NEW

Full-Roller Type Cross-Roller Ring

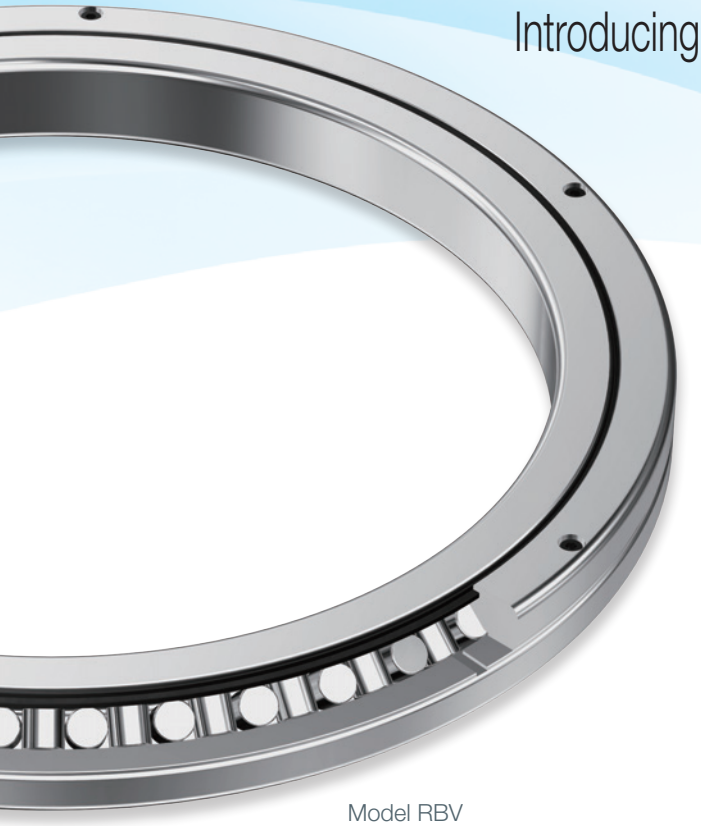
RBV/RBV-USP/RBUV
REV/REV-USP
RAV/RAUV/RUV



High rigidity and high load capacity. Performance for special environments.

Full-Roller Type Cross-Roller Ring

Structure and Features



Model RBV

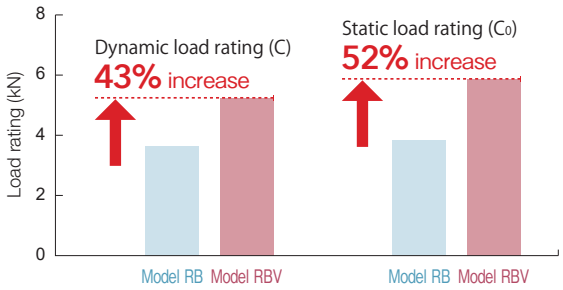
Introducing a new addition to the cross-roller ring series:

Full-Roller type models

1. High Load Capacity

More rollers means higher rigidity and superior load capacity, making these products ideal for even higher loads, particularly when used for low-speed rotation.

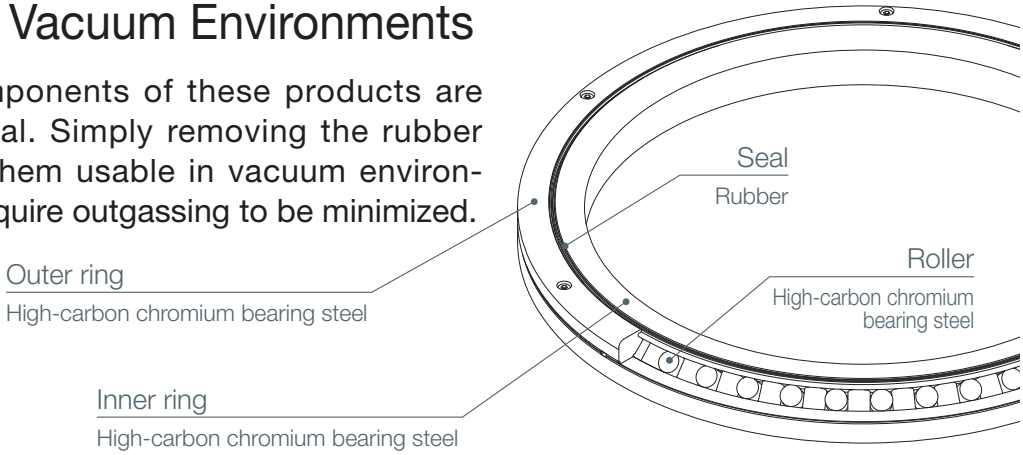
▶ Basic Load Rating Comparison



Model RB 2508 vs. Model RBV 2508 (max values)

2. Usable in Vacuum Environments

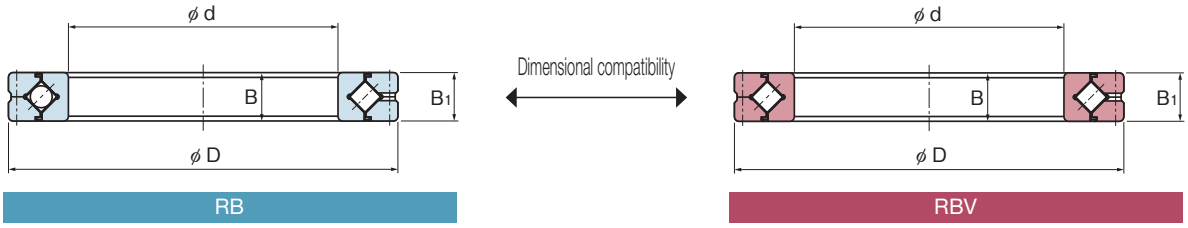
The key components of these products are made of metal. Simply removing the rubber seal makes them usable in vacuum environments that require outgassing to be minimized.



Model RBV Structure

3. Interchangeable with Existing Products

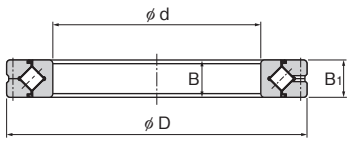
With the same dimensions as existing models, these products make for easy replacements.



RBV/RBV-USP

This basic cross-roller ring consists of a two-piece outer ring and solid inner ring. It can be used for applications that require accurate rotation from the inner ring and is primarily suited for use in the rotating elements of index tables found in machine tools.

USP-grade series variants are also available. The USP-grade series provides Ultra Precision-grade rotational accuracy that surpasses the world's highest accuracy standards, such as JIS Class 2, ISO Class 2, DIN P2, and AFBMA ABCE9.





Unit: mm

Model No.	Main dimensions			Basic load rating (radial)	
	Inner diameter d	Outer diameter D	Width B B_1	C (kN)	C_0 (kN)
RBV 2008	20	36	8	4.62	4.69
RBV 2508	25	41	8	5.22	5.85
RBV 3010	30	55	10	9.45	11.1
RBV 3510	35	60	10	10.1	12.6
RBV 4010	40	65	10	10.7	14.1
RBV 4510	45	70	10	10.9	14.8
RBV 5013	50	80	13	19.9	25
RBV 6013	60	90	13	22	30
RBV 7013	70	100	13	23.1	33.4
RBV 8016	80	120	16	40	57.9
RBV 9016	90	130	16	42.2	64.3
RBV 10016	100	140	16	43.1	68.7
RBV 10020*	100	150	20	39.7	62.2
RBV 11012	110	135	12	15.5	30.8
RBV 11015	110	145	15	28.6	50.8
RBV 11020	110	160	20	41.7	67.9
RBV 12016	120	150	16	29.6	54
RBV 12025*	120	180	25	82.1	125
RBV 13015	130	160	15	31.4	60.3
RBV 13025	130	190	25	86.5	137
RBV 14016	140	175	16	32.7	65.3
RBV 14025	140	200	25	88.7	144
RBV 15013	150	180	13	33	67.2
RBV 15025*	150	210	25	91.5	153
RBV 15030	150	230	30	115	179
RBV 16025	160	220	25	95.4	166
RBV 17020	170	220	20	33.9	73.3
RBV 18025	180	240	25	101	187
RBV 19025	190	240	25	54.6	113
RBV 20025	200	260	25	105	202
RBV 20030*	200	280	30	139	250
RBV 20035	200	295	35	189	327
RBV 22025	220	280	25	108	216
RBV 24025	240	300	25	85.8	188
RBV 25025	250	310	25	86.5	192
RBV 25030*	250	330	30	155	305
RBV 25040	250	355	40	240	441
RBV 30025	300	360	25	95.7	229
RBV 30035*	300	395	35	225	459
RBV 30040	300	405	40	262	522
RBV 35020	350	400	20	73.3	203
RBV 40035	400	480	35	194	475
RBV 40040*	400	510	40	302	683
RBV 45025	450	500	25	83.2	257
RBV 50025	500	550	25	87	286
RBV 50040*	500	600	40	289	750
RBV 50050	500	625	50	335	845
RBV 60040*	600	700	40	321	897
RBV 70045	700	815	45	344	1,044
RBV 80070	800	950	70	575	1,670
RBV 90070	900	1,050	70	605	1,860
RBV 1000110	1,000	1,250	110	1,474	3,948
RBV 1250110	1,250	1,500	110	1,639	4,910

* A USP-grade variant is available.

Product Information

RBV

Product Information

RBV-USP

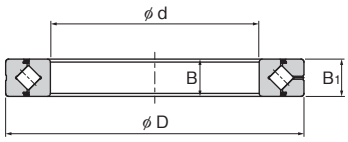
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RBUV

This model can be used for both inner-ring and outer-ring rotation because its inner and outer rings are each a single, solid piece.

In addition, unlike the Model RBV, this model can be attached to equipment without any detailed adjustments, so installation is easy and less time-consuming.





Unit: mm

Model No.	Main dimensions			Basic load rating (radial)	
	Inner diameter d	Outer diameter D	Width B B_1	C (kN)	C_0 (kN)
RBUV 2008	20	36	8	4.62	4.69
RBUV 2508	25	41	8	5.22	5.85
RBUV 3010	30	55	10	9.45	11.1
RBUV 3510	35	60	10	10.1	12.6
RBUV 4010	40	65	10	10.7	14.1
RBUV 4510	45	70	10	10.9	14.8
RBUV 5013	50	80	13	19.9	25
RBUV 6013	60	90	13	22	30
RBUV 7013	70	100	13	23.1	33.4
RBUV 8016	80	120	16	40	57.9
RBUV 9016	90	130	16	42.2	64.3
RBUV 10016	100	140	16	43.1	68.7
RBUV 10020	100	150	20	61.3	92.5
RBUV 11015	110	145	15	28.6	50.8
RBUV 11020	110	160	20	64.8	102
RBUV 12025	120	180	25	82.1	125
RBUV 13025	130	190	25	86.5	137
RBUV 14016	140	175	16	32.7	65.3
RBUV 14025	140	200	25	88.7	144
RBUV 15013	150	180	13	33	67.2
RBUV 15025	150	210	25	91.5	153
RBUV 16025	160	220	25	95.4	166
RBUV 18025	180	240	25	101	187
RBUV 19025	190	240	25	54.6	113

Product Information

RBUV

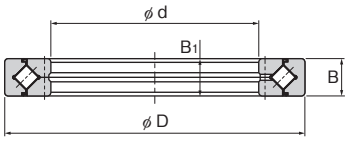
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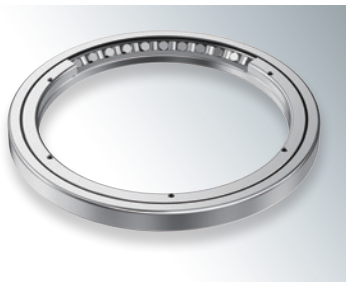
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REV/REV-USP

Though this model has the same main dimensions as the Model RBV, its split inner ring makes it suited for applications that require accurate rotation from the outer ring.

USP-grade series variants are also available. The USP-grade series provides Ultra Precision-grade rotational accuracy that surpasses the world's highest accuracy standards, such as JIS Class 2, ISO Class 2, DIN P2, and AFBMA ABCE9.





Unit: mm

Model No.	Main dimensions			Basic load rating (radial)	
	Inner diameter d	Outer diameter D	Width B B_1	C (kN)	C_0 (kN)
REV 2008	20	36	8	4.82	5.08
REV 2508	25	41	8	5.4	6.24
REV 3010	30	55	10	9.36	11.1
REV 3510	35	60	10	10	12.6
REV 4010	40	65	10	10.6	14.1
REV 4510	45	70	10	11.1	15.6
REV 5013	50	80	13	20.7	26.7
REV 6013	60	90	13	21.9	30.1
REV 7013	70	100	13	23.8	35.1
REV 8016	80	120	16	39.7	58
REV 9016	90	130	16	42	64.5
REV 10016	100	140	16	43.1	68.7
REV 10020*	100	150	20	40.8	65
REV 11012	110	135	12	15.7	31.5
REV 11015	110	145	15	29.6	53.6
REV 11020	110	160	20	42.5	70.7
REV 12016	120	150	16	30.6	56.9
REV 12025*	120	180	25	81.8	125
REV 13015	130	160	15	32	61.9
REV 13025	130	190	25	86.9	139
REV 14016	140	175	16	32.7	65.3
REV 14025	140	200	25	88.9	146
REV 15013	150	180	13	33.6	68.8
REV 15025*	150	210	25	91.1	153
REV 15030	150	230	30	122	196
REV 16025	160	220	25	92.7	161
REV 17020	170	220	20	36.2	80.1
REV 18025	180	240	25	99.4	181
REV 19025	190	240	25	55.1	116
REV 20025	200	260	25	105	202
REV 20030*	200	280	30	139	250
REV 20035	200	295	35	189	327
REV 22025	220	280	25	108	216
REV 24025	240	300	25	85.8	188
REV 25025	250	310	25	86.5	193
REV 25030*	250	330	30	155	305
REV 25040	250	355	40	240	441
REV 30025	300	360	25	94.8	229
REV 30035*	300	395	35	225	459
REV 30040	300	405	40	262	522
REV 35020	350	400	20	73.3	204
REV 40035	400	480	35	194	475
REV 40040*	400	510	40	302	683
REV 45025	450	500	25	83.9	260
REV 50025	500	550	25	87	286
REV 50040*	500	600	40	289	750
REV 50050	500	625	50	335	845
REV 60040*	600	700	40	321	897

* A USP-grade variant is available.

Product Information

REV

Product Information

REV-USP

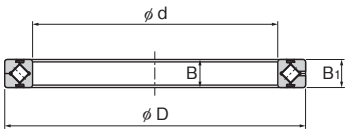
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RAV

This more compact version of the Model RBV has the thinnest possible inner and outer rings. It enables lightweight and compact designs for the swiveling hand portions of manipulators and robots.

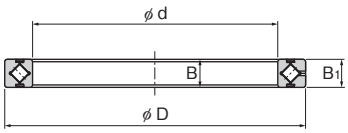
Due to its having a split outer ring, it is used where accurate rotation is required from the inner ring.





RAUV

Though its main dimensions are the same as those of the Model RAV, this model has an extremely small cross-sectional area, which allows it to be used in lightweight, compact devices. Because its inner and outer rings are each a single, solid piece, it can be used for both inner and outer ring rotation.





Unit: mm

Model No.		Main dimensions			Basic load rating (radial)			
		Inner diameter	Outer diameter	Width	RAV		RAUV	
		d	D	B B_1	C (kN)	C_0 (kN)	C (kN)	C_0 (kN)
RAV 5008	RAUV 5008	50	66	8	7.24	10.9	7.24	10.9
RAV 6008	RAUV 6008	60	76	8	7.91	12.9	7.91	12.9
RAV 7008	RAUV 7008	70	86	8	8.51	14.8	8.51	14.8
RAV 8008	RAUV 8008	80	96	8	9.14	17.2	9.14	17.2
RAV 9008	RAUV 9008	90	106	8	9.72	19.1	9.72	19.1
RAV 10008	RAUV 10008	100	116	8	10.2	21.1	10.2	21.1
RAV 11008	RAUV 11008	110	126	8	10.6	23	10.6	23
RAV 12008	RAUV 12008	120	136	8	11.2	25.4	11.2	25.4
RAV 13008	RAUV 13008	130	146	8	11.4	27	11.4	27
RAV 14008	RAUV 14008	140	156	8	11.9	29.3	11.9	29.3
RAV 15008	RAUV 15008	150	166	8	12.5	31.3	12.5	31.3
RAV 16013	RAUV 16013	160	186	13	36.3	76.9	36.3	76.9
RAV 17013	RAUV 17013	170	196	13	37.5	82.2	37.5	82.2
RAV 18013	RAUV 18013	180	206	13	38.9	87.6	38.9	87.6
RAV 19013	RAUV 19013	190	216	13	39.7	91.2	39.7	91.2
RAV 20013	RAUV 20013	200	226	13	41	96.5	41	96.5

Product Information

RAV

Product Information

RAUV

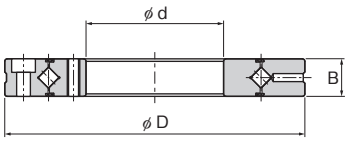
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RUV

This model's solid inner and outer rings, each with their own mounting holes, eliminate the need for a presser flange or housing and allow for easy installation.

In addition, the mounting has virtually no effect on performance, which ensures stable rotational accuracy and torque. This model can be used for both inner and outer ring rotation.





Unit: mm

Model No.	Main dimensions			Basic load rating (radial)	
	Inner diameter	Outer diameter	Width	C (kN)	C_0 (kN)
	d	D	B		
RUV 42	20	70	12	9.45	11.1
RUV 66	35	95	15	21.7	28.5
RUV 85	55	120	15	25.1	37.4
RUV 124	80	165	22	44.3	71.8
RUV 148	90	210	25	58.5	92.5
RUV 178	115	240	28	93.7	158
RUV 228	160	295	35	128	218
RUV 297	210	380	40	197	367
RUV 445	350	540	45	280	614

Product Information

RUV

Scan for details.

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Handling

(1) Please use at least two people to move any product with a mass of 20 kg or more, or use a cart or another method of conveyance. Otherwise, it may cause injury or damage the unit.
(2) Inner or outer rings that are split into two pieces are kept together by special rivets or by bolts and nuts, so please install the product as-is. Additionally, do not disassemble the cross-roller ring.
(3) Take care not to drop or strike the cross-roller ring. Otherwise, it may cause injury or damage the unit. Even if there is no outward indication of damage, a sudden impact could prevent the unit from functioning properly.
(4) Wear appropriate safety gear, such as protective gloves and safety shoes, when handling the product.

Precautions on Use

(1) Prevent foreign materials, such as cutting chips or coolant, from entering the product. Otherwise, it may damage the unit.
(2) Prevent foreign materials, such as cutting chips, coolant, corrosive solvents, or water from getting in the product by using a bellows or cover when the product is used in an environment where such a thing is likely.
(3) Do not use the product at temperatures above 80 °C. If used above this temperature, there is a risk that the resin and rubber parts may deform or become damaged.
(4) If foreign materials such as cutting chips adhere to the product, replenish the lubricant after cleaning the product.
(5) Slight oscillations can inhibit the formation of an oil film between the raceways and the area of contact for the rolling elements, resulting in fretting. We recommend periodically rotating the cross-roller ring several times to help ensure that a film forms on the surfaces and rolling elements.
(6) Do not forcibly drive a pin, key, or other positioning device into the product. Press-fit it on gently. An impact could create indentations on the raceway and impair the product's function.
(7) Because it is possible that the seam for the inner or outer ring could be slightly off-center, slightly loosen the bolts securing the inner or outer ring and correct with a plastic hammer before inserting into the housing. (The securing rivet will adjust to the housing.)
(8) When installing the cross-roller ring into a housing, if the inner ring is fixed, hammer the inner ring to insert it. If the outer ring is fixed, hammer the outer ring. Hammering the movable (rotating) side may cause damage to the unit.
(9) If the mounting material lacks sufficient rigidity or accuracy, the bearing load can be focused in one area, and bearing functionality will dramatically decrease. Therefore, carefully consider the rigidity and accuracy of the housing and base as well as the strength of the securing bolts.
(10) Avoid applying force to the securing rivets or securing bolts when installing or removing.
(11) Be careful of the dimensional tolerances of the mounting components to ensure that the presser flange firmly holds the inner and outer rings from the sides.

Lubrication

(1) Do not mix different lubricants. Even greases containing the same type of consistency enhancer may, if mixed, interact negatively due to disparate additives or other ingredients.
(2) When using the product in locations exposed to constant vibrations or in special environments such as in clean rooms, vacuums, and low/high temperatures, use a lubricant suitable for its use/environment.
(3) The consistency of grease and kinematic viscosity of base oil changes according to the temperature. Please keep in mind that the rotational torque of the cross-roller ring may also be affected by these changes.
(4) Cross-roller rings contain lithium soap-based grease No. 2, so they can be used immediately without additional lubrication at first. However, because they have less internal clearance than ordinary roller bearings and their rolling contact structure is more demanding on lubricant, they require regular lubrication when in use. To replenish grease, it is necessary to provide greasing holes that lead to the oil grooves formed on the inner and outer rings. Regularly resupply grease of the same type so that it is distributed throughout the interior of the bearing at least every three to six months, even if the product is not rotated very frequently. The final lubrication interval/amount should be set at the actual machine. When the bearing is filled up with grease, the initial rotational torque will temporarily increase due to resistance from the grease. However, surplus grease will run off of the seals, and the torque will return to a normal level after a short period of time. Because the thin type does not have oil grooves, please lubricate by providing oil grooves on the inner diameter of the housing.
(5) Excess grease may protrude from the outside edge of the cross-roller ring. The structure of peripheral components will require careful consideration if contamination due to grease around the edges of the device is a concern.
(6) Full-Roller type cross-roller rings require more frequent lubrication than existing spacer retainer type ones.
(7) Contact THK if you are considering using a special grease or a lubricant other than grease.

Storage

When storing the cross-roller ring, pack it as designated by THK and store it indoors in a horizontal position away from high or low temperatures and high humidity.
Please note that if the product has been kept in storage for an extended period, the lubricant inside may have deteriorated. Please ensure that you replenish the lubricant before use.
If you request that we do not apply anti-rust oil to a product, please be aware that it may rust due to the storage environment or length of storage.

Disposal

Dispose of the product properly as industrial waste.

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