

# PIPELINE INSULATING JOINTS

## Flange insulating kits

Document No.: 14-201-R1

Sheet: 1 of 2

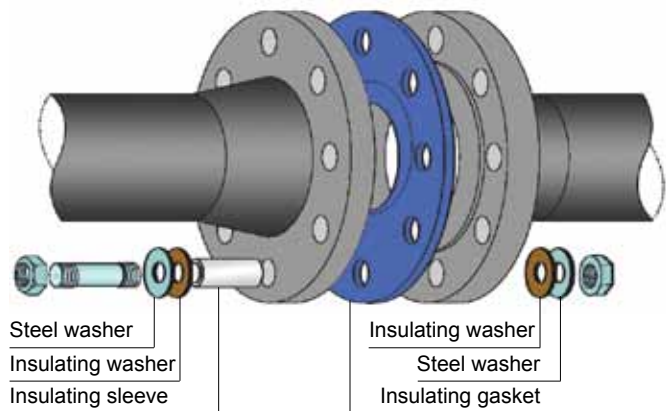
German Cathodic Protection



Flange Insulating Kits are used for electrically isolating cathodic protected pipeline sections from unprotected pipelines or other metallic structures.

Gasket-seals are sealings which are effective immediately after installation when the pipes are assembled the first time. The gaskets have an almost unlimited durability and can be removed and reinstalled several times.

Gask-O-Seal gaskets are available to fit all international standards, sizes and pressure ratings.



Material	Gaskets			Sleeve Spiral Wound Mylar	Washer High Strength Phenolic
	A	B	C		
Dielectric strength ( V/ mm )	20 000	20 000	94 000	4 000	2 000
Compressive strength ( N/cm <sup>2</sup> )	16 900	16 900	14 000		
Flexural strength ( N/cm <sup>2</sup> )	15 820	15 820	highly flexible		
Tensile strength ( N/cm <sup>2</sup> )	17 580	17 580	2 670		
Water absorption ( % )	1.6	1.6	5	0.8	1.0
Recommended max. temperature for continuous use ( °C )	80	107	316	150	107

### General Information

Gasket-seals are based on the advantageous principle of O-ring seals, but without their characteristic disadvantages. Unlike O-rings, there is no need to provide grooves in the flanges with close tolerances or to align the flanges exactly during assembly.

Gasket seals are made of first-class insulating materials. Later on, they may be converted into insulating flanges by adding insulating sleeves and washers.

Deformation of the sealing element under pressure is predetermined by the construction of the ring. The synthetic rubber of the element reverts to its original form if the flange is able to breathe under the pressure in the pipes, that is, the crown of the sealing ring remains in uniform contact with the inner flange surfaces, thus ensuring perfect sealing, even during pressure fluctuations.

The materials for the retainer and the sealing are carefully selected to allow their use in a wide range of liquids and gases under various operating conditions. Standard type gaskets can be used up to a maximum operating temperature of 107° C. High temperature gaskets even tolerate temperatures up to 180° C. Pressure capabilities considerably exceed the test pressure of ANSI 2500 flanges. They can also be used under low vacuum conditions.

**Material :** **A** Neoprene faced phenolic

**B** GASKET-SEAL retainer phenolic laminate with integral nitrile or viton seals

**C** Red Devil® Style 940 non-asbestos

High temperature materials: max. operating temperature 180° C

Retainer: high temperature phenolic

Seal element: fluorocarbon

If required, retainers and seals made of other materials can be supplied for special applications (for corrosive liquids, gases, vacuum).

### Insulating Kits

Flange Insulating Kits consist of the following :

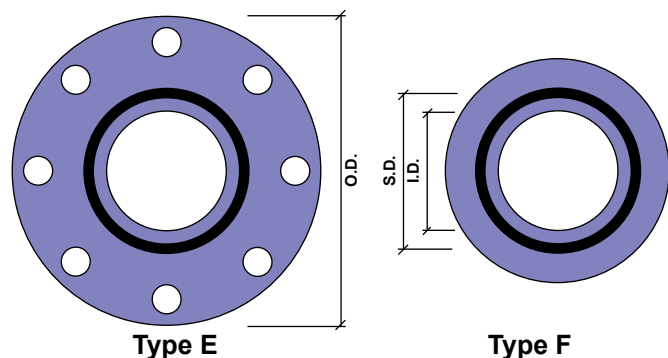
1 Gasket

Insulating sleeves (qty. according to flange type)

Insulating washers (qty. according to flange type)

Bright steel washers (qty. according to flange type)

Bolts and nuts are not included as standard but can be delivered on request.



Gasket-Seal **Type E** are used to avoid electrical contact points.

When using **Type F** gasket seals, the outside of the flange has to be taped.

No shutdown will be necessary when converting a normal gasket seal into an insulating flange. The bolts are removed one after another, fitted with insulating sleeves and washers, and then reinstalled. The flange coupling remains unaffected.

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Document No.: 14-201-R1

Sheet: 2 of 2

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**Flange Insulating Kits (Gasket Dimensions)**

Nom. Pipe Size	Gasket I.D.		Gasket O.D.		Seal Ring centre line dia.	Seal Ring width	Number and size of bolts							
	from	to	Type E	Type F			ANSI 150	ANSI 300	ANSI 400	ANSI 600	ANSI 900	ANSI 1500	ANSI 2500	
1	1 1/16	1	Same as O.D. of flange	Bolt circle less bolt diameter	1.524"	.156	4- 1/2	4- 5/8	4- 5/8	4- 5/8	4- 7/8	4- 7/8	4- 7/8	
1 1/4	1 3/8	1 1/4			1.940"	.156	4- 1/2	4- 5/8	4- 5/8	4- 5/8	4- 7/8	4- 7/8	4- 1	4- 1
1 1/2	1 5/8	1 1/2			2.210"	.156	4- 1/2	4- 3/4	4- 3/4	4- 3/4	4- 1	4- 1	4- 1 1/8	4- 1 1/8
2	2 1/16	1 15/16			2.760"	.156	4- 5/8	8- 5/8	8- 5/8	8- 5/8	8- 7/8	8- 7/8	8- 1	8- 1
2 1/2	2 1/2	2 5/16			3.020"	.156	4- 5/8	8- 3/4	8- 3/4	8- 3/4	8- 1	8- 1	8- 1 1/8	8- 1 1/8
3	3 1/16	2 15/16			3.600"	.156	4- 5/8	8- 3/4	8- 3/4	8- 3/4	8- 7/8	8- 1 1/8	8- 1 1/8	8- 1 1/4
3 1/2	3 9/16	3 7/16			4.170"	.172	8- 5/8	8- 3/4	8- 7/8	8- 7/8				
4	4 1/16	3 13/16			4.750"	.172	8- 5/8	8- 3/4	8- 7/8	8- 7/8	8- 1 1/8	8- 1 1/4	8- 1 1/2	8- 1 1/2
5	5 1/16	4 13/16			5.650"	.172	8- 3/4	8- 3/4	8- 7/8	8- 1	8- 1 1/4	8- 1 1/2	8- 1 3/4	8- 1 3/4
6	6 1/16	5 3/4			6.720"	.172	8- 3/4	12- 3/4	12- 7/8	12- 1	12- 1 1/8	12- 1 3/8	12- 1 3/8	8- 2
8	8	7 5/8			8.720"	.172	8- 3/4	12- 7/8	12- 1	12- 1 1/8	12- 1 3/8	12- 1 3/8	12- 2	12- 2
10	10 1/16	9 3/4			11.000"	.172	12- 7/8	16- 1	16- 1 1/8	16- 1 1/4	16- 1 3/8	12- 1 7/8	12- 2 1/2	12- 2 1/2
12	12 1/16	11 3/4			13.500"	.172	12- 7/8	16- 1 1/8	16- 1 1/4	20- 1 1/4	20- 1 3/8	16- 2	12- 2 3/4	12- 2 3/4
14	13 1/4	13			14.700"	.172	12- 1	20- 1 1/8	20- 1 1/4	20- 1 3/8	20- 1 1/2	16- 2 1/4		
16	15 1/4	15			16.750"	.188	16- 1	20- 1 1/4	20- 1 3/8	20- 1 1/2	20- 1 5/8	16- 2 1/2		
18	17 1/4	17			19.000"	.188	16- 1 1/8	24- 1 1/4	24- 1 3/8	20- 1 5/8	20- 1 7/8	16- 2 3/4		
20	19 1/4	19			21.000"	.188	20- 1 1/8	24- 1 1/4	24- 1 1/2	24- 1 5/8	20- 2	16- 3		
22	21 1/4	21			23.250"	.188	20- 1 1/4	24- 1 1/2	24- 1 5/8	24- 1 3/4				
24	23 1/4	23			25.000"	.188	20- 1 1/4	24- 1 1/2	24- 1 3/4	24- 1 7/8	20- 2 1/2	16- 3 1/2		
26	25 1/4	25			26.500"	.188	24- 1 1/4	28- 1 5/8	28- 1 3/4	28- 1 7/8	20- 2 3/4			
28	27 1/4	27			28.500"	.188	28- 1 1/4	28- 1 5/8	28- 1 7/8	28- 2	20- 3			
30	29 1/4	29			30.500"	.188	28- 1 1/4	28- 1 3/4	28- 2	28- 2	20- 3			
32	31 1/4	31			32.500"	.188	28- 1 1/2	28- 1 7/8	28- 2	28- 2 1/4	20- 3 1/4			
34	33 1/4	33			34.500"	.188	32- 1 1/2	28- 1 7/8	28- 2	28- 2 1/4	20- 3 1/2			
36	35 1/4	35			36.500"	.250	32- 1 1/2	32- 2	32- 2	28- 2 1/2	20- 3 1/2			
40	39 1/4	39			40.500"	.250	36- 1 1/2	36- 2	32- 2 1/2	28- 2 3/4				
42	41 1/4	41			42.500"	.250	36- 1 1/2	36- 2	32- 2 1/2	28- 2 3/4				

Pipe Size DN	Type E	Type F	Number and size of bolts according to DIN, ISO and BS 4504										
			nominal pressure										
			10	16	25	40	64	100	160	250			
10	Same as O.D. of flange	Bolt circle less bolt diameter	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M16	
15			4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M12	4-M16	
20			4-M12	4-M12	4-M12	4-M12	4-M12						
25			4-M12	4-M12	4-M12	4-M12	4-M12	4-M16	4-M16	4-M16	4-M16	4-M20	
32			4-M16	4-M16	4-M16	4-M16	4-M16						
40			4-M16	4-M16	4-M16	4-M16	4-M16	4-M20	4-M20	4-M20	4-M20	4-M24	
50			4-M16	4-M16	4-M16	4-M16	4-M16	4-M20	4-M24	4-M24	4-M24	8-M24	
65			4-M16	4-M16	4-M16	4-M16	4-M16	8-M20	8-M20	8-M24	8-M24	8-M24	8-M24
80			8-M16	8-M16	8-M16	8-M16	8-M16	8-M20	8-M24	8-M24	8-M24	8-M27	8-M27
100			8-M16	8-M16	8-M16	8-M20	8-M24	8-M24	8-M27	8-M27	8-M27	8-M30	8-M30
125			8-M16	8-M16	8-M20	8-M24	8-M24	8-M27	8-M30	8-M30	8-M30	12-M30	12-M30
150			8-M20	8-M20	8-M24	8-M24	8-M30	12-M30	12-M30	12-M30	12-M30	12-M33	12-M33
175				8-M20	8-M24	12-M27	12-M30	12-M30	12-M30	12-M33	12-M33	12-M33	12-M33
200			8-M20	12-M20	12-M27	12-M27	12-M33	12-M33	12-M33	12-M33	12-M33	12-M39	12-M39
250			12-M20	12-M24	12-M27	12-M30	12-M33	12-M36	12-M39	16-M39	16-M39	16-M45	16-M45
300			12-M20	12-M24	12-M27	16-M30	16-M33	16-M39	16-M39	16-M39	16-M39		
350			16-M20	16-M24	16-M27	16-M33	16-M36	16-M45	16-M45	16-M45	16-M45		
400			16-M24	16-M27	16-M30	16-M36	16-M39	16-M45					
450			20-M24	20-M27	16-M33								
500			20-M24	20-M30	20-M33	20-M39	20-M45	20-M52	20-M52	20-M56	20-M56		
600	20-M27	20-M33	20-M33	20-M45	20-M52	20-M56	20-M56	20-M56	20-M56				
700	24-M27	24-M33	20-M36	24-M45	24-M52	24-M56	24-M56	24-M64	24-M64				
800	24-M30	24-M36	24-M39	24-M52	24-M56								
900	28-M30	28-M36	24-M45	28-M52	28-M56								
1000	28-M33	28-M39	28-M45	28-M52	28-M56								
1200	32-M36	32-M45	28-M52	32-M56	32-M72								
1400	36-M39	36-M45		36-M56									