FW-FERNWÄRME-TECHNIK GmbH

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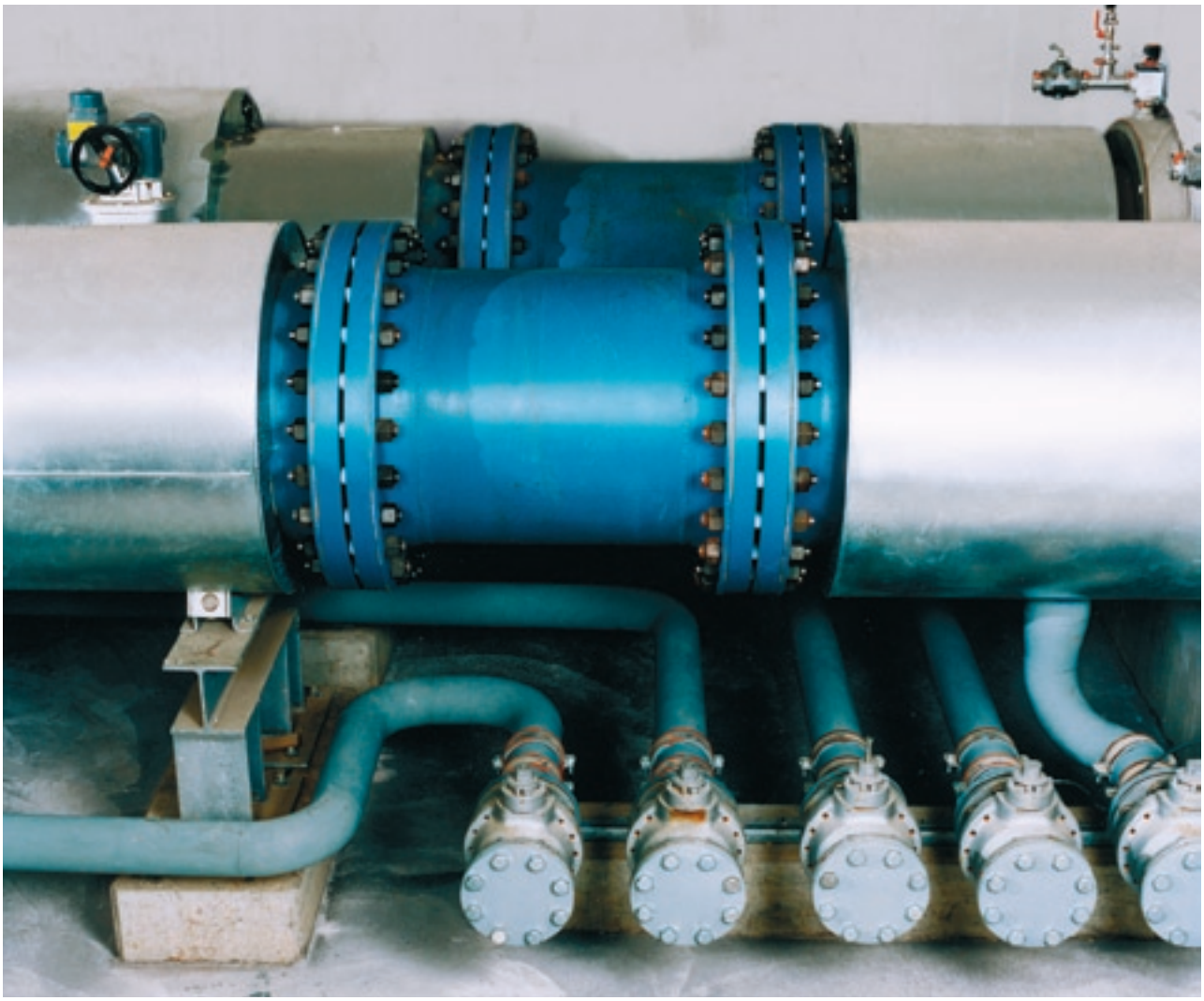
Insulating Pieces for Cathodic Corrosion Protection of Earth-Laid Pipelines



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Insulating Pieces

for Cathodic Corrosion Protection of Earth-Laid Pipelines

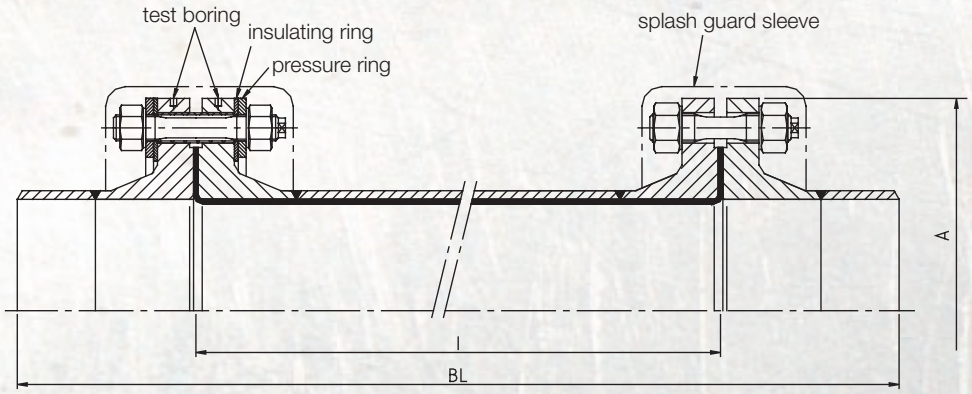
Corrosion refers to a reaction between a metal material and its environment that may cause a measurable alteration of the material and impair the function of a metal component or an entire system. Physical and chemical influences such as stray current, e.g. in the vicinity of trams, have an additional impact on corrosion.

The lifetime of steel structures can be considerably extended by using cathodic protection (CCP). Compared to the value of the object to be protected, the costs of a cathodic corrosion protection system are very low. CCP is the most effective method for active protection against corrosion und ensures safe long-term operation.

According to its basic principle, the metal surface to be protected is made the cathode of a DC circuit in which it is electrically connected to a (sacrificial) anode made of a more easily corroded metal. A low-voltage current compensates the corrosion current flowing in the opposite direction, thus preventing oxidation. This electrochemical process is, amongst others, used for earth-laid steel pipes.

In pipe systems, the protective effect also depends on the quality of the electrical insulation between protected and unprotected sections. Such a galvanic separation is provided by insulating pieces of FW-FERNWÄRME-TECHNIK GmbH and SGL CARBON GmbH.

The insulating pieces consist of a polytetrafluoroethylene-lined (PTFE) centre piece with two screw-on welding neck flanges. The electrical insulation of the mating flanges in the area of the bolt is ensured by insulating sleeves. Insulating pieces of this kind are much more reliable than short insulation flanges.



Range of application:

DN 50 – 1000
Operating temperatures
max. 200 °C

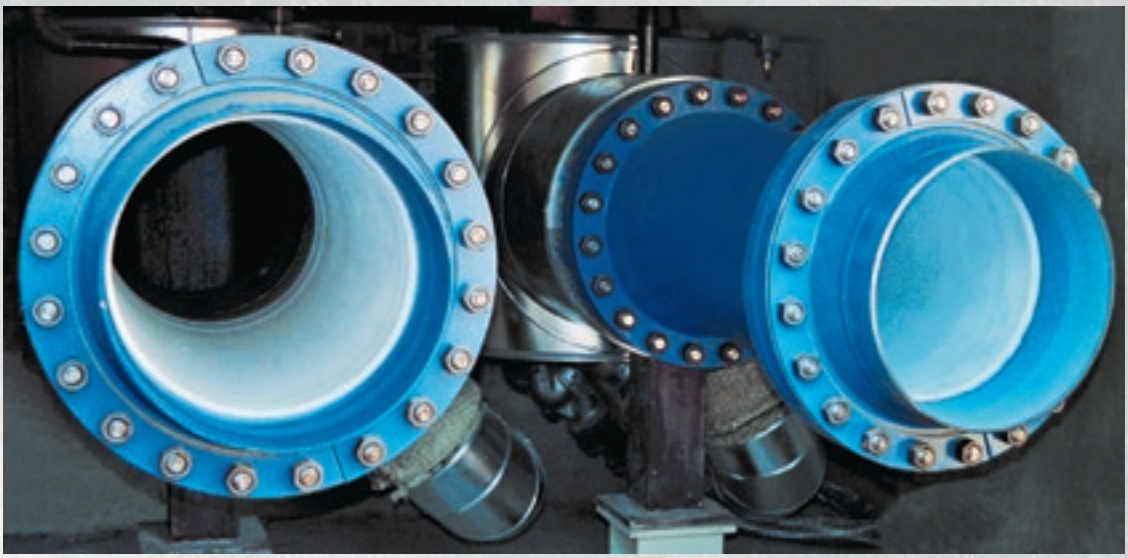
Nominal pressure PN 25
to DN 150 PN 40

Materials:

Steel pipe	P235GH (P265GH)	EN 10217-2
Flanges	P250GH (1.0460)	EN 10092-1/11 C
Bolts/nuts	24CrMo5	DIN 2510
Pressure ring	S235JR	DIN EN 10025
Lining	POLYFLURON®, virginal, paste-extruded PTFE	
Splash guard sleeve	PTFE	

For electrical conductance µS/cm, please refer to the AGFW rules and standards worksheet FW 510, “Requirements for circulation water of industrial and district heating systems and recommendations on their operation”.

Installation



In General

Insulating pieces are delivered in pre-assembled condition. No disassembly of the components is required prior to installation. The weld studs are sufficiently long as to avoid thermal damage to the PTFE lining during the welding process.

However, if it should nevertheless be necessary to disassemble the flanges, the flared PTFE edges should not remain unloaded for more than one hour as this may cause the PTFE liners to bulge back and inhibit installation.

The flow direction of the medium has no effect on the installation.

The root run of the weld studs should be GTA-welded in order to prevent welding beads from running onto the PTFE lining inside the insulation flange. The filler and final passes must be MMA-welded.

After having completely welded in the insulating piece, the indicated tightening torque (Table: Md) must be checked.

Upon successful completion of the hydrostatic test, the splash guard sleeves are mounted.

Insulating pieces for steel-in-steel pipes must by no means be equipped with heat insulation laminated with aluminium foil or wire cloth. This lamination would bypass the electrical separation of the insulating pieces rendering them ineffective. The electrical separation must also not be bypassed by sheet metal cladding in the area of the insulating piece, as is the case when an electrical contact is established between the sheet metal cladding and the earthed section of the pipe and the section subject to cathodic protection. Electrical contacts may be avoided by using safety shields.

Notes on PTFE lining

The PTFE lining in the centre insulation piece is flared between the welding neck flanges having highly profiled sealing surfaces and assumes the function of the flange seal.
After exposing the pipe to a thermal load for the first time, the tightening torques must be checked and must be retightened if necessary.

Sizes, Weights, Torques

DN	mm	PN bar	A mm	BL mm	l mm	G kg	Md Nm
50/25	33,7 x 2,6	25/40	165	549 with IRR	296	21	55
50/32	42,2 x 2,6	25/40	165				
50/40	48,3 x 2,6	25/40	165				
50	60,3 x 2,9	25/40	165	597	296	21	55
65	76,1 x 2,9	25/40	185	613	304	27	45
80	88,9 x 3,2	25/40	200	637	316	32	50
100	114,3 x 3,6	25/40	235	665	330	45	70
125	139,7 x 4,0	25/40	270	677	336	62	100
150	168,3 x 4,5	25/40	300	705	350	77	135
200	219,1 x 6,3	25	360	825	460	116	140
250	273 x 7,1	25	425	990	606	173	210
300	323,9 x 7,1	25	485	1036	644	219	220
350	355,6 x 8	25	555	1111	700	315	330
400	406,4 x 8,8	25	620	1251	820	416	440
500	508 x 6	25	730	1561	1100	570	470
600	610 x 6	25	845	1561	1100	679	650
700	711 x 8	25	960	1561	1000	927	700
800	813 x 8	25	1085	1581	1000	1238	1000
900	914 x 10	25	1165	1601	1000	1561	1000
1000	1016 x 10	25	1320	1621	1000	1920	1400

on stock

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One of the world's leading suppliers of system solutions, equipment, components and services for the chemical and related industries. 2007 Acquisition of Dr. Schnabel GmbH, the specialist for premium PTFE products in the area of process technology.

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FW-FERNWÄRME-TECHNIK GmbH

Established in 1980
Manufacturer of pipe-in-pipe systems for a temperature range of -200°C to +400°C (liquefied gas, e.g. LNG, steam, high-pressure hot water, hazardous media)

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