2	~250	935	140-200	110-135
ESK72-N3	~250	1170	140-200	110-135



## HV-CONNEX 72.5 kV – 245 kV

The advantages of the CONNEX system come to the fore in particular in the area of high-voltage systems: simple on-site installation and factory-tested components save money and provide additional safety. Plug-in HV-CONNEX systems make costly oil and gas work during the installation and commissioning of transformers and gas-insulated switchgear a thing of the past. Thanks to their plug-in connectors, cable joints from the HV-CONNEX range are much more flexible than traditional solutions when it comes to building and converting electrical systems. Needless to say, the range includes all the connection components needed to test the system and the attached equipment.

### Advantages

- approx. 50 % shorter mounting length compared with conventional systems in accordance with IEC62271-209 (former IEC60859)
- no opening of the cable termination and associated costly gas or oil work
- horizontal, vertical and angled versions for connection to GIS and transformers
- considerably reduced installation times
- the use of pre-assembled and tested components means maximum safety and efficiency
- installation errors are minimised
- if a fault does arise, rapid separation of cable and equipment
- cable sheath test possible without unplugging

### A Socket

- 1 contact element
- 2 epoxy socket

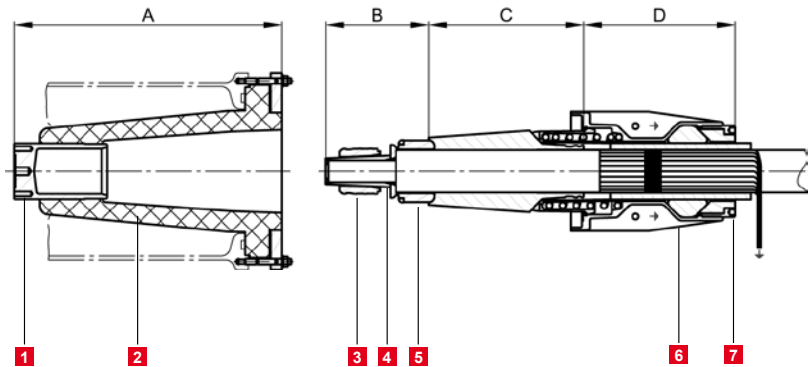
### B Contact system

- 3 contact ring
- 4 tension cone
- 5 thrust piece

### C Insulating part

### D Bell flange

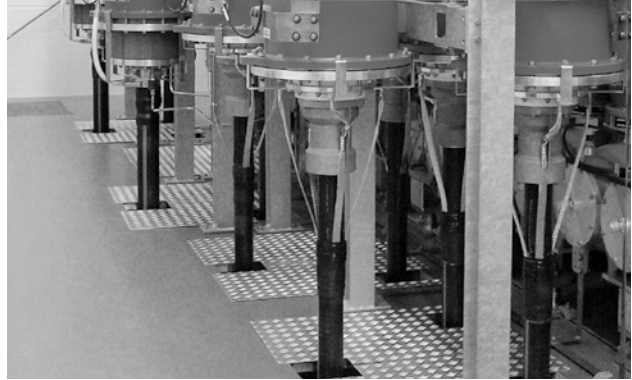
- 6 gasket
- 7 threaded counter ring



Sample drawing: Cable connecting system HV-CONNEX Size 5-S  
(cable with wire screen, application switch gear)

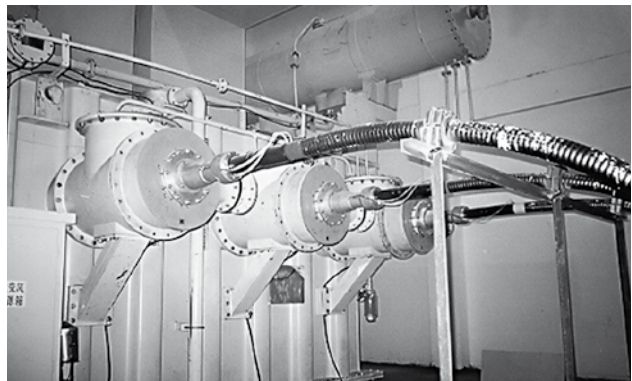
## GIS Equipment

HV-CONNEX bushings require less space than conventional type connectors. All well-known manufacturers have since begun to offer equipment which exploits this advantage. An extension adapter for conventional cable connector modules is required when HV-CONNEX is used with traditional GIS equipment.



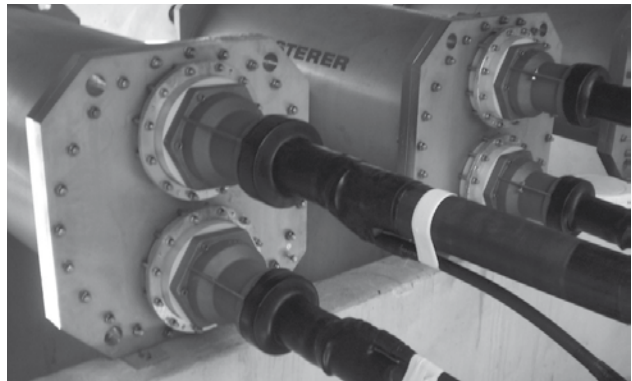
## Transformers

The installation of two connectors on the equipment makes it possible to have one cable connector on the side, facing down. If it is necessary to connect this kind of transformer using an overhead line, an HV-CONNEX plug-in insulator for overhead lines can be installed and the downward facing cable connector then terminated with a dummy connector. This plug-in insulator also makes it very easy to carry out simple voltage tests on transformers fitted with HV-CONNEX equipment connectors, either in the factory or on site.



## Plug-in Joint Boxes

The HV-CONNEX cable connection system means plug-in joint boxes for various geometric configurations can be assembled using fewer components. The advantage of these joint boxes is that the joint body is a single unit which is completely manufactured and tested at the factory. Solutions of this kind bring enormous benefits if, for example, cables need to be bent back multiple times during the installation and conversion phase.



# HV-CONNEX Pluggable Connection System



## HV-CONNEX Cable Connectors Size 4 - 6-S Technical Data and Size Classification List

Size		4	5-S	6	6-S
<b>Max. operating voltage</b>	<b><math>U_m</math> (kV)</b>	72.5	145	170	245
<b>Nominal current</b>	<b><math>I_N</math> (A)</b>	2500	2500	2500	2500
<b>Cross section range <sup>*)</sup></b>	<b>(mm<sup>2</sup>)</b>	95 - 1600	95 - 1600	240 - 2500	240 - 2500
<b>Minimum conductor diameter</b>	<b><math>\varnothing</math> (mm)</b>	9.3	9.3	15.3	15.3
	<b><math>\varnothing</math> (inch)</b>	0.37	0.37	0.6	0.6
<b>Max. conductor diameter</b>	<b><math>\varnothing</math> (mm)</b>	50.4	50.4	64.9	64.9
	<b><math>\varnothing</math> (inch)</b>	1.98	1.98	2.56	2.56
<b>Min. diameter over insulation</b>	<b><math>\varnothing</math> (mm)</b>	33.0	36.0	53.0	53.0
	<b><math>\varnothing</math> (inch)</b>	1.3	1.42	2.09	2.09
<b>Max. diameter over insulation</b>	<b><math>\varnothing</math> (mm)</b>	71.0	76.0	110.5	110.5
	<b><math>\varnothing</math> (inch)</b>	2.8	2.99	4.35	4.35
<b>Gross weight per packing unit <sup>*)</sup></b>	<b>(kg)</b>	18.5	22.0	27.0	27.0
<b>Rated power frequency withstand voltage</b>	<b>1min (kV)</b>	140	275	325	460
<b>Partial discharge</b>	<b><math>2 \times U_0</math> (pC)</b>	$\leq 2$	$\leq 2$	$\leq 2$	$\leq 2$
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	325	650	750	1050
<b>DC voltage test</b>	<b>15 min <math>6 \times U_0</math> (kV)</b>	144	304	348	508
<b>Rated short-time withstand current</b>	<b>0.5 s (kA)</b>	63	63	63	63
<b>Rated short-time withstand current</b>	<b>1 s (kA)</b>	50	50	50	50

\*) Packing Unit = 1 piece

\*\*) Cross section is for reference only.

Actual value is limited by min. / max. diameter over conductor and min. / max. diameter over insulation.

(1 inch = 25.4 mm ; 1 square inch = 645.16 mm<sup>2</sup>)

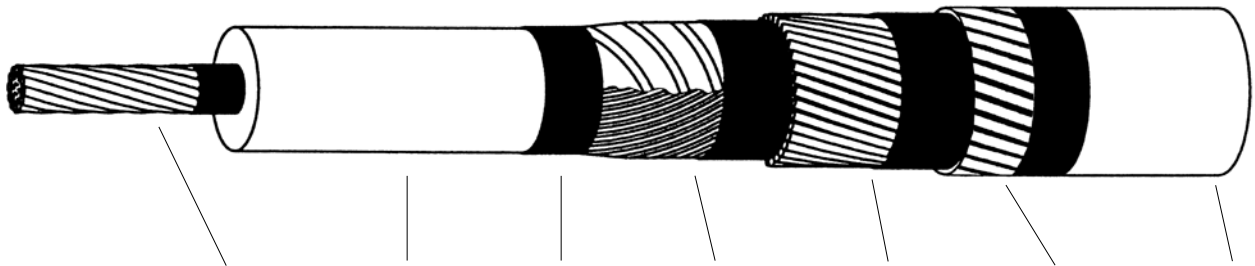
# HV-CONNEX Pluggable Connection System

## Form to determine HV-CONNEX Cable Connectors

**Company:** \_\_\_\_\_ **Name:** \_\_\_\_\_  
**Telephone:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
**E-mail:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Cable manufacturer:** \_\_\_\_\_ **Cable type:** \_\_\_\_\_

**Size of socket:**    Size 4     Size 5-S     Size 6     Size 6-S   
**Application:**        Outdoor     Outdoor installation vertical from above     Indoor     Offshore (saltwater-proof/soil-resistant)   
**Voltages:**             $U_o$  (phase/earth) \_\_\_\_\_ kV     $U_N$  (phase/phase) \_\_\_\_\_ kV     $U_M$  (Max. operating voltage  $2 \times U_o$ ) \_\_\_\_\_ kV  
**Grounding/Earthing:**    solid (standard)     insulated/compensated   
**Cable sheath test:**        \_\_\_\_\_ kV  
**Short circuit current:**    1 sec. short circuit current screen/sheath \_\_\_\_\_ kA



Diameter (mm)	_____	_____	_____	_____	_____	_____
Cross Section (mm <sup>2</sup> )	_____	_____	_____	_____	_____	_____
Thickness (mm)	_____	_____	_____	_____	_____	_____
stranded circular RM <input type="checkbox"/>	XLPE <input type="checkbox"/>	fully bonded <input type="checkbox"/>	Cu-wire <input type="checkbox"/>	Cu-wire <input type="checkbox"/>	Cu-wire <input type="checkbox"/>	PE <input type="checkbox"/>
stranded circular, segment RMS <input type="checkbox"/>	EPR <input type="checkbox"/>	easy strip <input type="checkbox"/>	Cu-band <input type="checkbox"/>	Cu-band <input type="checkbox"/>	Cu-band <input type="checkbox"/>	PVC <input type="checkbox"/>
solid circular RE <input type="checkbox"/>	PVC <input type="checkbox"/>	graphite <input type="checkbox"/>	Al-wire <input type="checkbox"/>	Al-wire <input type="checkbox"/>	Al-wire <input type="checkbox"/>	
superflexible stranded RF <input type="checkbox"/>			Al-band <input type="checkbox"/>	Al-band <input type="checkbox"/>	Al-band <input type="checkbox"/>	
			Steel wire <input type="checkbox"/>	Steel wire <input type="checkbox"/>	Steel wire <input type="checkbox"/>	
			Steel band <input type="checkbox"/>	Steel band <input type="checkbox"/>	Steel band <input type="checkbox"/>	
			Lead sheath <input type="checkbox"/>	Lead sheath <input type="checkbox"/>	Lead sheath <input type="checkbox"/>	
			Cu-corr sheath <input type="checkbox"/>	Cu-corr sheath <input type="checkbox"/>	Cu-corr sheath <input type="checkbox"/>	
			Al-corr. sheath <input type="checkbox"/>	Al-corr. sheath <input type="checkbox"/>	Al-corr. sheath <input type="checkbox"/>	

**Remark:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Fibre optic cable     Inner sheath     Inner sheath   
    Filling compound     Filling compound   
    Cu-foil     Cu-foil   
    Al-foil     Al-foil   
 Fibre optic cable

HV-CONNEX Pluggable Connection System



## HV-CONNEX Cable Connectors, Size 4, up to 72,5 kV

The following options are available but must be specified when ordering:

### Low temperature

The standard components are designed for a temperature down to -25°C. A special low temperature grease is used for ambient conditions involving temperatures below -25°C.

### Offshore

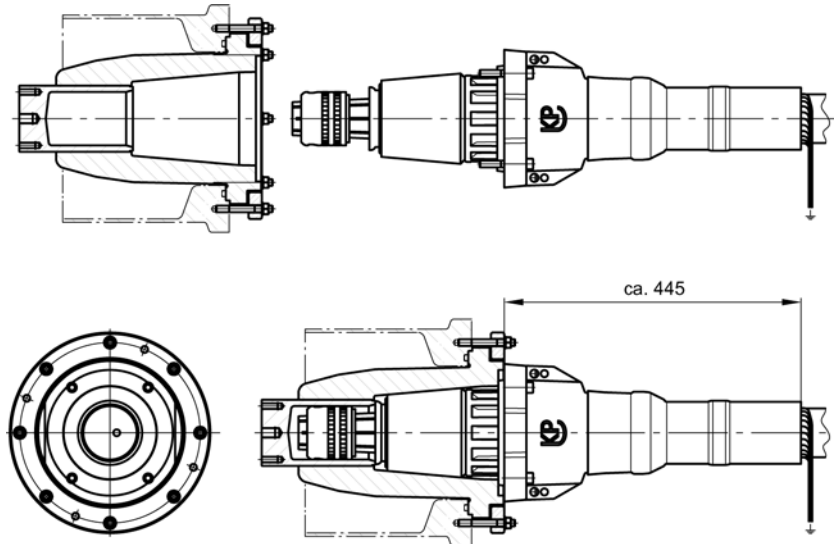
Components with corresponding material properties are used for offshore applications.

### Insulated cable shield

For insulated networks and usage of a Link Box. A touch proof system and flexibility were the main approach.

### Important:

Special tools are required for the assembly of HV-CONNEX cable connectors (see assembly accessories).



No.	Version <sup>1)</sup>	Cross section range <sup>2)</sup> (mm <sup>2</sup> )	Nominal current I <sub>N</sub> (A)	Conductor diameter Ø (mm)	Diameter over insulation Ø (mm)
849 999 999	XXXX <sup>1)</sup>	95 - 1600 <sup>2)</sup>	2500	9,3 - 50,4	33,0 - 75,0

<sup>1)</sup> Individual article number determined according to actual cable dimensions (see Form to determine HV-CONNEX Cable Connectors).

<sup>2)</sup> Cross section is only for reference purposes.  
Actual value is limited by min./max. diameter over conductor and min./max. diameter over insulation.

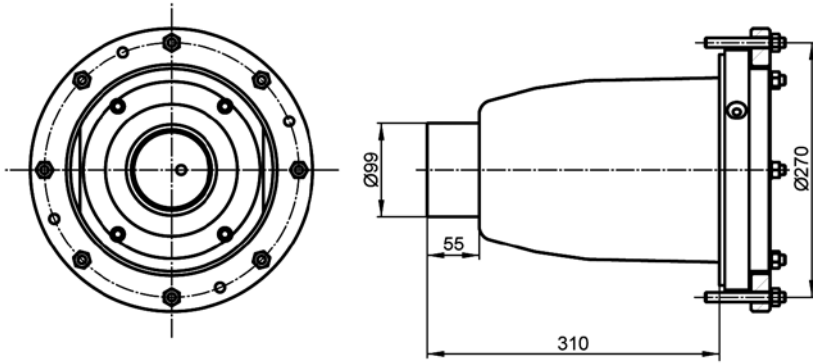
All dimensions in mm unless otherwise noted.



## HV-CONNEX Sockets, Size 4, up to 72.5 kV

For installation in:  
power circuit-breaker units, transformers, E-Coils, joints and other equipment

Including fixing material.



No.	Capacitive voltage tap (pF)	Weight (kg)
827 684 011	approx. 5	17.5
827 684 012	—	17.5

All dimensions in mm unless otherwise noted.

Size 4



## HV-CONNEX sockets for GIS, Size 4, up to 72.5 kV, according to IEC 62271-209 (former IEC 60859)

Depending on the type of termination, it is recommended to combine various products for installation in switchgear, joint boxes and other gas-insulated devices.

### HV-CONNEX socket

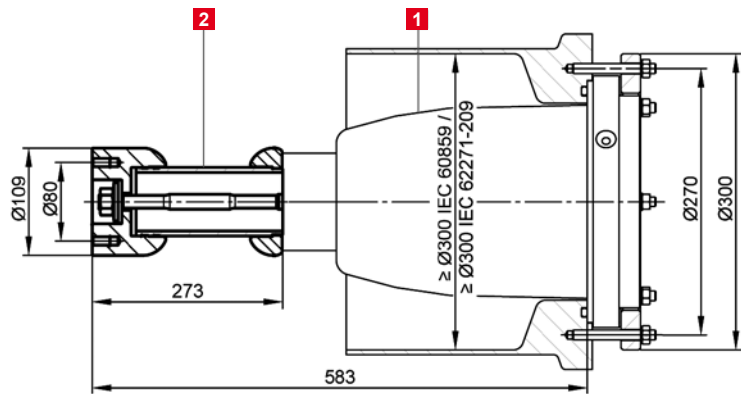
with or without voltage tap, including mounting material.

### IEC extension adapter

This IEC extension is used for adapting the installation depth of the dry-type cable termination to conventional cable terminal units.

## For dimensions according to IEC 62271-209 (former IEC 60859) for fluid-filled termination, Size 4

Socket **1**, with or without voltage tap, and IEC extension adapter **2** are required for adapting to a fluid-filled termination.

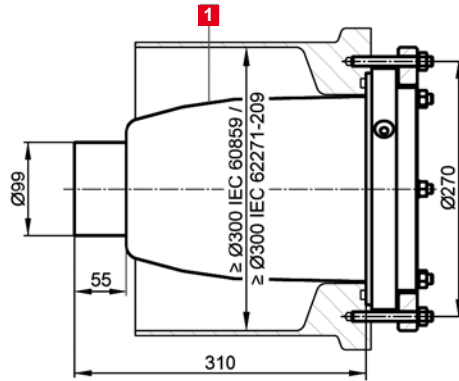


No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)
827 684 011	HV-CONNEX Sockets, Size 4, up to 72.5 kV	approx. 5	<b>1</b>
827 684 012	HV-CONNEX Sockets, Size 4, up to 72.5 kV	—	<b>1</b>
827 704 002	IEC extension adapter		<b>2</b>

All dimensions in mm unless otherwise noted.

**For dimensions according to IEC 62271-209 (former IEC 60859) for dry-type termination, Size 4**

Socket **1**, with or without voltage tap, is required for a standardised, dry-type termination.



No.	Product designation	Capacitive voltage tap (pF)
827 684 011	HV-CONNEX Sockets, Size 4, up to 72.5 kV	approx. 5 <b>1</b>
827 684 012	HV-CONNEX Sockets, Size 4, up to 72.5 kV	— <b>1</b>

Size 4

All dimensions in mm unless otherwise noted.



## HV-CONNEX sockets for transformers, Size 4, up to 72.5 kV, according to EN 50299

Depending on the type of termination, it is recommended to combine various products for installation in transformers, E-coils, joint boxes and other oil-insulated devices.

### HV-CONNEX socket

with or without voltage tap, including mounting material.

### IEC extension adapter

For adapting to conventional cable terminal units designed for wet-type cable termination systems in accordance with EN 50299.

### Corona shield

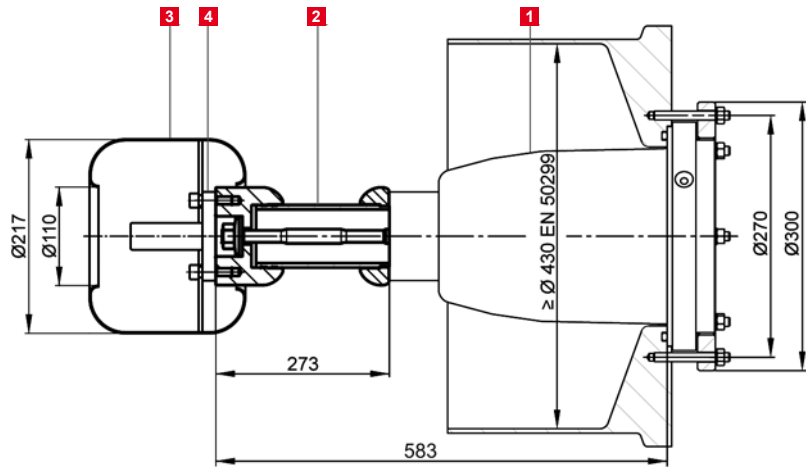
Protects against sharp-edged areas of the connection system.

### Take-off bolt

A silver-plated aluminium version is optionally available. Included in scope of delivery of transformer manufacturer as specified by EN 50299.

## For dimensions according to EN 50299 for conventional termination, Size 4

These components are required wherever a conventional termination is to be replaced: Socket **1**, with or without voltage tap, and extension adapter **2**. Corona shield **3** is optional. Take-off bolt **4** can be attached if required.

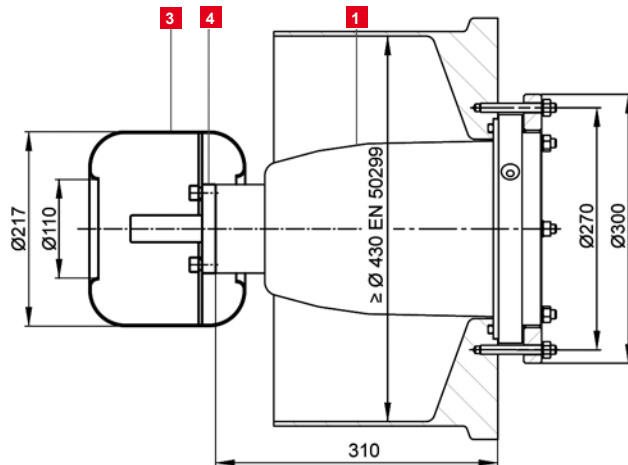


No.	Product designation	Capacitive voltage tap (pF)	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
827 684 011	HV-CONNEX Sockets, Size 4, up to 72.5 kV	approx. 5		<b>1</b>
827 684 012	HV-CONNEX Sockets, Size 4, up to 72.5 kV	—		<b>1</b>
827 704 002	IEC extension adapter			<b>2</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.

## Dimensions for compact design, Size 4

These components are required for a compact design:  
 Socket **1**, with or without voltage tap, is required.  
 Corona shield **3** is optional.  
 Take-off bolt **4** can be attached if required.



No.	Product designation	Capacitive voltage tap (pF)	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
827 684 011	HV-CONNEX Sockets, Size 4, up to 72.5 kV	approx. 5		<b>1</b>
827 684 012	HV-CONNEX Sockets, Size 4, up to 72.5 kV	—		<b>1</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

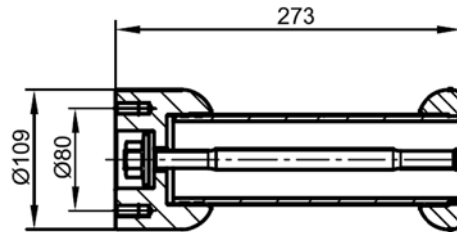
All dimensions in mm unless otherwise noted.

Size 4



## IEC Extension Adapter, Size 4

This extension is used for adapting the installation depth of the dry-type cable termination to conventional cable connection modules.

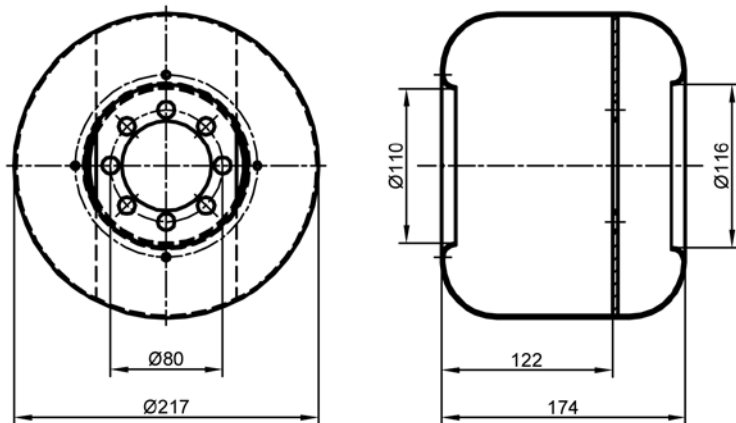


No.	IEC dimensions (mm)	Weight (kg)
827 704 002	583	7.5



## Corona shield for transformers

A corona shield is used to smoothen possible edges which may lead to an increased electrical field.

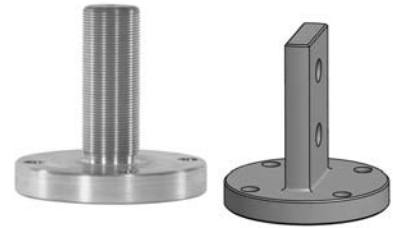
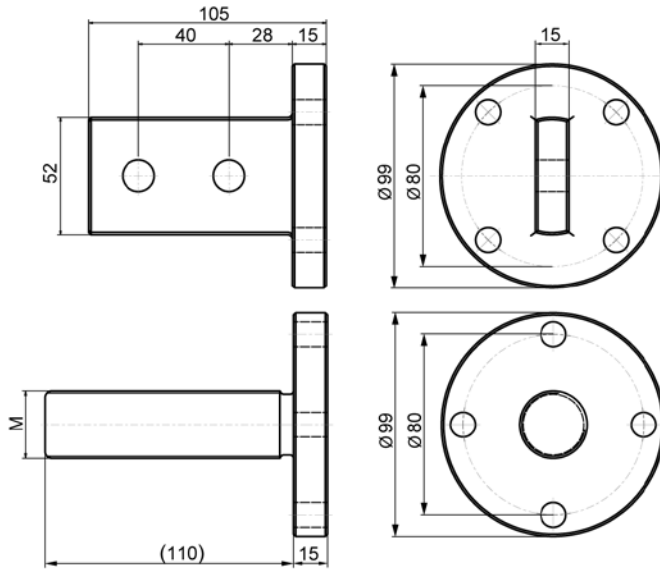


No.	ØR+10 (mm)	ØU (mm)	V (mm)	Weight (kg)
880 168 774	110	217	122	0.3

All dimensions in mm unless otherwise noted.

## Take-off-bolt

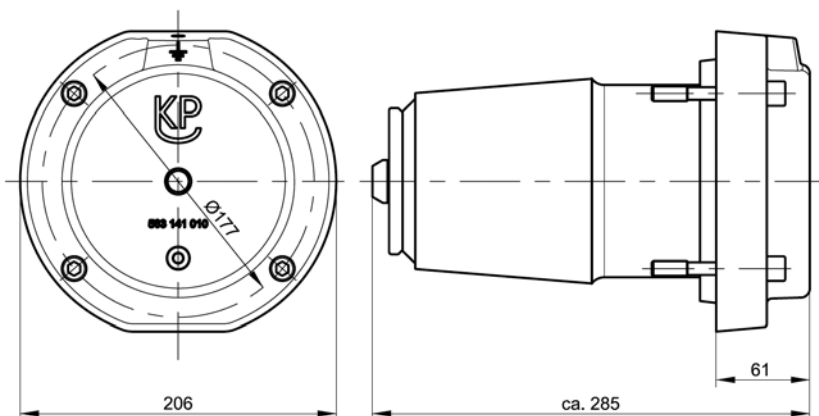
Optional.  
Conforming to EN 50299 included in scope of delivery of transformer manufacturer.  
Material: Aluminium, silver-plated



No.	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
880 266 147	M30 x 1,5	240 - 630
880 265 988	M42 x 1,5	800 - 1200
880 265 986	M52 x 2	≤ 2000
880 266 779	52 x 15	240 - 630

## Dummy Plug, Size 4

For sealing und voltage-proof closing of HV-CONNEX sockets.



No.	Weight (kg)
827 700 004	5.0

All dimensions in mm unless otherwise noted.

Size 4



## Gas-insulated Blind Cover, Size 4

For voltage-proof sealing of HV-CONNEX sockets with SF<sub>6</sub> gas.

No.	Manometer
827 714 001	with
827 714 002	without



## Cover Disk, Size 4

Not voltage-proof!

For protecting open HV-CONNEX sockets (e.g. transportation).  
Dust-proof and water-tight.

No.	Diameter Ø (mm)	Weight (kg)
827 220 104	200	1.1

## Lead, Size 4

The cable with flexible outdoor termination can be used for electrical tests on equipment fitted with HV-CONNEX sockets.

Other cable lengths and connecting cables with two CONNEX cable connectors available on request.

The specified values are maximum testing values that will result in increased wear when used as a testing cable, thus decreasing the expected service life.



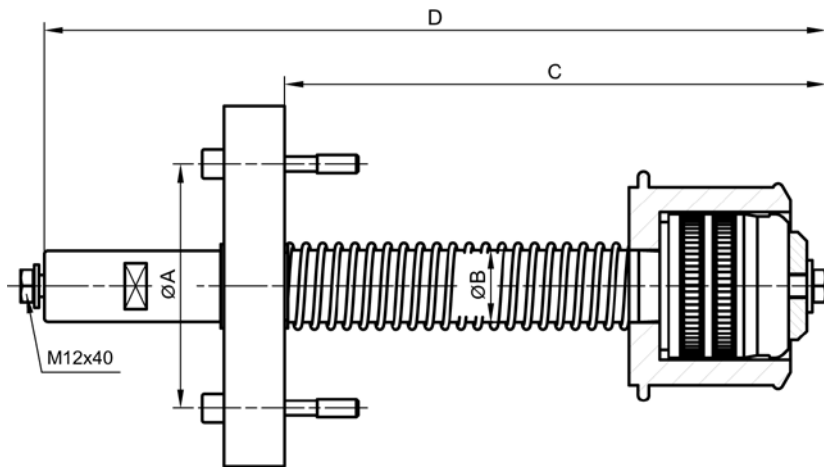
No.	Size	Nominal current $I_N$ (A)	Rated power frequency with-stand voltage	Rated lightning impulse with-stand voltage (BIL)	Partial discharge at $2x U_0$ (pC)	Cable cross section (mm <sup>2</sup> )	Length (m)
810 105 410	4	600	140	325	72 kV ≤ 2 pC	240	6

All dimensions in mm unless otherwise noted.



## Current Testing Plug, Size 4

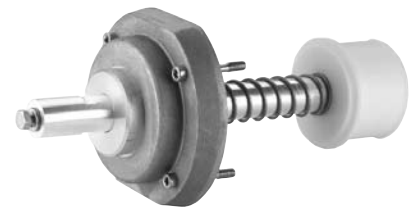
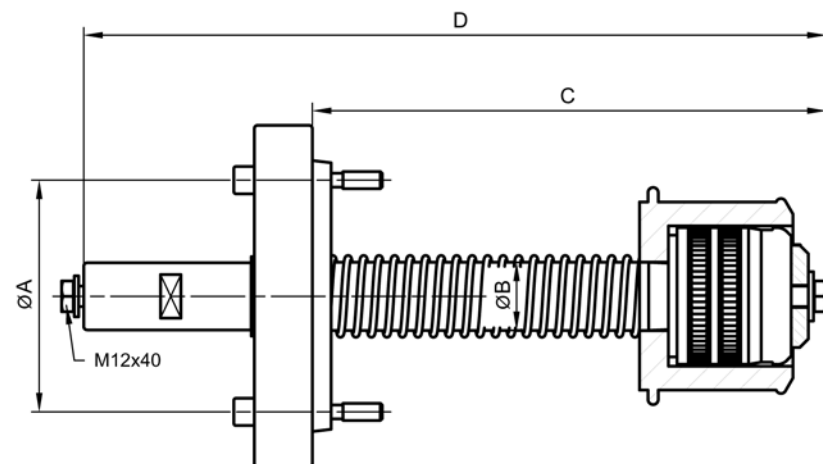
This plug is used to carry out current tests on switchgear, transformers, transducers etc. fitted with HV-CONNEX sockets.



No.	Size	Nominal current $I_N$ (A)	Max. testing voltage	A (mm)	B (mm)	C (mm)	D (mm)
827 093 004	4	1600	5	177	40	301	435

## Earthing and Short-circuit Devices for HV-CONNEX Sockets, Size 4

These devices are used to earth and short circuit equipment fitted with HV-CONNEX sockets (e. g. switchgear, transformers etc.).



No.	A (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)
827 086 004	177	40	301	435	10.5

All dimensions in mm unless otherwise noted.

III  
Size 4

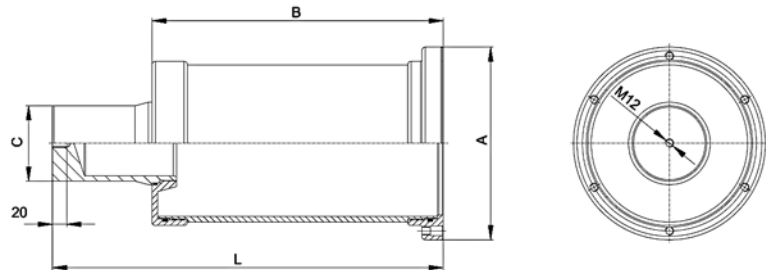


## Earthing and Protective Cap, Size 4

This device is used to earth and short circuit unplugged HV-CONNEX cable connectors.

- not voltage proof
- waterproof

For protection of unplugged HV-CONNEX cable connectors against damage and dirt.



No.	A (mm)	B (mm)	C (mm)	L (mm)	Weight (kg)
827 708 002	210	240	97	375	5.7

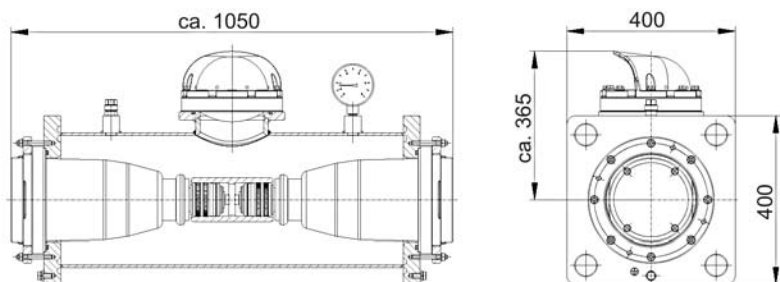


## HV-CONNEX Joint, Size 4

HV-CONNEX joint for testing and connecting cables terminated with HV-CONNEX cable connectors.

Insulation medium: SF<sub>6</sub> gas

The joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers. Voltage-proof dummy plugs to be ordered separately.



No.	Size	Max. operating voltage	Rated power frequency withstand voltage	Rated lightning impulse withstand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)			(mm)	(mm)	(kg)
827 049 010	4	72.5	140	325	400	1050	117.0

All dimensions in mm unless otherwise noted.

## HV-CONNEX T-Joint, Size 4

HV-CONNEX T-joint for branching cables terminated with HV-CONNEX cable connectors. Insulation medium: SF<sub>6</sub> gas  
 The T-joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers; voltage-proof dummy plugs to be ordered separately.

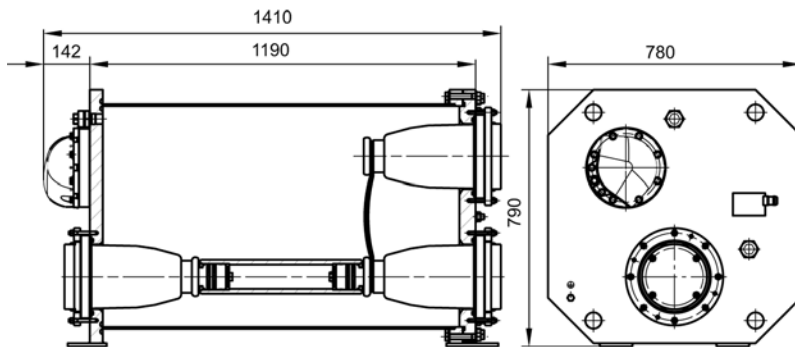


### Possible applications:

- Pluggable branching joint for HV cables
- Universal application options:  
 T-branching of one plastic-insulated cable to two plastic-insulated cables or  
 a overhead line to two plastic-insulated cables

### Properties:

- Metal clad
- Fully insulated
- High short-circuit strength
- Maintenance-free
- For outdoor use
- IP66
- Maintenance-free gas density monitor (manometer) with remote monitoring option
- Bursting disc
- Insulation medium SF<sub>6</sub>
- TÜV-tested joint-housing (TÜV is german Technical Inspection Association)
- Different sizes can be combined on request



No.	Size	Max. operating voltage	Rated power frequency withstand voltage	Rated lightning impulse withstand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)	1min (kV)	(kV)	(mm)	(mm)	(kg)
827 062 001	4	72.5	140	325	780	1410	595.0

All dimensions in mm unless otherwise noted.

III  
Size 4



## HV-CONNEX Cable Connectors, Size 5-S, up to 145 kV

The following options are available but must be specified when ordering:

### Low temperature

The standard components are designed for a temperature down to -25°C. A special low temperature grease is used for ambient conditions involving temperatures below -25°C.

### Offshore

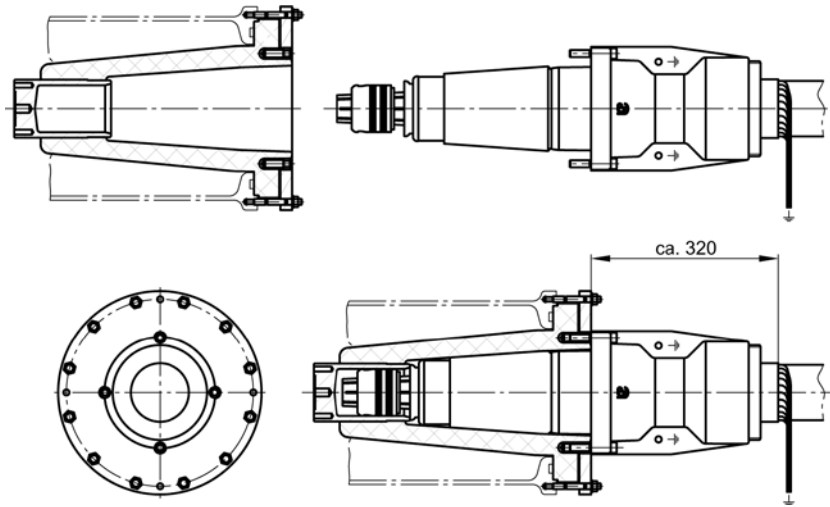
Components with corresponding material properties are used for offshore applications.

### Insulated cable shield

For insulated networks and usage of a Link Box. A touch proof system and flexibility were the main approach.

### Important:

Special tools are required for the assembly of HV-CONNEX cable connectors.



No.	Version <sup>1)</sup>	Cross section	Nominal	Conductor	Diameter over
		range <sup>2)</sup>	current	diameter	insulation
		(mm <sup>2</sup> )	I <sub>N</sub> (A)	Ø (mm)	Ø (mm)
859 999 999	XXXX <sup>1)</sup>	95 - 1600 <sup>2)</sup>	2500	9,3 - 50,4	36,0 - 76,0

<sup>1)</sup> Individual article number determined according to actual cable dimensions (see Form to determine HV-CONNEX Cable Connectors).

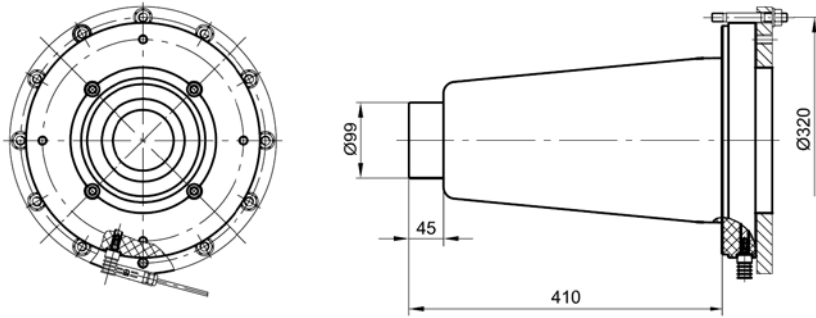
<sup>2)</sup> Cross section is only for reference purposes. Actual value is limited by min./max. diameter over conductor and min./max. diameter over insulation.

All dimensions in mm unless otherwise noted.

## HV-CONNEX Sockets, Size 5-S, up to 145 kV

For installation in:  
power circuit-breaker units, transformers, E-Coils, joints and other devices

Including fixing material.



No.	Capacitive voltage tap (pF)	Weight (kg)
827 691 116	1	32.0
827 695 101	—	32.0

All dimensions in mm unless otherwise noted.

III  
Size 5-S

# HV-CONNEX Pluggable Connection System



## HV-CONNEX sockets for GIS, Size 5-S, up to 145 kV, according to IEC 62271-209 (former IEC 60859)

Depending on the type of termination, it is recommended to combine various products for installation in switchgear, joint boxes and other gas-insulated devices.

### HV-CONNEX socket

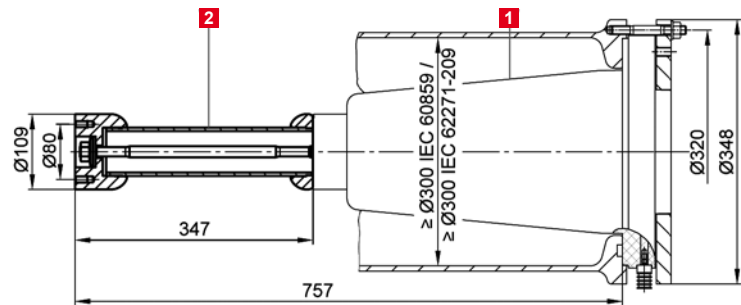
with or without voltage tap, including mounting material.

### IEC extension adapter

This IEC extension is used for adapting the installation depth of the dry-type cable termination to conventional cable terminal units.

## For dimensions according to IEC 62271-209 (former IEC 60859) for fluid-filled termination, Size 5-S

Socket **1**, with or without voltage tap, and the longer IEC extension adapter **2** are required for adapting to a fluid-filled termination.



## Accessories

No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)
827 695 101	HV-CONNEX Sockets, Size 5-S, up to 145 kV	—	<b>1</b>
827 691 116	HV-CONNEX Sockets, Size 5-S, up to 145 kV	1	<b>1</b>
827 704 001	IEC extension adapter		757 <b>2</b>

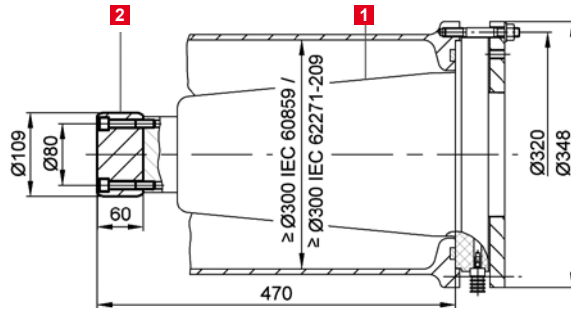
All dimensions in mm unless otherwise noted.



Size 5-S

**For dimensions according to IEC 62271-209 (former IEC 60859) for dry-type termination, Size 5-S**

Socket **1**, with or without voltage tap, and the shorter IEC extension adapter **2** are required for adapting to a dry-type termination.



No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)
827 695 101	HV-CONNEX Sockets, Size 5-S, up to 145 kV	—	<b>1</b>
827 691 116	HV-CONNEX Sockets, Size 5-S, up to 145 kV	1	<b>1</b>
827 702 002	IEC extension adapter		470 <b>2</b>

# HV-CONNEX Pluggable Connection System



## HV-CONNEX sockets for transformers, Size 5-S, up to 145 kV, according to EN 50299

Depending on the type of termination, it is recommended to combine various products for installation in transformers, E-coils, joint boxes and other oil-insulated devices.

### HV-CONNEX socket

with or without voltage tap, including mounting material.

### IEC extension adapter

For adapting to conventional cable terminal units designed for wet-type cable termination systems in accordance with EN 50299.

### Corona shield

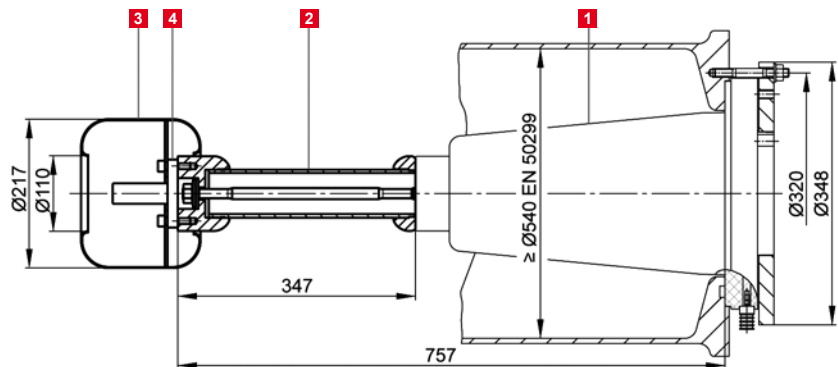
Protects against sharp-edged areas of the connection system.

### Take-off bolt

A silver-plated aluminium version is optionally available. Included in scope of delivery of transformer manufacturer as specified by EN 50299.

## For dimensions according to EN 50299 for conventional termination, Size 5-S

These components are required wherever a conventional termination is to be replaced: Socket **1**, with or without voltage tap, and extension adapter **2**. Corona shield **3** is optional. Take-off bolt **4** can be attached if required.



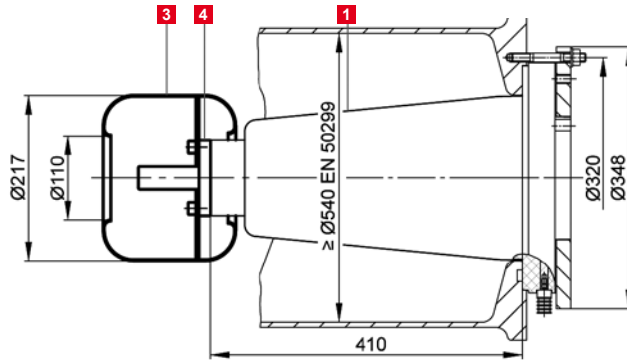
No.	Product designation	Capacitive voltage tap	Bolt size	Cross-sectional range
		(pF)		
827 695 101	HV-CONNEX Sockets, Size 5-S, up to 145 kV	—		<b>1</b>
827 691 116	HV-CONNEX Sockets, Size 5-S, up to 145 kV	1		<b>1</b>
827 704 001	IEC extension adapter			<b>2</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.



## Dimensions for compact design, Size 5-S

These components are required for a compact design:  
 Socket **1**, with or without voltage tap, is required.  
 Corona shield **3** is optional.  
 Take-off bolt **4** can be attached if required.



No.	Product designation	Capacitive voltage tap (pF)	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
827 695 101	HV-CONNEX Sockets, Size 5-S, up to 145 kV	—		<b>1</b>
827 691 116	HV-CONNEX Sockets, Size 5-S, up to 145 kV	1		<b>1</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.

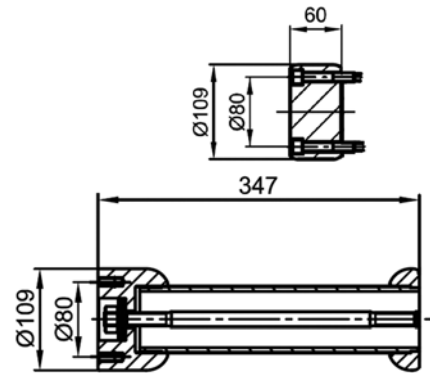


## 1 IEC Extension Adapter

This extension is used for adapting the installation depth of the dry-type cable termination to conventional cable connection modules.



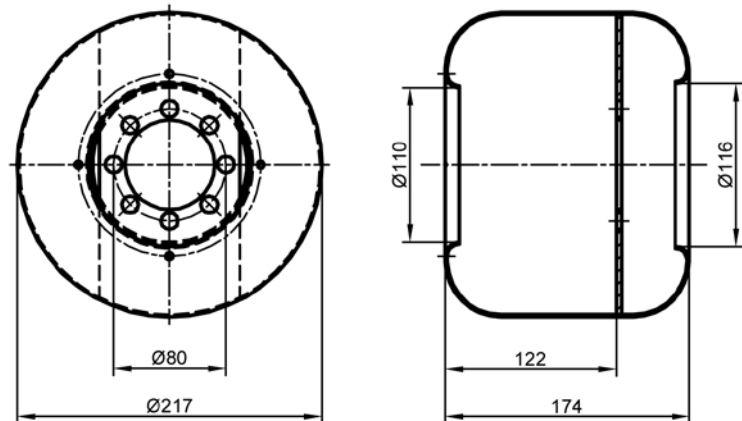
2



No.	IEC dimensions (mm)	Weight (kg)	
827 702 002	470	1.5	1
827 704 001	757	8.4	2

## Corona shield for transformers

A corona shield is used to smoothen possible edges which may lead to an increased electrical field.

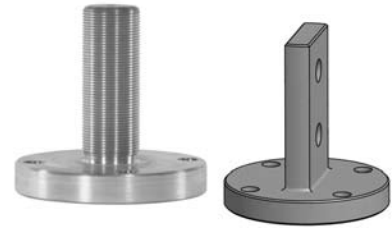
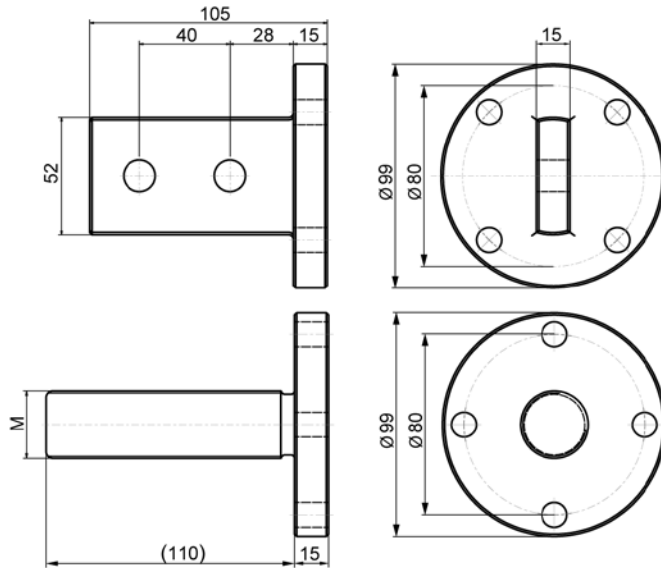


No.	ØR+10 (mm)	ØU (mm)	V (mm)	Weight (kg)
880 168 774	110	217	122	0.3

All dimensions in mm unless otherwise noted.

## Take-off-bolt

Optional.  
 Conforming to EN 50299 included in scope of delivery of transformer manufacturer.  
 Material: Aluminium, silver-plated



No.	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
880 266 147	M30 x 1,5	240 - 630
880 265 988	M42 x 1,5	800 - 1200
880 265 986	M52 x 2	≤ 2000
880 266 779	52 x 15	240 - 630

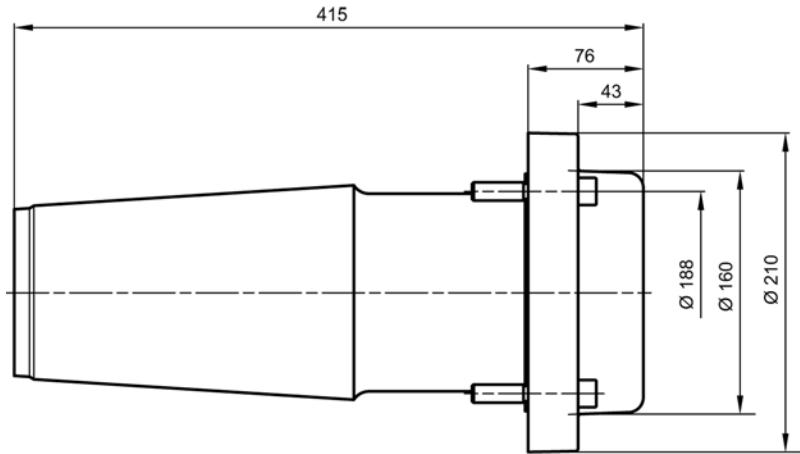
All dimensions in mm unless otherwise noted.

III  
 Size 5-S



## Dummy Plug, Size 5-S

For voltage-proof sealing of HV-CONNEX sockets.



No.	Weight (kg)
827 701 002	7.7



## Gas-insulated Blind Cover, Size 5-S

For voltage-proof sealing of HV-CONNEX sockets with SF<sub>6</sub> gas.

No.	Manometer
827 711 001	with
827 711 002	without



## Cover Disk, Size 5-S

Not voltage-proof!

For protecting open HV-CONNEX sockets (e.g. transportation).  
Dust-proof and water-tight.

No.	Diameter Ø (mm)	Weight (kg)
827 220 105	230	2.9

All dimensions in mm unless otherwise noted.

## Lead, Size 5-S

The cable with flexible outdoor termination can be used for electrical tests on equipment fitted with HV-CONNEX sockets.

Other cable lengths and connecting cables with two CONNEX cable connectors available on request.

The specified values are maximum testing values that will result in increased wear when used as a testing cable, thus decreasing the expected service life.

No.	Size	Nominal current $I_N$ (A)	Rated power frequency with-stand voltage 1min (kV)	Rated lightning impulse with-stand voltage (BIL) (kV)	Partial discharge at $2x U_0$ (pC)	Cable cross section (mm <sup>2</sup> )	Length (m)
810 105 510	5-S	700	275	550	$160 \text{ kV} \leq 5 \text{ pC}$	240	10



Size 5-S

All dimensions in mm unless otherwise noted.

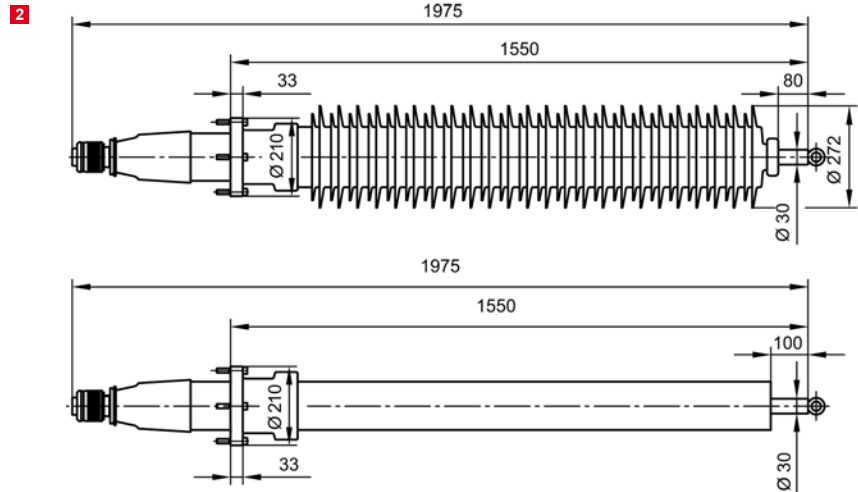
# HV-CONNEX Pluggable Connection System



## 1 HV-CONNEX Pluggable Bushing, Size 5-S

HV-CONNEX pluggable bushings are used for permanent operation or for carrying out voltage tests on equipment fitted with HV-CONNEX sockets. The pluggable bushings are equipped with a capacitive voltage tap.

Use as a test bushing will result in increased wear, thus decreasing the expected service life.



No.	Size	Rated Current $I_r$ (A)	Rated power frequency withstand voltage 1min (kV)	Rated lightning impulse withstand voltage (BIL) (kV)	Partial discharge at $2x U_0$ (pC)	creepage distance (mm)	Weight (kg)	
828 186 002	5-S	1250	275	650	$160 \text{ kV} \leq 5 \text{ pC}$	4495	85.0	1
828 186 004	5-S	1250	275	650	$160 \text{ kV} \leq 5 \text{ pC}$	1300	75.0	2

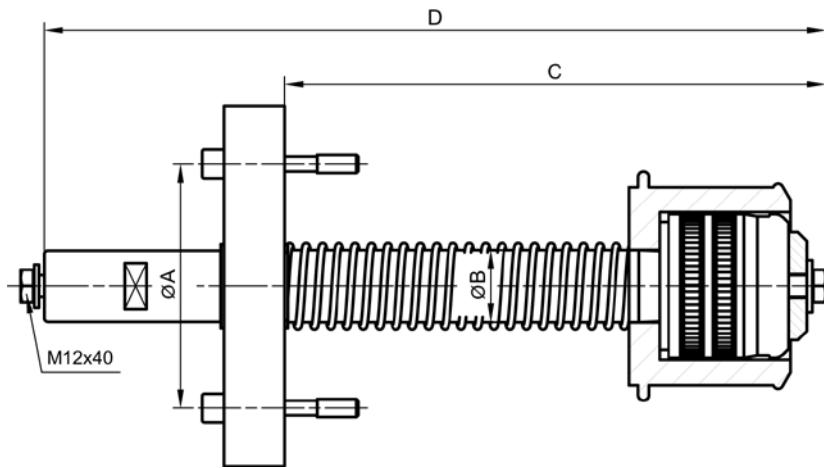
All dimensions in mm unless otherwise noted.

III

Size 5-S

## Current Testing Plug, Size 5-S

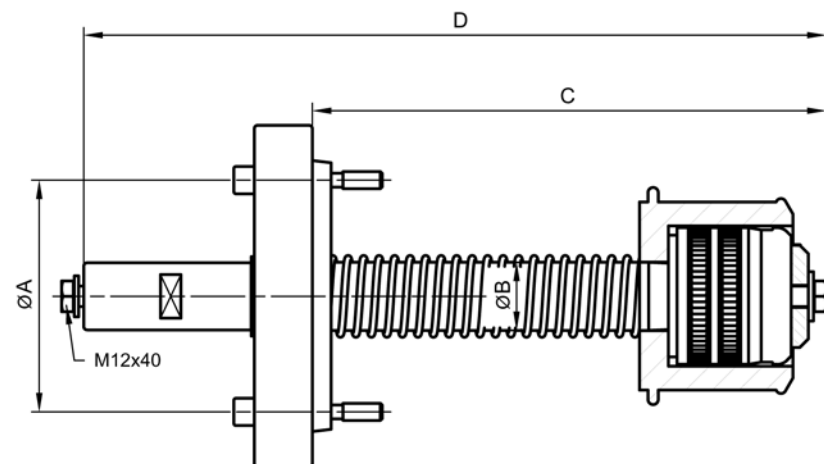
This plug is used to carry out current tests on switchgear, transformers, transducers etc. fitted with HV-CONNEX sockets.



No.	Size	Nominal current $I_N$ (A)	Max. testing voltage A	B	C	D
			(mm)	(mm)	(mm)	(mm)
827 093 005	5-S	1600	5	188	416	550

## Earthing and Short-circuit Devices for HV-CONNEX Sockets, Size 5-S

These devices are used to earth and short circuit equipment fitted with HV-CONNEX sockets (e. g. switchgear, transformers etc.).



No.	A	B	C	D
	(mm)	(mm)	(mm)	(mm)
827 086 005	188	40	416	550

All dimensions in mm unless otherwise noted.

III  
Size 5-S

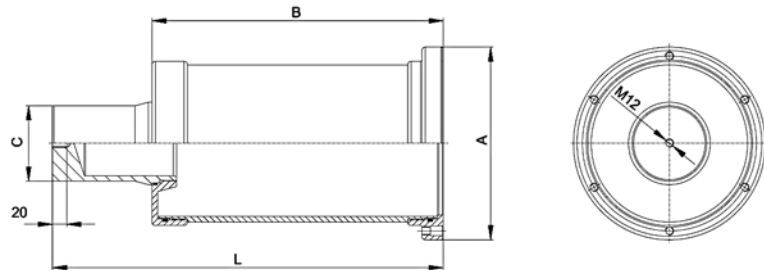


## Earthing and Protective Cap, Size 5-S

This device is used to earth and short circuit unplugged HV-CONNEX cable connectors.

- not voltage proof
- waterproof

For protection of unplugged HV-CONNEX cable connectors against damage and dirt.



No.	Size	Weight (kg)	A (mm)	B (mm)	C (mm)	L (mm)
827 708 001	5-S	6.5	220	355	97	490

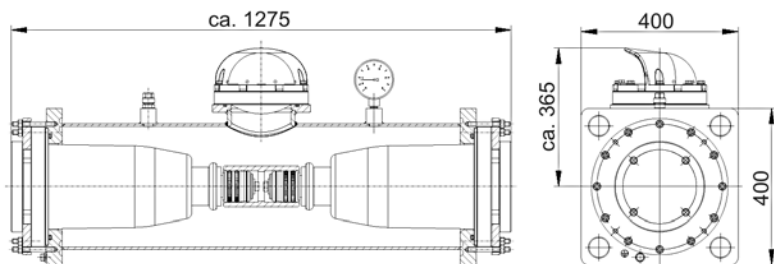


## HV-CONNEX Joint, Size 5-S

HV-CONNEX joint for testing and connecting cables terminated with HV-CONNEX cable connectors.

Insulation medium: SF<sub>6</sub> gas

The joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers. Voltage-proof dummy plugs to be ordered separately.



No.	Size	Max. operating voltage  U <sub>m</sub> (kV)	Rated power frequency withstand voltage	Rated lightning impulse withstand voltage (BIL)	Width (mm)	Length (mm)	Weight (kg)
827 052 010	5-S	145	275	550	400	1275	135.0

All dimensions in mm unless otherwise noted.



## HV-CONNEX T-joint, Size 5-S

HV-CONNEX T-joint for branching cables terminated with HV-CONNEX cable connectors. Insulation medium: SF<sub>6</sub> gas  
 The T-joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers; voltage-proof dummy plugs to be ordered separately.

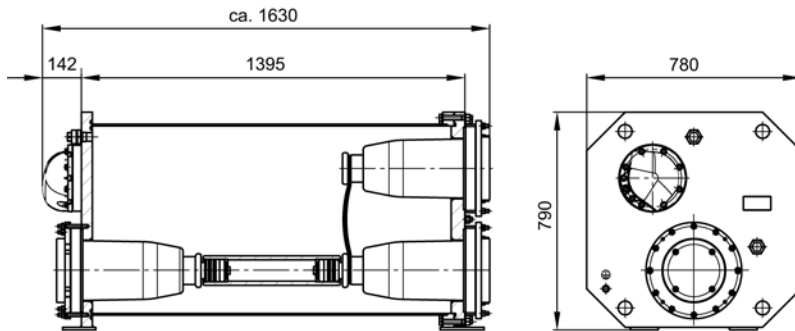


### Possible applications:

- Pluggable branching joint for HV cables
- Universal application options:  
 T-branching of one plastic-insulated cable to two plastic-insulated cables or  
 a overhead line to two plastic-insulated cables

### Properties:

- Metal clad
- Fully insulated
- High short-circuit strength
- Maintenance-free
- For outdoor use
- IP66
- Maintenance-free gas density monitor (manometer) with remote monitoring option
- Bursting disc
- Insulation medium SF<sub>6</sub>
- TÜV-tested joint-housing (TÜV is german Technical Inspection Association)
- Different sizes can be combined on request



No.	Size	Max. operating voltage	Rated power frequency withstand voltage	Rated lightning impulse withstand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)			(mm)	(mm)	(kg)
827 047 101	5-S	145	275	650	780	1630	665.0

All dimensions in mm unless otherwise noted.

III  
Size 5-S



## HV-CONNEX Cable Connectors, Size 6, up to 170 kV

The following options are available but must be specified when ordering:

### Low temperature

The standard components are designed for a temperature down to -25°C. A special low temperature grease is used for ambient conditions involving temperatures below -25°C.

### Offshore

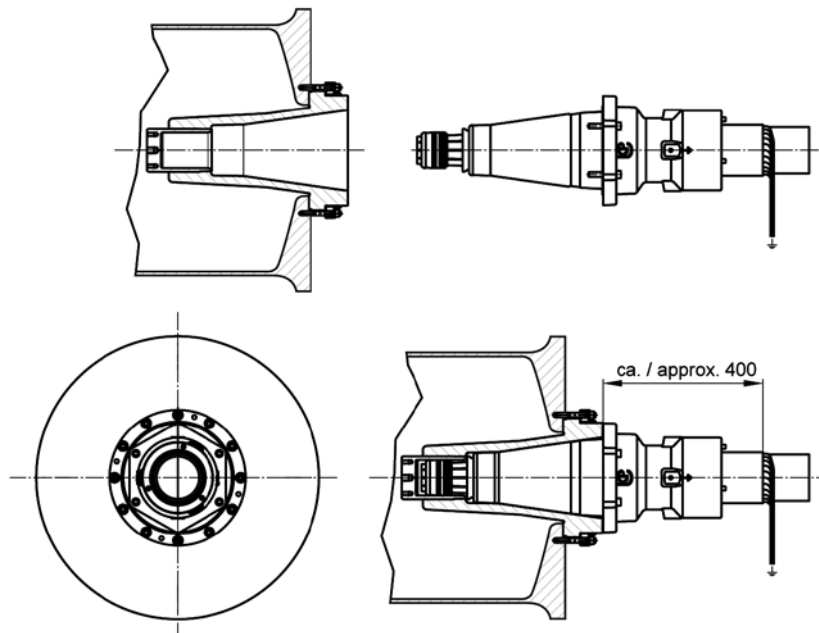
Components with corresponding material properties are used for offshore applications.

### Insulated cable shield

For insulated networks and usage of a Link Box. A touch proof system and flexibility were the main approach.

### Important:

Special tools are required for the assembly of HV-CONNEX cable connectors.



No.	Version <sup>1)</sup>	Cross section	Nominal	Conductor	Diameter over
		range <sup>2)</sup>	current	diameter	insulation
		(mm <sup>2</sup> )	I <sub>N</sub> (A)	Ø (mm)	Ø (mm)
869 999 999	XXXX <sup>1)</sup>	240 - 2500 <sup>2)</sup>	2500	15,3 - 64,9	53,0 - 110,5

<sup>1)</sup> Individual article number determined according to actual cable dimensions (see Form to determine HV-CONNEX Cable Connectors).

<sup>2)</sup> Cross section is only for reference purposes.

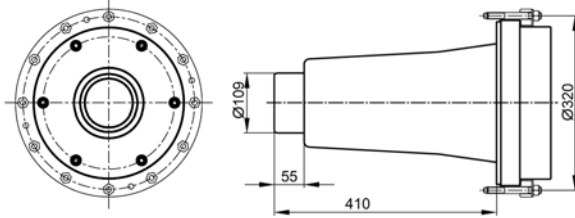
Actual value is limited by min./max. diameter over conductor and min./max. diameter over insulation.

All dimensions in mm unless otherwise noted.

## HV-CONNEX Sockets, Size 6, up to 170 kV

For installation in:  
power circuit-breaker units, transformers, E-Coils, joints and other devices

Including fixing material.



No.	Capacitive voltage tap (pF)	Weight (kg)
827 692 102	—	31.5
827 692 107	1	31.5

All dimensions in mm unless otherwise noted.



## HV-CONNEX sockets for GIS, Size 6, up to 170 kV, according to IEC 62271-209 (former IEC 60859)

Depending on the type of termination, it is recommended to combine various products for installation in switchgear, joint boxes and other gas-insulated devices.

### HV-CONNEX socket

with or without voltage tap, including mounting material.

#### ATTENTION:

Only the HV-CONNEX socket without a voltage tap is suitable for dimensions in accordance with IEC 60859.

### IEC extension adapter

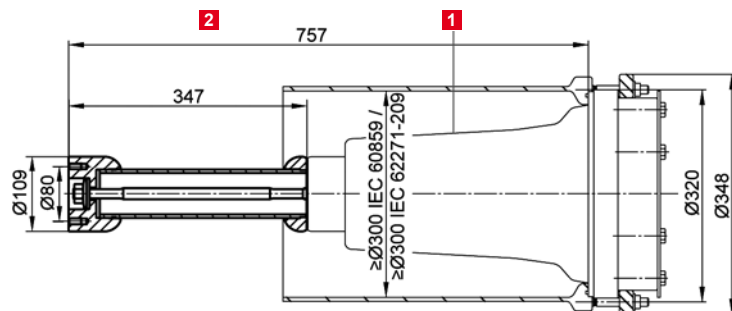
This IEC extension is used for adapting the installation depth of the dry-type cable termination to conventional cable terminal units.

## For dimensions according to IEC 62271-209 (former IEC 60859) for fluid-filled termination, Size 6

Socket **1**, with or without voltage tap, and the longer IEC extension adapter **2** are required for adapting to a fluid-filled termination.

#### ATTENTION:

Only the HV-CONNEX socket without a voltage tap is suitable for dimensions in accordance with IEC 60859.



No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)	Standards
827 692 102	HV-CONNEX Sockets, Size 6, up to 170 kV	—		IEC62271-209, IEC60859 <b>1</b>
827 692 107	HV-CONNEX Sockets, Size 6, up to 170 kV	1		IEC62271-209 <b>1</b>
827 704 001	IEC extension adapter		757	<b>2</b>

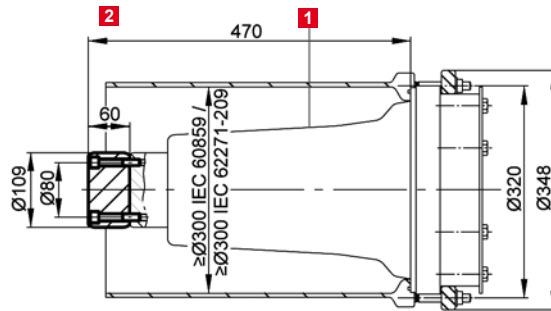
All dimensions in mm unless otherwise noted.

## For dimensions according to IEC 62271-209 (former IEC 60859) for dry-type termination, Size 6

Socket **1**, with or without voltage tap, and the shorter IEC extension adapter **2** are required for adapting to a dry-type termination.

### ATTENTION:

Only the HV-CONNEX socket without a voltage tap is suitable for dimensions in accordance with IEC 60859.



No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)	Standards
827 692 102	HV-CONNEX Sockets, Size 6, up to 170 kV	—		IEC62271-209, IEC60859 <b>1</b>
827 692 107	HV-CONNEX Sockets, Size 6, up to 170 kV	1		IEC62271-209 <b>1</b>
827 702 002	IEC extension adapter		470	<b>2</b>

All dimensions in mm unless otherwise noted.

# HV-CONNEX Pluggable Connection System



## HV-CONNEX sockets for transformers, Size 6, up to 170 kV, according to EN 50299

Depending on the type of termination, it is recommended to combine various products for installation in transformers, E-coils, joint boxes and other oil-insulated devices.

**HV-CONNEX socket**  
without voltage tap, including mounting material.

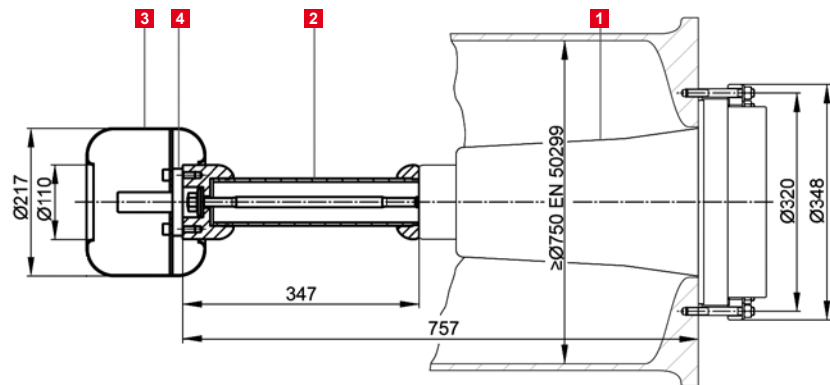
**IEC extension adapter**  
For adapting to conventional cable terminal units designed for wet-type cable termination systems in accordance with EN 50299.

**Corona shield**  
Protects against sharp-edged areas of the connection system.

**Take-off bolt**  
A silver-plated aluminium version is optionally available. Included in scope of delivery of transformer manufacturer as specified by EN 50299.

## For dimensions according to EN 50299 for conventional termination, Size 6

These components are required wherever a conventional termination is to be replaced: The socket **1** without voltage tap and the extension adapter **2**. Corona shield **3** is optional. Take-off bolt **4** can be attached if required.



No.	Product designation	Capacitive voltage tap	Bolt size	Cross-sectional range
		(pF)	(mm)	(mm <sup>2</sup> )
827 692 102	HV-CONNEX Sockets, Size 6, up to 170 kV	—		<b>1</b>
827 704 001	IEC extension adapter			<b>2</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.

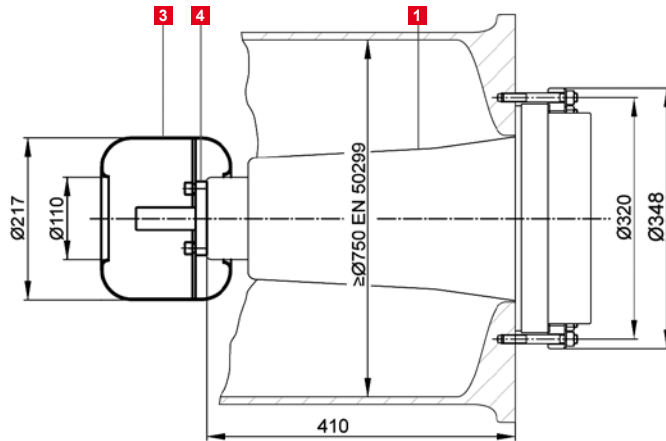
## Dimensions for compact design, Size 6

These components are required for a compact design:

Socket **1**, with or without voltage tap, is required.

Corona shield **3** is optional.

Take-off bolt **4** can be attached if required.



No.	Product designation	Capacitive voltage tap	Bolt size	Cross-sectional range
		(pF)	(mm)	(mm <sup>2</sup> )
827 692 102	HV-CONNEX Sockets, Size 6, up to 170 kV	—		<b>1</b>
827 692 107	HV-CONNEX Sockets, Size 6, up to 170 kV	1		<b>1</b>
880 168 774	Corona shield for transformers			<b>3</b>
880 266 147	Take-off-bolt		M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt		M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt		M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt		52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.

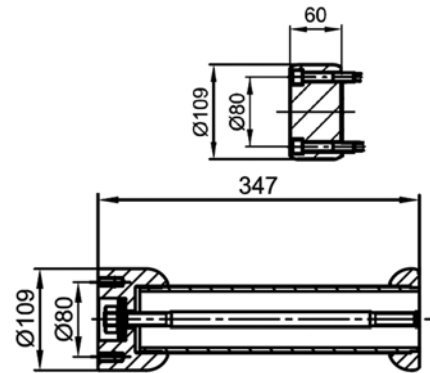


## 1 IEC Extension Adapter

This extension is used for adapting the installation depth of the dry-type cable termination to conventional cable connection modules.



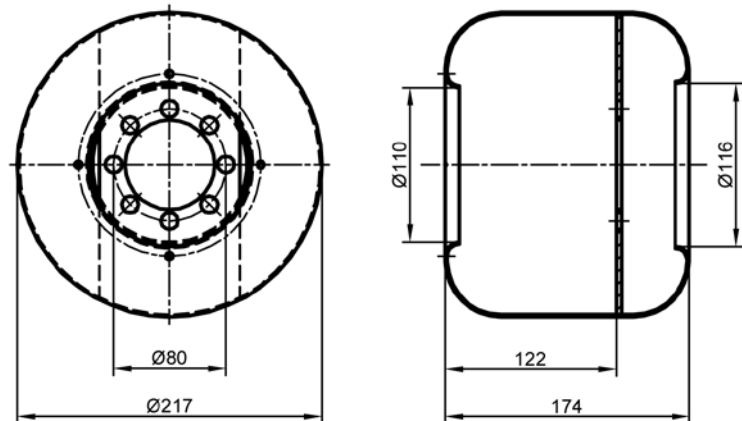
2



No.	IEC dimensions (mm)	Weight (kg)	
827 702 002	470	1.5	1
827 704 001	757	8.4	2

## Corona shield for transformers

A corona shield is used to smoothen possible edges which may lead to an increased electrical field.



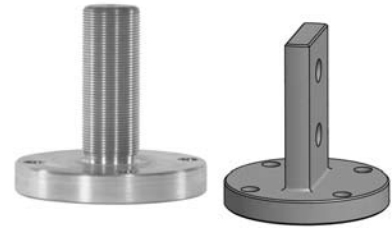
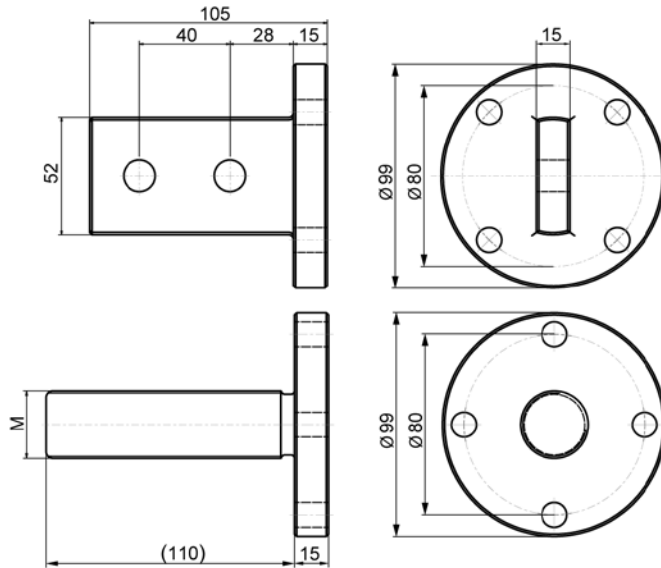
No.	ØR+10 (mm)	ØU (mm)	V (mm)	Weight (kg)
880 168 774	110	217	122	0.3

All dimensions in mm unless otherwise noted.



## Take-off-bolt

Optional.  
 Conforming to EN 50299 included in scope of delivery of transformer manufacturer.  
 Material: Aluminium, silver-plated



No.	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
880 266 147	M30 x 1,5	240 - 630
880 265 988	M42 x 1,5	800 - 1200
880 265 986	M52 x 2	≤ 2000
880 266 779	52 x 15	240 - 630

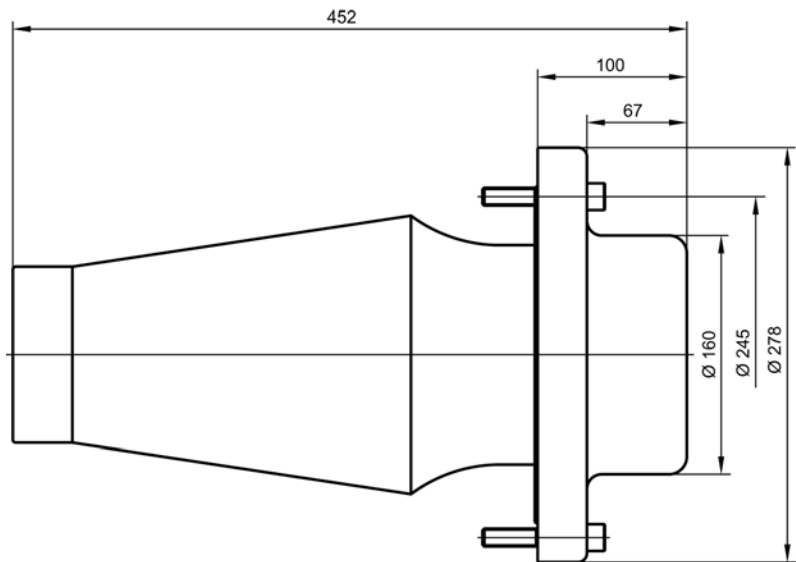
All dimensions in mm unless otherwise noted.

III  
 Size 6



## Dummy Plug, Size 6

For surge-proof sealing of HV-CONNEX sockets.



No.	Weight (kg)
827 706 002	13.2

## Gas-insulated Blind Cover, Size 6

For voltage-proof sealing of HV-CONNEX sockets with SF<sub>6</sub> gas.



No.	Manometer
827 716 002	with
827 716 002	without



## Cover Disk, Size 6

Not voltage-proof!  
For protecting open HV-CONNEX sockets (e.g. transportation).  
Dust-proof and water-tight.

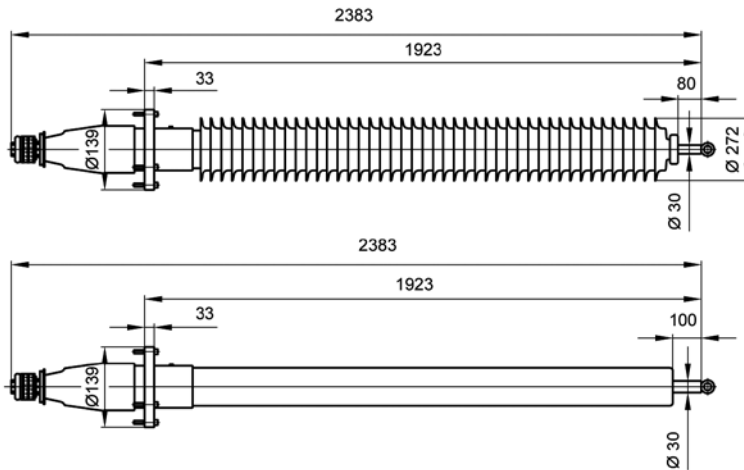
No.	Diameter Ø (mm)	Weight (kg)
827 220 106	280	3.2

All dimensions in mm unless otherwise noted.

## HV-CONNEX Pluggable Bushing, Size 6

HV-CONNEX pluggable bushings are used for permanent operation or for carrying out voltage tests on equipment fitted with HV-CONNEX sockets. The pluggable bushings are equipped with a capacitive voltage tap.

Use as a test bushing will result in increased wear, thus decreasing the expected service life.



No.	Size	Rated Current	Rated power frequency with-stand voltage	Rated lightning impulse with-stand voltage (BIL)	Partial discharge at $2x U_0$	creepage distance	Weight
		$I_r$ (A)	1min (kV)	(kV)	(pC)	(mm)	(kg)
828 187 009	6	1250	325	750	$170 \text{ kV} \leq 5 \text{ pC}$	5270	98.0 <b>1</b>
828 187 008	6	1250	325	750	$170 \text{ kV} \leq 5 \text{ pC}$	1500	86.0 <b>2</b>

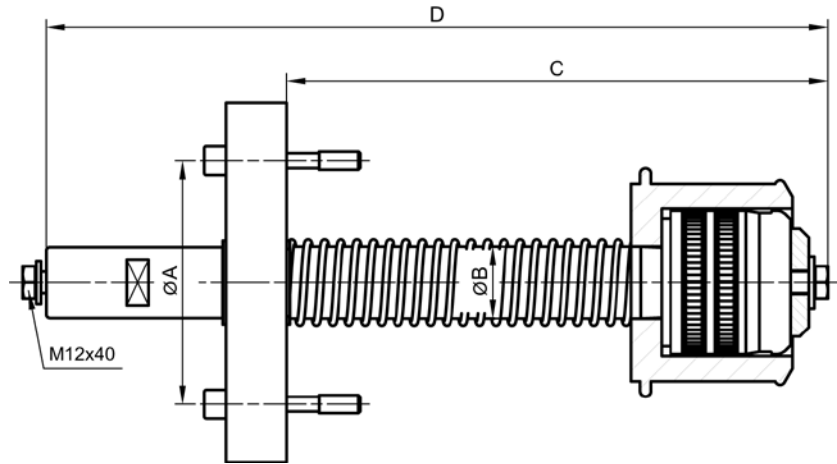
All dimensions in mm unless otherwise noted.

Size 6



## Current Testing Plug, Size 6

This plug is used to carry out current tests on switchgear, transformers, transducers etc. fitted with HV-CONNEX sockets.

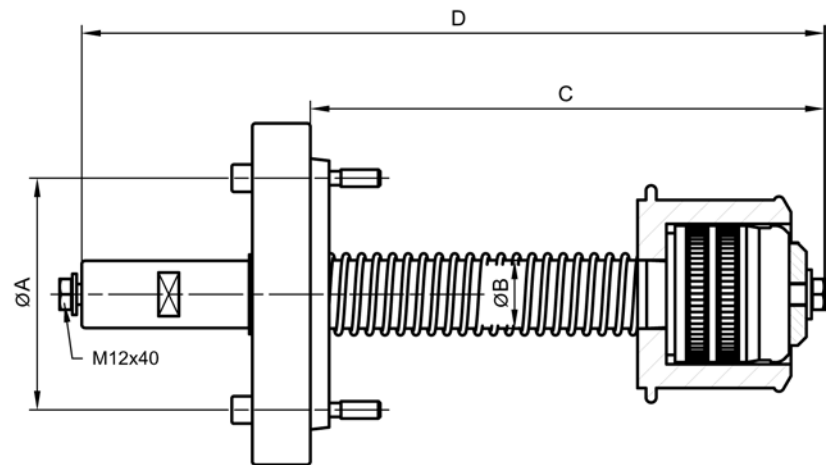


No.	Nominal current	Max. testing A voltage	B (mm)	C (mm)	D (mm)
	$I_N$ (A)	$U_m$ (kV)			
827 093 006	1600	5	245	451	585



## Earthing and Short-circuit Devices for HV-CONNEX Sockets, Size 6

These devices are used to earth and short circuit equipment fitted with HV-CONNEX sockets (e. g. switchgear, transformers etc.).



No.	A	B	C	D
	(mm)	(mm)	(mm)	(mm)
827 086 006	245	40	451	585

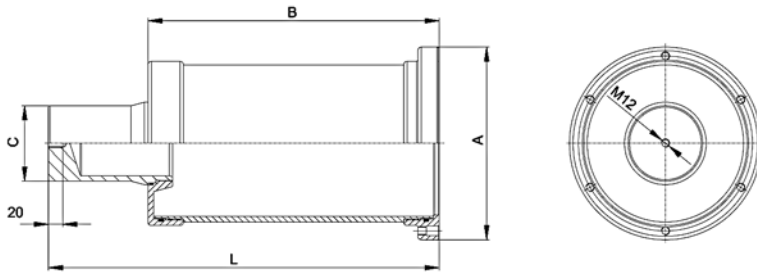
All dimensions in mm unless otherwise noted.

## Earthing and Protective Cap, Size 6

This device is used to earth and short circuit unplugged HV-CONNEX cable connectors.

- not voltage proof
- waterproof

For protection of unplugged HV-CONNEX cable connectors against damage and dirt.

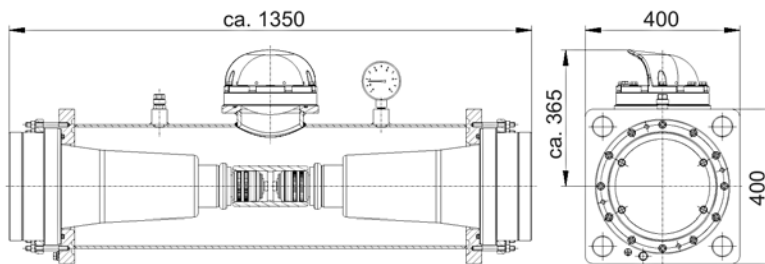


No.	A (mm)	B (mm)	C (mm)	L (mm)
827 708 003	270	410	105	550

## HV-CONNEX Joint, Size 6

HV-CONNEX joint for testing and connecting cables terminated with HV-CONNEX cable connectors. Insulation medium: SF<sub>6</sub> gas

The joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for +J400 remote display. The sockets are sealed with plastic covers. Voltage-proof dummy plugs to be ordered separately.



No.	Size	Max. operating voltage	Rated power frequency withstand voltage	Rated lightning impulse withstand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)	1min (kV)	(kV)	(mm)	(mm)	(kg)
827 053 010	6	170	325	750	400	1350	196.0

All dimensions in mm unless otherwise noted.

III  
Size 6



## HV-CONNEX T-Joint, Size 6

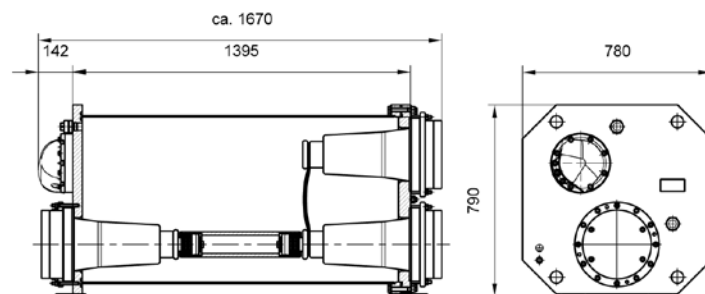
HV-CONNEX T-joint for branching cables terminated with HV-CONNEX cable connectors. Insulation medium: SF<sub>6</sub> gas  
 The T-joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers; voltage-proof dummy plugs to be ordered separately.

### Possible applications:

- Pluggable branching joint for HV cables
- Universal application options:  
 T-branching of one plastic-insulated cable to two plastic-insulated cables or a overhead line to two plastic-insulated cables

### Properties:

- Metal clad
- Fully insulated
- High short-circuit strength
- Maintenance-free
- For outdoor use
- IP66
- Maintenance-free gas density monitor (manometer) with remote monitoring option
- Bursting disc
- Insulation medium SF<sub>6</sub>
- TÜV-tested joint-housing (TÜV is german Technical Inspection Association)
- Different sizes can be combined on request



No.	Size	Max. operating voltage	Rated power frequency with-stand voltage	Rated lightning impulse with-stand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)			(mm)	(mm)	(kg)
827 057 001	6	170	325	750	780	1670	697.0

All dimensions in mm unless otherwise noted.

## HV-CONNEX Cable Connectors, Size 6-S, up to 245 kV

The following options are available but must be specified when ordering:

### Low temperature

The standard components are designed for a temperature down to -25°C. A special low temperature grease is used for ambient conditions involving temperatures below -25°C.

### Offshore

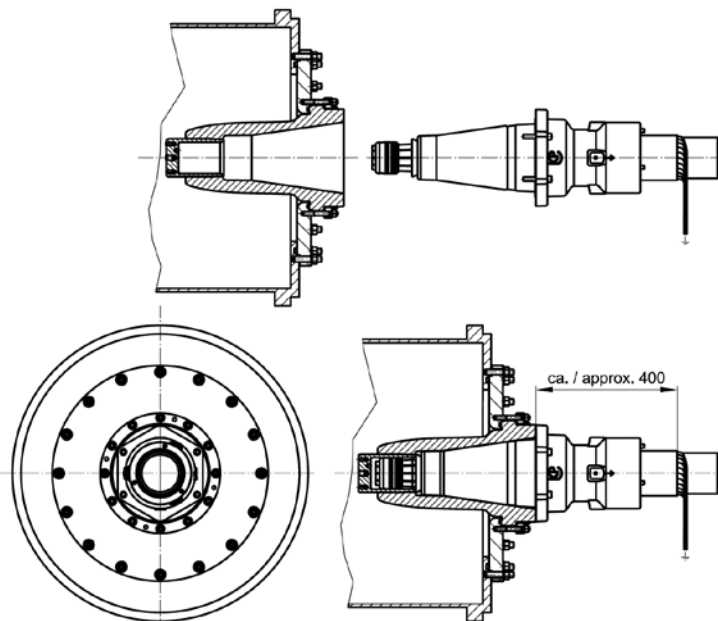
Components with corresponding material properties are used for offshore applications.

### Insulated cable shield

For insulated networks and usage of a Link Box. A touch proof system and flexibility were the main approach.

### Important:

Special tools are required for the assembly of HV-CONNEX cable connectors.



No.	Version <sup>1)</sup>	Cross section	Nominal	Conductor	Diameter over
		range <sup>2)</sup>	current	diameter	insulation
		(mm <sup>2</sup> )	I <sub>N</sub> (A)	Ø (mm)	Ø (mm)
869 999 999	XXXX <sup>1)</sup>	240 - 2500 <sup>2)</sup>	2500	15.3 - 64.9	53.0 - 110.5

<sup>1)</sup> Individual article number determined according to actual cable dimensions (see Form to determine HV-CONNEX Cable Connectors).

<sup>2)</sup> Cross section is only for reference purposes. Actual value is limited by min./max. diameter over conductor and min./max. diameter over insulation.

All dimensions in mm unless otherwise noted.

Size 6-S

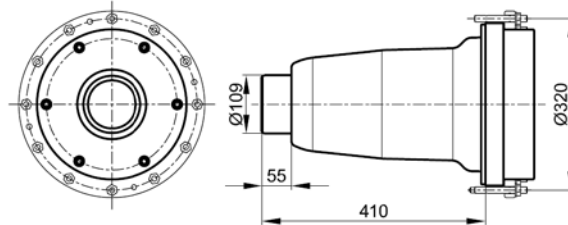
# HV-CONNEX Pluggable Connection System



## HV-CONNEX Sockets, Size 6-S, up to 245 kV

For installation in:  
power circuit-breaker units, transformers, E-Coils, joints and other devices

Including fixing material.



No.	Capacitive voltage tap (pF)	Reducing flange according to IEC60859	Reducing flange according to IEC62271-209	Weight (kg)
827 693 002	—	565554003	565554004	31.5
827 693 005	1	565554003	565554004	31.5

All dimensions in mm unless otherwise noted.

III

Size 6-S



## HV-CONNEX sockets for GIS, Size 6-S, up to 245 kV, according to IEC 62271-209 (former IEC 60859)

Depending on the type of termination, it is recommended to combine various products for installation in switchgear, joint boxes and other gas-insulated devices.

### Flange

To adapt HV-CONNEX Socket Size 6-S to conventional design according to the relevant standard. (Additional O-ring is needed, to be ordered separately.)

### HV-CONNEX socket

with or without voltage tap, including mounting material.

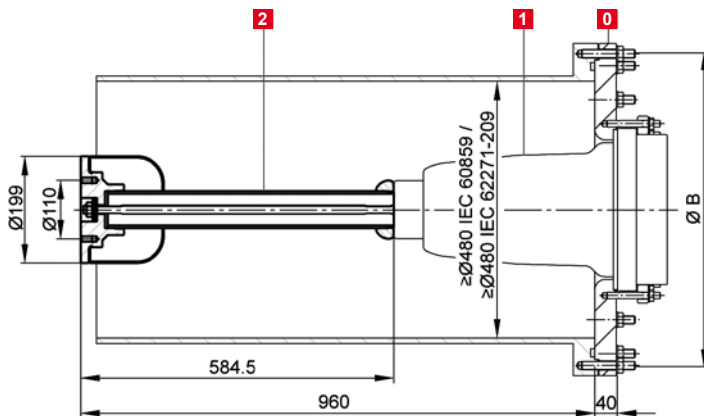
### IEC extension adapter

This IEC extension is used for adapting the installation depth of the dry-type cable termination to conventional cable terminal units.



## For dimensions according to IEC 62271-209 (former IEC 60859) for fluid-filled termination, Size 6-S

Adapter flange **0**, socket **1**, with or without voltage tap, and the longer IEC extension adapter **2** are required for adapting to a fluid-filled termination.



No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)	Dimension B B (mm)
565 554 003	Flange, Size 6-S	—		582 <b>0</b>
827 693 002	HV-CONNEX Sockets, Size 6-S, up to 245 kV	—		<b>1</b>
827 693 005	HV-CONNEX Sockets, Size 6-S, up to 245 kV	1		<b>1</b>
827 707 001	IEC extension adapter		960	<b>2</b>

All dimensions in mm unless otherwise noted.

III  
Size 6-S

## For dimensions according to IEC 62271-209 (former IEC 60859) for dry-type termination, Size 6-S

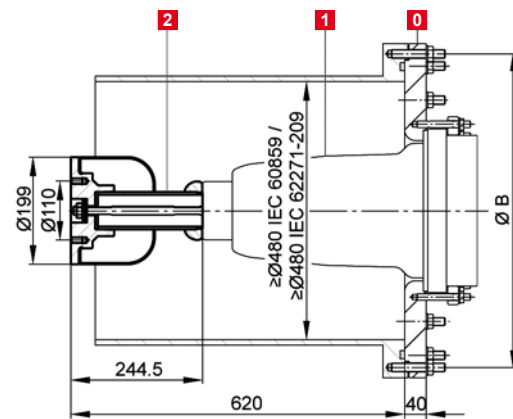
Adapter flange **0**, socket **1**, with or without voltage tap, and the shorter IEC extension adapter **2** are required for adapting to a dry-type termination.

### ATTENTION:

The required adapter flange differs depending on the standard.

The following adapter flanges are required for the IEC dimensions listed below:

- IEC 62271-209: Order No. 565 554 004
- IEC 60859: Order No. 565 554 003



No.	Product designation	Capacitive voltage tap (pF)	IEC dimensions (mm)	Dimension B B (mm)
565 554 004	Flange, Size 6-S			<b>0</b>
565 554 003	Flange, Size 6-S			<b>0</b>
827 693 002	HV-CONNEX Sockets, Size 6-S, — up to 245 kV			<b>1</b>
827 693 005	HV-CONNEX Sockets, Size 6-S, 1 up to 245 kV			<b>1</b>
827 707 002	IEC extension adapter		620	<b>2</b>

All dimensions in mm unless otherwise noted.

## HV-CONNEX sockets for transformers, Size 6-S, up to 245 kV, according to EN 50299

Depending on the type of termination, it is recommended to combine various products for installation in transformers, E-coils, joint boxes and other oil-insulated devices.

### Flange

To adapt HV-CONNEX Socket Size 6-S to conventional design according to the relevant standard. (Additional O-ring is needed, to be ordered separately.)

### HV-CONNEX socket

with or without voltage tap, including mounting material.

### IEC extension adapter

For adapting to conventional cable terminal units designed for wet-type cable termination systems in accordance with EN 50299.

### Corona shield

Protects against sharp-edged areas of the connection system.

### Take-off bolt

A silver-plated aluminium version is optionally available. Included in scope of delivery of transformer manufacturer as specified by EN 50299.



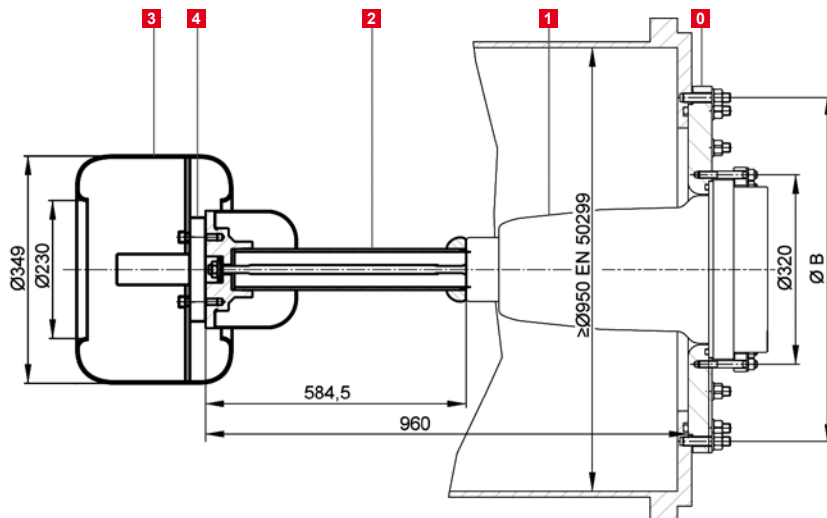
## For dimensions according to EN 50299 for conventional termination, Size 6-S

These components are required wherever a conventional termination is to be replaced:

Adapter flange **0**, socket **1**, with or without voltage tap, and extension adapter **2**

Corona shield **3** is optional.

Take-off bolt **4** can be attached if required.



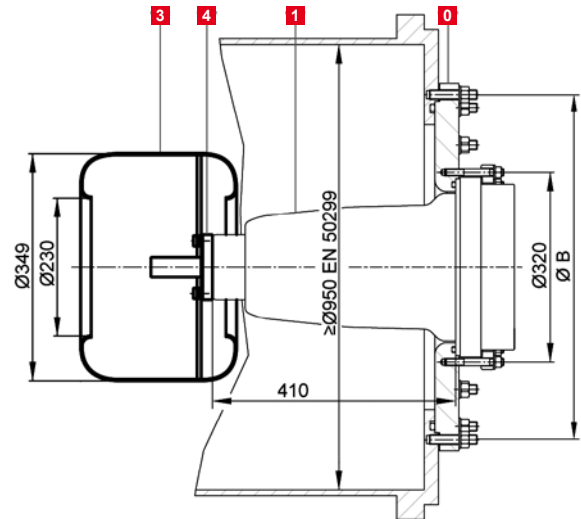
No.	Product designation	Capacitive voltage tap (pF)	Dimension B B (mm)
565 554 003	Flange, Size 6-S		582
827 693 002	HV-CONNEX Sockets, Size 6-S, — up to 245 kV		
827 693 005	HV-CONNEX Sockets, Size 6-S, 1 up to 245 kV		
827 707 001	IEC extension adapter		
565 568 002	Corona shield for transformers		

All dimensions in mm unless otherwise noted.

III  
Size 6-S

## Dimensions for compact design, Size 6-S

These components are required for a compact design:  
 Adapter flange **0**, socket **1**, with or without voltage tap.  
 Corona shield **3** is optional.  
 Take-off bolt **4** can be attached if required.

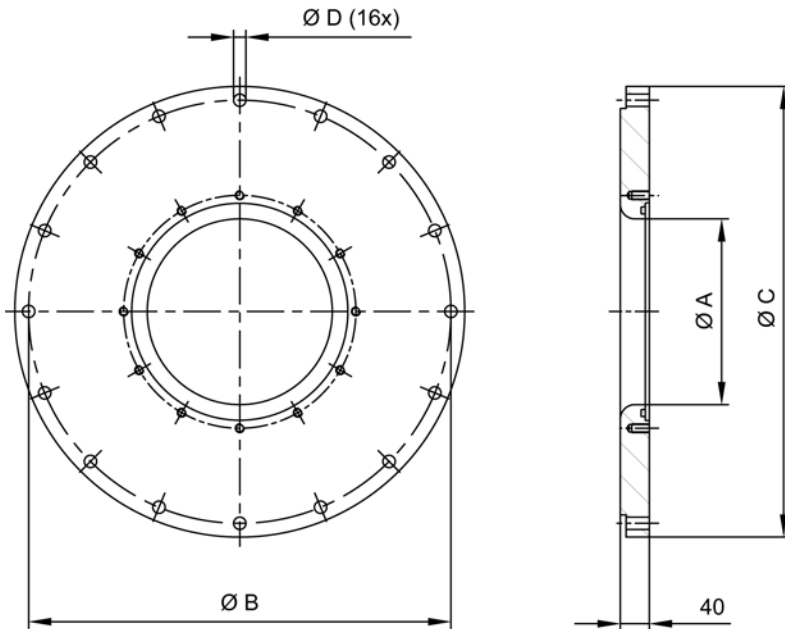


No.	Product designation	Capacitive voltage tap	Dimension B	Bolt size	Cross-sectional range
		(pF)	B (mm)		
565 554 003	Flange, Size 6-S		582		<b>0</b>
565 554 004	Flange, Size 6-S		475		<b>0</b>
827 693 002	HV-CONNEX Sockets, Size 6-S, up to 245 kV	—			<b>1</b>
827 693 005	HV-CONNEX Sockets, Size 6-S, up to 245 kV	1			<b>1</b>
565 568 002	Corona shield for trans- formers				<b>3</b>
880 266 147	Take-off-bolt			M30 x 1,5	240 - 630 <b>4</b>
880 265 988	Take-off-bolt			M42 x 1,5	800 - 1200 <b>4</b>
880 265 986	Take-off-bolt			M52 x 2	≤ 2000 <b>4</b>
880 266 779	Take-off-bolt			52 x 15	240 - 630 <b>4</b>

All dimensions in mm unless otherwise noted.

## Flange, Size 6-S

To adapt HV-CONNEX Socket Size 6-S to conventional design according to the relevant standard. (Additional O-ring is needed, to be ordered separately.)



No.	Dimension A	Dimension B	Dimension C	Dimension D	Suitable for socket
	A (mm)	B (mm)	C (mm)	D (mm)	
565 554 003	255	582	620	17	827 693 002 827 693 005
565 554 004	255	475	500	13	827 693 002 827 693 005

All dimensions in mm unless otherwise noted.

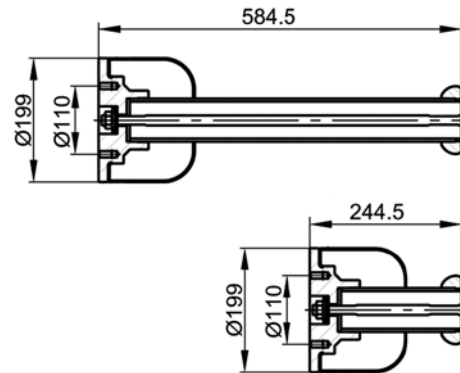
III  
Size 6-S



## 1 IEC Extension Adapter, Size 6-S

This extension is used for adapting the installation depth of the dry-type cable termination to conventional cable connection modules.

2

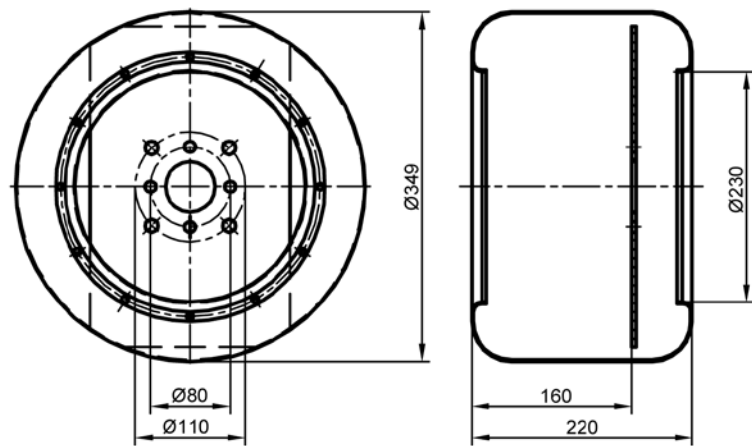


No.	IEC dimensions (mm)	Weight (kg)	
827 707 001	960	16.9	1
827 707 002	620	13.7	2



## Corona shield for transformers

A corona shield is used to smoothen possible edges which may lead to an increased electrical field.

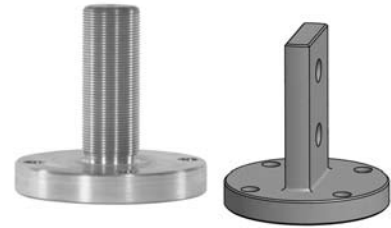
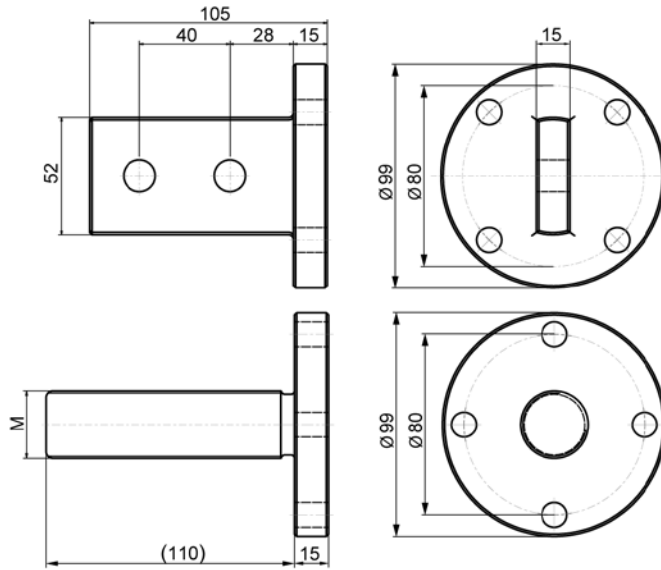


No.	ØR+10 (mm)	ØU (mm)	V (mm)	Weight (kg)
565 568 002	230	349	160	1.9

All dimensions in mm unless otherwise noted.

## Take-off-bolt

Optional.  
 Conforming to EN 50299 included in scope of delivery of transformer manufacturer.  
 Material: Aluminium, silver-plated



No.	Bolt size (mm)	Cross-sectional range (mm <sup>2</sup> )
880 266 147	M30 x 1,5	240 - 630
880 265 988	M42 x 1,5	800 - 1200
880 265 986	M52 x 2	≤ 2000
880 266 779	52 x 15	240 - 630

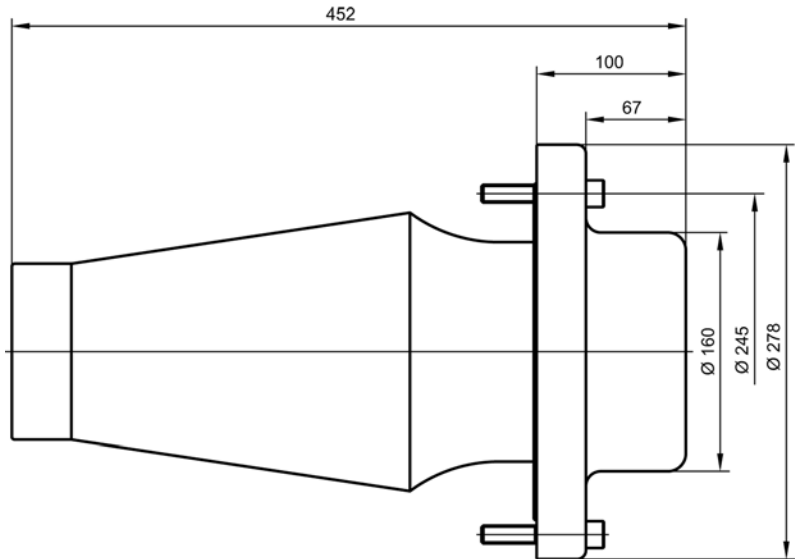
All dimensions in mm unless otherwise noted.

III  
 Size 6-S



## Dummy Plug, Size 6-S

For surge-proof sealing of HV-CONNEX sockets.



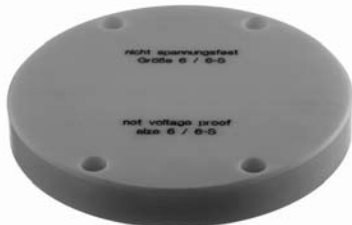
No.	Weight (kg)
827 706 001	13.2



## Gas-insulated Blind Cover, Size 6-S

For voltage-proof sealing of HV-CONNEX sockets with SF<sub>6</sub> gas.

No.	Manometer
827 716 001	with
827 716 002	without



## Cover Disk, Size 6-S

Not voltage-proof!  
For protecting open HV-CONNEX sockets (e.g. transportation).  
Dust-proof and water-tight.

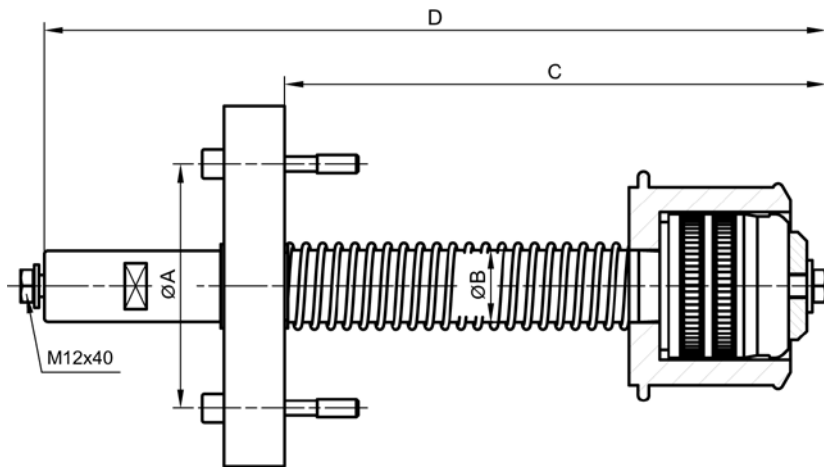
No.	Diameter Ø (mm)	Weight (kg)
827 220 106	280	3.2

All dimensions in mm unless otherwise noted.



## Current Testing Plug, Size 6-S

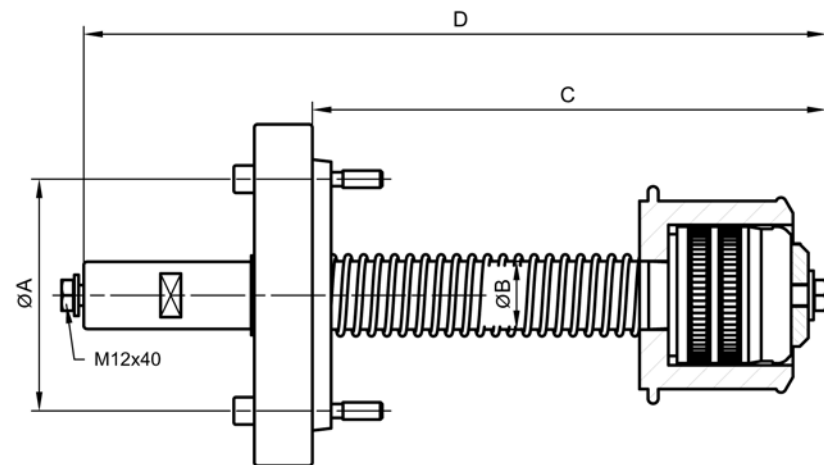
This plug is used to carry out current tests on switchgear, transformers, transducers etc. fitted with HV-CONNEX sockets.



No.	Nominal current $I_N$ (A)	Max. testing voltage $U_m$ (kV)	A (mm)	B (mm)	C (mm)	D (mm)
827 093 006	1600	5	245	40	451	585

## Earthing and Short-circuit Devices for HV-CONNEX Sockets, Size 6-S

These devices are used to earth and short circuit equipment fitted with HV-CONNEX sockets (e. g. switchgear, transformers etc.).



No.	A (mm)	B (mm)	C (mm)	D (mm)
827 086 006	245	40	451	585

All dimensions in mm unless otherwise noted.

III  
Size 6-S

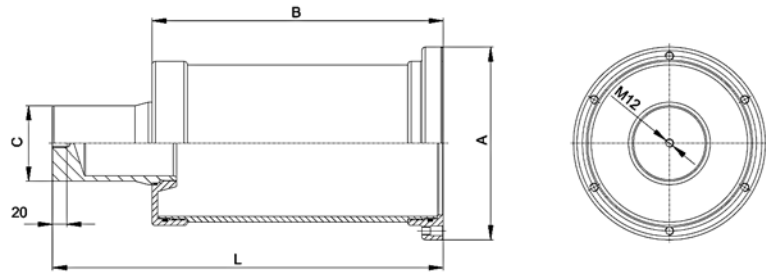


## Earthing and Protective Cap, Size 6-S

This device is used to earth and short circuit unplugged HV-CONNEX cable connectors.

- not voltage proof
- waterproof

For protection of unplugged HV-CONNEX cable connectors against damage and dirt.



No.	A (mm)	B (mm)	C (mm)	L (mm)
827 708 003	270	410	105	550

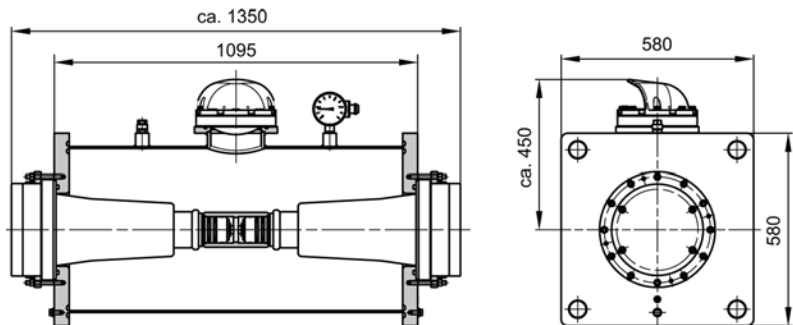


## HV-CONNEX Joint, Size 6-S

HV-CONNEX joint for testing and connecting cables terminated with HV-CONNEX cable connectors.

Insulation medium: SF<sub>6</sub> gas

The joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers. Voltage-proof dummy plugs to be ordered separately.



No.	Size	Max. operating voltage U <sub>m</sub> (kV)	Rated power frequency with-stand voltage 1min (kV)	Rated lightning impulse with-stand voltage (BIL) (kV)	Weight (kg)
827 059 010	6-S	245	460	1050	348.0

All dimensions in mm unless otherwise noted.

## HV-CONNEX T-Joint, Size 6-S

HV-CONNEX T-joint for branching cables terminated with HV-CONNEX cable connectors. Insulation medium: SF<sub>6</sub> gas  
 The T-joint features a turnable anti-burst device and a SF<sub>6</sub> gas density monitor with signal generator for remote display. The sockets are sealed with plastic covers; voltage-proof dummy plugs to be ordered separately.

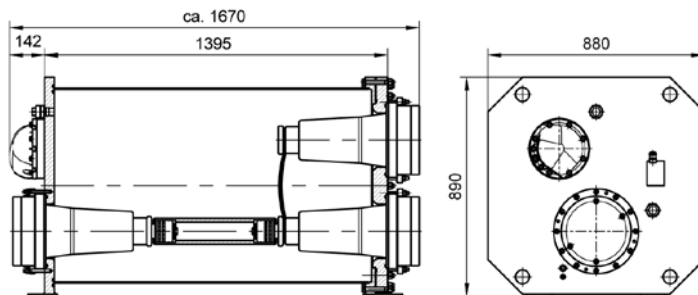


### Possible applications:

- Pluggable branching joint for HV cables
- Universal application options:  
 T-branching of one plastic-insulated cable to two plastic-insulated cables or  
 a over head line to two plastic-insulated cables

### Properties:

- Metal clad
- Fully insulated
- High short-circuit strength
- Maintenance-free
- For outdoor use
- IP66
- Maintenance-free gas density monitor (manometer) with remote monitoring option
- Bursting disc
- Insulation medium SF<sub>6</sub>
- TÜV-tested joint-housing (TÜV is german Technical Inspection Association)
- Different sizes can be combined on request



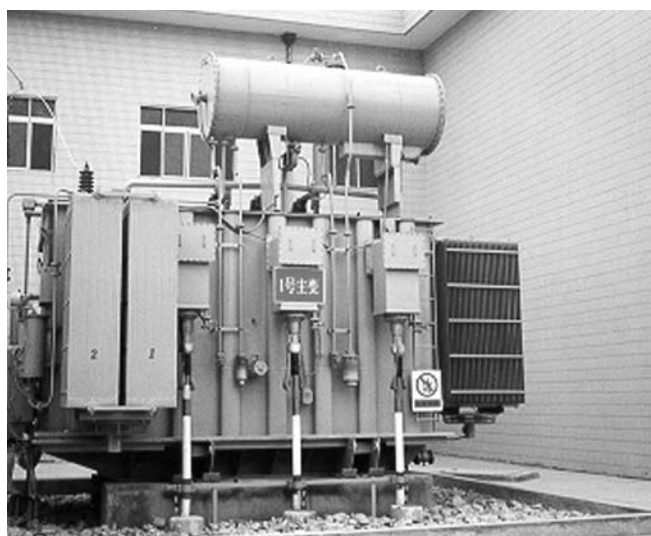
No.	Size	Max. operating voltage	Rated power frequency with-stand voltage	Rated lightning impulse with-stand voltage (BIL)	Width	Length	Weight
		U <sub>m</sub> (kV)	1min (kV)	(kV)	(mm)	(mm)	(kg)
827 063 001	6-S	245	460	1050	880	1670	865.0

All dimensions in mm unless otherwise noted.

III  
Size 6-S

# HV-CONNEX Pluggable Connection System

## Applications



HV-CONNEX Pluggable Connection System

## Assembly Accessories

Tools for HV-CONNEX, Sizes 4, 5-S, 6 and 6-S.

### Required PFISTERER special tools

These special PFISTERER products are needed for assembly:

#### Hooked Wrench

for tightening of the bell flange's threaded counter ring.

No.	Size	Weight (kg)
827 087 001	5-S, 6, 6-S	1.2



#### Hydraulic Hand-Operated Compression Tool

with compression head for axial compression of the contact ring for HV-CONNEX cable connectors.

No.	Size	Weight (kg)
827 017 003	4, 5-S	6.5
827 017 004	6, 6-S	6.5



#### Impact Device

for pre-assembly of contact part.

No.	Size	Weight (kg)
559 214 004	4, 5-S	0.4
559 214 006	6, 6-S	0.6



## Optional PFISTERER tools

The following tools may be useful as they are designed especially for PFISTERER cable systems:

### Push-on Device

for assembly of insulating part.



No.	Size	Weight (kg)
827 103 002	4, 5-S, 6, 6-S	8.5

### Strap Wrench

for turning of the threaded counter ring.



No.	Size
002 306 001	5-S, 6, 6-S

### Distance Pin with Eyebolt

for mounting of the block and tackle.



No.	Size	Weight (kg)
564 471 001	4, 5-S, 6, 6-S	0.5

### Block and Tackle

insulated, used for plug-in of HV-CONNEX cable connector into socket.



No.	Size	Weight (kg)
619 891 001	4, 5-S, 6, 6-S	3.2

### Heating mat

for heating before straightening.



No.	Length (m)
880 265 564	1
880 165 181	2

All dimensions in mm unless otherwise noted.

## HV Cable Stripper

for cable preparation (peeling, removing and bevelling the insulation).  
Stop rings for various stripping lengths available on request.

No.	range
	Ø (mm)
827 976 001	35 - 90



## Outer Jacket Cutter

for lengthwise cut of the outer jacket.

No.
827 973 001



## Fitting Clamp

for fixing block and tackles and to protect the bell flange during assembly.

No.	Cable diameter
	Ø (mm)
827 153 010	50 - 100
827 153 011	75 - 150



## POM-bar

for greasing of the insulating part's inner surface.

No.
620 018 019



## Alignment Rails

for straightening of the cable (2 items). Two screw clamps needed for assembly.

No.	Length
	(m)
880 164 185	1
880 165 185	2



## Pipe Cutter

for cutting of Al-corrugated sheath

No.	Cable diameter
	Ø (mm)
827 972 001	50 - 110



All dimensions in mm unless otherwise noted.



## Chain Cutter

for cut around the outer jacket.

No.

827 980 001



## Grinding Machine, elect.

for insulation preparation.

No.

827 960 001



## Hexagonal Screwdriver

for screwing on the bell flange.

No.

Size

Key width [X..16]

Weight

(kg)

546 004 018

4

SW 8

0.1

546 004 010

5-S, 6, 6-S

SW 10

0.2



## Unicut

for cable preparation (peeling, removing and bevelling the insulation).

No.

Diameter over insulation

Ø (mm)

880 265 214

Unicut 30

30 - 85

880 265 215

Unicut 40

70 - 125



## Feed Jaws

for Unicut.

No.

880 265 415

for Unicut 30

880 265 721

for Unicut 40



## HV-Carrying Case for Tools (without tools)

for transporting and storing tools.

No.

Size

305 768 002

4, 5-S, 6, 6-S

All dimensions in mm unless otherwise noted.



## Material

Additional assembly material:

### HV Special Grease

greasing of insulating part, socket etc.

No.	Size	Temperature range (° C)	Weight (g)
002 854 002	4, 5-S, 6, 6-S	-20 - 90	8
002 854 003	4, 5-S, 6, 6-S	-45 - 90	8



### HV-CONNEX Sealing Set for Outdoor Vertical Installation from above

e.g. on transformers for sizes 5-S, 6 and 6-S.

No.	Size
545 051 001	5-S, 6, 6-S



### Dilo SF<sub>6</sub> gas re-filling device

for filling of HV Test- and T-Joints.

No.
827 017 100



All dimensions in mm unless otherwise noted.



## GIS Cable Termination

ESG terminations: the conventional solution for inserting XLPE insulated cables directly into gas filled equipment. They are available in vertical, horizontal or upside-down versions from 72,5 kV to 170 kV.

### Material:

Insulator: cast resin  
Stress relief cone: silicone rubber

### Conductor connection:

compressed or screwed

### Optional accessories:

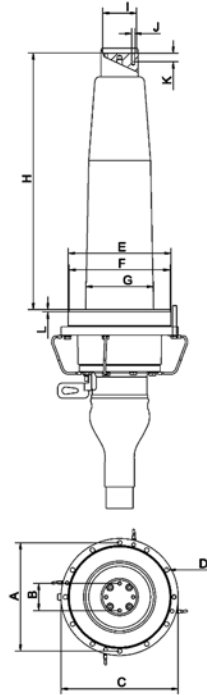
Adapter Flange

### Note:

Horizontal version is equipped with an expansion vessel.  
Upside-down version on request.  
Optional material is not within scope of supply and has to be ordered separately.

<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	72.5	123	145	170
<b>Standards</b>		IEC60840	IEC60840	IEC60840	IEC60840
		IEC60859	IEC60859	IEC60859	IEC60859
		IEC62271	IEC62271	IEC62271	IEC62271
<b>Rated voltage</b>	<b>U (kV)</b>	60 - 69	110 - 115	132 - 138	150 - 161
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	325	550	650	750
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5	< 5	< 5

## ESG72



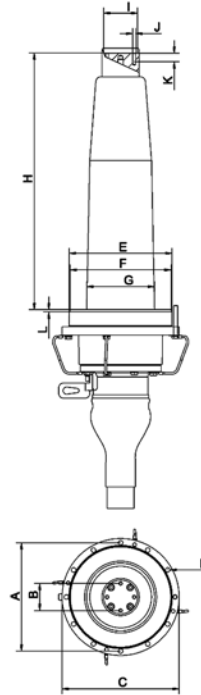
Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)
ESG72-H	95-2000	37 - 89	120	55
ESG72-V	95-2000	37 - 89	120	52

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESG72-H	270	80 ± 0,3	295	8 x Ø11	255	245 ± 0,3	184	583 ± 1	100	4 x M10	24	7
ESG72-V	270	80 ± 0,3	295	8 x Ø11	255	245 ± 0,3	184	583 ± 1	100	4 x M10	24	7



**1 ESG123**

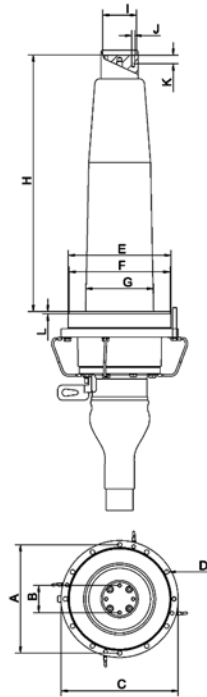
**2**



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESG123-H	150-2000	46 - 99	120	78	<b>1</b>
ESG123-H	150 - 2500	84 - 110	170	86	<b>1</b>
ESG123-V	150-2000	46 - 99	120	72	<b>2</b>
ESG123-V	150 - 2500	84 - 110	170	80	<b>2</b>

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESG123-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG123-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESG123-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG123-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7

## ESG145



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESG145-H	150-2000	46 - 99	120	78	1
ESG145-H	150 - 2500	84 - 110	170	86	1
ESG145-V	150-2000	46 - 99	120	72	2
ESG145-V	150 - 2500	84 - 110	170	80	2

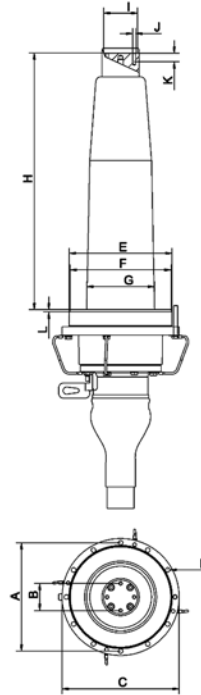
Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESG145-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG145-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESG145-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG145-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7



**1 ESG170**



**2**



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESG170-H	150-2000	46 - 99	120	78	<b>1</b>
ESG170-H	150 - 2500	84 - 110	170	86	<b>1</b>
ESG170-V	150-2000	46 - 99	120	72	<b>2</b>
ESG170-V	150 - 2500	84 - 110	170	80	<b>2</b>

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESG170-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG170-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESG170-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESG170-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7

## Transformer Cable Termination

ESU terminations: the conventional solution for inserting XLPE insulated cables directly into oil filled equipment. They are available in vertical, horizontal or upside-down versions from 72,5 kV to 170 kV.

### Material:

Insulator: cast resin  
Stress relief cone: silicone rubber

### Conductor connection:

compressed or screwed

### Optional accessories:

Adapter Flange, Stress Control Electrode

### Note:

Horizontal version is equipped with an expansion vessel.  
Upside-down version on request.  
Optional material is not within scope of supply and has to be ordered separately.

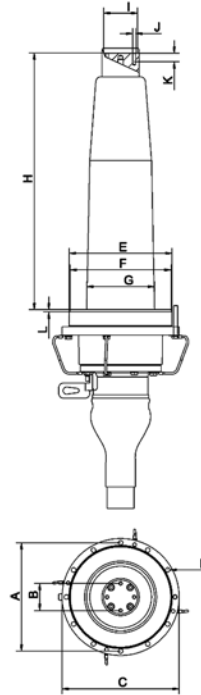


<b>Max. operating voltage</b>	<b>U<sub>m</sub> (kV)</b>	72.5	123	145	170
<b>Standards</b>		IEC60840 EN50299	IEC60840 EN50299	IEC60840 EN50299	IEC60840 EN50299
<b>Rated voltage</b>	<b>U (kV)</b>	60 - 69	110 - 115	132 - 138	150 - 161
<b>Rated lightning impulse withstand voltage (BIL)</b>	<b>(kV)</b>	325	550	650	750
<b>Partial discharge measurement</b>	<b>(pC)</b>	< 5	< 5	< 5	< 5



**1 ESU72**

**2**

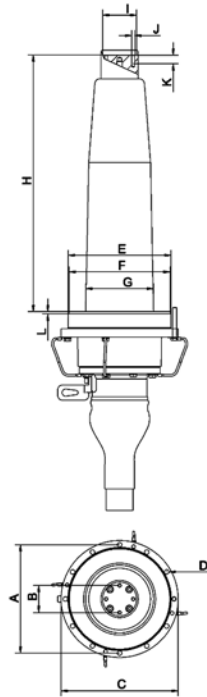


Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)
ESU72-H	95-2000	37 - 89	120	55 <b>1</b>
ESU72-V	95-2000	37 - 89	120	52 <b>2</b>

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESU72-H	270	80 ± 0,3	295	8 x Ø11	255	245 ± 0,3	184	583 ± 1	100	4 x M10	24	7
ESU72-V	270	80 ± 0,3	295	8 x Ø11	255	245 ± 0,3	184	583 ± 1	100	4 x M10	24	7



## ESU123



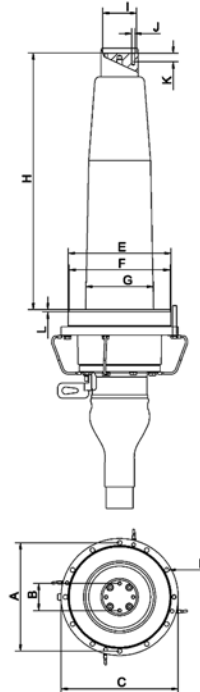
Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESU123-H	150-2000	46 - 99	120	78	1
ESU123-H	150 - 2500	84 - 110	170	86	1
ESU123-V	150-2000	46 - 99	120	72	2
ESU123-V	150 - 2500	84 - 110	170	80	2

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESU123-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU123-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESU123-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU123-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7

## 1 ESU145



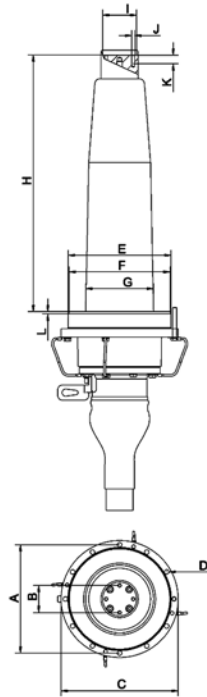
2



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESU145-H	150-2000	46 - 99	120	78	1
ESU145-H	150 - 2500	84 - 110	170	86	1
ESU145-V	150-2000	46 - 99	120	72	2
ESU145-V	150 - 2500	84 - 110	170	80	2

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESU145-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU145-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESU145-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU145-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7

## ESU170



Product designation	Conductor cross section (mm <sup>2</sup> )	Diameter over cable insulation (prepared) (mm)	max. diameter over outer cable sheath (mm)	Net weight approx. (kg)	
ESU170-H	150-2000	46 - 99	120	78	1
ESU170-H	150 - 2500	84 - 110	170	86	1
ESU170-V	150-2000	46 - 99	120	72	2
ESU170-V	150 - 2500	84 - 110	170	80	2

Product designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)
ESU170-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU170-H	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7
ESU170-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	200	757 ± 1	100	4 x M10	24	7
ESU170-V	320	80 ± 0,3	345	12 x Ø13,5	303	298 ± 0,3	215	757 ± 1	100	4 x M10	24	7

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