

Ring Joint (RTJ) Gasket Dimensions — ASME B16.20

Type R (R11 to R45)

Dimensions for ASME B16.20 Type R oval and octagonal ring-joint gaskets: pitch diameter, ring width, oval and octagonal ring height, and the flat width on the octagonal ring.

A ring-joint (RTJ) gasket is a solid metal ring that seats in the machined groove of two RTJ flange faces; as the joint is bolted up the ring deforms into the groove and forms a metal-to-metal seal, which is why RTJ joints are used on high-pressure and high-temperature service. ASME B16.20 identifies each ring by a ring number (R-number), not by pipe size: one R-number can serve more than one flange, and a given flange size has a different R-number at each pressure class, so the ring is ordered by its R-number and cross-section (oval or octagonal), not by NPS alone. The Type R ring is made in two cross-sections — oval and octagonal — that share the same pitch diameter and width for a given R-number but differ in height. The values below are ASME B16.20 Type R, cross-checked across two independent reference tables.

Ring no.	Pitch dia. P (mm)	Width A (mm)	Oval height B (mm)	Oct. height H (mm)	Oct. flat C (mm)
R11	34.14	6.35	11.2	9.7	4.32
R12	39.70	7.95	14.2	12.7	5.23
R13	42.88	7.95	14.2	12.7	5.23
R14	44.45	7.95	14.2	12.7	5.23
R15	47.63	7.95	14.2	12.7	5.23
R16	50.80	7.95	14.2	12.7	5.23
R17	57.15	7.95	14.2	12.7	5.23
R18	60.33	7.95	14.2	12.7	5.23
R19	65.10	7.95	14.2	12.7	5.23
R20	68.28	7.95	14.2	12.7	5.23
R21	72.24	11.13	17.5	16.0	7.75
R22	82.55	7.95	14.2	12.7	5.23
R23	82.55	11.13	17.5	16.0	7.75
R24	95.25	11.13	17.5	16.0	7.75
R25	101.60	7.95	14.2	12.7	5.23
R26	101.60	11.13	17.5	16.0	7.75
R27	107.95	11.13	17.5	16.0	7.75
R28	111.13	12.70	19.1	17.5	8.66
R29	114.30	7.95	14.2	12.7	5.23
R30	117.48	11.13	17.5	16.0	7.75
R31	123.83	11.13	17.5	16.0	7.75
R32	127.00	12.70	19.1	17.5	8.66
R33	131.78	7.95	14.2	12.7	5.23
R34	131.78	11.13	17.5	16.0	7.75
R35	136.53	11.13	17.5	16.0	7.75
R36	149.23	7.95	14.2	12.7	5.23
R37	149.23	11.13	17.5	16.0	7.75
R38	157.18	15.88	22.4	20.6	10.49
R39	161.93	11.13	17.5	16.0	7.75
R40	171.45	7.95	14.2	12.7	5.23
R41	180.98	11.13	17.5	16.0	7.75
R42	190.50	19.05	25.4	23.9	12.32
R43	193.68	7.95	14.2	12.7	5.23
R44	193.68	11.13	17.5	16.0	7.75
R45	211.15	11.13	17.5	16.0	7.75

P is the average pitch diameter of the ring; B is the height of the oval ring; H is the height of the octagonal ring; C is the flat width of the octagonal ring minus 0.18 mm, A plus or minus 0.20 mm.

(Wermac and piping-world, both in m

Reading the dimensions

- Ring number (R-number) — the number matched to the flange groove, so the same R-number can apply to many different sizes.
- Pitch diameter (P) — the diameter of the groove that must match the flange for a given R-number.
- Ring width (A) — the radial width of the ring number.
- Oval height (B) and octagonal height (C) — the height of the ring seats on curved contact faces; the octagonal ring is generally preferred, but the oval ring is interchangeable in the same groove.
- Octagonal flat (C) — the width of the ring seats on the groove wall.

Ring material is selected for the least amount of deformation — soft iron, low-carbon steel, or stainless steel. Material code. Material does not match the octagonal cross-section against

Selecting and matching

A ring-joint gasket matches a flange groove. To order the same R-number ring, you need to know the ring by NPS alone: the same NPS ring (oval or octagonal) to the groove. The gasket fits into the groove and forms the metal-to-metal seal with a flat or spiral wound gasket.

Reference compiled by cBallast from independent reference tables (Wermac and piping-world) and reference (Flange Bolt Chart) confirmed against the control reference; confirm against the control reference. All trademarks are the property of the