

## Torque Guidelines



### For reliable sealing of standardized flange connections

As a general rule, the highest possible surface pressure is essential to achieve a reliable seal. It must be ensured that both the maximum permissible surface pressure and the torque recommendation of the flange manufacturer are not exceeded. Our recommended torques in this respect are shown below for common flange types. It should also be noted that the user may have to provide proof of tightness and strength in accordance with EN1591-1.

The user is basically responsible for ensuring that the torques used do not exceed those of the pipeline manufacturer.

	DN	Torque [Nm]					Gasket thickness
		PN6	PN10	PN16	PN25	PN40	[mm]
<b>Steel Flange</b>	10	30	50	50	50	50	1,5
	15	30	50	50	50	50	1,5
	20	30	50	50	50	50	1,5
	25	30	50	50	50	50	1,5
	32	50	120	120	120	120	1,5
	40	50	120	120	120	120	1,5
	50	50	120	120	120	120	1,5
	65	50	120	120	120	120	1,5
	80	120	120	120	120	120	1,5
	100	120	120	120	230	230	1,5
	125	120	120	120	420	420	1,5
	150	120	230	230	420	420	1,5
	200	120	230	230	420	440	1,5
	250	120	230	420	440	440	1,5
	300	230	230	420	440	440	1,5

**Note:** The above values apply only under the following conditions:

- Welding neck flange according to EN 1092-1 Type 11 Form B with gaskets according to EN1514-1 Form IBC
- Friction factor  $\mu = 0,15$  (for lubricated screws)
- Screw quality: 5.6 (rigid screw)

Glass-Lined Steel Flange					Gasket dimensions		
	DN	Number of screws	Size of screws	Torque [Nm]	ID [mm]	OD [mm]	Thickness [mm]
	25	4	M 12	40	31	71	6
	32	4	M 16	60	38	82	6
	40	4	M 16	70	46	92	6
	50	4	M 16	90	57	107	6
	65	4	M 16	110	70	127	6
	80	8	M 16	70	85	142	6
	100	8	M 16	80	110	162	6
	125	8	M 16	100	135	192	6
	150	8	M 20	130	160	218	6
	200	8	M 20	180	210	273	6
	250	12	M 20	140	265	328	6
	300	12	M 20	160	315	378	6

Note: The above values apply only under the following conditions:

- Flange size PN10
- Gasket size: all inner diameters different from standard EN1514-1
- Friction factor  $\mu = 0,14$  (for lubricated screws)
- It is essential to check the screw force after the first temperature cycle. If necessary, retighten the screws to the initial torque at room temperature.

Plastic flange	DN	25	32	40	50	65	80	100	125	150	200	250	300
	Torque minimum [Nm]	10	15	20	25	30	20	20	30	35	50	40	45
	Torque maximum [Nm]	15	25	30	40	50	30	35	45	60	85	65	75
	Gasket thickness [mm]	3	3	3	3	3	3	3	3	3	3	3	3

Note: The above values apply only under the following conditions:

- Flange size PN10
- Gasket size according to standard EN1514-1
- Friction factor  $\mu = 0,15$  (for lubricated screws)

<b>Standard ASME-flange</b>					
(gaskets with form IBC on steel flanges with sealing strip)					
<b>Class 150</b>			<b>Class 300</b>		
<b>Diameter</b>		<b>Torque [Nm]</b>	<b>Diameter</b>		<b>Torque [Nm]</b>
<b>Flange</b>	<b>Screw</b>		<b>Flange</b>	<b>Screw</b>	
1/2"	1/2"	40	1/2"	1/2"	40
3/4"	1/2"	60	3/4"	5/8"	60
1"	1/2"	70	1"	5/8"	110
1 1/4"	1/2"	90	1 1/4"	5/8"	150
1 1/2"	1/2"	90	1 1/2"	3/4"	220
2"	5/8"	180	2"	5/8"	160
2 1/2"	5/8"	180	2 1/2"	3/4"	210
3"	5/8"	180	3"	3/4"	250
3 1/2"	5/8"	180	3 1/2"	3/4"	300
4"	5/8"	180	4"	3/4"	300
5"	3/4"	300	5"	3/4"	300
6"	3/4"	300	6"	3/4"	300
8"	3/4"	300	8"	7/8"	500
10"	7/8"	500	10"	1"	780
12"	7/8"	500	12"	1 1/8"	1050
14"	1"	780	14"	1 1/8"	950
16"	1"	780	16"	1 1/4"	1300
18"	1 1/8"	1050	18"	1 1/4"	1500
20"	1 1/8"	1050	20"	1 1/4"	1500
24"	1 1/4"	1500	24"	1 1/2"	2100

**Note: The above values apply only under the following conditions:**

- Flange according to ASME B16.5
- New screws (material according to ASTM A193-B7), lubricated
- Gasket dimension according to ASME B16.21

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