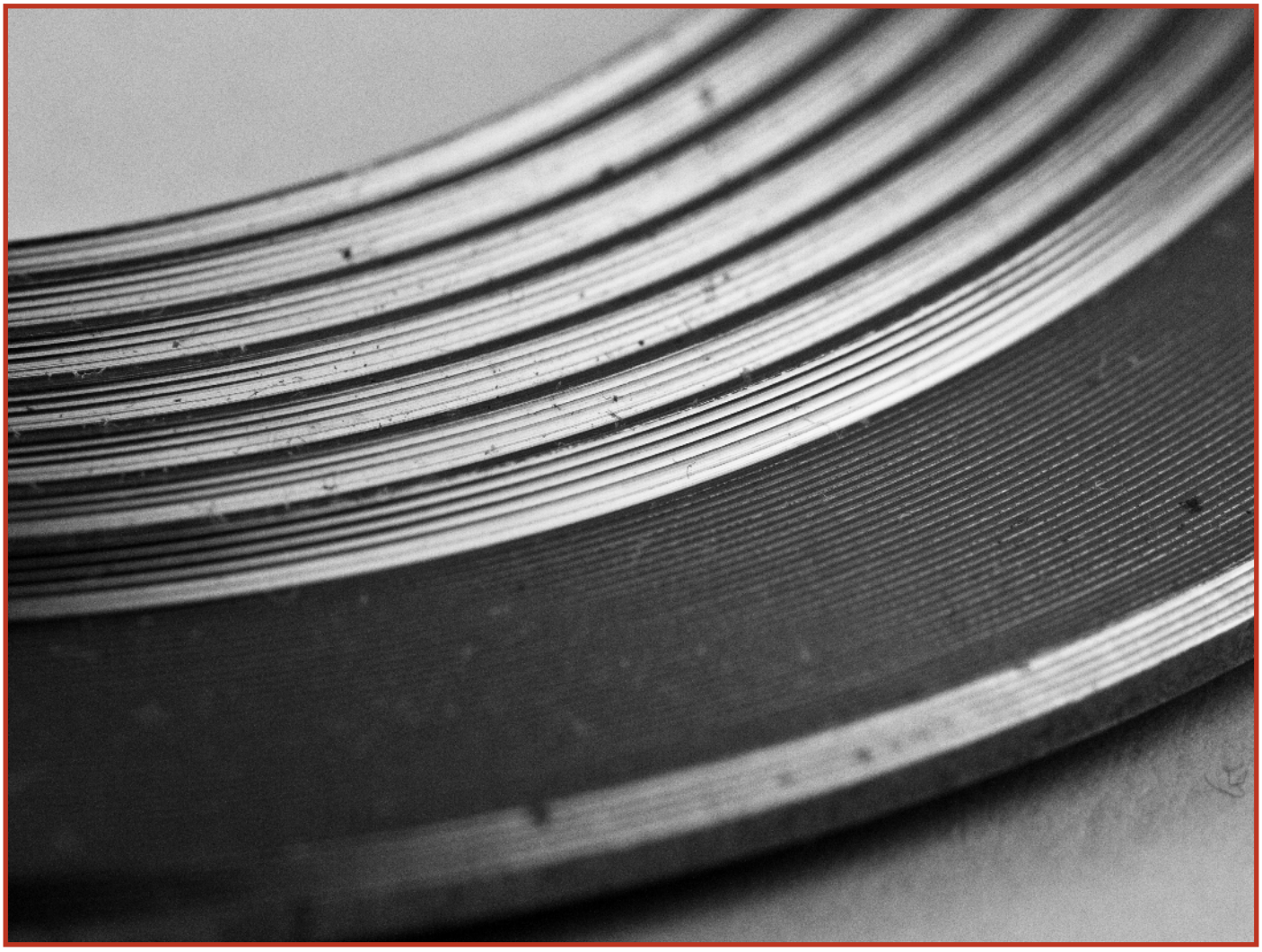
APOLLON

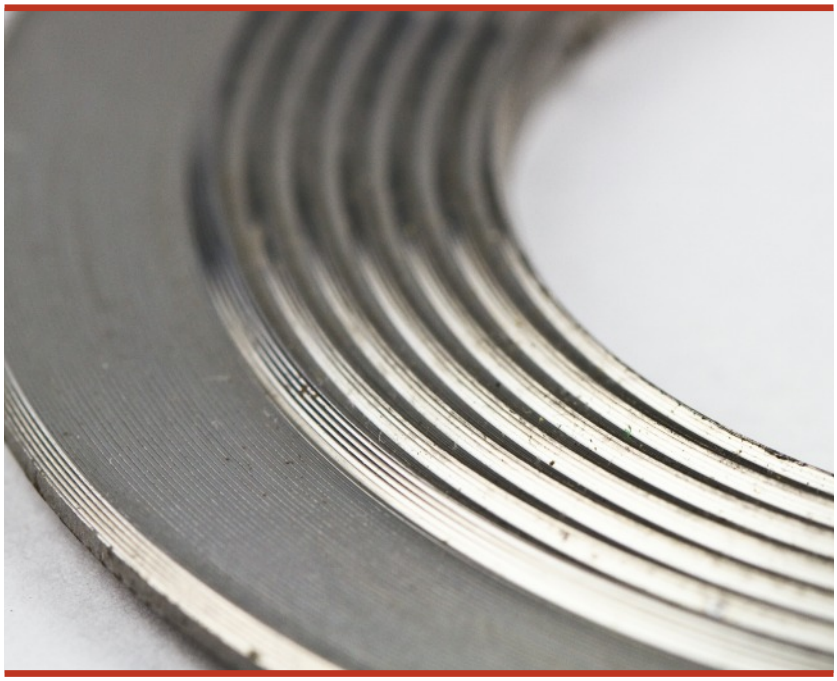
GROOVED GASKETS



Ein Unternehmen der

Gasket & Pipe
Holding GmbH

Grooved gaskets



Our grooved gaskets have invariably proven their worth in all industrial sectors, also in the case of difficult sealing tasks. These are found mainly in both conventional power plants as well as in the primary circuit of nuclear power plants.

On account of the good resiliency properties the grooved gaskets are ideal for applications with temperature- and pressure-change stresses. They are therefore also often referred to as composite gaskets. The sealing surface of the metal core consists of a 45° profiled sealing surface, on which a soft material layer is installed. The latter consists exclusively of high-quality materials, such as graphite or PTFE. The grooved gaskets can seal virtually all media, which is due to the selection of exclusively first-class carrier materials and sealing liner.

The enormous advantage of the grooved gasket is the interplay of low minimum surface pressure and high permissible maximum surface pressure, on account of which an outstanding effectiveness can be achieved. This characteristic permits a large range of applications, this gasket is as such not only deployed for the sealing of steam, water, alkalis, organic and inorganic gases, aliphatic and aromatic hydrocarbons, alcohols, ethers, ketones, but particularly also in the case of many other chemical substances.

The application temperatures are from -200 °C up to +1000 °C. In addition, the grooved gaskets can without a problem be used to reliably seal a total pressure of up to 400 bar. The grooved gaskets from our assortment can be used for all standardised flanges from DN 10 up to DN 3600. In case you need special forms, we can of course also offer tailored solutions, which are also distinguished by a high degree of quality

Overview

The grooved gasket is one of the technical standards, in particular in power and nuclear power plants.

They are deployed among others as a heat exchanger sealing, in the case of manhole covers as well as in the case of lids for fittings in the steam cycle.

Specifications:

We deliver according to the following standards:
EN 1514-2 and works standards suitable for flanges pursuant to ASME B 16.20, ASME B 16.47, ANSI B 16.5 and pursuant to DIN.

Profiles:

Type KPC - grooved gasket with centring ring. Centring ring with and without predetermined breaking point.

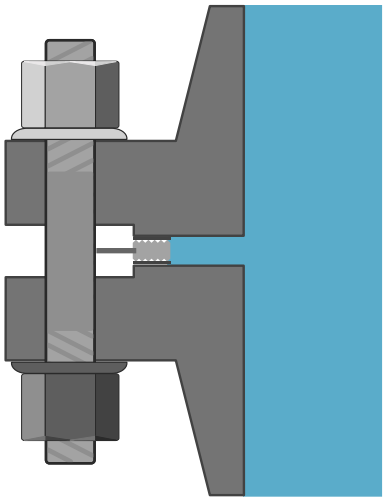
Type KPC-T grooved gasket gasket with loose centring ring.

Type KP - grooved gasket gasket for groove- and spring flanges

Type KPC-B - grooved gasket gasket with centring ring and spherical profile

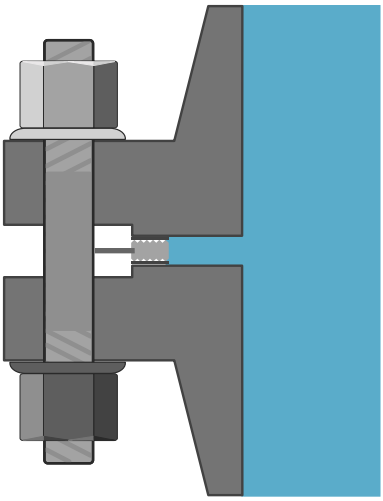
For DIN and EN flanges

Grooved gaskets for flanges pursuant to DIN and EN 1091



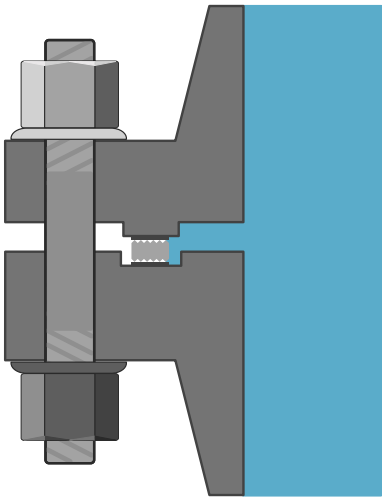
For ASME flanges

Grooved gaskets for flanges pursuant to: EN 12550-6, ASME B 16.5, ASME B 16.47 series A and prEN 1759-1



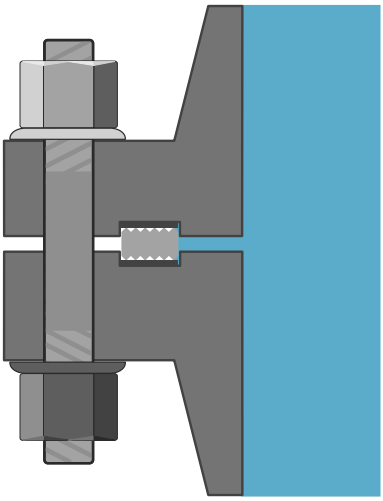
For flanges with groove & spring

Grooved gaskets for flanges of Type TG

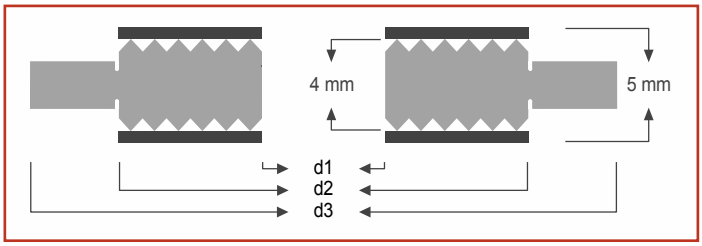


For flanges with groove on groove

Grooved gaskets for flanges pursuant to DIN 2512



Grooved gaskets



Type KPC KP and KPC-T

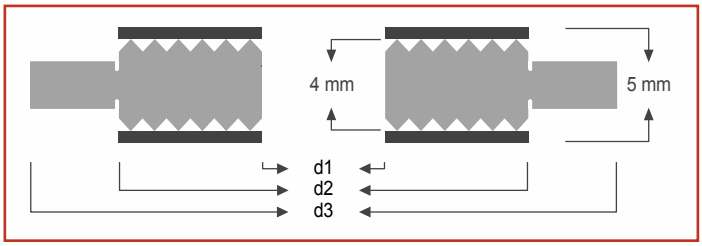
Norm: EN 1514-6

Flanges: DIN

Pressure: PN 10 - 400

PN	10-40		63-160	250-400	10	16	25	40	64	100	160	250	320	400
DN	d1	d2			d3									
10	22,0	36,0	36,0	36,0	46,0	46,0	46,0	46,0	56,0	56,0	56,0	67,0	67,0	67,0
15	26,0	42,0	42,0	42,0	51,0	51,0	51,0	51,0	61,0	61,0	61,0	72,0	72,0	--
20	31,0	47,0	47,0	47,0	61,0	61,0	61,0	61,0	--	--	--	--	--	--
25	36,0	52,0	52,0	52,0	71,0	71,0	71,0	71,0	82,0	82,0	82,0	83,0	92,0	104,0
32	46,0	62,0	62,0	66,0	82,0	82,0	82,0	82,0	--	--	--	--	--	--
40	53,0	69,0	69,0	73,0	92,0	92,0	92,0	92,0	103,0	103,0	103,0	109,0	119,0	135,0
50	65,0	81,0	81,0	87,0	107,0	107,0	107,0	107,0	113,0	119,0	119,0	124,0	134,0	150,0
65	81,0	100,0	100,0	103,0	127,0	127,0	127,0	127,0	137,0	143,0	143,0	153,0	170,0	192,0
80	95,0	115,0	115,0	121,0	142,0	142,0	142,0	142,0	148,0	154,0	154,0	170,0	190,0	207,0
100	118,0	138,0	138,0	146,0	162,0	162,0	168,0	168,0	174,0	180,0	180,0	202,0	229,0	256,0
125	142,0	162,0	162,0	178,0	192,0	192,0	194,0	194,0	210,0	217,0	217,0	242,0	274,0	301,0
150	170,0	190,0	190,0	212,0	217,0	217,0	224,0	224,0	247,0	257,0	257,0	284,0	311,0	348,0
175	195,0	215,0	215,0	245,0	247,0	247,0	254,0	265,0	277,0	287,0	284,0	316,0	358,0	402,0
200	220,0	240,0	248,0	280,0	272,0	272,0	284,0	290,0	309,0	324,0	324,0	358,0	398,0	442,0
250	270,0	290,0	300,0	340,0	327,0	328,0	340,0	352,0	364,0	391,0	388,0	442,0	488,0	--
300	320,0	340,0	356,0	400,0	377,0	383,0	400,0	417,0	424,0	458,0	458,0	536,0	--	--
350	375,0	395,0	415,0	--	437,0	443,0	457,0	474,0	486,0	512,0	--	--	--	--
400	426,0	450,0	474,0	--	489,0	495,0	514,0	546,0	543,0	572,0	--	--	--	--
450	480,0	506,0	--	--	539,0	555,0	--	571,0	--	--	--	--	--	--
500	530,0	560,0	588,0	--	594,0	617,0	624,0	628,0	657,0	704,0	--	--	--	--
600	630,0	664,0	700,0	--	695,0	734,0	731,0	747,0	764,0	813,0	--	--	--	--
700	730,0	770,0	812,0	--	810,0	804,0	833,0	852,0	879,0	950,0	--	--	--	--
800	830,0	876,0	886,0	--	917,0	911,0	942,0	974,0	988,0	--	--	--	--	--
900	930,0	982,0	994,0	--	1.017,0	1.011,0	1.042,0	1.084,0	1.108,0	--	--	--	--	--
1.000	1.040,0	1.098,0	1.110,0	--	1.124,0	1.128,0	1.154,0	1.194,0	1.220,0	--	--	--	--	--
1.200	1.250,0	1.320,0	1.334,0	--	1.341,0	1.342,0	1.364,0	1.398,0	1.452,0	--	--	--	--	--
1.400	1.440,0	1.522,0	--	--	1.548,0	1.542,0	1.578,0	1.618,0	--	--	--	--	--	--
1.600	1.650,0	1.742,0	--	--	1.772,0	1.764,0	1.798,0	1.830,0	--	--	--	--	--	--
1.800	1.850,0	1.914,0	--	--	1.972,0	1.964,0	2.000,0	--	--	--	--	--	--	--
2.000	2.050,0	2.120,0	--	--	2.182,0	2.168,0	2.230,0	--	--	--	--	--	--	--
2.200	2.250,0	2.328,0	--	--	2.384,0	2.378,0	--	--	--	--	--	--	--	--
2.400	2.460,0	2.512,0	--	--	2.594,0	--	--	--	--	--	--	--	--	--
2.600	2.670,0	2.728,0	--	--	2.794,0	--	--	--	--	--	--	--	--	--
2.800	2.890,0	2.952,0	--	--	3.014,0	--	--	--	--	--	--	--	--	--
3.000	3.100,0	3.166,0	--	--	3.228,0	--	--	--	--	--	--	--	--	--

Grooved gaskets



Type KPC KP and KPC-T

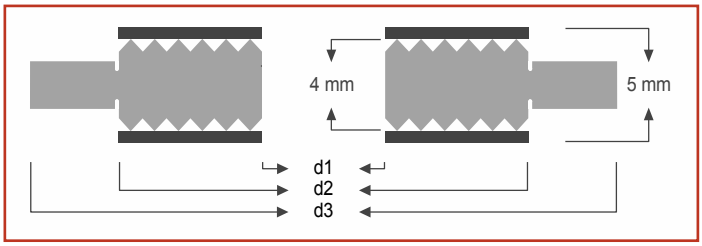
Norm: EN 12560-6

Flanges: prEN 1759-1

Pressure: Class 150 to 2.500

Class	150-2.500		150	300	400	600	900	1.500	2.500
NPS	d1	d2	d3						
1/2	23,0	33,3	44,4	50,8	50,8	50,8	60,3	60,3	66,7
3/4	28,6	39,7	53,9	63,5	63,5	63,5	66,7	66,7	73,0
1	36,5	47,6	63,5	69,8	69,8	69,8	76,2	76,2	82,5
1 1/4	44,4	60,3	73,0	79,4	79,4	79,4	85,7	85,7	101,6
1 1/2	52,4	69,8	82,5	92,1	92,1	92,1	95,2	95,2	114,3
2	69,8	88,9	101,8	108,0	108,0	108,0	139,7	139,7	142,8
2 1/2	82,5	101,6	120,6	127,0	127,0	127,0	161,9	161,9	165,1
3	98,4	123,8	133,4	146,1	146,1	146,1	165,1	171,5	193,7
3 1/2	111,1	136,5	158,8	161,9	158,7	158,7	--	--	--
4	123,8	154,0	171,5	177,8	174,6	190,5	203,2	206,4	231,7
5	150,8	182,6	193,7	212,7	209,5	238,1	244,5	250,8	276,2
6	177,8	212,7	219,1	247,7	244,5	263,5	285,8	279,4	314,3
8	228,6	266,7	276,2	304,8	301,6	317,5	355,6	349,3	384,1
10	282,6	320,7	336,5	358,8	355,6	396,9	431,8	431,8	473,0
12	339,7	377,8	406,4	419,1	415,9	454,0	495,3	517,5	432,0
14	371,5	409,6	447,7	482,6	479,4	488,9	517,5	574,7	--
16	422,3	466,7	511,2	536,6	533,4	561,9	571,5	638,1	--
18	479,4	530,2	546,1	593,7	590,5	609,6	635,0	701,7	--
20	530,2	581,0	603,2	650,9	644,5	679,5	695,3	752,4	--
22	581,0	631,8	657,2	701,7	698,5	730,3	--	--	--
24	631,8	682,6	714,4	771,5	765,2	787,4	835,0	898,5	--

Grooved gaskets



Type KPC KP and KPC-T

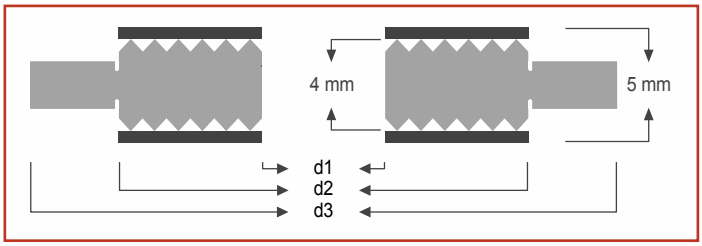
Norm: Work standard 101

Flanges: DIN

Pressure: PN 10 - 400

PN	10-40		10	16	25	40	64	100	160	250	320	400
DN	d1	d2	d3									
10	22,0	36,0	46,0	46,0	46,0	46,0	56,0	56,0	56,0	67,0	67,0	67,0
15	26,0	42,0	51,0	51,0	51,0	51,0	61,0	61,0	61,0	72,0	72,0	78,0
20	31,0	47,0	61,0	61,0	61,0	61,0	--	--	--	--	--	--
25	36,0	52,0	71,0	71,0	71,0	71,0	82,0	82,0	82,0	83,0	92,0	104,0
32	46,0	66,0	82,0	82,0	82,0	82,0	--	--	--	--	--	--
40	53,0	73,0	92,0	92,0	92,0	92,0	103,0	103,0	103,0	109,0	119,0	135,0
50	65,0	87,0	107,0	107,0	107,0	107,0	113,0	119,0	119,0	124,0	134,0	150,0
65	81,0	103,0	127,0	127,0	127,0	127,0	137,0	143,0	143,0	153,0	170,0	192,0
80	95,0	121,0	142,0	142,0	142,0	142,0	148,0	154,0	154,0	170,0	190,0	207,0
100	118,0	144,0	162,0	162,0	168,0	168,0	174,0	180,0	180,0	202,0	229,0	256,0
125	142,0	176,0	192,0	192,0	194,0	194,0	210,0	217,0	217,0	242,0	274,0	301,0
150	170,0	204,0	217,0	217,0	224,0	224,0	247,0	257,0	257,0	284,0	311,0	348,0
175	195,0	229,0	247,0	247,0	254,0	265,0	277,0	287,0	284,0	316,0	358,0	402,0
200	224,0	258,0	272,0	272,0	284,0	290,0	309,0	324,0	324,0	358,0	398,0	442,0
250	275,0	315,0	327,0	328,0	340,0	352,0	364,0	391,0	388,0	442,0	488,0	--
300	325,0	365,0	377,0	383,0	400,0	417,0	424,0	458,0	458,0	536,0		--
350	375,0	420,0	437,0	443,0	457,0	474,0	486,0	512,0	--	--	--	--
400	426,0	474,0	489,0	495,0	514,0	546,0	543,0	572,0	--	--	--	--
450	480,0	528,0	539,0	555,0	--	571,0	--	--	--	--	--	--
500	530,0	578,0	594,0	617,0	624,0	628,0	657,0	704,0	--	--	--	--
600	630,0	680,0	695,0	734,0	731,0	747,0	764,0	813,0	--	--	--	--
700	730,0	780,0	810,0	804,0	833,0	852,0	879,0	950,0	--	--	--	--
800	830,0	880,0	917,0	911,0	942,0	974,0	988,0	--	--	--	--	--
900	930,0	980,0	1.017,0	1.011,0	1.042,0	1.084,0	1.108,0	--	--	--	--	--
1.000	1.040,0	1.090,0	1.124,0	1.128,0	1.154,0	1.194,0	1.220,0	--	--	--	--	--
1.200	1.250,0	1.310,0	1.341,0	1.342,0	1.364,0	1.398,0	1.452,0	--	--	--	--	--
1.400	1.440,0	1.510,0	1.548,0	1.542,0	1.578,0	1.618,0	--	--	--	--	--	--
1.600	1.650,0	1.730,0	1.772,0	1.764,0	1.798,0	1.830,0	--	--	--	--	--	--
1.800	1.850,0	1.930,0	1.972,0	1.964,0	2.000,0	--	--	--	--	--	--	--
2.000	2.050,0	2.130,0	2.182,0	2.168,0	2.230,0	--	--	--	--	--	--	--
2.200	2.250,0	2.340,0	2.384,0	2.378,0	--	--	--	--	--	--	--	--
2.400	2.460,0	2.550,0	2.594,0	--	--	--	--	--	--	--	--	--
2.600	2.670,0	2.760,0	2.794,0	--	--	--	--	--	--	--	--	--
2.800	2.890,0	2.980,0	3.014,0	--	--	--	--	--	--	--	--	--
3.000	3.100,0	3.190,0	3.228,0	--	--	--	--	--	--	--	--	--

Grooved gaskets



Type KPC KP and KPC-T

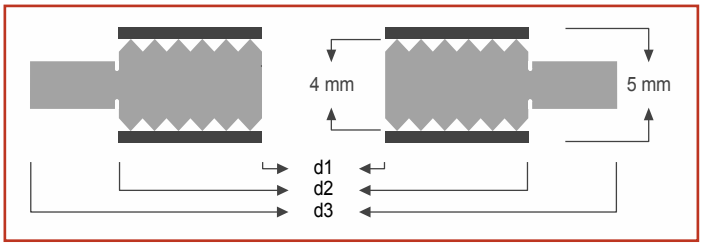
Norm: Work standard 146

Flanges: ANSI B 16.5

Pressure: Class 150 to 2.500

Class	150-2.500		400-600	900-2.500	150	300	400	600	900	1.500	2.500
NPS	d1	d2			d3						
1/2	20,0	30,0	30,0	30,0	44,4	50,8	50,8	50,8	60,3	60,3	66,7
3/4	25,0	35,0	35,0	35,0	53,9	63,5	63,5	63,5	66,7	66,7	73,0
1	32,0	42,0	42,0	42,0	63,5	69,8	69,5	69,5	76,2	76,2	82,5
1 1/4	40,0	56,0	56,0	56,0	73,0	79,4	79,4	79,4	85,7	85,7	101,6
1 1/2	45,0	61,0	61,0	61,0	82,5	92,1	92,1	92,1	95,2	95,2	114,3
2	60,0	80,0	80,0	80,0	101,8	108,0	108,0	108,0	139,7	139,7	142,8
2 1/2	70,0	90,0	90,0	90,0	120,6	127,0	127,0	127,0	161,9	161,9	165,1
3	85,0	105,0	105,0	110,0	133,4	146,1	146,1	146,1	165,1	171,5	193,7
3 1/2	100,0	120,0	120,0	--	158,8	161,9	158,7	158,7	--	--	--
4	110,0	130,0	130,0	135,0	171,5	177,8	174,6	190,5	203,2	206,4	231,7
5	135,0	155,0	155,0	165,0	193,7	212,7	209,5	238,1	244,5	250,8	276,2
6	160,0	180,0	180,0	195,0	219,1	247,7	244,5	263,5	285,8	279,4	314,3
8	210,0	230,0	230,0	250,0	276,2	304,8	301,6	317,5	355,6	349,3	384,1
10	265,0	285,0	295,0	315,0	336,5	358,8	355,6	396,9	431,8	431,8	473,0
12	315,0	335,0	350,0	375,0	406,4	419,1	415,9	454,0	495,3	517,5	546,1
14	350,0	370,0	390,0	405,0	447,7	482,6	479,4	488,9	517,5	574,7	--
16	400,0	425,0	445,0	460,0	511,2	536,6	533,4	561,9	571,5	638,1	--
18	450,0	480,0	500,0	525,0	546,1	593,7	590,5	609,6	635,0	701,7	--
20	500,0	535,0	555,0	575,0	603,2	650,9	644,5	679,5	695,3	752,4	--
24	600,0	640,0	665,0	685,0	714,4	771,5	765,2	787,4	835,0	898,5	--

Grooved gaskets

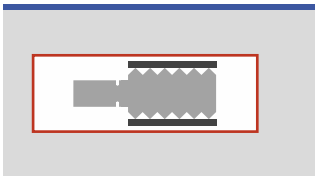
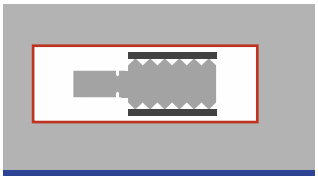


Type KPC KP and KPC-T

Norm:	Work standard 147
Flanges:	ASME B 16.47 Serie A
Pressure:	Class 150 to 2.500

Class	150-2.500		150	300	400	600	900	1.500	2.500
NPS	d1	d2	d3						
26	690,0	740,0	772,0	832,0	829,0	864,0	880,0	--	--
28	740,0	790,0	829,0	895,0	889,0	911,0	943,0	--	--
30	800,0	850,0	880,0	949,0	943,0	968,0	1.007,0	--	--
32	845,0	905,0	937,0	1.003,0	1.000,0	1.019,0	1.070,0	--	--
34	895,0	955,0	987,0	1.054,0	1.051,0	1.070,0	1.134,0	--	--
36	950,0	1.010,0	1.045,0	1.114,0	1.114,0	1.127,0	1.197,0	--	--
38	960,0	1.020,0	1.108,0	1.051,0	1.070,0	1.102,0	1.197,0	--	--
40	1.015,0	1.075,0	1.159,0	1.111,0	1.124,0	1.153,0	1.248,0	--	--
42	1.065,0	1.125,0	1.216,0	1.162,0	1.175,0	1.216,0	1.299,0	--	--
44	1.125,0	1.185,0	1.273,0	1.216,0	1.229,0	1.267,0	1.365,0	--	--
46	1.175,0	1.235,0	1.324,0	1.270,0	1.286,0	1.324,0	1.432,0	--	--
48	1.220,0	1.290,0	1.381,0	1.321,0	1.343,0	1.388,0	1.483,0	--	--
50	1.270,0	1.350,0	1.432,0	1.375,0	1.400,0	1.445,0	--	--	--
52	1.320,0	1.400,0	1.489,0	1.426,0	1.451,0	1.495,0	--	--	--
54	1.375,0	1.455,0	1.546,0	1.489,0	1.515,0	1.553,0	--	--	--
56	1.430,0	1.510,0	1.603,0	1.540,0	1.565,0	1.610,0	--	--	--
68	1.485,0	1.565,0	1.661,0	1.591,0	1.616,0	1.661,0	--	--	--
60	1.535,0	1.615,0	1.711,0	1.742,0	1.680,0	1.730,0	--	--	--

Grooved gaskets Characteristic values

Cross-section	Materials		Thickness	KH	KN	Adv. Surf. Roughness	min. Width	Operating limits		Max. surcface pressure			Pre-forming	Op. State
	Gasket	Coumpound	High of metal strip					Temp.	Pres-sure	Mounting Min.	operating Max.	Factor		
			hD			R_z	$B_{d\ mind}$	ϑ	$P_{zul.}$	σ_{vu}	σ_{bo}	m	$K_o \bullet K_D$	K_1
			mm			µm	mm	°C	bar	$\frac{N}{mm^2}$	$\frac{N}{mm^2}$		$\frac{N}{mm}$	mm
	Graphite Layer 0,5 mm dick	1.4541	4.0 (+2x0,5)	X		8-25	7	20 200 300 400 500 550	400*	40	500 450 420 390 350 335	1,1	KH 14 bD	KH 0,8bD
	PTFE Layer 0,5 mm dick	1.4541	4.0 (+2x0,5)	X		8-25	7	20 200 250	400*	40	450 390 330	1,1	KH 14 bD	KH 0,8bD

* Dependent on: Flange type, temperature, pressure, media

The maximum permissible, basically controllable temperature at the sealing surface in the case of continuous use with graphite is 460 ˚C.

Information for temperatures from 480 ˚C - 550 ˚C is based on laboratory data.

Pre-stressing forces and tightening torques for screws

		Materials																			
		5.6		8.8		10.9		12.9		1.1181 Ck 35		1.7258 24 CrMo 5		1.7709 21 CrMoV 57		1.7711 40 CrMoV 47		1.4923 X 22 CrMoV 121		1.4913 X 19 CrMo Vnbn 111		1.4986 X 8 CrNi MoBNb 1616		2.4952 NiCr 20 TiAl	
		Yield strength(N/mm²)																			
		300		660		940		1100		280		440		550		700		600		780		500		600	
		Mounting pre-stressing (kN)												Tightening torques (Nm)											
		kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm
M10	○	--	--	--	--	--	--	--	--	7,5	12,0	11,7	20,0	14,6	24,0	18,6	31,0	16,0	27,0	20,8	35,0	13,3	22,0	16,0	27,0
	●	12,2	21,0	26,0	44,0	38,2	64,0	44,7	75,0	11,4	19,0	17,9	30,0	22,3	38,0	28,4	48,0	24,4	41,0	31,7	53,0	20,3	34,0	--	--
M12	○	--	--	--	--	--	--	--	--	11,0	23,0	17,3	36,0	21,6	44,0	27,4	57,0	23,5	49,0	30,6	63,0	19,6	40,0	23,5	49,0
	●	17,6	35,0	37,6	75,0	55,3	110,0	64,7	130,0	16,5	33,0	29,9	52,0	32,3	65,0	41,2	82,0	35,3	71,0	45,9	92,0	29,4	59,0	--	--
M14	○	--	--	--	--	--	--	--	--	15,3	35,0	24,0	55,0	30,0	69,0	38,2	88,0	32,8	75,0	42,6	98,0	27,3	63,0	32,8	75,0
	●	24,2	56,0	51,5	120,0	75,7	175,0	88,6	205,0	22,5	52,0	35,4	82,0	44,3	100,0	56,4	130,0	48,3	110,0	62,8	145,0	40,3	93,0	--	--
M16	○	--	--	--	--	--	--	--	--	22,2	58,0	34,8	92,0	43,5	115,0	55,4	145,0	47,5	125,0	61,7	160,0	39,6	105,0	47,5	125,0
	●	33,0	85,0	70,3	180,0	103,5	265,0	121,0	310,0	30,8	79,0	48,4	125,0	60,4	155,0	76,9	200,0	65,9	170,0	85,7	220,0	55,0	140,0	--	--
M18	○	--	--	--	--	--	--	--	--	25,9	80,0	40,7	125,0	50,8	155,0	64,7	195,0	55,4	170,0	72,1	220,0	46,2	140,0	55,4	170,0
	●	40,3	120,0	88,7	260,0	126,5	370,0	148,0	430,0	37,6	110,0	59,1	170,0	73,9	215,0	94,1	275,0	80,6	235,0	105,0	305,0	67,2	195,0	--	--
M20	○	--	--	--	--	--	--	--	--	34,5	110,0	54,2	175,0	67,8	220,0	86,2	280,0	73,9	240,0	96,1	310,0	61,6	200,0	73,9	240,0
	●	51,5	165,0	113,0	360,0	161,0	520,0	188,5	600,0	48,0	155,0	75,5	240,0	94,3	300,0	120,0	385,0	103,0	330,0	134,0	425,0	85,8	275,0	--	--
M22	○	--	--	--	--	--	--	--	--	44,3	150,0	69,6	240,0	87,0	300,0	110,5	380,0	94,9	325,0	123,5	425,0	79,1	270,0	94,9	325,0
	●	63,6	220,0	140,0	485,0	199,5	690,0	233,5	810,0	59,4	205,0	93,3	320,0	116,5	405,0	148,5	510,0	127,5	440,0	165,5	570,0	106,0	365,0	--	--
M24	○	--	--	--	--	--	--	--	--	49,8	190,0	78,2	300,0	97,8	370,0	124,5	475,0	106,5	405,0	138,5	530,0	88,9	340,0	106,5	405,0
	●	74,1	285,0	163,0	630,0	232,5	890,0	272,0	1050,0	69,2	265,0	108,5	415,0	136,0	520,0	173,0	660,0	148,5	570,0	192,5	740,0	123,5	475,0	--	--
M27	○	--	--	--	--	--	--	--	--	64,5	275,0	101,5	435,0	126,5	545,0	161,0	690,0	138,0	590,0	179,5	770,0	115,0	495,0	138,0	590,0
	●	96,4	415,0	212,0	910,0	302,0	1300,0	353,0	1500,0	90,0	390,0	141,5	610,0	176,5	760,0	225,0	970,0	193,0	830,0	250,5	1100,0	160,5	690,0	--	--
M30	○	--	--	--	--	--	--	--	--	81,3	390,0	128,0	610,0	160,0	770,0	203,0	980,0	174,5	840,0	226,5	1100,0	145,5	700,0	174,5	840,0
	●	118,0	570,0	259,0	1250,0	369,0	1800,0	432,0	2100,0	110,0	530,0	173,0	830,0	216,0	1050,0	275,0	1300,0	235,5	1100,0	306,0	1500,0	196,5	950,0	--	--
M33	○	--	--	--	--	--	--	--	--	100,0	520,0	157,0	820,0	196,5	1000,0	250,0	1300,0	214,0	1100,0	278,5	1450,0	178,5	930,0	214,0	1100,0
	●	146,0	760,0	321,0	1700,0	457,0	2400,0	534,0	2800,0	136,0	710,0	214,0	1100,0	267,0	1400,0	340,0	1800,0	291,5	1500,0	379,0	2000,0	243,0	1250,0	--	--
M36	○	--	--	--	--	--	--	--	--	116,0	660,0	182,5	1050,0	228,5	1300,0	290,5	1650,0	249,0	1400,0	324,0	1850,0	207,5	1200,0	249,0	1400,0
	●	172,0	980,0	377,0	2150,0	538,0	3100,0	629,0	3600,0	160,0	920,0	251,5	1450,0	315,0	1800,0	400,0	2300,0	343,0	1950,0	446,0	2550,0	286,0	1650,0	--	--
M39	○	--	--	--	--	--	--	--	--	143,0	880,0	225,0	1400,0	281,0	1750,0	358,0	2200,0	307,0	1900,0	399,0	2450,0	255,5	1550,0	307,0	1900,0
	●	205,0	1250,0	451,0	2800,0	642,0	3950,0	752,0	4650,0	191,5	1200,0	301,0	1850,0	376,0	2300,0	478,0	2950,0	410,0	2500,0	533,0	3300,0	342,0	2100,0	--	--
M42	○	--	--	--	--	--	--	--	--	162,5	1100,0	255,5	1700,0	319,0	2100,0	406,0	2700,0	348,0	2300,0	453,0	3000,0	290,0	1950,0	348,0	2300,0
	●	235,0	1550,0	517,0	3450,0	737,0	4900,0	862,0	5800,0	219,5	1450,0	345,0	2300,0	431,0	2900,0	549,0	3650,0	470,0	3150,0	612,0	4100,0	392,0	2600,0	--	--
M45	○	--	--	--	--	--	--	--	--	194,0	1400,0	305,0	2150,0	381,0	2700,0	485,0	3450,0	415,0	2950,0	540,0	3850,0	346,0	2450,0	415,0	2950,0
	●	273,0	1950,0	601,0	4300,0	855,0	6100,0	1000,0	7100,0	255,0	1800,0	400,0	2850,0	500,0	3600,0	637,0	4500,0	546,0	3900,0	710,0	5100,0	455,0	3200,0	--	--
M48	○	--	--	--	--	--	--	--	--	216,5	1650,0	340,0	2600,0	425,0	3250,0	541,0	4150,0	464,0	3550,0	603,0	4600,0	386,0	2950,0	464,0	3550,0
	●	309,0	2400,0	679,0	5200,0	967,0	7400,0	1130,0	8700,0	288,0	2200,0	453,0	3500,0	566,0	4300,0	720,0	5500,0	617,0	4700,0	803,0	6100,0	515,0	3950,0	--	--
M52	○	--	--	--	--	--	--	--	--	258,5	2100,0	407,0	3350,0	508,0	4150,0	647,0	5300,0	554,0	4550,0	721,0	5900,0	462,0	3800,0	554,0	4550,0
	●	370,0	3000,0	813,0	6700,0	1160,0	9500,0	1355,0	11100,0	345,0	2850,0	542,0	4450,0	678,0	5600,0	862,0	7100,0	739,0	6100,0	961,0	7900,0	616,0	5100,0	--	--
M56	○	--	--	--	--	--	--	--	--	297,5	2650,0	468,0	4150,0	585,0	5200,0	744,0	6600,0	638,0	5600,0	829,0	7300,0	532,0	4700,0	638,0	5600,0
	●	426,0	3800,0	938,0	8300,0	1335,0	11800,0	1565,0	13900,0	398,0	3500,0	625,0	5500,0	782,0	6900,0	995,0	8800,0	853,0	7600,0	1110,0	9800,0	711,0	6300,0	--	--

Pre-stressing forces (kN) and tightening torque (Nm) with reduced shaft (○) and full shaft (●) in the case of 70% of the minimum distance. Coefficient of friction $\eta = 0,14$.

Materials*

Iron & steel

		DIN 17006	DIN 17007	AISI	Characteristic	Article Work standard	Hardness HB	Temperature C° From	Temperature C° To	Spec. Weight g/cm³
Steel & Iron	RSt 37-2	1.0038	--			0038	100-130	-40°	500°	7,85
	St 35	1.0308	--			0308	100-130	-40°	500°	7,85
	Ust 13	1.0333	1.003			0333	80-115	-40°	500°	7,85
	StW 24 mod.	1.0335	Soft-Iron		D	0335	90-100			
	Soft-Iron (Armco)	1.1003	Soft-Iron		D	1003	90-100	-60°	500°	7,85
Stainless Steel	X6 Cr13	1.4000	410		S 410	4000	130-180	-20°	500°	7,85
	X6 Cr17	1.4016	430			4016	130-170	-20°	350°	7,70
	X20 Cr13	1.4021	420			4021	225-275	-20°	500°	7,70
	X5 CrNi 18 10	1.4301	304		S 304	4301	130-180	-250°	550°	7,90
	X5 CrNiMo 17 12 2	1.4401	316		S 316	4401	130-180	-110°	550°	7,90
	X2 CrNiMo 17 13 2	1.4404	316 L			4404	120-180	-110°	550°	7,90
	X6 CrNiTi 18 10	1.4541	321		S 321	4541	130-190	-250°	550°	7,90
	X6 CrNiNb 18 10	1.4550	347		S 347	4550	130-190	-250°	550°	7,90
	X6 CrNiMoTi 17 12 2	1.4571	316 Ti		316 Ti	4571	130-190	-110°	550°	7,80
	X15 CrNiSi 20 12	1.4828	309			4828	130-190	-110°	800°	7,90
	X10 NiCrAlTi 32 20	1.4876	B 407-409			4876	140-220	-110°	850°	8,00
Heat treatable	16 Mo 3	1.5415	F9			5415	130-170	-20°	530°	7,85
	13 CrMo 4-5	1.7335	F12		7.335,0	7335	130-175	-60°	560°	7,85
	12 CrMo 195	1.7362	F5		F5	7362	175-220	-40°	650°	7,85
	10 CrMo 910	1.7380	F22			7380	130-175	-40°	590°	7,85

Non-ferrous metals

	Material	Designation	Article Work standard	Hardnesse HB	Temperature C° From	Temperature C° To	Spec. weight g/cm³
	Copper	SF-Cu	8001	55	-250°	400°	9,00
	Brass	CuZn37	8002	60-80	-100°	350°	8,00
	Lead	Pb 99,9	8003	4	-250°	220°	12,00
	Nickel	Ni 99,2	8004	100-150	-250°	600°	9,00
	Monel	NiCu30Fe	8005	95-125	-125°	600°	9,00
	Aluminium	Al 99,5	8006	20-23	-250°	300°	3,00
	Alu Composite	AlMg1	8007	25-32	-250°	300°	3,00

* Metal gaskets from other materials and materials we like to produce on request

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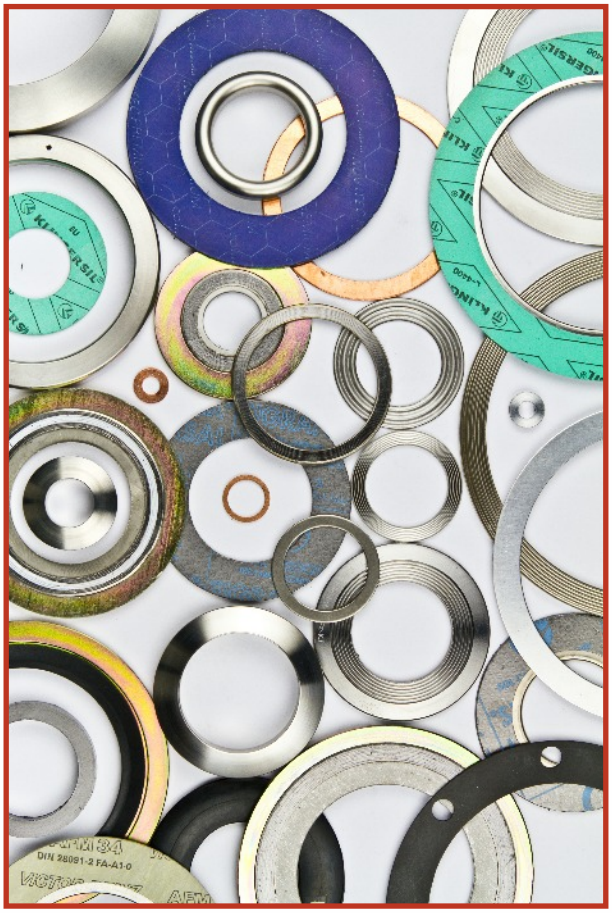

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TÜV AUSTRIA
ZERTIFIZIERT
EN ISO 9001
ZERTIFIKAT NR. 20100163000859
TÜV AUSTRIA CERT GMBH

Ein Unternehmen der
Gasket & Pipe
Holding GmbH