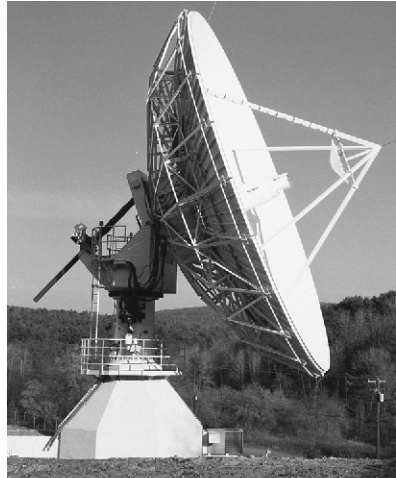


Series R Bearings

Introduction

Series R designates a crossed roller bearing configuration. V-Grooves are machined into each race to accept cylindrical rollers. The rollers are oriented with perpendicular axis in order to transmit loads in multiple directions. This construction enables crossed roller bearings to support thrust, moment and radial loads simultaneously, just as the Series M, H and T four-point contact ball bearings.

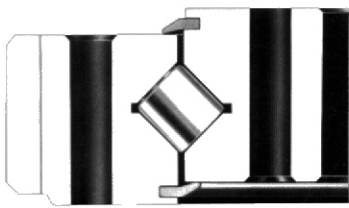


Applications

Ideal applications for Avon Series R bearings include search radar, communication antennae, gun turrets, machine tools, telescopes and missile launchers.



Typical Cross Section



Construction

These bearings are produced from special alloy steel through hardened to the appropriate level for the application. The roller paths are induction hardened to 58-62 Rc. Rollers are made from A.I.S.I. 52100 steel.

Advantages

The main advantage of a crossed roller bearing versus a four-point contact ball bearing is greater stiffness. A crossed roller bearing, per unit size, will offer higher dynamic capacity than a four-point contact ball design. Special attention, however, should be given to the mounting structure because crossed roller bearings are less forgiving to inadequacies.



Series R External, Internal and Gearless

External Gear

MOUNTING HOLES						GEAR DATA					CAPACITY DATA			
Outer race			Inner race			Tooth	PD	DP	# Teeth	Face	Moment	Thrust	Radial	Tooth
OBC	# Holes	Bolt	IBC	# Holes	Bolt									
14.094	24	.437	10.197	27-O	.437	FD	15.600	5	78	1.46	14,750	72,839	29,135	4,766
25.197	18	.625	20.000	18	.625	MOD	26.969	5	137	1.65	94,158	249,978	99,991	5,537
41.338	18	.625	35.826	18-N	.625	MOD	43.701	10	111	2.58	404,457	629,179	251,671	14,160
48.200	30	.750	41.800	36	.750	ST	50.400	2.5	126	3.50	733,041	977,388	390,955	21,985
33.625	24	.625	26.125	24	.750	FD	36.000	6	216	4.00	372,571	748,260	299,304	13,219
53.150	24	1.000	45.276	28	1.000	MOD	56.693	10	144	2.95	1,037,624	1,265,138	506,055	20,286
65.354	42	1.000	55.096	42	1.000	MOD	69.614	14	124	4.33	1,597,526	1,580,926	632,370	40,907
95.000	40	1.000-8	87.000	40	1.000	FD	100.000	3	300	6.00	3,701,758	2,414,190	965,676	29,548
1494	48	M22	1280	47-O	M22	MOD	1570	15	157	85	1,551,966	1,705,145	682,058	23,119
2089	40	M27x3	1880	40	M27	MOD	2196	18	122	134	3,783,751	2,875,919	1,150,367	68,334

Internal Gear

MOUNTING HOLES						GEAR DATA					CAPACITY DATA			
Outer race			Inner race			Tooth	PD	DP	# Teeth	Face	Moment	Thrust	Radial	Tooth
OBC	# Holes	Bolt	IBC	# Holes	Bolt									
24.500	18	.437	20.500	18	.437-14	FD	19.000	6	114	2.00	93,731	249,951	99,980	6,983
39.961	20-N	M20	34.646	24	M20x2.5	MOD	31.102	10	79	2.95	383,515	616,915	388,917	25,555
33.250	24	.750	27.250	30	.750-10	ST	24.800	2.5	62	3.38	322,532	645,064	258,025	30,134
53.000	36	.875	48.000	36	.875-14	FD	45.200	2.5	113	3.75	892,667	1,075,286	430,114	25,576
40.000	36	.750	33.500	36	.750-16	FD	30.800	2.5	77	3.50	559,272	920,613	368,245	24,728
1945	48	M28	1715	48	M28	MOD	1620	12	134	115	2,712,334	2,260,278	904,111	44,579
111.000	48	1.000	100.000	48	1.000-8	FD	96.000	2	192	5.00	5,884,867	3,331,057	1,332,422	41,279

Gearless

MOUNTING HOLES					
Outer race			Inner race		
OBC	# Holes	Bolt	IBC	# Holes	Bolt
14.094	24	M12	10.196	28	M12
640	36	M16	508	35-O	M16
41.338	36	.750	35.787	36	.750
35.250	36	1.000	26.250	36	1.000
54.331	28	M20x2.5	48.031	30	M20
83.000	42	.875	76.000	42	.875
25.000	18	1.125	17.520	36	1.000
44.000	30	1.000-8	36.250	35-O	1.000
93.000	48	1.000	85.000	48	1.000
2034	40	M30	1766	40	M30

CAPACITY DATA		
Moment	Thrust	Radial
20,602	101,781	40,712
94,158	249,978	99,991
404,382	629,177	251,670
340,570	664,528	265,811
950,455	1,114,228	445,691
2,305,233	1,739,798	695,919
182,882	518,571	207,428
693,509	1,035,089	414,035
4,244,353	2,861,361	660,803
3,389,816	2,719,104	1,087,641

of teeth: Number of teeth in the gear.

Face: Face width of the gear (inches).

Capacity: Raceway capacity (Moment, Thrust and Radial) are based upon the Theoretical Stress Limit Static Load rating for a single axis. See page 2-6 for additional information. Contact Avon Bearings Engineering for analysis of combined loading applications. **Note:** Bolts may be the limiting factor from a capacity standpoint. Tooth capacity denotes the Tangential Tooth Capacity based upon the Lewis equation and including a 4:1 safety factor over the tensile strength of the steel.

Moment: Denotes moment capacity of raceway, single-axis (ft.-lbs.).

Thrust: Denotes thrust or axial capacity of raceway, single-axis (lbs.).

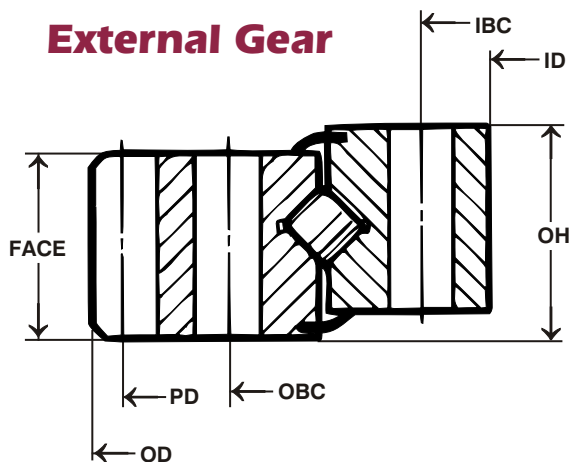
Radial: Denotes radial capacity of raceway, single-axis (lbs.).

Tooth: Denotes tangential tooth capacity (lbs.).

Note: Models with an "*" are dimensioned in millimeters.

Series R External, Internal and Gearless

External Gear



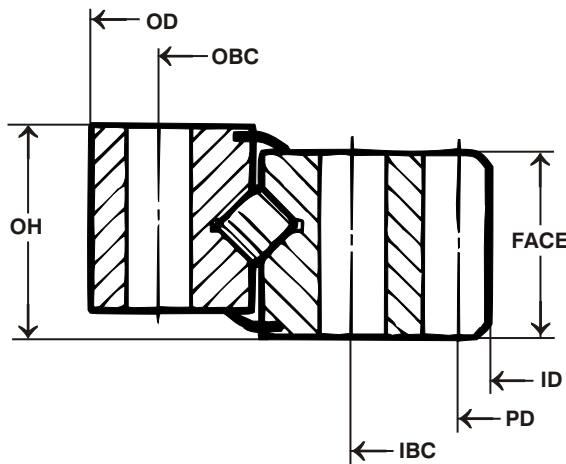
Model

R512A2
R723A1
R1038A4
R1245A1
R1530A3
R1549A2
R1561A1
R1592A1
R1755A2*
R2079A1*

Outline Dimensions

	OD	ID	OH
R512A2	16.00	9.19	2.17
R723A1	27.36	18.78	3.03
R1038A4	45.05	34.18	3.93
R1245A1	51.04	40.00	4.00
R1530A3	36.33	24.50	4.69
R1549A2	50.09	42.52	4.33
R1561A1	70.51	53.54	5.04
R1592A1	100.66	84.00	5.50
R1755A2*	1604	1206	130
R2079A1*	2232	1815	150

Internal Gear



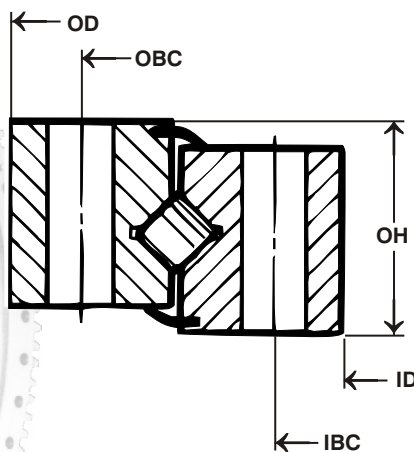
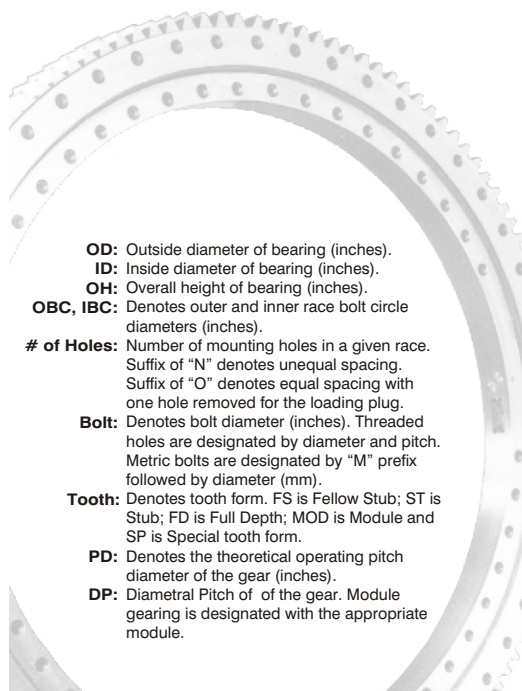
Model

R723B3
R1037B2
R1230B2
R1250B1
R1536B3
R1772B1*
R17106B1

Outline Dimensions

	OD	ID	OH
R723B3	26.70	18.66	2.50
R1037B2	41.97	30.83	3.35
R1230B2	36.00	24.16	3.88
R1250B1	54.74	44.40	4.50
R1536B3	41.50	30.32	4.19
R1772B1*	2002	1598	150
R17106B1	114.00	95.00	6.00

Gearless



Model

R612C3
R723C1*
R1039C2
R1231C1
R1251C3
R1280C1
R1521C1
R1540C1
R1589C1
R2075C1*

Outline Dimensions

	OD	ID	OH
R612C3	14.97	9.25	2.17
R723C1*	695	477	77
R1039C2	42.90	34.13	4.00
R1231C1	38.00	24.00	4.25
R1251C3	56.38	46.77	3.82
R1280C1	85.00	74.00	3.75
R1521C1	27.36	15.55	3.94
R1540C1	46.25	34.25	4.25
R1589C1	95.00	82.00	4.00
R2075C1*	2100	1700	145

Note: Models with an "*" are dimensioned in millimeters.

- OD:** Outside diameter of bearing (inches).
- ID:** Inside diameter of bearing (inches).
- OH:** Overall height of bearing (inches).
- OBC, IBC:** Denotes outer and inner race bolt circle diameters (inches).
- # of Holes:** Number of mounting holes in a given race. Suffix of "N" denotes unequal spacing. Suffix of "O" denotes equal spacing with one hole removed for the loading plug.
- Bolt:** Denotes bolt diameter (inches). Threaded holes are designated by diameter and pitch. Metric bolts are designated by "M" prefix followed by diameter (mm).
- Tooth:** Denotes tooth form. FS is Fellow Stub; ST is Stub; FD is Full Depth; MOD is Module and SP is Special tooth form.
- PD:** Denotes the theoretical operating pitch diameter of the gear (inches).
- DP:** Diametral Pitch of of the gear. Module gearing is designated with the appropriate module.



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