

Metallic Ring Joints



METALLIC RING JOINTS

Metallic ring joint gaskets are heavy duty, high-pressure gaskets largely used in offshore petrochemical applications. They are precision-engineered components designed to be used in conjunction with precision-machined flanges. All our Ring Joints are manufactured according to ASME B16.20.

The gasket material is selected on a number of grounds; primarily chemical compatibility with the media and the hardness of the flange. The gasket material ideally needs to be roughly 30 Brinell less than the flange material to ensure sufficient deformation of the gasket without damaging the flange facng.

A number of ring joint styles are available designed for specific flange types, these are:

Type	Nominal Pipe Size	Class Ratings
Type R Oval and Octagonal	1/2" to 24" 26" to 36" 1 1/2" to 20"	300 to 900 ASME B16.20 Series A 150 to 2500 ASME B16.20 API 6A
Type RX	1 1/2" to 24" 26" to 36" 1 1/2" to 20"	720 to 5000 ASME B16.20 300 to 900 ASME B16.20 Series A API 6A
Type BX	1 11/16" to 21 1/4"	5000 to 20000 ASME B16.20

Common Materials

Material	Brinell Hardness	Temperature Limitation	Identification
Soft iron	90	-60 to +400°C	D
Low carbon steel	120	-40 to +500°C	S
4%-6% Cr 1/2% Mo: F5	130	-125 to +500°C	F5
Stainless steel 304	160	-250 to +650°C	S304
Stainless steel 316	160	-110 to +800°C	S316
Stainless steel 321	160	-250 to +870°C	S321
Stainless steel 347	160	-250 to +870°C	S347
Stainless steel 410	170	-20 to +500°C	S410
Inconel 625	-	1000°C	625
Incoloy 825	-	1000°C	825
Hastelloy C-276	-	1000°C	C-276
Duplex	-	800°C	S31803
Titanium	-	540°C	TI

Klinger Type R Oval

Applications:

- Used for high pressure applications.

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat and round bottom groove flanges

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 2500
Availability:	Manufactured to ASME B16.20 Also available in a range of alloys shown on page 80.



Metallic

Type R Oval RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height
R-11	1/2"	300, 600	1.344	0.250	0.440
R-12	1/2"	900, 1500	1.563	0.313	0.560
R-13	3/4"	300, 600	1.688	0.313	0.560
R-13	1/2"	2500	1.688	0.313	0.560
R-14	3/4"	900, 1500	1.750	0.313	0.560
R-15	1 "	150	1.875	0.313	0.560
R-16	1 "	300, 600, 900, 1500	2.000	0.313	0.560
R-16	3/4"	2500	2.000	0.313	0.560
R-17	1.1/4"	150	2.250	0.313	0.560
R-18	1.1/4"	300, 600, 900, 1500	2.375	0.313	0.560
R-18	1 "	2500	2.375	0.313	0.560
R-19	1.1/2"	150	2.563	0.313	0.560
R-20	1.1/2"	300, 600, 900, 1500	2.688	0.313	0.560
R-21	1.1/4"	2500	2.844	0.438	0.690
R-22	2 "	150	3.250	0.313	0.560
R-23	2 "	300, 600	3.250	0.438	0.690
R-23	1.1/2"	2500	3.250	0.438	0.690
R-24	2 "	900, 1500	3.750	0.438	0.690
R-25	2.1/2"	150	4.000	0.313	0.560
R-26	2.1/2"	300, 600	4.000	0.438	0.690
R-26	2 "	2500	4.000	0.438	0.690
R-27	2.1/2"	900, 1500	4.250	0.438	0.690
R-28	2.1/2"	2500	4.375	0.500	0.750
R-29	3 "	150	4.500	0.313	0.560

All dimensions in Inches



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Type R Oval RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height
R-30	3" (1)	300	4.625	0.438	0.690
R-31	3 "	300, 600, 900	4.875	0.438	0.690
R-32	3 "	2500	5.000	0.500	0.750
R-33	3.1/2"	150	5.188	0.313	0.560
R-34	3.1/2"	300, 600	5.188	0.438	0.690
R-35	3 "	1500	5.375	0.438	0.690
R-36	4 "	150	5.875	0.313	0.560
R-37	4 "	300, 600, 900	5.875	0.438	0.690
R-38	4 "	2500	6.188	0.625	0.880
R-39	4 "	1500	6.375	0.438	0.690
R-40	5 "	150	6.750	0.313	0.560
R-41	5 "	300, 600, 900	7.125	0.438	0.690
R-42	5 "	2500	7.500	0.750	0.750
R-43	6 "	150	7.625	0.313	0.560
R-44	5 "	1500	7.625	0.438	0.690
R-45	6 "	300, 600, 900	8.313	0.438	0.690
R-46	6 "	1500	8.313	0.500	0.750
R-47	6 "	2500	9.000	0.750	1.000
R-48	8 "	150	9.750	0.313	0.560
R-49	8 "	300, 600, 900	10.625	0.438	0.690
R-50	8 "	1500	10.625	0.625	0.880
R-51	8 "	2500	11.000	0.875	1.130
R-52	10 "	150	12.000	0.313	0.560
R-53	10 "	300, 600, 900	12.750	0.438	0.690
R-54	10 "	1500	12.750	0.625	0.880
R-55	10 "	2500	13.500	1.125	1.440
R-56	12 "	1500	15.000	0.313	0.560
R-57	12 "	300, 600, 900	15.000	0.438	0.690
R-58	12 "	1500	15.000	0.875	1.130
R-59	14 "	150	15.625	0.313	0.560
R-60	12 "	2500	16.000	1.250	1.560
R-61	14 "	300, 600	16.500	0.438	0.690
R-62	14 "	900	16.500	0.625	0.880
R-63	14 "	1500	16.500	1.000	1.310
R-64	16 "	150	17.875	0.313	0.560
R-65	16 "	300, 600	18.500	0.438	0.690
R-66	16 "	900	18.500	0.625	0.880
R-67	16 "	1500	18.500	1.125	1.440
R-68	18 "	150	20.375	0.313	0.560
R-69	18 "	300, 600	21.000	0.438	0.690
R-70	18 "	900	21.000	0.750	1.000
R-71	18 "	1500	21.000	1.125	1.440
R-72	20 "	150	22.000	0.313	0.560
R-73	20 "	300, 600	23.000	0.500	0.750
R-74	20 "	900	23.000	0.750	1.000
R-75	20 "	1500	23.000	1.250	1.560

All dimensions in Inches

Metallic

Type R Oval RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height
R-76	24 "	150	26.500	0.313	0.560
R-77	24 "	300, 600	27.250	0.625	0.880
R-78	24 "	900	27.250	1.000	1.131
R-79	24 "	1500	27.250	1.375	1.750
R-92	-	-	9.000	0.438	0.690

(1) R-30 for lapped joint only

All dimensions in Inches

Klinger Type R Octagonal

Applications:

- Used for high pressure applications.

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat bottom groove flanges

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 2500
Availability:	Manufactured to ASME B16 20
	Also available in a range of alloys shown on page 80.



Metallic

Type R Octagonal RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height	Width of Flat	Radius
R-11	1/2"	300, 600	1.344	0.250	0.380	0.170	0.06
R-12	1/2"	900, 1500	1.563	0.313	0.500	0.206	0.06
R-13	3/4"	300, 600	1.688	0.313	0.500	0.206	0.06
R-13	1/2"	2500	1.688	0.313	0.500	0.206	0.06
R-14	3/4"	900, 1500	1.750	0.313	0.500	0.206	0.06
R-15	1 "	150	1.875	0.313	0.500	0.206	0.06
R-16	1 "	300, 600, 900, 1500	2.000	0.313	0.500	0.206	0.06
R-16	3/4"	2500	2.000	0.313	0.500	0.206	0.06
R-17	1.1/4"	150	2.250	0.313	0.500	0.206	0.06
R-18	1.1/4"	300, 600, 900, 1500	2.375	0.313	0.500	0.206	0.06
	1 "	2500	2.375	0.313	0.500	0.206	0.06
R-19	1.1/2"	150	2.563	0.313	0.500	0.206	0.06
R-20	1.1/2"	300, 600, 900, 1500	2.688	0.313	0.500	0.206	0.06
R-21	1.1/4"	2500	2.844	0.438	0.630	0.305	0.06
R-22	2 "	150	3.250	0.313	0.500	0.206	0.06
R-23	2 "	300, 600	3.250	0.438	0.630	0.305	0.06
R-23	1.1/2"	2500	3.250	0.438	0.630	0.305	0.06
R-24	2 "	900, 1500	3.750	0.438	0.630	0.305	0.06
R-25	2.1/2"	150	4.000	0.313	0.500	0.206	0.06
R-26	2.1/2"	300, 600	4.000	0.438	0.630	0.305	0.06
R-26	2 "	2500	4.000	0.438	0.630	0.305	0.06
R-27	2.1/2"	900, 1500	4.250	0.438	0.630	0.305	0.06
R-28	2.1/2"	2500	4.375	0.500	0.690	0.341	0.06
R-29	3 "	150	4.500	0.313	0.500	0.206	0.06

All dimensions in Inches



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Type R Octagonal RTJ Dimensions to ASME B16.20

Metallic

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height	Width of Flat	Radius
R-30	3"(1)	300	4.625	0.438	0.630	0.305	0.06
R-31	3 "	300, 600, 900	4.875	0.438	0.630	0.305	0.06
R-32	3 "	2500	5.000	0.500	0.690	0.341	0.06
R-33	3.1/2"	150	5.188	0.313	0.500	0.206	0.06
R-34	3.1/2"	300, 600	5.188	0.438	0.630	0.305	0.06
R-35	3 "	1500	5.375	0.438	0.630	0.305	0.06
R-36	4 "	150	5.875	0.313	0.500	0.206	0.06
R-37	4 "	300, 600, 900	5.875	0.438	0.630	0.305	0.06
R-38	4 "	2500	6.188	0.625	0.810	0.413	0.06
R-39	4 "	1500	6.375	0.438	0.630	0.305	0.06
R-40	5 "	150	6.750	0.313	0.500	0.206	0.06
R-41	5 "	300, 600, 900	7.125	0.438	0.630	0.305	0.06
R-42	5 "	2500	7.500	0.750	0.940	0.485	0.06
R-43	6 "	150	7.625	0.313	0.500	0.206	0.06
R-44	5 "	1500	7.625	0.438	0.630	0.305	0.06
R-45	6 "	300, 600, 900	8.313	0.438	0.630	0.305	0.06
R-46	6 "	1500	8.313	0.500	0.690	0.341	0.06
R-47	6 "	2500	9.000	0.750	0.940	0.485	0.06
R-48	8 "	150	9.750	0.313	0.500	0.206	0.06
R-49	8 "	300, 600, 900	10.625	0.438	0.630	0.305	0.06
R-50	8 "	1500	10.625	0.625	0.810	0.413	0.06
R-51	8 "	2500	11.000	0.875	1.060	0.583	0.06
R-52	10 "	150	12.000	0.313	0.500	0.206	0.06
R-53	10 "	300, 600, 900	12.750	0.438	0.630	0.305	0.06
R-54	10 "	1500	12.750	0.625	0.880	0.413	0.06
R-55	10 "	2500	13.500	1.125	1.380	0.780	0.09
R-56	12 "	1500	15.000	0.313	0.500	0.206	0.06
R-57	12 "	300, 600, 900	15.000	0.438	0.630	0.305	0.06
R-58	12 "	1500	15.000	0.875	1.060	0.583	0.06
R-59	14 "	150	15.625	0.313	0.500	0.206	0.06
R-60	12 "	2500	16.000	1.250	1.500	0.879	0.09
R-61	14 "	300, 600	16.500	0.438	0.630	0.305	0.06
R-62	14 "	900	16.500	0.625	0.810	0.413	0.06
R-63	14 "	1500	16.500	1.000	1.250	0.681	0.09
R-64	16 "	150	17.875	0.313	0.500	0.206	0.06
R-65	16 "	300, 600	18.500	0.438	0.630	0.305	0.06
R-66	16 "	900	18.500	0.625	0.810	0.413	0.06
R-67	16 "	1500	18.500	1.125	1.380	0.780	0.09
R-68	18 "	150	20.375	0.313	0.500	0.206	0.06
R-69	18 "	300, 600	21.000	0.438	0.630	0.305	0.06
R-70	18 "	900	21.000	0.750	0.940	0.485	0.06
R-71	18 "	1500	21.000	1.125	1.380	0.780	0.09
R-72	20 "	150	22.000	0.313	0.500	0.206	0.06
R-73	20 "	300, 600	23.000	0.500	0.690	0.341	0.06
R-74	20 "	900	23.000	0.750	0.940	0.485	0.06
R-75	20 "	1500	23.000	1.250	1.500	0.879	0.09
R-76	24 "	150	26.500	0.313	0.500	0.206	0.06

All dimensions in Inches

Type R Octagonal RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Pitch Diameter	Width	Height	Width of Flat	Radius
R-77	24 "	300, 600	27.250	0.625	0.810	0.413	0.06
R-78	24 "	900	27.250	1.000	1.250	0.681	0.09
R-79	24 "	1500	27.250	1.375	1.630	0.977	0.09
R-80	22 "	150	24.250	0.313	0.500	0.206	0.06
R-81	22 "	300, 600	25.000	0.563	0.750	0.377	0.06
R-82	1 "	10000	2.250	0.438	0.630	0.305	0.06
R-84	1.1/2"	10000	2.500	0.438	0.630	0.305	0.06
R-85	2 "	10000	3.125	0.500	0.690	0.341	0.06
R-86	2.1/2"	10000	3.563	0.625	0.810	0.413	0.06
R-87	3 "	10000	3.938	0.625	0.810	0.413	0.06
R-88	4 "	10000	4.875	0.750	0.940	0.485	0.06
R-89	3.1/2"	10000	4.500	0.750	0.940	0.485	0.06
R-90	5 "	10000	6.125	0.875	1.060	0.583	0.06
R-91	10 "	10000	10.250	1.250	1.500	0.879	0.06
R-92	-	-	9.000	0.438	0.630	0.305	0.06
R-93	26 "	300, 600	29.500	0.750	0.940	0.485	0.06
R-94	28 "	300, 600	31.500	0.750	0.940	0.485	0.06
R-95	30 "	300, 600	33.750	0.750	0.940	0.485	0.06
R-96	32 "	300, 600	36.000	0.875	1.060	0.583	0.06
R-97	34 "	300, 600	38.000	0.875	1.060	0.583	0.06
R-98	36 "	300, 600	40.250	0.875	1.060	0.583	0.06
R-99	8 "	2000, 3000	9.250	0.438	0.630	0.305	0.06
R-100	26 "	900	29.500	1.125	1.380	0.780	0.09
R-101	28 "	900	31.500	1.250	1.500	0.879	0.09
R-102	30 "	900	33.750	1.250	1.500	0.879	0.09
R-103	32 "	900	36.000	1.250	1.500	0.879	0.09
R-104	34 "	900	38.000	1.375	1.630	0.977	0.09
R-105	36 "	900	40.250	1.375	1.630	0.977	0.09

(1) R-30 for lapped joint only

All dimensions in Inches

Metallic

Klinger Type RX

Applications:

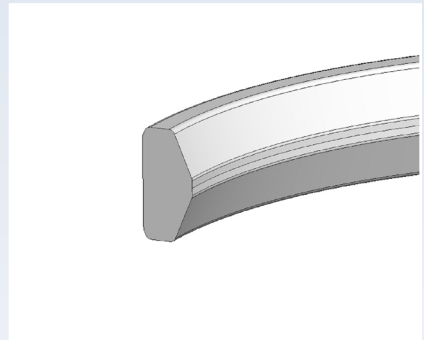
- Used for high pressure applications.

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat bottom groove flanges

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 5000
Availability:	Manufactured to ASME B16 20 Also available in a range of alloys shown on page 80.



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Type RX RTJ Dimensions to ASME B16.20

Nominal Size	Ring Number	Class	Outside Diameter	Width	Width of Flat	Height of outside bevel	Height of Ring	Radius	Hole Size
RX-20	1.1/2"	2000, 3000, 5000	3.000	0.344	0.182	0.125	0.750	0.06	-
RX-23	2 "	2000	3.672	0.469	0.254	0.167	1.000	0.06	-
RX-24	2 "	3000, 5000	4.172	0.469	0.254	0.167	1.000	0.06	-
RX-25	3.1/8"	5000	4.313	0.344	0.182	0.125	0.750	0.06	-
RX-26	2.1/2"	2000	4.406	0.469	0.254	0.167	1.000	0.06	-
RX-27	2.1/2"	3000, 5000	4.656	0.469	0.254	0.167	1.000	0.06	-
RX-31	3 "	2000, 3000	5.297	0.469	0.254	0.167	1.000	0.06	-
RX-35	3 "	5000	5.797	0.469	0.254	0.167	1.000	0.06	-
RX-37	4 "	2000, 3000	6.297	0.469	0.254	0.167	1.000	0.06	-
RX-39	4 "	5000	6.797	0.469	0.254	0.167	1.000	0.06	-
RX-41	5 "	2000, 3000	7.547	0.469	0.254	0.167	1.000	0.06	-
RX-44	5 "	5000	8.047	0.469	0.254	0.167	1.000	0.06	-
RX-45	6 "	2000, 3000	8.734	0.469	0.254	0.167	1.000	0.06	-
RX-46	6 "	5000	8.750	0.531	0.263	0.188	1.125	0.06	-
RX-47	8" (1)	5000	9.656	0.781	0.407	0.271	1.625	0.06	-
RX-49	8 "	2000, 3000	11.047	0.469	0.254	0.167	1.000	0.06	-
RX-50	8 "	5000	11.156	0.656	0.335	0.208	1.250	0.06	-
RX-53	10 "	2000, 3000	13.172	0.469	0.254	0.167	1.000	0.06	-
RX-54	10 "	5000	13.281	0.656	0.335	0.208	1.250	0.06	-
RX-57	12 "	2000, 3000	13.281	0.469	0.254	0.167	1.000	0.06	-
RX-63	14 "	5000	17.391	1.063	0.582	0.333	2.000	0.09	-
RX-65	16 "	2000	18.922	0.469	0.254	0.167	1.000	0.06	-
RX-66	16 "	3000	18.031	0.656	0.335	0.208	1.250	0.06	-
RX-69	18 "	2000	21.422	0.469	0.254	0.167	1.000	0.06	-

All dimensions in Inches



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Type RX RTJ Dimensions to ASME B16.20

Nominal Size	Ring Number	Class	Outside Diameter	Width	Width of Flat	Height of outside bevel	Height of Ring	Radius	Hole Size
RX-70	18 "	3000	21.656	0.781	0.407	0.271	1.625	0.09	-
RX-73	20 "	2000	23.469	0.531	0.263	0.208	1.250	0.06	-
RX-74	20 "	3000	23.656	0.781	0.407	0.271	1.625	0.09	-
RX-99	8" (1)	2000, 3000	9.672	0.469	0.254	0.167	1.000	0.06	-
RX-201	1.3/8"	5000	2.026	0.226	0.126	0.057	0.445	0.02	-
RX-205	1.13/16"	5000	2.453	0.219	0.120	0.072	0.437	0.02	-
RX-210	2.9/16"	5000	3.844	0.375	0.213	0.125	0.750	0.03	-
RX-215	4.1/16"	5000	5.547	0.469	0.210	0.167	1.000	0.06	-

(1) Crossover flange connection

All dimensions in Inches

Klinger Type BX

Applications:

- Used for high pressure API applications.

Typical Properties:

- Pressure energised design improves efficiency of seal with increasing internal pressure.
- Suitable for API 6BX flanges

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 20,000
Availability:	Manufactured to ASME B16 20
	Also available in a range of alloys shown on page 80.



Metallic

Type BX RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Outside Diameter	Height of Ring	Width of Ring	Outside Diameter of Flat	Width of Flat	Hole Size
BX-150	1.11/16"	10000, 15000	2.842	0.366	0.366	2.790	0.314	0.06
BX-151	1.13/16"	10000, 15000, 20000	3.008	0.379	0.379	2.954	0.325	0.06
BX-152	2.1/16"	10000, 15000, 20000	3.334	0.403	0.403	3.277	0.346	0.06
BX-153	2.9/16"	10000, 15000, 20000	3.974	0.448	0.448	3.910	0.385	0.06
BX-154	3.1/16"	10000, 15000, 20000	4.600	0.488	0.488	4.531	0.419	0.06
BX-155	4.1/16"	10000, 15000, 20000	5.825	0.560	0.560	5.746	0.481	0.06
BX-156	7.1/16"	10000, 15000, 20000	9.367	0.733	0.733	9.263	0.629	0.12
BX-157	9 "	10000, 15000, 20000	11.593	0.826	0.826	11.476	0.709	0.12
BX-158	11 "	10000, 15000, 20000	13.860	0.911	0.911	13.371	0.782	0.12
BX-159	13.5/8"	10000, 20000	16.800	1.012	1.012	16.657	0.869	0.12
BX-160	13.5/8"	3000	15.850	0.938	0.541	15.717	0.408	0.12
BX-161	16.3/4"	5000	19.347	1.105	0.638	19.191	0.482	0.12
BX-162	16.3/4"	5000, 10000, 15000	18.720	0.560	0.560	18.641	0.481	0.06
BX-163	18.3/4"	5000	21.896	1.185	0.684	21.728	0.516	0.12
BX-164	18.3/4"	10000, 15000	22.463	1.185	0.968	21.728	0.800	0.12
BX-165	21.1/4"	5000	24.595	1.261	0.728	24.417	0.550	0.12

All dimensions in Inches

Type BX RTJ Dimensions to ASME B16.20

Ring Number	Nominal Size	Class	Outside Diameter	Height of Ring	Width of Ring	Outside Diameter of Flat	Width of Flat	Hole Size
BX-166	21.1/4"	10000	25.198	1.261	1.029	25.020	0.851	0.12
BX-167	26.3/4"	2000	29.896	1.412	0.516	29.696	0.316	0.06
BX-168	26.3/4"	3000	30.128	1.412	0.632	29.928	0.432	0.06
BX-169	5.1/8"	10000	6.831	0.624	0.509	6.743	0.421	0.06
BX-170	6.5/8"	10000, 15000	8.584	0.560	0.560	8.505	0.481	0.06
BX-171	8.9/16"	10000, 15000	10.529	0.560	0.560	10.450	0.481	0.06
BX-172	11.5/32"	10000, 15000	13.113	0.560	0.560	13.034	0.481	0.06
BX-303	30 "	2000, 3000	33.573	1.494	0.668	33.361	0.457	0.06

All dimensions in Inches

Klinger IX Seal Ring

Applications:

- Used for high pressure applications
- For use in compact fanges

Typical Properties:

- High integrity seal at high pressures
- PTFE coating improves corrosion resistance and provides easy identification
- Designed to create a high integrity joint with primary and secondary seals

Typical Specifications:

Material :	As below
Max. temperature :	260°C
Max. pressure:	Up to Class 2500
Availability:	Manufactured to ASME B16 20 Also available in a range of alloys: Low Carbon Steel Duplex 17/4-PH Inconel 625



Metallic

