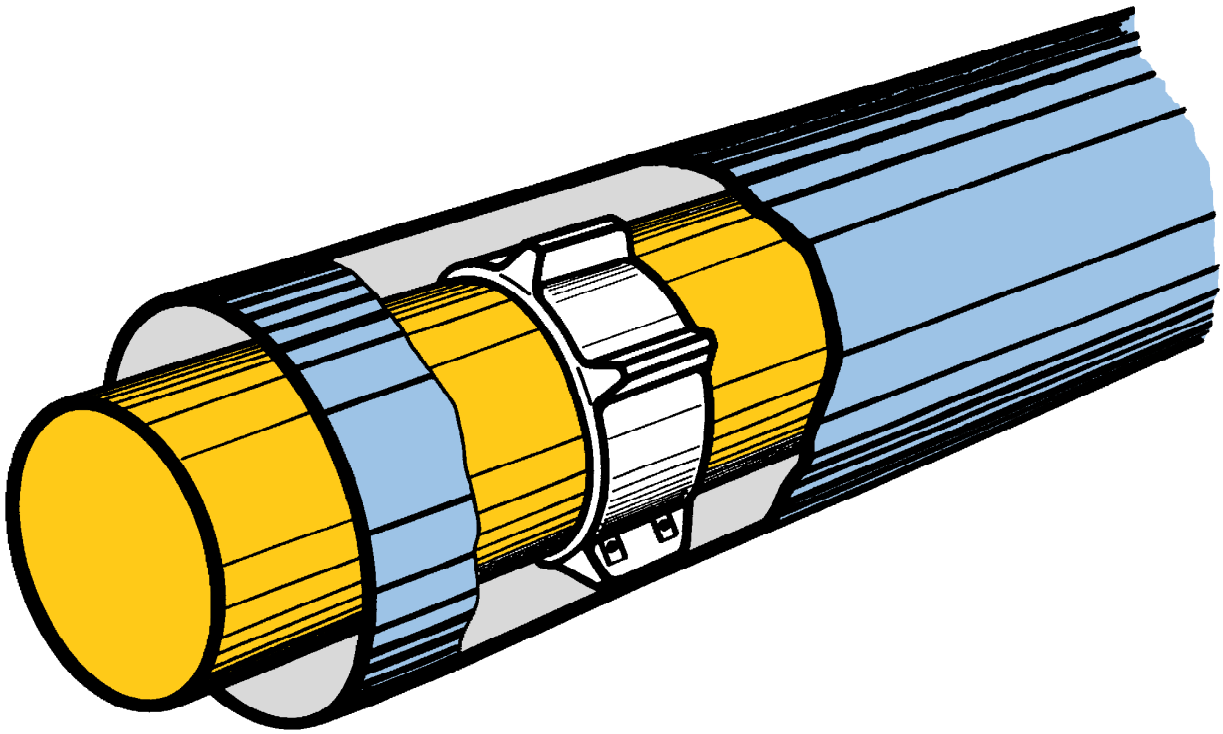
INSULATORS

Insulators made of polypropylene are universally applicable with the installation of pipelines when the carrier pipe runs inside a casing and fit all pipes from 30 mm and upwards.

For this comprehensive range of application the *plastic insulators* offer various advantages such as:

- Easy installation of the carrier pipe since the polypropylene reduces the friction coefficient to a minimum
- Minor friction thus preventing damages to the protective coating and insulation of the pipes
- Concentricity of the carrier pipe within the casing due to an extensive range of skid heights
- Outstanding insulation characteristics of polyethylene.
- The insulators conform entirely with the requirements of cathodic protection



Technical data

Material

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 comparision 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 dieelectric insulation are some more of the good characteristics of this material.
We recommend to use anti-sliding tape for smooth and coated pipes, to keep the insulator firmly in place.

Installation

Recommended space between the insulators:

- Pipe diameter up to Ø 300 mm — in 2,5 m support distance
- Pipe diameter from Ø 300 - 600 mm — in 2,0 m support distance
- Pipe diameter more than Ø 600 mm — in 1,5 m support distance

Skid height

You should always choose a skid height that is smaller than the ring gap for the insertion of the media pipe into the casing. In short lengths, there should be **25 - 50 mm** of air between the inner casing and the circular stroke of the sliding shoe. For larger lengths and diameters, there must be a minimum of **50 - 100 mm**.
For **PVC pipes**, skid height is recommended at least 25 mm due to the sleeve.

Important informations

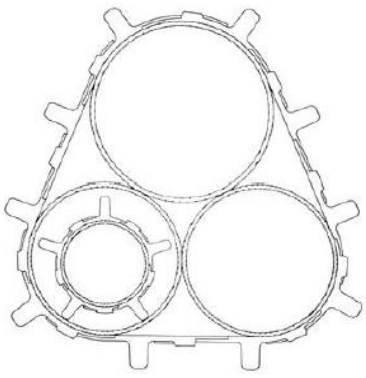
All insulators are for **even/straight surface** casing pipes (for other conditions contact Cobalch)

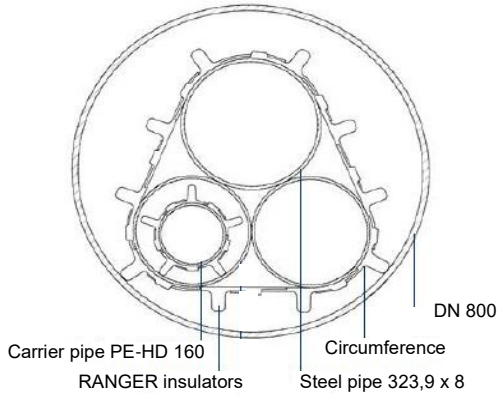
For district heating pipes above OD400, it is recommended to use **steel insulators**, as the casing can burst the plastic insulator, when it expands.
If the insulator is only for protection when inserting into the casing pipe, and there is no subsequent movement in the district heating pipe, it can be assessed whether it is of great importance if the plastic insulators break.
At an **outside temperature below 15°C**, it is a clear (necessary) advantage that the insulators are stored at +20°C, so that they can be shaped/bent for assembly of segments.

Directional drilling is a bit of a "gray zone"
- If the media pipe is pulled into the casing pipe in a "straight line" before directional drilling, it is a standard solution.
- If the media pipe is pulled into the casing pipe AFTER directional drilling - meaning, in a curve at minus level, stronger insulators must be considered during execution.
  Calculations on load during directional drilling from your engineer, please.

We are happy to help with advices and choice of insulator and type. If it is not possible to find a type and dimension to suit the task at hand, so please state:

- media pipe OD
- media pipes material
- media - gas or fluid
- length of casing pipe
- casing pipe inner diameter + outer diameter
- casing pipe material





Cobalch ApS ● Hejreskovvej 24 ● DK-3490 Kvistgård ● Denmark ● Tel.: +45 4582 0533
Danske Bank: 1471 4130088031 ● IBAN - DKK: DK3130004130088031 - EUR: DK4730004130088228 ● Swift code: DABADKKK
CVR nr. DK70614316 ● cobalch@cobalch.com ● www.cobalch.com

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Specifications

Type	Material	Pipe dia Ø	Load	Bolts	Temperature
PA (2-parts) 	Polypropylene with low friction 0,2-0,5	25-336	PA 0,75-1,5 = 85 kg PA 2,0-3,0 = 100 kg PA 4 = 200 kg PA 6-12 = 250 kg	El-galvanized	-20° to +100°C
AZ 	Same	98-385	200 kg	El-galvanized	-20° to +100°C
MA 	Same	402-1249	650 kg	El-galvanized	-20° to +100°C
RANGER II® 	Same	46-564	**Skid Height:** 16,5/50 mm S=225 kg M=600 kg **Skid height:** 65/75 mm S=185 kg M=450 kg **Skid height:** 90/100 mm S=160 kg M=400 kg **Skid height:** 125/150 S=115 kg M=285 kg **Skid height:** 175 M=225 kg	S-Lock in plast (metal free)	-30° to +100°C
GKO-mk 	Same	160-430	250 kg	S-Lock in plast (metal free)	-20° to +100°C
GKO-gl/gs 	Same	400-2500	GKO-gl = 4000 kg GKO-gs = 14200 kg	S-Lock in plast (metal free)	-20° to +100°C

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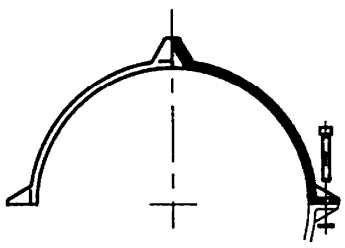
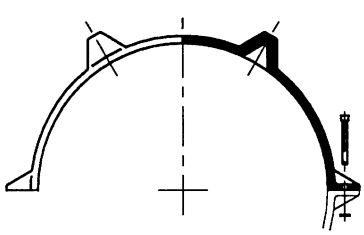
Insulator type PA- Type of segments

Dimensionstable type PA 0,75 til PA 4						
Outside pipediameter min. mm	Outside pipediameter max. mm	Insulator type	Skid height mm	Width mm	Numbers of segments per ring	Bolts and dimension
25,0	32,0	PA 0,75	12	80	2	4 x M4 x 30
32,0	40,0	PA 1 PA 1	13 25	80	2	4 x M4 x 30
42,0	48,3	PA 1,25	11	80	2	4 x M4 x 30
48,0	54,0	PA 1,5	14	80	2	4 x M4 x 30
60,0	67,0	PA 2 PA 2 PA 2	16 25 55	100	2	4 x M6 x 40
88,9	96,0	PA 3 PA 3 PA 3	16 25 48	100	2	4 x M6 x 40
106,6	120,0	PA 4 PA 4 PA 4 PA 4 PA 4	16 25 38 55 90	100	2	4 x M6 x 55
160,0	178,0	PA 6 PA 6 PA 6 PA 6	16 25 36 55	130	2	4 x M6 x 70
193,7	210,0	PA 7 PA 7 PA 7	36 75 90	175	2	4 x M6 x 70
221,0	239,0	PA 8 PA 8	36 55	130	2	4 x M6 x 70
244,5	260,0	PA 9 PA 9	16 55	175	2	4 x M6 x 70
276,0	295,0	PA 10 PA 10	25 36	130	2	4 x M6 x 70
298,5	315,0	PA 11 PA 11	25 55	175	2	4 x M6 x 70
326,0	336,0	PA 12	16	130	2	4 x M6 x 70

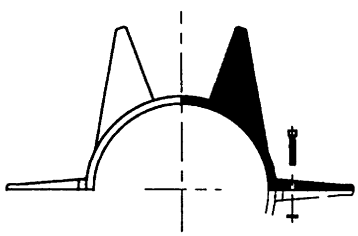
Sectional drawing
PA 0,75 to PA 4.
Insulator with 4 skids.



Sectional drawing
PA 6 - 8 - 10 - 12.
Insulator with 6 skids



Sectional drawing
PA 7 - 9 - 11.
Insulator with 6 skids



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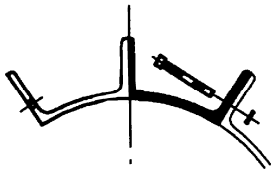
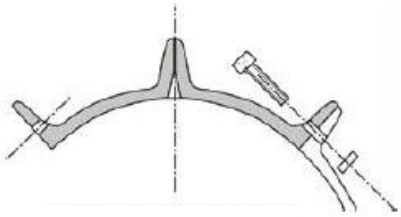
Insulator type AZ og MA - Type of segments

Dimensiontable type AZ 1 and AZ 2 - SKID HEIGHT: 16-25-36-55-75-90-110 mm						
Outside pipediameter min. mm	Outside pipediameter max. mm	Insulator type	Skid height mm	Width mm	Numbers of segments per ring	Bolts and dimension
98,0	130,0	AZ 1	16 til 90	130	3	6 x M6 x 70
130,0	172,0	AZ 1	16 til 90	130	4	8 x M6 x 70
173,0	202,0	AZ 1	16 til 90	130	5	10 x M6 x 70
203,0	230,0	AZ 2	16 til 110	130	3	6 x M6 x 70
234,0	268,0	AZ 2	16 til 110	130	3 AZ 2 + 1 AZ 1	8 x M6 x 70
269,0	301,0	AZ 2	16 til 110	130	4	8 x M6 x 70
302,0	350,0	AZ 2	16 til 110	130	4 AZ 2 + 1 AZ 1	10 x M6 x 70
350,0	385,0	AZ 2	16 til 110	130	5 AZ 2	10 x M6 x 70

Sectional drawing AZ 1



Sectional drawing AZ 2



Dimensionstable type MA - SKID HEIGHT: 25-36-55-75 mm				
Outside pipediameter min. mm	Outside pipediameter max. mm	Width mm	Numbers of segments per ring	Bolt and dimension
402,0	432,0	160	4 MA	8 x M8 x 70
420,0	426,0	160	4 MA	6xM8x70 - 2xM8x90
426,0	432,0	160	4 MA	4xM8x70 - 4xM8x90
450,0	494,0	160	4 MA + 1 MA 2	10 x M8 x 70
500,0	544,0	160	5 MA	10 x M8 x 70
548,0	599,0	160	5 MA + 1 MA 2	12 x M8 x 70
600,0	653,0	160	6 MA	12 x M8 x 70
654,0	699,0	160	6 MA + 1 MA 2	14 x M8 x 70
700,0	749,0	160	7 MA	14 x M8 x 70
750,0	799,0	160	7 MA + MA 2	16 x M8 x 70
800,0	849,0	160	8 MA	16 x M8 x 70
850,0	899,0	160	8 MA + MA 2	18 x M8 x 70
900,0	949,0	160	9 MA	18 x M8 x 70
950,0	994,0	106	9 MA + 1 MA 2	20 x M8 x 70
995,0	1044,0	106	10 MA	20 x M8 x 70
1045,0	1097,0	160	10 MA + 1 MA2	22 x M8 x 70
1098,0	1149,0	160	11 MA	22 x M8 x 70
1150,0	1199,0	160	11 MA + 1 MA2	24 x M8 x 70
1200,0	1249,0	160	12 MA	24 x M8 x 70

Sectional drawing MA

Sectional drawing MA 2

Insulator type RANGER II® - Type qty. of segments

Dimension table type RANGER II®		
RANGER II® str. S	**RANGER II® str. M**	**Numbers of segments**
46 - 62 mm		3
62 - 83 mm	138 - 188 mm	4
77 - 104 mm	172 - 235 mm	5
92 - 125 mm	207 - 282 mm	6
107 - 145 mm	241 - 329 mm	7
123 - 166 mm	276 - 376 mm	8
138 - 187 mm	310 - 423 mm	9
153 - 205 mm	344 - 470 mm	10
169 - 228 mm	379 - 517 mm	11
184 - 249 mm	413 - 564 mm	12

Sizes marked in red is NOT recommended

SKID HEIGHT					
Ranger II® - Str. S Width 80 mm	16,5 mm	28 mm	38 mm	44 mm	50 mm
	65 mm	75 mm	90 mm	100 mm	125 mm
Ranger II® - Str. M Width 130 mm	16,5 mm	28 mm	38 mm	44 mm	50 mm
	65 mm	75 mm	90 mm	100 mm	110 mm
	125 mm	150 mm	175 mm		

By larger pipe dimensions or heavier loads, referred to type GKO, see page 7

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Insulator type GKO

Type of segments

Dimension table type GKO-mk - SKID HEIGHT: 25-36-55-65-75-90-110-125 mm			
Outside pipediameter		**Width**	**Segments per ring**
min. mm	max. mm	**mm**	
150	180	130	4
181	230	130	5
231	280	130	6
281	330	130	7
331	380	130	8
381	430	130	9

GKO-gl

GKO-gs

GKO-gh

Dimension table type GKO - SKID HEIGHT: 36-50-65-75-90-110-125 mm				
Outside pipediameter		**Width**	**Type of segments**	
min. mm	**max. mm**	**mm**	GKO-gl/gs	GKO-gh
400	440	225	3	1
441	490	225	4	
491	540	225	4	1
541	625	225	5	
626	659	225	5	1
660	749	225	6	
750	854	225	7	
855	959	225	8	
960	1067	225	9	
1068	1199	225	10	
1200	1330	225	11	
1331	1440	225	12	
1441	1540	225	13	
1541	1660	225	14	
1661	1800	225	15	
1801	1910	225	16	
1911	2042	225	17	
2043	2150	225	18	
2151	2270	225	19	
2271	2400	225	20	
2401	2500	225	21	

Certificates

To offer our customer the best possible quality and service, the producer are organized according to DIN EN ISO 9001:2015 and have this continuously checked and certified.

Certificate ISO 9001:2015
This certification documents the producers conformity of the quality management system.

AEO-certificates
Authorized Economic Operator ”AEOC (customs simplification)”

Casing Spacers

Ruhrgas material testing

- DSI® Plastic Spacers GKO 125 gs, 125 gl, 36 gs, 36 gl; TALW component testing

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