



C&N INDUSTRIAL GROUP LIMITED



BETTER PIPELINE BETTER CONNECTION

Steel pipes Pipe Fittings Flange Gaskets

www.cnpipefitting.com

Spiral Wound Gaskets

Introduction:

Metal wound flat gasket is wound by v-type metallic and non-metallic Strip packing. The filler ensures the tightness of gaskets, metal bands ensure the gasket elasticity and resistance. It is typically used in volatile conditions of temperature and pressure, according to different usage, spiral wound gasket can have inner ring and the outer metal ring.

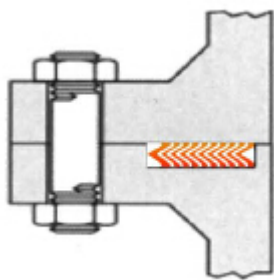
Advantages:

- Durable, not squeezed.
- Through different combinations of metal and filler strips, can be made into products that meet the different working conditions.
- Fastening force range.
- Easy installation, demolished check will not damage the flange.

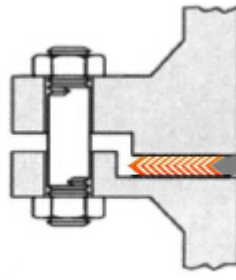
Gasket fastening force ranges:

Filler Material	With Inner ring or outer ring			With inner and outer rings		
	Fastening stress (20°C)			Fastening stress (20°C)		
	Min (N/MM ²)	Optimum (N/MM ²)	Max (N/MM ²)	Min (N/MM ²)	Optimum (N/MM ²)	Max (N/MM ²)
Graphite	50	95	180	50	120	400
PTFE	50	80	130	50	110	250
Mica	55	95	130	50	120	250

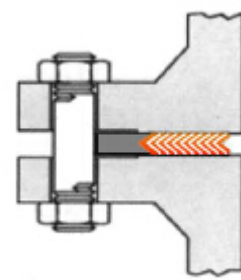
Spiral Wound Gasket Forms:



Just formed by the metal band and packing tape winding, suitable for tongue and Groove facing flange.

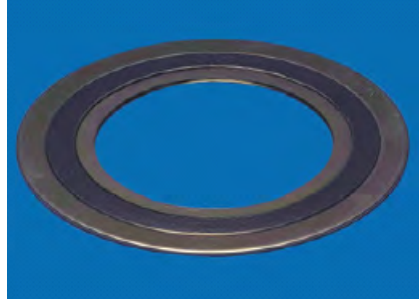
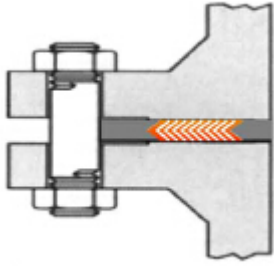


With inner strengthening ring, suitable for male and female flange. Installing the inner ring prevents erosion of the wound area by media.



Outside the ring, suitable for raised face flanges. External centering rings ensure gasket installation fast, precision, prevents gasket compression failure.





The most common type is gaskets with inner and outer rings, suitable for raised face flanges.

Type options:

- Metal inner-ring advantage: prevent radial deformation of packed with overflow.
Reduced systems of turbulent flow media, allowing the system to minimize flow resistance.
In high temperature condition, it can work as heat insulation.
- Advantages of metal outer ring: enables the gasket is installed in the best location.
Protect winding parts to be damaged.
Prevent gasket damage after flying out to prevent overload and excessive gasket compression.

Note: when the pressure level exceeding Class 600 or under high temperature conditions, inner and outer rings must be worn. When packing is PTFE, must be with inner ring.

Metal Choices:

Materials of spiral wound gaskets inner ring and metal band usually must agree with flange, so that you can avoid galvanic corrosion and differential swelling caused by different materials. Outer rings are usually carbon steel surface has been treated with preservatives or same material with the flange.

Material	Type	Proper temperature(°C)		Density (g/cm ³)
		lowest	highest	
Carbon steel	S	-40	500	7.85
Stainless steel 304	SS304	-250	550	7.9
Stainless steel 304L	SS304L	-250	550	7.9
Stainless steel 316	SS316	-100	550	7.9
Stainless steel 316L	SS316L	-100	550	7.9
Stainless steel 316Ti	SS316Ti	-100	550	7.8
Stainless steel 321	SS321	-250	550	7.9
Duplex stainless steel	SS31803	-40	300	7.8
Advanced duplex	SS32750	-40	300	7.8

Alloy625	ALLOY625	-50	450	8.44
Alloy825	ALLOY825	-100	450	8.14
Hastelloy alloy 276	HAST-C276	-200	450	8.9
Titanium alloy	Ti2	-250	350	4.5

Choices of sealing packing belt

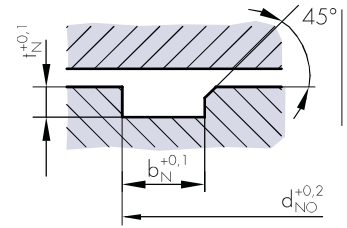
- Graphite packing belt: with excellent chemical resistance, not easy to aging, good sealing performance, high temperature conditions suitable for long time use.
- high temperature and oxygen graphite belt: inhibit the oxidation characteristics, can withstand the temperature higher than the ordinary graphite packing.
- The Teflon tape: can be used for almost all of the chemical medium, the temperature can reach 260 DEG C, not easy to aging, good air tightness.
- The mica tape: for use in ultra high temperature system. Combined using with high temperature and graphite band combination in general condition.

Filler strip material	end-use temperature (°C)		Maximum working pressure (bar)	Air tightness	The use of medium
	Lowest	Highest			
Graphite	-200	450	400	Good	Corrosive medium
High temperature oxygen inhibition of graphite	-200	500	400	Good	Corrosive medium
PTFE	-200	260	100	Good	Corrosive medium
Mica	-200	1000	5	Average	Gas
Mica +High temperature oxygen inhibition of graphite	-200	800	100	Good	Gas

Gasket compression

Spiral-wound gaskets shall be designed in such a way that a uniform bolt stress, based on the nominal root diameter will compress the gasket to a thickness(e).

STANDARD GASKET COMPRESSION			
s	3,5	4,5	6,5
e	2,5 ^{+0,1}	3,3 ^{+0,1}	4,7 ^{+0,1}

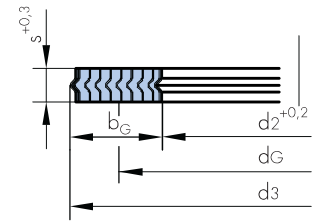


Connections with non-load bearing gaskets

Since no standards exist as yet for the use of spiral-wound gaskets in no-load bearing connections, the application of guidelines from the adjacent table is recommended.

GASKETS AND GROOVES DIMENSIONS								
Spiral-wound gasket					Groove			
d _M	b _G	d ₃	d ₂	s	d _{NO}	b _N	d _{NI}	t _N
< 300	5-9	d _G +b _G	d _G -b _G	3,5	d ₃ +1	b _G /0,86	d _{NO} -2b _N	2,5 ^{+0,1}
< 1000	9-17	d _G +b _G	d _G -b _G	3,5	d ₃ +1,5		d _{NO} -2b _N	2,5 ^{+0,1}
< 300	5-9	d _G +b _G	d _G -b _G	4,5	d ₃ +1	b _G /0,86	d _{NO} -2b _N	3,3 ^{+0,1}
< 1000	9-17	d _G +b _G	d _G -b _G	4,5	d ₃ +1,5		d _{NO} -2b _N	3,3 ^{+0,1}

b_G-gasket width
b_N-groove width



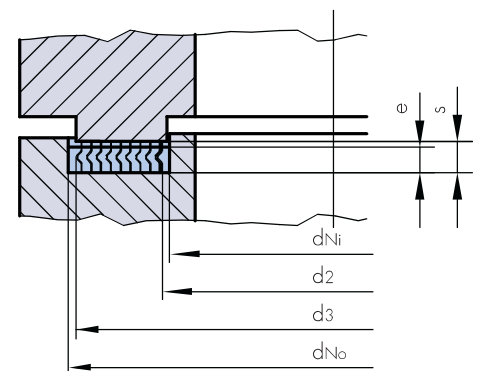
Tolerance Table

Flange size		Projection and recess			Smooth contactface					
NPS	DN	d2	d3	s1	d1	d2	d3	d4	s1	±2
< 10"	< 300	± 0,5	± 0,5	+ 0,8 + 0,1	± 0,8	± 0,8	± 0,8	± 0,8	+ + 0,1	+ 0,25 - 0,15
10" - 24"	300 - 700	± 0,8	± 0,8	+ 0,8 + 0,1	± 0,8	± 0,8	± 0,8	+ 0,8 - 1,6	+ 0,8 + 0,1	+ 0,25 - 0,15
26" - 50"	800 - 1200	± 1,2	± 1,2	+ 0,8 + 0,1	± 1,6	± 1,6	± 1,6	+ 0,8 - 2,0	+ 0,8 + 0,1	+ 0,25 - 0,15
> 50"	> 1200				± 2,4	± 2,4	± 2,4	+ 0,8 - 3,0	+ 0,8 + 0,1	+ 0,25 - 0,15

Gasket parameters

Gasket Type	MATERIAL (Jacket)	DIN 2505		ASME	
		k ₁ [mm]	k ₀ xK _D [N/mm]	m	y [MPa]
MS 10, MS 12,	Steel, Cr-Steel	1,3x _{BD}	50x _{BD}	1,3	50
MS 14, MS 16	CrNi-Steel, Monel	1,4x _{BD}	55x _{BD}	1,4	55
	CrNi-Steel (Graphite/ PTFE)	1,2x _{BD}	40x _{BD}	1,2	40

LOAD BEARING GASKETS



Ring Joint Gasket

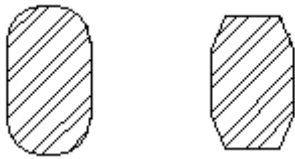
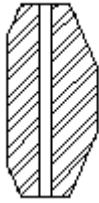

Introduction:

Metal ring gasket is solid metal gasket octagonal or oval shaped that made from metal material, with radial self tight seal effect. The metal ring gasket is internal and external side cushion plate and flange trapezoidal grooves (mainly the outer side) contact, and through the pressing and forming a seal.

Advantage:

- High temperature resistant, high pressure resistant, suitable for high pressure flange;
- lasting and reliable sealing performance;
- Adapt to the load frequency variable working condition;

Classification:

Model	Description	Cross-sectional shape
<p>R Series</p>	<p>The most common type of ring joint gasket, oval pad and octagon gasket. This type is a serial connection flange standard design, pressure up to 5000Psi. Octagonal pad compared elliptical pad speaking, has better sealing effect.</p>	 <p>Oval Octagonal</p>
<p>RX Series:</p>	<p>Section design of this series of gasket can use to pipeline pressure to improve sealing performance. Because of the characteristics of this series is more suitable for the gasket impact of large, strong motion, frequent pressure changes in working conditions such as oil drilling platform.</p>	
<p>BX Series:</p>	<p>This series is designed to seal gasket pressure up to 20000Psi. Gasket section is square, four angle, size of the gasket is slightly larger than the flange groove, so that when the gasket is installed, the outer surface by pre pressure can produce high stress, improve the sealing effect.</p>	

IX Series	<p>This series of gasket is by Norway Petroleum Institute (OLF) and the Federation of Norway industries jointly launched. Specifically for the petroleum and petrochemical, marine platform. Section design special, assurance in high stress of bolt, keep good sealing performance.</p>	
------------------	---	--

** According to the drawing processing non-standard products*

In order to avoid flange damage, the ring joint gasket material hardness is lower than the flange hardness, the table below provides the hardness and the use of conventional material temperature metallic ring gasket:

Material	Highest hardness ①		Temperature (°C)		Density (g/cm ³)
	Brinell hardness HB ②	Rockwell hardness HRB ③	Lowest	Highest	
soft iron	90	56	-40	500	7.85
carbon steel	120	68	-40	500	7.85
F5	130	72	-40	650	7.83
SS304	160	83	-250	550	7.9
SS316L	160	83	-100	550	7.9
Duplex31803	230	99	-40	300	7.8
Monel400	150	80	-125	600	8.8
Inconel625	150	80	-50	450	8.44
Inconel825	195	92	-100	450	8.14
Hastelloy C276	210	95	-200	450	8.9
Titanium	215	96	-250	350	4.5

① Above table hardness of materials hardness standard, can reduce the gasket hardness to cooperate with the on-site flange by heat treatment.

② Brinell hardness is the use of ball diameter 10mm, the specimen surface applied 3000kg measured pressure.

③ Rockwell hardness is 1.6mm diameter steel ball, on the specimen surface applied 100kg measured pressure.

Quality control:

All production of the metal ring gasket are in accordance with API6A PSL 4 specifications. Each of the metal ring gasket are clearly marking, including: material, change number, standard, oven number.

Product inspection:

Spectrum test: each batch of incoming raw materials need to be done before the spectral test, determination of material.

Hardness test: finished the final finishing, sampling for hardness testing of products.

Surface roughness test: R series and RX series gasket surface roughness is 1.6 m, BX series of gasket is 0.8 M.



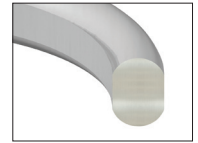
C&N INDUSTRIAL GROUP LIMITED

Ring Type Joint Gaskets

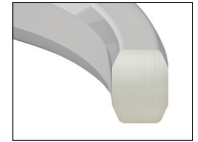
R Series

R series ring type joint gaskets are manufactured to API-6A and ASME B16.20 specifications. Available in standard mild steel, stainless steel 304 and stainless steel 316.

R series ring type joint gaskets are available in oval and octagonal designs. The oval design can be used in older round bottom gland designs, while both can be used in a flat bottom design. R Series are available up to 5,000 PSI.



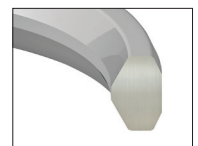
R Oval



R Octagonal

RX Series

RX series are interchangeable with R series octagonal gaskets designed for API 6B flanges. RX out perform R series in situations that have higher pressures with more intense vibrations. RX gaskets are available up to 5,000 PSI.



RX

Pipe Size	Ring Number at Class Rating						
	150	300	400	600	900	1500	2500
1/2"	-	R11	-	R11	R12	R12	R13
3/4"	-	R13	-	R13	R14	R14	R16
1"	R15	R16	-	R16	R16	R16	R18
1-1/4"	R17	R18	-	R18	R18	R18	R21
1-1/2"	R19	R/RX20	-	R/RX20	R/RX20	R/RX20	R/RX23
2"	R22	R/RX23	-	R/RX23	R/RX24	R/RX24	R/RX26
2-1/2"	R/RX25	R/RX26	-	R/RX26	R/RX27	R/RX27	R28
3"	R29	R/RX31	-	R/RX31	R/RX31	R/RX35	R32
3-1/2"	R33	R34	-	R34	-	-	-
4"	R36	R/RX37	R/RX37	R/RX37	R/RX37	R/RX39	R38
5"	R40	R/RX41	R/RX41	R/RX41	R/RX41	R/RX44	R42
6"	R43	R/RX45	R/RX45	R/RX45	R/RX45	R/RX46	R/RX47
8"	R48	R/RX49	R/RX49	R/RX49	R/RX49	R/RX50	R51
10"	R52	R/RX53	R/RX53	R/RX53	R/RX53	R/RX54	R55
12"	R56	R/RX57	R/RX57	R/RX57	R/RX57	R58	R60
14"	R59	R61	R61	R61	R62	R/RX63	-
16"	R64	R/RX65	R/RX65	R/RX65	R/RX66	R67	-
18"	R68	R/RX69	R/RX69	R/RX69	R/RX70	R71	-
20"	R72	R/RX73	R/RX73	R/RX73	R/RX74	R75	-
24"	R76	R77	R77	R77	R78	R79	-



Ring Type Joint Gaskets

Model R and RX (For Flanges in accordance with API spec 6A, model 6B)

Pipe Size	Ring Number at Class Rating		
	2000	3000	5000
2-1/6"	R/RX23	R/RX24	R/RX24
2-9/16"	R/RX26	R/RX27	R/RX27
3-1/8"	R/RX31	R/RX31	R/RX35
4-1/16"	R/RX37	R/RX37	R/RX39
5-1/8"	R/RX41	R/RX41	R/RX44
7-1/16"	R/RX45	R/RX45	R/RX46
9"	R/RX49	R/RX49	R/RX50
11"	R/RX53	R/RX53	R/RX54
13-5/8"	R/RX57	R/RX57	-
16-3/4"	R/RX65	R/RX66	-
20-3/4"	-	R/RX74	-
21-1/4"	R/RX73	-	-

Model R or RX (For flanges in accordance with ASME B16.47 series A (MSS-SP44))

Pipe Size	Ring Number at Class Rating	
	300-600	900
26"	R93	R100
28"	R94	R101
30"	R95	R102
32"	R96	R103
34"	R97	R104
36"	R98	R105



C&N INDUSTRIAL GROUP LIMITED

Ring Type Joint Gaskets

BX Series

BX series ring joint gaskets feature a pressure relief vent and are designed for API 6BX flanges reaching pressures up to 20,000 PSI. BX series ring joint gaskets are available in low carbon steel, stainless steel 304 and stainless steel 316.



BX

Pipe Size	Ring Number at Pressure Rating (PSI)					
	2000	3000	5000	10000	15000	20000
1-11/16"	-	-	-	BX150	BX150	-
1-13/16"	-	-	-	BX151	BX151	BX151
2-1/16"	-	-	-	BX152	BX152	BX152
2-9/16"	-	-	-	BX153	BX153	BX153
3-1/16"	-	-	-	BX154	BX154	BX154
4-1/16"	-	-	-	BX155	BX155	BX155
5-1/8"	-	-	-	BX169	BX169	-
7-1/16"	-	-	-	BX156	BX156	BX156
9"	-	-	-	BX157	BX157	BX157
11"	-	-	-	BX158	BX158	BX158
13-5/8"	-	-	BX160	BX159	BX159	BX159
16-3/4"	-	-	BX162	BX162	-	-
18-3/4"	-	-	BX163	BX164	BX164	-
21-1/4"	-	-	BX165	BX166	-	-
26-3/4"	BX167	BX168	-	-	-	-
30"	BX303	BX303	-	-	-	-



C&N INDUSTRIAL GROUP LIMITED

office add:NO. 15,lane#1518,guangfulin Rd,Shanghai,China

plant add:Hengpeng Road, Henghe Industrial Zone, Cixi, Zhejiang, China

Tel:+ 86 21 31267504

Fax: + 86 21 31267504

Email: sales@cnpipfitting.com

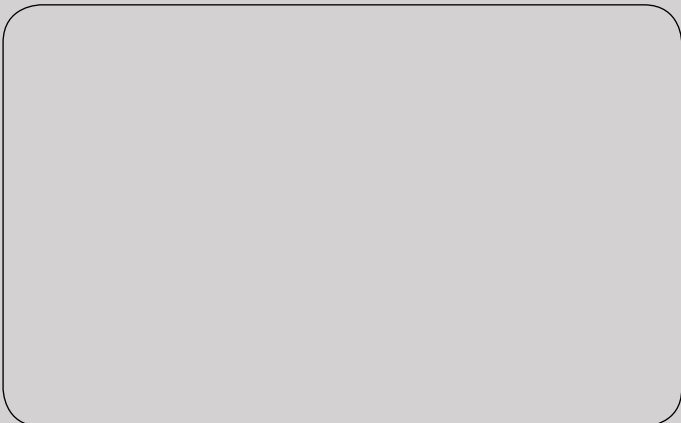


Visit us on the Web
www.cnpipfitting.com

Reach C&N

From BeiJing.total 3 hours by air
From Shanghai PuDong Airport 60 minutes
From Shanghai HongQiao Airport 30 minutes

Distribute By:



Service online time:

Work team 1: Greenwich time:1:00 AM to 10:AM

Work team 2: Greenwich time:10:00 AM to 18:00:PM