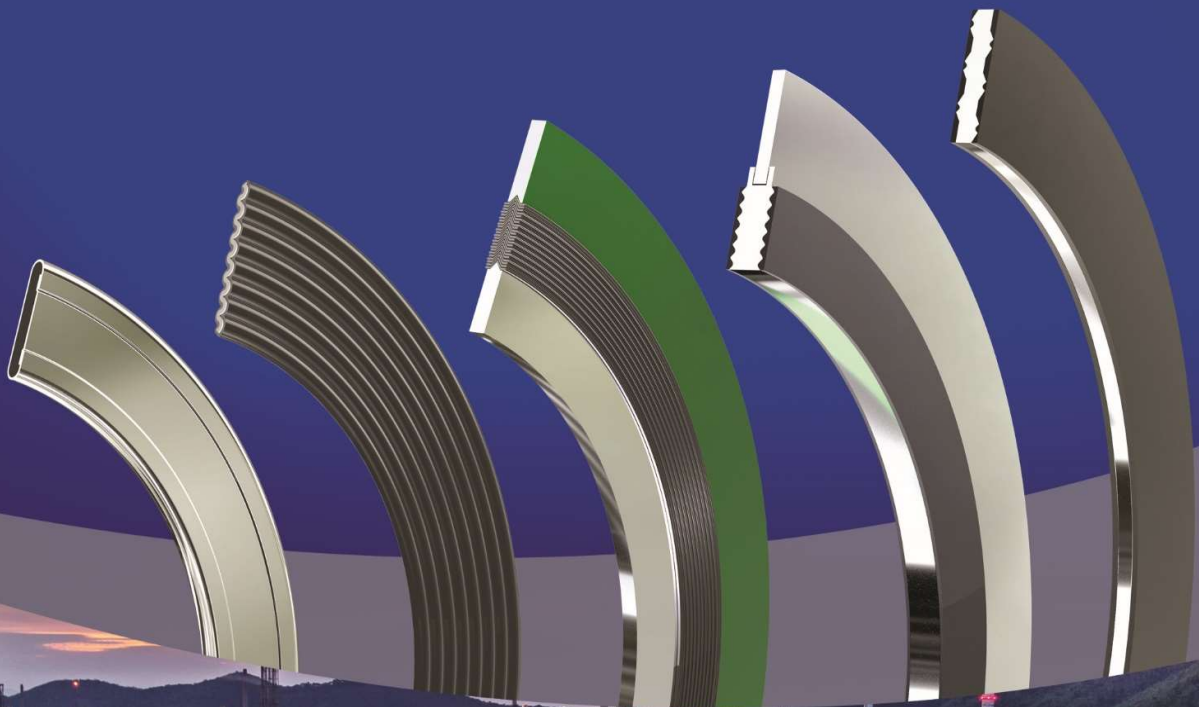




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PRODUCT & TECHNICAL GUIDE

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**Kammprofile Torque Charts
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THE EXTRA RECOVERY GASKET



HTG – High Temperature Gaskets



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**Gasket Styles - Hydrofluoric Acid (HF)
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**Standard Heat Exchanger Gasket
Shapes**



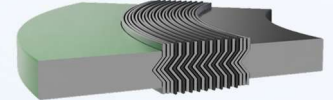
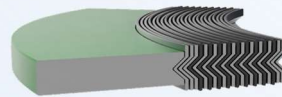
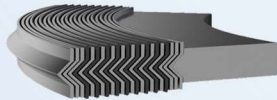
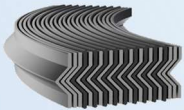
Gasket Operating Stress

Spiral-Wound Gasket Product Range

Description:

3S SWG gaskets are wound with a “V” section profiled metal strip along with a soft filler material. The “V” section metal strip ensures the gasket has excellent compressibility and recovery under various applications. The soft filler material ensures sealability against the flange face, offering optimum performance. 3S SWG can be produced in a wide range of sizes, thickness and material combinations to suit the application.

Styles:



Style S - SI- is a spiral wound gasket that is fabricated by utilizing the metal wire along with soft non-metallic filler.

Suitable for tongue and groove, male and female, or grooved to flat face flange assemblies, also available with pass bars

Style GS- are comprised of the metal wire with designated filler incorporating the use of a solid metal outer ring. The outer guide ring promotes the correct centering of the gasket in a standard flange, offers radial support for the outer portion of the spiral wound, and acts as a compression gauge to prevent over compression of the spiral wound.

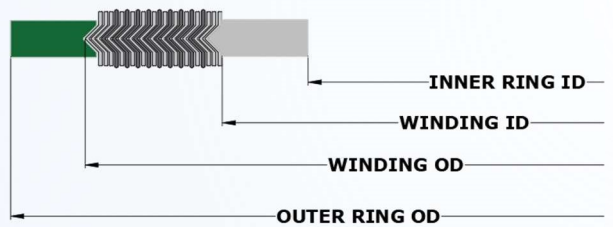
Style GSI- are the same as our Style GS with a addition of an inner ring. Like the outer ring, the inner ring serves multiple functions including: radial support for the inner portion of the spiral wound, prevents inward buckling and helps to provide uniform gasket stress



All 3S SWG have full material traceability through the MTR # etched on the guide ring and inner ring, the MTR can be retrieved through the 3S website.



GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 (INCHES)



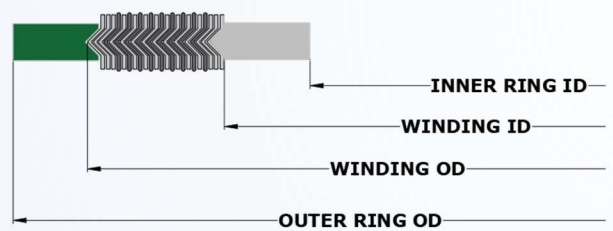
150 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/4"	-	0.50	0.88	1.75
1/2"	0.56	0.75	1.25	1.88
3/4"	0.81	1.00	1.56	2.25
1"	1.06	1.25	1.88	2.63
1-1/4"	1.50	1.88	2.38	3.00
1-1/2"	1.75	2.13	2.75	3.38
2"	2.19	2.75	3.38	4.13
2-1/2"	2.62	3.25	3.88	4.88
3"	3.19	4.00	4.75	5.38
3-1/2"	3.98	4.50	5.25	6.38
4"	4.19	5.00	5.88	6.88
5"	5.19	6.13	7.00	7.75
6"	6.19	7.19	8.25	8.75
8"	8.50	9.19	10.38	11.00
10"	10.56	11.31	12.50	13.38
12"	12.50	13.38	14.75	16.13
14"	13.75	14.63	16.00	17.75
16"	15.75	16.63	18.25	20.25
18"	17.69	18.69	20.75	21.63
20"	19.69	20.69	22.75	23.88
24"	23.75	24.75	27.00	28.25

300 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/4"	-	0.50	0.88	1.75
1/2"	0.56	0.75	1.25	2.13
3/4"	0.81	1.00	1.56	2.63
1"	1.06	1.25	1.88	2.88
1-1/4"	1.50	1.88	2.38	3.25
1-1/2"	1.75	2.13	2.75	3.75
2"	2.19	2.75	3.38	4.38
2-1/2"	2.62	3.25	3.88	5.13
3"	3.19	4.00	4.75	5.88
3-1/2"	3.98	4.50	5.25	6.50
4"	4.19	5.00	5.88	7.13
5"	5.19	6.13	7.00	8.50
6"	6.19	7.19	8.25	9.88
8"	8.50	9.19	10.38	12.13
10"	10.56	11.31	12.50	14.25
12"	12.50	13.38	14.75	16.63
14"	13.75	14.63	16.00	19.13
16"	15.75	16.63	18.25	21.25
18"	17.69	18.69	20.75	23.50
20"	19.69	20.69	22.75	25.75
24"	23.75	24.75	27.00	30.50

400 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/4"	-	0.50	0.88	1.75
1/2"	0.56	0.75	1.25	2.13
3/4"	0.81	1.00	1.56	2.63
1"	1.06	1.25	1.88	2.88
1-1/4"	1.50	1.88	2.38	3.25
1-1/2"	1.75	2.13	2.75	3.75
2"	2.19	2.75	3.38	4.38
2-1/2"	2.62	3.25	3.88	5.13
3"	3.19	4.00	4.75	5.88
3-1/2"	3.60	4.13	5.25	6.38
4"	4.04	4.75	5.88	7.00
5"	5.05	5.81	7.00	8.38
6"	6.10	6.88	8.25	9.75
8"	8.10	8.88	10.38	12.00
10"	10.05	10.81	12.50	14.13
12"	12.10	12.88	14.75	16.50
14"	13.50	14.25	16.00	19.00
16"	15.35	16.25	18.25	21.13
18"	17.25	18.50	20.75	23.38
20"	19.25	20.50	22.75	25.50
24"	23.25	24.75	27.00	30.25

600 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/4"	-	0.50	0.88	1.75
1/2"	0.56	0.75	1.25	2.13
3/4"	0.81	1.00	1.56	2.63
1"	1.06	1.25	1.88	2.88
1-1/4"	1.50	1.88	2.38	3.25
1-1/2"	1.75	2.13	2.75	3.75
2"	2.19	2.75	3.38	4.38
2-1/2"	2.62	3.25	3.88	5.13
3"	3.19	4.00	4.75	5.88
3-1/2"	3.60	4.13	5.25	6.38
4"	4.04	4.75	5.88	7.63
5"	5.05	5.81	7.00	9.50
6"	6.10	6.88	8.25	10.50
8"	8.10	8.88	10.38	12.63
10"	10.05	10.81	12.50	15.75
12"	12.10	12.88	14.75	18.00
14"	13.50	14.25	16.00	19.38
16"	15.35	16.25	18.25	22.25
18"	17.25	18.50	20.75	24.13
20"	19.25	20.50	22.75	26.88
24"	23.25	24.75	27.00	31.13

GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 (INCHES)



900 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/2"	0.56	0.75	1.25	2.50
3/4"	0.81	1.00	1.56	2.75
1"	1.06	1.25	1.88	3.13
1-1/4"	1.31	1.56	2.38	3.50
1-1/2"	1.63	1.88	2.75	3.88
2"	2.06	2.31	3.38	5.63
2-1/2"	2.50	2.75	3.88	6.50
3"	3.10	3.75	4.75	6.63
3-1/2"	3.50	4.13	5.25	7.50
4"	4.04	4.75	5.88	8.13
5"	5.05	5.81	7.00	9.75
6"	6.10	6.88	8.25	11.38
8"	7.75	8.75	10.13	14.13
10"	9.69	10.88	12.25	17.13
12"	11.50	12.75	14.50	19.63
14"	12.63	14.00	15.75	20.50
16"	14.75	16.25	18.00	22.63
18"	16.75	18.25	20.50	25.13
20"	19.00	20.50	22.50	27.50
24"	23.25	24.75	26.75	33.00

1500 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/2"	0.56	0.75	1.25	2.50
3/4"	0.81	1.00	1.56	2.75
1"	1.06	1.25	1.88	3.13
1-1/4"	1.31	1.56	2.38	3.50
1-1/2"	1.63	1.88	2.75	3.88
2"	2.06	2.31	3.38	5.63
2-1/2"	2.50	2.75	3.88	6.50
3"	3.10	3.63	4.75	6.88
3-1/2"	3.50	4.13	5.25	7.38
4"	3.85	4.63	5.88	8.25
5"	4.90	5.63	7.00	10.00
6"	5.80	6.75	8.25	11.13
8"	7.75	8.50	10.13	13.88
10"	9.69	10.50	12.25	17.13
12"	11.50	12.75	14.50	20.50
14"	12.63	14.25	15.75	22.75
16"	14.50	16.00	18.00	25.25
18"	16.75	18.25	20.50	27.75
20"	18.75	20.25	22.50	29.75
24"	22.75	24.25	26.75	35.50

2500 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
1/2"	0.56	0.75	1.25	2.75
3/4"	0.81	1.00	1.56	3.00
1"	1.06	1.25	1.88	3.38
1-1/4"	1.31	1.56	2.38	4.13
1-1/2"	1.63	1.88	2.75	4.63
2"	2.06	2.31	3.38	5.75
2-1/2"	2.50	2.75	3.88	6.63
3"	3.10	3.63	4.75	7.75
4"	3.85	4.63	5.88	9.25
5"	4.90	5.63	7.00	11.00
6"	5.80	6.75	8.25	12.50
8"	7.75	8.50	10.13	15.25
10"	9.69	10.63	12.25	18.75
12"	11.50	12.50	14.50	21.63

Tolerances:

Thickness = $\pm 0.005''$: Please note the nominal thickness of 0.175" is measured across the metal winding, NOT over the soft filler material.

Inner & Outer Rings = 0.117" to 0.131"

Winding OD:

NPS 1/2" through NPS 8" = $\pm 0.03''$

NPS 10" through NPS 24" = $+0.06'' / -0.03''$

Winding ID:

NPS 1/2" through NPS 8" = $\pm 0.016''$

NPS 10" through NPS 24" = $\pm 0.03''$

Outer Ring:

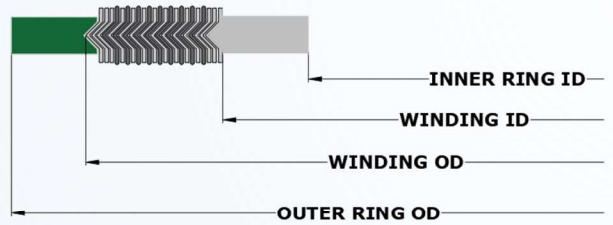
All NPS = $\pm 0.03''$

Inner Ring ID:

NPS 1/2" through NPS 3" = $\pm 0.03''$

NPS 3 1/2" through NPS 24" = $\pm 0.06''$

GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series A (INCHES)



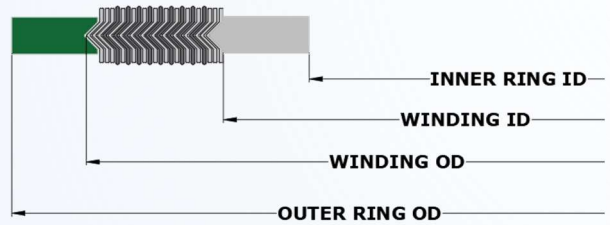
150 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
22"	-	22.75	24.00	26.00
26"	25.75	26.50	27.75	30.50
28"	27.75	28.50	29.75	32.75
30"	29.75	30.50	31.75	34.75
32"	31.75	32.50	33.88	37.00
34"	33.75	34.50	35.88	39.00
36"	35.75	36.50	38.13	41.25
38"	37.75	38.50	40.13	43.75
40"	39.75	40.50	42.13	45.75
42"	41.75	42.50	44.25	48.00
44"	43.75	44.50	46.38	50.25
46"	45.75	46.50	48.38	52.25
48"	47.75	48.50	50.38	54.50
50"	49.75	50.50	52.50	56.50
52"	51.75	52.50	54.50	58.75
54"	53.50	54.50	56.50	61.00
56"	55.50	56.50	58.50	63.25
58"	57.50	58.50	60.50	65.50
60"	59.50	60.50	62.50	67.50

300 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
22"	-	22.75	24.75	27.75
26"	25.75	27.00	29.00	32.88
28"	27.75	29.00	31.00	35.38
30"	29.75	31.25	33.25	37.50
32"	31.75	33.50	35.50	39.63
34"	33.75	35.50	37.50	41.63
36"	35.75	37.63	39.63	44.00
38"	37.50	38.50	40.00	41.50
40"	39.50	40.25	42.13	43.88
42"	41.50	42.25	44.13	45.88
44"	43.50	44.50	46.50	48.00
46"	45.38	46.38	48.38	50.13
48"	47.63	48.63	50.63	52.13
50"	49.00	51.00	53.00	54.25
52"	52.00	53.00	55.00	56.25
54"	53.25	55.25	57.25	58.75
56"	55.25	57.25	59.25	60.75
58"	57.00	59.50	61.50	62.75
60"	60.00	61.50	63.50	64.75

400 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
22"	-	22.75	24.75	27.63
26"	26.00	27.00	29.00	32.75
28"	28.00	29.00	31.00	35.13
30"	29.75	31.25	33.25	37.25
32"	32.00	33.50	35.50	39.50
34"	34.00	35.50	37.50	41.50
36"	36.13	37.63	39.63	44.00
38"	37.50	38.25	40.25	42.25
40"	39.38	40.38	42.38	44.38
42"	41.38	42.38	44.38	46.38
44"	43.50	44.50	46.50	48.50
46"	46.00	47.00	49.00	50.75
48"	47.50	49.00	51.00	53.00
50"	49.50	51.00	53.00	55.25
52"	51.50	53.00	55.00	57.25
54"	53.25	55.25	57.25	59.75
56"	55.25	57.25	59.25	61.75
58"	57.25	59.25	61.25	63.75
60"	59.75	61.75	63.75	66.25

600 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
22"	-	22.75	24.75	28.88
26"	25.50	27.00	29.00	34.13
28"	27.50	29.00	31.00	36.00
30"	29.75	31.25	33.25	38.25
32"	32.00	33.50	35.50	40.25
34"	34.00	35.50	37.50	42.25
36"	36.13	37.63	39.63	44.50
38"	37.50	39.00	41.00	43.50
40"	39.75	41.25	43.25	45.50
42"	42.00	43.50	45.50	48.00
44"	43.75	45.75	47.75	50.00
46"	45.75	47.75	49.75	52.25
48"	48.00	50.00	52.00	54.75
50"	50.00	52.00	54.00	57.00
52"	52.00	54.00	56.00	59.00
54"	54.25	56.25	58.25	61.25
56"	56.25	58.25	60.25	63.50
58"	58.00	60.50	62.50	65.50
60"	60.25	62.75	64.75	68.25

GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series A (INCHES)



900 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
22"	-	24.25	27.00	33.00
26"	26.00	27.00	29.00	34.75
28"	28.00	29.00	31.00	37.25
30"	30.25	31.25	33.25	39.75
32"	32.00	33.50	35.50	42.25
34"	34.00	35.50	37.50	44.75
36"	36.25	37.75	39.75	47.25
38"	39.75	40.75	42.75	47.25
40"	41.75	43.25	45.25	49.25
42"	43.75	45.25	47.25	51.25
44"	45.50	47.50	49.50	53.88
46"	48.00	50.00	52.00	56.50
48"	50.00	52.00	54.00	58.50

Tolerances:

Thickness = $\pm 0.005''$: Please note the nominal thickness of 0.175" is measured across the metal winding, NOT over the soft filler material.

Inner & Outer Rings = 0.117" to 0.131"

Winding OD:

NPS 26" through NPS 60" = $\pm 0.06''$

Winding ID:

NPS 26" through NPS 34" = $\pm 0.03''$

NPS 36" through NPS 60" = $\pm 0.06''$

Outer Ring:

All NPS = $\pm 0.03''$

Inner Ring ID:

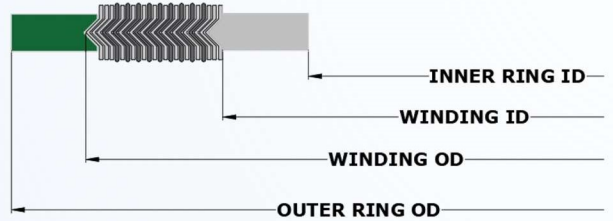
NPS 26" through NPS 60" = $\pm 0.12''$

GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series B (INCHES)

150 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
26"	25.75	26.50	27.50	28.56
28"	27.75	28.50	29.50	30.56
30"	29.75	30.50	31.50	32.56
32"	31.75	32.50	33.50	34.69
34"	33.75	34.50	35.75	36.81
36"	35.75	36.50	37.75	38.88
38"	37.75	38.38	39.75	41.13
40"	39.75	40.25	41.88	43.13
42"	41.75	42.50	43.88	45.13
44"	43.75	44.25	45.88	47.13
46"	45.75	46.50	48.19	49.44
48"	47.75	48.50	50.00	51.44
50"	49.75	50.50	52.19	53.44
52"	51.75	52.50	54.19	55.44
54"	53.75	54.50	56.00	57.63
56"	56.00	56.88	58.19	59.63
58"	58.19	59.06	60.19	62.19
60"	60.44	61.31	62.44	64.19

300 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
26"	25.75	26.50	28.00	30.38
28"	27.75	28.50	30.00	32.50
30"	29.75	30.50	32.00	34.88
32"	31.75	32.50	34.00	37.00
34"	33.75	34.50	36.00	39.13
36"	35.75	36.50	38.00	41.25
38"	38.25	39.75	41.25	43.25
40"	40.25	41.75	43.25	45.25
42"	42.75	43.75	45.25	47.25
44"	44.25	45.75	47.25	49.25
46"	46.38	47.88	49.38	51.88
48"	48.50	49.75	51.63	53.88
50"	49.88	51.88	53.38	55.88
52"	51.88	53.88	55.38	57.88
54"	53.75	55.25	57.25	60.25
56"	56.25	58.25	60.00	62.75
58"	58.44	60.44	61.94	65.19
60"	61.31	62.56	64.19	67.19

GSI – GS DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series B (INCHES)



400 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
26"	25.75	26.25	27.50	29.38
28"	27.63	28.13	29.50	31.50
30"	29.63	30.13	31.75	33.75
32"	31.50	32.00	33.88	35.88
34"	33.50	34.13	35.88	37.88
36"	35.38	36.13	38.00	40.25
38"	37.50	38.25	40.25	42.25
40"	39.38	40.38	42.38	44.38
42"	41.38	42.38	44.38	46.38
44"	43.50	44.50	46.50	48.50
46"	46.00	47.00	49.00	50.75
48"	47.50	49.00	51.00	53.00
50"	49.50	51.00	53.00	55.25
52"	51.50	53.00	55.00	57.25
54"	53.25	55.25	57.25	59.75
56"	55.25	57.25	59.25	61.75
58"	57.25	59.25	61.25	63.75
60"	59.75	61.75	63.75	66.25

600 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
26"	25.38	26.13	28.13	30.13
28"	27.00	27.75	29.75	32.25
30"	29.63	30.63	32.63	34.63
32"	31.25	32.75	34.75	36.75
34"	33.50	35.00	37.00	39.25
36"	35.50	37.00	39.00	41.25
38"	37.50	39.00	41.00	43.50
40"	39.75	41.25	43.25	45.50
42"	42.00	43.50	45.50	48.00
44"	43.75	45.75	47.75	50.00
46"	45.75	47.75	49.75	52.25
48"	48.00	50.00	52.00	54.75
50"	50.00	52.00	54.00	57.00
52"	52.00	54.00	56.00	59.00
54"	54.25	56.25	58.25	61.25
56"	56.25	58.25	60.25	63.50
58"	58.00	60.50	62.50	65.50
60"	60.25	62.75	64.75	68.25

900 lb				
SIZE	INNER RING	WINDING		OUTER RING
NPS	ID	ID	OD	OD
26"	26.25	27.25	29.50	33.00
28"	28.25	29.25	31.50	35.50
30"	30.75	31.75	33.75	37.75
32"	33.00	34.00	36.00	40.00
34"	35.25	36.25	38.25	42.25
36"	36.25	37.25	39.25	44.25
38"	39.75	40.75	42.75	47.25
40"	41.75	43.25	45.25	49.25
42"	43.75	45.25	47.25	51.25
44"	45.50	47.50	49.50	53.88
46"	48.00	50.00	52.00	56.50
48"	50.00	52.00	54.00	58.50

Tolerances:

Thickness = ± 0.005": Please note the nominal thickness of 0.175" is measured across the metal winding, NOT over the soft filler material.

Inner & Outer Rings = 0.117" to 0.131"

Winding OD:

NPS 26" through NPS 60" = ±0.06"

Winding ID:

NPS 26" through NPS 34" = ±0.03"

NPS 36" through NPS 60" = ±0.06"

Outer Ring:

All NPS = ±0.03"

Inner Ring ID:

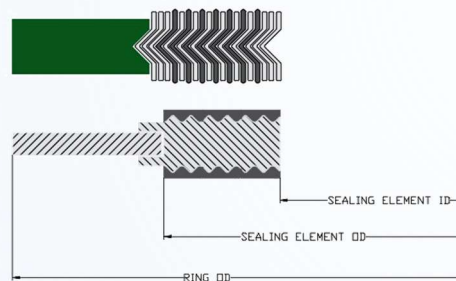
NPS 26" through NPS 60" = ±0.12"

GS – KP3 – RJ

RAISED FACE TO RTJ FLANGES

(INCHES)

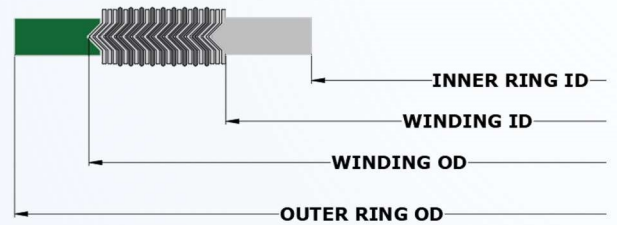
Note: 3S always recommends using a KP-3 on this style of gasket, style GS may over compress especially on higher class flanges.
For GSI style gaskets please contact 3S technical team for inner ring ID dimensions, pipe schedule will have to be known.



NPS	150 lb			300 lb			400 lb		
	SEALING ELEMENT		RING	SEALING ELEMENT		RING	SEALING ELEMENT		RING
	ID	OD	OD	ID	OD	OD	ID	OD	OD
½"				0.56	0.94	2.13	0.56	0.94	2.13
¾"				0.81	1.25	2.63	0.81	1.25	2.63
1"	1.13	1.63	2.63	1.06	1.63	2.88	1.06	1.63	2.88
1 ¼"	1.38	1.88	3.00	1.31	2.00	3.25	1.31	2.00	3.25
1 ½"	1.63	2.25	3.38	1.56	2.38	3.75	1.56	2.38	3.75
2"	2.13	2.88	4.13	2.13	2.75	4.38	2.13	2.75	4.38
2 ½"	2.75	3.31	4.88	2.75	3.31	5.13	2.75	3.31	5.13
3"	3.31	3.94	5.38	3.31	3.94	5.88	3.31	3.94	5.88
4"	4.31	5.19	6.88	4.31	5.19	7.13	4.31	5.19	7.00
5"	5.31	6.19	7.75	5.31	6.44	8.50	5.31	6.44	8.38
6"	6.31	7.19	8.75	6.44	7.63	9.88	6.44	7.63	9.75
8"	8.25	9.19	11.00	8.25	9.94	12.13	8.25	9.94	12.00
10"	10.31	11.44	13.38	10.31	12.00	14.25	10.31	12.00	14.13
12"	12.19	13.56	16.13	12.88	14.25	16.63	12.88	14.25	16.50
14"	13.44	14.94	17.75	14.25	15.75	19.13	14.25	15.75	19.00
16"	15.31	16.94	20.25	16.25	17.75	21.25	16.25	17.75	21.13
18"	17.25	19.00	21.63	18.25	20.25	23.50	18.25	20.25	23.38
20"	19.13	21.13	23.88	20.25	22.19	25.75	20.25	22.19	25.50
24"	23.00	25.25	28.25	24.25	26.31	30.50	24.25	26.31	30.25

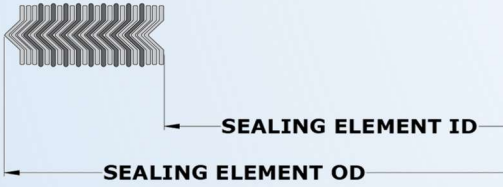
NPS	600 lb			900 lb			1500 lb		
	SEALING ELEMENT		RING	SEALING ELEMENT		RING	SEALING ELEMENT		RING
	ID	OD	OD	ID	OD	OD	ID	OD	OD
½"	0.56	0.94	2.13	0.56	1.06	2.5	0.56	1.06	2.5
¾"	0.81	1.25	2.63	0.81	1.31	2.75	0.81	1.31	2.75
1"	1.06	1.63	2.88	1.06	1.63	3.13	1.06	1.63	3.13
1 ¼"	1.31	2.00	3.25	1.31	2.00	3.50	1.31	2.00	3.50
1 ½"	1.56	2.38	3.75	1.56	2.38	3.88	1.56	2.38	3.88
2"	2.13	2.75	4.38	2.25	3.25	5.63	2.25	3.25	5.63
2 ½"	2.75	3.31	5.13	2.56	3.63	6.50	2.56	3.63	6.50
3"	3.31	3.94	5.88	3.19	4.19	6.63	3.19	4.69	6.88
4"	4.31	5.19	7.63	4.06	5.19	8.13	4.06	5.69	8.25
5"	5.31	6.44	9.50	5.31	6.44	9.75	5.06	6.94	10.00
6"	6.44	7.63	10.50	6.31	7.63	11.38	6.00	7.56	11.13
8"	8.25	9.94	12.63	8.25	9.94	14.13	7.88	9.75	13.88
10"	10.31	12.00	15.75	10.31	12.00	17.13	9.81	11.88	17.13
12"	12.88	14.25	18.00	12.88	14.25	19.63	11.94	13.94	20.50
14"	14.25	15.75	19.38	13.81	15.56	20.50	13.44	15.19	22.75
16"	16.25	17.75	22.25	15.56	17.56	22.63	15.00	17.00	25.25
18"	18.25	20.25	24.13	17.69	19.94	25.13	17.25	19.50	27.75
20"	20.25	22.19	26.88	19.69	21.94	27.50	19.19	21.44	29.75
24"	24.25	26.31	31.13	23.19	25.94	33.00	23.00	25.50	35.50

GSI – GS DIMENSIONS IN ACCORDANCE WITH EN1514-2 (INCHES)



NPS	INNER RING ID	WINDING ID	WINDING OD		OUTER RING OD						
			PN10 - PN40	PN63 - PN250	PN10	PN16	PN25	PN40	PN63	PN100	PN160
10	0.71	0.94	1.34	1.34	1.81			2.20			
15	0.91	1.14	1.54	1.54	2.01			2.40			
20	1.10	1.34	1.81		2.40			-			
25	1.38	1.61	2.09	2.09	2.80			3.23			
32	1.69	1.93	2.40		3.23			-			
40	1.97	2.20	2.68	2.68	3.62			4.06			
50	2.40	2.76	3.39	3.39	4.21			4.45	4.69		
65	3.03	3.39	4.02	4.17	5.00			5.39	5.63		
80	3.54	3.90	4.53	4.69	5.59			5.83	6.06		
100	4.53	5.00	5.63	5.79	6.38		6.61		6.85	7.09	
125	5.51	5.98	6.77	6.93	7.56		7.64		8.27	8.54	
150	6.57	7.05	7.83	7.99	8.58		8.82		9.72	10.12	
200	8.50	8.98	9.76	9.92	10.75		11.18	11.42	12.17	12.76	
250	10.51	10.98	11.93	12.09	12.87	12.95	13.39	13.86	14.33	15.39	15.28
300	12.52	12.99	13.94	14.09	14.84	15.12	15.75	16.42	16.69	18.03	18.03
350	14.17	14.80	15.75	15.91	17.20	17.48	17.99	18.66	19.13	20.16	-
400	16.14	16.61	17.72	17.95	19.21	19.49	20.24	21.50	21.38	22.52	-
500	20.08	20.55	21.65	21.89	23.35	24.29	24.57	24.72	25.87	27.72	-
600	24.02	24.49	25.59	25.83	27.36	28.90	28.78	29.41	30.08	32.01	-
700	27.95	28.43	29.76	30.00	31.89	31.65	32.80	33.54	34.61	37.40	-
800	31.89	32.68	34.02	34.25	36.10	35.87	37.09	38.35	38.90	-	-
900	35.83	36.61	37.95	38.19	40.04	39.80	41.02	42.68	43.62	-	-
1000	39.76	40.55	42.28	42.52	44.25	44.41	45.43	47.01	-	-	-

STYLE S - DIMENSIONS TO SUIT ASME B16.5 FLANGES (INCHES)



NPS	Style S - LMF				Style S - LTG		Style S - STG	
	Sealing Element - Class 150lb to 1500lb		Sealing Element - Class 2500lb		Sealing Element - Class 150lb to 2500lb		Sealing Element - Class 150lb to 2500lb	
	ID	OD	ID	OD	ID	OD	ID	OD
1/4	0.50	1.00	-	-	0.50	1.00	-	-
1/2	1.00	1.38	0.81	1.38	1.00	1.38	1.00	1.38
3/4	1.31	1.69	1.06	1.69	1.31	1.69	1.31	1.69
1	1.50	2.00	1.25	2.00	1.50	2.00	1.50	1.88
1 1/4	1.88	2.50	1.63	2.50	1.88	2.50	1.88	2.25
1 1/2	2.13	2.88	1.88	2.88	2.13	2.88	2.13	2.50
2	2.88	3.63	2.38	3.63	2.88	3.63	2.88	3.25
2 1/2	3.38	4.13	3.00	4.13	3.38	4.13	3.38	3.75
3	4.25	5.00	3.75	5.00	4.25	5.00	4.25	4.63
3 1/2	4.75	5.50	-	-	4.75	5.50	4.75	5.13
4	5.19	6.19	4.75	6.19	5.19	6.19	5.19	5.69
4 1/2	5.69	6.75	-	-	-	-	-	-
5	6.31	7.31	5.75	7.31	6.31	7.31	6.31	6.81
6	7.50	8.50	6.75	8.50	7.50	8.50	7.50	8.00
8	9.38	10.63	8.75	10.63	9.38	10.63	9.38	10.00
10	11.25	12.75	10.75	12.75	11.25	12.75	11.25	12.00
12	13.50	15.00	13.00	15.00	13.50	15.00	13.50	14.25
14	14.75	16.25	-	-	14.75	16.25	14.75	15.50
16	17.00	18.50	-	-	16.75	18.50	16.75	17.63
18	19.25	21.00	-	-	19.25	21.00	19.25	20.13
20	21.00	23.00	-	-	21.00	23.00	21.00	22.00
24	25.25	27.25	-	-	25.25	27.25	25.25	26.25

STYLE SI - DIMENSIONS TO SUIT ASME B16.5 FLANGES (INCHES)



NPS	Style SI - LMF				
	Inner Ring	Winding - Class 150 - 1500lb		Winding - Class 2500lb	
		ID	ID	OD	ID
1/2	0.56	1.00	1.38	0.81	1.38
3/4	0.81	1.31	1.69	1.06	1.69
1	1.06	1.50	2.00	1.25	2.00
1 1/4	1.38	1.88	2.50	1.63	2.50
1 1/2	1.63	2.13	2.88	1.88	2.88
2	2.06	2.88	3.63	2.38	3.63
2 1/2	2.50	3.38	4.13	3.00	4.13
3	3.06	4.25	5.00	3.75	5.00
3 1/2	3.56	4.75	5.50	-	-
4	4.06	5.19	6.19	4.75	6.19
4 1/2	4.56	5.69	6.75	-	-
5	5.06	6.31	7.31	5.75	7.31
6	6.06	7.50	8.50	6.75	8.50
8	8.00	9.38	10.63	8.75	10.63
10	10.00	11.25	12.75	10.75	12.75
12	11.94	13.50	15.00	13.00	15.00
14	13.50	14.75	16.25	-	-
16	15.50	16.75	18.50	-	-
18	17.50	19.25	21.00	-	-
20	19.50	21.00	23.00	-	-
24	23.50	25.25	27.25	-	-

LMF = Large Male and Female
 LTG = Large Tongue and Groove
 STG = Small Tongue and Groove

For any other gasket sizing requirements please contact our technical department technical@3sgaskets.com. We can assist in the design of non-standard gaskets to suit specially designed flanges, torque calculations and drawing references can be provided for these applications. Dimensions in all tables "Product & Technical Guide" are for reference only.

COLOR CODING – DESIGN PARAMETERS

Spiral Wound Operating Temperature with Color Coding

Alloy Materials					
Operation Temperature					
Gasket Material	Minimum °F (°C)		Maximum °F (°C)		Gasket Color Code
304 Stainless Steel	-320	(-195)	1400	(760)	Yellow
316L Stainless Steel	-150	(-100)	1400	(760)	Green
317L Stainless Steel	-150	(-100)	1400	(760)	Maroon
321L Stainless Steel	-320	(-195)	1400	(760)	Turquoise
347 Stainless Steel	-320	(-195)	1400	(760)	Blue
Carbon Steel	-40	(-40)	900	(482)	Silver
Alloy 20	-300	(-185)	1000	(540)	Black
Hastelloy B2	-300	(-185)	2000	(1090)	Brown
Hastelloy C276	-300	(-185)	2000	(1090)	Beige
Monel 400	-200	(-130)	1500	(820)	Orange
Nickel 200	-320	(-195)	1400	(760)	Red
Titanium	-320	(-195)	2000	(1090)	Purple
Incoloy 800	-150	(-100)	1600	(870)	White
Incoloy 825	-150	(-100)	1600	(870)	White
Inconel 600	-150	(-100)	2000	(1090)	Gold
Inconel 625	-150	(-100)	2000	(1090)	Gold
Inconel X750	-150	(-100)	2000	(1090)	No Color

Filler Materials					
Operation Temperature					
Gasket Material	Minimum °F (°C)		Maximum °F (°C)		Gasket Color Code
Flexible Graphite	-350	(-212)	975	(524)	Gray
PTFE	-400	(-240)	500	(260)	White
Ceramic	-350	(-212)	2000	(1090)	Light Green
Phlogopite (mica)	-350	(-212)	1500	(820)	Light Blue

For reference use only

Design Parameters				Standard Tolerances		
Gasket Thickness	Maximum ID	Maximum Cross Sectional Width	Recommended Compressed Thickness	Gasket Diameter	Inside Diameter	Outside Diameter
0.125"	Up to 14"	½"	0.090" – 0.100"	Up to 10"	± 1/64"	± 1/32"
0.175"	Up to 60"	1"	0.125" – 0.135"	10" to 24"	± 1/32"	± 1/16"
0.250"	Up to 90"	1"	0.180" – 0.200"	24" to 60"	± 3/64"	± 1/16"
0.285"	Up to 180"	1"	0.200" – 0.220"	60" and Above	± 1/16"	± 1/16"

Thickness Tolerance ±0.005"

TORQUE CHART – ASME B16.20 SWG GASKETS

ASME B16.5 FLANGES



CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	28	36	43
3/4"	37	47	56
1"	37	47	56
1-1/4"	37	47	56
1-1/2"	37	47	56
2"	75	94	113
2-1/2"	75	94	113
3"	110	116	128
3-1/2"	75	94	113
4"	86	107	129
5"	135	168	202
6"	154	193	231
8"	210	221	232
10"	262	327	393
12"	311	327	344
14"	393	492	590
16"	393	492	590
18"	661	696	835
20"	557	696	835
24"	794	993	1191

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	25	31	37
3/4"	50	63	75
1"	57	72	86
1-1/4"	57	72	86
1-1/2"	103	128	154
2"	57	72	86
2-1/2"	103	128	154
3"	103	128	154
3-1/2"	103	128	154
4"	135	168	202
5"	154	193	231
6"	154	193	231
8"	249	312	374
10"	328	410	492
12"	464	580	696
14"	464	580	696
16"	662	827	993
18"	662	827	993
20"	662	827	993
24"	1155	1444	1732

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	28	36	43
3/4"	50	63	75
1"	64	80	97
1-1/4"	64	80	97
1-1/2"	116	144	173
2"	64	80	97
2-1/2"	90	112	135
3"	116	144	173
3-1/2"	218	273	327
4"	218	273	327
5"	218	273	327
6"	218	273	327
8"	328	410	492
10"	464	580	696
12"	662	827	993
14"	662	827	993
16"	862	1078	1293
18"	862	1078	1293
20"	1155	1444	1732
24"	2061	2576	3091

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	28	36	43
3/4"	50	63	75
1"	64	80	97
1-1/4"	64	80	97
1-1/2"	116	144	173
2"	64	80	97
2-1/2"	90	112	135
3"	116	144	173
3-1/2"	187	234	280
4"	187	234	280
5"	281	351	422
6"	281	351	422
8"	398	497	596
10"	567	709	851
12"	567	709	851
14"	739	924	1109
16"	990	1237	1485
18"	1392	1740	2088
20"	1392	1740	2088
24"	2202	2753	3303

CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	51	64	77
3/4"	51	64	77
1"	83	104	125
1-1/4"	145	182	218
1-1/2"	219	273	328
2"	145	182	218
2-1/2"	219	273	328
3"	145	182	218
4"	309	387	464
5"	441	552	662
6"	309	387	464
8"	575	719	862
10"	575	719	862
12"	575	719	862
14"	770	962	1155
16"	1083	1354	1624
18"	1713	2141	2569
20"	2104	2630	3156
24"	4255	5319	6383

CLASS 1500 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	51	64	77
3/4"	51	64	77
1"	83	104	125
1-1/4"	125	156	187
1-1/2"	187	234	281
2"	125	156	187
2-1/2"	187	234	281
3"	265	331	398
4"	378	473	567
5"	660	825	990
6"	493	616	739
8"	928	1160	1392
10"	1468	1835	2202
12"	1803	2254	2705
14"	1745	2182	2618
16"	2432	3039	3647
18"	3277	4097	4916
20"	4300	5375	6450
24"	6942	8677	10413

CLASS 2500 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	51	64	77
3/4"	64	80	96
1"	104	130	156
1-1/4"	187	234	281
1-1/2"	265	331	398
2"	187	234	281
2-1/2"	265	331	398
3"	378	473	567
4"	660	825	990
5"	981	1227	1472
6"	1503	1879	2254
8"	1503	1879	2254
10"	2432	3039	3647
12"	4097	5121	6145

Gasket Style	SWG - GS - GSI
K Factor	0.15 to 0.17
Bolt Grade	B7 - B16

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.



TORQUE CHART – ASME B16.20 - ASME B16.47

SERIES A - SWG

Gasket Style	SWG - GS - GSI
K Factor	0.15 to 0.17
Bolt Grade	B7 -B16

CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	662	827	993
28"	662	827	993
30"	662	827	993
32"	1155	1444	1732
34"	1155	1444	1732
36"	1155	1444	1732
38"	1371	1444	1588
40"	1155	1444	1732
42"	1155	1444	1732
44"	1155	1444	1732
46"	1155	1444	1732
48"	1371	1444	1516
50"	2061	2576	3091
52"	2447	2576	2705
54"	2061	2576	3091
56"	2061	2576	3091
58"	2447	2576	3091
60"	2061	2576	3091

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1238	1547	1856
28"	1238	1547	1856
30"	1570	1963	2355
32"	1958	2447	2936
34"	1958	2447	2936
36"	2404	3006	3607
38"	880	1100	1320
40"	1238	1547	1856
42"	1624	2030	2437
44"	2355	2944	3533
46"	2936	3670	4404
48"	2936	3670	4404
50"	3156	3945	4734
52"	3156	3945	4734
54"	4581	5727	6872
56"	4581	5727	6872
58"	4581	5727	6872
60"	4581	5727	6872

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1570	1963	2355
28"	1958	2447	2936
30"	2404	3006	3607
32"	2404	3006	3607
34"	2404	3006	3607
36"	2404	3006	3607
38"	1570	1963	2355
40"	1958	2447	2936
42"	1958	2447	2936
44"	2404	3006	3607
46"	2404	3006	3607
48"	4581	5727	6872
50"	3490	4363	5236
52"	3490	4363	5236
54"	4863	6079	7295
56"	4863	6079	7295
58"	4863	6079	7295
60"	6555	8194	9832

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1713	2141	2569
28"	2104	2630	3156
30"	2104	2630	3156
32"	3054	3818	4581
34"	3054	3818	4581
36"	4255	5319	6383
38"	3054	3818	4581
40"	3054	3818	4581
42"	4255	5319	6383
44"	4255	5319	6383
46"	4255	5319	6383
48"	4916	6145	7374
50"	6450	8063	9676
52"	6450	8063	9676
54"	6450	8063	9676
56"	8273	10341	12410
58"	8273	10341	12410
60"	10413	13016	15619

CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	3277	4097	4916
28"	4300	5375	6450
30"	4300	5375	6450
32"	5515	6894	8273
34"	6942	8677	10413
36"	6942	8677	10413
38"	6942	8677	10413
40"	6942	8677	10413
42"	6942	8677	10413
44"	7829	9786	11743
46"	10490	13113	15735
48"	10490	13113	15735

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.

TORQUE CHART – ASME B16.20 - ASME B16.47 SERIES B - SWG



Gasket Style	SWG - GS - GSI
K Factor	0.15 to 0.17
Bolt Grade	B7 -B16

CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	135	168	202
28"	135	168	202
30"	135	168	202
32"	135	168	202
34"	218	273	327
36"	218	273	327
38"	328	410	492
40"	328	410	492
42"	328	410	492
44"	328	410	492
46"	464	580	696
48"	464	580	696
50"	464	580	696
52"	464	580	696
54"	464	580	696
56"	464	580	696
58"	662	827	993
60"	662	827	993

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	504	630	757
28"	504	630	757
30"	657	821	985
32"	880	1100	1320
34"	880	1100	1320
36"	1238	1547	1856
38"	1238	1547	1856
40"	1238	1547	1856
42"	1570	1963	2355
44"	1570	1963	2355
46"	1958	2447	2936
48"	1958	2447	2936
50"	1958	2447	2936
52"	1713	2141	2569
54"	1958	2447	2936
56"	3490	4363	5236
58"	3054	3818	4581
60"	3490	4363	5236

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	657	821	985
28"	880	1100	1320
30"	880	1100	1320
32"	1238	1547	1856
34"	1238	1547	1856
36"	1570	1963	2355
38"	1570	1963	2355
40"	1958	2447	2936
42"	1958	2447	2936
44"	2404	3006	3607
46"	2404	3006	3607
48"	4581	5727	6872
50"	3490	4363	5236
52"	3490	4363	5236
54"	4863	6079	7295
56"	4863	6079	7295
58"	4863	6079	7295
60"	6555	8194	9832

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1083	1354	1624
28"	1374	1717	2061
30"	1713	2141	2569
32"	2104	2630	3156
34"	3054	3818	4581
36"	3054	3818	4581
38"	3054	3818	4581
40"	2356	2945	3534
42"	3283	4103	4924
44"	3283	4103	4924
46"	3283	4103	4924
48"	4425	5531	6637
50"	5805	7257	8708
52"	5805	7257	8708
54"	5805	7257	8708
56"	7446	9307	11169
58"	7446	9307	11169
60"	9371	11714	14057

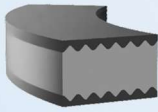
CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	3647	4559	5471
28"	3277	4097	4916
30"	4300	5375	6450
32"	4300	5375	6450
34"	5515	6894	8273
36"	4300	5375	6450
38"	6942	8677	10413
40"	6942	8677	10413
42"	6942	8677	10413
44"	7829	9786	11743
46"	10490	13113	15735
48"	10490	13113	15735

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.

Kammprofile Gasket Product Range

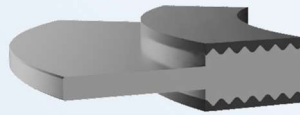
Description: 3S - Kammprofile gaskets are manufactured with the best practices utilizing the latest manufacturing technology. This style is the preferred gasket choice to maintain a tight seal for heat exchangers, pressure vessels, and other equipment that are subjected to excessive thermal cycling. Kammprofile gaskets are constructed with concentrically serrated solid metal core faced on both sides with a flexible sealing material. These are commonly specified to improve performance where lower gasket seating stresses are required for an effective seal. This design limits the movement of the sealing material within the serrations while the solid metal core provides blowout resistance and firmness for ease of installation.

Styles:



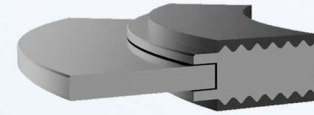
KP-1

KP-1 is constructed with solid serrated core only for use in confined spaces, male and female, tongue and groove, or recessed flange compositions. These are most commonly found in heat exchanger flanges as upgrade from double jacketed or solid metal where lower bolt load is required



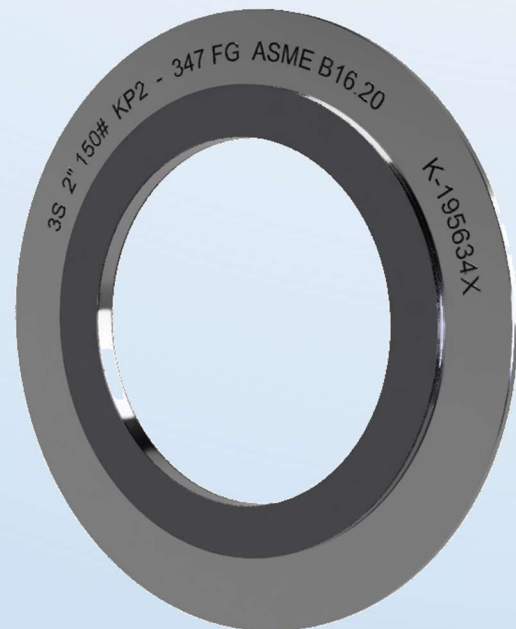
KP-2

KP-2 is fabricated similar to KP-1, except with an integral outer guide ring to assist in proper alignment on flange facing. This gasket is recommended for raised face or flat face mating flanges



KP-3

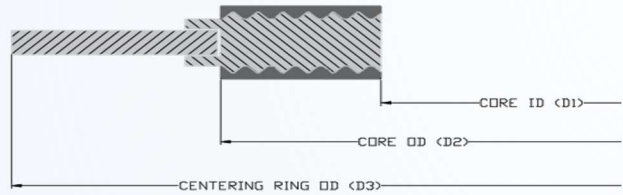
KP-3 is very similar to our KP-2 with minor difference of utilizing a loose-fitting guide ring for alignment. This design is used in place of KP-2 where thermal expansion is encountered



Gasket Properties (All Styles)	
m	2
y	2500 psi

All 3S Kammprofile Gaskets have full material traceability through the MTR # etched on the guide ring, where the MTR can be retrieved through the 3S website

KAMMPROFILE DIMENSIONS IN ACCORDANCE WITH ASME B16.20 (INCHES)



NPS	Grooved Metal Core		Pressure Class						
	D1	D2	D3						
	Core ID	Core OD	150 lb	300 lb	400 lb	600 lb	900 lb	1500 lb	2500 lb
1/2"	0.91	1.31	1.88	2.13	2.13	2.13	2.50	2.50	2.75
3/4"	1.13	1.56	2.25	2.63	2.63	2.63	2.75	2.75	3.00
1"	1.44	1.87	2.63	2.88	2.88	2.88	3.13	3.13	3.38
1-1/4"	1.75	2.37	3.00	3.25	3.25	3.25	3.50	3.50	4.13
1-1/2"	2.06	2.75	3.38	3.75	3.75	3.75	3.88	3.88	4.63
2"	2.75	3.50	4.13	4.38	4.38	4.38	5.63	5.63	5.75
2-1/2"	3.25	4.00	4.88	5.13	5.13	5.13	6.50	6.50	6.63
3"	3.87	4.87	5.38	5.88	5.88	5.88	6.63	6.88	7.75
4"	4.87	6.06	6.88	7.13	7.00	7.63	8.13	8.25	9.25
5"	5.94	7.19	7.75	8.50	8.38	9.50	9.75	10.00	11.00
6"	7.00	8.37	8.75	9.88	9.75	10.50	11.38	11.13	12.50
8"	9.00	10.50	11.00	12.13	12.00	12.63	14.13	13.88	15.25
10"	11.13	12.63	13.38	14.25	14.13	15.75	17.13	17.13	18.75
12"	13.37	14.87	16.13	16.63	16.50	18.00	19.63	20.50	21.63
14"	14.63	16.13	17.75	19.13	19.00	19.38	20.50	22.75	
16"	16.63	18.37	20.25	21.25	21.13	22.25	22.63	25.25	
18"	18.87	20.87	21.63	23.50	23.38	24.13	25.13	27.75	
20"	20.87	22.87	23.88	25.75	25.50	26.88	27.50	29.75	
24"	24.87	26.87	28.25	30.50	30.25	31.13	33.00	35.50	

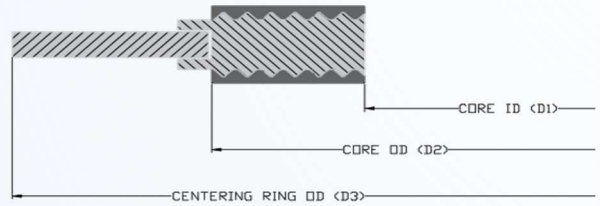
Tolerances: Thickness of core = 0.117" to 0.131" - D1, D2 & D3 = ± 0.03"

KAMMPROFILE DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series A (INCHES)

NPS	Class 150 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	26.50	27.75	30.50
28"	28.50	29.75	32.75
30"	30.50	31.75	34.75
32"	32.50	33.88	37.00
34"	34.50	35.88	39.00
36"	36.50	38.13	41.25
38"	38.50	40.13	43.75
40"	40.50	42.13	45.75
42"	42.50	44.25	48.00
44"	44.50	46.38	50.25
46"	46.50	48.38	52.25
48"	48.50	50.38	54.50
50"	50.50	52.50	56.50
52"	52.50	54.50	58.75
54"	54.50	56.50	61.00
56"	56.50	58.50	63.25
58"	58.50	60.50	65.50
60"	60.50	62.50	67.50

NPS	Class 300 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	27.00	29.00	32.88
28"	29.00	31.00	35.38
30"	31.25	33.25	37.50
32"	33.50	35.50	39.63
34"	35.50	37.50	41.63
36"	37.63	39.63	44.00
38"	38.50	40.00	41.50
40"	40.25	42.13	43.88
42"	42.25	44.13	45.88
44"	44.50	46.50	48.00
46"	46.38	48.38	50.13
48"	48.63	50.63	52.13
50"	51.00	53.00	54.25
52"	53.00	55.00	56.25
54"	55.25	57.25	58.75
56"	57.25	59.25	60.75
58"	59.50	61.50	62.75
60"	61.50	63.50	64.75

KAMMPROFILE DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series A (INCHES)



NPS	Class 400 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	27.00	29.00	32.75
28"	29.00	31.00	35.13
30"	31.25	33.25	37.25
32"	33.50	35.50	39.50
34"	35.50	37.50	41.50
36"	37.63	39.63	44.00
38"	38.25	40.25	42.25
40"	40.38	42.38	44.38
42"	42.38	44.38	46.38
44"	44.50	46.50	48.50
46"	47.00	49.00	50.75
48"	49.00	51.00	53.00
50"	51.00	53.00	55.25
52"	53.00	55.00	57.25
54"	55.25	57.25	59.75
56"	57.25	59.25	61.75
58"	59.25	61.25	63.75
60"	61.75	63.75	66.25

NPS	Class 600 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	27.00	29.00	34.13
28"	29.00	31.00	36.00
30"	31.25	33.25	38.25
32"	33.50	35.50	40.25
34"	35.50	37.50	42.25
36"	37.63	39.63	44.50
38"	39.00	41.00	43.50
40"	41.25	43.25	45.50
42"	43.50	45.50	48.00
44"	45.75	47.75	50.00
46"	47.75	49.75	52.25
48"	50.00	52.00	54.75
50"	52.00	54.00	57.00
52"	54.00	56.00	59.00
54"	56.25	58.25	61.25
56"	58.25	60.25	63.50
58"	60.50	62.50	65.50
60"	62.75	64.75	68.25

NPS	Class 900 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	27.00	29.00	34.75
28"	29.00	31.00	37.25
30"	31.25	33.25	39.75
32"	33.50	35.50	42.25
34"	35.50	37.50	44.75
36"	37.75	39.75	47.25
38"	40.75	42.75	47.25
40"	43.25	45.25	49.25
42"	45.25	47.25	51.25
44"	47.50	49.50	53.88
46"	50.00	52.00	56.50
48"	52.00	54.00	58.50

Tolerances ASME B16.20 – B16.47 Series A & B

Thickness of core = 0.117" to 0.131"

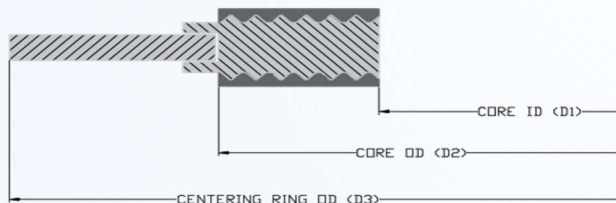
D1 = NPS 26" through NPS 34" = ±0.03"

NPS 36" through NPS 60" = ±0.06"

D2 = NPS 26" through NPS 60" = ±0.06"

D3 = NPS 26" through NPS 60" = ±0.03"

KAMMPROFILE DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series B (INCHES)



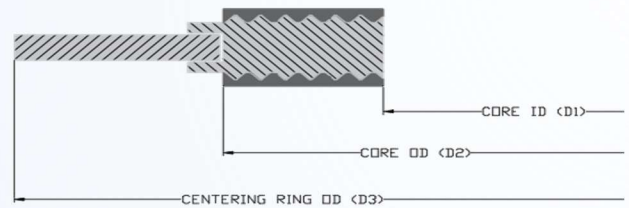
NPS	Class 150 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	26.50	27.50	28.56
28"	28.50	29.50	30.56
30"	30.50	31.50	32.56
32"	32.50	33.50	34.69
34"	34.50	35.75	36.81
36"	36.50	37.75	38.88
38"	38.38	39.75	41.13
40"	40.25	41.88	43.13
42"	42.50	43.88	45.13
44"	44.25	45.88	47.13
46"	46.50	48.19	49.44
48"	48.50	50.00	51.44
50"	50.50	52.19	53.44
52"	52.50	54.19	55.44
54"	54.50	56.00	57.63
56"	56.88	58.19	59.63
58"	59.08	60.19	62.19
60"	61.31	62.44	64.19

NPS	Class 300 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	26.50	28.00	30.38
28"	28.50	30.00	32.50
30"	30.50	32.00	34.88
32"	32.50	34.00	37.00
34"	34.50	36.00	39.13
36"	36.50	38.00	41.25
38"	39.75	41.25	43.25
40"	41.75	43.25	45.25
42"	43.75	45.25	47.25
44"	45.75	47.25	49.25
46"	47.88	49.38	51.88
48"	49.75	51.63	53.88
50"	51.88	53.38	55.88
52"	53.88	55.38	57.88
54"	55.25	57.25	60.25
56"	58.25	60.00	62.75
58"	60.44	61.94	65.19
60"	62.56	64.19	67.19

NPS	Class 400 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	26.25	27.50	29.38
28"	28.13	29.50	31.50
30"	30.13	31.75	33.75
32"	32.00	33.88	35.88
34"	34.13	35.88	37.88
36"	36.13	38.00	40.25
38"	38.25	40.25	42.25
40"	40.38	42.38	44.38
42"	42.38	44.38	46.38
44"	44.50	46.50	48.50
46"	47.00	49.00	50.75
48"	49.00	51.00	53.00
50"	51.00	53.00	55.25
52"	53.00	55.00	57.25
54"	55.25	57.25	59.75
56"	57.25	59.25	61.75
58"	59.25	61.25	63.75
60"	61.75	63.75	66.25

NPS	Class 600 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	26.13	28.13	30.13
28"	27.75	29.75	32.25
30"	30.63	32.63	34.63
32"	32.75	34.75	36.75
34"	35.00	37.00	39.25
36"	37.00	39.00	41.25
38"	39.00	41.00	43.50
40"	41.25	43.25	45.50
42"	43.50	45.50	48.00
44"	45.75	47.75	50.00
46"	47.75	49.75	52.25
48"	50.00	52.00	54.75
50"	52.00	54.00	57.00
52"	54.00	56.00	59.00
54"	56.25	58.25	61.25
56"	58.25	60.25	63.50
58"	60.50	62.50	65.50
60"	62.75	64.75	68.25

KAMMPROFILE DIMENSIONS IN ACCORDANCE WITH ASME B16.20 – B16.47 Series B (INCHES)



NPS	Class 900 lb		
	Grooved Metal Core		Outer Ring
	D1	D2	D3
26"	27.75	29.50	33.00
28"	29.25	31.50	35.50
30"	31.75	33.75	37.75
32"	34.00	36.00	40.00
34"	36.25	38.25	42.25
36"	37.25	39.25	44.25
38"	40.75	42.75	47.25
40"	43.25	45.25	49.25
42"	45.25	47.25	51.25
44"	47.50	49.50	53.88
46"	50.00	52.00	56.50
48"	52.00	54.00	58.50

Tolerances ASME B16.20 – B16.47 Series A & B

Thickness of core = 0.117" to 0.131"

D1 = NPS 26" through NPS 34" = ±0.03"

NPS 36" through NPS 60" = ±0.06"

D2 = NPS 26" through NPS 60" = ±0.06"

D3 = NPS 26" through NPS 60" = ±0.03"

TORQUE CHART – ASME B16.20 GASKETS – ASME B16.5 FLANGES KAMMPROFILE

CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	37	47	56
3/4"	37	47	56
1"	37	47	56
1-1/4"	37	47	56
1-1/2"	37	47	56
2"	75	94	113
2-1/2"	90	113	135
3"	107	113	124
4"	90	113	135
5"	162	202	243
6"	162	202	243
8"	192	202	212
10"	262	327	393
12"	363	382	401
14"	393	492	590
16"	393	492	590
18"	661	696	835
20"	557	696	835
24"	794	993	1191

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	28	36	43
3/4"	57	72	86
1"	57	72	86
1-1/4"	57	72	86
1-1/2"	103	128	154
2"	57	72	86
2-1/2"	103	128	154
3"	103	128	154
4"	135	168	202
5"	154	193	231
6"	154	193	231
8"	249	312	374
10"	328	410	492
12"	464	580	696
14"	464	580	696
16"	662	827	993
18"	662	827	993
20"	662	827	993
24"	1155	1444	1732

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	28	36	43
3/4"	50	63	75
1"	64	80	97
1-1/4"	64	80	97
1-1/2"	116	144	173
2"	64	80	97
2-1/2"	90	112	135
3"	116	144	173
4"	218	273	327
5"	218	273	327
6"	218	273	327
8"	328	410	492
10"	464	580	696
12"	662	827	993
14"	662	827	993
16"	862	1078	1293
18"	862	1078	1293
20"	1155	1444	1732
24"	2061	2576	3091

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.

TORQUE CHART – ASME B16.20 GASKETS – ASME B16.5 FLANGES - KAMMPROFILE

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	32	40	48
3/4"	64	80	97
1"	64	80	97
1-1/4"	64	80	97
1-1/2"	116	144	173
2"	64	80	97
2-1/2"	116	144	173
3"	116	144	173
4"	187	234	280
5"	281	351	422
6"	281	351	422
8"	398	497	596
10"	567	709	851
12"	567	709	851
14"	739	924	1109
16"	990	1237	1485
18"	1392	1740	2088
20"	1392	1740	2088
24"	2202	2753	3303

CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	64	80	96
3/4"	64	80	96
1"	104	130	156
1-1/4"	145	182	218
1-1/2"	219	273	328
2"	145	182	218
2-1/2"	219	273	328
3"	145	182	218
4"	309	387	464
5"	441	552	662
6"	309	387	464
8"	575	719	862
10"	575	719	862
12"	575	719	862
14"	770	962	1155
16"	1083	1354	1624
18"	1713	2141	2569
20"	2104	2630	3156
24"	4255	5319	6383

CLASS 1500 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	51	64	77
3/4"	51	64	77
1"	83	104	125
1-1/4"	145	182	218
1-1/2"	219	273	328
2"	145	182	218
2-1/2"	219	273	328
3"	309	387	464
4"	441	552	662
5"	770	962	1155
6"	575	719	862
8"	1083	1354	1624
10"	1713	2141	2569
12"	2104	2630	3156
14"	2618	3272	3927
16"	3647	4559	5471
18"	4916	6145	7374
20"	6450	8063	9676
24"	8677	10846	13016

CLASS 2500 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
1/2"	51	64	77
3/4"	64	80	96
1"	104	130	156
1-1/4"	187	234	281
1-1/2"	265	331	398
2"	187	234	281
2-1/2"	265	331	398
3"	378	473	567
4"	660	825	990
5"	981	1227	1472
6"	1503	1879	2254
8"	1503	1879	2254
10"	2432	3039	3647
12"	4097	5121	6145

Gasket Style	Kammprofile KP-2 &3
K Factor	0.15 to 0.17
Bolt Grade	B7 - B16



TORQUE CHART – ASME B16.20 - ASME B16.47 SERIES A - KAMMPROFILE

CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	662	827	993
28"	662	827	993
30"	662	827	993
32"	1155	1444	1732
34"	1155	1444	1732
36"	1155	1444	1732
38"	1371	1444	1588
40"	1155	1444	1732
42"	1155	1444	1732
44"	1155	1444	1732
46"	1155	1444	1732
48"	1371	1444	1516
50"	2061	2576	3091
52"	2447	2576	2705
54"	2061	2576	3091
56"	2061	2576	3091
58"	2447	2576	3091
60"	2061	2576	3091

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1238	1547	1856
28"	1238	1547	1856
30"	1570	1963	2355
32"	1958	2447	2936
34"	1958	2447	2936
36"	2404	3006	3607
38"	880	1100	1320
40"	1238	1547	1856
42"	1624	2030	2437
44"	2355	2944	3533
46"	2936	3670	4404
48"	2936	3670	4404
50"	3156	3945	4734
52"	3156	3945	4734
54"	4581	5727	6872
56"	4581	5727	6872
58"	4581	5727	6872
60"	4581	5727	6872

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1570	1963	2355
28"	1958	2447	2936
30"	2404	3006	3607
32"	2404	3006	3607
34"	2404	3006	3607
36"	2404	3006	3607
38"	1570	1963	2355
40"	1958	2447	2936
42"	1958	2447	2936
44"	2404	3006	3607
46"	2404	3006	3607
48"	4581	5727	6872
50"	3490	4363	5236
52"	3490	4363	5236
54"	4863	6079	7295
56"	4863	6079	7295
58"	4863	6079	7295
60"	6555	8194	9832

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1713	2141	2569
28"	2104	2630	3156
30"	2104	2630	3156
32"	3054	3818	4581
34"	3054	3818	4581
36"	4255	5319	6383
38"	3054	3818	4581
40"	3054	3818	4581
42"	4255	5319	6383
44"	4255	5319	6383
46"	4255	5319	6383
48"	4916	6145	7374
50"	6450	8063	9676
52"	6450	8063	9676
54"	6450	8063	9676
56"	8273	10341	12410
58"	8273	10341	12410
60"	10413	13016	15619

CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	4097	5121	6145
28"	4300	5375	6450
30"	5375	6719	8063
32"	5515	6894	8273
34"	6942	8677	10413
36"	6942	8677	10413
38"	6942	8677	10413
40"	6942	8677	10413
42"	6942	8677	10413
44"	7829	9786	11743
46"	10490	13113	15735
48"	10490	13113	15735

Gasket Style	Kammprofile KP-2 & 3
K Factor	0.15 to 0.17
Bolt Grade	B7 – B16

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.

TORQUE CHART – ASME B16.20 - ASME B16.47 SERIES B - KAMMPROFILE

CLASS 150 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	662	827	993
28"	662	827	993
30"	662	827	993
32"	990	1237	1485
34"	1155	1444	1732
36"	1155	1444	1732
38"	1371	1444	1588
40"	1155	1444	1732
42"	1155	1444	1732
44"	1155	1444	1732
46"	1155	1444	1732
48"	1371	1444	1516
50"	2061	2576	3091
52"	2447	2576	2705
54"	1766	2208	2649
56"	1570	1963	2355
58"	1631	1717	2061
60"	1374	1717	2061

CLASS 300 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1238	1547	1856
28"	1238	1547	1856
30"	1570	1963	2355
32"	1958	2447	2936
34"	1958	2447	2936
36"	2104	2630	3156
38"	880	1100	1320
40"	1238	1547	1856
42"	1624	2030	2437
44"	2061	2576	3091
46"	2936	3670	4404
48"	2936	3670	4404
50"	2705	3381	4058
52"	2705	3381	4058
54"	4581	5727	6872
56"	4581	5727	6872
58"	3490	4363	5236
60"	3927	4908	5890

CLASS 400 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1178	1472	1766
28"	1468	1835	2202
30"	2104	2630	3156
32"	2404	3006	3607
34"	2404	3006	3607
36"	2404	3006	3607
38"	2061	2576	3091
40"	2569	3212	3854
42"	2545	3181	3817
44"	2404	3006	3607
46"	2404	3006	3607
48"	4581	5727	6872
50"	3490	4363	5236
52"	3490	4363	5236
54"	4863	6079	7295
56"	4863	6079	7295
58"	4863	6079	7295
60"	6555	8194	9832

CLASS 600 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	1713	2141	2569
28"	2104	2630	3156
30"	2104	2630	3156
32"	3054	3818	4581
34"	3054	3818	4581
36"	3647	4559	5471
38"	3054	3818	4581
40"	3054	3818	4581
42"	4255	5319	6383
44"	4255	5319	6383
46"	4255	5319	6383
48"	4916	6145	7374
50"	6450	8063	9676
52"	6450	8063	9676
54"	6450	8063	9676
56"	8273	10341	12410
58"	8273	10341	12410
60"	10413	13016	15619

CLASS 900 lb			
NPS	Minimum	Optimum	Maximum
	ft-lbs	ft-lbs	ft-lbs
26"	4097	5121	6145
28"	5375	6719	8063
30"	5375	6719	8063
32"	6894	8618	10341
34"	6942	8677	10413
36"	6942	8677	10413
38"	6942	8677	10413
40"	6942	8677	10413
42"	6942	8677	10413
44"	7829	9786	11743
46"	10490	13113	15735
48"	10490	13113	15735

Gasket Style	Kammprofile KP-2 & 3
K Factor	0.15 to 0.17
Bolt Grade	B7 – B16

Note: 3S Superior Sealing Services LLC produces torque calculations from given information, either from relevant standards or information from our customers. 3S Superior Sealing Service LLC doesn't accept responsibility for misuse of this information.

THE NEXT GENERATION IN SUPERIOR GASKET COMPRESSION & RECOVERY

Description:

3S XRG is a specially designed metallic profiled core offering greater sealing properties when compared to other semi-metallic gaskets. The XRG performs consistently by providing high compression and recovery at varying gasket stresses and temperatures.

Styles:



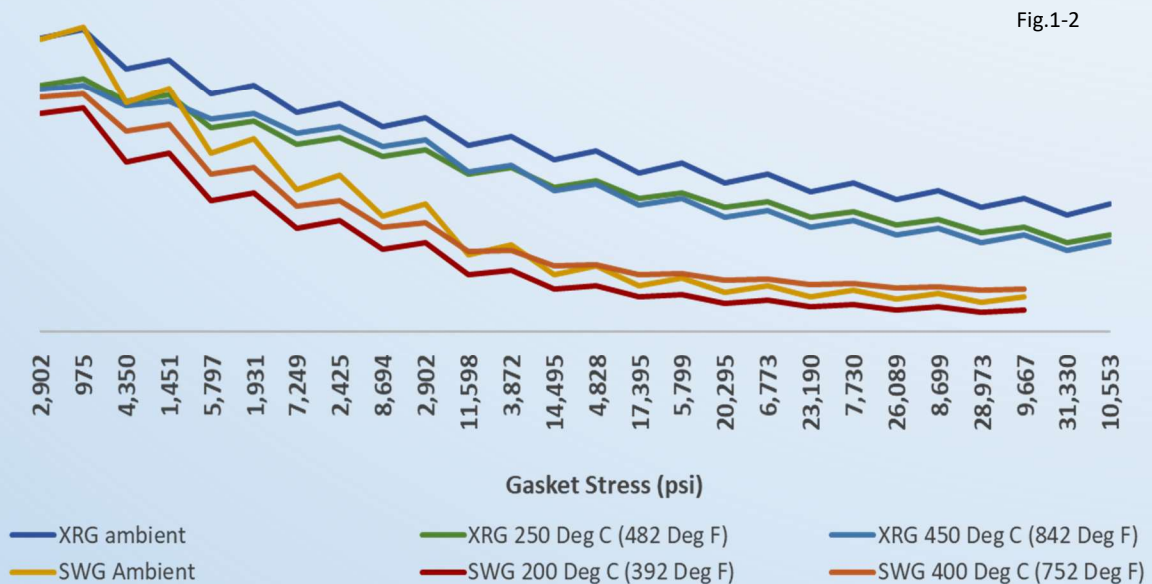
XRG can be utilized in flange types such as: confined spaces, male and female, tongue and groove, or recessed flange compositions. These are most commonly found in demanding heat exchanger applications.



XRG-O is fabricated similar to XRG, except with an integral outer guide ring to assist in proper alignment on flange facing. This gasket is recommended for raised face or flat face mating flanges

Fig 1.2 details the thickness change of XRG and a Spiral Wound Gasket (SWG). The gasket stress is increased and reduced at three different temperature.

XRG vs SWG - Thickness Change at Varying Gasket Stresses & Temperatures



The compression and recovery is constant at the three temperatures for XRG and remains stable as the stress increases. The XRG has the ability to compress and recover at high loads.

- XRG demonstrates consistent recovery throughout the gasket stress range.
- The consistency of XRG remains even at the different temperatures.
- Unlike XRG, the SWG compresses to the guide ring, but fails to recover after compression.

CONSTANTS & SUMMARY

CONSTANTS

ROTT Data

XRG		
Gb	392	psi
a	0.317	
Gs	0.604	psi
S100	1686	psi
S1000	3498	psi
S10000	7258	psi
Tpmin	1383	
Tpmax	77799	

Gasket Availability

XRG Thickness	XRG Diameter	XRG Width
Standard 3/32"	Minimum 2" OD	Minimum 3/8"
Other 1/8"	Maximum 140" OD	Maximum 2"

Facing thickness as standard = 0.020" (0.5mm) each side. This is not included in the above "XRG Thickness"

Materials

Maximum Temperature (Filler)	
3S Inhibited Graphite	850°F (454°C)
Super Inhibited Graphite	975°F (524°C)
PTFE	500°F (260°C)
Mica	1800°F (982°C)
HTG	1500°F (815°C)
Ceramic	2000°F (1093°C)
Maximum Temperature (Alloys)	
304 / 304L SS	1400°F (760°C)
316 SS	1400°F (760°C)
316L SS	1400°F (760°C)
321 SS	1500°F (815°C)
347 SS	1500°F (815°C)
Monel	1500°F (815°C)
Inconel 600	2000°F (1093°C)
Carbon Steel	900°F (482°C)

XRG Summary

- Extremely low leakage rates as shown in EN13555 & ROTT testing.
- Consistently low leakage rates at different temperatures and pressures.
- Low modulus of elasticity values at varying temperatures.
- High compression and recovery values at varying temperatures across a wide gasket stress range.
- Performs under minimal gasket stress due to its unique design.

m & y Values

XRG		
m	2.0	
y	2500	psi

ROTT DATA COMPARISON										
	Gb	a	Gs	S100	S1000	S10000	Tpmin	Tpmax	m	y
XRG	392	0.317	0.604	1686	3498	7258	1383	77799	2	2500
CMG	315	0.36	1855	1653	3787				2.5	6400
Kammprofile	387	0.334	14	1802	3888			55000	2	2500
SWG	365	0.413	5.52	2445	6328	16378	213	17362	3	10000

All 3S Gaskets have full material traceability through the MTR # etched on the guide ring and inner ring if applicable, the MTR can be retrieved through the 3S website.

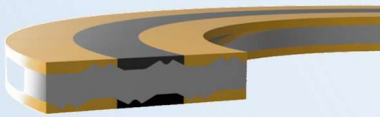
High Temperature Gasket HTG

Gasket Product Range

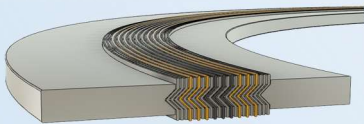
Description:

3S HTG product range is designed for higher operating temperatures where the limits of standard graphite are exceeded. The HTG sealing element consists of a combination of mica and APX2[®] graphite. The mica acts as an oxidation shield for the graphite.

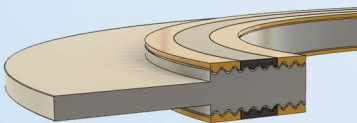
Styles:



XRG (eXtra Recovery Gasket) is available with our HTG sealing layers, the inner section of the sealing element is mica, the middle section is APX2[®] Graphite, the outer section again is mica. The mica inner and outer sealing rings act as an oxidation shield for the APX2[®]. Enabling this design to operate up to a maximum temperature of 1500 Deg F (815 Deg C).



Style S, SI, GS, GSI are available with our HTG sealing layers, the inner section of the sealing element is mica, the middle section is APX2[®] Graphite and the outer section again is mica. The mica inner and outer sealing rings act as an oxidation shield for the APX2[®]. Enabling this design to operate up to a maximum temperature of 1500 Deg F (815 Deg C).



KP-1-2 & 3 are all available with our HTG sealing layers, the inner section of the sealing element is mica, the middle section is APX2[®] Graphite, the outer section again is mica. The mica inner and outer sealing rings act as an oxidation shield for the APX2[®]. Enabling this design to operate up to a maximum temperature of 1500 Deg F (815 Deg C).



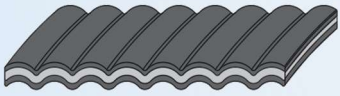
CMG-HTG offers good recovery when thermal contraction and expansion in the flange assembly occurs. CMG-HTG can also be used at higher temperatures and in oxidizing environments because of the Mica sealing layers on the inner and outer diameters.

Maximum Temperature (Filler)	
Mica	1800°F (982°C)
Mica/APX2 [®] /Mica (HTG)	Max 1500°F (815°C)
Ceramic	2000°F (1093°C)
Maximum Temperature (Alloys)	
304 / 304L SS	1400°F (760°C)
316 SS	1400°F (760°C)
316L SS	1400°F (760°C)
321 SS	1500°F (815°C)
347 SS	1500°F (815°C)
Monel	1500°F (815°C)
Inconel 600	2000°F (1093°C)
Carbon Steel	900°F (482°C)

All 3S Gaskets have full material traceability through the MTR # etched on the guide ring and inner ring if applicable, the MTR can be retrieved through the 3S website.

Corrugated Metal Gasket (CMG) Product Range

CMG styles can be manufactured for standard size flanges (CMS) or for heat exchanger gaskets (CMH)



CMG with graphite facings are used in standard piping up to Class 300lb and on small to large heat exchangers. It is a good replacement for Double Jacketed gaskets where leaks have occurred.

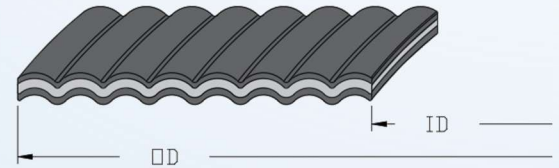


CMG-PTFE (EPTFE) can offer a great sealing solution in aggressive media applications where a conventional PTFE sheet could creep and extrude.



CMG-FG-PTFE (EPFTE) is a good solution where aggressive chemicals are present but the application requires fire safe properties.

CMG DIMENSIONS IN ACCORDANCE WITH ASME B16.21 TO SUIT ASME B16.5 FLANGES (INCHES)



150 lb		
NPS	ID	OD
1/2"	0.84	1.88
3/4"	1.06	2.25
1"	1.31	2.62
1-1/4"	1.66	3.00
1-1/2"	1.91	3.38
2"	2.38	4.12
2-1/2"	2.88	4.88
3"	3.50	5.38
3-1/2"	4.00	6.38
4"	4.50	6.88
5"	5.56	7.75
6"	6.62	8.75
8"	8.62	11.00
10"	10.75	13.38
12"	12.75	16.13
14"	14.00	17.75
16"	16.00	20.25
18"	18.00	21.62
20"	20.00	23.88
24"	24.00	28.25

300 lb		
NPS	ID	OD
1/2"	0.84	2.12
3/4"	1.06	2.62
1"	1.31	2.88
1-1/4"	1.66	3.25
1-1/2"	1.91	3.75
2"	2.38	4.38
2-1/2"	2.88	5.12
3"	3.50	5.88
3-1/2"	4.00	6.50
4"	4.50	7.12
5"	5.56	8.50
6"	6.62	9.88
8"	8.62	12.12
10"	10.75	14.25
12"	12.75	16.62
14"	14.00	19.12
16"	16.00	21.25
18"	18.00	23.50
20"	20.00	25.75
24"	24.00	30.50

Tolerance: OD: 1/2" through 12" = +0 / -0.063" - 14" through 24" = +0 / -0.125" Tolerance ID: 1/2" through 12" ±0.063" - 14" through 24" = ±0.125"

XRG-HF Product Range HF Alkylation Service

Description:

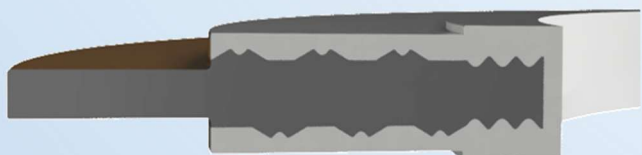
Style XRG-HF gaskets are designed for highly corrosive applications, such as Hydrofluoric Acid (HF). This style offers the advantage of having double sealing design which occupies all the space from the bore of the pipe to the outer diameter of raised face flanges.

The inner kammprofile seats the encapsulated PTFE seal, the thickness of the PTFE can vary depending on the flange corrosion, standard thickness is 1/8". The outer XRG (eXtra Recovery Gasket) sealing portion offers excellent compression and recovery as a standard and can consist of APX2® Graphite or PTFE soft sealing layers. XRG-HF gaskets are designed for standard and non-standard flanges.

Styles:

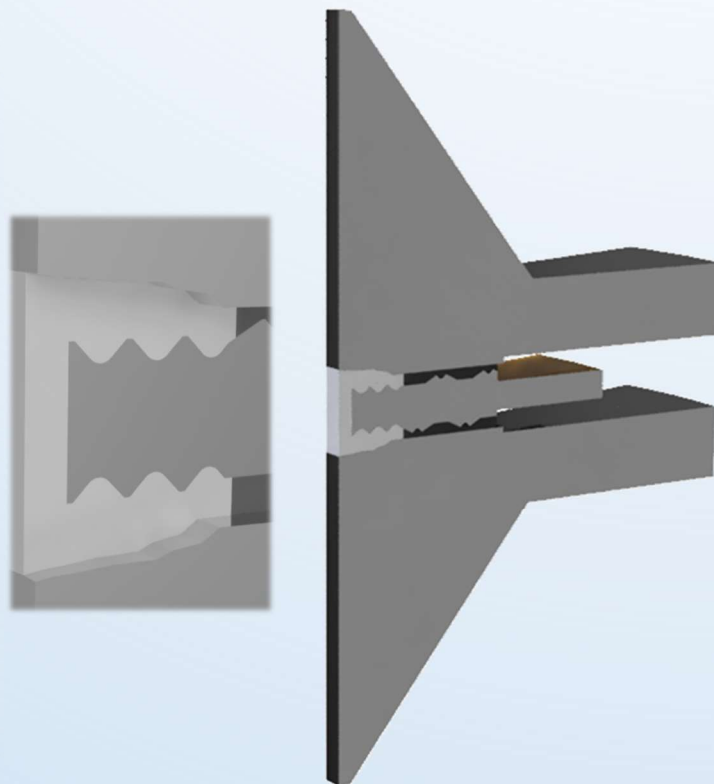


Core Material: Monel or Carbon Steel
Facing Materials: PTFE - APX2® Graphite



Core Material: Monel or Carbon Steel
Facing Materials: PTFE - PTFE

The inner kammprofile is designed to sit on the inner bore of the pipe to stop HF build up in this area. The soft PTFE inner seal will conform to flange corrosion and create a tight seal.



Gasket Properties	
m	2.5
y	2500 psi

Maximum Temperature (Filler)	
3S Inhibited Graphite	850°F (454°C)
APX2® Graphite	975°F (524°C)
PTFE	500°F (260°C)
Maximum Temperature (Alloys)	
Monel	1500°F (815°C)
Carbon Steel	900°F (482°C)

GSI-HF Product Range – HF Alkylation Service

Description:

Style GSI-HF gaskets are designed for highly corrosive applications, such as Hydrofluoric Acid (HF). The spiral wound sealing element can be fabricated to the customers specifications. Typically, we will use either Kammprofile Carbon Steel (Teflon Coated) or Monel Inner ring faced with Graphite or PTFE. This Kammprofile Inner ring is affixed to the “special” spiral wound. The GSI-HF gaskets are designed to prevent corrosion on the flange faces, especially in HF service.

Styles:



GSI Winding – APX2®
Graphite – Monel.
Monel Kammprofile Inner
Ring – APX2® Graphite
Faced



GSI Winding – APX2®
Graphite – Monel.
PTFE Coated Carbon Steel
Kammprofile Inner Ring –
APX2® Graphite Faced

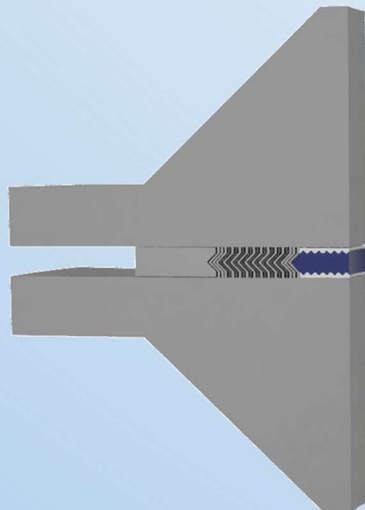


GSI Winding – APX2®
Graphite – Monel.
PTFE Coated Carbon Steel
Kammprofile Inner Ring –
EPTFE Faced



GSI Winding – APX2®
Graphite – Monel.
Monel Kammprofile Inner
Ring – EPTFE Faced

The winding portion is the main sealing element but once compressed the inner kammprofile creates a seal and stops HF attack on the inner bore of the flange faces.



The inner ring is designed to sit on the inner bore of the pipe to stop HF build up in this area

Gasket Properties	
m	2.5
y	5500 psi

Maximum Temperature (Filler)	
3S Inhibited Graphite	850°F (454°C)
APX2® Graphite	975°F (524°C)
PTFE	500°F (260°C)
Maximum Temperature (Alloys)	
Monel	1500°F (815°C)
Carbon Steel	900°F (482°C)

3S HEAT EXCHANGER GASKET SHAPES

R	C1	C2	D1	E1	E2	E3	E4
E5	F1	F2	F3	G1	G2	G3	G4
G5	G6	G7	G8	H1	H2	H3	H4
H5	H6	H7	H8	H9	H10	H11	H12
H13	H14	I1	I2	I3	I4	I5	I6
I7	I8	I9	I10	I11	I12	J1	J2
J3	J4	J5	K1	K2	K3	K4	K5
K6	K7	K8	K9	K10	K11	N2	N3
N4	N5	N7	N8	N18	N19	N20	

GASKET OPERATING STRESS

Gasket	TARGET GASKET STRESS (psi)		
	Minimum	Optimum	Maximum
XRG	2500	18000	60000
Spiral Wound			
GS	6000	12000	25000
GSI	10000	25000	45000
GSI-LL	5000	10000	45000
GSI-HF	7000	20000	45000
GSI-HTG	10000	30000	45000
Kammprofile			
KP-1, 2 & 3 (PTFE / FG)	2500	18000	60000
KP-1, 2 & 3 (HTG)	2500	30000	60000
CMG			
CMS (Standard Sizing)	3700	10000	20000
CMH (Heat Exchanger)	3700	18000	35000
DJ			
Steel	7500	20000	30000
Stainless Steel	10000	25000	35000
Graphite Sheet			
GF	800	4000	15000
GT	2000	8000	20000
CNAF			
NA-3S (1/16")	2000	5000	10000
NA-3S (1/8")	3000	6000	9000

Gasket	TARGET GASKET STRESS (MPa)		
	Minimum	Optimum	Maximum
XRG	17	124	414
Spiral Wound			
GS	41	83	172
GSI	69	172	310
GSI-LL	34	69	310
GSI-HF	48	138	310
GSI-HTG	69	207	310
Kammprofile			
KP-1, 2 & 3 (PTFE / FG)	17	124	414
KP-1, 2 & 3 (HTG)	17	207	414
CMG			
CMS (Standard Sizing)	26	69	138
CMH (Heat Exchanger)	26	124	241
DJ			
Steel	52	138	207
Stainless Steel	69	172	241
Graphite Sheet			
GF	6	28	103
GT	14	55	138
CNAF			
NA-3S (1/16")	14	34	69
NA-3S (1/8")	21	41	62



GASKET PRODUCT RANGE

SPIRALWOUND GASKETS

STYLE	DESCRIPTION
S	SPIRAL ONLY
SI	SPIRAL WITH INNER RING
GS	SPIRAL AND OUTER RING
GSI	SPIRAL WITH INNER AND OUTER RING
GSI-LL	LOW LOAD SPIRAL WITH INNER AND OUTER RING
GSI-HF	SPIRAL FOR HF TYPE APPLICATIONS
GSI-HTG	SPIRAL FOR HIGH TEMPERATURE APPLICATIONS
GSI / GS – KP-3 RJ	SPIRAL TO SEAL DAMAGED RTJ GROOVES – RF TO RTJ FLANGES
MW / MWI	SPIRAL FOR BOILER DOOR APPLICATIONS

THE EXTRA RECOVERY GASKET

STYLE	DESCRIPTION
XRG	EXTRA RECOVERY GASKET
XRG-O	EXTRA RECOVERY GASKET – OUTER RING

OTHER SEALING PRODUCTS

PTFE SHEET IN VARIOUS FORMS

NON-ASBESTOS SHEET – NA-3S

GRAPHITE SHEET – STYLE GF & GT

KAMMPROFILE GASKETS

STYLE	DESCRIPTION
KP-1	KAMMPROFILE RING FOR HEAT EXCHANGER APPLICATIONS
KP-2	KAMMPROFILE WITH AN INTEGRAL OUTER RING
KP-3	KAMMPROFILE WITH LOOSE FITTING OUTER RING

CORRUGATED METAL GASKETS

STYLE	DESCRIPTION
CMS	CORRUGATED FOR STANDARD SIZED FLANGES
CMH	CORRUGATED FOR HEAT EXCHANGERS

DOUBLE JACKETED

STYLE	DESCRIPTION
DJS	DJ FOR STANDARD SIZED FLANGES
DJH	DJ FOR HEAT EXCHANGERS

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