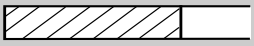
Metal profile gaskets

Solid **metal flat gaskets** are used in areas where, due to the medium, temperature, pressure and/or permitted leakage rate, soft-material or metal/soft-material gaskets are not particularly suitable. They have proven reliable at low temperatures of -200°C as well as at high temperatures of over 600°C. They are used at pressures ranging from relatively low to extremely high.

The thickness of the seal and the sealing material are generally dependent on the flange surface and the operating conditions. The better the flange surface in terms of surface quality and evenness, the thinner the gasket that can be used, e.g. 0.5 – 1 mm as a gasket in spinning nozzle fittings or 2 – 3 mm for aluminium gaskets in heat exchangers.

It should be noted that soft metals (such as aluminium or silver) need only relatively low surface pressures to become deformed, harder materials on the other hand, particularly steel, require high sealing pressure.

Gasket profiles

Profile	Cross-section
A1	

To reduce the sealing surfaces of gaskets with rectangular cross-section such as Profile A1, choose a convex cross-section shape. Information on this can be found in DIN 7603 at Form D.

The absolute level of the sealing press capacity can be reduced by using narrow gaskets instead of wide gaskets or harder metals galvanised with thin overlays of soft metal.

Coatings of copper, nickel, silver or tin up to a maximum of 100 µm will give significantly better sealing properties and significantly lower deformation surface pressure σ_V. For the stated flange surface roughnesses a coating thickness of 35 to 50 µm is sufficient.

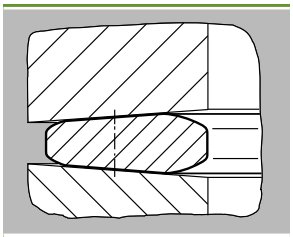
In metal profile gaskets, a line contact arises first. The bolt loads are clearly lower compared to metal flat gaskets (Profile A1). With the rectangular profile A1, even a slight flange twist can lead to sealing problems. The sealing diameter in the middle of the gasket jumps to the size of the external diameter, causing the leverage to be adversely affected. The greater internal pressure also has a negative effect.

In **convex gaskets** on the other hand, the contact geometry is such that it is self-sealing at high internal pressures. The sealing diameter is retained and edge pressure is avoided.

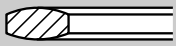
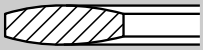
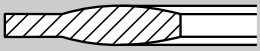
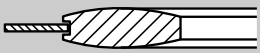
Narrow gaskets are more heavily loaded at the same bolt force and can flow when insufficiently stable, leading to a loss of bolt load and leakages.

To avoid flowing when loaded or even a destruction of the entire gasket, narrow flat gaskets should be chambered if necessary, as is the case with flanges with tongue and groove faces. Even with a chambered specimen there can be damage to the gasket, particularly if the sealing material is sensitive to crevice corrosion. In this case, fitting in a groove can actually be disadvantageous. In order to prevent damage to the gasket, ensure that the maximum permitted surface pressure σ_ϑ is not exceeded under any operating conditions.

Profiles A7 and H7 are centred by the corresponding shape of the flange e.g. male and female face joint. Gaskets of the type Profile H9 and H15 can also be used as high-pressure, high-temperature gaskets with flanges with raised or flat face flanges. The gaskets are then centred on the bolts. Profile H15, with a loose centring ring, is ideal for use with gaseous media and/or centring ring with widths greater than 15 mm. Profiles H7, H9 and H15 have an osculating radius R which is determined by the prevailing surface pressure.



Gasket profiles

Profile	Cross-section
A7	
H7	
H9	
H15	

Metal profile gaskets

Flat ring gaskets and other special shapes produced using special tools are also available. To protect from corrosion, galvanised overlays are possible. In copper gaskets with corrosion protection layers of hard nickel, the covering layer is only a few µm, so that the sealing properties are affected as little as possible by the harder protective layer.

We produce gaskets in all commonly used metals. See also **"Materials commonly used"**.

Convex gaskets made from metal are dimensioned as follows:

Oval flanges

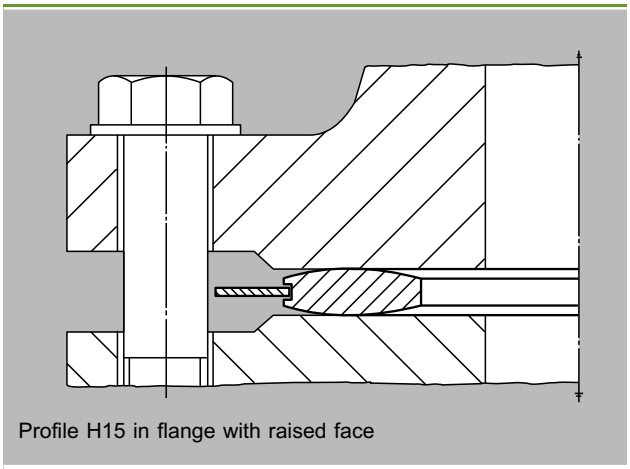
- in accordance with DIN 71511

Sealing discs for connections to pressure gauges and associated valves

- in accordance with DIN 837

Union fittings

- in accordance with DIN 7603



Profile H15 in flange with raised face

For measurements see section **"General Dimension Tables for DIN, ASME/ANSI, BS for flat gaskets"**

06

Gasket limiting values

Profile			A1									
Materials			Iron (1.1003) RSt 28 (1.0326)	St 35 (1.0308) St 38.8 (1.0305)	12CrMo195 (1.7362)	13CrMo44 (1.7335)	X6CrNiTi 18 10 (1.4541)	X15CrNiSi20 12 (1.4828)	Nickel Ni 99.6 (2.4060) Ni 99.2 (2.4066)	Copper	aluminium	Fine silver 99.98 Ag
Recommended max. roughness of the flange	µm	from	1,6	1,6	1,6	1,6	1,6	1,6	1,6	3,2	12,5	6,3
		to	3,2	3,2	3,2	3,2	3,2	3,2	3,2	6,3	25	12,5
Surfaces pressure limits for 20 °C	N/mm²	σ_v	235	265	400	300	335	400	190	135	70	50
		σ_ϑ	525	600	900	675	750	900	510	300	140	160
Surface pressure limits for 300 °C	N/mm²	σ_v	235	265	400	300	335	400	190	135	-	50
		σ_ϑ	315	390	730	585	630	750	480	150	-	135

Gasket characteristic values

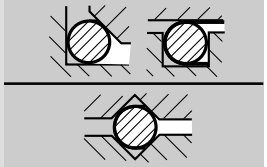
Profiles			A7, H7, H9, H15								
Materials			Iron 1.1003	Heat-resistant mild steel 1.5415	Heat-resistant mild steel 1.7362	Stainless steel 1.4541	Stainless steel 1.4828	Steel St 35 copper-plated	Stainless steel 1.4541 silver-plated	Copper 2.0090	Monel 2.4360
Recommended max. roughness of the flange	µm	from	3,2	3,2	3,2	1,6	1,6	3,2	6,3	3,2	3,2
		to	6,3	6,3	6,3	3,2	3,2	6,3	12,5	6,3	6,3
Surface pressure limits for 20 °C	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
	N/mm²	σ_ϑ	525	675	900	750	900	600	750	300	660
E modulus at 20 °C	kN/mm²		210	210	210	200	200	210	200	128	178
Surface pressure limits for 300 °C	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
	N/mm²	σ_ϑ	315	585	730	630	750	390	630	150	650
E modulus at 300 °C	kN/mm²		185	185	190	186	186	185	186	114	175

Round wire gaskets

Round wire gaskets are used in gas and vacuum engineering. Standard materials used include soft-annealed aluminium, copper, silver and nickel.

Lathed rings and rings bended and welded from calibrated wire can be supplied. Round wire gaskets are usually inserted in grooves. Some possible options are shown here.

Gasket profiles

Profile	Cross-section
A10	

If the gaskets are generally elastically deformed, the sealing surface width arising should first be calculated using the following formula

$$b_G = 100 \cdot \frac{\sigma}{E_G} \cdot r \cdot n \cdot \sin\alpha \quad ^{2)}$$

It should be noted that a small wire and/or sealing diameter will place higher demands on the groove and on the gasket with regard to size, tolerances and surface quality. Lathed rings should be used in this case. With welded models, strong plastic deformation is required.

If the material displays full plasticity, such as aluminium, soft copper, silver or gold, the seal width b_G is equal to the groove width b. Full plastic deformation requires much higher bolt loads than the more predominant elastic deformation.

The cross-section surfaces for full plastic deformation should be dimensioned in such a way that the round ring can fill the groove cross-section in its deformed state. Generally a gap of a few tenths of a millimetre should be left.

Materials

1.0333, 3.0255, 2.0090, 2.4066, fine-grain silver

Further technical data can be found in our brochure under **"Materials commonly used"**.

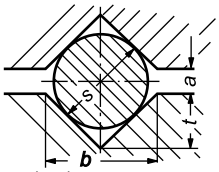
Ordering example for a round wire gasket, Profile A10 with internal diameter of 110 m and wire diameter of 5 mm made of ...[1]):

Round wire gasket, Profile A10, **110 x 5 / 2.0090**

1) Specify material when placing order

2) Formula taken from "Optimization of static gaskets" by H.J. Tückmantel, published by Kempchen.

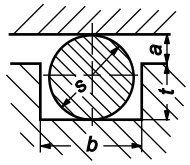
Double-sided contact



Dimensions in mm

s	b	t	a
2	2,5	1,25	0,16
3	3,8	1,9	0,24
4	5,0	2,5	0,32
5	6,3	3,1	0,40
6	7,5	3,8	0,48
8	10,0	5,0	0,64
10	12,5	6,3	0,80

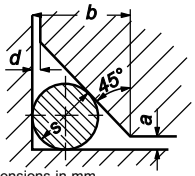
Single-sided contact



Dimensions in mm

s	b	t	a
2	2,1	1,4	0,6
3	3,3	2,1	0,9
4	4,4	2,8	1,2
5	5,5	3,5	1,5
6	6,6	4,2	1,8
8	8,8	5,6	2,4
10	11,0	7,0	3,0

Single-sided contact



Dimensions in mm

s	b		a
2	2,8		0,6
3	4,2		0,9
4	5,6		1,2
5	7,0	d is the result from the fit H 8 / e 8	1,5
6	8,4		1,8
8	11,2		2,4
10	14,0		3,0

Gasket limiting values

Profile			A10				
Materials			Iron 1.0333	Aluminium 3.0255	Copper 2.0090	Nickel 2.4066	Fine-grain silver
Recommended max. roughness of the flange surfaces	µm	from	3,2	3,2	3,2	3,2	3,2
		to	6,3	6,3	6,3	6,3	6,3
Surface pressure limits for 20 °C	N/mm²	σ_v	265	70	135	190	100
		σ_θ	600	140	300	510	190
E modulus at 20 °C	kN/mm²		210	70	128	206	79
Surface pressure limits for 300 °C	N/mm	σ_v	265	-	135	100	100
		σ_θ	390	-	150	480	145
E modulus at 300 °C	kN/mm²		185	-	114	118	70

Ring joints RTJ

Ring joint gaskets are made from metallic materials. The requirements in terms of dimensional accuracy and surface quality are therefore high. This relates to both the gasket and the sealing section of the flange.

The necessary surface quality depends substantially on the Brinell hardness of the gasket material The relationship $R_Z[\mu m] \leq 300/HB$ provides a useful indication.

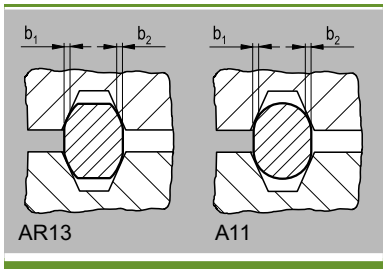
A distinction is made between two kinds of ring joint gaskets and two different calculation methods are therefore used:

1. RTJ gaskets with osculating radius (Figure 1)

a) The convex octagonal RTJ gaskets, Profile AR 13, in which the convex cone case surfaces of the gasket are pressed against the even cone case surfaces of the groove when tensioned.

b) The oval ring-joint gasket, Profile A11, in which the circular surface is pressed against the cone case surfaces of the groove.

Figure 1

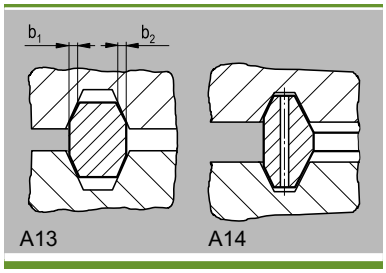


The sealing surface pressure increases or decreases to a **lesser extent** in response to any change in the bolt load.

2. RTJ gaskets with flat sealing surfaces (Figure 2)

The octagonal RTJ gasket, Profiles A13 and A14, are flat gaskets in which the sealing surfaces are two cone case surfaces. The projection in the direction of the bolting force $b_G = b_1 + b_2$ should be set as the sealing surface width.

Figure 2



The sealing surface pressure increases or decreases **proportionally** in response to any change in the bolt load.

The application thresholds values of oval octagonal RTJ gaskets can be more accurately calculated in relation to material, diameter, pressure, temperature and the surface pressure limits.

Here the fictitions sealing characteristic values in accordance with AD are replaced with the values of σ_v and σ_ϑ.

Ring joint gaskets in accordance with API and ASME standards are mainly used in the petrochemical industry and in refineries as a reliable gasket for production pipelines.

We are permitted to give our products the API Monogram. This guarantees that our products meet the latest API standards.

It should be noted that in Profile A12 the flanges have metal-to-metal contact. Profile AR13 with convex sealing surfaces.

Ring joint gaskets can be produced as blind gaskets in Profile A11S, A13S etc. or as blind spectacle gaskets in Profile A11BS, A13BS (see Blind Gaskets).

Material

Code designation	Material no.	Hardness (HB)	US-Type AISI	Code
Pure iron, e.g. Armco	1.1003	90-100	Soft iron	D
Stwfi4mod	-	90-110	Soft iron	D
Low-carbon steel	-	120	Low-carbonsteel	S
13 CrMo 4 4	1.7335	ca. 160	-	7335
12 CrMo 19 5 mod	1.7362 mod	ca. 130	501	F5
X6 Cr 13	1.4000	ca. 160	410	S 410
X5 CrNi 18 10	1.4301	ca. 160	304	S 304
X5 CrNiMo 17 12 2	1.4401	ca. 160	316	S 316
X6 CrNiTi 18 10	1.4541	ca. 160	321	S 321
X6 CrNiNb 18 10	1.4550	ca. 160	347	S 347
X6 CrNiMoTi 17 12 2	1.4571	ca. 160	316 Ti	316 Ti

* Further technical data see section “Materials commonly used”.

Ring joints RTJ

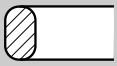
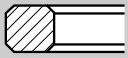
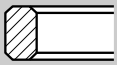
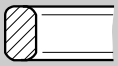
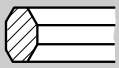
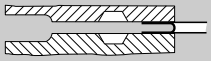
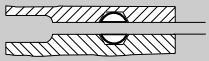
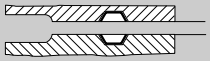
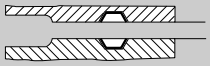
Material, profiles, surface pressure limits, surface roughness

With the addition of a protective ring made from sheet metal to Profile F22, disruptive turbulence and accretions are avoided. At small edge widths the protective gaskets are symmetrical, at larger edge widths they are centred on one side. We can supply soft-iron compensating caps for damaged grooves, such as Profile AK11, AK12, AK13, AK14.

For a complete estimate on sealing flange connections, our efficient sealing estimate service is available.

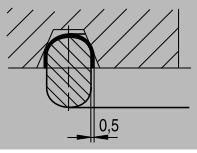
API Q
American Petroleum Institute
License Number: 6A-0046

Gasket profiles

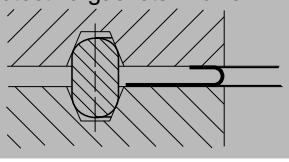
Profile	Cross-section
A11	
A12	
A13	
AR13	
A14	
F22	
AK11	
AK12	
Ak13	
AK14	

Compensating caps, protective gaskets

Compensating caps for damaged grooves



Protective gaskets Profile F22

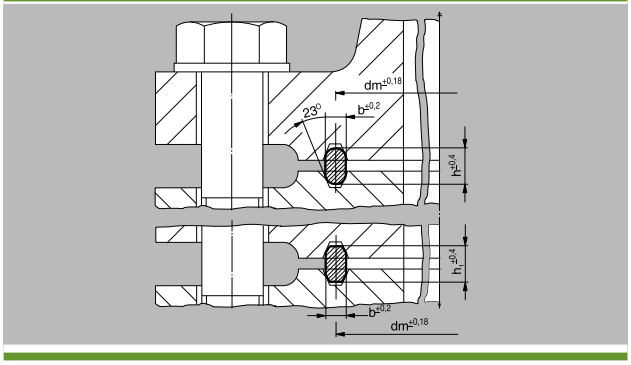


Gasket limiting values

Profile			A11, A11S, A11BS, A12, A13, A13S, A13BS, AR13, AR13S, AR13BS, A14								
Materials			Iron 1.100 Stw24modd	Heat-resistant mild steel 1.5415	Heat-resistant mild steel 1.7362	Stainless Steel 1.4541	Stainless Steel 1.4828	Steel St 35 copper-plated	Stainless steel 1.4541 silver-plated	Copper 2.0090	Monel 2.4360
Recommended max. roughness of the flange surfaces	µm	from	3,2	3,2	3,2	1,6	1,6	3,2	6,3	3,2	3,2
		to	6,3	6,3	6,3	3,2	3,2	6,3	12,5	6,3	6,3
Surface pressure limits for 20 °C	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
		σ_ϑ	525	675	900	750	900	600	750	300	660
E modulus at 20 °C	kN/mm²		210	210	210	200	200	210	200	128	178
Surface pressure limits for 300 °C	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
		σ_ϑ	315	585	730	630	750	390	630	150	650
E modulus at 300 °C	kN/mm²		185	185	190	186	186	185	186	114	175

Ring joint gaskets, Type R

Ring joint gaskets, Type R, dimensions in accordance with ASME B 16.20, API Std 6 A for flanges in accordance with ASME B16.5 and ASME B16.47 Series A in accordance with EN 12560-5



Ordering example for an oval ring joint gasket, Profile A11, NPS 5, Class 150, made of ...[1]):

Ring joint gasket R 40 A11/1.4541

Ordering example for an octagonal ring joint gasket, Profile A13, NPS 20, Class 1500, made of ...[1]):

Ring joint gasket R 75 A13/1.4541

Ring joint gaskets, Type R

NPS	class	Ring-No.	Ring measurements dm	b	h	h_1
1/2	300 bis 600	R 11	34,13	6,35	11,11	9,53
1/2	900, 1 500	R 12	39,69	7,94	14,29	12,70
1/2	2500	R 13	42,86	7,94	14,29	12,70
3/4	300 bis 600	R 13	42,86	7,94	14,29	12,70
3/4	900, 1500	R 14	44,45	7,94	14,29	12,70
1	150	R 15	47,63	7,94	14,29	12,70
3/4	2500	R 16	50,80	7,94	14,29	12,70
1	300 bis 1500	R 16	50,80	7,94	14,29	12,70
1 1/4	150	R 17	57,15	7,94	14,29	12,70
1	2500	R 18	60,33	7,94	14,29	12,70
1 1/4	300 bis 1500	R 18	60,33	7,94	14,29	12,70
1 1/2	150	R 19	65,09	7,94	14,29	12,70
1 1/2	300 bis 1500	*R 20	68,26	7,94	14,29	12,70
1 1/4	2500	R 21	72,23	11,11	17,46	15,88
2	150	R 22	82,55	7,94	14,29	12,70
1 1/2	2500	*R 23	82,55	11,11	17,46	15,88
2	300 bis 600	*R 23	82,55	11,11	17,46	15,88
2	900, 1500	*R 24	95,25	11,11	17,46	15,88
2 1/2	150	R 25	101,60	7,94	14,29	12,70
2	2500	*R 26	101,60	11,11	17,46	15,88
2 1/2	300 bis 600	*R 26	101,60	11,11	17,46	15,88
2 1/2	900, 1500	*R 27	107,95	11,11	17,46	15,88
2 1/2	2500	R 28	111,13	12,70	19,05	17,46
3	150	R 29	114,30	7,94	14,29	12,70
3	300 bis 600	*R 30	117,48	11,11	17,46	15,88
3	300 bis 900	*R 31	123,83	11,11	17,46	15,88
3	2500	R 32	127,00	12,70	19,05	17,46
3 1/2	150	R 33	131,76	7,94	14,29	12,70
3 1/2	300 bis 600	R 34	131,76	11,11	17,46	15,88
3	1500	*R 35	136,53	11,11	17,46	15,88
4	150	R 36	149,23	7,94	14,29	12,70
4	300 bis 900	*R 37	149,23	11,11	17,46	15,88
4	2500	R 38	157,16	15,88	22,23	20,64
4	1500	*R 39	161,93	11,11	17,46	15,88
5	150	R 40	171,45	7,94	14,29	12,70
5	300 bis 900	*R 41	180,98	11,11	17,46	15,88
5	2500	R 42	190,50	19,05	25,40	23,81
6	150	R 43	193,68	7,94	14,29	12,70
5	1500	*R 44	193,68	11,11	17,46	15,88
6	300 bis 900	*R 45	211,14	11,11	17,46	15,88
6	1500	*R 46	211,14	12,70	19,05	17,46
6	2500	*R 47	228,60	19,05	25,40	23,81
8	150	R 48	247,65	7,94	14,29	12,70
8	300 bis 900	*R 49	269,88	11,11	17,46	15,88
8	1500	*R 50	269,88	15,88	22,23	20,64
8	2500	R 51	279,40	22,23	28,58	26,99
10	150	R 52	304,80	7,94	14,29	12,70
10	300 bis 900	*R 53	323,85	11,11	17,46	15,88
10	1500	*R 54	323,85	15,88	22,23	20,64
10	2500	R 55	342,90	28,58	36,51	34,93
12	150	R 56	381,00	7,94	14,29	12,70
12	300 bis 900	*R 57	381,00	11,11	17,46	15,88
12	1500	R 58	381,00	22,23	28,58	26,99
14	150	R 59	396,88	7,94	14,29	12,70
12	2500	R 60	406,40	31,75	39,69	38,10
14	300 bis 600	R 61	419,10	11,11	17,46	15,88
14	900	R 62	419,10	15,88	22,22	20,64
14	1500	*R 63	419,10	25,40	33,34	31,75
16	150	R 64	454,00	7,94	14,29	12,70
16	300 bis 600	*R 65	469,90	11,11	17,46	15,88
16	900	*R 66	469,90	15,88	22,23	20,64
16	1500	R 67	469,90	28,58	36,51	34,93
18	150	R 68	517,53	7,94	14,29	12,70
18	300 bis 600	*R 69	533,40	11,11	17,46	15,88
18	900	*R 70	533,40	19,05	25,40	23,81
18	1500	R 71	533,40	28,58	36,51	34,93
20	150	R 72	558,80	7,94	14,29	12,70
20	300 bis 600	*R 73	584,20	12,70	19,05	17,46
20	900	*R 74	584,20	19,05	25,40	23,81
20	1500	R 75	584,20	31,75	39,68	38,10
24	150	R 76	673,10	7,94	14,29	12,70
24	300 bis 600	R 77	692,15	15,88	22,23	20,64
24	900	R 78	692,15	25,40	33,34	31,75
24	1500	R 79	692,15	34,92	44,45	41,28
22	150	R 80	615,95	7,93	-	12,70
22	300 bis 600	R 81	635,00	14,28	-	19,05
1	10000	*R 82	57,15	11,11	-	15,87
1 1/2	10000	*R 84	63,50	11,11	-	15,87
2	10000	*R 85	79,37	12,70	-	17,46
2 1/2	10000	*R 86	90,49	15,87	-	20,63
3	10000	*R 87	100,01	15,87	-	20,63
4	10000	*R 88	123,83	19,05	-	23,81
3 1/2	10000	*R 89	114,30	19,05	-	23,81
5	10000	*R 90	155,58	22,22	-	26,98
10	10000	*R 91	260,35	31,75	-	38,10
		R 92	228,60	11,11	17,46	15,87
26	300, 400, 600	R 93[2])	749,30	19,05	-	23,81
28	300, 400, 600	R 94[2])	800,10	19,05	-	23,81
30	300, 400, 600	R 95[2])	857,25	19,05	-	23,81
32	300, 400, 600	R 96[2])	914,40	22,22	-	26,98
34	300, 400, 600	R 97[2])	965,2	22,22	-	26,98
36	300, 400, 600	R 98[2])	1022,35	22,22	-	26,98
8	2000, 3000	*R 99	234,95	11,11	-	15,87
26	900	R 100[2])	749,30	28,57	-	34,92
28	900	R 101[2])	800,10	31,75	-	38,10
30	900	R 102[2])	857,25	31,75	-	38,10
32	900	R 103[2])	914,40	31,75	-	38,10
34	900	R 104[2])	965,20	34,92	-	41,27
36	900	R 105[2])	1022,35	34,92	-	41,27

Dimensions in mm

- Flanges compliant with the standard not available

Dimensions in mm

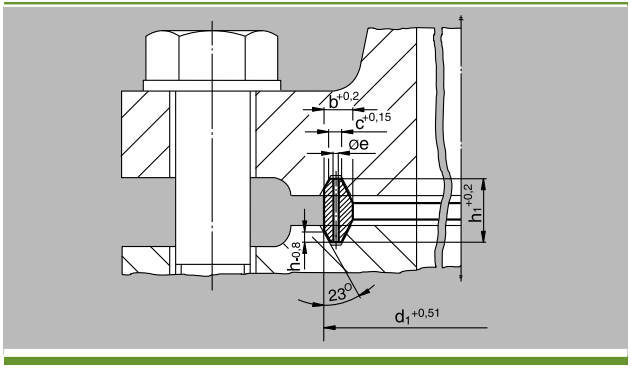
* These rings conform to API standard 6A. The measurements given in mm are converted measurements and will differ marginally from the metric API table.

1) Specify material when placing order

2) Ring for flanges in accordance with ASME B16.47 Series A

Ring joint gaskets, Type RX

Ring joint gaskets, Type RX, dimensions in accordance with ASME B 16.20 and/or API Std 6 A for API 6B flanges



Ordering example for an oval ring joint gasket, Profile A14, NPS 4, Class 3000, made of ...[1]):

Ring joint gasket R 37 A14/1.4541

1) Specify material when placing order

06

Ring joint gaskets, Type RX

NPS	class	Ring-No.	d_1	b	c	h_1	h	Bore* e
1 1/2	2000, 3000,5000	RX 20	76,2	8,73	4,62	19,05	3,18	-
2	2000	RX 23	93,27	11,91	6,45	25,4	4,24	-
2	3000, 5000	RX 24	105,97	11,91	6,45	25,4	4,24	-
3 1/8	5000	RX 25	109,54	8,73	4,62	19,05	3,18	-
2 1/2	2000	RX 26	111,92	11,91	6,45	25,4	3,78	-
2 1/2	3000, 5000	RX 27	118,27	11,91	6,45	25,4	4,24	-
3	2000, 3000	RX 31	134,54	11,91	6,45	25,4	4,24	-
3	5000	RX 35	147,24	11,91	6,45	25,4	4,24	-
4	2000, 3000	RX 37	159,94	11,91	6,45	25,4	4,24	-
4	5000	RX 39	172,64	11,91	6,45	25,4	4,24	-
5	2000, 3000	RX 41	191,69	11,91	6,45	25,4	4,24	-
5	5000	RX 44	204,39	11,91	6,45	25,4	4,24	-
6	2000, 3000	RX 45	221,85	11,91	6,45	25,4	4,24	-
6	5000	RX 46	222,25	13,49	6,68	28,58	4,78	-
8	crossover flange	RX 47	245,3	19,84	10,34	41,28	6,88	-
8	2000, 3000	RX 49	280,59	11,91	6,45	25,4	4,24	-
8	5000	RX 50	283,37	16,67	8,51	31,75	5,28	-
10	2000, 3000	RX 53	334,57	11,91	6,45	25,4	4,24	-
10	5000	RX 54	337,34	16,67	8,51	31,75	5,28	-
12	2000, 3000	RX 57	391,72	11,91	6,45	25,4	4,24	-
14	5000	RX 63	441,72	26,99	14,78	50,8	8,46	-
16	2000	RX 65	480,62	11,91	6,45	25,4	4,24	-
16	3000	RX 66	483,39	16,67	8,51	31,75	5,28	-
18	2000	RX 69	544,1	11,91	6,45	25,4	4,24	-
18	3000	RX 70	550,1	19,84	10,34	41,28	6,88	-
20	2000	RX 73	596,1	13,49	6,68	31,75	5,28	-
20	3000	RX 74	600,87	19,84	10,34	41,28	6,88	-
1	10000	RX 82	67,87	11,91	6,45	25,4	4,24	1,6
1 1/2	10000	RX 84	74,22	11,91	6,45	25,4	4,24	1,6
2	10000	RX 85	90,09	13,49	6,68	25,4	4,24	1,6
2 1/2	10000	RX 86	103,58	15,08	8,51	28,58	4,78	2,4
3	10000	RX 87	113,11	15,08	8,51	28,58	4,78	2,4
4	10000	RX 88	139,3	17,46	10,34	31,75	5,28	3,2
3 1/2	10000	RX 89	129,78	18,26	10,34	31,75	5,28	3,2
5	10000	RX 90	174,62	19,84	12,17	44,45	7,42	3,2
10	10000	RX 91	286,94	30,16	19,81	45,24	7,54	3,2
8	2000, 3000	RX 99	245,67	11,91	6,45	25,4	4,24	-
1 1/4	5000	RX 201	51,46	5,74	3,2	11,3	1,45	-
1 3/4	5000	RX 205	62,31	5,56	3,05	11,1	1,83	-
2 1/2	5000	RX 210	97,63	9,53	5,41	19,05	3,18	-
4	5000	RX 215	140,89	11,91	5,33	25,4	4,24	-
4x 4 1/4	5000	RX 215	140,89	11,91	5,33	25,4	4,24	-

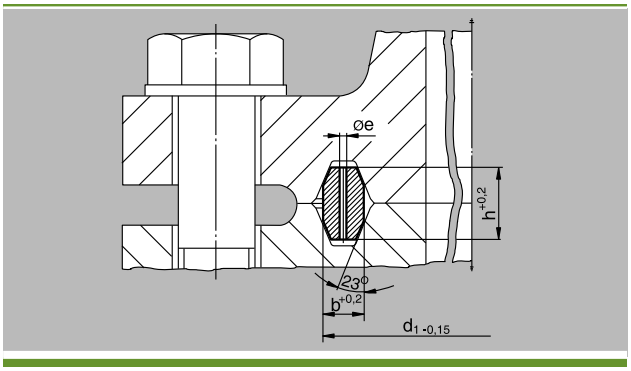
- Flanges compliant with the standard not available

Dimensions in mm

* A compensating bore on the ring circumference. The compensating bore equalises the pressure in both air chambers.

Ring joint gasket, Type RX

Ring joint gasket, Type BX, dimensions in accordance with API Std 6 A for API 6BX flanges



Ordering example for an ring joint gasket, Profile A12, NPS 3 1/16, Class 15000, made of ...[1]):

Ring joint gasket BX 154 A12/1.4541

1) Specify material when placing order

Ring joint gaskets, Type BX

NPS	class	Ring-No.	d1	b	h	Bore* e
1 11/16	10000,15000	BX 150	72,19	9,30	9,30	1,6
1 13/16	10000,15000,20000	BX 151	76,40	9,63	9,63	1,6
2 1/16	10000,15000,20000	BX 152	84,68	10,24	10,25	1,6
2 9/16	10000,15000,20000	BX 153	100,94	11,38	11,38	1,6
3 1/16	10000,15000,20000	BX 154	116,84	12,40	12,40	1,6
4 1/16	10000,15000,20000	BX 155	147,96	14,22	14,22	1,6
7 1/16	10000,15000,20000	BX 156	237,92	18,62	18,62	3,2
9	10000,15000	BX 157	294,46	20,98	20,98	3,2
11	10000,15000	BX 158	352,04	23,14	23,14	3,2
13 5/8	10000	BX 159	426,72	25,70	25,70	3,2
13 5/8	5000	BX 160	402,59	13,74	23,83	3,2
16 3/4		BX 161	491,41	16,20	28,07	3,2
16 3/4	5000,10000	BX 162	475,49	14,22	14,22	1,6
18 3/4	5000	BX 163	556,16	17,37	30,10	3,2
18 3/4	10000	BX 164	570,56	24,59	30,10	3,2
21 1/4	5000	BX 165	624,71	18,49	32,03	3,2
21 1/4	10000	BX 166	640,03	26,14	32,03	3,2
26 3/4	2000	BX 167	759,36	13,11	35,86	1,6
26 3/4	3000	BX 168	765,25	16,05	35,86	1,6
5 1/8	10000	BX 169	173,52	12,93	15,84	1,6
9		BX 170	218,03	14,22	14,22	1,6
11		BX 171	267,44	14,22	14,22	1,6
13 5/8		BX 172	333,07	14,22	14,22	1,6
30	2000, 3000	BX 303	852,75	16,97	37,95	1,6

Dimensions in mm

* A compensating bore on the ring circumference.
The compensating bore equalises the pressure in both air chambers.

Lens gaskets
The proven high-pressure gaskets

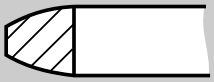
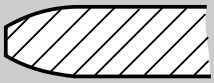
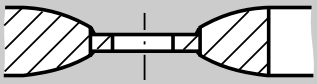
Lens gaskets are reusable, as the sealing effect is generally achieved by elastic deformation of the surfaces.

The projected sealing width b_G is calculated in relation to the angle a, which forms the sealing surface against the direction of the force (tubular axis) depending on the E modulus E_G and the surface pressure exerted by $b_G = 100 \cdot \sigma / E_G \cdot r \cdot \sin\alpha$.

We can also specially produce bellows lenses, lens blind spectacle gaskets and half-lenses.

Lens blind spectacle gaskets are made of a sealing lens and a lens blind, which are connected by a ligament. It is also usual to use lens blinds on their own. In this case, it is useful to weld on a small plate to render the lens blind distinguishable.

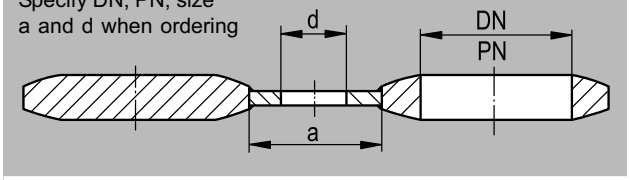
Gasket profiles

Profile	Cross-section
A5	
A5S	
A5BS	

Lens gaskets are impervious to overpressure. With increasing loads, the contact surface between the spherical lens surface and the spherical flange groove increases, so that the surface pressure only increases to a lesser extent.

A disadvantage with standard sealing lenses is that, at high pressures and temperatures, the sealing lens can bulge along the circumference and weaken the tension of the connection. Also, at greater nominal diameter, the flange can become stuck in the area of the raised face diameter d_5 and lift up at the sealing diameter.

Profile A5BS
Specify DN, PN, size
a and d when ordering



Steel type designation	Material number	For circulatory temperatures	Code designation on the outer edge
S235JRG2	1.0038	to 425 °C	none
P265GH	1.0425	to 425 °C	none
16Mo3	1.5415	425 to 475	1 Punch mark
13CrMo4-5	1.7335	425 to 520	2 Punch marks
10CrMo9-10	1.7380	520 to 580	3 Punch marks
X6CrNiTi18-10	1.4541	350 to 550	4 Punch marks
12CrMo19-5	1.7362	max. 650 °C	1 notch
X6CrNiMoTi17-12-2	1.4571	max. 550 °C	3 notches

Further technical data see section **"Materials commonly used".**

Gasket limiting values

Profile			A5, A5S, A5BS								
Materials			Iron 1.1003	Heat-resistant mild steel 1.5415	Heat-resistant mild steel 1.7362	Stainless steel 1.4541	Stainless steel 1.4828	Steel St 35 copper-plated	Steel 1.4541 silver-plated	Copper 2.0090	Monel 2.4360
Recommended max. roughness of the flange surfaces	µm	from	3,2	3,2	3,2	1,6	1,6	3,2	6,3	3,2	3,2
		to	6,3	6,3	6,3	3,2	3,2	6,3	12,5	6,3	6,3
Surface pressure	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
limits for 20 °C	N/mm²	σ_ϑ	525	675	900	750	900	600	750	300	660
E modulus at 20 °C	kN/mm²		210	210	210	200	200	210	200	128	178
Surface pressure	N/mm²	σ_v	235	300	400	335	400	135	100	135	260
limits for 300 °C	N/mm²	σ_ϑ	315	585	730	630	750	390	630	150	650
E modulus at 300 °C	kN/mm²		185	185	190	186	186	185	186	114	175

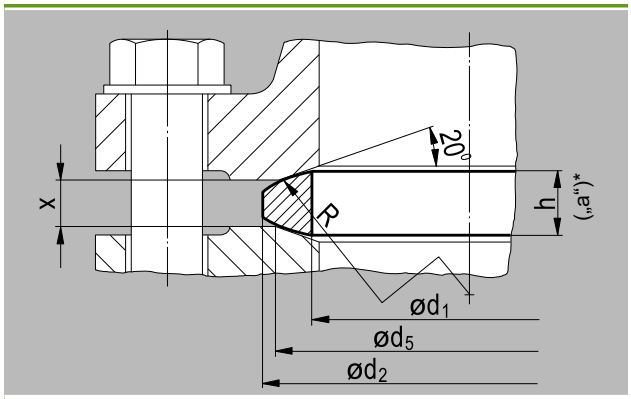
Lens gaskets
The proven high-pressure gaskets

DIN 2696 : 1999-08, Series 1

DN	d_1	d_2	d_5	h	r	x
PN 63						
50	55	78	68	13,6	90	9
65	70	102	85	18,3	113	13
80	82	116	97	18,3	131	13
100	107	143	127	22,1	171	15
125	131	180	157	31,2	210	22
150	158	210	183	34,9	249	26
200	205	276	243	40,5	327	27
PN 100						
10	14	21	18	7,4	23	6
15	18	28	27	9,1	32	6
25	29	43	39	9,5	49	6
40	43	62	55	12,2	71	8
50	54	78	68	13,9	89	9
65	69	102	85	18,7	112	13
80	81	116	97	18,7	130	13
100	105	143	127	22,8	169	15
125	128	180	157	32,3	208	22
150	155	210	183	36,0	146	26
200	200	276	243	42,2	323	27
PN 160						
10	14	21	18	7,4	23	6
15	18	28	27	9,1	32	6
25	28	43	39	9,8	49	6
40	42	62	55	12,6	70	8
50	53	78	68	14,3	88	9
65	67	102	85	19,4	110	13
80	77	116	97	20,1	127	13
100	99	143	127	24,8	165	15
125	120	180	157	35,0	202	22
150	144	210	183	39,7	239	26
175	166	243	218	39,2	280	21
200	188	276	243	44,3	314	25
PN 250						
15	17	28	27	9,4	32	6
25	27	43	39	10,2	48	6
40	39	62	55	13,6	68	8
50	48	78	68	15,9	85	9
65	61	102	85	21,4	106	13
80	80	116	97	19,0	129	13
100	99	143	127	24,8	165	15
125	121	180	157	34,6	203	22
150	143	210	183	40,1	238	26
200	195	276	243	41,9	320	25
PN 320						
10	12	21	18	8,1	22	6
15	15	28	27	10,0	31	6
25	24	43	39	11,1	46	6
40	36	62	55	14,5	66	8
50	48	78	68	16,0	84	9
65	67	102	85	19,3	111	13
80	77	116	97	20,1	127	13
125	129	180	157	31,9	209	22
150	144	210	183	39,7	239	26
175	164	243	218	39,9	279	21
200	185	276	243	45,3	312	25
PN 400						
10	10	21	18	8,7	20	6
15	17	28	27	9,4	32	6
25	29	43	39	9,5	49	6
40	41	62	55	12,9	70	8
50	52	78	68	14,6	87	9
65	70	102	85	18,3	113	13
80	80	116	97	19,0	129	13
100	96	143	127	25,9	162	15
125	134	180	157	30,2	212	22
150	150	210	183	37,7	243	26
200	193	276	243	42,6	319	25

Dimensions in mm

Lens gaskets for flange connections PN 63 to PN 400



Conforms to DIN 2696 : 1999-08*

Ordering example for a lens gasket, DN 100, PN 63, conforming to DIN 2696, made of ...[1]):

Lens gasket, DN 100, PN 63, DIN 2696 Series 1 / 1.7335

DIN 2696 : 1999-08, Series 2

DN	d_1	d_2	d_5	h	r	x
PN 63						
50	52	78	68	14,6	87	9
100	100	143	127	24,5	166	15
125	124	180	157	33,6	205	22
150	148	210	183	38,4	242	26
PN 100						
10	11	21	18	8,4	21	6
15	16	28	27	9,7	31	6
25	25	43	39	10,8	47	6
40	39	62	55	13,6	68	8
50	51	78	68	14,9	87	9
100	98	143	127	25,2	164	15
125	121	180	157	34,6	203	22
150	145	210	183	39,4	240	26
PN 160						
10	10	21	18	8,7	20	6
15	16	28	27	9,7	31	6
25	25	43	39	10,8	46	6
40	38	62	55	13,9	67	8
50	49	78	68	15,6	86	9
100	92	143	127	27,2	160	15
125	113	180	157	37,3	197	22
150	134	210	183	43,1	232	26
PN 250						
15	15	28	27	10,0	31	6
25	23	43	39	11,4	45	6
40	35	62	55	14,9	65	8
50	45	78	68	16,9	82	9
PN 320						
10	9	21	18	9,0	20	6
15	14	28	27	10,3	30	6
25	20	43	39	12,3	43	6
40	32	62	55	15,7	64	8
100	101	143	127	24,2	167	15
125	119	180	157	35,3	202	22

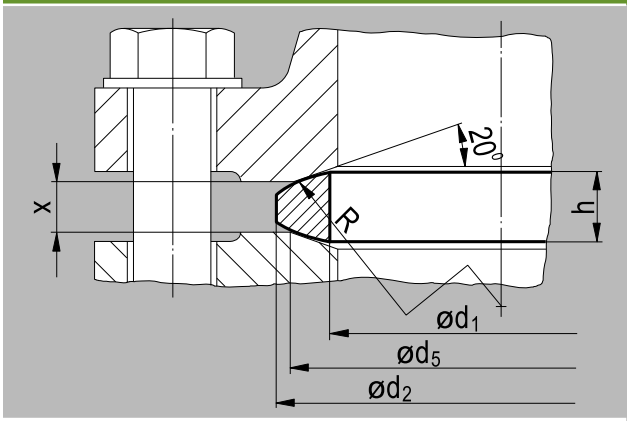
Dimensions in mm

1) Specify material when placing order

* Sealing lenses with dimensions conforming to with DIN 2696 April 1972 edition must always be arranged in advance. To avoid misunderstandings the desired sealing lens height "a" should always be given for the internal diameter d_1 specified.

Lens gaskets
The proven high-pressure gaskets

Lens gaskets for flange connections
PN 63 to PN 400



Works standard 108[2)]

Ordering example for a lens gasket with d_1=94 mm internal diameter and d_2 = 143 mm external diameter, made of ...[1)]:

Lens gasket 94x143 WN 108 / 1.7335

Works standard 108

DN	$d_{1,min}$*	h_{max}	$d_{1,max}$*	h_{min}	d_2*	r*	d_5*	x*
PN 63 to PN 400								
10	10	8,0	14	7,0	21	25	18	5,7
15	14	10,0	18	9,0	28	32	27	6,0
25	20	11,5	29	9,5	43	50	39	6,0
40	34	15,0	43	12,5	62	70	55	8,0
50	46	16,5	55	13,5	78	88	68	9,0
65	62	21,0	70	18,5	102	112	85	13,0
80	72	21,5	82	18,5	116	129	97	13,0
100	94	26,0	108	22,0	143	170	127	15,0
125	116	35,5	135	29,5	180	218	157	22,0
150	139	41,0	158	35,0	210	250	183	26,0
PN 63 to PN 100								
(175)	176	42,5	183	40,5	243	296	218	28,0
200	198	42,5	206	40,0	276	329	243	27,0
250	246	43,0	257	39,5	332	406	298	25,0
300	295	43,5	305	40,5	385	473	345	26,0
350	330	45,5	348	39,5	425	538	394	23,0
400	385	45,5	395	42,0	475	610	445	24,0
PN 160 to PN 400								
(175)	162	40,0	177	35,5	243	296	218	21,0
200	183	45,5	200	40,0	276	329	243	25,0
250	230	48,0	246	43,0	332	406	298	25,0
300	278	53,0	285	51,0	385	473	345	30,0

Dimensions in mm

1) Specify material when placing order

2) Unless otherwise agreed, the sealing lenses will be supplied with $d_{1,min}$ and h_{max}. The interior diameters should be adapted to the by boring of the integral or collar flanges.

* In accordance with DIN 2696 April 1972.

Diamond gaskets

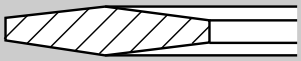
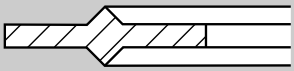
Diamond gaskets have proven excellent in high temperature engineering, high vacuum engineering, chemical and petrochemical industries as well as in nuclear technology. Diamond gaskets are metallic gaskets. Like all metal gaskets, they require high sealing surface pressures. As it is the “tip” of the diamond that bears pressure first of all, the necessary forces are much lower compared to other metal gaskets.

So that the diamond gasket does not damage the flanges, the gasket should have a lower hardness than the flange material.

In stainless steel flanges the diamond gasket is made of the same material. Gasket and flange have roughly the same hardness.

Diamond gaskets are also used with an inner or outer centring ring.

Gasket profiles

Profile	Cross-section
B2	
B3	

Dimensions: Specified by client

Materials: 1.0333, 1.4571, 2.0090, 3.0255

The H-gasket

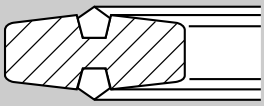
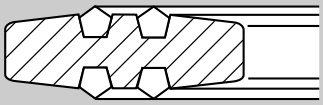
A further development of the diamond gasket is the H-gasket. A H-gasket is a fully metal gasket consisting of a chamber ring and two and/or four sealing rings.

The ring, which is H-shaped in cross-section, chambered and load-bearing, should preferably be made from a hard and elastic material.

The end faces of the chamber ring should be sloped by 2° towards the flange surfaces, so that the security of the seal diameter d_G is retained even if the flange is tilted. Both sealing rings are pentagonal in cross-section and are made of an easily-deformable, plastic metal. At very high pressures, two or three of the same kind of sealing ring can be arranged concentrically. The surface quality of the flange should be R_z < 16 µm.

In order to meet all the requirements of day-to-day use we have extended the sealing ring to three profile widths, so that, in conjunction with the double-layering technique, there are effective sealing widths of 3.2; 4 and 4.85 mm available.

Gasket profiles

Profile	Cross-section
H5-2 H5-2,5 H5-3	
H5-D2 H5-D2,5 H5-D3	

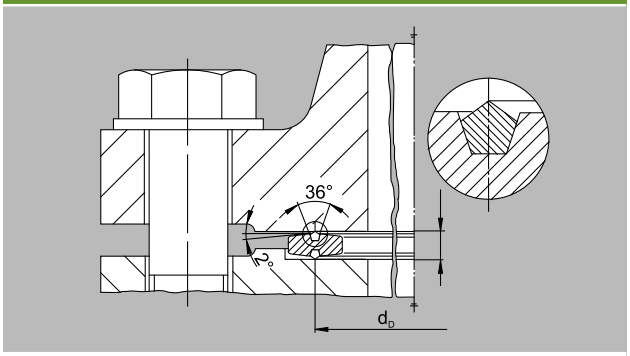
Gasket Profile H 5 has the following special features:

- Low sealing forces, as the sealing width is only a few millimetres.
- All deformation takes place during pre-deformation. No relaxation during operation, as the plastic sealing rings are chambered by the H-ring. The irregularities in the flange surface are filled in. There is excellent adaptability which can seal gases off effectively.
- The cross-sectionally H-shaped ring can be reused. The sealing rings should however be replaced after every use. This is easy to do as the opening angle of the groove is at 36°.
- The use of the gasket Profile H 5 is recommended everywhere where a defined installation height and/or a metallic contact is required. The combination of the small plastic sealing ring with the H-ring, which has a width of 15 to 40 mm, allows greater forces in the main flow to be conducted through the gasket. Edge pressure is avoided with the slant of 2°.
- Can also be used in valve engineering, particularly in the area of complicated control fittings and auxiliary equipment.
- Ideal for interstage pumping in nuclear installations using the double-profile H5-D. Design recommendations available on request.

Important: No sealing agents, such as solid lubricant paste, may be used with metal gaskets such as the H5 gasket.

If these sealing agents are used they can cause indentations on the flange sealing surfaces, necessitating their repair before they can be reused.

Installation sketch



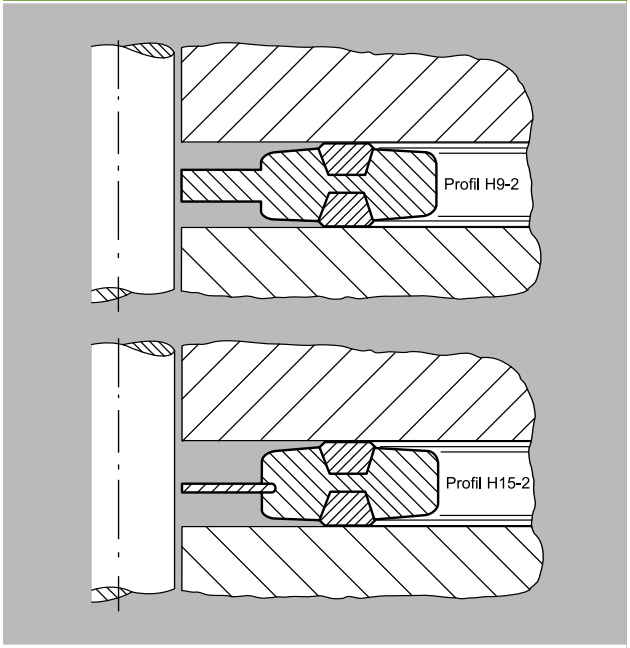
Materials for the chambering ring

1.4016,1.4541,1.4828,1.5415,1.7335, for technical data see “Materials commonly used”.

Materials for the sealing ring

1.0035, 2.0090, 2.3040, 2.4066, 3.0255, fine-grain silver, technical data can be found in “Materials commonly used".

If the gasket is to be installed between two smooth flanges, we recommend Profile H9 with centring ring and/or H15 with loose metal centring ring.

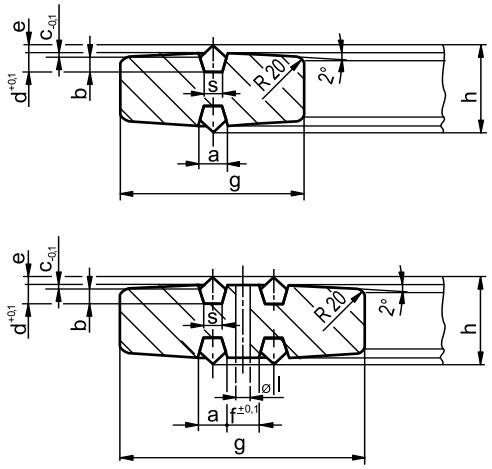


Works standard 131

Ordering example for a H-gasket, Profile H5-2, d_1 = 90 mm internal diameter, d_2 = 120 mm external diameter, height = 8 mm in accordance with works standard 131, made from... [1]:

Gasket H5-2, 90x120x8, WN131, 1.4541/3.0255

1) Specify material when placing order



s	a	b	c	d	e~	f	Ø l*
2,0	3,2	1,9	0,4	2,3	0,78	3,0	2,0
2,5	4,0	2,4	0,5	2,9	0,97	3,5	2,5
3,0	4,85	2,85	0,6	3,45	1,16	4,0	3,0

* minimum of 2 boreholes on the circumference

Measurement recommendations for the designing engineer:

Profile	Guideline values for height “h”			
	< 200	< 500	> 500	g
H5-2	8	9	10	15
H5-2,5	9	10	11	20
H5-3	10	11	12	25
H5-D2	8	9	10	25
H5-D2,5	9	10	11	30
H5-D3	10	11	12	40

Weld ring gaskets

We recommend weld ring gaskets for use in any place where a welded seal is necessary, due either to the danger of the medium or the danger presented by a loss of functionality, but where the connection also needs to be detachable to a certain degree.

These gaskets are therefore described as being semi-detachable, as the welded sealing joint needs to be undone as well as the flange bolts.

Weld ring gaskets are generally made of the same or a related material as the pipe or flange and are only used in pairs.

The choice between the various profiles depends on the operating conditions of the weld ring gasket. The table shows the typical features of Profiles A21 to A25. The “attachment seam” is the connection of a welded half with the flange. The “attachment seam” can be located internally or externally. The “seal seam” is always the welding of both weld rings with one another.

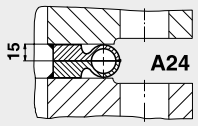
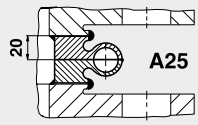
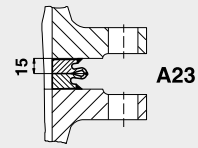
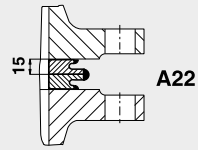
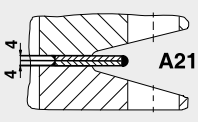
Note:

The suitability of the materials for welding (gasket to flange), the ability to weld (proper fitting) and the security of the welding (expert layout and specifications) should be assessed and tested with regard to the local operating conditions by an expert welding engineer. The “attachment seams” and “seal seam” should be arranged so that they can withstand all load conditions.

Weld rings with hollow lips in Profiles A24, A25 and A23 optimise the stress ratio in the seal seam. Weld rings with hollow lips are recommended for use when connecting components with different heat exchange properties.

The advantage of weld ring gaskets in Profile A24 and A25 lies in their greater motion absorption. They are predominantly used with heat exchangers with differing radial strain properties, e.g. as gaskets between channel flanges and tube plates. With the A24 gasket the weld seams are not accessible from the outside. However in many cases this is an advantage, particularly where creep corrosion is feared.

Typical features:

Profile	Internal "attachment seam" Crevice corrosion between weld ring and flange is avoided	External “attachment seam” Re-welding or disassembly possible	Capacity of radial differential expansion	Undo and re-weld
	Usual	Not possible	Depending on the thickness of the wall of the torus, to a max. Δ r ~ 5 mm	Easy to separate with a 2 mm cutting wheel. Can be re-welded 2 to 4 times
	Possible to have additional attachment. Intermittently welded	Usual	Depending on the thickness of the wall of the torus, to a max. Δ r ~ 5 mm	Easy to separate with a 2 mm cutting wheel. Can be re-welded 2 to 4 times
	a) Only as an additional attachment. Intermittently welded b) if there is a danger of corrosion	a) Usual setup b) Only as an additional attachment aid. Intermittently welded	Only low capacity due to the small lip. max. Δ r ~ 0,5 mm	Difficult to separate Can be re-welded 1 to 3 times
	a) Only as an additional attachment. Intermittently welded. b) if there is a danger of corrosion	a) Usual setup b) Only as an additional attachment aid. Intermittently welded	Not really possible. max.. Δ r ~ 0,1 mm	With cutting wheel Separation loss 2 to 3 mm respectively. Can be re-welded 3 to 5 times
	Usual	Not possible Flange form M in accordance with DIN 2526 also necessary	Modest capacity Depending on projection max.. Δ r ~ 0,3 mm	With cutting wheel Separation loss 2 to 3 mm respectively. Can be re-welded 2 to 4 times

In this case we recommend the following profiles: A24H, A24K, A24KVR and A24N.

All weld ring gaskets can be combined with additional auxiliary gaskets. These can be useful for various different reasons.

a) The pressure test should be carried out with an auxiliary gasket without welding.

b) The start or run-up phase should be undertaken with the auxiliary gasket, as it is likely to need to be opened several times.

c) This application is generally in conjunction with the additional auxiliary gasket. The weld ring gasket is only welded if the auxiliary gasket fails.

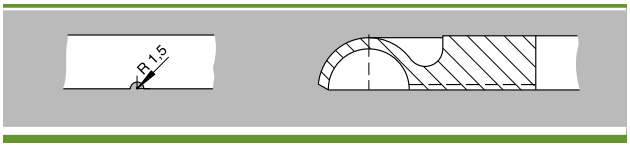
Weld ring gaskets should be fitted so that the weld ring halves lie on top of each other, and parallel to each other and to the flanges.

If weld ring gaskets are used with auxiliary gaskets, the flange and bolt calculations must be carried out once for the weld ring gasket with the seal diameter to the outermost seal seam and once for the auxiliary gasket.

With the use of auxiliary gaskets, a gap of 0.3 mm remains between the weld ring gasket halves, depending on the design.

Note:

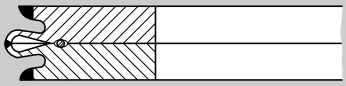
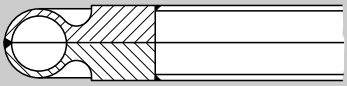
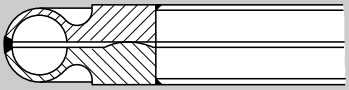
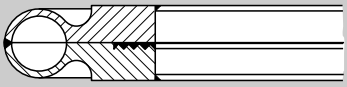
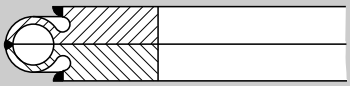
If there is a build-up of condensation during temperature cycles, this can lead to an uncontrolled increase in pressure in the torus. This can be avoided by inserting one or more grooves (1.5 mm deep, 3 mm wide) into one of the ring halves. Please specify the number of grooves when ordering.

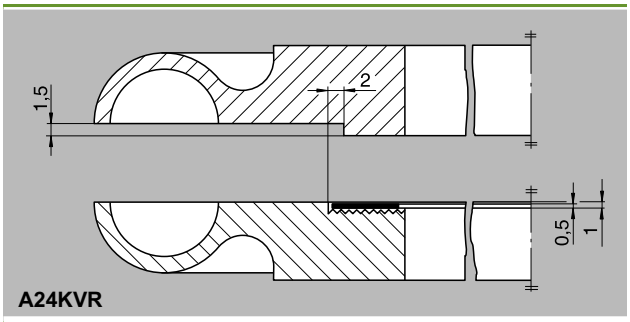


Profile A24H has a weld ring half with a convex sealing surface. The radius conforms to the pressure, temperature and the material involved. A galvanised coat can be useful.

Profile A24K has a weld ring half with a grooved profile, onto which has been attached a layer approximately 0.5 mm thick of either PTFE, graphite, silver or FA (fibre in accordance with DIN 28091), depending on the operating conditions.

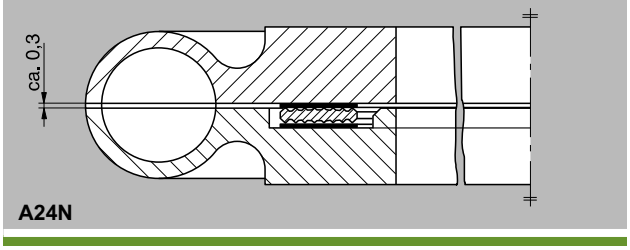
Gasket profiles

Profile	Cross-section
A23	
A24	
A24H	
A24K	
A25	



Profile A24KVR with male and female face joints and grooved profile as shown in diagram. Depending on the operating conditions, the layer for this gasket is either PTFE, graphite, silver or fibre* at a thickness of approximately 0.5 mm.

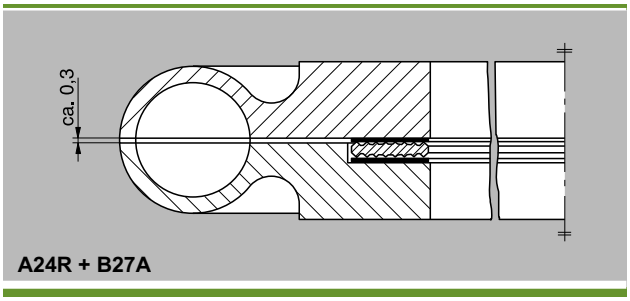
Grooved profile gasket Profile B27A in a floating-type seal



Profile A24N has a groove in one weld ring half for the addition of a grooved profile gasket Profile B27A. For the materials used in the gasket see the section “Grooved gaskets”. The depth of the groove is less than the thickness of the grooved profile gasket, so that a floating-type seal can be guaranteed. The groove depth for the use of a grooved profile gasket = $3{,}5^{-0{,}1}$ mm, the thickness of the grooved profile gasket = $3{,}6^{+0{,}1}$ mm.

Weld ring gaskets

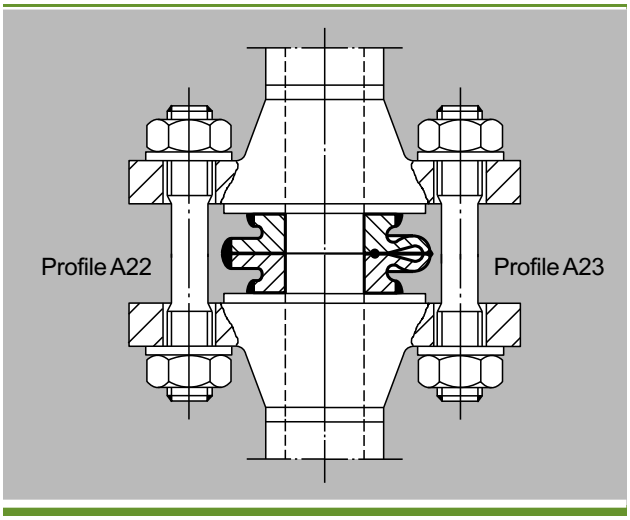
The weld ring gaskets can also be supplied with a female face in Profile A24R to receive a grooved profile gasket, so that if there is any damage to the gasket it can be replaced.



A24R + B27A

The various types of auxiliary gaskets, explained in more detail for A24, are also available for Profile A25 and A23. Profile A23 is shown with a protective gasket which is in no way leak-tight.

Weld ring gaskets in Profile A22 are, like A23 and A24, 2x15=30 mm thick therefore providing enough room to weld without special flanges, as shown in the illustration.

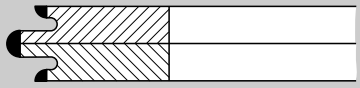
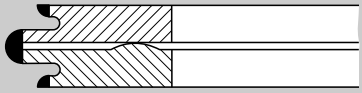
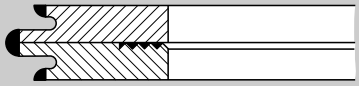
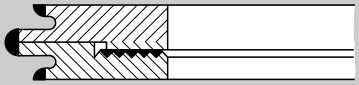
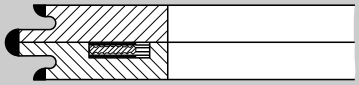


This results in large bolt lengths with good spring suspension. As all weld seams are external, any irregularities can easily be re-welded.

Profiles A22 to A22N are predominantly used in pipeline construction, where the twin flange design means that no large differences in strain properties arise when the same material for the gasket and flange is selected.

A further advantage is that due to the greater thickness an auxiliary gasket can be provided, as is explained for A24 - see weld rings with hollow lips.

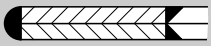
Gasket profiles

Profile	Cross-section
A22	
A22H	
A22K	
A22KVR	
A22N	

Weld ring gaskets

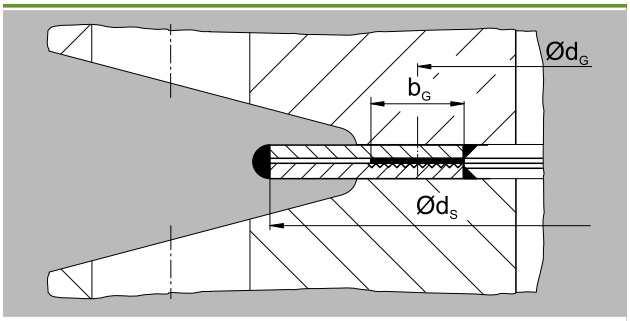
Membrane rings in accordance with DIN 2695 are each 4 mm thick and should be made of the same material as the flange due to the low absorption of radial strain differences. These gaskets are firstly welded internally to the flange using an “attachment seam”, and once the flange has been assembled a “seal seam” is made externally. Any errors made when creating the internal welds can only be fixed with great difficulty.

Gasket profile

Profile	Cross-section
A21	

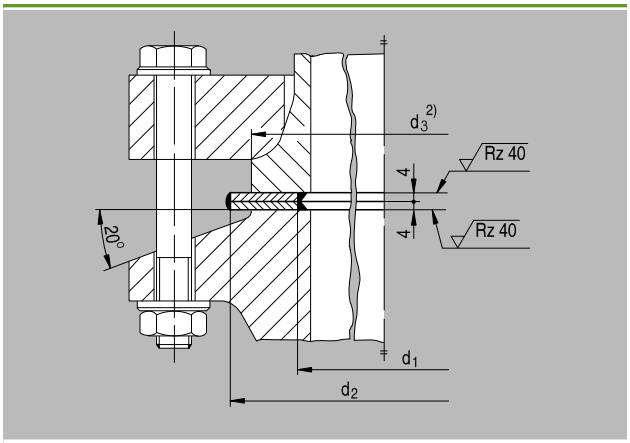
First check if there is sufficient room to make the seal weld or if bevelled flanges of the type Form M in accordance with DIN 2526 will be required.

Membrane weld ring gaskets in Profile A21K are provided with an additional grooved profile. The layers of PTFE, graphite or silver are approximately 0.5 mm thick and should be selected according to the operating conditions.



The figure shows Profile A21K as assembled between flanges of type Form M.

Profil A21



Membrane weld ring gasket Profile A21

Ordering example for a membrane weld ring gasket Profile A21 with d_1=115 mm internal diameter and d2 = 169 mm external diameter, made of...[1]):

Gasket 115 x 169, DIN 2695, 1.5415

Each membrane weld ring gasket has two weld halves.

Conforms to DIN 2695 (PN 63 to PN 400) Model M

		d_2[3] at PN				
DN	d_1	63	100	160	250 a. 320	400
80	90	143	149	149	153	153
100	115	169	176	176	179	179
125	142	206	213	213	216	216
150	165	243	248	248	248	248
200	214	305	315	315	315	315
250	264	360	370	370	370	-
300	310	420	430	430	-	-
350	340	482	490	-	-	-
400	386	539	-	-	-	-
to 3200 possible						

Dimensions in mm

Weld ring gaskets

Conforms to DIN 2695 (Class 150 to Class 2500) Model M

DN	NPS	d_1	d_2 In class 150	300	600	900 to 1500	2500
80	3	92	130	142	142	157	157
100	4	118	167	172	180	187	187
125	5	114	190	208	216	216	216
150	6	170	215	243	246	246	246
200	8	220	272	300	300	300	300
250	10	273	332	354	354	354	354
300	12	322	400	411	411	411	411
350	14	360	440	443	443	443	-
400	16	412	500	500	500	500	-
to 3200 possible							

Dimensions in mm

Size d_3 [2)] for PN (DIN 2695) and Class

		d_3 [2)]			
		PN	Class		
DN	NPS	63 - 400	150	300	600
80	3	123	116	122	122
100	4	149	146	150	-
125	5	186	172	180	-
150	6	218	196	-	-
200	8	285	252	-	-
250	10	340	308	-	-
300	12	400	370	-	-
350	14	460	-	-	-
400	16	519	-	-	-

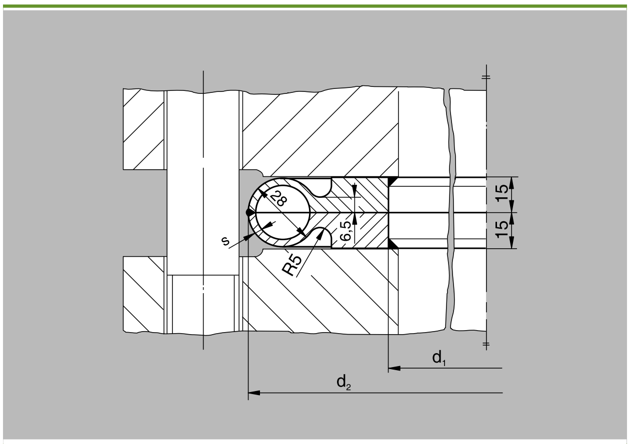
Dimensions in mm

1) Specify materials when placing order.

2) When bevelling the flanges the raised face should be machined to this size (not required for DN150, 200, 350, 400).

3) Aim for 15 mm membrane protrusion, but at least 10 mm (maximum size: centring diameter less than 4 mm).

Profile A24



Weld ring gaskets Profile A24 for DIN flanges

Ordering example for a weld ring gasket, Profile A24, DN 500, PN 40, works standard 126, made of...[1)]:

Weld ring gasket DN 500, PN 40, A24, 490 x 626, WN 126, 1.5415, s = ...*

Works standard 126

DN	PN 16 d_1	PN 16 d_2	PN 25 d_1	PN 25 d_2	PN 40 d_1	PN 40 d_2	PN 63 d_1	PN 63 d_2	PN 100 d_1	PN 100 d_2
250	-	-	-	-	-	-	-	-	258	389
300	-	-	-	-	-	-	-	-	306	456
350	-	-	-	-	348	472	341	484	334	510
400	-	-	-	-	395	544	388	541	to be specified by client**	570
500	-	-	498	622	490	626	to be specified by client**	655		702
600	-	-	598	729	to be specified by client**	745		762		811
700	-	-	696	831		850		877		948
800	-	-	795	940		972		986		-
900	-	-	892	1040		1082		1106		-
1000	1006	1126	991	1152		1192		1218		-
1200	1205	1340	to be specified by client**	1362		1396		1450		-
1400	1402	1540		1576		1616		-		-
1600	1598	1762		1796		1828		-		-
1800	1795	1962		1998		-		-		-
2000	1990	2166		2228		-		-		-

Dimensions in mm

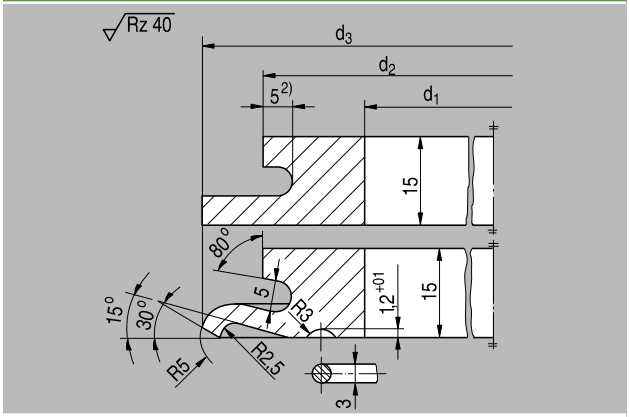
* size specified by client The wall thickness s is determined according to pressure, temperature, material and motion to be absorbed.

** In Profiles A24 to A24N the total width of the weld ring gasket must be no less than $(d_2-d_1) / 2 = 60$ mm.

1) Specify material when placing order

Weld ring gaskets

Profile A22 and A23



Weld ring gasket Profile A22* and Profile A23 in accordance with DIN 2695 2002 for DIN flanges

Ordering example for a weld ring gasket, Profile A22, DN 100, PN 60, conforming to DIN 2695-2002, made of...[1]:

Weld ring gasket, DN 100, PN 160, A22, DIN 2695-2002, 1.5415

Each membrane weld ring gasket has two weld ring halves.

In order to successfully carry out the welding, the customer should check

a) whether the raised face is being machined
b) whether a smooth flange is being used
c) or whether the external diameter d_3 is to be reduced other than in accordance with our works standard.

[1] Specify material when placing order
[2] At DN 10 and 15 only 4 mm
* Model "S" conforms to DIN 2695-2002

Dimensions in accordance with DIN 2695-2002 for DIN flanges

	PN 10 – 40			PN 63			PN 100			PN 160			PN 250			PN 320			PN 400		
DN	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3
10	14	27	41	14	30	50	14	30	50	14	30	50	12	30	50	12	30	50	10	30	50
15	17	32	46	17	35	55	17	35	55	17	35	55	16	35	55	15	35	55	17	40	60
20	22	38	58	21	48	68	21	48	68	-	-	-	-	-	-	-	-	-	-	-	-
25	29	46	66	29	50	70	29	50	70	28	50	70	27	50	70	24	50	70	28	50	70
32	37	55	75	37	55	75	37	55	75	-	-	-	-	-	-	-	-	-	-	-	-
40	43	60	80	43	60	80	43	60	80	41	60	80	38	60	80	36	60	80	40	80	100
50	55	75	95	55	75	95	54	75	95	52	75	95	48	80	100	48	90	110	51	90	110
65	70	90	110	70	90	110	69	90	110	66	90	110	60	100	120	67	110	130	70	120	140
80	83	105	125	82	105	125	81	105	125	76	105	125	80	115	135	77	125	145	79	130	150
100	107	125	145	106	125	145	104	125	145	98	125	145	99	135	155	101	145	165	95	150	170
125	132	150	170	131	150	170	127	150	170	120	160	180	120	160	180	128	172	192	134	188	208
150	159	178	198	157	178	198	154	178	198	143	185	205	143	185	205	144	205	225	149	218	238
200	207	235	255	205	235	255	199	235	255	187	230	250	195	255	275	185	255	275	193	285	305
250	259	285	305	255	285	305	248	285	305	233	280	300	235	310	330	244	335	355	-	-	-
300	310	335	355	302	335	355	296	335	355	280	335	355	244	335	355	-	-	-	-	-	-

Dimensions in mm

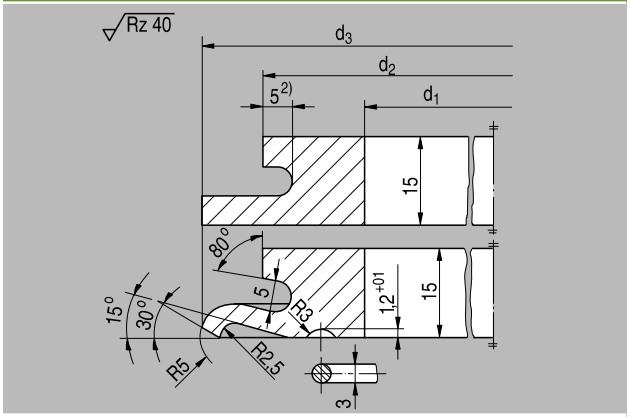
	PN 10			PN 16			PN 25			PN 40			PN 63			PN 100		
DN	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3
350	341	385	405	340	385	405	340	385	405	338	385	405	331	385	405	324	385	405
400	392	435	455	390	435	455	389	435	455	384	435	455	378	435	455	371	435	455
450	443	490	510	441	490	510	440	490	510	435	490	510	-	-	-	-	-	-
500	494	540	560	492	540	560	488	540	560	480	540	560	476	560	580	464	560	580
600	595	645	665	592	645	665	588	645	665	585	645	665	575	655	675	560	670	690
700	695	750	770	694	750	770	686	750	770	683	750	770	671	760	780	651	780	800
800	797	840	860	793	850	870	785	855	875	781	855	875	769	870	890	-	-	-
900	894	945	965	894	945	965	882	960	980	880	960	980	864	975	995	-	-	-
1000	996	1045	1065	996	1045	1065	988	1055	1075	981	1060	1080	964	1085	1105	-	-	-
1200	1198	1260	1280	1195	1260	1280	1188	1265	1285	1176	1275	1295	1156	1295	1315	-	-	-
1400	1396	1455	1475	1392	1460	1480	1385	1465	1485	1375	1475	1495	-	-	-	-	-	-
1600	1592	1665	1685	1588	1665	1685	1585	1665	1685	1570	1680	1700	-	-	-	-	-	-
1800	1790	1860	1880	1785	1865	1885	1780	1870	1890	-	-	-	-	-	-	-	-	-
2000	1984	2070	2090	1980	2070	2090	1975	2075	2095	-	-	-	-	-	-	-	-	-
2200	2184	2270	2290	2175	2275	2295	-	-	-	-	-	-	-	-	-	-	-	-
2400	2380	2470	2490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2600	2576	2675	2695	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2800	2776	2875	2895	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3000	2972	3080	3100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Flanges compliant with the standard not available

Dimensions in mm

Weld ring gaskets

Profile A22 and A23



Weld ring gasket Profile A22 and Profile A23 for DIN flanges

Ordering example for a weld ring gasket, Profile A22, DN 100, PN 160, conforming to works standard 110, made of...[1]:

Weld ring gasket, DN 100, PN 160, A22, works standard 110, 1.5415

Each membrane weld ring gasket has two weld ring halves.

In order to successfully carry out the welding, the customer should check:

a) whether the raised face is being machined
b) whether a smooth flange is being used
c) or whether the external diameter d_3 is to be reduced other than in accordance with our works standard.

[1] Specify material when placing order

[2] At DN 10 and 15 only 4 mm

06

Dimensions in accordance with works standard 110 for DIN flanges

	PN 10 – 40			PN 63			PN 100			PN 160			PN 250			PN 320			PN 400		
DN	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3
10	13,6	27	41	13,6	30	50	13,6	30	50	13,6	30	50	12	30	50	12	30	50	10	30	50
15	17,3	32	46	17,3	35	55	17,3	35	55	17,3	35	55	16,1	35	55	14,9	35	55	16,9	40	60
20	22,3	38	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	28,5	46	66	28,5	50	70	28,5	50	70	27,9	50	70	26,5	50	70	23,7	50	70	28,2	50	70
32	37,2	55	75	37,2	55	75	37,2	55	75	-	-	-	-	-	-	-	-	-	-	-	-
40	43,1	60	80	42,5	60	80	42,5	60	80	41,1	60	80	38,3	60	80	35,7	60	80	40,3	80	100
50	54,5	75	95	54,5	75	95	53,9	75	95	52,3	75	95	47,7	80	100	47,5	90	110	51,1	90	110
65	70,3	90	110	69,7	90	110	68,9	90	110	66,1	90	110	60,1	100	120	66,9	110	130	69,6	120	140
80	82,5	105	125	81,7	105	125	80,9	105	125	76,3	105	125	79,6	115	135	76,6	125	145	79,3	130	150
100	107,1	125	145	106,3	125	145	104,3	125	145	98,3	125	145	98,6	135	155	101	145	165	95,3	150	170
125	131,7	150	170	130,7	150	170	127,1	150	170	119,7	160	180	120,4	160	180	128,3	172	192	133,7	188	208
150	159,3	178	198	157,1	178	198	154,1	178	198	143,3	185	205	142,8	185	205	143,7	205	225	149,1	218	238
200	206,5	235	255	204,9	235	255	199,1	235	255	187,1	230	250	194,5	255	275	184,5	255	275	193	285	305
250	258,8	285	305	255,4	285	305	248	285	305	233	280	300	234,5	310	330	243,9	335	355	-	-	-
300	309,7	335	355	301,9	335	355	295,5	335	355	279,5	335	355	244	335	355	-	-	-	-	-	-

Dimensions in mm

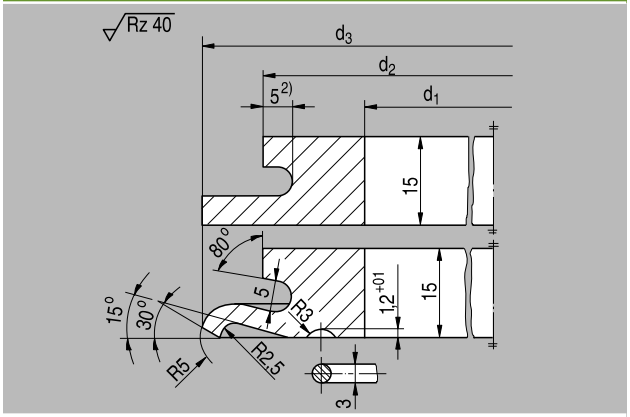
	PN 10			PN 16			PN 25			PN 40			PN 63			PN 100		
DN	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3
350	341,4	385	405	339,6	385	405	339,6	385	405	338,0	385	405	330,6	385	405	323,6	385	405
400	392,2	435	455	390,4	435	455	388,6	435	455	384,4	435	455	378	435	455	371,4	435	455
450	443	490	510	441,2	490	510	439,6	490	510	435,2	490	510	-	-	-	-	-	-
500	493,8	540	560	492	540	560	488	540	560	479,6	540	560	476	560	580	464	560	580
600	595,4	645	665	592	645	665	587,6	645	665	585	645	665	575	655	675	560	670	690
700	695,2	750	770	693,6	750	770	686,2	750	770	683	750	770	671	760	780	651	780	800
800	797	840	860	793	850	870	784,6	855	875	781	855	875	769	870	890	-	-	-
900	894	945	965	894	945	965	882	960	980	880	960	980	864	975	995	-	-	-
1000	996	1045	1065	996	1045	1065	988	1055	1075	981	1060	1080	964	1085	1105	-	-	-
1200	1198	1260	1280	1195	1260	1280	1188	1265	1285	1176	1275	1295	1156	1295	1315	-	-	-
1400	1396	1455	1475	1392	1460	1480	1385	1465	1485	1375	1475	1495	-	-	-	-	-	-
1600	1592	1665	1685	1588	1665	1685	1585	1665	1685	1570	1680	1700	-	-	-	-	-	-
1800	1790	1860	1880	1785	1865	1885	1780	1870	1890	-	-	-	-	-	-	-	-	-
2000	1984	2070	2090	1980	2070	2090	1975	2075	2095	-	-	-	-	-	-	-	-	-
2200	2184	2270	2290	2175	2275	2295	-	-	-	-	-	-	-	-	-	-	-	-
2400	2380	2470	2490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2600	2576	2675	2695	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2800	2776	2875	2895	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3000	2972	3080	3100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Flanges compliant with the standard not available

Dimensions in mm

Weld ring gaskets

Profile A22 and A23



Weld ring gasket Profile A22* and A23 for ANSI flanges

Ordering example for a weld ring gasket, Profile A22, NPS 3, Class 900, made of ...[1]:

Schweißdichtung A22, NPS 3, Class 900, WN 111, 1.5415

* Model “S” conforms to DIN 2695-2002

In accordance with 2695-2002 for ANSI flanges

		Class						
		d_1			d_2	d_3	d_2	d_3
		150-300	400-900	1500-2500	150		300-2500	
DN	NPS							
15	½	16	14	6	29	45	29	45
20	¾	21	19	11	33	53	33	53
25	1	27	24	15	42	62	42	62
32	1 ¼	35	33	23	52	72	55	75
40	1 ½	41	38	28	60	80	64	84
50	2	53	49	38	75	95	83	103
65	2 ½	63	59	45	96	116	96	116
80	3	78	74	58	105	125	118	138
100	4	102	97	80	148	168	148	168
125	5	128	122	103	160	180	177	197
150	6	154	146	124	185	205	207	227
200	8	203	194	174	240	260	261	281
250	10	255	248	222	295	315	315	335
300	12	305	298	273	372	392	372	392
350	14	337	330	305	404	424	404	424
400	16	387	381	356	461	481	461	481
450	18	438	432	406	525	545	525	545
500	20	499	483	457	575	595	575	595
600	24	591	584	559	683	703	683	703

Dimensions in mm

Works standard 111 for ANSI flanges

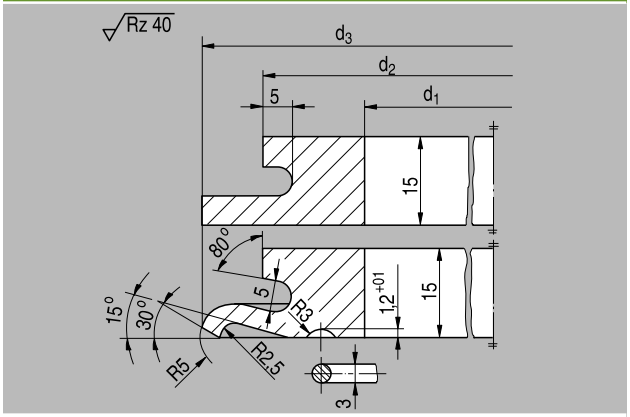
		Class						
		d_1			d_2	d_3	d_2	d_3
		150-300	400-900	1500-2500	150		300-2500	
DN	NPS							
15	½	15,7	14,0	6,4	29	45	29	45
20	¾	20,8	18,8	11,0	33	53	33	53
25	1	26,7	24,4	15,2	42	62	42	62
32	1 ¼	35,1	32,5	22,8	52	72	55	75
40	1 ½	40,9	38,1	27,9	60	80	64	84
50	2	52,6	49,3	38,2	75	95	83	103
65	2 ½	62,7	58,9	45,0	96	116	96	116
80	3	78,0	73,7	58,4	105	125	118	138
100	4	102,4	97,3	80,1	148	168	148	168
125	5	128,3	122,2	103,2	160	180	177	197
150	6	154,2	146,3	124,4	185	205	207	227
200	8	202,7	193,8	174,6	240	260	261	281
250	10	254,5	247,6	222,3	295	315	315	335
300	12	304,8	298,4	273,1	372	392	372	392
350	14	336,6	330,2	304,8	404	424	404	424
400	16	387,3	381,0	355,6	461	481	461	481
450	18	438,1	431,8	406,4	525	545	525	545
500	20	488,9	482,6	457,2	575	595	575	595
600	24	590,5	584,2	558,8	683	703	683	703

Dimensions in mm

[1] Specify material when placing order
[2] At NPS ½ and NPS ¾ only 4 mm

Weld ring gaskets

Profile A22 and A23



Weld ring gasket Profile A22 and Profile A23 for flanges in accordance with ASME B16.47 Series A

Ordering example for a weld ring gasket, Profile A22, NPS 30, Class 150, made of...[1]:

Weld ring gasket A22, NPS 30, Class 150, WN 143, 1.5415

Works standard 143 for ASME B16.47 Series A flanges

NPS	Class 150 - 300			Class 400 - 600			Class 900		
	d_1	d_2	d_3	d_1	d_2	d_3	d_1	d_2	d_3
26	641,4	695,8	715,8	635,0	695,8	715,8	622,4	708,4	728,4
28	692,2	746,6	766,6	685,8	746,6	766,6	673,2	759,2	779,2
30	743,0	797,4	817,4	736,6	797,4	817,4	724,0	810,0	830,0
32	793,8	848,2	868,2	787,4	848,2	868,2	774,8	860,8	880,8
34	844,6	899,0	919,0	838,2	899,0	919,0	825,6	911,6	931,6
36	895,4	949,8	969,8	889,0	949,8	969,8	876,4	962,4	982,4
38	946,2	1000,6	1020,6	939,8	1000,6	1020,6	927,2	1013,0	1033,0
40	997,0	1051,4	1071,4	990,6	1051,4	1071,4	978,0	1064,0	1084,0
42	1047,8	1102,4	1122,2	1041,4	1102,4	1122,2	1028,8	1114,8	1134,8
44	1098,6	1153,0	1173,0	1092,2	1153,0	1173,0	1079,6	1165,6	1185,6
46	1149,4	1203,8	1223,8	1143,0	1203,8	1223,8	1130,4	1216,4	1236,4
48	1200,2	1254,6	1274,6	1193,8	1254,6	1274,6	1181,2	1267,2	1287,2
50	1251,0	1305,4	1325,4	1244,6	1305,4	1325,4	-	-	-
52	1301,8	1356,2	1376,2	1295,4	1356,2	1376,2	-	-	-
54	1352,6	1407,0	1427,0	1346,2	1407,0	1427,0	-	-	-
56	1403,4	1457,8	1477,8	1397,0	1457,8	1477,8	-	-	-
58	1454,2	1508,6	1528,6	1447,8	1508,6	1528,6	-	-	-
60	1505,0	1559,4	1579,4	1498,6	1559,4	1579,4	-	-	-

- Flanges compliant with the standard not available

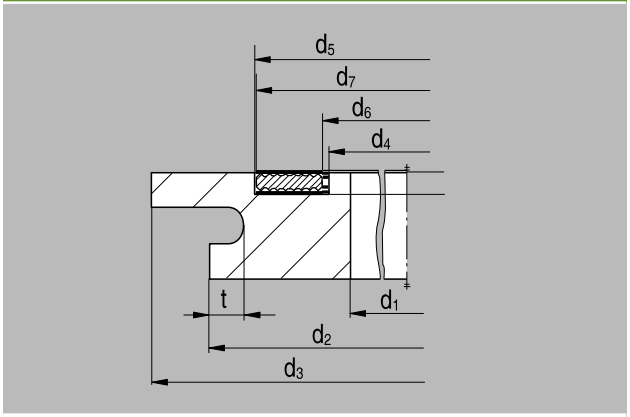
Dimensions in mm

Each membrane weld ring gasket has two weld ring halves.

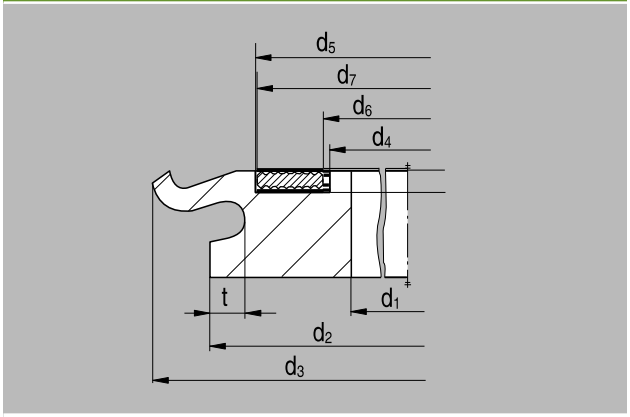
All measurements are recommendations and should be checked by the client.

Weld ring gaskets

Profile A22N



Profile A23N



Weld ring gasket Profile A22N and Profile A23N for DIN flanges

Ordering example for a weld ring gasket, Profile A22N, DN 100, PN 6, with a grooved profile gasket Profile B27A, conform to works standard 134, made of...[1]:

Weld ring gasket, DN 100, PN 16, A22N, B27A, 1.4541 / graphite, WN 134

* Turning in depth t 4 mm only
In order to successfully carry out the welding, the customer should check:
a) whether the raised face is being machined
b) whether a smooth flange is being used
c) or whether the external diameter d_3 is to be reduced other than in accordance with our works standard.

[1] Specify material when placing order

Works standard 134, PN 10

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
32 *	37,2	65	79	40,0	54	7,0	6,0	41	53
40 *	43,1	71	85	46,0	60	7,0	6,0	47	59
50 *	54,5	84	98	59,0	73	7,0	6,0	60	72
65 *	70,3	101	115	74,6	90	7,7	6,5	76	89
80	82,5	115	135	86,6	102	7,7	6,5	88	101
100 *	107,1	141	155	111,4	128	8,3	7,0	113	127
125 *	131,7	166	180	136,4	153	8,3	7,0	138	152
150 *	159,3	196	210	165,2	183	8,9	7,5	167	182
(175) *	182,9	223	237	189,0	209	10,0	8,5	191	208
200 *	207,3	246	260	212,0	232	10,0	8,5	214	231
250	260,4	299	315	264,0	285	10,5	9,0	266	284
300	309,7	354	370	314,6	338	11,7	10,0	317	337
350	341,4	390	410	348,6	372	11,7	10,0	351	371
400	392,2	445	465	401,2	427	12,9	11,0	404	426
(450)	443,0	500	520	453,0	481	14,0	12,0	456	480
500	493,8	555	575	506,0	534	14,0	12,0	509	533
600	595,4	660	680	608,0	638	15,0	13,0	611	637
700	695,2	770	790	710,2	745	17,4	15,0	714	744
800	797,0	875	895	813,0	850	18,5	16,0	817	849
900	894,0	970	990	908,0	945	18,5	16,0	912	944
1000	996,0	1075	1095	1012,0	1049	18,5	16,0	1016	1048

- Flanges compliant with the standard not available

Dimensions in mm

Works standard 134, PN 16

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
32 *	37,2	65	79	40,0	54	7,0	6,0	41	53
40 *	43,1	71	85	46,0	60	7,0	6,0	47	59
50 *	54,5	84	98	59,0	73	7,0	6,0	60	72
65 *	70,3	101	115	74,6	90	7,7	6,5	76	89
80	82,5	115	135	86,6	102	7,7	6,5	88	101
100 *	107,1	141	155	111,4	128	8,3	7,0	113	127
125 *	131,7	166	180	136,4	153	8,3	7,0	138	152
150 *	159,3	196	210	165,2	183	8,9	7,5	167	182
(175) *	182,9	223	237	189,0	209	10,0	8,5	191	208
200 *	207,3	246	260	212,0	232	10,0	8,5	214	231
250	260,4	299	315	264,0	285	10,5	9,0	266	284
300	309,7	354	370	314,6	338	11,7	10,0	317	337
350	339,6	390	410	348,6	372	11,7	10,0	351	371
400	390,4	445	465	401,2	427	12,9	11,0	404	426
(450)	-	-	-	-	-	-	-	-	-
500	492,0	555	575	506,0	534	14,0	12,0	509	533
600	592,4	660	680	608,0	638	15,0	13,0	611	637
700	693,4	770	790	710,2	745	17,4	15,0	714	744
800	793,0	875	895	813,0	850	18,5	16,0	817	849
900	894,0	970	990	908,0	945	18,5	16,0	912	944
1000	996,0	1075	1095	1012,0	1049	18,5	16,0	1016	1048

Dimensions in mm

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Weld ring gaskets

Works standard 134, PN 25

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Sealing width	Grooved gasket d_6	Grooved gasket d_7
32*	37,2	65	79	40,0	54	7,0	6,0	41	53
40*	43,1	71	85	46,0	60	7,0	6,0	47	59
50*	54,5	84	98	59,0	73	7,0	6,0	60	72
65*	70,3	101	115	74,6	90	7,7	6,5	76	89
80	82,5	115	135	86,6	102	7,7	6,5	88	101
100*	107,1	141	155	111,4	128	8,3	7,0	113	127
125*	131,7	166	180	136,4	153	8,3	7,0	138	152
150*	159,3	196	210	165,2	183	8,3	7,5	167	182
(175)*	182,5	225	245	189,0	209	10,0	8,5	191	208
200*	206,5	250	270	214,0	234	10,0	8,5	216	233
250	258,8	310	330	269,0	290	10,5	9,0	271	289
300	307,9	360	380	317,6	341	11,7	10,0	320	340
350	339,6	390	410	348,6	372	11,7	10,0	351	371
400	388,8	445	465	399,2	425	12,9	11,0	402	424
500	488,0	555	575	506,0	534	14,0	12,0	509	533
600	588,0	660	680	608,0	638	15,0	13,0	611	637
700	686,0	770	790	710,2	745	17,4	15,0	714	744
800	784,6	875	895	813,0	850	18,5	16,0	817	849
900	882,0	970	990	908,0	945	18,5	16,0	912	944
1000	981,0	1075	1095	1012,0	1049	18,5	16,0	1016	1048

Dimensions in mm

Works standard 134, PN 40

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Sealing width	Grooved gasket d_6	Grooved gasket d_7
32*	37,2	65	79	40,0	54	7,0	6,0	41	53
40*	43,1	71	85	46,0	60	7,0	6,0	47	59
50*	54,5	84	98	59,0	73	7,0	6,0	60	72
65*	70,3	101	115	74,6	90	7,7	6,5	76	89
80	82,5	115	135	86,6	102	7,7	6,5	88	101
100*	107,1	141	155	111,4	128	8,3	7,0	113	127
125*	131,7	166	180	136,4	153	8,3	7,0	138	152
150*	159,3	196	210	165,2	183	8,9	7,5	167	182
(175)*	182,5	225	245	189,0	209	10,0	8,5	191	208
200*	206,5	250	270	214,0	234	10,0	8,5	216	233
250	258,8	310	330	269,0	290	10,5	9,0	271	289
300	307,9	360	380	317,6	341	11,7	10,0	320	340
350	338,0	390	410	347,6	371	11,7	10,0	350	370
400	388,4	440	460	394,2	420	12,9	11,0	397	419
500	479,6	540	560	491,0	519	14,0	12,0	494	518

Dimensions in mm

Works standard 134, PN 63

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
25*	28,5	61	75	33,0	47	7,0	6,0	34	46
32*	37,2	65	79	40,0	54	7,0	6,0	41	53
40*	42,5	76	90	48,0	62	7,0	6,0	49	61
50	54,5	85	105	58,0	72	7,0	6,0	59	71
65	69,7	105	125	74,6	90	7,7	6,5	76	89
80	81,7	120	140	88,6	104	7,7	6,5	90	103
100	106,3	145	165	111,4	128	8,3	7,0	113	127
125	130,7	175	195	139,2	157	8,9	7,5	141	156
150	157,1	200	220	164,0	183	9,5	8,0	166	182
(175)	181,1	225	245	188,0	208	10,0	8,5	190	207
200	204,9	250	270	212,0	232	10,0	8,5	214	231
250	255,4	305	325	265,0	286	10,5	9,0	267	285
300	301,9	355	375	311,6	335	11,7	10,0	314	334
350	330,6	385	405	341,6	365	11,7	10,0	344	364
400	378,0	435	455	389,2	415	12,9	11,0	392	414

Dimensions in mm

Works standard 134, PN 100

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
25*	28,5	61	75	33,0	47	7,0	6,0	34	46
32*	37,2	65	79	40,0	54	7,0	6,0	41	53
40*	42,5	76	90	48,0	62	7,0	6,0	49	61
50	53,9	85	105	58,0	72	7,0	6,0	59	71
65	68,9	105	125	74,6	90	7,7	6,5	76	89
80	80,9	120	140	87,6	103	7,7	6,5	89	102
100	104,3	145	165	111,4	128	8,3	7,0	113	127
125	127,1	170	190	135,2	153	8,9	7,5	137	152
150	154,1	200	220	164,0	183	9,5	8,0	166	182
(175)	176,1	225	245	186,0	206	10,0	8,5	188	205
200	199,1	245	265	207,0	227	10,0	8,5	209	226
250	248,0	295	315	256,0	277	10,5	9,0	258	276
300	295,5	350	370	306,6	330	11,7	10,0	309	329
350	323,6	385	405	337,6	361	11,7	10,0	340	360

Dimensions in mm

* Turning in depth t 4 mm only

Weld ring gaskets

Works standard 134, PN 160

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
10	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-
25	27,9	61	75	33,0	47	7,0	6,0	34	46
40*	41,1	76	90	48,0	62	7,0	6,0	49	61
50	52,3	90	110	59,0	73	7,0	6,0	60	72
65	66,1	105	125	72,6	88	7,7	6,5	74	87
80	76,3	115	135	83,6	99	7,7	6,5	85	98
100	98,3	140	160	106,4	123	8,3	7,0	108	122
125	119,7	160	180	126,2	144	8,9	7,5	128	143
150	143,3	190	210	152,0	171	9,5	8,0	154	170
(175)	165,3	215	235	175,0	195	10,0	8,5	177	194
200	187,1	230	250	194,0	214	10,0	8,5	196	213
250	233,0	280	300	241,0	262	10,5	9,0	243	261
300	279,5	335	355	290,6	314	11,7	10,0	293	313

Dimensions in mm

Works standard 134, PN 320

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
10*	12,0	46	60	18,0	32	7,0	6,0	19	31
15*	14,9	51	65	23,0	37	7,0	6,0	24	36
25	23,7	60	80	30,0	44	7,0	6,0	31	43
40	35,7	75	95	43,0	57	7,0	6,0	44	56
50	47,5	90	110	56,0	70	7,0	6,0	57	69
65	66,9	110	130	75,6	91	7,7	6,5	77	90
80	76,6	125	145	88,6	104	7,7	6,5	90	103
100	101,0	145	165	109,4	126	8,3	7,0	111	125
125	128,3	172	192	136,2	154	8,9	7,5	138	153
150	143,7	205	225	160,0	179	9,5	8,0	162	178
(175)	163,1	230	250	182,0	202	10,0	8,5	184	201
200	184,5	255	275	205,0	225	10,0	8,5	207	224
250	243,9	335	355	274,0	295	10,5	9,0	276	294

Dimensions in mm

Works standard 134, PN 250

DN	d_1	d_2	d_3	Groove measurement d_4	Groove measurement d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
10*	12,0	46	60	18,0	32	7,0	6,0	19	31
15*	16,1	51	65	23,0	37	7,0	6,0	24	36
25*	26,5	61	75	33,0	47	7,0	6,0	34	46
40	38,3	75	95	45,0	59	7,0	6,0	46	58
50	47,7	85	105	54,0	68	7,0	6,0	55	67
65	60,1	100	120	67,6	83	7,7	6,5	69	82
80	79,6	120	140	87,6	103	7,7	6,5	89	102
100	98,6	140	160	106,4	123	8,3	7,0	108	122
125	120,4	165	185	129,2	147	8,9	7,5	131	146
150	142,8	190	210	152,0	171	9,5	8,0	154	170
(175)	174,7	230	250	198,0	218	10,0	8,5	200	217
200	194,5	255	275	220,0	240	10,0	8,5	222	239
250	234,5	310	330	257,0	278	10,5	9,0	259	277

Dimensions in mm

Works standard 134, PN 400

DN	d_1	d_2	d_3	Groove measurment d_4	Groove measurment d_5	Groove width	Gasket width	Grooved gasket d_6	Grooved gasket d_7
10*	10,0	46	60	18,0	32	7,0	6,0	19	31
15*	16,9	51	65	23,0	37	7,0	6,0	24	36
25	28,2	65	85	35,0	49	7,0	6,0	36	48
40	40,3	80	100	49,0	63	7,0	6,0	50	62
50	51,1	90	110	59,0	73	7,0	6,0	60	72
65	69,6	120	140	82,6	98	7,7	6,5	84	97
80	79,3	130	150	92,6	108	7,7	6,5	94	107
100	95,3	150	170	109,4	126	8,3	7,0	111	125
125	133,7	188	208	147,2	165	8,9	7,5	149	164
150	149,1	218	238	169,0	188	9,5	8,0	171	187
(175)	-	-	-	-	-	-	-	-	-
200	193,0	285	305	224,0	244	10,0	8,5	226	243

Dimensions in mm

* Turning in depth 4 mm only

Weld ring gaskets

Weld ring gasket Profile A22N and Profile A23 for ANSI flanges

Ordering example for a weld ring gasket, Profile A22N, NPS 10, Class 150, with a grooved profile gasket Profile B27A, conform to works standard 135, made of ...[1]:

Weld ring gasket NPS 10, Class 150, A22N, B27A, 1.4541 / graphite, works standard 135

The measurement d_1 corresponds to the internal diameter for standard pipes in accordance with ANSI B 36.10

* Turning in depth t 4 mm only

In order to successfully carry out the welding, the customer should check:

a) whether the raised face is being machined
b) whether a smooth flange is being used
c) or whether the external diameter d_3 is to be reduced other than in accordance with our works standard.

[1] Specify material when placing order

Works standard 135, Class 150

				Groove measurement				Grooved gasket	
DN	d_1	d_2	d_3	d_4	d_5	Groove width	Gasket width	d_6	d_7
½	-	-	-	-	-	-	-	-	-
¾	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-
1¼	-	-	-	-	-	-	-	-	-
1½	-	-	-	-	-	-	-	-	-
2 *	52,6	81	95	56,0	70	7,0	6,0	57	69
2½	62,7	96	116	68,0	82	7,0	6,0	69	81
3 *	78,0	111	125	82,6	98	7,7	6,5	84	97
3½	90,2	131	151	97,4	114	8,3	7,0	99	113
4	102,4	148	168	112,4	129	8,3	7,0	114	128
5	128,3	160	180	132,2	150	8,9	7,5	134	149
6	154,2	194	210	160,2	178	8,9	7,5	162	177
8	202,7	245	265	209,0	229	10,0	8,5	211	228
10	254,5	300	320	262,0	283	10,5	9,0	264	282
12	304,8	372	392	321,6	345	11,7	10,0	324	344
14	336,6	404	424	353,6	377	11,7	10,0	356	376
16	387,3	461	481	406,2	432	12,9	11,0	409	431
18	438,1	515	535	458,0	486	14,0	12,0	461	485
20	488,9	575	595	513,0	541	14,0	12,0	516	540
22	539,7	625	645	563,0	593	15,0	13,0	566	592
24	590,5	683	703	617,0	647	15,0	13,0	620	646

Dimensions in mm

Works standard 135, Class 300 - 600

				Groove measurement				Grooved gasket	
DN	d_1	d_2	d_3	d_4	d_5	Groove width	Gasket width	d_6	d_7
½	-	-	-	-	-	-	-	-	-
¾*	20,8	52	62	25,0	39	7,0	5,5	27	38
1 *	26,7	58	68	32,0	46	7,0	5,5	34	45
1¼*	35,1	68	78	42	56	7,0	5,5	44	55
1½*	40,9	71	85	45	59	7,0	6,0	46	58
2 *	52,6	81	95	56,0	70	7,0	6,0	57	69
2½	62,7	96	116	68,0	82	7,0	6,0	69	81
3	78,0	111	125	83,6	99	7,7	6,5	85	98
3½	90,2	131	151	97,4	114	8,3	7,0	99	113
4	102,4	148	168	112,4	129	8,3	7,0	114	128
5	128,3	170	190	135,2	153	8,9	7,5	137	152
6	154,2	195	215	161,2	179	8,9	7,5	163	178
8	202,7	260	280	217,0	237	10,0	8,5	219	236
10	254,5	315	335	270,0	291	10,5	9,0	272	290
12	304,8	372	392	321,6	345	11,7	10,0	324	344
14	336,6	404	424	353,6	377	11,7	10,0	356	376
16	387,3	461	481	406,2	432	12,9	11,0	409	431
18	438,1	515	535	458,0	486	14,0	12,0	461	485
20	488,9	575	595	513,0	541	14,0	12,0	516	540
22	539,7	632	652	566,6	596	15,0	13,0	569	595
24	590,5	683	703	617,0	647	15,0	13,0	620	646

Dimensions in mm

Works standard 135, Class 900 1500

				Groove measurement				Grooved gasket	
DN	d_1	d_2	d_3	d_4	d_5	Groove width	Gasket width	d_6	d_7
½*	15,7	46	56	20,0	34	7,0	5,5	22	33
¾*	20,8	52	62	25,0	39	7,0	5,5	27	38
1 *	26,7	56	70	31,0	45	7,0	6,0	32	44
1¼	35,1	66	80	40,0	54	7,0	6,0	41	53
1½*	40,9	76	90	48,0	62	7,0	6,0	49	61
2	52,6	90	110	60,0	74	7,0	6,0	61	73
2½	62,7	100	120	70,0	84	7,0	6,0	71	83
3	78,0	120	140	85,6	102	7,7	6,5	88	101
4	102,4	150	170	113,4	130	8,3	7,0	115	129
5	128,3	180	200	140,2	158	8,9	7,5	142	157
6	154,2	210	230	168,2	186	8,9	7,5	170	185
8	202,7	260	280	217,0	237	10,0	8,5	219	236
10	254,5	315	335	270,0	291	10,5	9,0	272	290
12	304,8	372	392	321,6	345	11,7	10,0	324	344
14	336,6	404	424	353,6	377	11,7	10,0	356	376
16	387,3	461	481	406,2	432	12,9	11	409	431
18	438,1	515	535	458	486	14	12	461	485
20	488,9	575	595	513	541	14	12	516	540
24	590,5	683	703	617	647	15	13	620	646

Dimensions in mm

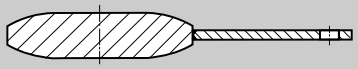
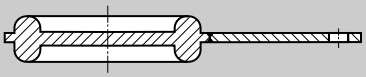
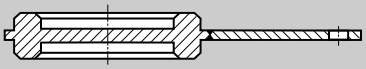
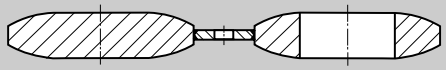
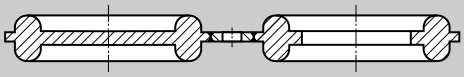
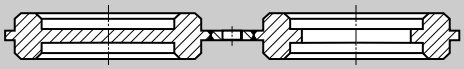
Works standard 135, Class 2500

				Groove measurement				Grooved gasket	
DN	d_1	d_2	d_3	d_4	d_5	Groove width	Gasket width	d_6	d_7
½*	15,7	46	60	20,0	34	7,0	6,0	21	33
¾*	20,8	51	65	25,0	39	7,0	6,0	26	38
1 *	26,7	61	75	33,0	47	7,0	6,0	34	46
1¼	35,1	70	90	41,0	55	7,0	6,0	42	54
1½*	40,9	80	100	49,0	63	7,0	6,0	50	62
2	52,6	95	115	62,0	76	7,0	6,0	63	75
2½	62,7	105	125	72,0	86	7,0	6,0	73	85
3	78,0	125	145	89,6	105	7,7	6,5	91	104
4	102,4	155	175	115,4	132	8,3	7,0	117	131
5	128,3	185	205	143,2	161	8,9	7,5	145	160
6	154,2	210	230	168,2	186	8,9	7,5	170	185
8	202,7	260	280	217,0	237	10,0	8,5	219	236
10	254,5	315	335	270,0	291	10,5	9,0	272	290
12	304,8	372	392	321,6	345	11,7	10,0	324	344
14	336,6	404	424	353,6	377	11,7	10,0	356	376
16	387,3	461	481	406,2	432	12,9	11	409	431
18	438,1	515	535	458	486	14	12	461	485
20	488,9	575	595	513	541	14	12	516	540
24	590,5	683	703	617	647	15	13	620	646

Dimensions in mm

Blind gaskets / Spectacle blind gaskets

Gasket profiles

Profile	Querschnitt
A1S	
B7S	
B9S	
A5S	
A11S	
A13S	
A5BS	
A11BS	
A13BS	

Besides the usual blind gaskets available on the market, we also manufacture special shapes, which have certain sealing advantages compared to the blind gaskets currently available on the market.

If no thickness is specified, we set the thickness of the blind gasket in accordance with the AD Technical Specification Sheet B5-2000. Using high-strength materials, we can manufacture thin, and thereby light, blind gaskets. Blind gaskets must be as thin as possible, as they are frequently fitted between splayed flanges.

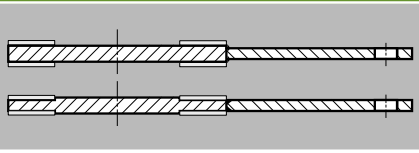
All blind gaskets are provided with a stable marker plate. The marker plate contains details about the manufacturer, nominal width and nominal pressure level, as well as a hold for a hanging storage. It can also be painted with a colour for security, to avoid accidents and unintentional isolation.

With our on-site or localised service we can also offer a blind gasket service. We can supply blind gaskets on request, as well as flat gaskets (for A1S) or sealing layers (for B7S/B9S). We can also arrange to hire these out for a fee. Contact us for further details.

Profile descriptions

Profile A1S

These blinds have soft-material gaskets on both sides. On request we can machine a recess to reduce the total thickness. Within the clamping range, the disc must be 70% of the thickness at the middle of the disc, in accordance with AD2000 regulations. With this profile the blind gasket and the marker plate can be produced from one piece, which prevents any loss due to breaking off.



Profile B7S, Profile B9S

Like normal grooved gaskets, these blind gaskets have graphite or PTFE layers on both sides. They can also be used at very high pressures and, given the right measurements, in RTJ flanges.

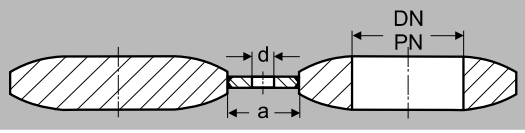
Profile A5S, Profile A11S and Profile A13S

The lens blind gasket A5S takes the shape of a lens gasket and the ring joint blind gasket takes the shape of a ring joint gasket. For ease of handling the blind gaskets have a plate which also serves as identification.

Profile A5BS

Lens blind spectacle gaskets are made of a sealing lens and a lens blind, which are connected by a ligament.

Specify DN, PN, size a and d when ordering



Profile A11BS, Profile A13BS

Ring joint spectacle blind gaskets have the same design shape as lens spectacle blind gaskets.

Blind gaskets and spectacle blind gaskets are produced for all current flanges. The material should be specified before ordering, see also “Materials commonly used".