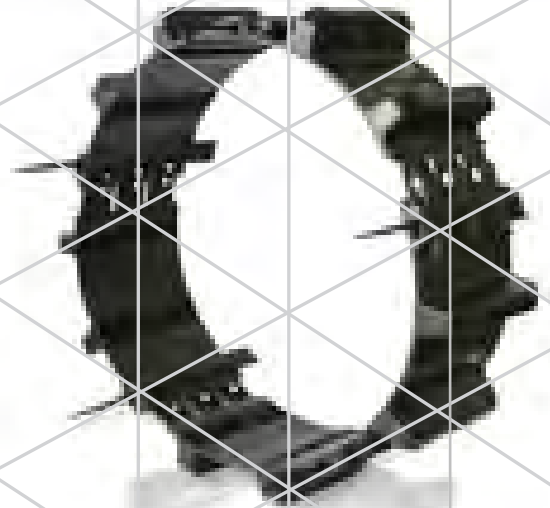
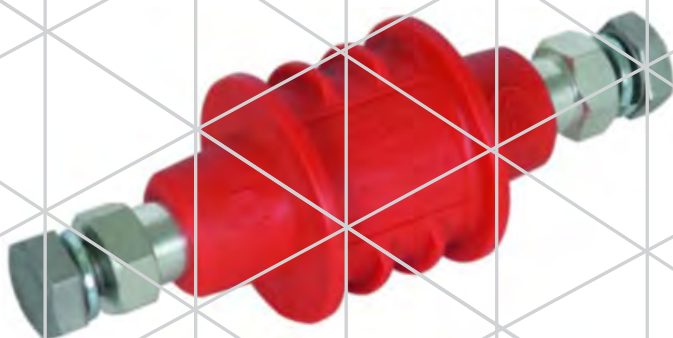
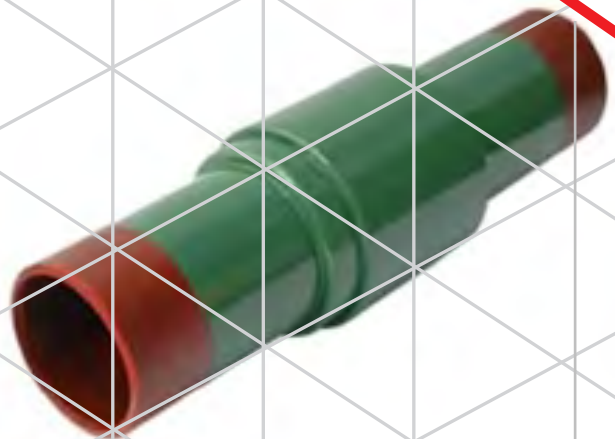




CORROSION CONTROL

# PRODUCTS CATALOGUE

## PIPELINE ACCESSORIES





CORROSION CONTROL

# PIPELINE ACCESSORIES CATALOGUE INDEX

<b>2</b>	<b>PIPELINE ACCESSORIES</b>	<b>Page</b>
2.1	Insulating Flange Kits	3
2.2	Isolation Joints	6
2.3	Surge Protection - EX-FS Type	8
2.4	Surge Protection - EX-FS-KU Type	10
2.5	Electronic De-Coupling Devices	14
2.6	Zinc Earthing Electrodes	20
2.7	Pipeline Casing Insulators	21
2.8	Pipeline Casing End Seals	22
2.9	Pipeline Link Seals	23

# INSULATING FLANGE KITS

Insulation Flange Kits are an ideal solution where discrete electrical sections of pipeline are required for the control and regulation of Cathodic Protection and electrolytic current flow.

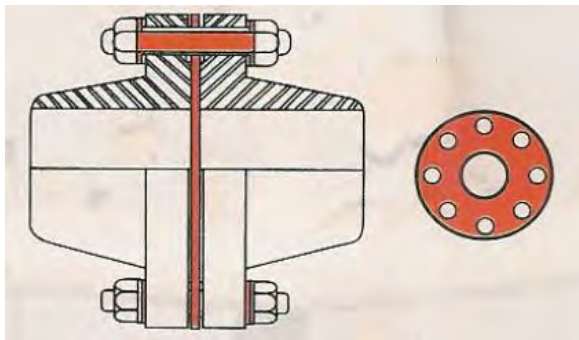
A standard Flange Insulation Kit will comprise as follows

- Gasket
- Insulating Sleeves
- Insulating Washers (2 per bolt)
- Zinc Plated Steel Washers (2 per bolt)

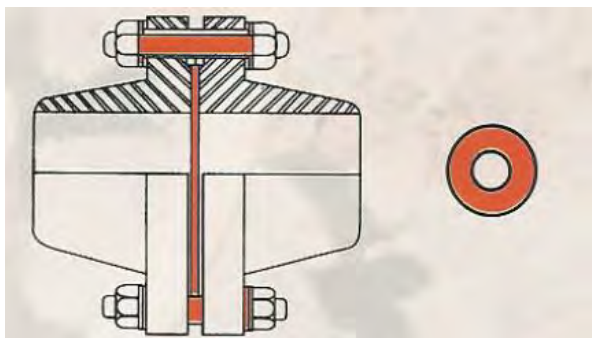
Stud bolts can be added on request,

Gasket Types as follows are available ;

TYPE 'E' For use on flat face & raised face flanges. Insulating gasket manufactured from either reinforced phenolic or high dielectric strength non-asbestos sheeting. Insulating sleeve manufactured from either phenolic, mylar or polyethylene. Insulating washers manufactured from reinforced phenolic.



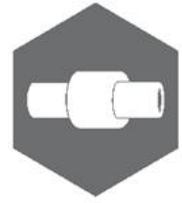
TYPE 'F' The central gasket locates inside the bolts. Insulating gasket manufactured from either reinforced phenolic or high dielectric strength non-asbestos sheeting. Insulating sleeve manufactured from either phenolic, mylar or polyethylene. Insulating washers manufactured from reinforced phenolic.



## DATASHEET

### 2.9

## INSULATING FLANGE KITS



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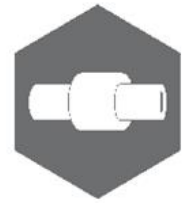
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# INSULATING FLANGE KITS

# DATASHEET

## 2.9

### INSULATING FLANGE KITS



#### MATERIAL INFORMATION

#### Central Gasket in Neoprene Faced Phenolic

Neoprene faced phenolic resin sheet. Rubber thickness of 0.4mm on each face of phenolic sheet thickness 2.4mm, to NEMA L1-1-1983, Type XPC, with the following properties.

Dielectric Strength in oil @ 23°C	500 Volt/mil (20,000 Volts/mm)
Water absorption after 24 hours immersion in water @ 23°C	0.60%
Compressive strength @ 23°C	168 N/mm <sup>2</sup>
Maximum continuous operating temperature	100°C
Insulation resistance	1.2 x 10 Megohms

#### Phenolic Washers

Bakelaque Cotton Fabric Reinforced Laminate Grade B12 Phenolic Resin

Flexural Strength	120 Mpa
Impact Strength (Notched Charpy)	10.0 kJm <sup>2</sup>
Tensile Strength	80 Mpa
Electric Strength perpendicular to laminations in oil @ 90°C (Rapidly applied)	3 MV/m
Electric Strength perpendicular to laminations in oil @ 90°C (Step by Step)	2 MV/m
Breakdown Voltage parallel to laminations in oil @ 90°C	12 kV
Insulation resistance after 24 hours water immersion	2 GΩ
Comparative Tracking Index	110 V
Thermal classification continuous**	115°C
Thermal classification intermittent	125°C
Water Absorption after 24 hours immersion	85 mg
Density	1.35 g/cm <sup>3</sup>
Specific Volume	741 cm <sup>3</sup> /kg
Colour	Brown

*\*\* Figures given are for guidance only and assume use of material in air*

#### Mylar Sleeves

Dielectric Strength - ASTM D149	4000 Volts/mil
Compressive Strength - ASTM D695	N/A
Water Absorption - ASTM D229	0.80%
Operating Temp °F	-75 to +300
Operating Temp °C	-59 to +149

# INSULATING FLANGE KITS

## DATASHEET

### 2.3

#### INSULATING FLANGE KIT



#### MATERIAL INFORMATION

Flexural Strength - ASTM D790  
Cut Through Resistance

13000 psi  
3500 ft-lbs

#### Phenolic Sleeves

Axial electric strength in oil @ 90°C

Water Absorption

Cohesion between Layers

Insulation resistance after immersion in water

Axial Compressive Strength

Electric strength normal to axis in oil @ 90°C (1.6mm wall)

Relative Density

Thermal Classification

30 kV  
3.5 mg/cm<sup>2</sup>  
70 Mpa  
50 Mohms  
100 Mpa  
7.8 MV/m  
1.20  
E

#### Steel Washers

Zinc Plated BS4320 (43A)



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# INSULATING JOINTS

## DATASHEET

### 2.2

#### ISOLATION JOINTS



The insulating monoblock is a metal-insulating, non-dismountable prefabricated structure with or without a spark gap, ensuring the electrical continuity of the pipeline in which it is installed is interrupted.

#### Application

On underground and above-ground transmission and distribution pipelines, on existing facilities as well as during construction, before and after gas reduction stations, in above-ground installations and underground storage of gas and crude oil mines, on tanks and installations of liquid and gaseous fuels.

#### Mechanical properties

Monoblock bodies are made as welded structures of thick sheets (carbon or low-alloy structural steel), the results of the measurements and tests carried out are included in the documentation attached to our products.

#### Electrical properties

The guarantee of quality is the use of high-class insulating materials, use of replaceable spark gaps, no sparking and no breakdown during the electrical test with alternating voltage of 5 kV (50 Hz) for 1 min. (test performed before and after the hydrostatic test), monoblock resistance above 1GΩ at a voltage of 1kV in a dry state, no breakdown at a voltage of 15 ÷ 25 kV (depending on requirements) when checking the tightness of the outer insulation coating.

#### Calculations

Standard according to WUDT-UC-WO-0, PN-EN 13480-3 and ASME VIII Div. 1 additional values such as bending moment and bursting forces can be imposed by the customer, the necessary parameter to perform the calculations is the specification of the working pressure

#### Materials

Used pipes for welding acc. To PN-EN ISO 3183, PN-EN 10028, DIN 1626, API Spec 5L, ASTM A53 and others, steel elements (rings) are made of sheets, metallurgical rings and forgings according to PN-EN 10028, The insulating material is laminated epoxy boards according to PN-EN 60893 and DIN 7735.



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# INSULATING JOINTS

## DATASHEET

### 2.3 ISOLATION JOINTS



#### **Welding and non-destructive testing**

Steel elements of the monoblock are joined together by MAG welding in accordance with approved procedures by an independent certification body, the welds made are tested using non-destructive methods: VT (visual testing), PT (penetration testing) and UT (ultrasonic testing) by 2nd degree specialists with competence certificates issued by the Welding Institute.

#### **Applied external coatings**

Polyurethane coatings according to PN-EN 10290,  
Heat-shrinkable coatings according to PN-EN 12068, "CANUSA", "REIHEM"  
Paint coatings (epoxy) according to PN-EN 12944

#### **Applied internal coatings**

paint coatings (epoxy) according to PN-EN 12944, PN-EN 10301

#### **Tests**

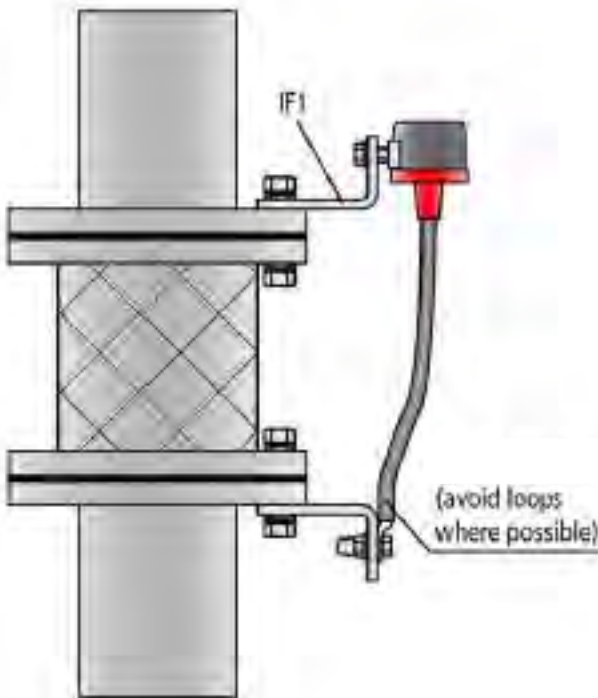
Construction, dimensions, materials,  
hydrostatic strength test by pressure 1.5xMOP (maximum working pressure),  
pneumatic tightness test at a pressure of 6 bar,  
electric test with alternating voltage 5kV / 50 Hz for 1 minute (no sparking),  
resistance above 1GΩ at 1 kV DC voltage

#### **The scope of execution**

It is possible to supply monoblocks with increased operating parameters, i.e. working pressure up to 420 bar (ANSI 2500), working temperature -50 ° C ÷ 180 ° C, additionally, version with an internal or external spark gap or adaptation for an external spark gap

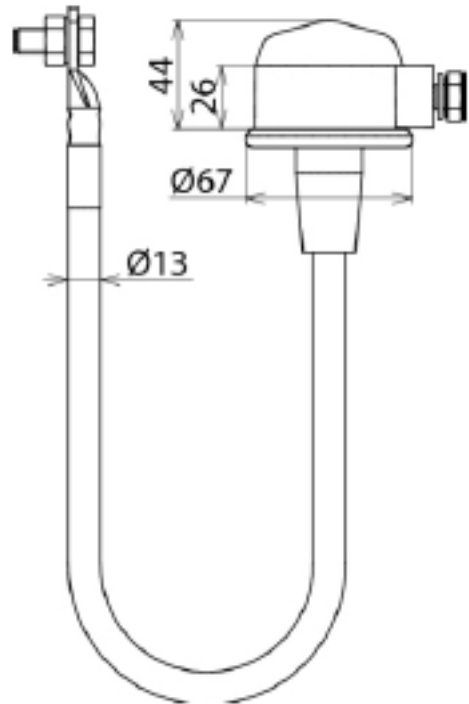
# SPARK GAPS

- For indirect connection / earthing of functionally isolated parts of installations under lightning conditions
- For lightning equipotential bonding according to IEC 62305 in hazardous areas (zone 2)
- Approval according to ATEX directive 94/9/EC and IECEx



# DATASHEET 2.3

## SPARK GAPS



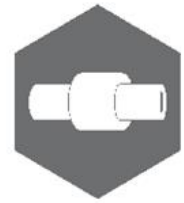
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### MODEL EXFS L100 TECHNICAL INFORMATION

Type EXFS L100	
Isolating spark gap according to EN 62561-3 / IEC 62561-3	yes
Lightning impulse current	(10/350 $\mu$ s) (Iimp) 50 kA
Class (lightning current carrying capability)	N
Rated power-frequency withstand voltage	(50 Hz) (UwAC) 300 V
Rated impulse sparkover voltage	(Ur imp) $\leq$ 2.5 kV
Operating temperature range (TU)	-20 °C ... +80 °C
Degree of protection	IP 54
ATEX approvals	DEKRA 11ATEX0146 X
Ex marking according to EN 60079-0 and EN 60079-15:	gas II 3 G Ex nC IIC T4 Gc
IECEX approvals	IECEX DEK 11.0063X
Ex marking according to EN 60079-0	Ex nC IIC T4 Gc
Enclosure length	90 mm
Enclosure diameter	63 mm
Enclosure material	zinc die-cast, plastic
Connecting cable	H01N2-D 25 mm <sup>2</sup> with cable lug and screw / nut (M10)
Cable length	100 mm
Suitable for flange size	tbc
Extended technical data:	
- Nominal discharge current	(8/20 $\mu$ s) (In) 100 kA
- Power frequency sparkover voltage	(50 Hz) (Uaw) $\leq$ 1.2 kV
Weight	733 g
Customs tariff number	85369085
GTIN	4013364038912
PU	1 pc(s)

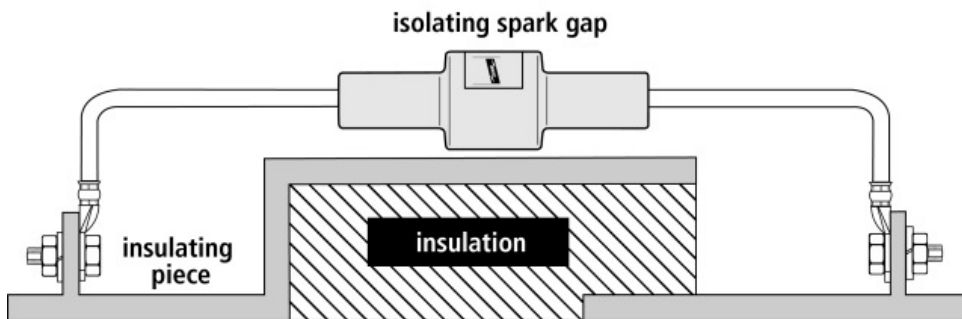
# SPARK GAPS

## DATASHEET 2.4

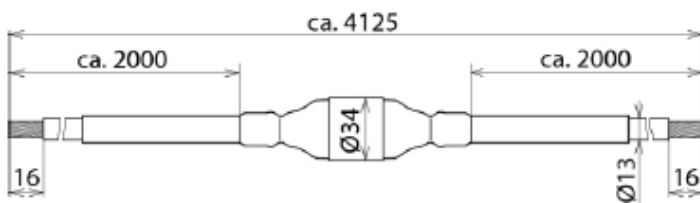
### SPARK GAPS



- For indirect connection / earthing of functionally isolated parts of installations under lightning conditions
- Device for lightning equipotential bonding according to IEC 62305 in hazardous areas
- Approval according to ATEX Directive 94/9/EC and IECEx
- Ex isolating spark gap with connecting cable for aboveground and underground installation; with water-proof sheath; may be shortened for short



Installation of EXFS L300



Dimension drawing of EXFS 100 KU

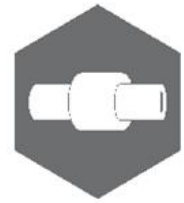


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### MODEL EXFS 100 KU (923 101) TECHNICAL INFORMATION

Type EXFS 100 KU	
Part No. 923 101	
Isolating spark gap according to EN 62561-3 / IEC 62561-3	yes
Lightning impulse current (	10/350 $\mu$ s) (Iimp) 100 Ka
Class (lightning current carrying capability)	H
Rated power-frequency withstand voltage	(50 / 60 Hz) (UwAC) 250 V
Rated impulse sparkover voltage	(Ur imp) $\leq$ 1.25 kV
Operating temperature range	(TU) -40 °C ... +60 °C
Temperature range during installation	-5 °C to + 50 °C
Degree of protection	IP 67
ATEX approvals	DEKRA 11ATEX0178 X
Ex marking according to EN 60079-0 and EN 60079-1:	gas II 2 G Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31:	dust II 2 D Ex tb IIIC T80 °C Db IP 66/67
IECEX approvals IECEX KEM 09.0051X	
Ex marking according to EN 60079-0 and EN 60079-1:	gas Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31:	dust Ex tb IIIC T80°C Db IP 66/67
Enclosure length	123 mm
Enclosure diameter	34 mm
Enclosure material	water-proof plastic sheath
Connection of enclosure	NYY-J-1x25 mm <sup>2</sup>
Cable length	2x approx. 2000 mm
Extended technical data:	
- Rated discharge current	(50 / 60 Hz) (Imax) 500 A / 0.2 sec.
- Noimnal discharge current	(8/20 $\mu$ s) (In) 100 kA
- Power frequency sparkover voltage	(50 / 60 Hz) (Uaw) $\leq$ 0.5 kV
Weight	1,98 kg
Customs tariff number	85369085
GTIN	4013364108332
PU 1 pc(s)	1 pc(s)

# SPARK GAPS

# DATASHEET 2.4

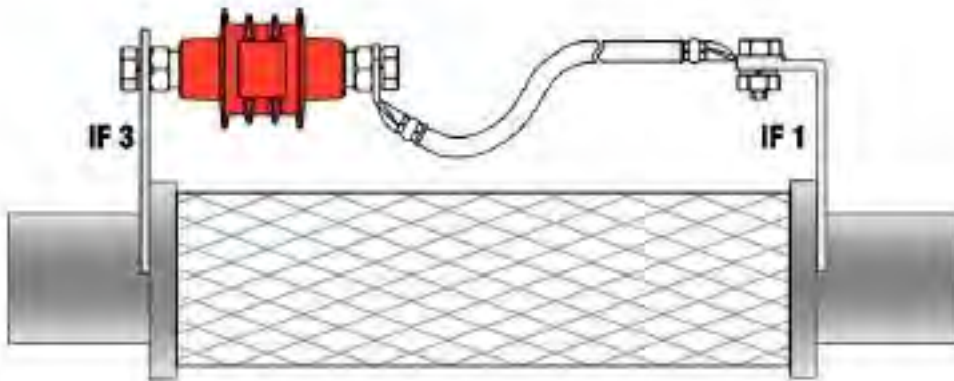
EXFS 100 (923 100)

SPARK GAPS

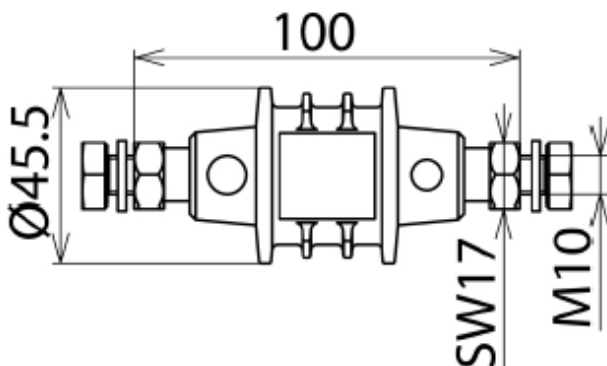
For indirect connection / earthing of functionally isolated parts of installations under lightning conditions

Device for lightning equipotential bonding according to IEC 62305 in hazardous areas

Approval according to ATEX Directive 94/9/EC and IECEx



Installation of EXFS L300



Dimension drawing of EXFS100

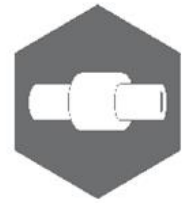


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### MODEL EXFS 100 (923 100) TECHNICAL INFORMATION

Type EXFS 100	
Part No.	923 100
Isolating spark gap according to EN 62561-3 / IEC 62561-3	yes
Lightning impulse current	(10/350 $\mu$ s) (Iimp) 100 kA
Class (lightning current carrying capability)	H
Rated power-frequency withstand voltage	(50 / 60 Hz) (UwAC) 250 V
Rated impulse sparkover voltage	(Ur imp) $\leq$ 1.25 kV
Operating temperature range (TU)	-20 °C ... +60 °C
Degree of protection	IP 67
ATEX approvals	DEKRA 11ATEX0178 X
Ex marking according to EN 60079-0 and EN 60079-1:	gas II 2 G Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31:	dust II 2 D Ex tb IIIC T80 °C Db IP 66/67
IECEX approvals	IECEX KEM 09.0051X
Ex marking according to EN 60079-0 and EN 60079-1:	gas Ex d IIC T6 Gb
Ex marking according to EN 60079-0 and EN 60079-31:	dust Ex tb IIIC T80 °C Db IP 66/67
Enclosure length	100 mm
Enclosure diameter	45.5 mm
Enclosure material	plastic sheath
Connection of enclosure	M10 threaded bushing, 2x M10x25 mm, 2x spring washer
Extended technical data:	
- Rated discharge current	(50 / 60 Hz) (Imax) 500 A / 0.2 sec.
- Noimnal discharge current	(8/20 $\mu$ s) (In) 100 kA
- Power frequency sparkover voltage	(50 / 60 Hz) (Uaw) $\leq$ 0.5 kV
Weight	289 g
Customs tariff number	85369085
GTIN	4013364108325
PU	1 pc(s)



# ELECTRONIC DECOUPLING DEVICE - EDD

An Electronic Decoupling Device (EDD) has been designed as a polarisation cell replacement (PCR). The EDD is a solid state device used in the cathodic protection industry which prevents the flow of Direct Current (DC) volts across the terminals between +2/- 2V (symmetrical) or +1/-3V (asymmetrical) DC, while simultaneously providing a grounding (coupling) path for steady state alternating current (AC), should AC be present. The device can be configured for symmetrical or asymmetrical by moving a linking bar (factory set to asymmetrical). The product has the added features of being rated to carry lightning and AC fault currents.

It has been designed to be an ideal replacement for electrochemical polarisation cells as the solid state design eliminates the need for maintenance with potentially hazardous chemicals.



## Common Applications

- DC Isolation of Cathodically Protected structures from power utility grounding systems.
- Blocking Stray DC Voltages.
- Over Voltage protection of equipment from AC faults, lightning and switching transients.
- Over voltage protection of insulating joints.
- Mitigation of AC induced voltages on structures.
- AC Fault Current Rating
- There are four different current sizes available at 50Hz and 60Hz with the following replacements.



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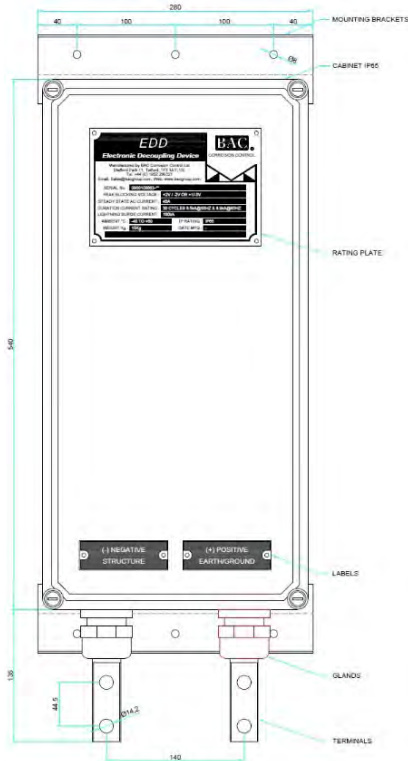
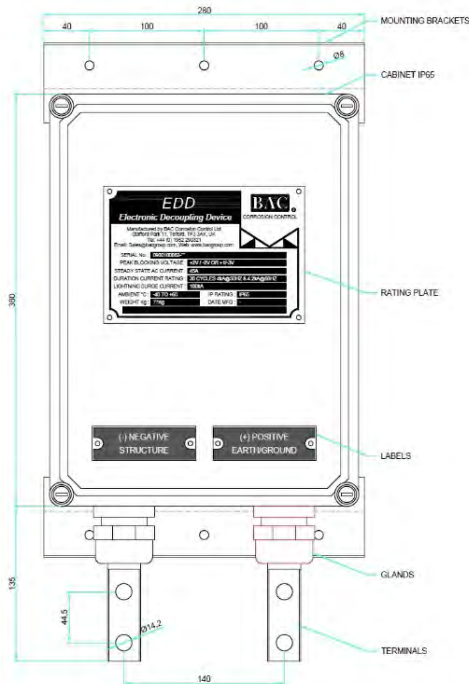
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# ELECTRONIC DECOUPLING DEVICE - EDD

# DATASHEET 2.5

## ELECTRONIC DECOUPLING DEVICE



### AC Fault Current Rating

The Maximum Surge Rating for 50Hz are as follows:

	AC Fault Current kA						
	Cycles at 50Hz						
	1	3	5	10	30	50	100
Type 1	4.4	3.2	2.8	2.32	1.6	1.52	1.2
Type 2	8.64	7.2	5.6	4.64	3.4	2.96	2.4
Type 3	15.6	13.6	10.4	8.4	5.6	5.2	4.4
Type 4	22.6	18.4	15.2	12.8	10.5	7.6	6.4
Type 5	42.4	36	28	22.4	16	13.6	12
Type 6	57.6	48	38.4	32	26	20	8.8

Standard rating at 30 cycles.

The Maximum Surge Rating for 60Hz are as follows:

	AC Fault Current kA						
	Cycles at 60Hz						
	1	3	5	10	30	50	100
Type 1	3.84	3.44	3.04	2.48	1.7	1.6	1.28
Type 2	9.6	7.92	6.16	5.12	3.7	3.28	2.64
Type 3	16.8	14.6	11.2	9.04	6	5.6	4.72
Type 4	24	19.5	16.1	13.6	11	8.08	6.88
Type 5	49.2	41.8	32.8	26	19	15.8	13.9
Type 6	64	53.4	42.6	35.5	29	22.2	9.76

Standard rating at 30 cycles.

### Steady State AC Ratings

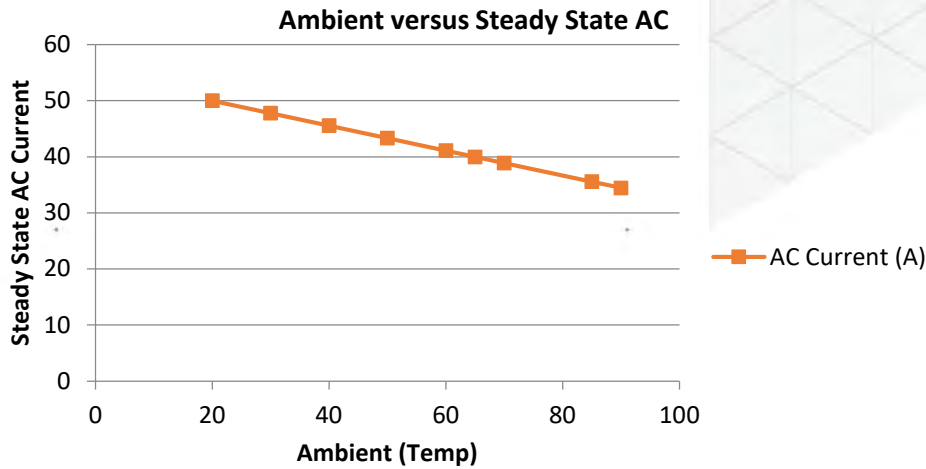
EDD's are used in a number of applications which require the device to block DC while carrying steady state AC. For example, when a pipeline runs in the same corridor as power lines, steady state AC voltage is often induced onto the pipeline. The unit provides a low impedance path to ground, while simultaneously preventing the flow of DC. The EDD is rated for steady state AC as follows:

Ambient Temperature	Rating
20°C	50A
50°C	45A
65°C	40A

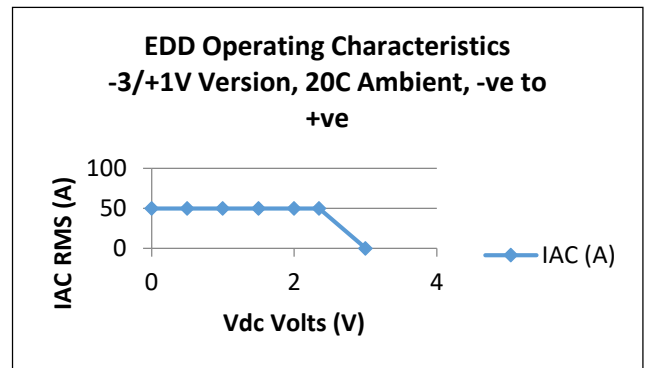
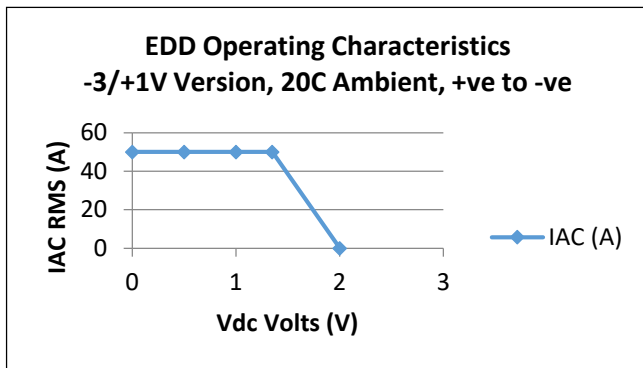


# ELECTRONIC DECOUPLING DEVICE - EDD

## DATASHEET 2.5 ELECTRONIC DECOUPLING DEVICE



As the DC voltages rise towards +1 / -3V the allowable steady state current rating reduces due to DC leakage see table below:



### DC Blocking Voltage

The EDD DC blocking voltage can be configured to:

- +2/- 2V (symmetrical) DC
- +1/-3V (asymmetrical) DC,

The device can be configured for symmetrical or asymmetrical by moving a linking bar (factory set to asymmetrical).

The reason there are two types can be most easily explained by looking at the example of an insulating joint. The EDD is fitted across the joint to provide over voltage protection to the insulation joint. If both sides of the pipeline are protected by their own cathodic protection system, then the voltage across the joint should be near to zero, therefore it is desirable to select a symmetrical +/-2V EDD. In the event of either system being switched off the EDD will block voltages of 2V in either direction. If only one side of the insulating joint is cathodically protected, and the other side is grounded, then an asymmetrical version which blocks -3V to +1V should be specified since the DC flow need only be blocked in one polarity.

# ELECTRONIC DECOUPLING DEVICE - EDD

## DATASHEET 2.5

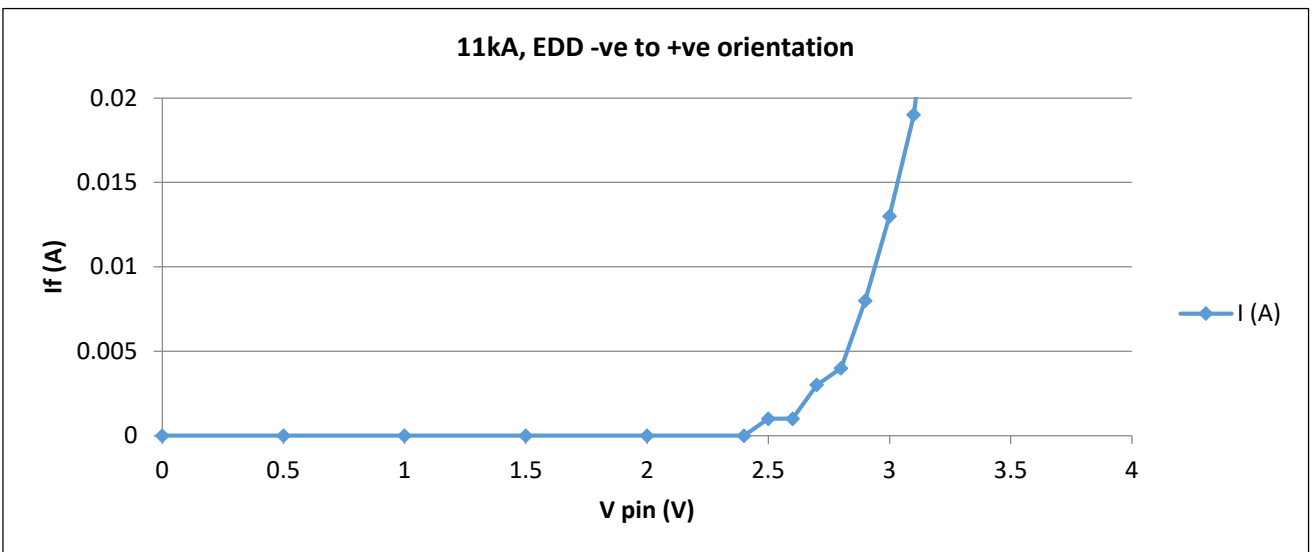
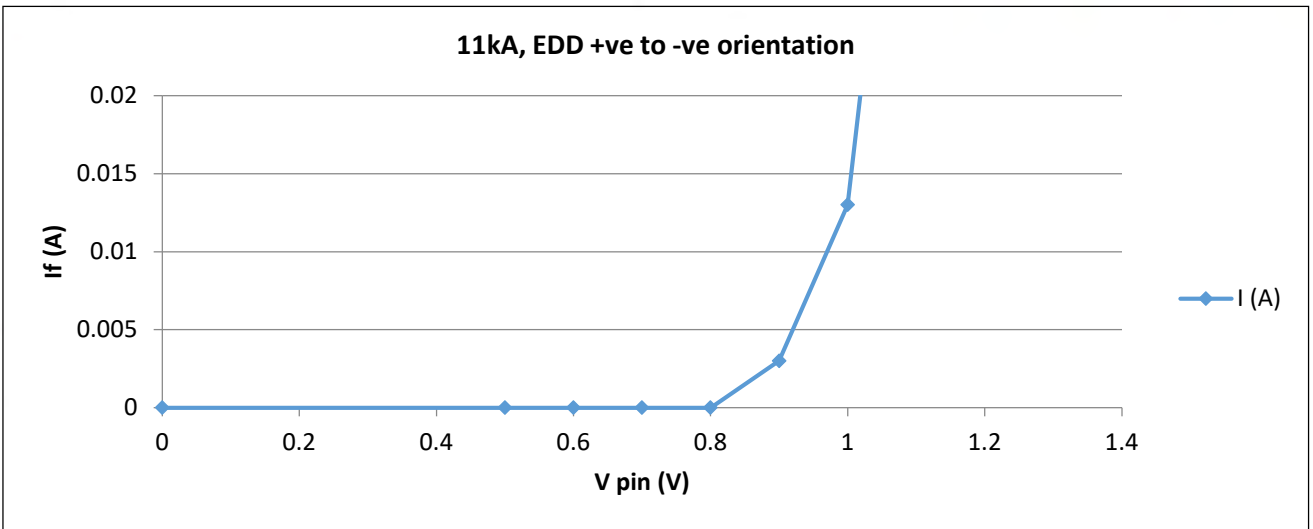
ELECTRONIC  
DECOUPLING DEVICE



The below charts show blocking voltage versus leakage current:

As can be seen the current flow remains low (<13mA) up to 1V (+ve to -ve) and 3V (-ve to +ve).

At higher DC voltages, the current flow starts to rapidly increase.



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# ELECTRONIC DECOUPLING DEVICE - EDD

**DATASHEET**

**2.5**

ELECTRONIC  
DECOUPLING DEVICE

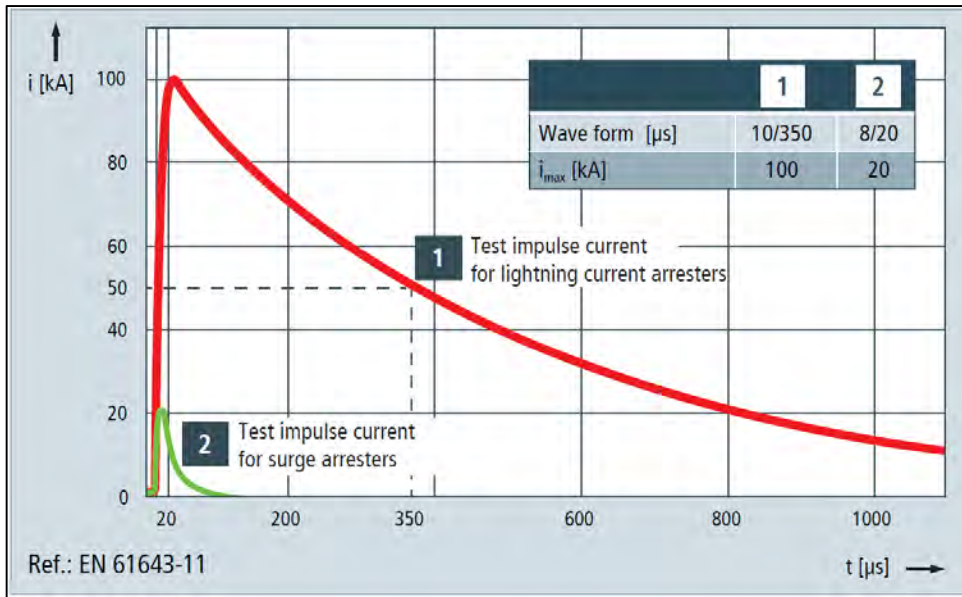


## Lightning Surge Rating

Lightning strikes are modelled by either a 'direct strike' 100kA 10/350us model or an 'induced surge' model of 20kA 8/20us, see table below, We have based our calculations on the peak current of 20kA and 100kA as the key parameters.

The unit is rated to withstand the following lightning pulse and maintain a low clamping voltage:

- 20kA at 8/20us
- 100kA at 10/350us



The diode and busbar assembly is designed to handle the above lightning strikes. In areas with high lightning activity we recommend fitting an **optional spark gap** co-ordinated to clamp and divert lightning strikes to ground without passing through the diodes and resistive busbar assembly thus reducing wear and increasing the life of the EDD.

Ideally the EDD terminals should be connected directly to the structure/s and ground were this is not possible the connecting cables used are required to be as short as possible to reduce the effect of inductive voltage drop on the clamping voltage of the EDD during lightning strikes (or any other quick di/dt events).

When cables are used we recommend the maximum length of 150mm.

Without knowing the exact cable characteristics it's not possible to say the exact effect the cable length will have, but using an 'industry standard' rule of thumb the following table has been created (Voltage drop is 'per cable' – two are required to connect to the EDD),

Cable Length mm	Inductive Voltage Drop (V) 100kA 10/350us Model	Inductive Voltage Drop (V) 20kA 8/20us Model
300	1970	492
500	3280	820
1000	6560	1640



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# ELECTRONIC DECOUPLING DEVICE - EDD

## DATASHEET

### 2.5

#### ELECTRONIC DECOUPLING DEVICE



The values are derived by using the rule of thumb of an inductance of 0.2uH/ft for connecting leads. This inductance is then used in the following formula to calculate voltage drop,

$$V_{\text{cabledrop}} = L_{\text{busbar}} * di/dt$$

For example, for the 300mm cable length, 300mm = 0.98ft, therefore inductance = 0.197uH. For a 10/350us lightning strike,

$$V_{\text{cabledrop}} = 0.197\mu * 100000/10e-6 \\ = 1970V$$

For installations with high lightning activity we recommend addition of optional lightning surge diverter which will ensure lightning strikes are grounded without passing through the diodes and will increase life of the EDD.

#### Polarity

The EDD has 2 tin plated brass terminals (14.2mmØ holes) fitted through M40 cable glands.

- (-) Negative Structure (*Black Gland*)  
Connect to the structure with CP or more negative structure.
- (+) Positive Earth/Ground (*Red Gland*)  
Connect to the ground or more positive structure.

Connections should be kept as short as feasibly possible.

#### Solid State Design

The unit uses a proven solid state design, which will instantaneously clamp voltages above the specified blocking levels. There are no user serviceable parts inside the unit, and any attempt to open the unit will invalidate any warranty.

#### Fail Safe Design

If the unit is subjected to AC fault currents or lightning surge currents in excess of the rating of the unit, failure will cause the unit to fail short circuit. Once shorted the unit can carry greater than the rated fault current and still provide an effective ground path.

#### Enclosure

The enclosure is manufactured fibreglass reinforced polyester with stainless steel mounting brackets and tin plated terminals.

IP rating IP65

IK rating IK09

#### Operating Temperature

-40°C to +60°C

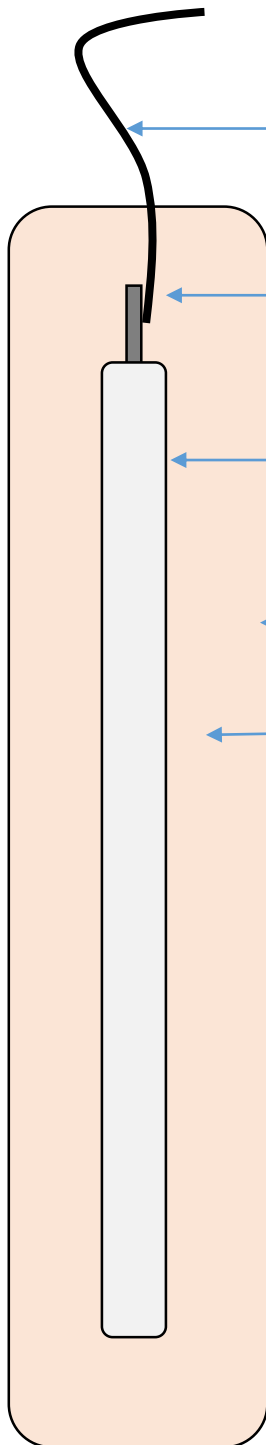
# PACKAGED ZINC ANODES SINGLE TYPE

Pre-packaged Zinc Anodes for use in Cathodic Protection or Earthing applications.

Zinc Anodes can be provided pre-packaged in a 50/50 mix of gypsum and bentonite to ensure good surface contact and high working efficiency.

# DATASHEET 2.6

PACKAGED ZINC ANODES



Cable Tail : 10m of 25mm<sup>2</sup> XLPE/PVC or as required.

Cable brazed to steel insert

Zinc Anode 50 x 50 x 1,500mm or 35mm x 35mm x 1,500mm

Cotton bag, approx. dimensions 150 dia x 2,000mm

50% gypsum / 50% bentonite backfill or as required.

## CHEMICAL COMPOSITION

	Type I	Type II
Aluminium :	0.1-0.5	0.005% max
Cadmium :	0.02-0.07	0.003% max
Iron :	0.005% max	0.0014% max
Lead :	0.006% max	0.003% max
Copper	0.006% max	0.002% max
Zinc :	Balance	Balance



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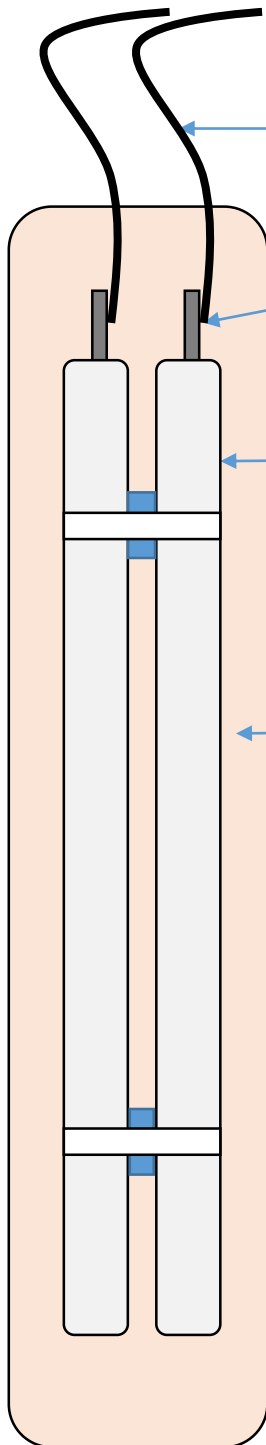
# PACKAGED ZINC ANODES TWIN ELECTRODE TYPE

Pre-packaged Zinc Anodes for use in Cathodic Protection or Earthing applications.

Zinc Anodes can be provided pre-packaged in a 50/50 mix of gypsum and bentonite to ensure good surface contact and high working efficiency.

## DATASHEET 2.6

PACKAGED ZINC ANODES



Cable Tails : 10m of 25mm<sup>2</sup> XLPE/PVC or as required.

Cable brazed to steel insert

Zinc Anodes 50 x 50 x 1,500mm or 35mm x 35mm x 1,500mm

Cotton bag, approx. dimensions 150 dia x 2,000mm

50% gypsum / 50% bentonite backfill or as required.

### CHEMICAL COMPOSITION

	Type I	Type II
Aluminium :	0.1-0.5	0.005% max
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Copper	0.006% max	0.002% max
Zinc :	Balance	Balance



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# PIPELINE CASING INSULATORS

## DATASHEET 2.7

### PIPELINE CASING INSULATORS



Insulators for pipe-in-pipe Systems

Polypropylene casing spacers are universally applicable in the installation of pipelines when a media pipe runs through a casing pipe.

Plastic insulators provide many advantages for these applications:

- Easy penetration of carrier pipe. The insulators friction co-efficient is reduced to a minimum because they are made of plastic.
- The minimised friction prevents the media pipe from taking damage inside the casing pipe.
- A wide range of skid heights ensures concentricity of the media pipe inside the casing pipe
- Excellent insulation characteristics. All requirements of cathodic pipe protection are met.

Casing Spacers are suitable for all pipe diameters from 25 mm upwards and many skid heights are available to suit specific requirements.



#### Materials

Polypropylene has a good friction coefficient due to its waxy surface with good sliding properties. The sliding friction coefficient is approx. 0.2 for PP on steel. In comparison to this, steel on steel is approx. 0.5. Therefore the abrasion is reduced to a minimum. The material is strong and yet flexible and is therefore resistant to stress cracking. Flexibility of the body, stability of the skid form and excellent dielectric insulation are some more of the good characteristics of this material. Polypropylene has a higher temperature resistance compared to polyethylene. The base material is resistant from -20 °C to +100 °C.

#### Installation notes

Plastic insulator rings are normally installed with the following spacing in between the rings:

- Pipe diameter up to 300 mm in 2.5 m support distance
- Pipe diameter 301 - 600 mm in 2.0 m support distance
- Pipe diameter of more than 600 mm in 1.5 m support distance

Please contact [sales@bacgroup.com](mailto:sales@bacgroup.com) so we can find a product solution for your application



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# PIPELINE CASING END SEALS

# DATASHEET

## 2.8

### PIPELINE CASING END SEALS



Pipes carrying media (e.g. gas pipe, water pipe, sewage pipe, ...) below motorways, main roads, tracks etc. are often laid in casing pipes. Casing end seals serve to protect the annular space between carrier pipe and casing pipe from moisture, dirt and animals. PSI casing end seals are available for new installations and pipes already in place.

#### Type new casing end seal -step shape-(only for new installation)

The casing end sleeve type DU stepped sleeve 110/16 mm can be used variably and can be adjusted step by step on the construction site to the respective size for the carrier pipe / casing pipe combination. One type which can be variably used for casing pipe OD 110 mm and for carrier pipes from 16 mm up to 90 mm.



#### Type KT casing end seal (only for new installation)

Advantages of the PSI type KT casing end seals are, in particular, low storage costs, because of only five different KT sizes suitable for casing pipe sizes from DN 100 to DN 600. Two casing pipe sizes per type are already pre-molded for installation convenience as a collar. The stainless steel straps included in the delivery can be used for all diameters.



#### Type DU casing end seal (only for new installation)

Casing end seals type DU are always supplied in a suitable size for the carrier pipe / casing pipe combination. Further adaptation on the construction site is no longer necessary.



#### Type KG/KO casing end seal (KG for for new installation, KO for retrofitting installation)

The type KG/KO casing end seals are manufactured in a conical shape. Due to individual production of the casing seals, they are available for nearly all pipe sizes and carrier pipe/casing pipe combinations. If the opening is a bit too small for the carrier pipe, it can be adjusted on site (see installation instructions).



#### Type HA casing end seal (only for new installation)

HA - casing end seals are only used when laying new small pipes for house connections.

Please contact [sales@bacgroup.com](mailto:sales@bacgroup.com) to find a product solution for your application.



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# LINK SEALS

A modular, elastomer sealing system that creates a permanent, hydrostatic seal for nearly any cylindrical object as it passes through a barrier.

LINK-SEAL® modular seals are considered to be the premier method for permanently sealing pipes of any size passing through walls, floors and ceilings. In fact, any cylindrical object may be quickly, easily and permanently sealed against the entry of water, soil or backfill material.

For the system approach, metal or non-conductive Century-Line™ sleeves with water stops may be ordered with LINK-SEAL® modular seals to ensure correct positioning and a water tight seal of the installation within poured concrete walls.

## DATASHEET

### 2.9

#### LINK SEALS



#### Features and Benefits

- Install in up to 75% less time compared to lead-oakum joints, hand-fitted flashings, mastics, or casing boots.
- Rated at 20 psig (40ft of head), which exceeds the performance requirements of most applications.
- Designed for use as a permanent seal. Seal elements are specially compounded to resist aging and attack from ozone, sunlight, water, and a wide range of chemicals.
- Standard fasteners have a two-part zinc dichromate and proprietary corrosion inhibiting coating. Corrosion resistant 316 stainless steel available for maximum corrosion protection.
- NSF 61 and Factory Mutual Fire Approved materials available. Also carry a wide variety of approvals from various Federal agencies, associations, code groups, laboratories, and organizations.
- Manufactured in an ISO 9001 certified facility.
- 16 sizes, color-coded EPDM, Nitrile, and Silicone elastomers may be used with various hardware options to match performance characteristics with service conditions.



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