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# METALLIC GASKETS

## ABOUT COMPANY

EMA Flow Control USA holds the state of art manufacturing facilities equipped with ultra modern production equipment and exporting the finest quality Ring Joint Gasket, Lens Gasket, Weld Ring Gasket, Metal O-ring Gasket & Other Metallic Gasket.

Some of the key industries where our products are being used are Oil & Gas, Petrochemical, Chemical, Power Plant, Pharmaceutical, Food & Beverages, Sugar Mills, Paper Industry and Cement Industry.

We operate on philosophy to provide Immediate Response, Excellent Quality, Quick Delivery and Customer Satisfaction followed by commitment as "What we commit, We deliver" based on this we are having satisfied customers in more than 25 countries throughout the world.

We have stringent Quality Management and Control System to ensure the superior quality of products. All of our products are strictly inspected at each stage of the production process from the Inspection of Raw Material to the finish products. Each order is carried out as per Inspection / Test Plan, Required Specifications and Applicable Manufacturing / Quality Standards.

## MISSION

EMA Flow Control USA focused to provide the superior quality products at competitive prices to its customers around the world by utilizing the company's human resources and advanced technology equipment with the strong commitment to R&D, Health, Safety, Environment and company's core values.

## VISION

To make our brand "the first choice of customers".

## CORE VALUES

The core values of our company guide and drive our business to achieve our mission and a step ahead towards our vision.

**Quality:** It is our primary focus to produce and deliver superior quality products.

**Commitment:** What we commit, We deliver.

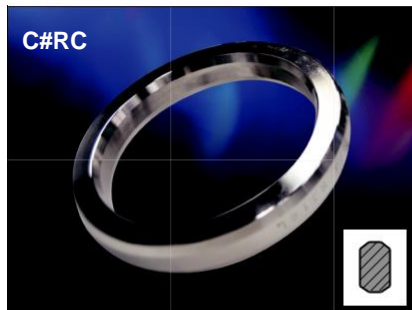
**Team Work:** We believe on team work which is the most important element to accomplish the set objective.

**Customer Satisfaction:** To achieve customer satisfaction with our Quality, Commitment and Team Work.

## RING JOINT GASKET

The Ring Joint Gasket was initially developed for use in the petroleum industry, where high pressure/temperature applications necessitated the need for a high integrity seal. They are mainly used in the oil field on drilling and completion equipment. Ring Joint Gaskets are also commonly used on valves and pipework assemblies, along with some high integrity pressure vessel joints.

The style R Ring Joint Gasket is manufactured in accordance with API 6A and ASME B16.20 to suit API 6B and ASME B16.5 flanges.



### R Style (Octagonal)

This R style ring is standard ring joint gasket with octagonal cross section and designed for flanges with standard ring joint grooves. Interchangeable with oval section gaskets on modern octagonal grooved flanges.



### R Style (Oval)

The oval ring gaskets are applied at wide range of industry today. These gaskets fit API 6B and ASME B16.5 flanges. Oval type R gaskets fit all current specification ring grooves, as well as "round bottom" ring grooves found in some older flanges.



### BX Style

Style BX gaskets incorporate a pressure balance hole to ensure equalization of pressure which may be trapped in the grooves. Style BX pressure energized Ring Type Joints, manufactured in accordance with API 6A, are designed for use on pressurized systems up to 20000 psi. Although similar in style to the octagonal gaskets, the BX Series can only be used with 6BX flanges and 16BX hubs. BX-Gaskets have been designed for higher-pressure between 5000lbs and 20000lbs.



### RX Style

Style RX is a pressure energized adaptation of the standard Style R Ring Type Joint. As the RX is designed to fit the same groove design as a Standard Style R, the joints are interchangeable. Style RX gaskets are designed for pressures up to 15000 psi. These gaskets are interchangeable with R-oval or R-octagonal rings used on API 6B flanges. Style RX is more costly than your standard oval or octagonal rings, therefore not as popular. Style RX performs excellent in 6B flanged blowout preventer stacks, which require the additional mass of the RX to support the higher pressures with higher vibrations and heavier weights of these units.

# RING JOINT GASKET

The gasket material should be selected to suit the service conditions. It is always recommended that the gasket material is softer than the mating flanges. Popular Ring Type Joint materials, with the recommended maximum hardness and identification as specified in API 6A, are shown in the table below. For specialized applications, Ring Type Joints can be machined from DUPLEX steels and other exotic materials such as Monel®, Inconel®, Incoloy®, and Hastelloy®. The Technical Department is available to advise on other materials.



## Hardness of Material

MATERIAL	UNS NUMBER	MAXIMUM HARDNESS		IDENTIFICATION
		BRINELL*	ROCKWELL B*	
Soft Iron		90	56	D
Low Carbon Steel		120	68	S
4-6% Chrome 1/2% Moly	K42544	130	72	F5
Type 304 Stainless Steel	S30400	160	83	S304
Type 316 Stainless Steel	S31600	160	83	S316
Type 347 Stainless Steel	S34700	160	83	S347
Type 410 Stainless Steel	S41000	170	86	S410
Titanium Grade 2	R50400			
Alloy 600	N06600	200		
Alloy 625	N06625	200		
Alloy 800	N08800	200		
Alloy 825	N08825	150		
Hastelloy	N10001	200		
Alloy C276	N10276	200		
SMO 254	S31254	180		
Zeron 100		200		
Duplex	S31803			

\* Measured with 3000 Kg load except soft iron which is measured with 500 Kg load ♣ Measured with 100 Kg load and 1/16 inch diameter ball

# RING JOINT GASKET

Dimensions of R Style

RING NO.	PRESSURE CLASSES													AVERAGE PITCH DIAMETER OF RING	WIDTH OF RING	HEIGHT OF RING		WIDTH OF FLAT ON OCTAGONAL RING	RADIUS IN OCTAGONAL RING				
	ASME B16.5					API 6B					ASME B16.47 Series A					P	A			OVAL	OCTAGONAL	C	R1
	150	300/600	900	1500	2500	720/960(1)	2000	3000	5000	10000(1)	150	300/600	900							B	H		
R11	-	1/2	-	-	-	-	-	-	-	-	-	-	-	34.14	6.35	11.2	9.7	4.32	1.5				
R12	-	-	1/2	1/2	-	-	-	-	-	-	-	-	-	39.70	7.95	14.2	12.7	5.23	1.5				
R13	-	3/4	-	-	1/2	-	-	-	-	-	-	-	-	42.88	7.95	14.2	12.7	5.23	1.5				
R14	-	-	3/4	3/4	-	-	-	-	-	-	-	-	-	44.45	7.95	14.2	12.7	5.23	1.5				
R15	1	-	-	-	-	-	-	-	-	-	-	-	-	47.63	7.95	14.2	12.7	5.23	1.5				
R16	-	1	1	1	3/4	1	1	1	1	-	-	-	-	50.80	7.95	14.2	12.7	5.23	1.5				
R17	1 1/4	-	-	-	-	-	-	-	-	-	-	-	-	57.15	7.95	14.2	12.7	5.23	1.5				
R18	-	1 1/4	1 1/4	1 1/4	1	1 1/4	1 1/4	1 1/4	1 1/4	-	-	-	-	60.33	7.95	14.2	12.7	5.23	1.5				
R19	1 1/2	-	-	-	-	-	-	-	-	-	-	-	-	65.10	7.95	14.2	12.7	5.23	1.5				
R20	-	1 1/2	1 1/2	1 1/2	-	1 1/2	1 1/2	1 1/2	1 1/2	-	-	-	-	68.28	7.95	14.2	12.7	5.23	1.5				
R21	-	-	-	-	1 1/4	-	-	-	-	-	-	-	-	72.24	11.13	17.5	16.0	7.75	1.5				
R22	2	-	-	-	-	-	-	-	-	-	-	-	-	82.55	7.95	14.2	12.7	5.23	1.5				
R23	-	2	-	-	1 1/2	2	2	-	-	-	-	-	-	82.55	11.13	17.5	16.0	7.75	1.5				
R24	-	-	2	2	-	-	-	2	2	-	-	-	-	95.25	11.13	17.5	16.0	7.75	1.5				
R25	2 1/2	-	-	-	-	-	-	-	-	-	-	-	-	101.60	7.95	14.2	12.7	5.23	1.5				
R26	-	2 1/2	-	-	2	2 1/2	2 1/2	-	-	-	-	-	-	101.60	11.13	17.5	16.0	7.75	1.5				
R27	-	-	2 1/2	2 1/2	-	-	-	2 1/2	2 1/2	-	-	-	-	107.95	11.13	17.5	16.0	7.75	1.5				
R28	-	-	-	-	2 1/2	-	-	-	-	-	-	-	-	111.13	12.70	19.1	17.5	8.66	1.5				
R29	3	-	-	-	-	-	-	-	-	-	-	-	-	114.30	7.95	14.2	12.7	5.23	1.5				
R30(2)	-	3	-	-	-	-	-	-	-	-	-	-	-	117.48	11.13	17.5	16.0	7.75	1.5				
R31	-	3	3	-	-	3	3	3	-	-	-	-	-	123.83	11.13	17.5	16.0	7.75	1.5				
R32	-	-	-	-	3	-	-	-	-	-	-	-	-	127.00	12.70	19.1	17.5	8.66	1.5				
R33	3 1/2	-	-	-	-	-	-	-	-	-	-	-	-	131.78	7.95	14.2	12.7	5.23	1.5				
R34	-	3 1/2	-	-	-	-	-	-	-	-	-	-	-	131.78	11.13	17.5	16.0	7.75	1.5				
R35	-	-	-	3	-	-	-	-	3	-	-	-	-	136.53	11.13	17.5	16.0	7.75	1.5				
R36	4	-	-	-	-	-	-	-	-	-	-	-	-	149.23	7.95	14.2	12.7	5.23	1.5				
R37	-	4	4	-	-	4	4	4	3 1/2	-	-	-	-	149.23	11.13	17.5	16.0	7.75	1.5				
R38	-	-	-	-	4	-	-	-	-	-	-	-	-	157.18	15.88	22.4	20.6	10.49	1.5				
R39	-	-	-	4	-	-	-	-	4	-	-	-	-	161.93	11.13	17.5	16.0	7.75	1.5				
R40	5	-	-	-	-	-	-	-	-	-	-	-	-	171.45	7.95	14.2	12.7	5.23	1.5				
R41	-	5	5	-	-	5	5	5	-	-	-	-	-	180.98	11.13	17.5	16.0	7.75	1.5				
R42	-	-	-	-	5	-	-	-	-	-	-	-	-	190.50	19.05	25.4	23.9	12.32	1.5				
R43	6	-	-	-	-	-	-	-	-	-	-	-	-	193.68	7.95	14.2	12.7	5.23	1.5				
R44	-	-	-	5	-	-	-	-	5	-	-	-	-	193.68	11.13	17.5	16.0	7.75	1.5				
R45	-	6	6	-	-	6	6	6	-	-	-	-	-	211.15	11.13	17.5	16.0	7.75	1.5				
R46	-	-	-	6	-	-	-	-	6	-	-	-	-	211.15	12.70	19.1	17.5	8.66	1.5				
R47	-	-	-	-	6	-	-	-	-	-	-	-	-	228.60	19.05	25.4	23.9	12.32	1.5				
R48	8	-	-	-	-	-	-	-	-	-	-	-	-	247.65	7.95	14.2	12.7	5.23	1.5				
R49	-	8	8	-	-	8	8	8	-	-	-	-	-	269.88	11.13	17.5	16.0	7.75	1.5				
R50	-	-	-	8	-	-	-	-	8	-	-	-	-	269.88	15.88	22.4	20.6	10.49	1.5				
R51	-	-	-	-	8	-	-	-	-	-	-	-	-	279.40	22.23	28.7	26.9	14.81	1.5				
R52	10	-	-	-	-	-	-	-	-	-	-	-	-	304.80	7.95	14.2	12.7	5.23	1.5				
R53	-	10	10	-	-	10	10	10	-	-	-	-	-	323.85	11.13	17.5	16.0	7.75	1.5				
R54	-	-	-	10	-	-	-	-	10	-	-	-	-	323.85	15.88	22.4	20.6	10.49	1.5				
R55	-	-	-	-	10	-	-	-	-	-	-	-	-	342.90	28.58	36.5	35.1	19.81	2.3				
R56	12	-	-	-	-	-	-	-	-	-	-	-	-	381.00	7.95	14.2	12.7	5.23	1.5				
R57	-	12	12	-	-	12	12	12	-	-	-	-	-	381.00	11.13	17.5	16.0	7.75	1.5				

GENERAL NOTE: End flanges to API 6D and API 600 use gaskets for equivalent pipe size under ASME B16.5 or ASME B16.47 series A.

- (a) All dimensions are in millimeters.
- (b) Tolerances:

P = average pitch diameter of ring,  $\pm 0.18$   
 A = width of ring,  $\pm 0.20$   
 B, H = height of ring, +1.3, -0.5

Variation in height throughout the entire circumference

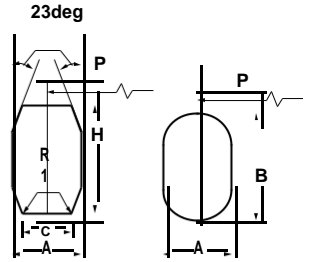
of any given ring shall not exceed 0.5 within these tolerances.  
 C = width of flat on octagonal ring,  $\pm 0.20$

R1 = radius in ring,  $\pm 0.5$   
 23 deg = angle,  $\pm 0$  deg 30 min

NOTES:

(1) Class 720, 960, and 10000 flanges to API 6B are obsolete. Data are for information only.

(2) R-30 is for lapped joint only.



RING NO.	PRESSURE CLASSES												AVERAGE PITCH DIAMETER OF RING	WIDTH OF RING	HEIGHT OF RING		WIDTH OF FLAT ON OCTAGONAL RING	RADIUS IN OCTAGONAL RING		
	ASME B16.5					API 6B					ASME B16.47 Series A				OVAL B	OCTAGONAL H			C	R1
	150	300/600	900	1500	2500	720/960(1)	2000	3000	5000	10000(1)	150	300/600								
R58	-	-	-	12	-	-	-	-	-	-	-	-	-	381.00	22.23	28.7	26.9	14.81	1.5	
R59	14	-	-	-	-	-	-	-	-	-	-	-	-	396.88	7.95	14.2	12.7	5.23	1.5	
R60	-	-	-	-	12	-	-	-	-	-	-	-	-	406.40	31.75	39.6	38.1	22.23	2.3	
R61	-	14	-	-	-	14	14	14	-	-	-	-	-	419.10	11.13	17.5	16.0	7.75	1.5	
R62	-	-	14	-	-	-	-	-	-	-	-	-	-	419.10	15.88	22.4	20.6	10.49	1.5	
R63	-	-	-	14	-	-	-	-	-	-	-	-	-	419.10	25.40	33.3	31.8	17.30	2.3	
R64	16	-	-	-	-	-	-	-	-	-	-	-	-	454.03	7.95	14.2	12.7	5.23	1.5	
R65	-	16	-	-	-	16	16	-	-	-	-	-	-	469.90	11.13	17.5	16.0	7.75	1.5	
R66	-	-	16	-	-	-	-	16	-	-	-	-	-	469.90	15.88	22.4	20.6	10.49	1.5	
R67	-	-	-	16	-	-	-	-	-	-	-	-	-	469.90	28.58	36.6	35.1	19.81	2.3	
R68	18	-	-	-	-	-	-	-	-	-	-	-	-	517.53	7.95	14.2	12.7	5.23	1.5	
R69	-	18	-	-	-	18	18	-	-	-	-	-	-	533.40	11.13	17.5	16.0	7.75	1.5	
R70	-	-	18	-	-	-	-	18	-	-	-	-	-	533.40	19.05	25.4	23.9	12.32	1.5	
R71	-	-	-	18	-	-	-	-	-	-	-	-	-	533.40	28.58	36.6	35.1	19.81	2.3	
R72	20	-	-	-	-	-	-	-	-	-	-	-	-	558.80	7.95	14.2	12.7	5.23	1.5	
R73	-	20	-	-	-	20	20	-	-	-	-	-	-	584.20	12.70	19.1	17.5	8.66	1.5	
R74	-	-	20	-	-	-	-	20	-	-	-	-	-	584.20	19.05	25.4	23.9	12.32	1.5	
R75	-	-	-	20	-	-	-	-	-	-	-	-	-	584.20	31.75	39.6	38.1	22.33	2.3	
R76	24	-	-	-	-	-	-	-	-	-	-	-	-	673.10	7.95	14.2	12.7	5.23	1.5	
R77	-	24	-	-	-	-	-	-	-	-	-	-	-	692.15	15.88	22.4	20.6	10.49	1.5	
R78	-	-	24	-	-	-	-	-	-	-	-	-	-	692.15	25.40	33.3	31.8	17.30	2.3	
R79	-	-	-	24	-	-	-	-	-	-	-	-	-	692.15	34.93	44.5	41.4	24.82	2.3	
R80	-	-	-	-	-	-	-	-	-	-	-	-	-	615.95	7.95	-	12.7	5.23	1.5	
R81	-	-	-	-	-	-	-	-	-	-	-	-	-	635.00	14.30	-	19.1	9.58	1.5	
R82	-	-	-	-	-	-	-	-	-	1	-	-	-	57.15	11.13	-	16.0	7.75	1.5	
R84	-	-	-	-	-	-	-	-	-	1 1/2	-	-	-	63.50	11.13	-	16.0	7.75	1.5	
R85	-	-	-	-	-	-	-	-	-	2	-	-	-	79.38	12.70	-	17.5	8.66	1.5	
R86	-	-	-	-	-	-	-	-	-	2 1/2	-	-	-	90.50	15.88	-	20.6	10.49	1.5	
R87	-	-	-	-	-	-	-	-	-	3	-	-	-	100.03	15.88	-	20.6	10.49	1.5	
R88	-	-	-	-	-	-	-	-	-	4	-	-	-	122.83	19.05	-	23.9	12.32	1.5	
R89	-	-	-	-	-	-	-	-	-	3 1/2	-	-	-	114.30	19.05	-	23.9	12.32	1.5	
R90	-	-	-	-	-	-	-	-	-	5	-	-	-	155.58	22.23	-	26.9	14.81	1.5	
R91	-	-	-	-	-	-	-	-	-	10	-	-	-	260.35	31.75	-	38.1	22.33	2.3	
R92	-	-	-	-	-	-	-	-	-	-	-	-	-	228.60	11.13	17.5	16.0	7.75	1.5	
R93	-	-	-	-	-	-	-	-	-	-	-	26	-	749.30	19.05	-	23.9	12.32	1.5	
R94	-	-	-	-	-	-	-	-	-	-	-	28	-	800.10	19.05	-	23.9	12.32	1.5	
R95	-	-	-	-	-	-	-	-	-	-	-	30	-	857.25	19.05	-	23.9	12.32	1.5	
R96	-	-	-	-	-	-	-	-	-	-	-	32	-	914.40	22.23	-	26.9	14.81	1.5	
R97	-	-	-	-	-	-	-	-	-	-	-	34	-	965.20	22.23	-	26.9	14.81	1.5	
R98	-	-	-	-	-	-	-	-	-	-	-	36	-	1022.35	22.23	-	26.9	14.81	1.5	
R99	-	-	-	-	-	-	8	8	-	-	-	-	-	234.95	11.13	-	16.0	7.75	1.5	
R100	-	-	-	-	-	-	-	-	-	-	-	26	-	749.30	28.58	-	35.1	19.81	2.3	
R101	-	-	-	-	-	-	-	-	-	-	-	28	-	800.10	31.75	-	38.1	22.33	2.3	
R102	-	-	-	-	-	-	-	-	-	-	-	30	-	857.25	31.75	-	38.1	22.33	2.3	
R103	-	-	-	-	-	-	-	-	-	-	-	32	-	914.40	31.75	-	38.1	22.33	2.3	
R104	-	-	-	-	-	-	-	-	-	-	-	34	-	965.20	34.93	-	41.4	24.82	2.3	
R105	-	-	-	-	-	-	-	-	-	-	-	36	-	1022.35	34.93	-	41.4	24.82	2.3	

**RING JOINT GASKET**

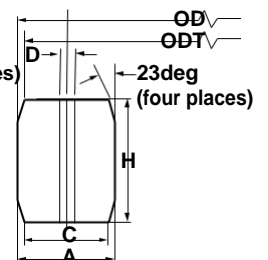
*Dimensions of BX Style*

RING NO.	PRESSURE CLASSES, API 6 BX						NOMINAL SIZE	OUTSIDE DIAMETER OF RING, OD	HEIGHT OF RING, H	WIDTH OF RING, A	OUTSIDE DIAMETER OF FLAT, ODT	WIDTH OF FLAT, C	HOLE SIZE, D (NOTE 1)
	2000	3000	5000	10000	15000	20000							
BX150	-	-	-	1 11/16	1 11/16	-	43	72.19	9.30	9.30	70.87	7.98	1.5
BX151	-	-	-	1 13/16	1 13/16	1 13/16	46	76.40	9.63	9.63	75.03	8.26	1.5
BX152	-	-	-	2 1/16	2 1/16	2 1/16	52	84.68	10.24	10.24	83.24	8.79	1.5
BX153	-	-	-	2 9/16	2 9/16	2 9/16	65	100.94	11.38	11.38	99.31	9.78	1.5
BX154	-	-	-	3 1/16	3 1/16	3 1/16	78	116.84	12.40	12.40	115.09	10.64	1.5
BX155	-	-	-	4 1/16	4 1/16	4 1/16	103	147.96	14.22	14.22	145.95	12.22	1.5
BX156	-	-	-	7 1/16	7 1/16	7 1/16	179	237.92	18.62	18.62	235.28	15.98	3.0
BX157	-	-	-	9	9	9	229	294.46	20.98	20.98	291.49	18.01	3.0
BX158	-	-	-	11	11	11	279	352.04	23.14	23.14	348.77	19.86	3.0
BX159	-	-	-	13 5/8	13 5/8	13 5/8	346	426.72	25.70	25.70	423.09	22.07	3.0
BX160	-	-	13 5/8	-	-	-	346	402.59	23.83	13.74	399.21	10.36	3.0
BX161	-	-	16 3/4	-	-	-	422	491.41	28.07	16.21	487.45	12.24	3.0
BX162	-	-	16 3/4	16 3/4	16 3/4	-	422	475.49	14.22	14.22	473.48	12.22	1.5
BX163	-	-	18 3/4	-	-	-	476	556.16	30.10	17.37	551.89	13.11	3.0
BX164	-	-	-	18 3/4	18 3/4	-	476	570.56	30.10	24.59	566.29	20.32	3.0
BX165	-	-	21 1/4	-	-	-	540	624.71	32.03	18.49	620.19	13.97	3.0
BX166	-	-	-	21 1/4	-	-	540	640.03	32.03	26.14	635.51	21.62	3.0
BX167	26 3/4	-	-	-	-	-	680	759.36	35.86	13.11	754.28	8.03	1.5
BX168	-	26 3/4	-	-	-	-	680	765.25	35.86	16.05	760.17	10.97	1.5
BX169	-	-	-	5 1/8	-	-	130	173.51	15.85	12.93	171.27	10.69	1.5
BX170	-	-	-	6 5/8	6 5/8	-	168	218.03	14.22	14.22	216.03	12.22	1.5
BX171	-	-	-	8 9/16	8 9/16	-	218	267.44	14.22	14.22	265.43	12.22	1.5
BX172	-	-	-	11 5/32	11 5/32	-	283	333.07	14.22	14.22	331.06	12.22	1.5
BX303	30	30	-	-	-	-	762	852.75	37.95	16.97	847.37	11.61	1.5

GENERAL NOTES:

- (a) All dimensions are in millimeters.
- (b) Radius, R shall be 8% to 12% of the gasket height, H.
- (c) Tolerances:

OD = outside diameter of ring, +0.00, -0.15  
 H = height of ring, +0.20, -0.00  
 Variation in height throughout the entire circumference of any ring shall not exceed 0.10 within these tolerances. **R(four places)**  
 A = width of ring, +0.20, -0.00  
 Variation in width throughout the entire circumference of any ring shall not exceed 0.10 within these tolerances.  
 ODT = outside diameter of flat, ±0.05  
 C = width of flat, +0.15, -0.00  
 D = hole size, ±0.5  
 R = radius of ring [see General Note (b)]  
 23 deg = angle, ±0 deg 15 min



NOTE:

- (1) One pressure passage hole is required per gasket as illustrated. The centerline of the hole shall be located at the midpoint of dimension C.

# RING JOINT GASKET

Dimensions of RX Style

NO.	PRESSURE CLASSES, API 6B				OUTSIDE DIAMETER OF RING, OD	WIDTH OF RING, A	WIDTH OF FLAT, C	HEIGHT OF OUTSIDE BEVEL, D	HEGHT OF RING, H	RADIUS IN OCTAGONAL RING, R1	HOLE SIZE, E (NOTE3)
	720-960 and 2000 (NOTE 1)	2900 (NOTE 1)	3000	5000							
RX20	1 1/2	.	1 1/2	1 1/2	76.20	8.74	4.62	3.18	19.05	1.5	-
RX23	2	.	.	.	93.27	11.91	6.45	4.24	25.40	1.5	-
RX24	.	.	2	2	105.97	11.91	6.45	4.24	25.40	1.5	-
RX25	.	.	.	3 1/8	109.55	8.74	4.62	3.18	19.05	1.5	-
RX26	2 1/2	.	.	.	111.91	11.91	6.45	4.24	25.40	1.5	-
RX27	.	.	2 1/2	2 1/2	118.26	11.91	6.45	4.24	25.40	1.5	-
RX31	3	.	3	.	134.54	11.91	6.45	4.24	25.40	1.5	-
RX35	.	.	.	3	147.24	11.91	6.45	4.24	25.40	1.5	-
RX37	4	.	4	.	159.94	11.91	6.45	4.24	25.40	1.5	-
RX39	.	.	.	4	172.64	11.91	6.45	4.24	25.40	1.5	-
RX41	5	.	5	.	191.69	11.91	6.45	4.24	25.40	1.5	-
RX44	.	.	.	5	204.39	11.91	6.45	4.24	25.40	1.5	-
RX45	6	.	6	.	221.84	11.91	6.45	4.24	25.40	1.5	-
RX46	.	.	.	6	222.25	13.49	6.68	4.78	28.58	1.5	-
RX47	.	.	.	8 (2)	245.26	19.84	10.34	6.88	41.28	2.3	-
RX49	8	.	8	.	280.59	11.91	6.45	4.24	25.40	1.5	-
RX50	.	.	.	8	283.36	16.66	8.51	5.28	31.75	1.5	-
RX53	10	.	10	.	334.57	11.91	6.45	4.24	25.40	1.5	-
RX54	.	.	.	10	337.34	16.66	8.51	5.28	31.75	1.5	-
RX57	12	.	12	.	391.72	11.91	6.45	4.24	25.40	1.5	-
RX63	.	.	.	14	441.73	27.00	14.78	8.46	50.80	2.3	-
RX65	16	.	.	.	480.62	11.91	6.45	4.24	25.40	1.5	-
RX66	.	.	16	.	457.99	16.66	8.51	5.28	31.75	1.5	-
RX69	18	.	.	.	544.12	11.91	6.45	4.24	25.40	1.5	-
RX70	.	.	18	.	550.06	19.84	10.34	6.88	41.28	2.3	-
RX73	20	.	.	.	596.11	13.49	6.68	5.28	31.75	1.5	-
RX74	.	.	20	.	600.86	19.84	10.34	6.88	41.28	2.3	-
RX82	.	1	.	.	67.87	11.91	6.45	4.24	25.40	1.5	1.5
RX84	.	1 1/2	.	.	74.22	11.91	6.45	4.24	25.40	1.5	1.5
RX85	.	2	.	.	90.09	13.49	6.68	4.24	25.40	1.5	1.5
RX86	.	2 1/2	.	.	103.58	15.09	8.51	4.78	28.58	1.5	2.3
RX87	.	3	.	.	113.11	15.09	8.51	4.78	28.58	1.5	2.3
RX88	.	4	.	.	139.29	17.48	10.34	5.28	31.75	1.5	3.0
RX89	.	3 1/2	.	.	129.77	18.26	10.34	5.28	31.75	1.5	3.0
RX90	.	5	.	.	174.63	19.84	12.17	7.42	44.45	2.3	3.0
RX91	.	10	.	.	286.94	30.18	19.81	7.54	45.24	2.3	3.0
RX99	8 (2)	.	8 (2)	.	245.67	11.91	6.45	4.24	25.40	1.5	-
RX201	.	.	.	1 3/8	51.46	5.74	3.20	1.45	11.30	0.5(5)	-
RX205	.	.	.	1 13/16	62.31	5.56	3.05	1.83 (4)	11.10	0.5(5)	-
RX210	.	.	.	2 9/16	97.64	9.53	5.41	3.18 (4)	19.05	0.8(5)	-
RX215	.	.	.	4 1/16	140.89	11.91	5.33	4.24 (4)	25.40	1.5(5)	-

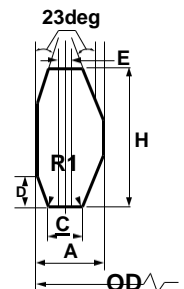
**GENERAL NOTES:**

- (a) All dimensions are in millimeters.
- (b) Tolerances:

OD = outside diameter of ring, +0.51, -0.00  
 A = width of ring, +0.20, -0.00  
 Variation in width throughout the entire circumference of any ring shall not exceed 0.10 within these tolerances.  
 C = width of ring, +0.15, -0.00  
 D = height of outside bevel, +0.0, -0.76  
 H = height of ring, +0.20, -0.00  
 Variation in height throughout the entire circumference of any ring shall not exceed 0.10 within these tolerances.  
 R1 = radius of ring, ±0.5  
 23 deg = angle, ±0 deg 30 min  
 E = hole size, ±0.5

**NOTE:**

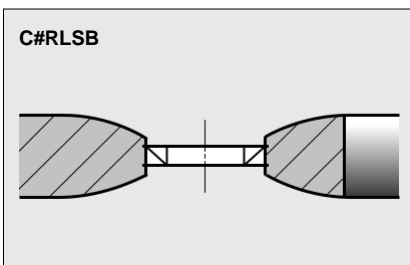
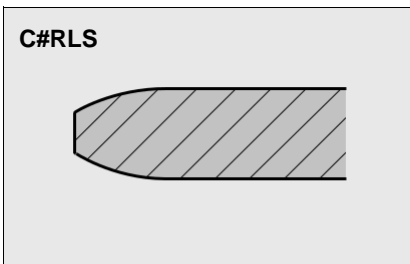
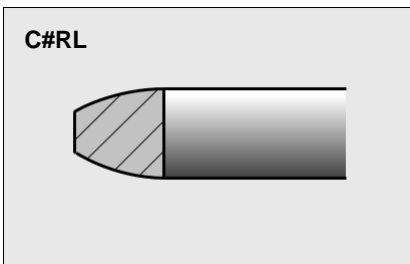
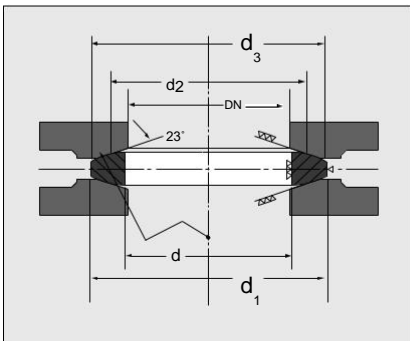
- (1) Class 720, 960, and 2900 flanges to API 6B are obsolete. Date are for information only.
- (2) Crossover flange connection.
- (3) Rings RX-82 through RX-91 only require one pressure passage hole as illustrated. The centerline of the hole shall be located at the mid. point of dimension C.
- (4) Tolerance on these dimensions is +0.00, -0.38.
- (5) Tolerance on these dimensions is +0.5, -0.0.





# LENS GASKET

A Lens Type Gasket is a line contact seal for use in high pressure piping systems and in pressure vessel heads. The lens cross section is a spherical gasket surface and requires special machining on the flanges. In ordering lens gaskets, complete drawings and material specifications must be supplied.



**In certain applications**, the specification of a high integrity metallic seal has usually lead to the selection of the Lens Ring concept, rather than the more generally recognized ring type joint solution. The Lens Ring is covered solely by the DIN 2696 specification.

However, ASME B16.5 and other flange types can be modified to accept the Lens Ring. The Lens Ring provides a metallic gasket design incorporating spherical seating faces designed to suit specifically mating flange recesses, providing the user with a high integrity, high pressure/temperature metal to metal seal. As with all metallic gaskets, the Lens Ring material should be specified softer than the flange material, thus ensuring applied compressive load leads to the elastic/plastic deformation of the lens ring and not to the flange sealing face. The distribution of high compressive loads leads to the spread of the gasket facings, ensuring over stressing of the gasket is prevented.

In accordance with DIN 2696 general materials are limited to a range of specified carbon steels and stainless steel grades, although alternative grades are available upon request. Cartec requires a detailed drawing be supplied when ordering non standard Lens Rings.

**C#RL are reliable gaskets** for high-pressure applications.

They are reusable as the sealing effect is brought about almost entirely by elastic deformation of the gasket surface.

**C#RLS are impervious** to overpressure. With increasing loads, the contact surface between the spherical lens surface and the spherical flange groove increases, so that the surface pressure only increases to a lesser extent.

**C#RLSB are made** of a sealing lens and a lens blind, which are connected by a ligament. It is also usual to use lens blinds on their own. In this case, it is useful to weld on a small plate to render the lens blind dis-tinguishable.

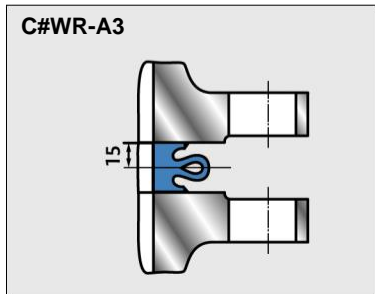
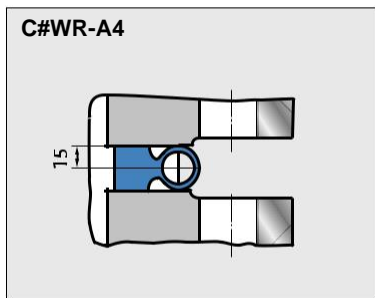


# WELD RING GASKET

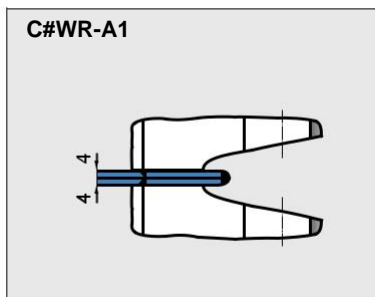
We recommend weld ring gaskets for use in any place where a welded seal is necessary. Either due to the danger of the medium or the danger presented by a loss of functionality, but where the connection also needs to be detachable to a certain degree.



**Weld ring gaskets** are generally made of the same or a related material as the pipe or flange and are only used in pairs. The weld ring gasket can also be supplied with a female face in profile of weld ring to receive a kammprofile and SWG gasket. So that if there is any damage to the gasket it can be replaced. Weld rings with hollow lips in Profiles C#WR-A5, A4 and A3 optimize the stress ratio in the seal seam. Weld rings with hollow lips are recommended for use when connecting components with different heat exchange properties. The advantage of weld ring gaskets in Profile C#WR-A4 lies in their greater motion absorption. They are predominantly used with heat exchangers with differing radial strain properties, e.g. as gaskets between channel flanges and tube plates. With the C#WR-A4 gasket the weld seams are not accessible from the outside. However in many cases this is an advantage, particularly where creep corrosion is feared.

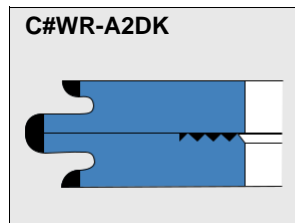


**C#WR-A2**

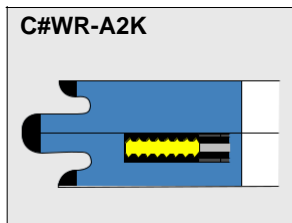


## Typical Feature

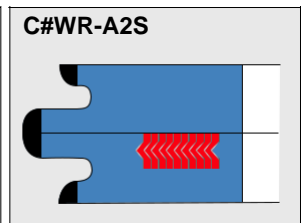
Profile	Internal "attachment seam" Crevice corrosion between weld ring and flange is avoided	External " attachment seam" Re-welding or disassembly possible	Capacity of radial differential expansion	Undo and re-weld
<b>C#WR -A4</b>	Usual	Not possible	Depending on the thickness of the well of the torus, to a max. $\Delta r \sim 5$ mm	Easy to separate with a 2mm cutting wheel. can be re-welded. 2 to 4 times
<b>C#WR -A3</b>	a) Only as an additional attachment. b) Intermittently welded It there is a danger of corrosion	a) Usual setup b) Only as an additional attachment aid. Intermittently welded	Only low capacity due to the small lip max. $\Delta r \sim 0.5$ mm	Difficult to separate can be re-welded. 1 to 3 times
<b>C#WR -A2</b>	a) Only as an additional attachment. Intermittently welded b) It there is a danger of corrosion	a) Usual setup b) Only as an additional attachment aid. Intermittently welded	Not really possible max. $\Delta r \sim 0.1$ mm	With cutting wheel Separation loss 2 to 3mm respectively. can be re-welded. 3 to 5 times
<b>C#WR -A1</b>	Usual	Not possible Flange	Modest capacity	With cutting wheel Separation loss 2 to 3mm respectively. can be re-welded. 2 to 4 times
<b>C#WR -A1</b>	Usual	from M in accordance with DIN 2526 also necessary	Depending on projection max. $\Delta r \sim 0.3$ mm	respectively. can be re-welded. 2 to 4 times



The auxiliary sealing is made directly on one of the weld ring gasket halves.



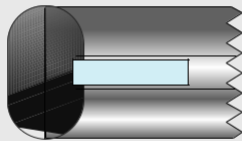
An auxiliary kammprofile gasket is fitted inside the weld ring gasket.



An auxiliary spiral wound gasket is fitted inside the weld ring gasket.

## OTHER METALLIC GASKET

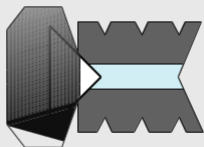
C#RS



### Style R Ring Type Joints with PTFE Inserts

Oval and octagonal ring type joints can be supplied with a PTFE insert which is located in a machined recess in the bore of the gasket. The insert reduces turbulent flow across adjoining flanges and also eliminates flange/gasket erosion which can occur with high velocity fluids.

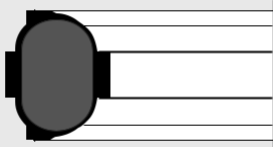
C#RRXS



### Style RX Ring Type Joints with PTFE Inserts

Style RX ring type joints can also be supplied with PTFE inserts, in order to reduce turbulent flow and eliminate gasket flange erosion. The insert is specially designed with radially drilled pressure passage holes so that the self sealing performance of the RX Ring Joint is not impaired.

C#RRUB

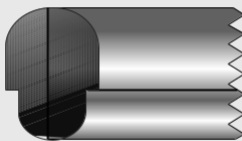


### Rubber Coated Ring Type Joints

This is an oval ring type joint which is totally enclosed in a nitrile rubber coating. The ring type joint material is usually soft iron or low carbon steel. The type of gasket has three main functions :

- It is used in pressure testing to minimize damage to flanges.
- The rubber contact points provide additional seals while protecting the flange surface
- It provides increased assurance against corrosion, which can occur between conventional ring type joints and the engaged surfaces of the groove.

C#RCOMB



### Transition Ring Type joints

These are combination rings which consist of two different sizes having the same pitch circle diameter. They are used for sealing ring type joint flanges where the mating flanges have different ring groove diameters. Transition ring type joints are available with either oval or octagonal facings.

C#IX SEAL RING



### NORSOK standard L-005 Compact Flanged Connections

Flange material	Service temperature	Seal ring material	Seal ring PTFE color
Carbon Steel	-50°C to +250°C	Carbon Steel CS360LT or low alloy steels, e.g. AISI 4140	Blue
Stainless Steel	-50°C to +250°C	22Cr Duplex	Yellow
Stainless Steel	-50°C to +250°C	17/4 - PH	Orange
Stainless Steel	-101°C to +250°C	Nickel alloys such as Alloy 625 or similar	Black

# METAL O-RING GASKET

Metallic seals made of metal are used in ultra high circumstance for very low temperature, high temperature, ultra high pressure and high chemical resistance where elastomer - viton, kalrez - made of rubber can't be applied.



Those are applied in chemical industry, nuclear power, semiconductor, munitions industry, nuclear reaction and car engine.

**Characteristics are below**

- Temperature : Cryogenic(-270°C) to 800°C
- Pressure : 60000 PSI(4100 bar) with ultra high vacuum  $1.3 \times 10^{-10}$ pa
- Compact design is possible with small sealing space
- Tubing where inner is empty
- Metal O-rings provide excellent springback, resilient nature and a high sealing level.

## Materials and Surface Treatment

	Materials & Treatment	Treatment Range (°C)	Features
Materials	SUS321	-270~500	Standard Material
	SUS304	-270~500	Standard Material
	SUS316L	-270~500	Against corrosion
	Inconel 600	-270~750	Against corrosion. Thermostable
	Inconel X-750	-270~750	For spring more than 500°C
	Nickel	0~750	Against alkali
Surface Treatment	Gold	-270~800	Against Acid. Against Corrosion, Thermostable.
	Silver	-270~500	Standard treatment except against Corrosive fluid.
	Copper	-270~400	Standard treatment except against Corrosive.
	Nickel	0~750	High temperature fluid. Flange precise polishing needed in vacuum and gas sealing.
	PTFE (Teflon)	-270~200	Cryogenic, cycling for low temp~normal temp normal temp~low temp.

Generally, Metal O-ring is used without surface treatment. However, surface treatment should be needed to improve sealing level. Then, precise polishing of flange is necessary as well as precise polishing of Metal O-ring. Especially, this is recommended in gaseous media.

### Metal O-Ring Type

Tube diameter (mm)	Wall Thickness	Available Size (OD)	Standard Press (mm)	Restore elasticity (mm)
0.9	0.15~0.25	9~50	0.25	0.04
1.6	0.25~0.35	13~200	0.35	0.05
2.4	0.25~0.50	20~350	0.4	0.06
3.2	0.35~0.80	30~500	0.5	0.06
4.8	0.50~1.10	50~2500	0.7	0.05

### Metal O-Ring Type of Flange design

Tube diameter (mm)	Available Size (OD)	Clearance	Tolerance	Depth	Width(min.)
0.9	6~25	+0.13	+0.10	0.65 / 0.72	3.50
1.6	13~50	+0.15	+0.15	1.0 / 1.20	5.00
2.4	40~100	+0.20	+0.20	1.80 / 1.90	6.70
3.2	250~400	+0.30	+0.30	2.50 / 2.65	9.50
	260~500	+0.35	+0.35		
4.8	260~1000	+0.40	+0.40	3.75/3.85	17.00

