

upg PIPE
SYSTEMS

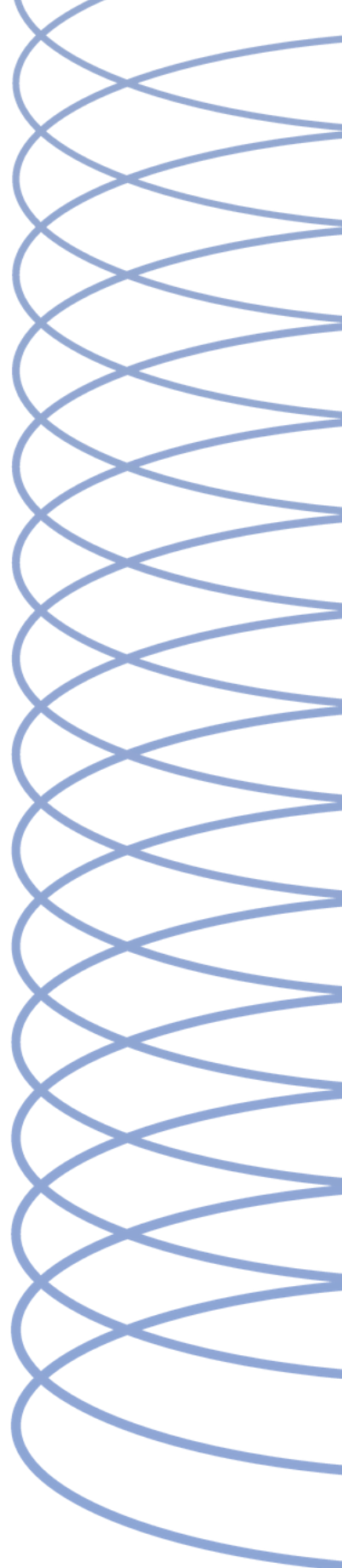
REINERT-RITZ



Flanges Connection Installation Guide



Ultimate Solutions.
Intelligent Delivery.



INSTALLATION INSTRUCTIONS

For safe and reliable functioning of the flange connection, the properly executed installation of the correctly matched components is essential. The following installation instructions are based on DVS specifications for the installation of flange connections.

The materials used in the components of the "flange connection" system determine the required bolt- tightening torques. The bolt tightening torques are required for the forces and the necessary surface pressure resulting from these.

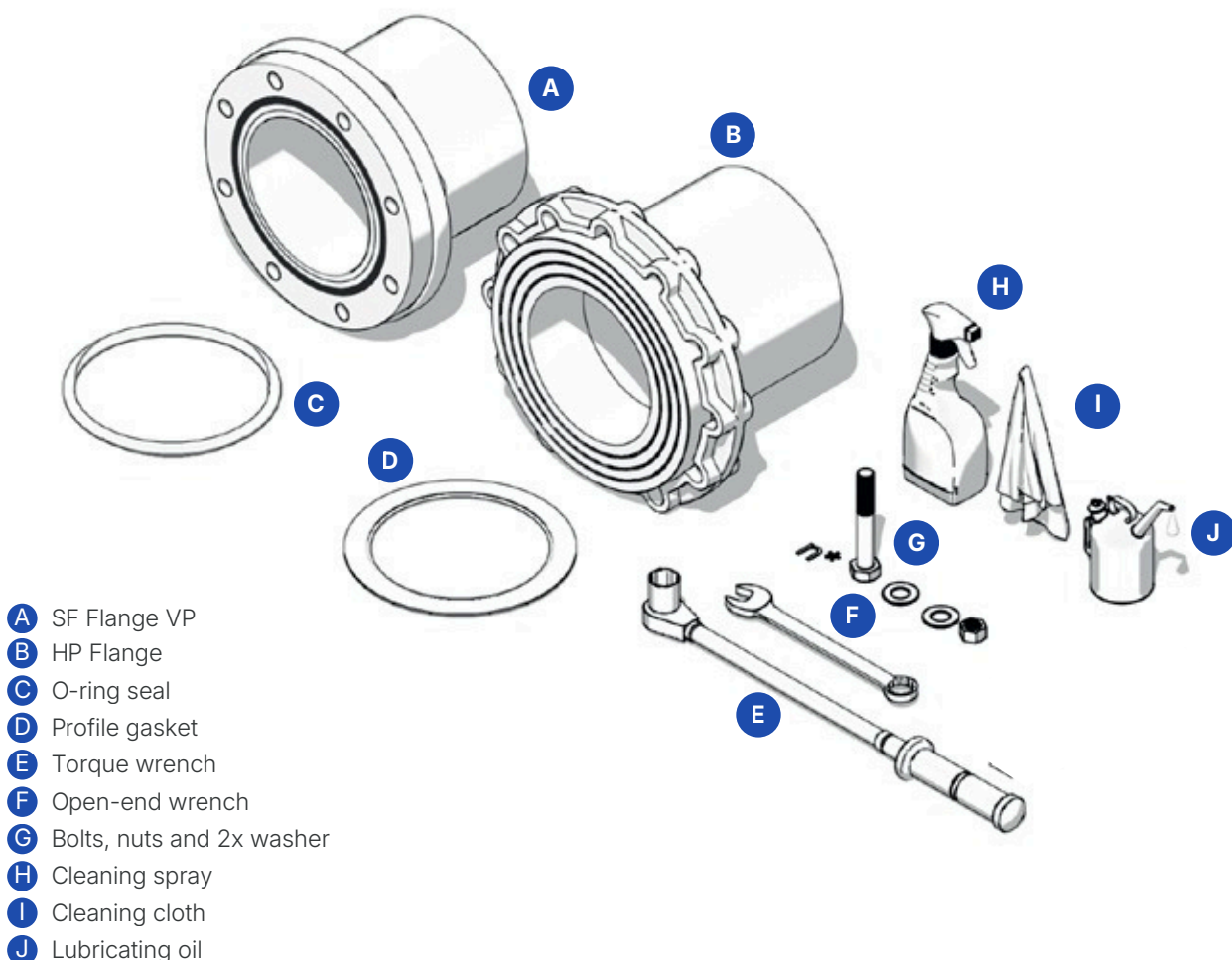
Besides the flanges, the components in this system comprise the gasket and the bolts, nuts and washers. The flange partners can be made of different materials (PE100 and cast iron or steel, for example).

The special properties of all involved components must therefore be taken into account in the calculation of the bolt tightening torques under ideal conditions. The values listed then only apply to this constellation.

Ideal conditions include the tension free installation of the listed components at room temperature and pre sure loading of the flange connection only by the assumed load case (usually internal pressure).

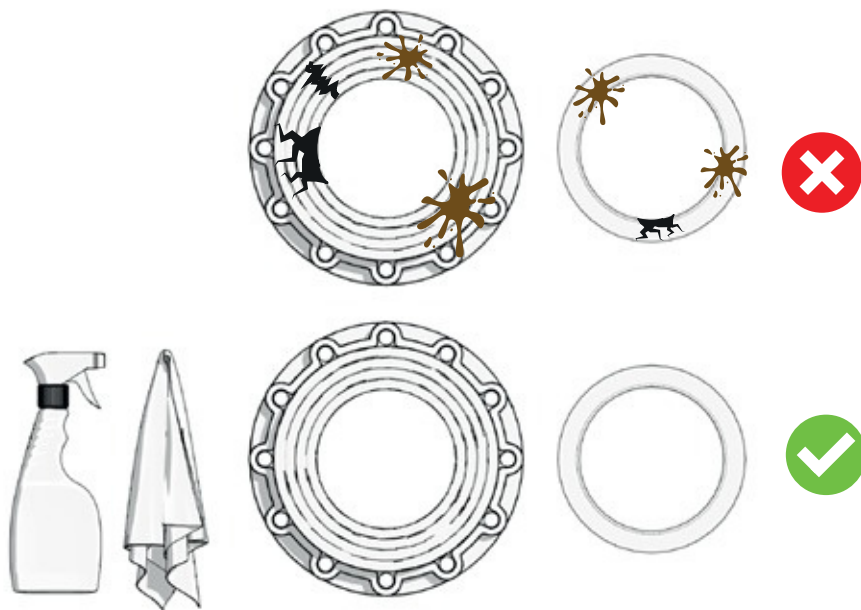
Additional stresses that affect the connection and thereby the surface pressure of the gasket must also be taken into account. In particular, temperature differences during laying, installation and operation, which have a strong impact particularly with plastic pipelines, as well as slope locations without fixed points, must then be taken into account by the planner as special installation and operating conditions. In the case of uncertainties and special installtion conditions, we will be pleased to support you.

With our installation instructions and the bolt tightening torques determined for the respective flange type, a permanently tight flange connection for our flange solutions can be produced.



INSTALLATION INSTRUCTIONS

Cleaning and testing the stub and gasket

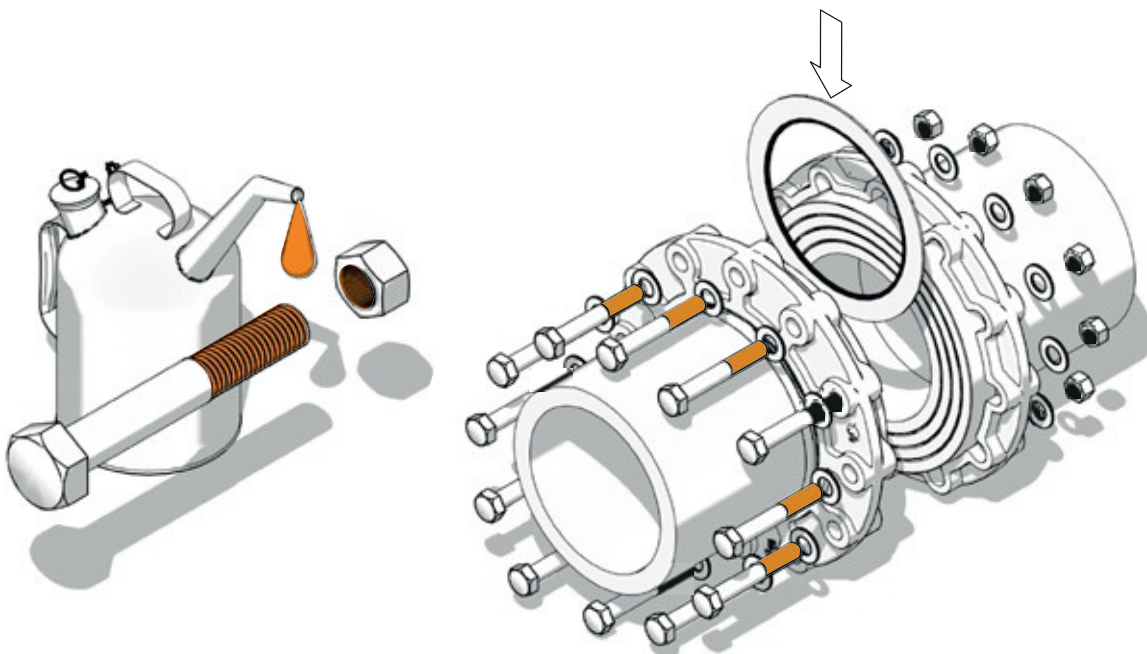


Info+ Box

Approx. 90 % of the bolt tightening torque is required for the surface pressure.

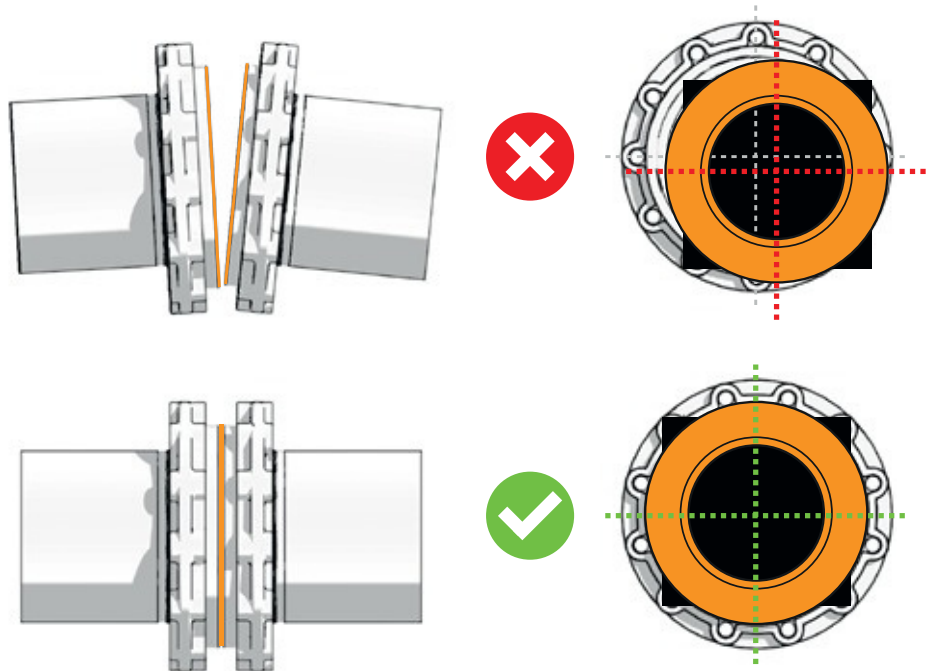
With corroded bolt connections it may be that only 30% of the required torque is achieved. The remaining torque will be lost in the bolt as frictional resistance.

Lubricating all threads Inserting the gasket or checking the O-ring for correct seating

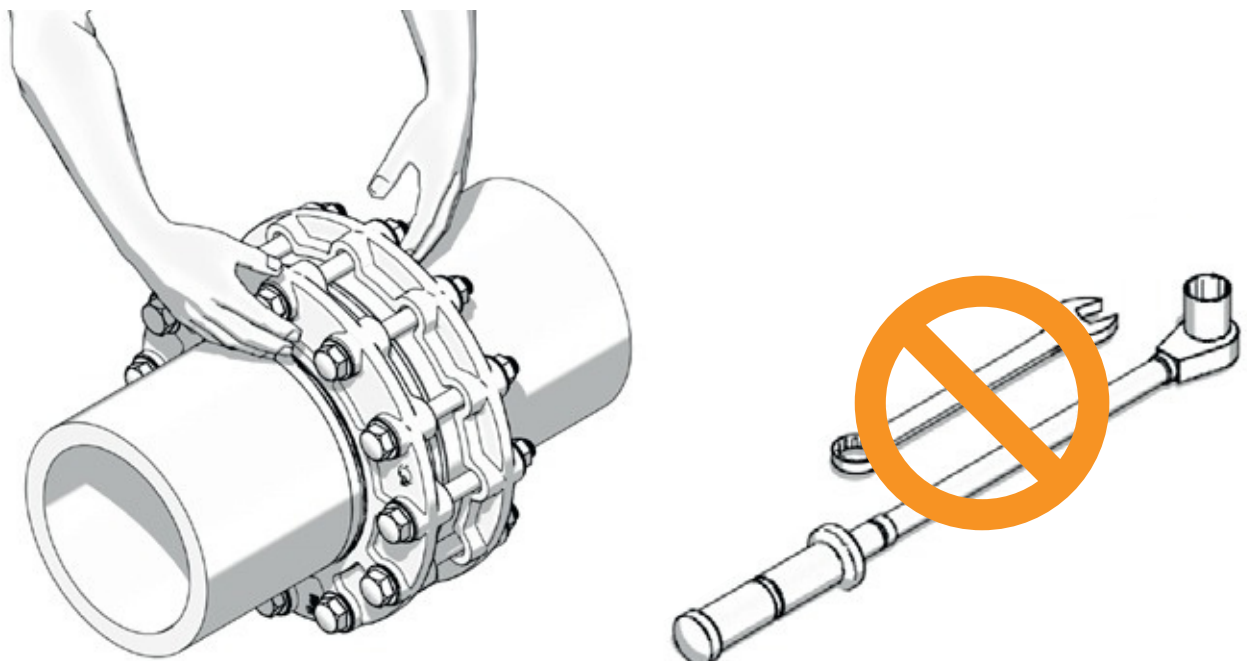


INSTALLATION INSTRUCTIONS

Aligning the stubs and gasket

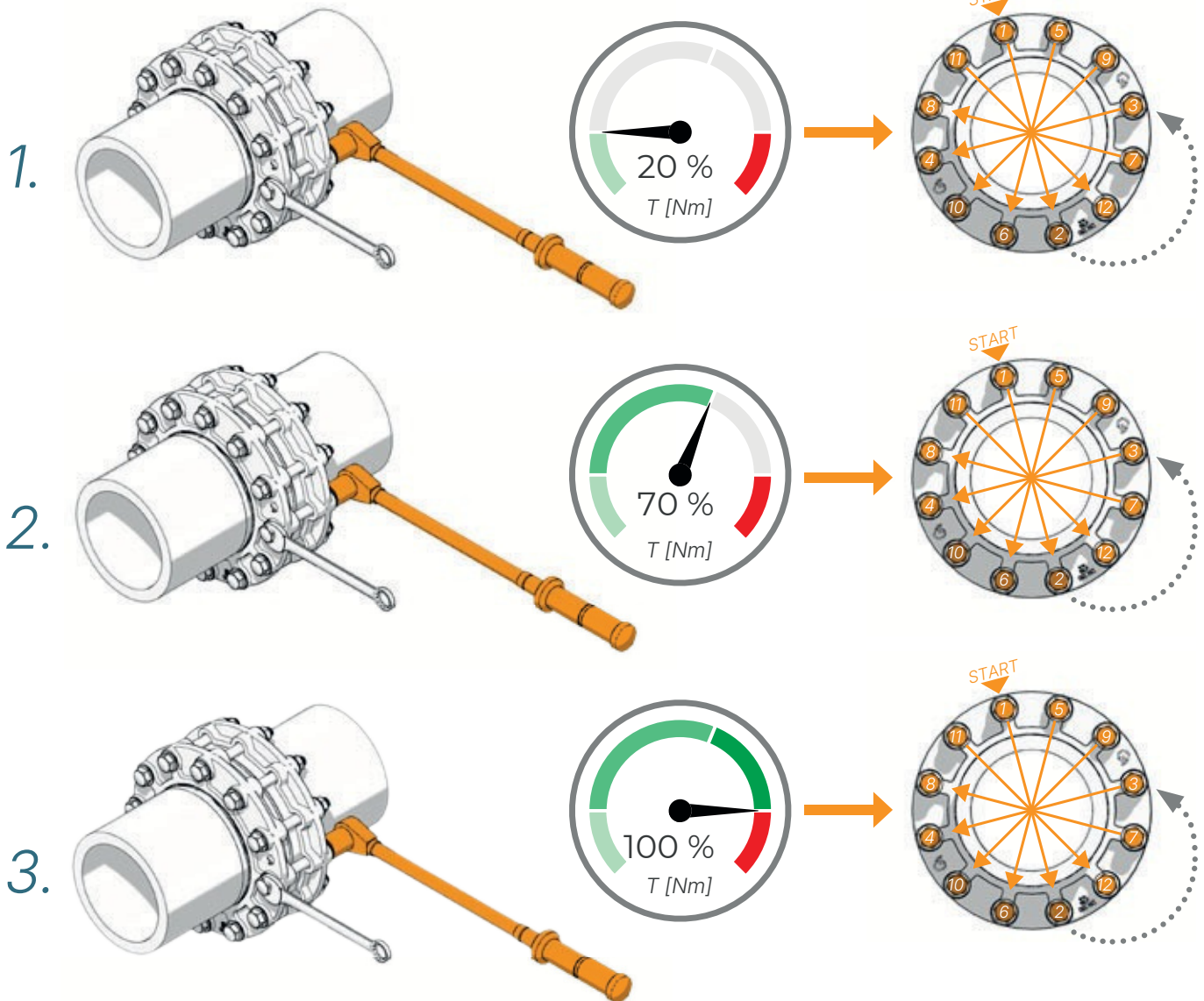


Tightening the bolts by hand



INSTALLATION INSTRUCTIONS

Tighten crosswise in three steps to full bolt torque



Info Box

"Clicking" of the torque wrench indicates that the preset value has been reached. Slow approach is necessary, otherwise the value will be exceeded.

TO BE NOTED:

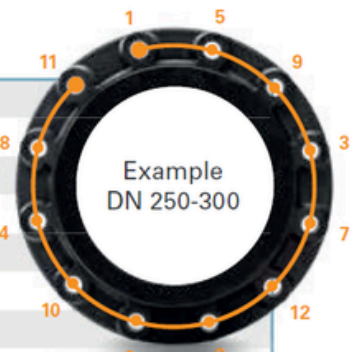
- The bolt tightening torques for our flange solutions can be found in the supplementary sheet. In the case of other conditions, please contact us.
- Exceeding the bolt tightening torques will damage the elastomer seal or the PE stub and cause leakage.
- After the pressure test, the required bolt tightening torques must be checked and, if necessary, re-tightening performed

INSTALLATION INSTRUCTIONS

The following points are intended to help you produce a resilient and tight flange connection. The diagonal labelling of the bolts helps you observe the correct order when tightening the bolts. The checklist can be used to review the most important points before conducting a leak test.

Diagonal labelling

DN	Number of bolts	Clockwise order
50	4	1-3-2-4
65-200	8	1-5-3-8-2-6-4-7
250-300	12	1-5-9-3-7-12-2-6-10-4-8-11
350/400	16	1-9-5-13-3-11-7-16-2-10-6-14-4-12-8-15
450-600	20	1-13-5-17-9-3-15-7-19-11-2-14-6-18-10-4-16-8-20-12
700/800	24	1-9-17-5-13-21-3-11-19-7-15-24-2-10-18-6-14-22-4-12-20-8-16-23
900/1000	28	1-13-5-25-17-9-21-3-16-7-27-19-11-23-2-14-6-26-18-10-22-4-15-8-28-20-12-24
1200	32	1-9-17-25-5-31-13-23-3-11-19-27-7-29-15-21-2-10-18-26-6-32-14-24-4-12-20-28-8-30-16-22



Common causes of leakage at a flange connection

- Pulling of flanges
- Multi-axial loading (e.g. bending load) of the flange connection, in addition to the internal pressure
- Use of wrong gasket
- Deviating temperature conditions during installation and operation of the pipeline
- Installation situation deviates from the calculation basis (e.g. vertically suspended flange pipe)
- Flange dimensions differ from those of the calculation basis (e.g. ANSI flanges)

**In these cases, the listed bolt tightening torques lose their validity.
The loads must be recalculated. Contact us for assistance.**

BOLT TIGHTENING TORQUES

HPFLANGE | PN10 for connection with profile gasket

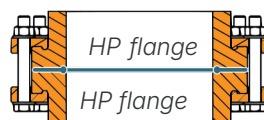
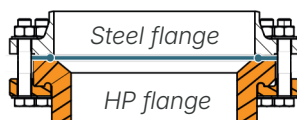


In the table you will find our recommended values for the bolt tightening torques of the flange connection shown and corresponding gasket, in addition to the minimum and maximum permissible values under the listed conditions. Below the minimum bolt tightening torques leakage at test pressure is to be expected, while above the maximum bolt tightening torques the flange connection is overloaded. A permanently tight flange connection is then no longer possible.

These bolt tightening torques have been carefully calculated by us and confirmed regularly and on a random basis in internal-pressure creep tests (20°C, test pressure: 1.5 x max. operating pressure).

The values apply to the following conditions:

- Flange dimensions according to DIN EN 1092-1
- Buried, horizontal installation
- Axial load caused by internal pressure only (no bending, slope location, etc.)
- 20° C ambient and fitting temperature
- Rubber-steel profile gaskets (Kroll & Ziller and Klinger) or O-rings made of EPDM or NBR with corresponding flanges
- Pairing of flanges according to sketch
- Sealing surfaces according to DIN EN 1092-1 types A and B
- New, lubricated bolted connections of the same quality according to standard DIN EN 1092-1 (quality 5.6 or higher)
- Washers under nut and bolt head
- Installation according to our instructions



Nominal size (DN)	PE Pipe (DN/OD)	Torque in Nm			Torque in Nm		
		Min.	Recommended	Max.	Min.	Recommended	Max.
40	50	8	23	27	6	27	32
50	63	11	43	51	12	55	65
65	75	8	29	34	9	39	46
80	90	10	36	42	11	45	53
100	110	14	38	45	14	55	64
100	125	14	38	45	14	46	55
125	140	20	50	59	20	75	88
150	160	32	66	78	32	117	137
150	180	32	66	78	33	83	97
200	200	52	95	111	49	178	210
200	225	52	95	111	51	128	151

The bolt tightening torques for dimensions > DN 200 are provided with the delivery documents.

TO BE NOTED:

Even small changes to the system or its components have a strong impact on the flange connection: e.g. unlubricated bolts or a different type of bolt. Due to the many possible framework conditions, we cannot provide guaranteed values.

We will be happy to advise you on specific situations.

BOLT TIGHTENING TORQUES

HPFLANGE | PN16 for connection with profile gasket

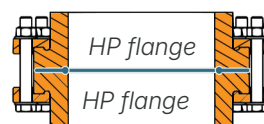
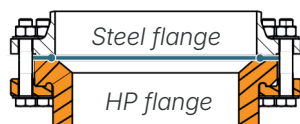


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		Min.	Recommended	Max.	Min.	Recommended	Max.
40	50	8	23	27	6	27	32
50	63	11	43	51	12	55	65
65	75	8	29	34	9	39	46
80	90	10	36	42	11	45	53
100	110	14	38	45	14	55	64
100	125	14	38	45	14	46	55
125	140	20	50	59	20	75	88
150	160	32	66	78	32	117	137
150	180	32	66	78	33	83	97
200	200	52	95	111	49	178	210
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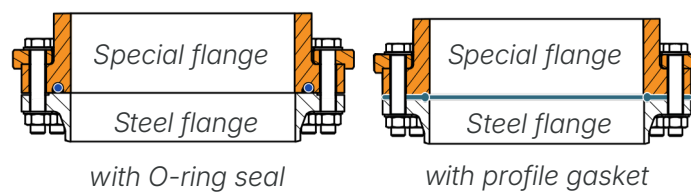
SPECIAL FLANGE & VP | PN10

In the table you will find our recommended values for the bolt tightening torques of the flange connection shown and corresponding gasket, in addition to the minimum and maximum permissible values under the listed conditions. Below the minimum bolt tightening torques leakage at test pressure is to be expected, while above the maximum bolt tightening torques, the flange connection is overloaded. A permanently tight flange connection is then no longer possible.

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- Pairing of flanges according to sketch
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- Installation according to our instructions



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65	90	4	35	42	7	29	34
80	110	6	41	48	9	36	42
100	140	9	44	51	11	38	45
125	160	13	61	72	16	50	59
125	180	13	61	72	16	50	59
150	200	22	72	84	25	66	78

The bolt tightening torques for dimensions > DN 200 are provided with the delivery documents.

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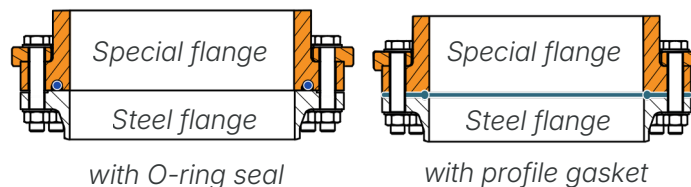
SPECIALFLANGE | PN16

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150	200	30	72	84	32	66	78

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