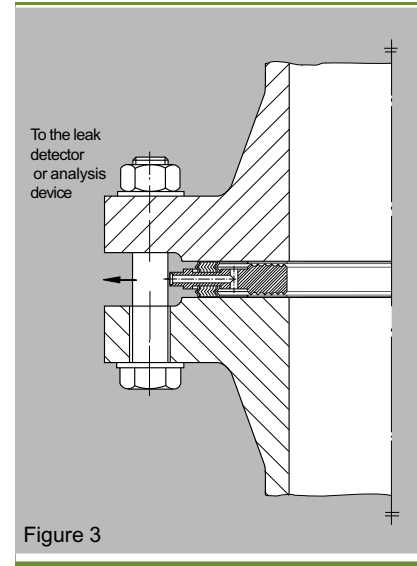
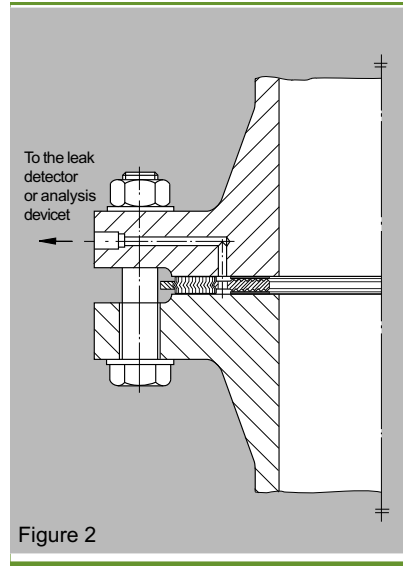
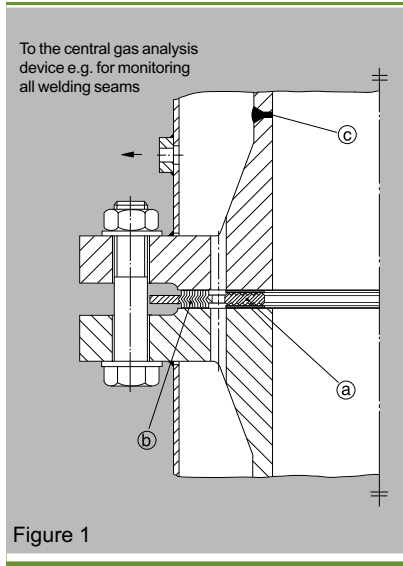


## Double sealing system KHS/KNS with intermediate exhausting



Old and new plants constantly place greater demands on safety and reliability. This applies at certain sizes to bolted flange connections on apparatuses, valves and pipelines. For many years, sealing systems with intermediate exhausting or certain areas of the chemical industry. The simplest example of this consists of two O-rings concentrically arranged in grooves.

This or similar designs are problem-free, as long as the components to be sealed are inherently stable and retain their position relative to each other. The bolt load applied, the internal pressure, the temperature or even external forces and moments all cause the flanges to take on a certain angle to each other, and so large deformations in the area of the seal should be anticipated.

The use of some gaskets leads to noticeable difficulties if the gasket is not able to securely seal the flanges as they slant against each other. The problem is even more difficult when two concentrically aligned gaskets are used.

If both gaskets are aligned as a main load seal or else if both are in off load contact, in each case significantly greater sealing recovery proportionate to the lever arms is required from a gasket than from other gaskets.

In many cases it has proven preferable not to have the components so inherently stable, so that leaks can be avoided with the pressure applied or with large applications of force.

Only the combination of a main load gasket with a off load gasket as in the Kempchen double sealing system provides a secure design solution to this problem. Due to this special design, the double sealing system has proven a reliable sealing system in double-walled equipment or tanks as well as in double-lined pipes and flanges with intermediate exhausting. In double-walled systems with double sealing system gaskets the space between both walls can be used as extra heating or cooling or for monitoring any leakage arising, as shown in figure 1.

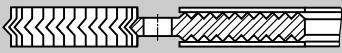
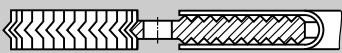
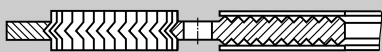
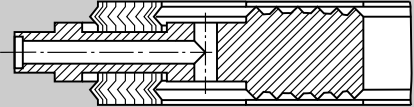
By exhausting or rinsing e.g. with nitrogen the leak-tightness of the internal gasket (a) and external gasket (b) and the welding seam (c) can always be monitored. In practice, in a 2" double sealing gasket a leak rate on the inner gasket of less than  $10^{-5} \text{mbar} \cdot \text{l} \cdot \text{s}^{-1}$  can be measured for gaskets with graphite, and a leak rate of less than  $10^{-8} \text{mbar} \cdot \text{l} \cdot \text{s}^{-1}$  for gaskets with PTFE.

In single-wall systems the internal and external gaskets can be monitored by intermediate exhausting in the flange. The principle of intermediate exhausting is shown in figure 2.

By changing the height of the gasket the intermediate exhausting can be done from the centring ring, see figure 3.

## Double sealing system KHS/KNS with intermediate exhausting

### Gasket profiles

Profile	Cross-section
HN21A	
HN21H	
HN22A	
HN222A	

For main load gaskets, a gasket with greater spring stiffness such as a grooved gasket is used, whereas for off load gaskets a gasket with lower spring stiffness, such as a spiral wound gasket, is more appropriate. The height of the main load gasket is measured in such a way that the anticipated flange inclination and anticipated change in the flange inclination does not overload the off load gasket and allows it to be used safely.

Ask us for advice on the calculations and characteristic values of this gasket system.

The preferred areas of application for this gasket are:

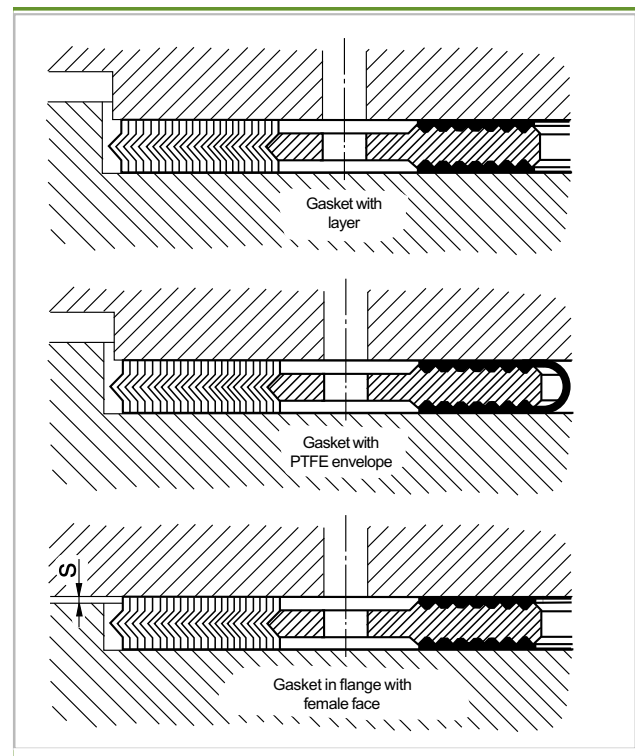
- Plants and pipelines in the chemical industry with carcinogenic, toxic or water-polluting intermediate and end products.
- Tanks with pressurised liquid gases in large-capacity storage tanks e.g. ammonia
- Equipment or pipelines with accompanying heating/cooling
- Nuclear installations

Double sealing gaskets are supplied as a complete set, i.e. the spiral gasket is mounted on the outer ring of the inner gasket. The inner gasket is coated with a layer of PTFE, graphite or silver, depending on the operating conditions. It can also be supplied with an internally sealed PTFE envelope. The filler strip for the outer gasket can be either PTFE or graphite, depending on the operating conditions.

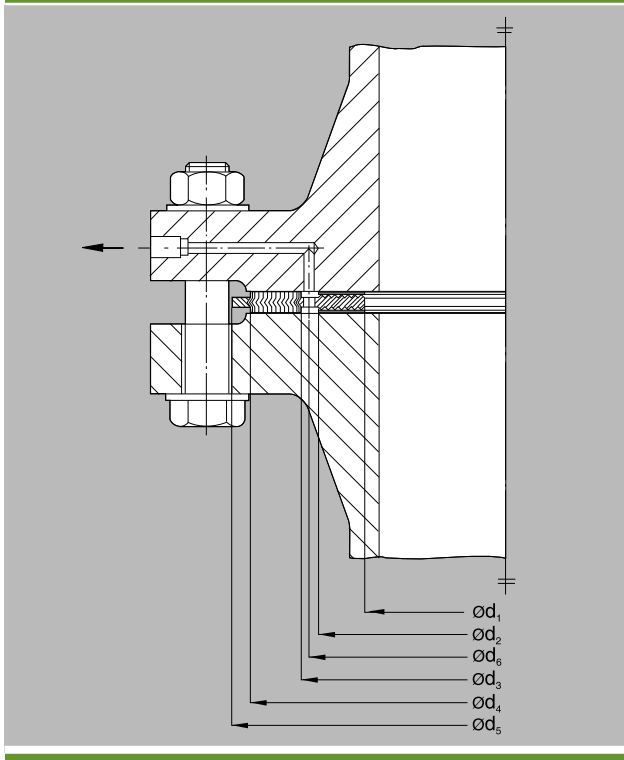
The standard material for the metal carrier of the inner gasket and for the metal strip of the spiral gasket is 1.4541 or 1.4571 steel. Other materials available on request. See also the section "Materials commonly used".

Double sealing systems can be used with smooth flanges, flanges with raised face and even with flanges with male and female faces, if the recess is wide and deep enough.

Double sealing system gaskets can only be reused on a limited basis, i.e. if the layers and/or the PTFE envelope and the spiral part are replaced, the gaskets can be used again, as long as there is no damage to the metal core of the primary gasket. Reprocessing is only economical for gaskets greater than DN 500 and is done in our workshop.



## Double sealing system KHS/KNS with intermediate exhausting



### Works standard 160

Ordering example for a double sealing gasket with layers, Profile HN22A, DN 100, PN 63, works standard 160, made of...<sup>1)</sup>:

**Double sealing gasket, HN22A, DN 100, PN 63, works standard 160, 1.4541 / graphite**

1) Specify material when placing order

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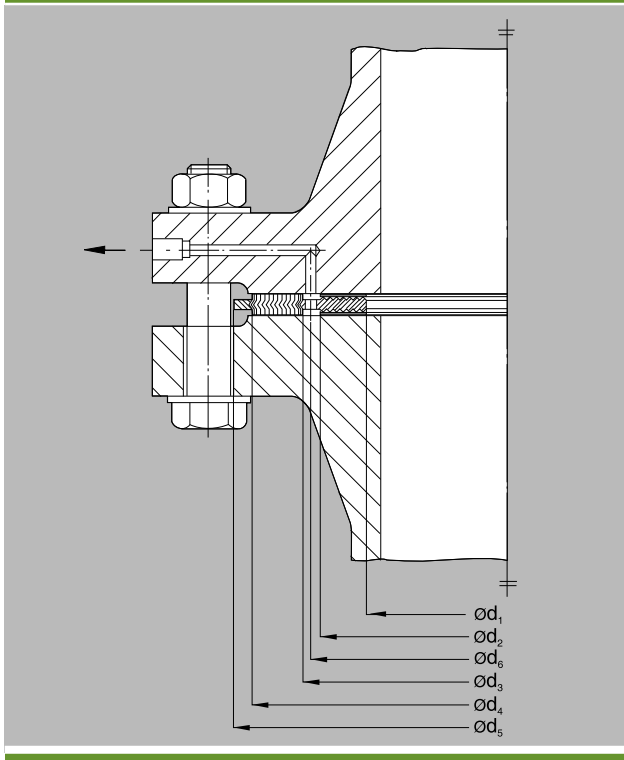
### For DIN flanges PN 25 to PN 400

DN	PN													intermediate exhausting
	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	25	40	63	100	160	250	320	400	d <sub>6</sub>	
25	30	47	53	63	71	71	82	82	82	83	92	104	50	
32	40	57	63	73	82	82	-	-	-	-	-	-	60	
40	46	64	72	82	92	92	103	103	103	109	119	135	68	
50	60	78	86	96	107	107	113	119	119	124	134	150	82	
65	75	95	105	115	127	127	137	143	143	153	170	192	100	
80	90	110	120	132	142	142	148	154	154	170	190	207	115	
100	110	130	140	152	168	168	174	180	180	202	229	256	135	
125	138	160	170	182	194	194	210	217	217	242	274	301	165	
150	162	184	196	208	224	224	247	257	257	284	311	348	190	
175	187	209	221	233	254	265	277	287	284	316	358	402	215	
200	212	234	246	260	284	290	309	324	324	358	398	442	240	
250	262	284	296	310	340	352	364	391	388	442	488	-	290	
300	312	334	346	360	400	417	424	458	458	536	-	-	340	
350	348	372	388	404	457	474	486	512	-	-	-	-	380	
400	396	422	438	454	514	546	543	572	-	-	-	-	430	
450	444	472	488	504	-	571	-	-	-	-	-	-	480	
500	494	522	538	558	624	628	657	704	-	-	-	-	530	
600	600	632	648	668	731	747	764	813	-	-	-	-	640	

- Flanges compliant with the standard not available

Dimensions in mm

## Double sealing system KHS/KNS with intermediate exhausting



### Works standard 161

Ordering example for a double sealing gasket with layers, Profile HN22A, NPS 5, Class 600, works standard 161, made of ...')::

### Double sealing gasket, HN22A, 5, Class 600, works standard 161, 1.4541 / graphite

1) Specify material when placing order

### For ANSI flanges Class 150 to Class 2500

DN	$d_1$	$d_2$	$d_3$	$d_4$	Class							intermediate exhausting $d_6$
					150	300	400	600 $d_5$	900	1500	2500	
1½	42	56	62	72	82,5	92,1	92,1	92,1	95,2	95,2	114,3	59
2	55	73	79	90	101,6	108,0	108,0	108,0	139,7	139,7	142,8	76
2½	65	83	91	102	120,6	127,0	127,0	127,0	161,9	161,9	165,1	87
3	81	99	111	124	133,4	146,1	146,1	146,1	165,1	171,5	193,7	105
3½	93	111	123	136	158,8	161,9	158,7	158,7	-	-	-	117
4	105	128	139	152	171,5	177,8	174,6	190,5	203,2	206,4	231,7	133
5	131	156	166	178	193,7	212,7	209,5	238,1	244,5	250,8	276,2	161
6	155	183	193	206	219,1	247,7	244,5	263,5	285,8	279,4	314,3	188
8	206	236	247	260	276,2	304,8	301,6	317,5	355,6	349,3	384,1	242
10	258	290	301	314	336,5	358,8	355,6	396,9	431,8	431,8	473,0	296
12	308	342	355	370	406,4	419,1	415,9	454,0	495,3	517,5	546,1	349
14	340	376	388	403	447,7	482,6	479,4	488,9	517,5	574,7	-	382
16	395	433	445	460	511,2	536,6	533,4	561,9	571,5	638,1	-	439
18	445	489	507	524	546,1	593,7	590,5	609,6	635,0	701,7	-	498
20	493	541	557	574	603,2	650,9	644,5	679,5	695,3	752,4	-	549
22	544	598	612	631	657,2	701,7	698,5	730,3	-	-	-	605
24	595	650	662	682	714,4	771,5	765,2	878,4	835,0	898,5	-	656

- Flanges compliant with the standard not available

Dimensions in mm

# Start-up sieve/strainer gaskets

## Areas of application

Start-up gaskets are an inexpensive way to protect sensitive equipment in a pipeline system. The gaskets are affixed to the suction side of pumps, measuring and monitoring equipment. Particularly in new plants, there is a possibility that pieces of ash, cinder, soil or other impermissible contaminants may find their way into the pipeline system. Start-up gaskets eliminate the penetration of such particles into the valuable machinery lying behind them and thereby avoid costly repairs.

Start-up gaskets are available in various different models for the different kind of flanges and areas of application.

## Grooved gasket B9A ZT sieve

The grooved gasket B9A ZT sieve is made of stainless steel and has a layer of graphite or PTFE in the sealing area. In the centre of the standard model, welded to the internal diameter of the gasket, is a stainless steel sieve made of 1.4301, with a wire gauge of 0.8 mm and a mesh width of 1.6 mm. On request the gasket can be supplied with an identification rim. The core thickness of the groove profile B9A ZT sieve is 4 mm, the total width on delivery is 5 mm.



Grooved gasket B9A ZT sieve

## Tongue and groove connections

For use in tongue and groove connections, we make stainless steel carriers with a groove recess and tongue, with a stainless steel sieve welded onto the centre. The standard model has a stainless steel sieve made of 1.4301, with a wire gauge of 0.8 mm and a mesh width of 1.6 mm. On request the gasket can be supplied with an identification clip. The height of the start-up gasket depends on the nominal width and can be supplied on request.



Groove/tongue start-up gasket

## PTFE flat gasket Profile A1 ZT strainer

In flanges with PTFE covering, the PTFE flat gasket Profile A1 ZT strainer is used. This start-up strainer consists of a 3 mm thick PTFE blank, which has 2 mm holes in its interior. The PTFE flat gasket Profile A1 ZT strainer is made from virgin PTFE or black conductive PTFE



PTFE flat gasket profile A1 ZT strainer

## PTFE enveloped gasket Profile PF3 ZT strainer

We manufacture the start-up strainer gasket with PTFE casing PT3 ZT strainer for use with enamelled flanges. The envelope consists of a lathed envelope with a diffusion barrier and a layer of plain graphite sheeting 3 mm thick. This design conforms well to the irregularities of the enamelled flange surface. In the internal area the PTFE blank has 2 mm holes. The PTFE enveloped gasket Profile PF3 ZT strainer is made from virgin PTFE.



PTFE enveloped gasket PF3 ZT strainer

## Start-up sieve/strainer gaskets

### Rubber sieve gasket Profile WMS

The rubber sieve gasket Profile WMS consists of an elastomer sealing element. A stainless steel wire sieve is vulcanised between the individual elastomer sealing layers, minimising the cross-sectional leakage in the sealing design. The standard model has a sieve made of 1.4828, with a wire gauge of 0.28 mm and a mesh width of 0.7 mm, the total thickness is 4.5 mm.



Rubber sieve gasket Profile WMS

### RivaTherm Super sieve gasket Profile RMS

The RivaTherm Super sieve gasket Profile RMS consists of 2 connected graphite layers RS1E1 with incorporated stainless steel sieve. The standard model has a sieve made of 1.4828, with a wire gauge of 0.28 mm and a mesh width of 0.7 mm. The total thickness is approx. 2.5 mm. This model is particularly suitable for use with gases.



RivaTherm sieve gasket Profile RMS

Start-up sieve gaskets are supplied in sizes DN 15 PN 40 to DN 80 PN 40 and DN 100 PN 16 to DN 250 PN16. Start-up strainer gaskets from PTFE are supplied to a maximum of DN 100 PN 16. Start-up gaskets are not suitable for long-term use. Extreme fluctuations in pressure jeopardise functionality. In addition, the functionality of the start-up gasket will be adversely affected by dirt. The gasket should therefore be replaced if there is a fall in pressure greater than 10% of the operating pressure.



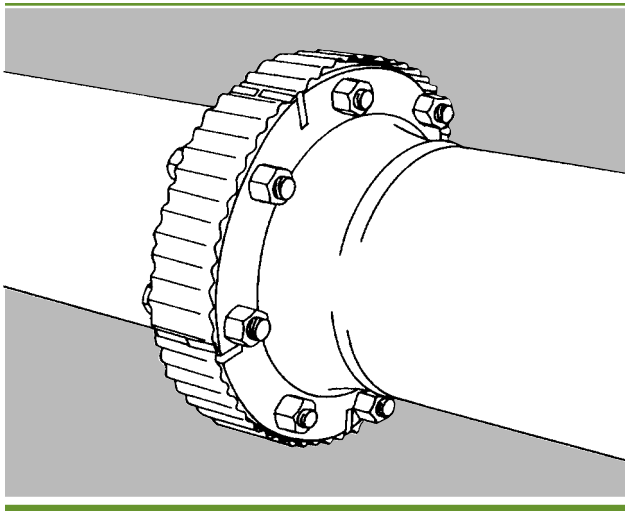
# Splatter-shield strips

Dangerous, hot or pressurised media are transported through pipelines in many branches of industry. Wherever these pipelines are connected to each other with bolted flanges, there is a danger that a leakage of the dangerous medium will occur, leading to an accident.

This can involve acids or alkalis, high-pressure steam or boiling water, high-pressure hydraulic oil or heat-carrying oil, compressed air or water, to name the most important sources of danger.

### Design and operation

Splatter-shield strips in Profile BWQ are made from 0.2 mm thick stainless steel strip of material 1.4541. They are corrugated at right angles to the length. When used with a flange connection, the corrugation along the strip creates many small openings to the outside.



This means that the dangerous medium cannot stream out directly onto a person standing in front of the flange connection. Instead, the stream of acid, alkali or water will hit the interior of the splatter-shield strip and then flow at low pressure through the opening.

### Selection criteria for a splatter-shield strip for a 4 mm thick gasket

The strip width $b_s$ as relates to the flange thickness is:					
Flange thickness $b$ [mm]	10-23	24-26	27-39	40-44	45-78
Strip width $b_s$	40	40 (60)	60	60 (100)	100

The length of the splatter shield strip  $L_s$  is determined as follows:

Single wrap	$D < 160$ mm	$LS = \pi \cdot D + 50$ mm
	$D > 160$ mm	$LS = 1,1 \cdot \pi \cdot D$ mm
Double wrap	$D < 320$ mm	$LS = 2 \cdot \pi \cdot D + 50$ mm
	$D > 320$ mm	$LS = 2,05 \cdot \pi \cdot D$ mm

### Number of security fastener required

To correctly attach the splatter-shield strips you need the following number of security fasteners, as a security fastener must be attached just before the outer end of the wrapping.

Diameter D [mm]	Security fasteners	Diameter D [mm]	Security fasteners
10 - 50	2	1194 - 1273	16
65 - 100	3	1274 - 1353	17
125 - 150	4	1354 - 1432	18
175 - 200	5	1433 - 1511	19
225 - 250	6	1512 - 1591	20
275 - 300	7	1592 - 1671	21
350 - 600	8	1642 - 1750	22
635 - 715	9	1751 - 1830	23
716 - 795	10	1831 - 1909	24
796 - 875	11	1910 - 1989	25
876 - 955	12	1990 - 2069	26
956 - 1035	13	2070 - 2148	27
1036 - 1115	14	2149 - 2228	28
1116 - 1193	15	2229 - 2307	29
		2308 - 2387	30

### Installation

For security, a flange of approx.  $1,1 \cdot D \cdot \pi$  mm, but  $D \cdot \pi + 50$  mm as a minimum for small flanges, is required, so that there is sufficient overlap. From PN 100, particularly with water or other heavy liquids, there should be a double wrapping of the flange. For this  $2,05 \cdot D \cdot \pi$  mm is required. To securely attach it, the splatter-shield strip with security fasteners Profile BWS, which is wrapped around the flange, is secured to the flange in such a way that, starting at the overlap, one end of the security fastener is bent downwards towards the flange plate and one end is bent upwards by  $180^\circ$ .

### Supplied as:

We supply splatter-shield strips for all profile sizes in rolls of 25 m each. This includes security fasteners from stainless steel material 1.4541, Profile BWS 40, BWS 60 or BWS 100.

# Splatter-shield strips

Nominal flange diameter	PN 6					PN 10					PN 16					PN 25					PN 40					
	A (Stck.)	L <sub>s</sub> (mm)	b <sub>s</sub> (mm)	DIN 2527, 2631	DIN 2641	A (Stck.)	L <sub>s</sub> (mm)	b <sub>s</sub> (mm)	DIN 2527, 2632, 2566	DIN 2642	DIN 2653, 2673	DIN 2576	DIN 28115	A	L <sub>s</sub> (mm)	b <sub>s</sub> (mm)	DIN 2527, 2634	DIN 2655	DIN 28115	A	L <sub>s</sub> (mm)	b <sub>s</sub> (mm)	DIN 2527, 2635	DIN 2656	DIN 28115	
10	3	290	40	40	40	3	335	40	40	40	40 (60)	40		3	335	40	3	335	40	3	335	40	3	335	40	
15	3	305	40	40	40	3	350	40	40	40	40 (60)	40		3	350	40	3	350	40	3	350	40	3	350	40	
20	3	335	40	40	40	3	380	40	40	40	40 (60)	40		3	380	40	3	380	40	3	380	40	3	380	40	
25	3	365	40	40	40	3	415	40	40	40	40 (60)	40	40	3	415	40	3	415	40	3	415	40	3	415	40	40
32	4	430	40	40	40	4	490	40	40	40	60	40	40	4	490	40	4	490	40	4	490	40	4	490	40	40
40	4	460	40	40	40	4	525	40	40	40	60	40	40	4	525	40	4	525	40	4	525	40	4	525	40	40
50	4	490	40	40	40	4	575	40	40	40	60	40	40	4	575	40	4	575	40	4	575	40	4	575	40	40
65	5	555	40	40	40	5	640	40	40	40	60	40	40	5	640	40	5	640	40	5	640	40	5	640	40	40
80	5	660	40	40	40	5	695	40	40	40	60	40	40	5	695	40	5	695	40	5	695	40	5	695	40	40
100	5	730	40	40	40	6	765	40	40	40	60	40	40	6	765	40	6	765	40	6	765	40	6	765	40	40
125	6	830	40	40	40	6	865	40	40	40	60	40	40	6	865	40	6	865	40	6	865	40	6	865	40	40
150	6	920	40	40	40	7	985	40	40	40	60	40	40	7	985	40	7	985	40	7	985	40	7	985	40	40
200	7	1110	40	40	40	7	1175	40 (60)	40 (60)	40 (60)	60 (100)	40 (60)	40 (60)	7	1175	40 (60)	7	1175	40 (60)	7	1175	40 (60)	7	1175	40 (60)	40 (60)
250	8	1300	40	40	40	8	1365	40 (60)	40 (60)	40 (60)	60 (100)	40 (60)	40 (60)	8	1365	40 (60)	8	1365	40 (60)	8	1365	40 (60)	8	1365	40 (60)	40 (60)
300	8	1525	40	40 (60)	40	8	1540	40 (60)	40 (60)	40 (60)	100	40 (60)	40 (60)	8	1540	40 (60)	8	1540	40 (60)	8	1540	40 (60)	8	1540	40 (60)	40 (60)
350	8	1700	40	40 (60)	40	8	1750	40 (60)	40 (60)	40 (60)	100	60	40	8	1750	40 (60)	8	1750	40 (60)	8	1750	40 (60)	8	1750	40 (60)	60
400	8	1870	40	60	40	8	1955	40 (60)	40 (60)	40 (60)	100	60	40	8	1955	40 (60)	8	1955	40 (60)	8	1955	40 (60)	8	1955	40 (60)	40
500	9	2230	40 (60)	60	40	9	2320	60	60	60	100	60	40	9	2320	60	9	2320	60	9	2320	60	9	2320	60	60
600	10	2610	40 (60)	60	40	10	2700	60	60	60	100	60	40	10	2700	60	10	2700	60	10	2700	60	10	2700	60	60
700	11	2975	40 (60)	60 (100)	60	12	3095	60	60	60	100	60	40	11	2975	60	11	2975	60	11	2975	60	11	2975	60	60
800	13	3370	40 (60)	60 (100)	60	13	3510	60	60	60	100	60	40	13	3370	60	13	3510	60	13	3510	60	13	3510	60	60
900	14	3715	40 (60)	100	60	15	3855	60	60	60	100	60	40	14	3715	60	14	3855	60	14	3855	60	14	3855	60	60
1000	15	4065	40 (60)	100	60	16	4255	60	60	60	100	60	40	15	4065	60	15	4255	60	15	4255	60	15	4255	60	60
1200	18	4860	60	100	60	19	5030	60	60	60	100	60	40	18	4860	60	18	5030	60	18	5030	60	18	5030	60	60
1400	21	5635	60	60	60	22	5790	60 (100)	60 (100)	60 (100)	100	60	40	21	5635	60	21	5790	60 (100)	21	5790	60 (100)	21	5790	60 (100)	60
1600	23	6325	60	60	60	25	6620	100	100	100	100	60	40	23	6325	60	23	6620	100	23	6620	100	23	6620	100	60
1800	26	7070	60	60	60	27	7310	100	100	100	100	60	40	26	7070	60	26	7310	100	26	7310	100	26	7310	100	60
2000	29	7830	60	60	60	30	8035	100	100	100	100	60	40	29	7830	60	29	8035	100	29	8035	100	29	8035	100	60
											longer fasteners															

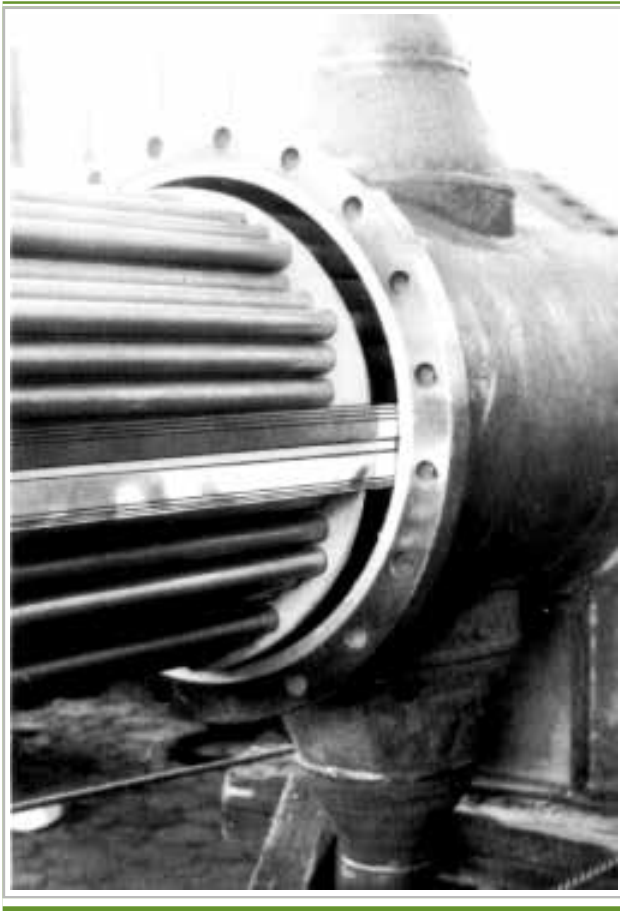
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## Baffle seals T4

### Baffle seals T4 for sealing longitudinal baffles in high-performance heat exchangers.

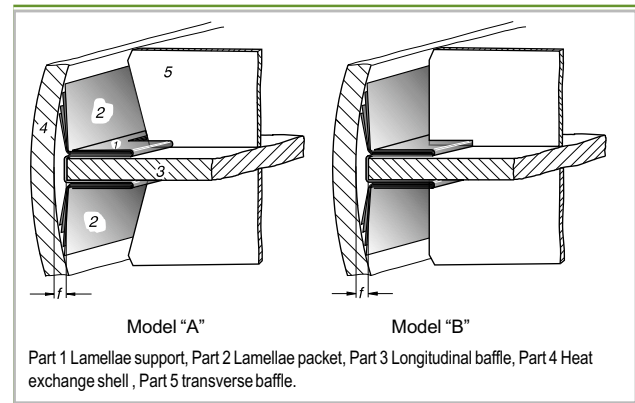
Baffle seals Profile T4 is a full metal seal. It is generally made from 1.4571 steel for the lamellae supports and for the lamellas themselves. On request and with larger orders, these seal can also be produced from other spring-elastic steels or non-ferrous metals.



The baffle seal plays an important role in effectively sealing the gap between the longitudinal baffle and the heat exchanger shell in high-performance heat exchangers. In particular, where there are small differences in temperature, even low short-circuit currents can cause a significant loss of function. This can largely be avoided by using the baffle seal T4. The T4 seal is easily assembled directly onto the longitudinal baffle.

No bolts are required to affix it. This means that there is no need to bore holes or do any of the usual bolting jobs during assembly.

The lamellae in the baffle seal Profile T4 are spot welded to a lamellae unit with the lamellae support and can be supplied in any length. For transport reasons they cannot exceed 6000 mm. We can supply fixed lengths down to the exact millimetre in accordance with your specifications, avoiding the difficult task of cutting the thin lamellae.



Part	1	2
Name	Lamellae support	Lamellae packet
Material no.	1.4571	1.4571
Material thickness	0,50 mm	0,2 mm
Supply length	1000 mm	6000 mm*

\* Longer lengths in one piece available by request. Lengths up to 8500 mm possible. Transport should be discussed when ordering.

#### Model A

In this model the lamellae supports have a corresponding recess.

The necessary slots for the transverse baffles should be ground in during installation. The slots should only be made as deep as is needed to take the transverse baffles.

#### Model B:

With large numbers of transverse baffles it is easier to fit the baffle seal uniformly. However it should also be secured, and the first lamellae support (which is the deepest) can be secured with a bolt or pin to the baffle, so that when the bundle is pulled, the baffle seal is also securely pulled out.

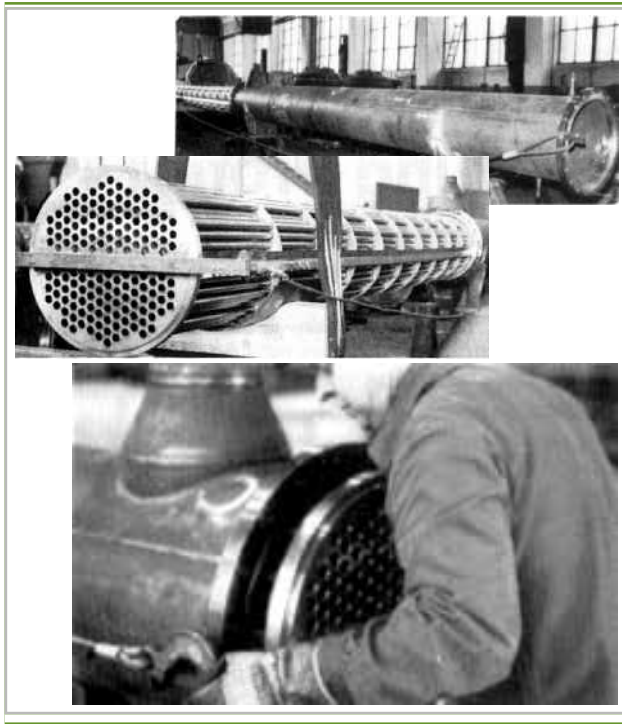
## Baffle seals T4

With model A, which has recesses for the lateral transverse baffles, this safeguard is not necessary.

Baffle seal Profile T4 is not completely lead-proof, especially with gaseous media. With these simple methods, however, a significantly better seal can be achieved than was previously possible. The full metal finish guarantees safe functioning in a wide range of temperatures.

For particularly high demands on the seal, PTFE sheets can be inserted into the last two lamellae. Baffle seal Profile T4 can be supplied in two lamellae widths.

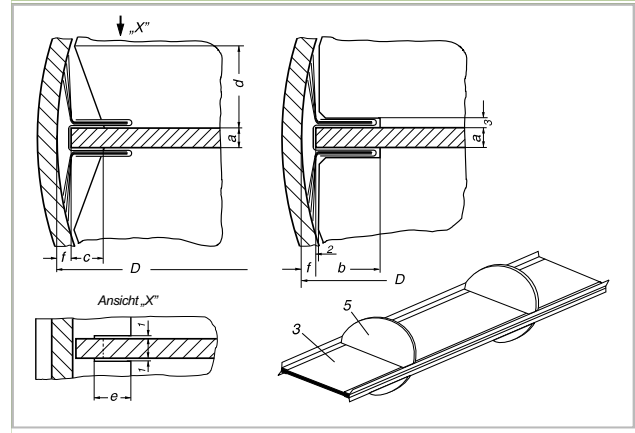
The lamellae width is 30 mm with lamellae support T4.30 and 20 mm with support T4.20. The lamellae supports are available for longitudinal baffles from 4 mm to 25 mm. The type which can be produced at which thickness can be taken from the following table.



Ordering example for a baffle seal Profile T4, material 1.4571, 30 mm side length, internal heat exchanger diameter  $D = 1000$  mm, radial gap to be sealed  $f = 4$  mm, baffle thickness  $a = 10$  mm, length = 2000 mm:

**Baffle seal T4.30.10/2000**

### Works standard 124



Legend	Longitudinal baffle thickness		
	a		
Side length			
Profile name	T4.	20.	30.
			XX

Measurements Profile	Size in mm	
	T4.20.XX	T4.30.XX
Longitudinal baffle thickness $a$ with currently available tools (other thicknesses available on request)	04 05 06 07 08 09 10 -- -- -- 16 17 --	-- 05 06 07 08 09 10 12 13 15 16 20 25
<b>b</b>	22	32
<b>c</b>	12	15
<b>d</b>	30	40
<b>e</b>	15	22

The radial gap  $f$  in [mm] between the baffle and shell should have roughly the following size:

Diameter $D$ in mm	T4.20	T4.30
200	6	-
300	5,5	-
400	5	5,5
500	4,5	5
600	4	4,5
800	3,5	4
1000	3,5	4
1200	-	4
1600	-	3,5
2000	-	3,5

## Kemcontrol system

High demands are placed upon reliability in process plants. In doing so, both the gasket materials as well as the flanges are exposed to the most varying of pressures, temperatures and media.

A defined surface pressure of the sealing surface must be ensured during assembly in order to achieve a sealing effect that corresponds to the requirements of the flange connection. At present, this is theoretically calculated for all flange connections using the necessary bolt force and is applied to the flange connection via the calculated screw tightening torque.

Due to the large number of influencing factors exerted into the flange connection, it is not possible to provide a reliable statement regarding the actual present surface pressure of the gasket.

Furthermore, the gaskets must meet the requirements placed upon environmentally-friendly systems (e.g. "TA-Luft" Certificate).

The KemControl system was developed within this context.

The KemControl System consists of a gasket and a respectively-configured laptop.

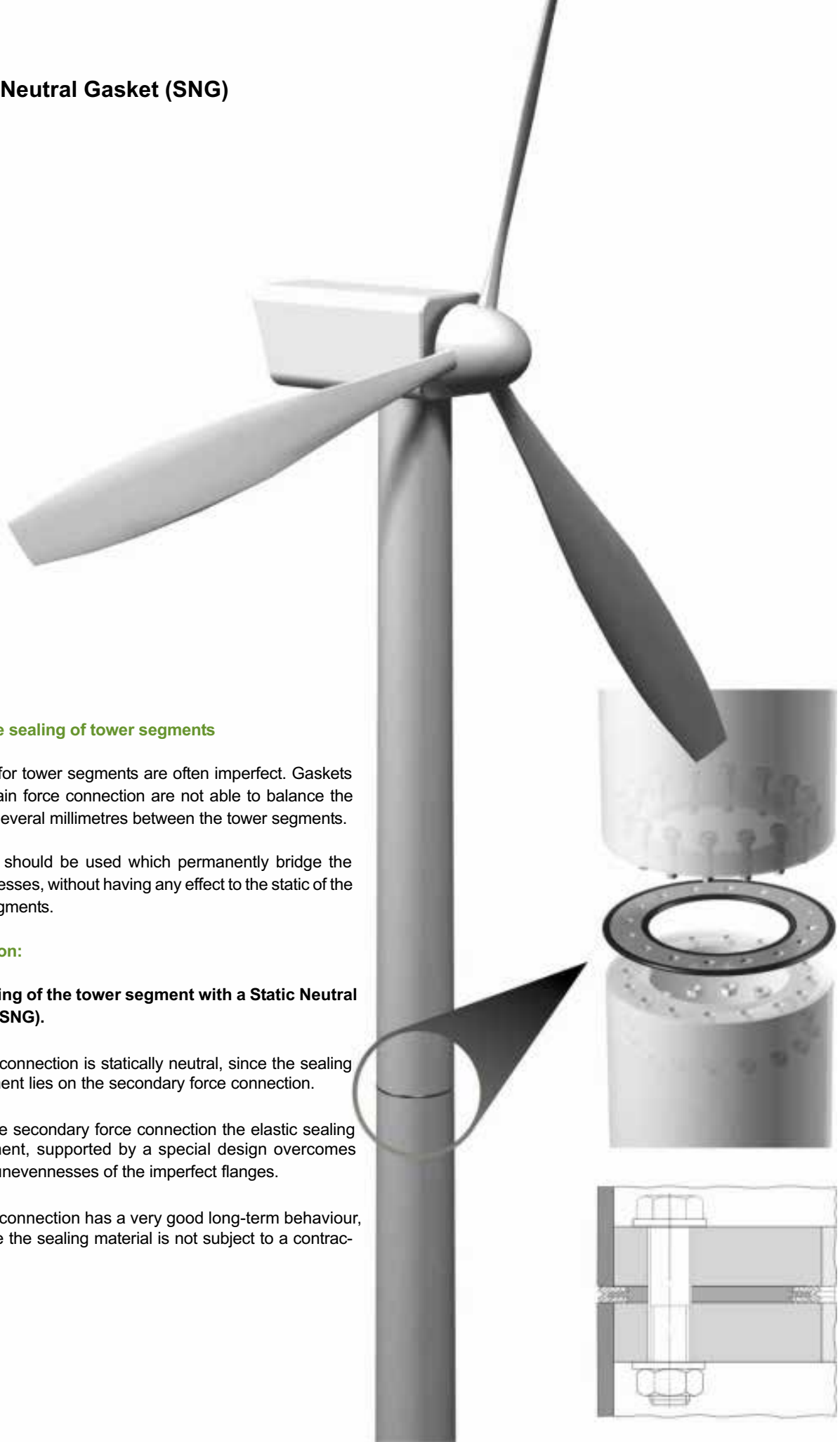
The KemControl system can be integrated into the most diverse types of gaskets such as all types of Kammprofile gaskets as well as RTJ or double cone gaskets for instance.

The KemControl system boasts measuring sensors that are integrated into the gasket system and are divided into several segments.

- The acting surface pressure in the existing segments can be read during installation as well as any time following installation of the gasket.
- Consequently, the fitter is able to immediately check whether the pre-defined surface pressure values have been applied and that tension was applied to the flange in a uniform manner.
- A drop below the minimum surface pressure, with the risk of blowout, can be counter-acted thanks to regular monitoring.
- The design of the system is extremely flexible.
- The range of application of up to 400°C and 400 bar enables a broad application.
- The system can be re-used multiple times.
- The software permits various evaluations and can be individually customized.



# Static Neutral Gasket (SNG)



08

## The save sealing of tower segments

Flanges for tower segments are often imperfect. Gaskets in the main force connection are not able to balance the gaps of several millimetres between the tower segments.

Systems should be used which permanently bridge the unevennesses, without having any effect to the static of the tower segments.

### Innovation:

#### Tensioning of the tower segment with a Static Neutral Gasket (SNG).

- The connection is statically neutral, since the sealing element lies on the secondary force connection.
- In the secondary force connection the elastic sealing element, supported by a special design overcomes the unevennesses of the imperfect flanges.
- The connection has a very good long-term behaviour, since the sealing material is not subject to a contraction.