General information

Product information

Product information (continued)

20080301

Seals can be broadly sub-divided into static and dynamic seals.

Static seals

These seals are used to seal two elements that are permanently stationary in relation to each other. Examples of this are pipe sections joined by means of flanges and gasket to guarantee the leakproof transport of e.g. liquids or gases. Parts of equipment such as e.g. heat exchangers are also provided with static seals to prevent leakage and to make the efficiency of the appliance as high as possible. Static seals can be sub-divided into:

- Metallic and semi-metallic gaskets (camprofile gaskets, spiral wound gaskets, ring joint gaskets, lens (shaped) rings, welded membranes, superseals)
- Sheet gaskets (Aramid fibre, graphite, PTFE)

Dynamic seals

This is the sealing of two elements that are in motion in relation to each other. This can be rotating as well as oscillating movements. Examples of this are e.g. the stems of valves and piston-rods in pneumatic cylinders. Higher (peripheral) speeds occur on the output shafts of e.g. pumps or compressors. These applications require very special seals, which are referred to as mechanical seals.
In this catalogue we restrict ourselves to the product groups gland packings and O-rings.

General sealing technology

Seals form an essential part of the pipework and equipment in modern chemical and petrochemical installations (e.g. heat exchangers). Installation reliability depends for great part on the correct functioning of seals. Clearly, with modern technology and the increasingly extensive environmental requirements, the reliability of seals must taken seriously.
The primary demands on a seal are the following:

- temperature resistance
- compressive strength
- resistance to the medium to be sealed

Besides choosing the correct type of seal and/or the correct sealing material, it is of great importance that the flange parts between which the gasket must be fitted are suitable for the chosen seal with regards to flange roughness and it must be possible to generate sufficient gasket pressure to realize the seal realize.
Another, very important factor is the installation of the gasket. For critical uses in particular, it is of crucial importance that the gasket is installed with the correct gasket stress being applied. It is highly desirable to use a torque wrench to ensure that the bolts are tightened in a balanced and controlled manner.
An accurate calculation of the flange joint can be made for heat exchangers as well as for flange joints. This is generally not necessary for standard flanges but for non standard equipment a calculation is often made. This calculation indicates what forces will be present in the flange joint during installation and operation. The gasket and bolt forces are also evaluated.

Sealing principle

Gaskets are used to realize a static seal between two elements that are stationary in relation to each other, and to maintain this seal during operating conditions with varying pressures and temperatures.
If it would be possible to manufacture flanges that are very smooth and that would connect perfectly to each other and would maintain perfect contact during the most extreme operating conditions, there would be no need for gaskets. In practice this is not possible due to:

- The dimensions of the piping flanges or equipment flanges
- In practice it is impossible to keep such smooth flange facings undamaged during handling
- Corrosion and erosion will affect the flange facings during duty.

As a consequence of this a sealing material, in the form of a gasket, must be fitted between the flanges. In general, external forces (mainly bolt forces) will compress the sealing material into the microscopic surface unevenness of the flanges to be connected.
This in turn leads to the following points that must be taken into account for the design of a well-functioning seal:

- There must be sufficient (bolt) force available to initiate the seal, i.e. during the fitting phase, there must be sufficient gasket load available to cause the sealing material to flow into the (micro) flange unevennesses .
- Due to internal system pressure, hydrostatic forces tend to move the flanges away from each other and in this way reduce the gasket stress. During operating conditions (under pressure and temperature) sufficient gasket stress must remain to ensure that the flanges/gasket combination stays a tight unit and that no leakage or blowout occurs.
- The choice of the sealing material must be such that it can with stand forces exerted by the joint and internal pressure on the gasket material. Special account must be taken of the mechanical strength properties in the temperature range within which the gasket is deployed. The gasket material should also be resistant to the medium to be sealed in combination with the temperature.

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Surface roughness

Another important factor for obtaining a good seal is the surface roughness of the flange facings. In general it can be stated that for soft gasket material the flange facings need to be rougher than for metallic gaskets.

- For soft gasket material such as Novus® sheet gaskets and PTFE, the roughness of the flange facings must ensure that the mechanically rather weak gasket material is not blown out as a result of the internal pressure. The flange roughness ensures increased friction between the gasket material and flange facing (stock finish)
- Conversely, for metallic gaskets the flange facings must be very smooth to allow the metallic sealing material to flow into the unevenness of the flange under high gasket stress (special finish).
- For semi-metallic gaskets such as spiral wound gaskets and camprofile gaskets the required flange roughness lies in between (smooth finish)

Flange roughnesses

Special finish	0.8 – 1.6 µm Ra	32 – 64 µinch
Smooth finish	3.2 – 6.3 µm Ra	125 – 250 µinch
Stock finish	6.3 – 12.5 µm Ra	250 – 500 µinch

Recommended flange roughness per gasket type

	Stock finish	Smooth finish	Special finish
Fibre sheet gasket (Novus®)	X	X	
Uniflon®	X	X	
Graphite sheet gasket	X	X	
Spiral wound gaskets	X	X	
Camprofile gaskets		X	X
Metal jacketed gaskets			X
Ring Type Joints			X

DIN 2505 - gasket factors

Gasket type	Material	m	õVU	õVO	õBO				
					[N/mm2]				
					100 °C	200 °C	300 °C	400 °C	500 °C
Sheet gaskets	Uniflon 50 – 2 mm	1.3	22	100	50	40			
Sheet gaskets	Uniflon 51 – 2 mm	1.3	30	100	60	45			
Sheet gaskets	Uniflon 53 – 2 mm	1.3	30	100	60	45			
Sheet gaskets	Novus 30 – 2 mm	2.0	25	150	80	50			
Sheet gaskets	Novus 34 – 2 mm	2.0	30	180	100	60			
Sheet gaskets	Novus Graftec – 2 mm	2.5	21	120	100	80	60		
Sheet gaskets	Econgraph FI – 1.5mm	1.3	20	100	100	80	60	50	
Sheet gaskets	Econgraph TI – 1.5mm	1.3	30	160	160	150	140	120	
SPW one-sided closed form	SS / Graphite, PTFE	1.3	20	110	110	100	95	85	
SPW two-sided closed form	SS / Graphite, PTFE	1.3	20	300	170	160	150	140	130
Camprofile gaskets	SS / Graphite, PTFE	1.1	20	450	430	420	390	360	340

õVU = lower limit at assembling, õVO = upper limit at assembling, õBO = upper limit at operating conditons

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The gasket is generally seen as the most important component of a seal. Flanges and bolts are also important parts. All components together ensure the correct functioning of the seal.

Flanges must be sufficiently rigid and have the correct surface roughness. The flange must also be very clean. Damage to the flange surface, especially in a radial direction, are potential causes of leakage. The gasket must be chosen in such a way that it is suitable for the intended use with regards to pressure, temperature resistance and resistance to the medium. Gaskets may never be re-used.

The bolt force must be sufficient, particularly at the operating temperature. If bolts are re-used, they must be inspected, cleaned and oiled or lubricated with special purpose products that are used to reduce the coefficient of friction. Besides the correct selection of the gasket, flanges and bolts, the correct fitting of the gasket is of great importance.
At important and/or non-standard flange joints we recommend making a calculation to determine the correct gasket load, bolt forces and the associated tightening torques to be applied.
For the correct assembling of gaskets, the following points must be taken into account:

1. Use a torque wrench
Without the use of a torque wrench, it is practically impossible to tighten the bolts to the correct bolt tension and to distribute the total bolt force evenly across the gasket surface. For the seal to function properly, it is important that the total required bolt force is distributed evenly across the surface of the gasket.

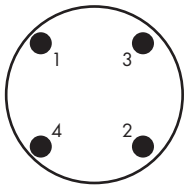
2. Centre the gasket correctly
It is important that the gasket is properly centered when fitting, especially when using "stretch bolts". Apart from the chance that the piping can be partially blocked by the gasket, an asymmetric loading of the flange construction can take place, meaning that the gasket force is unevenly distributed across the surface of the gasket.

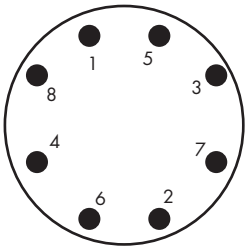
3. Don't use any add. joining mat. (glue, grease)
The use of joining materials such as glue and grease to keep the gasket in place during fitting is absolutely prohibited. Under operation conditions (raised temperature) these materials burn, leading to a loss of mass, which results in reduced gasket stress at these points. In many cases, this will result in leakage. The use of grease as a joining material causes a reduction in the friction between the gasket and flange surface. The consequence of this can be that the gasket blows out.

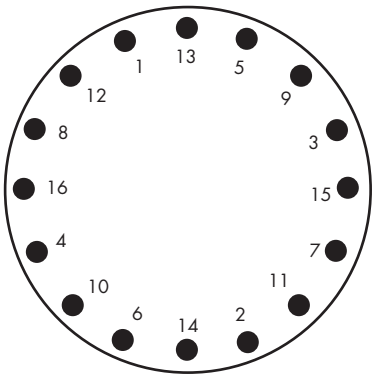
4. Nuts, bolts and washers
As stated earlier, bolts must be inspected and lightly oiled or lubricated with special purpose products that are used to reduce the coefficient of friction between nut and bolt. As the greatest friction occurs between nut and flange, the use of special flat washers is recommended. The contact face between the nut and washer should also be lubricated with a product that reduces the friction.

5. Flange spreader
The installation of gaskets is simplified, by the use of tools that push the flanges apart and thereby improves the accessibility of the flange facings.

6. Tighten bolts / nuts crosswise
To distribute the total required bolt force evenly across the surface of the gasket it is important that all bolts are tightened to the same bolt tension. To achieve this it is necessary that the required tightening torques are applied in several steps. This usually happens in three steps: 50% - 80% - 100%. This tightening must occur crosswise. Below you will find examples of crosswise tightening:







After the last bolt is tightened to the correct torque, all bolts must be checked one more time against the target torques.

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Camprofile gaskets are used when high demands are placed on the seal at high pressures (up to 250 bar) and changing temperatures. A good seal is possible even at low gasket stresses. These gaskets consist of a metallic, mostly SS, core in which concentric grooves are turned on both sides. In general a sealing top layer is applied on both sides, e.g. graphite, PTFE, sheet gasket (asbestos-free) or silver. Apart from guaranteeing a good operation of the seal, the top layer also offers a complete protection against damage to the flange facings.

Profile shapes
Camprofile gaskets are standard available in series 2021 (type M21LM) and series 2041 (type M41LM).

Series 2021
This is a standard camprofile gasket that consists of a flat camprofile shaped sealing element with a top layer, and a loose centering ring.

Series 2041
This is a standard camprofile gasket that consists of a convex camprofile shaped sealing element with a top layer, and a loose centring ring. This shape is suitable for weak flange constructions (low bolt forces).

Top layer material

Material	Temperature		Max. operating pressure [bar]	Impermeability to gas	Use
	Min. [°C]	Max. [°C]			
Graphite	-200	550	250	Good	aggressive media
PTFE (Teflon ®)	-200	250	100	Good	aggressive media
Novus ®	-100	250	100	Good	Liquids and gases
Silver	-200	750	250	Good	aggressive media

Seal element
The sealing element of the camprofile gasket is constructed in such a way that in the case of a graphite layer the highly compressed graphite (s.m. max 2.1 gr/cm³) fills the grooves of the camprofile. Only 0.1-0.2 mm of graphite remains above the cams. This makes very little diffusion possible through the sealing material, while also preventing damage to the flanges by the cams of the camprofile. With a PTFE top layer, the PTFE is confined on both sides, which limits the adverse flow-effect of the material.

Centering ring
The centering ring has only one purpose: to centre the camprofile between the bolts of the flange joint during assembling. The loose centring ring prevents possible cracking of the camprofile core that, as a result of thermal tensions, can occur in camprofile gaskets with centering ring that are produced in a single piece. For series 2021/2041 the centring ring lies entirely outside the sealing surface of the gasket, so that it remains fully unloaded. As standard, the material of the centring ring is the same as the material of the core.

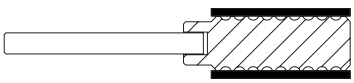
Ordering information

Ordering code	Profile form	Sealing element Centring ring	Top layer	Flange standard
2021107	M21LM	AISI 316L	Graphite	ASME B16.5
2021187	M21LM	AISI 316L	PTFE	ASME B16.5
2041608	M41LM	AISI 316Ti	Graphite	DIN
2041688	M41LM	AISI 316Ti	PTFE	DIN
2041107	M41LM	AISI 316L	Graphite	ASME B16.5
2041187	M41LM	AISI 316L	PTFE	ASME B16.5

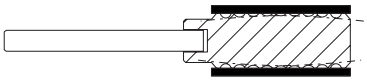
Specify the following data when ordering:
Fig. no. (profile shape) – sealing element/centring ring materials – nominal dimension/rating – flange standard.
- Other materials or material combinations are available on request
- For other profile shapes see page HA-01-002
- For dimensions see dimension tables

Standard profile shapes
- fig. 2021107
- fig. 2021187
- fig. 2041608
- fig. 2041688
- fig. 2041107
- fig. 2041187

- DIN
- ASME
- Large gasket stress range
- Easy (dis)assembly
- Very low leak rates (TA-Luft)
- No damage to the flange facings
- Fire-safe



Series 2021 (type M21LM)



Series 2041 (type M41LM)

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Along with the shapes for standard piping systems series 2021 and series 2041, a variety of different profile shapes are available on request:

Series 2018 (type M18L)
This shape consists of a flat, profiled core with a integral centering ring.

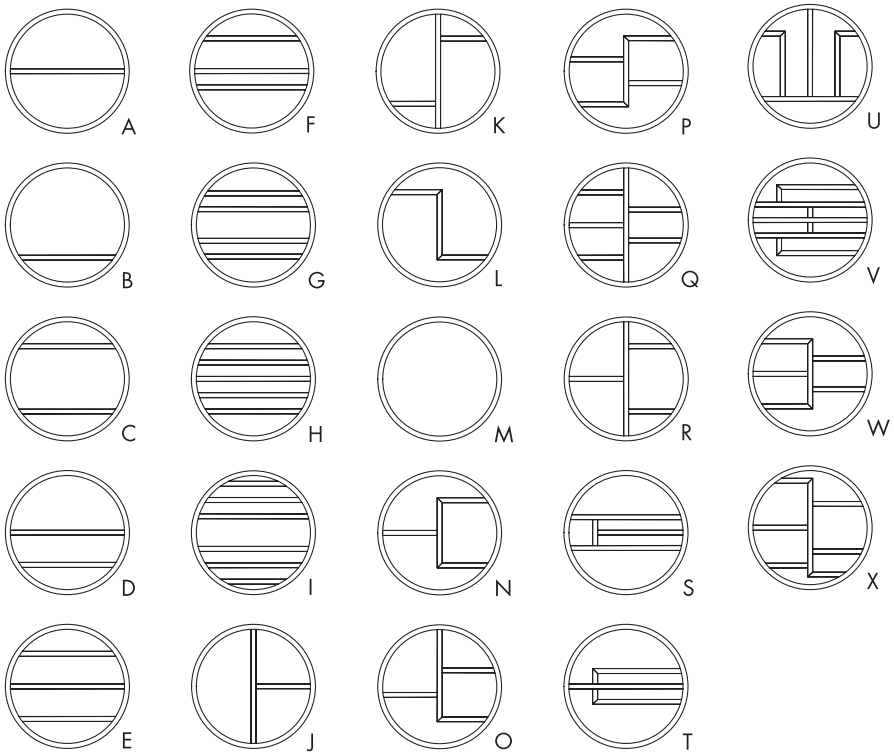
Series 2038 (type M38L)
This consists of a convex, profiled core with a integral centering ring.

Series 2020 (type M20L)
Profiled, flat metallic core without centering ring.
This type is principally used in male/female, tongue/groove and groove/groove flanges (heat exchangers).

Series 2040 (type M40L)
Profiled convex core, without centring ring.
This type is principally used in male/female, tongue/groove and groove/groove flanges (heat exchangers).

Non-standard variants
A camprofile gasket can be manufactured in a large number of shapes.
It is possible to produce shapes with tack welded bars (camprofile shaped), oval, rectangular and other arbitrary shapes.

An overview is given below of a number of standard shapes in which camprofile shaped gaskets can be produced for heat exchangers.



Ordering information
Specify the following data when ordering:
Series number (profile shape) – materials for the core/centering ring and layer material – nominal dimension/rating – flange standard.
With non-standard dimensions, the dimensions must also be specified, or a drawing must be provided.

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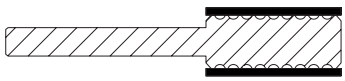
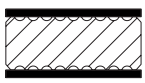
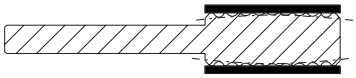
Other profile shapes
- Series 2018
- Series 2020
- Series 2038
- Series 2040



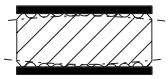
Series 2018 (type M18L)



Series 2020 (type M20L)



Series 2038 (type M38L)



Series 2040 (type M40L)

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Metallic and semi-metallic gaskets

Dimension table for camprofile gaskets
For ASME B16.5 Raised Face flanges

Nom. pipe size [inch]	d1	Pressure rating [lbs]									
		150-300	400-600	900-2500	150	300	400	600	900	1500	2500
		d2			d3						
½	20	30	30	30	48	54	54	54	64	64	70
¾	25	35	35	35	57	67	67	67	70	70	76
1	32	42	42	42	67	73	73	73	79	79	86
1¼	40	56	56	56	76	83	83	83	89	89	105
1½	45	61	61	61	86	95	95	95	98	98	118
2	60	80	80	80	105	111	111	111	143	143	146
2½	70	90	90	90	124	130	130	130	165	165	168
3	85	105	105	110	137	149	149	149	168	175	197
3½	100	120	120	125	162	165	162	162			
4	110	130	130	135	175	181	178	194	206	210	235
5	135	155	155	165	197	216	213	241	248	254	279
6	160	180	180	195	222	251	248	267	289	283	318
8	210	230	230	250	279	308	305	321	359	352	387
10	265	285	295	315	340	362	359	400	435	435	476
12	315	335	350	375	410	422	419	457	499	521	550
14	350	370	390	405	451	486	483	492	521	578	581
16	400	425	445	460	514	540	537	565	575	641	644
18	450	480	500	525	549	597	594	613	638	705	
20	500	535	555	575	606	654	648	683	699	756	
22	550	585	610		660	705	702	733			
24	600	640	665	685	718	775	768	791	838	902	

all dimensions in millimetres

Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8

Camprofile thickness = 3.00 or 4.00 + 0/-0.25

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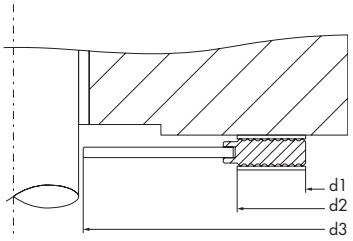
RF
Camprofile gaskets

- Works standard CAM 101
- For ASME B16.5 RF flanges



20080301

Metallic and semi-metallic gaskets

Dimension table for camprofile gaskets
For ASME B16.5 Slip-On flanges

Nom. pipe size [inch]		Pressure rating [lbs]									
		150-300	400-600	900-2500	150	300	400	600	900	1500	2500
	d1	d2			d3						
½	25	35	35	35	48	54	54	54	64	64	70
¾	31	41	41	41	57	67	67	67	70	70	76
1	38	48	48	48	67	73	73	73	79	79	86
1¼	45	61	61	61	76	83	83	83	89	89	105
1½	53	69	69	69	86	95	95	95	98	98	118
2	65	85	85	85	105	111	111	111	143	143	146
2½	78	98	98	98	124	130	130	130	165	165	168
3	94	114	114	118	137	149	149	149	168	175	197
3½	106	126	126	130	162	165	162	162			
4	119	139	139	143	175	181	178	194	206	210	235
5	147	167	167	175	197	216	213	241	248	254	279
6	174	194	194	208	222	251	248	267	289	283	318
8	224	244	244	262	279	308	305	321	359	352	387
10	279	299	309	323	340	362	359	400	435	435	476
12	330	350	364	380	410	422	419	457	499	521	550
14	362	382	402	412	451	486	483	492	521	578	581
16	413	437	457	469	514	540	537	565	575	641	644
18	465	495	515	531	549	597	594	613	638	705	
20	516	550	570	582	606	654	648	683	699	756	
24	619	659	683	691	718	775	768	791	838	902	
all dimensions in millimetres											

Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

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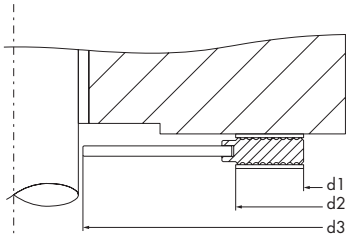
RF
Camprofile gaskets

- Works standard CAM 105
- For ASME B16.5 Slip-On flanges



20080301

Metallic and semi-metallic gaskets

Dimension table for camprofile gaskets
For ASME B16.47 series A flanges

Nom. pipe size [inch]	d1	Pressure rating [lbs]							
		150-300	400-600	900	150	300	400	600	900
		d2			d3				
26	650	685	705	725	774.7	835.2	831.9	866.9	882.7
28	705	745	765	785	831.9	898.7	892.3	914.4	946.2
30	755	795	820	840	882.7	952.5	946.2	971.6	1009.7
32	805	850	875	895	939.8	1006.6	1003.3	1022.4	1073.2
34	855	900	930	950	990.6	1057.4	1054.1	1073.2	1136.7
36	905	955	985	1005	1047.8	1117.6	1117.6	1130.3	1200.2
38	960	1015	1030	1065	1111.3	1054.1	1073.2	1104.9	1200.2
40	1010	1065	1085	1120	1162.1	1114.6	1127.3	1155.7	1251.0
42	1060	1120	1135	1175	1219.2	1165.4	1178.1	1219.2	1301.8
44	1110	1170	1190	1230	1276.4	1219.2	1231.9	1270.0	1368.6
46	1160	1225	1250	1285	1327.2	1273.3	1289.1	1327.2	1435.1
48	1210	1275	1300	1340	1384.3	1324.1	1346.2	1390.7	1485.9
50	1260	1330	1355		1435.1	1378.0	1403.4	1447.8	
52	1310	1385	1405		1492.3	1428.8	1454.2	1498.6	
54	1360	1435	1460		1549.4	1492.3	1517.7	1555.8	
56	1410	1490	1515		1606.6	1543.1	1568.5	1612.9	
58	1460	1540	1565		1663.7	1593.9	1619.3	1663.7	
60	1510	1595	1625		1714.5	1644.7	1682.8	1733.6	
all dimensions in millimetres									

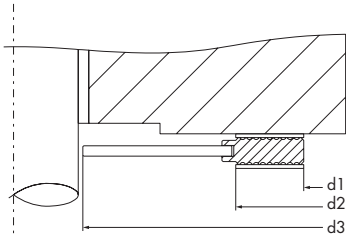
Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

econosto®

RF
Camprofile gaskets

- Works standard CAM 102
- For ASME B16.47 series A flanges



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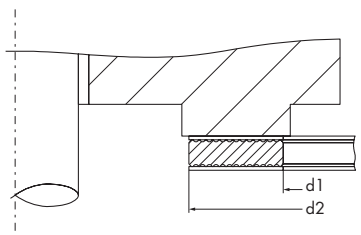
Nom. pipe size [inch]	d1	d2	
	(narrow)		(wide)
½	25	35	35
¾	33	43	43
1	38	48	51
1¼	48	57	64
1½	54	64	73
2	73	83	92
2½	86	95	105
3	108	118	127
3½	121	130	140
4	132	145	157
5	160	173	186
6	190	203	216
8	238	254	270
10	286	305	324
12	343	362	381
14	375	394	413
16	425	448	470
18	489	511	535
20	535	559	585
22	591	616	641
24	640	667	690
all dimensions in millimetres			

Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

Tongue/Groove Camprofile gaskets

- Works standard CAM 103
- For ASME B16.5 flanges
- Tongue/Groove



20080301

Metallic and semi-metallic gaskets

Dimension table for camprofile gaskets
For ASME B16.5 Male/Female flanges

Nom. pipe size	d1	d2	d1	d2
[inch]	(narrow)		(wide)	
½		18	21	35
¾		24	27	43
1		30	33	51
1¼		38	42	64
1½		44	48	73
2		57	60	92
2½		68	73	105
3		84	89	127
3½		97	102	140
4	zie opm.	110	114	157
5		137	141	186
6		162	168	216
8		213	219	270
10		267	273	324
12		318	324	381
14		349	356	413
16		400	406	470
18		451	457	535
20		502	510	585
24		603	610	690
all dimensions in millimetres				
Remark: d1 to be specified by customer				

Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

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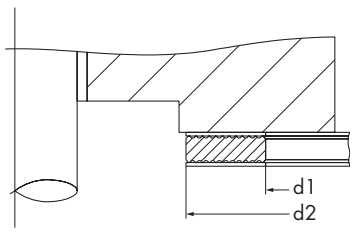
Male/Female Camprofile gaskets

- Works standard CAM 104
- For ASME B16.5 flanges
- Male/Female



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Metallic and semi-metallic gaskets

Dimension table for camprofile gaskets
For DIN Raised Face flanges

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Nom. pipe size		Pressure rating PN												
		10-40	64-160	250-400	10	16	25	40	64	100	160	250	320	400
[mm]	d1	d2			d3									
400	10	16	25	40	64	100	160	250	320	400				
[mm]	d1	d2			d3									
10	22	36	36	36	46	46	46	46	56	56	56	67	67	67
15	26	42	42	42	51	51	51	51	61	61	61	72	72	
20	31	47	47	47	61	61	61	61						
25	36	52	52	52	71	71	71	71	82	82	82	83	92	104
32	46	62	62	66	82	82	82	82						
40	53	69	69	73	92	92	92	92	103	103	103	109	119	135
50	65	81	81	87	107	107	107	107	113	119	119	124	134	150
65	81	100	100	103	127	127	127	127	137	143	143	153	170	192
80	95	115	115	121	142	142	142	142	148	154	154	170	190	207
100	118	138	138	146	162	162	167	167	174	180	180	202	229	256
125	142	162	162	178	192	192	193	193	210	217	217	242	274	301
150	170	190	190	212	217	217	223	223	247	257	257	284	311	348
175	195	215	215	245	247	247	253	265	277	287	284	316	358	402
200	220	240	248	280	272	272	283	290	309	324	324	358	398	442
250	270	290	300	340	327	328	340	352	364	391	388	442	488	
300	320	340	356	400	377	383	400	417	424	458	458	536		
350	375	395	415		437	443	457	474	486	512				
400	426	450	474		488	495	514	546	543	572				
500	530	560	588		594	617	624	628	657	704				
600	630	664	700		695	734	731	747	764	813				
700	730	770	812		810	804	833	852	879	950				
800	830	876	886		917	911	942	974	988					
900	930	982	994		1017	1011	1042	1084	1108					
1000	1040	1098	1110		1124	1128	1154	1194	1220					
1200	1250	1320	1334		1341	1342	1364	1398	1452					
1400	1440	1522			1548	1542	1578	1618						
1600	1650	1742			1772	1764	1798	1830						
1800	1850	1914			1972	1964	2000							
2000	2050	2120			2182	2168	2230							
2200	2250	2328			2384	2378								
2400	2460	2512			2594									
2600	2670	2728			2794									
2800	2890	2952			3014									
3000	3100	3166			3228									

all dimensions in millimetres

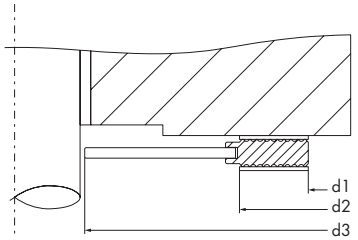
Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8

Camprofile thickness = 3.00 or 4.00 + 0/-0.25

RF
Camprofile gaskets

- Works standard CAM 201
- For DIN flanges
- Raised Face (RF)



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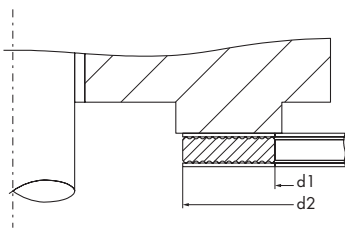
Nom. pipe size [mm]	d1	d2
4-6	20	30
8	22	32
10	24	34
15	29	39
20	36	50
25	43	57
32	51	65
40	61	75
50	73	87
65	95	109
80	106	120
100	129	149
125	155	175
150	183	203
175	213	233
200	239	259
250	292	312
300	343	363
350	395	421
400	447	473
500	549	575
600	649	675
700	751	777
800	856	882
900	961	987
1000	1062	1092
all dimensions in millimetres		

Tolerances

DN		d1	d2	d3
[mm]	[inch]		[mm]	
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

Tongue/Groove Camprofile gaskets

- Standard DIN 2512
- For DIN flanges
- Tongue/Groove



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Nom. pipe size [mm]	d1	d2
10	18	34
15	22	39
20	28	50
25	35	57
32	43	65
40	49	75
50	61	87
65	77	109
80	90	120
100	115	149
125	141	175
150	169	203
175	195	233
200	220	259
250	274	312
300	325	363
350	368	421
400	420	473
500	520	575
600	620	675
700	720	777
800	820	882
900	920	987
1000	1020	1091
all dimensions in millimetres		

Tolerances

DN		d1	d2	d3
[mm]	[inch]	[mm]		
15 - 200	½ - 8	± 0.4	± 0.8	± 0.8
250 - 600	10 - 24	± 0.8	+ 1.5/-0.8	± 0.8
650 - 850	26 - 34	± 0.8	± 1.5	± 0.8
900 - 1500	36 - 60	± 1.25	± 1.5	± 0.8
Camprofile thickness = 3.00 or 4.00 + 0/-0.25				

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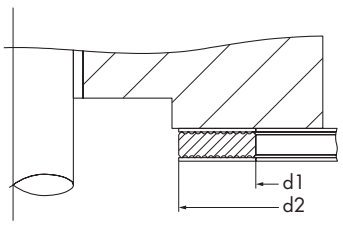
Male/Female Camprofile gaskets

- Standard DIN 2513
- For DIN flanges
- Male/Female



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Spiral wound gaskets consist of a combination of profiled V-shaped metal strip and a soft (asbestos-free) filler material. These gaskets are very suitable as standard piping gasket, particularly in higher pressure systems. The solid construction of the gasket makes it blowout-proof and, in combination with a graphite filler material, it is suitable for "Fire-Safe" applications.

Profile
Spiral wound gaskets are available standard in series 2004 (type SG) and in series 2005 (type SG-IR)

Series 2004
This is a standard spiral wound gasket that consists of a spiral wound element and an external centring ring.

Series 2005
This is a standard spiral wound gasket that consists of a spiral wound element, and has an external centring ring and an internal ring.

Sealing element
The sealing element of a spiral wound gasket consists of a profiled metal V-strip, wound in combination with a soft filler material. The choice of material quality for the sealing element is based on the application field, medium and temperature.

Material	Temperature		Max. operating pressure	Impermeability to gas	Application
	Min.	Max.			
	[°C]		[Bar]		
Graphite	-200	550	250	Good	aggressive media
PTFE	-200	250	100	Good	aggressive media
Novus ®	-100	250	100	Good	Liquids and gases
Ceramica®	-200	1100	100	Bad	Very high temperatures

Outer ring
For standard piping systems the spiral wound gasket is always provided with a metal outer ring. This outer ring serves as centering ring between the bolts of the flange, as a result of which the sealing element is centered on the gasket surface (RF or FF) of the flange. The outer ring also functions as a compression stop to prevent the sealing element from being overloaded by excessive tightening of the bolts.

Inner ring
The inner ring is used in the higher pressure classes to prevent distortion of the sealing element. Spiral wound gaskets with a PTFE filler material are always provided standard with an inner ring. The material of the inner ring is standard the same as the material of the winding strip.

Ordering information

Ordering code	Profile form	Sealing element	Outside ring	Inside ring	Gasket standard	Flange standard
2004205	SG	AISI 316L / Graphite	CS (carbon steel)		ASME B16.20	ASME B16.5
2004225	SG	AISI 316L / Graphite	AISI 316L		ASME B16.20	ASME B16.5
2004506	SG	AISI 316Ti / Graphite	CS (carbon steel)		EN 1514.2	DIN
2004526	SG	AISI 316Ti / Graphite	AISI 316Ti		EN 1514.2	DIN
2005205	SGIR	AISI 316L / Graphite	CS (carbon steel)	AISI 316L	ASME B16.20	ASME B16.5
2005225	SGIR	AISI 316L / Graphite	AISI 316L	AISI 316L	ASME B16.20	ASME B16.5
2005245	SGIR	AISI 316L / PTFE	CS (carbon steel)	AISI 316L	ASME B16.20	ASME B16.5
2005506	SGIR	AISI 316Ti / Graphite	CS (carbon steel)	AISI 316Ti	EN 1514.2	DIN
2005526	SGIR	AISI 316Ti / Graphite	AISI 316Ti	AISI 316Ti	EN 1514.2	DIN
2005546	SGIR	AISI 316Ti / PTFE	CS (carbon steel)	AISI 316Ti	EN 1514.2	DIN

Specify the following data when ordering:
Fig.no. (profile shape) – sealing element materials - outer ring material – nominal dimension/rating - flange standard
- Other profile shapes, materials or material combinations are available on request
- For other profile shapes see page HA-10-002
- For dimensions, see dimension tables section

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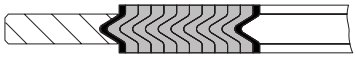
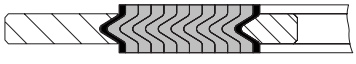
Sealing Global - Servicing Local

Standard profile shapes
- fig. 2004205
- fig. 2004225
- fig. 2004506
- fig. 2004526
- fig. 2005205
- fig. 2005225
- fig. 2005245
- fig. 2005506
- fig. 2005526
- fig. 2005546

- ASME and DIN/EN
- Wide gasket stress range
- Solid construction
- Very low leak rates (TA-Luft)
- Blow-out proof
- Easy assembly
- Fire-safe



Series 2004 (type SG)



Series 2005 (type SG-IR)

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In addition to the shapes for standard piping systems, series 2004 and series 2005, a number of different profile shapes is available on request:

Series 2001 (type RF1)
The gasket consists of combined wound filler material and V-shaped metal strip. This profile is usually used in tongue/groove flanges.

Series 2003 (type IR)
This shape is identical to series 2001, however it has an internal ring. This profile is usually used in male/female flanges.

Series 2004 (type SG)
For this shape, which is identical to the SG type, the dimensioning is specially adjusted to the use of spiral wound gaskets in combination with RTJ (Ring Type Joint) flanges.

Series 2008 (type HX-R)
A type of gasket that consists of a spiral wound element around which a small, wound centering ring is applied.
The added centering windings ensure a correct centring in grooved flange facings (such as for heat exchangers)

Series 2009 (type HX-RIR)
This type of gasket is identical to series 2008 (type HX-R), however it also has an internal ring. This type of gasket is therefore suitable for fitting in male/female flanges.

Series 2006/2007 (type SG/GT and SG-IR/GT Gas-Tight
For these profile shapes, which are identical to the 2004/2005 series with regard to their basic profile, the spiral wound element consists of ceramic material, for instance, that has a number of graphite central windings to increase the gas-tightness.
This provides a spiral wound gasket with the following characteristics:

- Non-contaminating for the medium
- An improved gas-tightness

Non-standard shapes
A spiral wound gasket can be manufactured and used in a large number of varieties. It is possible to produce shapes with prefitted bars (heat exchangers), oval shapes (manholes and inspection holes), and many other different shapes.
When using a spiral wound gasket with bars, use is generally made of metal jacketed bars.

Ordering information
Specify the following data when ordering:
Series number (profile shape) – sealing element materials (winding strip and filler material) – outer and inner ring materials – nominal dimension/rating – flange standard.
With non-standard dimensions, the dimensions must also be specified, or a drawing must be provided.

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Other profile shapes
- Series 2001
- Series 2003
- Series 2004
- Series 2008
- Series 2009
- Series 2006
- Series 2007

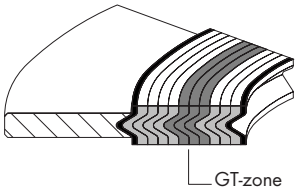
Series 2001 (type RF1)

Series 2003 (type IR)

Series 2004 (type SG)

Series 2008 (type HX-R)

Series 2009 (type HX-RIR)



Series 2006 - 2007 (type SG/GT, SG-IR/GT)

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Metallic and semi-metallic gaskets

Dimension table for spiral wound gaskets
For ASME B16.5 Raised Face flanges

Nom. pipe size [inch]	pressure rating 150 [lbs]				pressure rating 300 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
½	14.2	19.1	31.8	47.8	14.2	19.1	31.8	54.1
¾	20.6	25.4	39.6	57.2	20.6	25.4	39.6	66.8
1	26.9	31.8	47.8	66.8	26.9	31.8	47.8	73.2
1¼	38.1	47.8	60.5	76.2	38.1	47.8	60.5	82.6
1½	44.5	54.1	69.9	85.9	44.5	54.1	69.9	95.3
2	55.6	69.9	85.9	104.9	55.6	69.9	85.9	111.3
2½	66.5	82.6	98.6	124.0	66.5	82.6	98.6	130.3
3	81.0	101.6	120.7	136.7	81.0	101.6	120.7	149.4
4	106.4	127.0	149.4	174.8	106.4	127.0	149.4	181.1
5	131.8	155.7	177.8	196.9	131.8	155.7	177.8	215.9
6	157.2	182.6	209.6	222.3	157.2	182.6	209.6	251.0
8	215.9	233.4	263.7	279.4	215.9	233.4	263.7	308.1
10	268.2	287.3	317.5	339.9	268.2	287.3	317.5	362.0
12	317.5	339.9	374.7	409.7	317.5	339.9	374.7	422.4
14	349.3	371.6	406.4	450.9	349.3	371.6	406.4	485.9
16	400.1	422.4	463.6	514.4	400.1	422.4	463.6	539.8
18	449.3	474.7	527.1	549.4	449.3	474.7	527.1	596.9
20	500.1	525.5	577.9	606.6	500.1	525.6	577.9	654.1
24	603.3	628.7	685.8	717.6	603.3	628.7	685.8	774.7
all dimensions in millimetres								

Nom. pipe size [inch]	pressure rating 400 [lbs]				pressure rating 600 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
½	14.2	19.1	31.8	54.1	14.2	19.1	31.8	54.1
¾	20.6	25.4	39.6	66.8	20.6	25.4	39.6	66.8
1	26.9	31.8	47.8	73.2	26.9	31.8	47.8	73.2
1¼	38.1	47.8	60.5	82.6	38.1	47.8	60.5	82.6
1½	44.5	54.1	69.9	95.3	44.5	54.1	69.9	95.3
2	55.6	69.9	85.9	111.3	55.6	69.9	85.9	111.3
2½	66.5	82.6	98.6	130.3	66.5	82.6	98.6	130.3
3	81.0	101.6	120.7	149.4	78.7	101.6	120.7	149.4
4	102.6	120.7	149.4	177.8	102.6	120.7	149.4	193.8
5	128.3	147.6	177.8	212.9	128.3	147.6	177.8	241.3
6	154.9	174.8	209.6	247.7	154.9	174.8	209.6	266.7
8	205.7	225.6	263.7	304.8	205.7	225.6	263.7	320.8
10	255.3	274.6	317.5	358.9	255.3	274.6	317.5	400.1
12	307.3	327.2	374.7	419.1	307.3	327.2	374.7	457.2
14	342.9	362.0	406.4	482.6	342.9	362.0	406.4	492.3
16	389.9	412.8	463.6	536.7	389.9	412.8	463.6	565.2
18	438.2	469.9	527.1	593.9	438.2	469.9	527.1	612.9
20	489.0	520.7	577.9	647.7	489.0	520.7	577.9	682.8
24	590.6	628.7	685.8	768.4	590.6	628.7	685.8	790.7
all dimensions in millimetres								

Nom. pipe size [inch]	pressure rating 900 [lbs]				pressure rating 1500 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
½	14.2	19.1	31.8	63.5	14.2	19.1	31.8	63.5
¾	20.6	25.4	39.6	69.9	20.6	25.4	39.6	69.9
1	26.9	31.8	47.8	79.5	26.9	31.8	47.8	79.5
1¼	38.1	39.6	60.5	88.9	33.3	39.6	60.5	88.9
1½	44.5	47.8	69.9	98.6	41.4	47.8	69.9	98.6
2	55.6	58.7	85.9	143.0	52.3	58.7	85.9	143.0
2½	66.5	69.9	98.6	165.1	63.5	69.9	98.6	165.1
3	78.7	95.3	120.7	168.4	78.7	92.2	120.7	174.8
4	102.6	120.7	149.4	206.5	97.8	117.6	149.4	209.6
5	128.3	147.6	177.8	247.7	124.5	143.0	177.8	254.0
6	154.9	174.8	209.6	289.1	147.3	171.5	209.6	282.7
8	196.9	222.3	257.3	358.9	196.9	215.9	257.3	352.6
10	246.1	276.4	311.2	435.1	246.1	266.7	311.2	435.1
12	292.1	323.9	368.3	498.6	292.1	323.9	368.3	520.7
14	320.8	355.6	400.1	520.7	320.8	362.0	400.1	577.9
16	374.7	412.8	457.2	574.8	368.3	406.4	457.2	641.4
18	425.5	463.6	520.7	638.3	425.5	463.6	520.7	704.9
20	482.6	520.7	571.5	698.5	476.3	514.4	571.5	755.7
24	590.6	628.7	679.5	838.2	577.9	616.0	679.5	901.7
all dimensions in millimetres								

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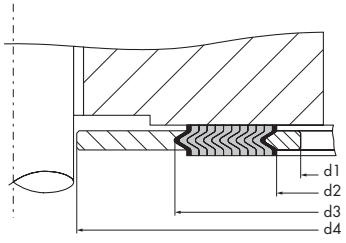
RF
Spiral wound gaskets
Pressure rating 150 lbs - 1500 lbs

- Standard ASME B16.20
- For ASME B16.5 flanges
- Raised Face (RF)



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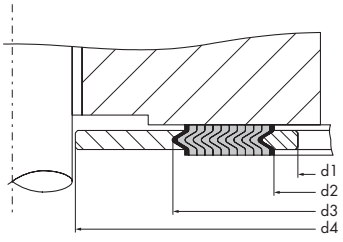
Nom. pipe size [inch]	pressure rating 2500 [lbs] d1	d2	d3	pressure rating 2500 [lbs d4
½	14.2	19.1	31.8	69.9
¾	20.6	25.4	39.6	76.2
1	26.9	31.8	47.8	85.9
1¼	33.3	39.6	60.5	104.9
1½	41.4	47.8	69.9	117.6
2	52.3	58.7	85.9	146.0
2½	63.5	69.9	98.6	168.4
3	78.7	92.2	120.7	196.9
4	97.8	117.6	149.4	235.0
5	124.5	143.0	177.8	279.4
6	147.3	171.5	209.6	317.5
8	196.9	215.9	257.3	387.4
10	246.1	270.0	311.2	476.3
12	292.1	317.5	368.3	549.4

all dimensions in millimetres

RF
Spiral wound gaskets
Pressure rating 2500 lbs

- Standard ASME B16.20
- For ASME B16.5 flanges
- Raised Face (RF)



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Nom. pipe size [inch]	pressure rating 150 [lbs]				pressure rating 300 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
26	654.1	673.1	704.9	774.7	654.1	685.8	736.6	835.2
28	704.9	723.9	755.7	831.9	704.9	736.6	787.4	898.7
30	755.7	774.7	806.5	882.7	755.7	793.8	844.6	952.5
32	806.5	825.5	860.6	939.8	806.5	850.9	901.7	1006.6
34	857.3	876.3	911.4	990.6	857.3	901.7	952.5	1057.4
36	908.1	927.1	968.5	1047.8	908.1	955.8	1006.6	1117.6
38	958.9	977.9	1019.3	1111.3	952.5	977.9	1016.0	1054.1
40	1009.7	1028.7	1070.1	1162.1	1003.3	1022.4	1070.1	1114.6
42	1060.5	1079.5	1124.0	1219.2	1054.1	1073.2	1120.9	1165.4
44	1111.3	1130.3	1178.1	1276.4	1104.9	1130.3	1181.1	1219.2
46	1162.1	1181.1	1228.9	1327.2	1152.6	1178.1	1228.9	1273.3
48	1212.9	1231.9	1279.7	1384.3	1209.8	1235.2	1286.0	1324.1
50	1263.7	1282.7	1333.5	1435.1	1244.6	1295.4	1346.2	1378.0
52	1314.5	1333.5	1384.3	1492.3	1320.8	1346.2	1397.0	1428.8
54	1358.9	1384.3	1435.1	1549.4	1352.6	1403.4	1454.2	1492.3
56	1409.7	1435.1	1485.9	1606.6	1403.4	1454.2	1505.0	1543.1
58	1460.5	1485.9	1536.7	1663.7	1447.8	1511.3	1562.1	1593.9
60	1511.3	1536.7	1587.5	1714.5	1524.0	1562.1	1612.9	1644.7

all dimensions in millimetres

Nom. pipe size [inch]	pressure rating 400 [lbs]				pressure rating 600 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
26	660.4	685.8	736.6	831.9	647.7	685.8	736.6	866.9
28	711.2	736.6	787.4	892.3	698.5	736.6	787.4	914.4
30	755.7	793.8	844.6	946.2	755.7	793.8	844.6	971.6
32	812.8	850.9	901.7	1003.3	812.8	850.9	901.7	1022.4
34	863.6	901.7	952.5	1054.1	863.6	901.7	952.5	1073.2
36	917.7	955.8	1006.6	1117.6	917.7	955.8	1006.6	1130.3
38	952.5	971.6	1022.4	1073.2	952.5	990.6	1041.4	1104.9
40	1000.3	1025.7	1076.5	1127.3	1009.7	1047.8	1098.6	1155.7
42	1051.1	1076.5	1127.3	1178.1	1066.8	1104.9	1155.7	1219.2
44	1104.9	1130.3	1181.1	1231.9	1111.3	1162.1	1212.9	1270.0
46	1168.4	1193.8	1244.6	1289.1	1162.1	1212.9	1263.7	1327.2
48	1206.5	1244.6	1295.4	1346.2	1219.2	1270.0	1320.8	1390.7
50	1257.3	1295.4	1346.2	1403.4	1270.0	1320.8	1371.6	1447.8
52	1308.1	1346.2	1397.0	1454.2	1320.8	1371.6	1422.4	1498.6
54	1352.6	1403.4	1454.2	1517.7	1378.0	1428.8	1479.6	1555.8
56	1403.4	1454.2	1505.0	1568.5	1428.8	1479.6	1530.4	1612.9
58	1454.2	1505.0	1555.8	1619.3	1473.2	1536.7	1587.5	1663.7
60	1517.7	1568.5	1619.3	1682.8	1530.4	1593.9	1644.7	1733.6

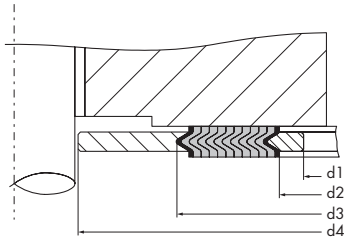
all dimensions in millimetres

Nom. pipe size [inch]	pressure rating 900 [lbs]			
	d1	d2	d3	d4
26	660.4	685.8	736.6	882.7
28	711.2	736.6	787.4	946.2
30	768.4	793.8	844.6	1009.7
32	812.8	850.9	901.7	1073.2
34	863.6	901.7	952.5	1136.7
36	920.8	958.9	1009.7	1200.2
38	1009.7	1035.1	1085.9	1200.2
40	1060.5	1098.6	1149.4	1251.0
42	1111.3	1149.4	1200.2	1301.8
44	1155.7	1206.5	1257.3	1368.6
46	1219.2	1270.0	1320.8	1435.1
48	1270.0	1320.8	1371.6	1485.9

all dimensions in millimetres

RF
Spiral wound gaskets

- Standard ASME B16.20
- For ASME B16.47 series A flanges



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Metallic and semi-metallic gaskets

Dimension table for spiral wound gaskets
For ASME B16.47 series B flanges

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Nom. pipe size [inch]	pressure rating 150 [lbs]				pressure rating 300 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
26	654.1	673.1	698.5	725.4	654.1	673.1	711.2	771.7
28	704.9	723.9	749.3	776.2	704.9	723.9	762.0	825.5
30	755.7	774.7	800.1	827.0	755.7	774.7	812.8	886.0
32	806.5	825.5	850.9	881.1	806.5	825.5	863.6	939.8
34	857.3	876.3	908.1	935.0	857.3	876.3	914.4	993.9
36	908.1	927.1	958.9	987.6	908.1	927.1	965.2	1047.8
38	958.9	974.6	1009.7	1044.7	971.6	1009.7	1047.8	1098.6
40	1009.7	1022.4	1063.8	1095.5	1022.4	1060.5	1098.6	1149.4
42	1060.5	1079.5	1114.6	1146.3	1085.9	1111.3	1149.4	1200.2
44	1111.3	1124.0	1165.4	1197.1	1124.0	1162.1	1200.2	1251.0
46	1162.1	1181.1	1224.0	1255.8	1178.1	1216.2	1254.3	1317.8
48	1212.9	1231.9	1270.0	1306.6	1200.2	1231.7	1270.0	1368.6
50	1263.7	1282.7	1325.6	1357.4	1267.0	1317.8	1355.9	1419.4
52	1314.5	1333.5	1376.4	1408.2	1317.8	1368.6	1406.7	1470.2
54	1365.3	1384.3	1422.4	1463.8	1365.3	1384.3	1422.4	1530.4
56	1422.4	1435.1	1472.2	1514.6	1428.8	1479.6	1524.0	1593.9
58	1478.0	1500.3	1528.8	1579.6	1484.4	1535.2	1573.3	1655.8
60	1535.2	1557.3	1586.0	1630.4	1557.3	1589.0	1630.4	1706.6

all dimensions in millimetres

Nom. pipe size [inch]	pressure rating 400 [lbs]				pressure rating 600 [lbs]			
	d1	d2	d3	d4	d1	d2	d3	d4
26	654.1	666.8	698.5	746.3	644.7	663.7	714.5	765.3
28	701.8	714.5	749.3	800.1	692.2	704.9	755.7	819.2
30	752.6	765.3	806.5	857.3	752.6	778.0	828.8	879.6
32	800.1	812.8	860.6	911.4	793.8	831.9	882.7	933.5
34	850.9	866.9	911.4	962.2	850.9	889.0	939.8	997.0
36	898.7	917.7	965.2	1022.4	901.7	939.8	990.6	1047.8
38	952.5	971.6	1022.4	1073.2	952.5	990.6	1041.4	1104.9
40	1000.3	1025.7	1076.5	1127.3	1009.7	1047.8	1098.6	1155.7
42	1051.1	1076.5	1127.3	1178.1	1066.8	1104.9	1155.7	1219.2
44	1104.9	1130.3	1181.1	1231.9	1111.3	1162.1	1212.9	1270.0
46	1168.4	1193.8	1244.6	1289.1	1162.1	1212.9	1263.7	1327.2
48	1206.5	1244.6	1295.4	1346.2	1219.2	1270.0	1320.8	1390.7
50	1257.3	1295.4	1346.2	1403.4	1270.0	1320.8	1371.6	1447.8
52	1308.1	1346.2	1397.0	1454.2	1320.8	1371.6	1422.4	1498.6
54	1352.6	1403.4	1454.2	1517.7	1378.0	1428.8	1479.6	1555.8
56	1403.4	1454.2	1505.0	1568.5	1428.8	1479.6	1530.4	1612.9
58	1454.2	1505.0	1555.8	1619.3	1473.2	1536.7	1587.5	1663.7
60	1517.7	1568.5	1619.3	1682.8	1557.3	1589.0	1630.4	1706.6

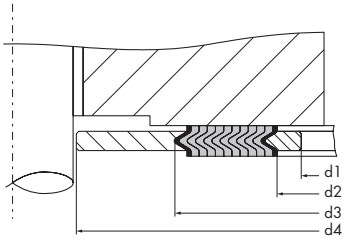
all dimensions in millimetres

Nom. pipe size [inch]	pressure rating 900 [lbs]			
	d1	d2	d3	d4
26	666.8	692.2	749.3	838.2
28	717.6	743.0	800.1	901.7
30	781.8	806.5	857.3	958.9
32	838.2	863.6	914.4	1016.0
34	895.4	920.8	971.6	1073.2
36	920.8	946.2	997.0	1124.0
38	1009.7	1035.1	1085.9	1200.2
40	1060.5	1098.6	1149.4	1251.0
42	1111.3	1149.4	1200.2	1301.8
44	1155.7	1206.5	1257.3	1368.6
46	1219.2	1270.0	1320.8	1435.1
48	1270.0	1320.8	1371.6	1485.9

all dimensions in millimetres

RF
Spiral wound gaskets

- Standard ASME B16.20
- For ASME B16.47 series B flanges



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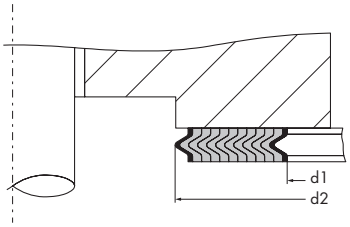
Nom. pipe size [inch]	d1	d2	d1	d2
	narrow		wide	
½		18	21	35
¾		24	27	43
1		30	33	51
1¼		38	42	64
1½		44	48	73
2		57	60	92
2½		68	73	105
3		84	89	127
3½		97	102	140
4	Opm.	110	114	157
5		137	141	186
6		162	168	216
8		213	219	270
10		267	273	324
12		318	324	381
14		349	356	413
16		400	406	470
18		451	457	535
20		502	510	585
24		603	610	690
all dimensions in millimetres				
Rem. To be specified by the user				

Male/Female Spiral wound gaskets

- Works standard SPW3
- For ASME B16.5 flanges
- Male/Female
- Series 2001 (type RF1)



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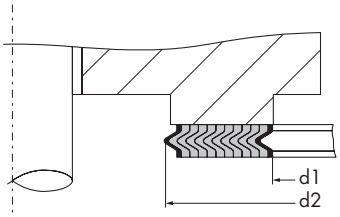
Nom. pipe size [inch]	d1	d2	
		(narrow)	(wide)
½	25	35	35
¾	33	43	43
1	38	48	51
1¼	48	57	64
1½	54	64	73
2	73	83	92
2½	86	95	105
3	108	118	127
3½	121	130	140
4	132	145	157
5	160	173	186
6	190	203	216
8	238	254	270
10	286	305	324
12	343	362	381
14	375	394	413
16	425	448	470
18	489	511	535
20	535	559	585
22	591	616	641
24	640	667	690
all dimensions in millimetres			

Tongue/Groove Spiral wound gaskets

- Works standard SPW4
- For ASME B16.5 flanges
- Tongue/Groove
- Series 2001 (type RF1)



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Metallic and semi-metallic gaskets

Dimension table for spiral wound gaskets
For DIN Raised Face flanges

Nom. pipe size			Pressure rating PN										
			10-40	63-100	10	16	25	40	63	100	160	250	320
[mm]	d1	d2	d3		d4								
10	15	23.6	36.4	36.4	48	48	48	48	58	58	56	67	67
15	19	27.6	40.4	40.4	53	53	53	53	63	63	61	72	72
20	24	33.6	47.4	48.4	63	63	63	63	74	74	74	79	
25	30	40.6	55.4	56.4	73	73	73	73	84	84	82	82	92
32	39	49.6	66.4	67.4	84	84	84	84	90	90	90	100	
40	45	55.6	72.4	74.4	94	94	94	94	105	105	102	108	118
50	56	67.6	86.4	88.4	109	109	109	109	115	121	118	123	133
65	72	83.6	103.4	106.4	129	129	129	129	140	146	143	153	170
80	84	96.6	117.4	120.4	144	144	144	144	150	156	153	170	190
100	108	122.6	144.4	148.4	164	164	170	170	176	183	180	202	229
125	133	147.6	170.4	174.4	194	194	196	196	213	220	217	242	274
150	160	176.6	200.4	205.4	220	220	226	226	250	260	257	284	311
200	209	228.6	255.4	263.4	275	275	286	293	312	327	324	358	398
250	262	282.4	310.4	319.4	330	331	343	355	367	394	388	442	488
300	311	331.6	360.4	369.4	380	386	403	420	427	461	458	538	
350	355	374.6	405.4	413.4	440	446	460	477	489	515			
400	406	425.6	458.4	466.4	491	498	517	549	546	575			
450	452	476.6	512.4		541	558	567	574					
500	508	527.6	566.4	572.4	596	620	627	631	660	708			
600	610	634.6	675.4	683.4	698	737	734	750	768	819			
700	710	734.0	778.5	786.5	813	807	836	852	883	956			
800	811	835.0	879.5	887.5	920	914	945	974	994				
900	909	933.0	980.5	990.5	1020	1014	1045	1084	1114				
1000	1010	1030	1078	1086	1124	1128	1154	1194	1220				
1200	1210	1230	1280	1290	1341	1342	1364	1398	1452				
1400	1420	1450	1510		1548	1542	1578	1618					
1600	1630	1660	1720		1772	1764	1798	1830					
1800	1830	1860	1920		1972	1964	2000						
2000	2020	2050	2120		2182	2168	2230						
2200	2230	2260	2330		2384	2378							
2400	2430	2480	2530		2594								
2600	2630	2660	2730		2794								
2800	2830	2860	2930		3014								
3000	3030	3060	3130		3228								

all dimensions in millimetres

Remark

For nominal pipe sizes >DN 900 and pressure ratings > PN 100, the dimensions are as per SPW1 standard

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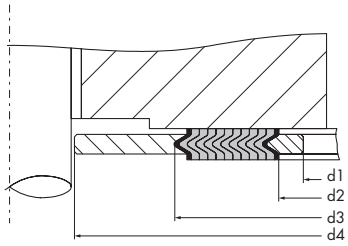
RF
Spiral wound gaskets

- Standard EN 1514-2
- For DIN RF Flanges



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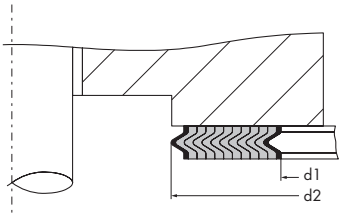
Nom. pipe size [mm]	d1	d2
10	18	34
15	22	39
20	28	50
25	35	57
32	43	65
40	49	75
50	61	87
65	77	109
80	90	120
100	115	149
125	141	175
150	169	203
175	195	233
200	220	259
250	274	312
300	325	363
350	368	421
400	420	473
500	520	575
600	620	675
700	720	777
800	820	882
900	920	987
1000	1020	1091

all dimensions in millimetres

Male/Female Spiral wound gaskets

- Standard DIN 2692
- For DIN 2513 flanges
- Male/Female
- Series 2001 (type RF1)



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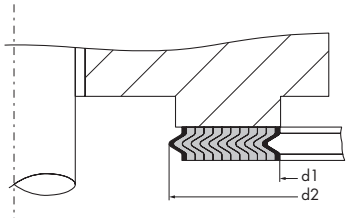
Nom. pipe size [mm]	d1	d2
4-6	20	30
8	22	32
10	24	34
15	29	39
20	36	50
25	43	57
32	51	65
40	61	75
50	73	87
65	95	109
80	106	120
100	129	149
125	155	175
150	183	203
175	213	233
200	239	259
250	292	312
300	343	363
350	395	421
400	447	473
500	549	575
600	649	675
700	751	777
800	856	882
900	961	987
1000	1062	1092

all dimensions in millimetres

Tongue/Groove Spiral wound gaskets

- Standard DIN 2691
- For DIN 2512 flanges
- Tongue/Groove
- Series 2001 (type RF1)



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Ring Joint gaskets are solid metal sealing rings, suitable for application at high pressures and temperatures. Ring Joint gaskets are used in combination with special flanges with a groove, that together with the correct choice of material and profile shape, realize a very reliable seal.
Ring Joint gaskets are manufactured on high quality computer-controlled CNC lathes and comply with the requirements stated in the ASME B16.20 and API 6a standards.

Profile shapes
Ring Joint gaskets are available standard in the following profile shapes:

Series 2071 (type R-oval, M8)
This is a standard Ring Joint gasket, with oval design and designed for flanges with standard Ring Joint grooves.

Series 2072 (type R Octagonal, M9)
This is a standard Ring Joint gasket, with octagonal design and designed for flanges with standard Ring Joint grooves.

Series 2074 (type RX, M12)
This is a Ring Joint gasket for pressures up to approx. 700 bar. For this version, which is self-energizing, the external sealing surfaces make the first contact with the flanges. A higher system pressure produces a higher surface pressure. Ring Joint gaskets of the RX type are interchangeable with the standard R types. However, the length of the bolt have to be increased due to the greater height of the RX profiles.

Series 2073 (type BX, M11)
This is a Ring Joint gasket for use at very high pressures (up to approx. 1500 bar). This Ring Joint gasket is only suitable for API type BX flanges and grooves.

Hardness of Ring Joint gaskets
Depending on the type of material, Ring Joint gaskets are provided with hardnesses as given in the table below:

Material	HRB (max) Rockwell-B	HB (max) Brinell
Soft Iron (D)	56	90
Low Carbon Steel (S)	68	120
ASTM A-182 F5	72	130
SS	83	160

Ordering information

Ordering code	Profile form	Material	Gasket standard	Flange standard
2071101	R-oval	Soft Iron (D) Oiled	ASME B16.20/API-6A	ASME B16.5/ISO7005
2071104	R-oval	Soft Iron (D) Galvanized	ASME B16.20/API-6A	ASME B16.5/ISO7005
2071141	R-oval	AISI 316L	ASME B16.20/API-6A	ASME B16.5/ISO7005
2072101	R octagonal	Soft Iron (D) Oiled	ASME B16.20/API-6A	ASME B16.5/ISO7005
2072104	R octagonal	Soft Iron (D) Galvanized	ASME B16.20/API-6A	ASME B16.5/ISO7005
2072141	R octagonal	AISI 316L	ASME B16.20/API-6A	ASME B16.5/ISO7005
2074101	RX	Soft Iron (D) Oiled	ASME B16.20/API-6A	ASME B16.5/ISO7005
2074104	RX	Soft Iron (D) Galvanized	ASME B16.20/API-6A	ASME B16.5/ISO7005
2074141	RX	AISI 316L	ASME B16.20/API-6A	ASME B16.5/ISO7005
2073101	BX	Soft Iron (D) Oiled	ASME B16.20/API-6A	API-6A type BX
2073104	BX	Soft Iron (D) Galvanized	ASME B16.20/API-6A	API-6A type BX
2073141	BX	AISI 316L	ASME B16.20/API-6A	API-6A type BX

Specify the following data when ordering:
Fig.no. (profile shape) – ring number - material
- Other materials available on request
- For dimensions see dimension tables


Fig. 2071101


Fig. 2072101


Fig. 2074101

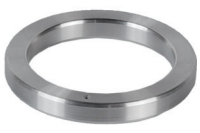
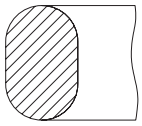
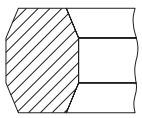


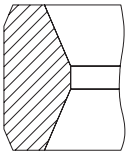
Fig. 2073101

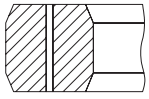
For standard ASME, API piping systems
- fig. 2071101
- fig. 2071104
- fig. 2071141
- fig. 2072101
- fig. 2072104
- fig. 2072141
- fig. 2074101
- fig. 2074104
- fig. 2074141
- fig. 2073101
- fig. 2073104
- fig. 2073141

- High and changing pressures up to 1500 bar
- High reliability
- Easy assembly
- Comply with ASME B16.20 and API-6A requirements


Series 2071 (type R-oval, M8)


Series 2072 (type R-octagonal, M9)


Series 2074 (type RX)


Series 2073 (Type BX)

20080301

Metallic and semi-metallic gaskets

Selection table for Ring Joint gaskets, types R or RX
For ASME B16.5 and BS 1560 flanges

Nom. pipe size [inch]	Pressure rating [lbs]						
	150	300	400	600	900	1500	2500
½		R11		R11	R12	R12	R13
¾		R13		R13	R14	R14	R16
1	R15	R16		R16	R16	R16	R18
1¼	R17	R18		R18	R18	R18	R21
1½	R19	R/RX20		R/RX20	R/RX20	R/RX20	R/RX23
2	R22	R/RX23		R/RX23	R/RX24	R/RX24	R/RX26
2½	R/RX25	R/RX26		R/RX26	R/RX27	R/RX27	R28
3	R29	R/RX31		R/RX31	R/RX31	R/RX35	R32
3½	R33	R34		R34			
4	R36	R/RX37	R/RX37	R/RX37	R/RX37	R/RX39	R38
5	R40	R/RX41	R/RX41	R/RX41	R/RX41	R/RX44	R42
6	R43	R/RX45	R/RX45	R/RX45	R/RX45	R/RX46	R/RX47
8	R48	R/RX49	R/RX49	R/RX49	R/RX49	R/RX50	R51
10	R52	R/RX53	R/RX53	R/RX53	R/RX53	R/RX54	R55
12	R56	R/RX57	R/RX57	R/RX57	R/RX57	R58	R60
14	R59	R61	R61	R61	R62	R/RX63	
16	R64	R/RX65	R/RX65	R/RX65	R/RX66	R67	
18	R68	R/RX69	R/RX69	R/RX69	R/RX70	R71	
20	R72	R/RX73	R/RX73	R/RX73	R/RX74	R75	
24	R76	R77	R77	R77	R78	R79	

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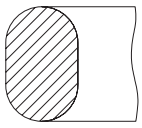
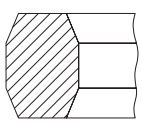
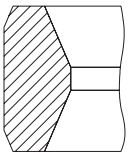
Ring Joint gaskets

- Type R-oval
- Type R-octagonal
- Type RX
- For ASME B16.5 flanges
- For BS 1560 flanges







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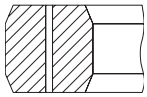
Nom. pipe size [inch]	Pressure rating [psi]					
	2000	3000	5000	10000	15000	20000
1 1/16				BX150	BX150	
1 3/16				BX151	BX151	BX151
2 1/16				BX152	BX152	BX152
2 9/16				BX153	BX153	BX153
3 1/16				BX154	BX154	BX154
4 1/16				BX155	BX155	BX155
5 1/8				BX169		
7 1/16				BX156	BX156	BX156
9				BX159	BX157	BX157
11				BX158	BX158	BX158
13 5/8			BX160	BX159	BX159	BX159
16 3/4			BX162	BX162		
18 3/4			BX163	BX164	BX164	
21 1/4			BX165	BX166		
26 3/4	BX167	BX168				
30	BX303	BX303				

Ring Joint gaskets

- Type BX
- For API spec. 6A, type 6BX flanges



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Metallic and semi-metallic gaskets

Selection table for Ring Joint gaskets, types R or RX
For ASME B16.47 series A flanges

Nom. pipe size [inch]	Pressure rating [lbs]	
	300-600	900
26	R93	R100
28	R94	R101
30	R95	R102
32	R96	R103
34	R97	R104
36	R98	R105
For flanges > 36" there are no standard Ring Joint gaskets available		

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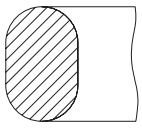
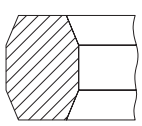
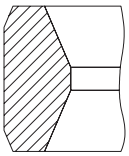
Ring Joint gaskets

- Type R-oval
- Type R-octagonal
- Type RX
- For ASME B16.47 series A flanges







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Metallic and semi-metallic gaskets

Selection table for Ring Joint gaskets, type R or RX
For API spec. 6A, model 6B flanges

Nom. pipe size [inch]	Pressure rating [lbs]		
	2000	3000	5000
2 1/16	R/RX23	R/RX24	R/RX24
2 9/16	R/RX26	R/RX27	R/RX27
3 1/8	R/RX31	R/RX31	R/RX35
4 1/16	R/RX37	R/RX37	R/RX39
5 1/8	R/RX41	R/RX41	R/RX44
7 1/16	R/RX45	R/RX45	R/RX46
9	R/RX49	R/RX49	R/RX50
11	R/RX53	R/RX53	R/RX54
13 5/8	R/RX57	R/RX57	
16 3/4	R/RX65	R/RX66	
20 3/4		R/RX74	
21 1/4	R/RX73		

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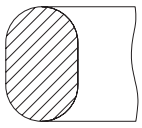
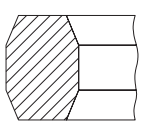
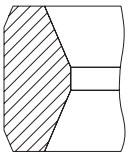
Ring Joint gaskets

- Type R-oval
- Type R-octagonal
- Type RX
- For API spec. 6A, model 6B flanges







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Nom. pipe size [inch]	Pressure rating 5000 lbs	
	Dual	Triple/Quadruple
1 3/8	RX201	
1 13/16	RX205	RX205
2 1/16	RX20	RX20
2 9/16	RX210	RX210
3 1/8	RX25	RX25
4 1/16	RX215	RX215
4 1/16 x 4 1/4	RX215	RX215

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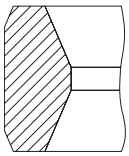
Ring Joint gaskets

- Type RX
- For segmented API spec. 6A flanges



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Metallic and semi-metallic gaskets

Dimension table for Ring Joint gaskets and grooves, type R
As per ASME B16.20, API spec. 6A and ISO 7483

Ring number	Ring [mm]						Groove [mm]			Weight [kg]**	
	P	A	B	H	C	R1	E	F	R2	Oval	Octagonal
R11	34.13	6.35	11.11	9.53	4.32	1.6	5.56	7.14	0.8	0.05	0.04
R12	39.69	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.10	0.08
R13	42.86	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.11	0.09
R14	44.45	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.11	0.09
R15	47.63	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.12	0.10
R16	50.80	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.13	0.11
R17	57.15	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.14	0.12
R18	60.33	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.15	0.12
R19	65.09	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.16	0.13
R20*	68.26	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.17	0.14
R21	72.23	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.30	0.27
R22	82.55	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.20	0.17
R23*	82.55	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.34	0.31
R24*	95.25	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.40	0.35
R25	101.60	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.25	0.21
R26*	101.60	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.42	0.38
R27*	107.95	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.45	0.40
R28	111.13	12.70	19.05	17.46	8.66	1.6	9.53	13.49	1.6	0.57	0.51
R29	114.30	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.28	0.24
R30	117.48	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.49	0.44
R31*	123.83	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.51	0.46
R32	127.00	12.70	19.05	17.46	8.66	1.6	9.53	13.49	1.6	0.65	0.58
R33	131.76	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.33	0.27
R34	131.76	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.55	0.49
R35*	136.53	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.57	0.51
R36	149.23	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.37	0.31
R37*	149.23	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.62	0.55
R38	157.16	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	1.16	1.01
R39*	161.93	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.67	0.60
R40	171.45	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.42	0.36
R41*	180.98	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.75	0.67
R42	190.50	19.05	25.40	23.81	12.32	1.6	12.70	19.84	1.6	1.92	1.64
R43	193.68	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.48	0.40
R44*	193.68	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.80	0.72
R45*	211.14	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.88	0.78
R46*	211.14	12.70	19.05	17.46	8.66	1.6	9.53	13.49	1.6	1.09	0.96
R47*	228.60	19.05	25.40	23.81	12.32	1.6	12.70	19.84	1.6	2.30	1.97
R48	247.65	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.61	0.51
R49*	269.88	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	1.12	1.00
R50*	269.88	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	2.00	1.74
R51	279.40	22.23	28.58	26.99	14.81	1.6	14.29	23.02	1.6	3.67	3.26

* Specified in API spec. 6A.

** The weight is based on a specific mass of 7.9 g/cm3

Tolerances, type R

A	ring width	± 0.20	mm
B	ring height, oval	± 0.51	mm
H	ring height, octagonal	± 0.51	mm
C	width of the bottom surface	± 0.20	mm
E	groove depth	+ 0.51/0.00	mm
F	groove width	± 0.20	mm
P	Avg. pitch diameter of the ring	± 0.18	mm
	Av. pitch diameter of the groove	± 0.13	mm
R1	radius of the ring	± 0.51	mm
R2	radius in the groove	max.	
23°	corner	± ½°	

The surface roughness of the 23° sides is max. 1.58 µm Ra

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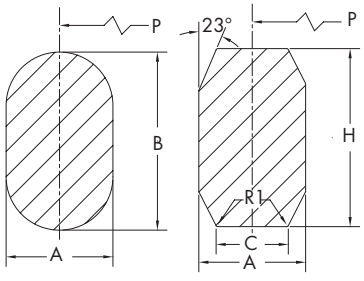
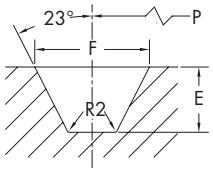
Ring Joint gaskets

- Type R-oval
- Type R-octagonal
- Standard ASME B16.20
- Standard API spec 6A
- Standard ISO 7483





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Metallic and semi-metallic gaskets

Dimension table for Ring Joint gaskets and grooves, type R
As per ASME B16.20, API spec. 6A and ISO 7483 (continued)

Ring number	Ring [mm]						Groove [mm]			Weight [kg]**	
	P	A	B	H	C	R1	E	F	R2	Oval	Octagonal
R52	304.80	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.76	0.63
R53*	323.85	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	1.35	1.20
R54*	323.85	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	2.40	2.08
R55	342.90	28.58	36.51	34.93	19.81	2.4	17.46	30.16	2.4	7.38	6.95
R56	381.00	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.94	0.79
R57*	381.00	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	1.58	1.42
R58	381.00	22.23	28.58	26.99	14.81	1.6	14.29	23.02	1.6	5.00	4.44
R59	396.88	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	0.98	0.82
R60	406.40	31.75	39.69	38.10	22.33	2.4	17.46	33.34	2.4	10.52	10.09
R61	419.10	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	1.74	1.56
R62	419.10	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	3.11	2.70
R63*	419.10	25.40	33.34	31.75	17.30	2.4	15.88	26.99	2.4	7.36	6.78
R64	454.03	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	1.13	0.94
R65*	469.90	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	1.95	1.75
R66*	469.90	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	3.48	3.02
R67	469.90	28.58	36.51	34.93	19.81	2.4	17.46	30.16	2.4	10.12	9.52
R68	517.53	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	1.28	1.07
R69*	533.40	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	2.22	1.98
R70*	533.40	19.05	25.40	23.81	12.32	1.6	12.70	19.84	1.6	5.37	4.59
R71	533.40	28.58	36.51	34.93	19.81	2.4	17.46	30.16	2.4	11.48	10.81
R72	558.80	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	1.38	1.16
R73*	584.20	12.70	19.05	17.46	8.66	1.6	9.53	13.49	1.6	3.00	2.66
R74*	584.20	19.05	25.40	23.81	12.32	1.6	12.70	19.84	1.6	5.88	5.03
R75	584.20	31.75	39.69	38.10	22.33	2.4	17.46	33.34	2.4	15.12	14.50
R76	673.10	7.94	14.29	12.70	5.23	1.6	6.35	8.73	0.8	1.67	1.39
R77	692.15	15.88	22.23	20.64	10.49	1.6	11.11	16.67	1.6	5.13	4.45
R78	692.15	25.40	33.34	31.75	17.30	2.4	15.88	26.99	2.4	12.16	11.19
R79	692.15	34.93	44.45	41.28	24.82	2.4	20.64	36.51	2.4	22.15	20.62
R80	615.95	7.94		12.70	5.23	1.6	6.35	8.73	0.8		1.28
R81	635.00	14.29		19.05	9.58	1.6	11.11	15.08	1.6		3.46
R82*	57.15	11.11		15.88	7.75	1.6	7.94	11.91	0.8		0.21
R84*	63.50	11.11		15.88	7.75	1.6	7.94	11.91	0.8		0.24
R85*	79.38	12.70		17.46	8.66	1.6	9.53	13.49	1.6		0.36
R86*	90.49	15.88		20.64	10.49	1.6	11.11	16.67	1.6		0.58
R87*	100.01	15.88		20.64	10.49	1.6	11.11	16.67	1.6		0.64
R88*	123.83	19.05		23.81	12.32	1.6	12.70	19.84	1.6		1.07
R89*	114.30	19.05		23.81	12.32	1.6	12.70	19.84	1.6		0.98
R90*	155.58	22.23		26.99	14.81	1.6	14.29	23.02	1.6		1.81
R91*	260.35	31.75		38.10	22.33	2.4	17.46	33.34	2.4		6.46
R92	228.60	11.11	17.46	15.88	7.75	1.6	7.94	11.91	0.8	0.95	0.85
R93	749.30	19.05		23.81	12.32	1.6	12.70	19.84	1.6		6.45
R94	800.10	19.05		23.81	12.32	1.6	12.70	19.84	1.6		6.88
R95	857.25	19.05		23.81	12.32	1.6	12.70	19.84	1.6		7.37
R96	914.40	22.23		26.99	14.81	1.6	14.29	23.02	1.6		10.66
R97	965.20	22.23		26.99	14.81	1.6	14.29	23.02	1.6		11.26
R98	1022.35	22.23		26.99	14.81	1.6	14.29	23.02	1.6		11.92
R99*	234.95	11.11		15.88	7.75	1.6	7.94	11.91	0.8		0.87
R100	749.30	28.58		34.93	19.81	2.4	17.46	30.16	2.4		15.18
R101	800.10	31.75		38.10	22.33	2.4	17.46	33.34	2.4		19.86
R102	857.25	31.75		38.10	22.33	2.4	17.46	33.34	2.4		21.27
R103	914.40	31.75		38.10	22.33	2.4	17.46	33.34	2.4		22.69
R104	965.20	34.93		41.28	24.82	2.4	20.64	36.51	2.4		28.75
R105	1022.35	34.93		41.28	24.82	2.4	20.64	36.51	2.4		30.45

* Specified in API spec. 6A.

** The weight is based on a specific mass of 7.9 g/cm3

Tolerances, type R

A	ring width	± 0.20	mm
B	ring height, oval	± 0.51	mm
H	ring height, octagonal	± 0.51	mm
C	width of the bottom surface	± 0.20	mm
E	groove depth	+ 0.51/0.00	mm
F	groove width	± 0.20	mm
P	Avg. pitch diameter of the ring	± 0.18	mm
	Av. pitch diameter of the groove	± 0.13	mm
R1	radius of the ring	± 0.51	mm
R2	radius in the groove	max.	
23°	corner	± ½°	

The surface roughness of the 23° sides is max. 1.58 µm Ra

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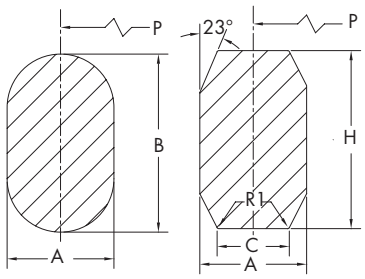
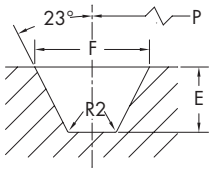
Ring Joint gaskets

- Type R-oval
- Type R-octagonal
- Standard ASME B16.20
- Standard API spec 6A
- Standard ISO 7483





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Metallic and semi-metallic gaskets

Dimension table for Ring Joint gaskets and grooves, type RX
As per ASME B16.20, API spec. 6A

Ring number	Ring [mm]							Groove [mm]			Weight [kg]**
	P	OD	A	C	D	H	R1	E	F	R2	
RX20	68.28	76.20	8.73	4.62	3.18	19.05	1.6	6.35	8.73	0.8	0.24
RX23	82.55	93.27	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.53
RX24	95.25	105.97	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.62
RX25	101.60	109.54	8.73	4.62	3.18	19.05	1.6	6.35	8.73	0.8	0.36
RX26	101.60	11.92	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.66
RX27	107.95	118.27	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.70
RX31	123.83	134.54	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.80
RX35	136.53	147.24	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.89
RX37	149.23	159.94	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.97
RX39	161.93	172.64	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.05
RX41	180.98	191.69	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.18
RX44	193.68	204.39	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.26
RX45	211.14	221.85	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.37
RX46	211.14	222.25	13.49	6.68	4.78	28.58	1.6	9.53	13.49	1.6	1.67
RX47	228.60	245.27	19.84	10.34	6.88	41.28	2.4	12.70	19.84	1.6	3.91
RX49	269.88	280.59	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.76
RX50	269.88	283.37	16.67	8.51	5.28	31.75	1.6	11.11	16.67	1.6	2.89
RX53	323.85	334.57	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	2.11
RX54	323.85	337.34	16.67	8.51	5.28	31.75	1.6	11.11	16.67	1.6	3.47
RX57	381.00	391.72	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	2.48
RX63	419.10	441.72	26.99	14.78	8.46	50.80	2.4	15.88	26.99	2.4	12.03
RX65	469.90	480.62	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	3.06
RX66	469.90	483.39	16.67	8.51	5.28	31.75	1.6	11.11	16.67	1.6	5.04
RX69	533.40	544.12	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	3.48
RX70	533.40	550.07	19.84	10.34	6.88	41.28	2.4	12.70	19.84	1.6	9.18
RX73	584.20	596.11	13.49	6.68	5.28	31.75	1.6	9.53	13.49	1.6	4.66
RX74	584.20	600.87	19.84	10.34	6.88	41.28	2.4	12.70	19.84	1.6	10.06
RX82	57.15	67.87	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.37
RX84	63.50	74.22	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	0.41
RX85	79.38	90.09	13.49	6.68	4.24	25.40	1.6	9.53	13.49	1.6	0.53
RX86	90.49	103.58	15.08	8.51	4.78	28.58	1.6	11.11	16.67	1.6	0.82
RX87	100.01	113.11	15.08	8.51	4.78	28.58	1.6	11.11	16.67	1.6	0.91
RX88	123.83	139.30	17.46	10.34	5.28	31.75	1.6	12.70	19.84	1.6	1.48
RX89	114.30	129.78	18.26	10.34	5.28	31.75	1.6	12.70	19.84	1.6	1.37
RX90	155.58	174.63	19.84	12.17	7.42	44.45	2.4	14.29	23.02	1.6	3.12
RX91	260.35	286.94	30.16	19.81	7.54	45.24	2.4	17.46	33.34	2.4	7.80
RX99	234.95	245.67	11.91	6.45	4.24	25.40	1.6	7.94	11.91	0.8	1.53
RX201	46.05	51.46	5.74	3.20	1.45	11.30	0.5	4.06	5.56	0.8	0.06
RX205	57.15	62.31	5.56	3.05	1.83	11.10	0.5	4.06	5.56	0.5	0.08
RX210	88.90	97.63	9.53	5.41	3.18	19.05	0.8	6.35	9.53	0.8	0.35
RX215	130.18	140.89	11.91	5.33	4.24	25.40	1.6	7.87	11.91	0.8	0.78

** The weight is based on a specific mass of 7.9 g/cm3

Tolerances, type RX

A	ring width	+ 0.20/-0.00	mm
C	width of the bottom surface	+ 0.15/-0.00	mm
D	height of the 23°-surface	+ 0.00/-0.76	mm
E	groove depth	+ 0.51/-0.00	mm
F	groove width	± 0.20	mm
H	ring height	+ 0.20/-0.00	mm
OD	outside diameter of the ring	+ 0.51/-0.00	mm
P	Av. pitch diameter of the groove	± 0.13	mm
R1	radius of the ring	± 0.51	mm
R2	radius in the groove	max.	
23°	corner	± ½°	

The surface roughness of the 23° sides is max. 1.58 µm Ra

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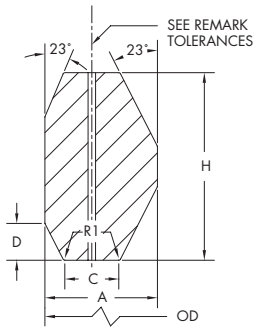
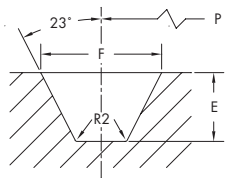
Ring Joint gaskets

- Type RX
- Standard ASME B16.20
- Standard API spec 6A





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Metallic and semi-metallic gaskets

Dimension table for Ring Joint gaskets and grooves, type BX
As per ASME B16.20 and API spec. 6A

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Ring number	Ring [mm]						Groove [mm]			Weight [kg]*
	OD	H	A	ODT	C	D	E	G	N	
BX150	72.19	9.30	9.30	70.87	7.98	1.6	5.56	73.48	11.43	0.13
BX151	76.40	9.63	9.63	75.03	8.26	1.6	5.56	77.77	11.84	0.15
BX152	84.68	10.24	10.24	83.24	8.79	1.6	5.95	86.23	12.65	0.19
BX153	100.94	11.38	11.38	99.31	9.78	1.6	6.75	102.77	14.07	0.28
BX154	116.84	12.40	12.40	115.09	10.64	1.6	7.54	119.00	15.39	0.39
BX155	147.96	14.22	14.22	145.95	12.22	1.6	8.33	150.62	17.73	0.66
BX156	237.92	18.62	18.62	235.28	15.98	3.0	11.11	241.83	23.39	1.84
BX157	294.46	20.98	20.98	291.49	18.01	3.0	12.70	299.06	26.39	2.92
BX158	352.04	23.14	23.14	348.77	19.86	3.0	14.29	357.23	29.18	4.26
BX159	426.72	25.70	25.70	423.09	22.07	3.0	15.88	432.64	32.49	6.42
BX160	402.59	23.83	13.74	399.21	10.36	3.0	14.29	408.00	19.96	3.03
BX161	491.41	28.07	16.21	487.45	12.24	3.0	17.07	497.94	23.62	5.14
BX162	475.49	14.22	14.22	473.48	12.22	1.6	8.33	478.33	17.91	2.26
BX163	556.16	30.10	17.37	551.89	13.11	3.0	18.26	563.50	25.55	6.70
BX164	570.56	30.10	24.59	566.29	20.32	3.0	18.26	577.90	32.77	9.73
BX165	624.71	32.03	18.49	620.19	13.97	3.0	19.05	632.56	27.20	8.54
BX166	640.03	32.03	26.14	635.51	21.62	3.0	19.05	647.88	34.87	12.38
BX167	759.36	35.86	13.11	754.28	8.03	1.6	21.43	768.32	22.91	8.14
BX168	765.25	35.86	16.05	760.17	10.97	1.6	21.43	774.22	25.86	10.13
BX169	173.51	15.85	12.93	171.27	10.69	1.6	9.53	176.66	16.92	0.79
BX170	218.03	14.22	14.22	216.03	12.22	1.6	8.33	220.88	17.91	1.00
BX171	267.44	14.22	14.22	265.43	12.22	1.6	8.33	270.28	17.91	1.24
BX172	333.07	14.22	14.22	331.06	12.22	1.6	8.33	335.92	17.91	1.56
BX303	852.75	37.95	16.97	847.37	11.61	1.6	22.62	862.30	27.38	12.66

* The weight is based on a specific mass of 7.9 g/cm3

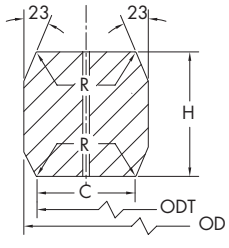
Tolerances, type BX

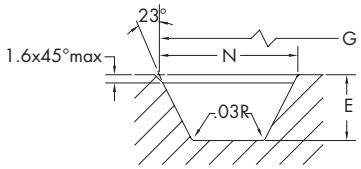
A	ring width	+ 0.20/-0.00	mm
C	width of the bottom surface	+ 0.15/-0.00	mm
D	diameter of the hole	± 0.50	mm
E	groove depth	+ 0.51/-0.00	mm
G	outside diameter of the groove	+ 0.10/-0.00	mm
H	ring height	+ 0.20/-0.00	mm
N	groove width	+ 0.10/-0.00	mm
OD	outside diameter of the ring	+ 0.00/-0.15	mm
ODT	outside diameter of the bottom surface	± 0.05	mm
R	radius of the ring	see remark	
23°	corner	± ¼°	

The surface roughness of the 23° sides is max. 0.8 µm Ra
The radius "R" is equal to 8%-12% of the ring height

Ring Joint gaskets

- Type BX
- Standard ASME B16.20
- Standard API spec 6A





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Welded membranes are mainly used when an absolutely gas-tight connection must be realized.
These gaskets are composed from two identical, precisely manufactured components. Both parts are subsequently welded to the flanges.
After this both parts are welded at the seam to guarantee a gas tight seal.
Depending on the type, the expected thermal expansion of flanges and pipe plates of heat exchangers is compensated by a bellows construction on the perimeter.
Econosto can manufacture this type of gasket in every desired sort of material.
It is also possible to apply these welded membranes in combination with a spiral wound gasket, a camprofile gasket or an O-ring.
The dimensions comply with DIN 2695 or per customer specification.

Profile
Welded membranes are available in a variety of different shapes:

Series 2086 (type MW 1)
These are flat welded membranes. The dimensions comply with DIN 2695 or are per customer specification. The standard thickness is 4 mm.

Series 2087 (type MW 2)
These are welded membranes with a thickness of 15 mm (total thickness per set 30 mm). This yields sufficient space to weld the seal without having to make use of special flanges. All welds can be reached from the outside, so that in the event of leakage, welding repairs can be easily made.
This profile shape can also be produced with grooves for a secondary gasket (spiral wound or camprofile) that provides the seal during the pressure testing, prior to the welding of the seal.

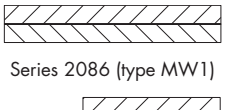
Series 2088 , Series 2089, Series 2090
Series 2088 (type MW 3), Series 2089 (type MW 4), Series 2090 (type MW 5) are welded gaskets that have a hollow lip on the perimeter. These shapes can absorb small movements and rotations of the flanges that are caused by e.g. thermal tensions, better than the Series 2087 (type MW2)
With the series 2088 and 2090 (type MW3 and MW5) all welds are accessible from the outside.

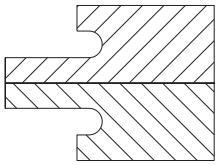
Ordering information
Specify the following data when ordering:
Profile – material – dimensions

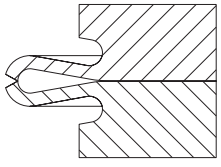
econosto®

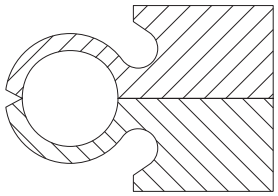
Welded membranes
- Series 2086
- Series 2087
- Series 2088
- Series 2089
- Series 2090

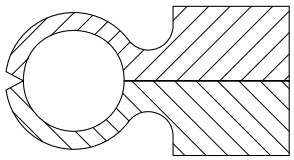
- Absolutely gas-tight
- All materials possible
- Can be re-used several times


Series 2086 (type MW1)


Series 2087 (type MW2)


Series 2088 (type MW3)


Series 2089 (type MW4)


Series 2090 (type MW5)

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Metal jacketed gaskets are composed of a metal cover and a soft (asbestos-free) filler. The filler material gives the seal resilience, while the metal cover ensures the seal and protects the filler material against pressure, temperature and corrosion.
Metal jacketed gaskets are generally used in heat exchangers, pumps, autoclaves, engines and exhaust systems.

Profile
Metal jacketed gaskets are available in the following profile shapes:

Series 2092 (type S6)

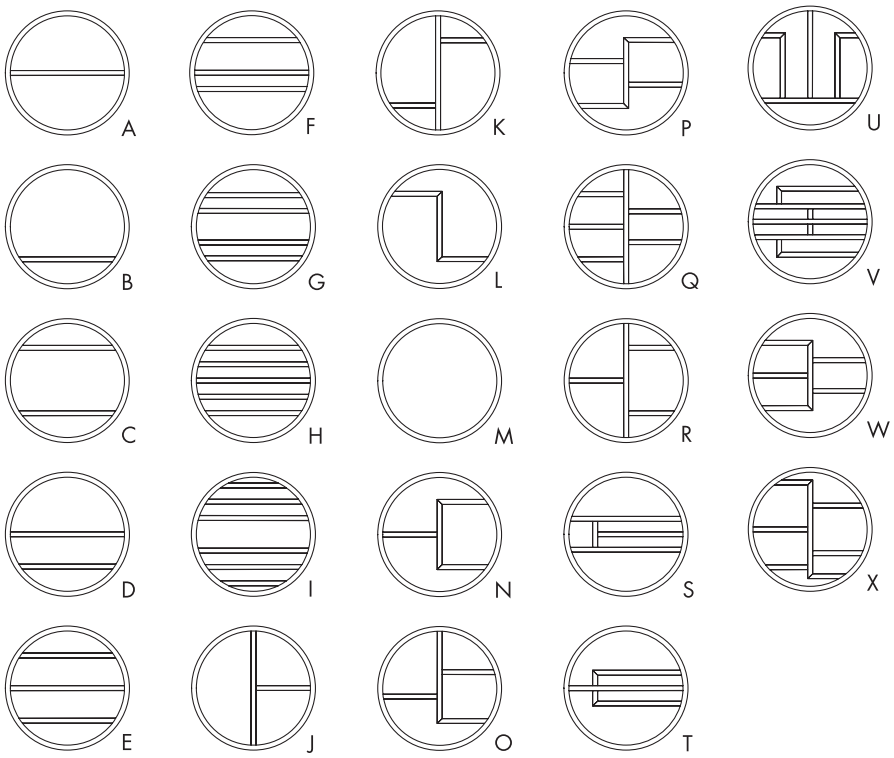
Jacket material
The following metals are available standard, other metals are available on request:

Soft iron
AISI 316

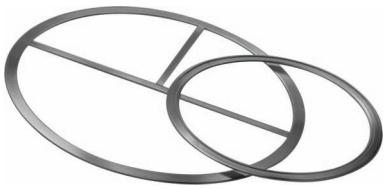
Filler materials
The filler materials below are available standard, other materials are available on request.

Graphite
NOVUS® 30

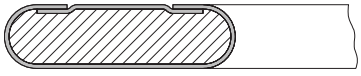
Heat exchangers shapes
Metal jacketed gaskets can be produced in a variety of styles. Below you see an overview of a number of standard shapes in which metal jacketed gaskets for vessels and heat exchangers can be produced.



Ordering information
Specify the following data when ordering:
Profile shape (S6) – jacket and filler materials – nominal dimension/rating – flange standard.
With non-standard dimensions, the dimensions must also be specified, or a drawing must be provided.



Series 2092
- Solid construction
- Easy to install
- All seal shapes possible



Series 2092 (type S6)

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Metal corrugated rings, with and without a sealing layer, create extremely resilient and flexible seals.
Corrugated rings are often used as an insert in PTFE envelope seals for weak flange constructions (e.g. enamelled flanges) in the chemical industry.
Corrugated rings with layers are also very suitable for accommodating flanges which are not exactly parallel.
Corrugated rings can also be produced in oval or rectangular shapes.

Profile
Corrugated seals can be obtained in the following variants:

Series 2095
Corrugated ring without layer.

Series 2096
Corrugated ring with layer. The layer is in most cases graphite or soft sheet gasket (NOVUS®30/34).

Ordering information
Specify the following data when ordering:
Corrugated ring/layer material – dimensions

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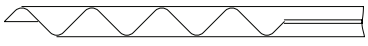
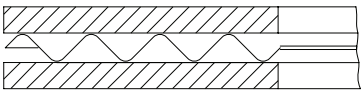
Series 2095/Series 2096
- Low gasket stresses required
- Suitable for weak flanges



Series 2095



Series 2096

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In addition to Ring Joint seals, a complete range of other solid metal seals is available; each has its own specific characteristics and areas of use.
Besides the standardized shapes that are described below, problem-specific solutions are also possible. Econosto can advise you in the choice or design of specific metallic seals.

Flat sealing rings
Series 2080 (type M1)
This type is used in such applications as for valves, seats, heat exchangers and screwed connections.
The dimensions comply with ISO 7483, DIN 7603A and DIN 16258.
They can also be manufactured to comply with specifications from individual customers.

Insert rings
Series 2081 (type M2)
This machined sealing ring is available with or without a layer.
These rings are used in Groove/Groove flange joints as per DIN 2512 and works standard WAS 100.

Lens rings
Series 2082 (type M4)
The sealing action is based on a line contact seal. A relatively low bolt tension already gives a good seal. This technique is applied on a large scale in high pressure pipe systems, from PN 64 to PN 400.
The dimensions comply with DIN 2696 or are per customer specification.

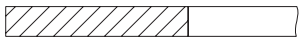
O-rings
Series 2083 (type M6)
The O-rings are produced in welded or seamless versions. In general materials such as aluminium, copper and silver are used. After the production process the material is generally annealed. These rings are mainly used in gas and vacuum technology.
The dimensions comply with the specifications from the customer.

Convex rings
Series 2084 (type M10)
The dimensions are DIN 7603D compliant or as per customer's specifications.

Delta gaskets
Series 2085 (type M15)
Delta gaskets are produced within narrow tolerances.
The gasket is designed in such a way that, due to the internal system pressure, it is self-energizing and because of this causes a high surface pressure between the flanges and the gasket. This gasket can be produced in all common materials. The Delta gasket is used in applications such as pressure vessels.
The dimensions comply with customer specifications.

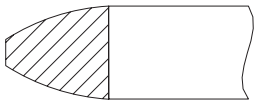
Ordering information
Specify the following data when ordering:
Profile – material – dimension (standard)

Overview of metallic sealing rings
- Series 2080
- Series 2081
- Series 2082
- Series 2083
- Series 2084
- Series 2085

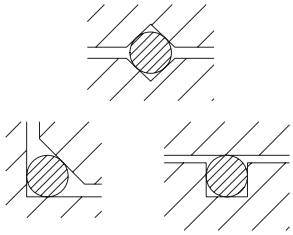


Series 2080 (type M1)

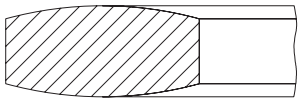
Series 2081 (type M2)



Series 2082 (type M4)



Series 2083 (type M6)



Series 2084 (type M10)

Series 2085 (type M15)

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Nominal dimension [mm]	d1	d2	h variant A	h variant D	r
4 x 8	4.2 +0.3	7.9 -0.2	1 ±0,2	1 ±0,2	4
5 x 7.5	5.2 +0.3	7.4 -0.2	1 ±0,2	1 ±0,2	4
5.5 x 8	5.7 +0.3	7.9 -0.2	1 ±0,2	1 ±0,2	4
6.5 x 9.5	6.7 +0.3	9.4 -0.2	1 ±0,2	1 ±0,2	4
7 x 15	7.2 +0.3	14.9 -0.2	1.5 ±0,2		
8 x 11.5	8.2 +0.3	11.4 -0.2	1 ±0,2	1 ±0,2	4
10 x 13.5	10.2 +0.3	13.4 -0.2	1 ±0,2	1 ±0,2	4
12 x 15.5	12.2 +0.3	15.4 -0.2	1.5 ±0,2	1.5 ±0,2	4
12 x 16	12.2 +0.3	15.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
12 x 19	12.2 +0.3	18.9 -0.2	1.5 ±0,2		
14 x 18	14.2 +0.3	17.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
14 x 20	14.2 +0.3	19.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
15 x 19	15.2 +0.3	18.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
15 x 23	15.2 +0.3	22.9 -0.2	1.5 ±0,2		
16 x 20	16.2 +0.3	19.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
17 x 21	17.2 +0.3	20.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
18 x 22	18.2 +0.3	21.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
20 x 24	20.2 +0.3	23.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
21 x 26	21.2 +0.3	25.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
22 x 27	22.2 +0.3	26.9 -0.2	1.5 ±0,2	1.5 ±0,2	4
23 x 28	23.3 +0.3	27.9 -0.2	2 ±0,2	2 ±0,3	6
24 x 29	24.3 +0.3	28.9 -0.2	2 ±0,2	2 ±0,3	6
25 x 30	25.3 +0.3	29.9 -0.2	2 ±0,2	2 ±0,3	6
26 x 31	26.3 +0.3	30.9 -0.2	2 ±0,2	2 ±0,3	6
27 x 32	27.3 +0.3	31.9 -0.2	2 ±0,2	2 ±0,3	6
28 x 33	28.3 +0.3	32.9 -0.2	2 ±0,2	2 ±0,3	6
30 x 36	30.3 +0.3	35.9 -0.2	2 ±0,2	2 ±0,3	6
32 x 38	32.3 +0.3	37.9 -0.2	2 ±0,2	2 ±0,3	6
33 x 39	33.3 +0.3	38.9 -0.2	2 ±0,2	2 ±0,3	6
35 x 41	35.3 +0.3	40.9 -0.2	2 ±0,2	2 ±0,3	6
36 x 42	36.3 +0.3	41.9 -0.2	2 ±0,2	2 ±0,3	6
38 x 44	38.3 +0.3	43.9 -0.2	2 ±0,2	2 ±0,3	6
39 x 46	39.3 +0.3	45.9 -0.2	2 ±0,2	2 ±0,3	6
40 x 47	40.3 +0.3	46.9 -0.2	2 ±0,2	2 ±0,3	6
42 x 49	42.3 +0.3	48.9 -0.2	2 ±0,2	2 ±0,3	6
44 x 51	44.3 +0.3	50.9 -0.2	2 ±0,2	2 ±0,3	6
45 x 52	45.3 +0.3	51.9 -0.2	2 ±0,2	2 ±0,3	6
48 x 55	48.3 +0.3	54.9 -0.2	2 ±0,2	2 ±0,3	6
50 x 57	50.2 +0.3	56.9 -0.2	2 ±0,2	2 ±0,3	6
52 x 60	52.5 +0.5	59.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
54 x 62	54.5 +0.5	61.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
55 x 63	55.5 +0.5	62.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
56 x 64	56.5 +0.5	63.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
58 x 66	58.5 +0.5	65.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
60 x 68	60.5 +0.5	67.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
64 x 72	64.5 +0.5	71.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
65 x 74	65.5 +0.5	73.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
70 x 79	70.5 +0.5	78.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
75 x 84	75.5 +0.5	83.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
78 x 88	78.5 +0.5	87.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
80 x 90	80.7 +0.5	89.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
85 x 95	85.7 +0.5	94.8 -0.3	2.5 ±0,2	2.5 ±0,4	10
90 x 100	90.7 +0.5	99.8 -0.3	2.5 ±0,2	2.5 ±0,4	10

all dimensions in millimetres

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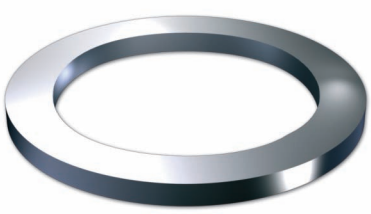
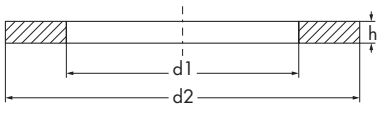
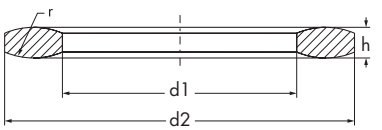


Flat and convex sealing rings

- Series 2080 (Type M1) flat ring
- Series 2084 (Type M10) convex rings
- Standard DIN 7603 A and D





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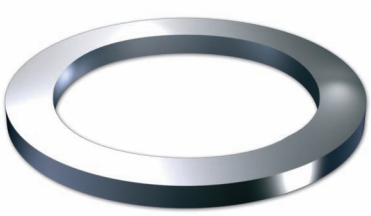
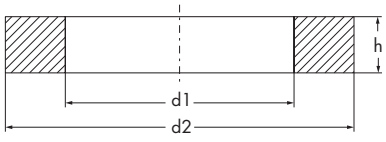
Nominal pipe dimension	d1	d2	h
4-6	20	30	10
8	22	32	10
10	24	34	10
15	29	39	10
20	36	50	10
25	43	57	10
32	51	65	10
40	61	75	10
50	73	87	10
65	95	109	10
80	106	120	10
100	129	149	12
125	155	175	12
150	183	203	12
175	213	233	12
200	239	259	12
250	292	312	12
300	343	363	12
350	395	421	14
400	447	473	14
500	549	575	14
600	649	675	14
700	751	777	14
800	856	882	14
900	961	987	14
1000	1062	1092	16

all dimensions in millimetres



Metal insert rings

- Series 2081 (type M2)
- For DIN 2512 flanges
- PN 10-160
- Groove/Groove



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Metallic and semi-metallic gaskets

Dimension table for metal insert rings
For ASME B16.5 flanges

Nominal pipe dimension	d1	d2		h
		narrow	wide	
½	25	35	35	12
¾	33	43	43	12
1	38	48	51	12
1¼	48	57	64	12
1½	54	64	73	12
2	73	83	92	12
2½	86	95	105	12
3	108	118	127	14
3½	121	130	140	14
4	132	145	157	14
5	160	173	186	14
6	190	203	216	14
8	238	254	270	14
10	286	305	324	14
12	343	362	381	14
14	375	394	413	16
16	425	448	470	16
18	489	511	535	16
20	535	559	585	16
22	591	616	641	16
24	640	667	690	16

all dimensions in millimetres

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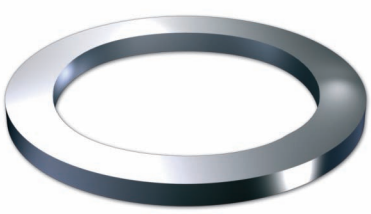
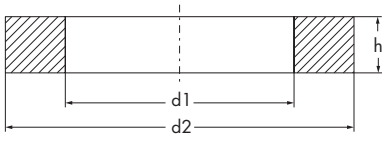


Metal rings

- Series 2081 (type M2)
- For ASME B16.5
- 150-2500Lbs
- Groove/Groove
- Works standard WAS100



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