

Product Reference Guide



INA USA CORPORATION



SEALS, SNAP RINGS & ROLLERS

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This product section has been excerpted from our full Product Reference Guide to reduce download time. Our complete Product Reference Guide is available in print and on CD-ROM. To receive the full version, please contact your nearest INA Sales Office listed on the last page of this file.



FOREWORD

This publication was designed to serve as a quick reference to the standard product series offered by INA USA Corporation (INA) for its domestic market. The guide provides a current overview of INA products, including basic envelope dimensions and capacities, in one publication – it is not an engineering design guide intended to replace INA engineering catalogs. Consequently, the metric and inch conversions are listed to 3 decimal places for easy reference and rapid identification of correct replacement part(s), not 4 decimal places as necessary for quality control purposes.

This publication can be used to narrow the choices between the many different INA product lines and series for new designs. Detailed engineering information for new designs can be found in our traditional catalogs or by contacting the INA Engineering Department.

A significant portion of INA sales are special production sizes. The identification of those parts is sometimes difficult since a comprehensive listing is beyond the intent of this publication. Special part numbers take as many different forms as the series listed here, but the basic system is to use sequential numbers for each new design. Usually the prefix is F or FC but can include VH, INA or the bearing type such as NA. INA maintains a technical help desk to identify sizes not known or to match competitors' parts.

The toll free 800 numbers listed will give you access to INA Customer Service representatives. These representatives can tap into INA Worldwide resources to provide the bearings you need.

Storage Life

Lubricants age naturally due to environmental influences. It is therefore the user's responsibility to follow the directions given by the lubricant manufacturer.

The greases used in INA rolling bearings have a mineral oil base and experience shows that they can be stored for up to 3 years without deteriorating providing the following important conditions are met.

- Closed storage room
- Temperature between 0 °C and 40 °C
- Relative atmospheric humidity 65% or less
- Security from chemical agents (vapors, gases, fluids)
- Sealed rolling bearings

The frictional torque can be considerably higher after longer storage periods than in freshly greased bearings and the lubricity of the grease can also have deteriorated.

INA bearings have many optional features available including:

- ISO series of bearings generally include the standard clearance options CN, C2, C3 and C4.
- ISO bearing series include PN, P6 and P5 precision classes.

- Corrotect plating is available for most bearing designs. Corrotect is a patented process for zinc-iron and zinc-iron-cobalt plating in a thin layer which can be applied to standard components. The protection exceeds stainless steel and the cost is half. Add suffix RR.
- All sealed bearings are supplied pregreased. In most cases the standard lubricant is Shell Alvania 2 or equivalent. Other greases are available, some at extra cost.
- Unsealed bearings may not be greased when shipped.
- Speed limits as published, are based on oil lubrication for open bearings or grease lubrication for sealed bearings. The speed limits are calculated based on a nominal load and heat balance equation. Higher speeds may be allowed depending on the application.
- Dynamic capacities are published based on INA standard usage of ISO and ABMA formulas. New life theory threshold values are published in other INA publications.
- Life calculations and evaluations can be made from INA engineering based catalogs which are available from your INA Sales Representative.
- Other features are available based on current production volumes including heat stabilization of the rings, matched bearing sets, with oil holes and grooves, etc.

ABMA American Bearing Manufacturers Association

ASTM American Society Of Testing And Materials

DIN Deutsches Institut für Normung e.V.

ISO International Standards Organization

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INA USA Corporation reserves the right to make changes / revisions to specifications contained herein without notice.

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SEALS, SNAP RINGS & ROLLERS

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General Information

SEALS, SNAP RINGS & ROLLERS

PRODUCT DESCRIPTION

INA Seals, Snap Rings and Rollers

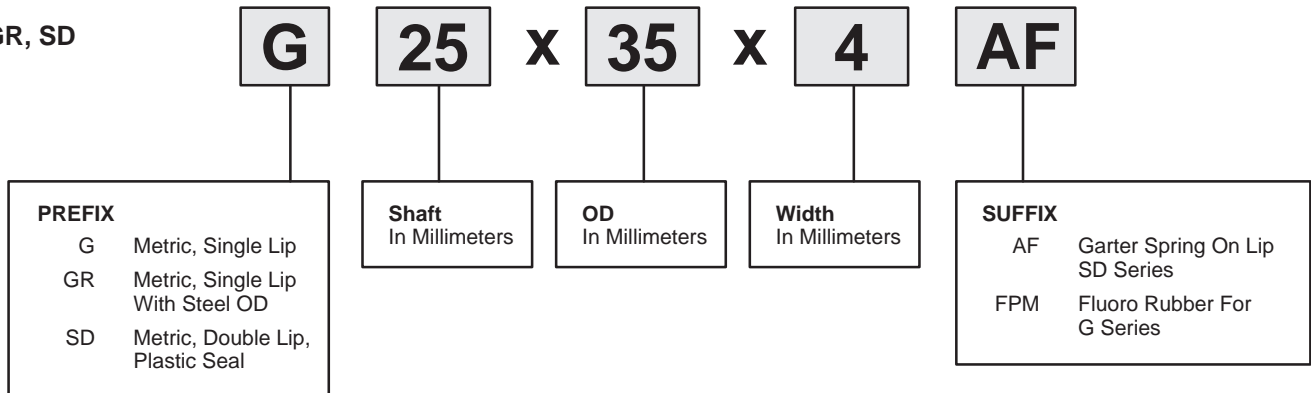
- Complementary metric components for use with INA bearing products
- Seals available as single lip rubber or double lip plastic grease seals
- Double lip version available with garter spring
- Rollers available in inch or metric nominal sizes
- Roller diameter sorted to tolerance groups of 2 micrometers (0.00008 inch) for tolerance range of 10 micrometers (0.0004 inch)

Part Number Identification

SEALS, SNAP RINGS & ROLLERS

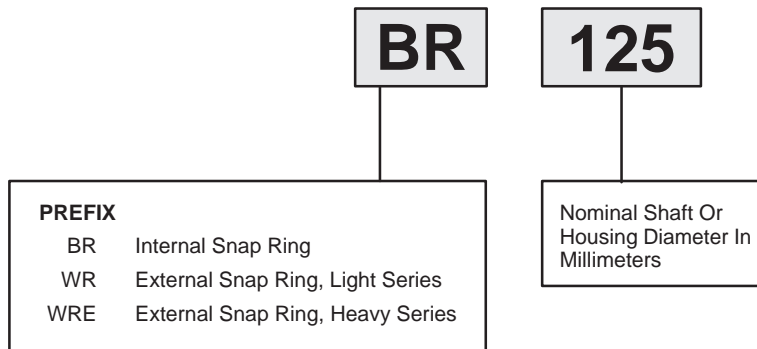
NEEDLE BEARING SEALS METRIC SERIES

G, GR, SD



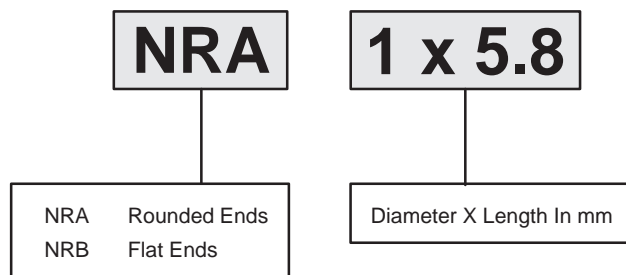
NEEDLE BEARING SEALS METRIC SERIES

BR, WR, WRE



NEEDLE ROLLERS

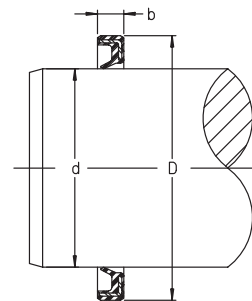
NRA, NRB



Metric Seals

G SERIES

- Single lip NBR seals
- GR series interchangeable except with steel OD



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
 For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

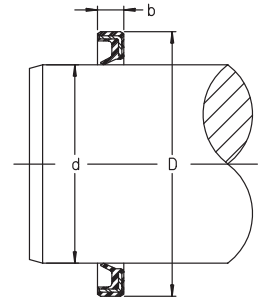
PART NUMBER	SHAFT DIA. d inch	SHAFT DIA. d mm	OD D inch	OD D mm	WIDTH b inch	WIDTH b mm	WEIGHT lbs	WEIGHT g
G 4x8x2	0.157	4	0.315	8	0.079	2	0.0004	0.18
G 5x9x2	0.197	5	0.354	9	0.079	2	0.0004	0.19
G 5x10x2	0.197	5	0.394	10	0.079	2	0.0005	0.22
G 6x10x2	0.236	6	0.394	10	0.079	2	0.0005	0.21
G 6x12x2	0.236	6	0.472	12	0.079	2	0.0008	0.38
G 7x11x2	0.276	7	0.433	11	0.079	2	0.0006	0.25
G 7x14x2	0.276	7	0.551	14	0.079	2	0.0011	0.52
G 8x12x3	0.315	8	0.472	12	0.118	3	0.0009	0.41
G 8x15x3	0.315	8	0.591	15	0.118	3	0.0014	0.65
G 9x13x3	0.354	9	0.512	13	0.118	3	0.0010	0.44
G 9x16x3	0.354	9	0.63	16	0.118	3	0.0015	0.69
G 10x14x3	0.394	10	0.551	14	0.118	3	0.0011	0.5
G 10x17x3	0.394	10	0.669	17	0.118	3	0.0020	0.9
G 12x16x3	0.472	12	0.63	16	0.118	3	0.0013	0.6
G 12x18x3	0.472	12	0.709	18	0.118	3	0.0020	0.9
G 12x19x3	0.472	12	0.748	19	0.118	3	0.0022	1
G 13x19x3	0.512	13	0.748	19	0.118	3	0.0020	0.9
G 14x20x3	0.551	14	0.787	20	0.118	3	0.0022	1
G 14x21x3	0.551	14	0.827	21	0.118	3	0.0024	1.1
G 14x22x3	0.551	14	0.866	22	0.118	3	0.0029	1.3
G 15x21x3	0.591	15	0.827	21	0.118	3	0.0022	1
G 15x23x3	0.591	15	0.906	23	0.118	3	0.0029	1.3
G 16x22x3	0.63	16	0.866	22	0.118	3	0.0029	1.3
G 16x24x3	0.63	16	0.945	24	0.118	3	0.0029	1.3
G 16x25x3	0.63	16	0.984	25	0.118	3	0.0035	1.6
G 17x23x3	0.669	17	0.906	23	0.118	3	0.0029	1.3
G 17x25x3	0.669	17	0.984	25	0.118	3	0.0033	1.5
G 18x24x3	0.709	18	0.945	24	0.118	3	0.0026	1.2
G 18x26x4	0.709	18	1.024	26	0.157	4	0.0040	1.8
G 19x27x4	0.748	19	1.063	27	0.157	4	0.0044	2
G 20x26x4	0.787	20	1.024	26	0.157	4	0.0040	1.8
G 20x28x4	0.787	20	1.102	28	0.157	4	0.0046	2.1
G 21x29x4	0.827	21	1.142	29	0.157	4	0.0049	2.2
G 22x28x4	0.866	22	1.102	28	0.157	4	0.0040	1.8
G 22x30x4	0.866	22	1.181	30	0.157	4	0.0049	2.2
G 24x32x4	0.945	24	1.26	32	0.157	4	0.0055	2.5
G 25x32x4	0.984	25	1.26	32	0.157	4	0.0051	2.3
G 25x33x4	0.984	25	1.299	33	0.157	4	0.0055	2.5
G 25x35x4	0.984	25	1.378	35	0.157	4	0.0057	2.6
G 26x34x4	1.024	26	1.339	34	0.157	4	0.0057	2.6
G 28x35x4	1.102	28	1.378	35	0.157	4	0.0053	2.4
G 28x37x4	1.102	28	1.457	37	0.157	4	0.0068	3.1
G 29x38x4	1.142	29	1.496	38	0.157	4	0.0071	3.2
G 30x37x4	1.181	30	1.457	37	0.157	4	0.0060	2.7
G 30x40x4	1.181	30	1.575	40	0.157	4	0.0079	3.6
G 32x42x4	1.26	32	1.654	42	0.157	4	0.0082	3.7



Metric Seals

G SERIES

- Single lip NBR seals
- GR series interchangeable except with steel OD



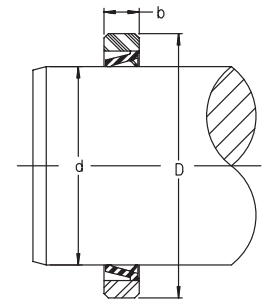
For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
 For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

PART NUMBER	SHAFT DIA. d inch	SHAFT DIA. d mm	OD D inch	OD D mm	WIDTH b inch	WIDTH b mm	WEIGHT lbs	WEIGHT g
G 32x45x4	1.26	32	1.772	45	0.157	4	0.0112	5.1
G 35x42x4	1.378	35	1.654	42	0.157	4	0.0066	3
G 35x45x4	1.378	35	1.772	45	0.157	4	0.0090	4.1
G 37x47x4	1.457	37	1.85	47	0.157	4	0.0088	4
G 38x48x4	1.496	38	1.89	48	0.157	4	0.0097	4.4
G 40x47x4	1.575	40	1.85	47	0.157	4	0.0073	3.3
G 40x50x4	1.575	40	1.969	50	0.157	4	0.0101	4.6
G 40x52x5	1.575	40	2.047	52	0.197	5	0.0106	4.8
G 42x52x4	1.654	42	2.047	52	0.157	4	0.0104	4.7
G 43x53x4	1.693	43	2.087	53	0.157	4	0.0106	4.8
G 45x52x4	1.772	45	2.047	52	0.157	4	0.0084	3.8
G 45x55x4	1.772	45	2.165	55	0.157	4	0.0115	5.2
G 50x58x4	1.969	50	2.283	58	0.157	4	0.0099	4.5
G 50x62x5	1.969	50	2.441	62	0.197	5	0.0229	10.4
G 55x63x5	2.165	55	2.48	63	0.197	5	0.0157	7.1
G 70x78x5	2.756	70	3.071	78	0.197	5	0.0198	9

Metric Seals

SD SERIES

- Double lipped polyurethane seal



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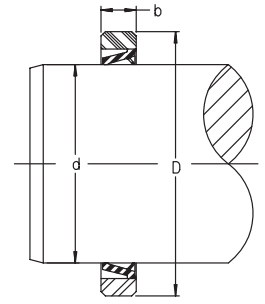
PART NUMBER	SHAFT d inch	SHAFT d mm	OD D inch	OD D mm	WIDTH b inch	WIDTH b mm	WEIGHT lbs	WEIGHT g
SD 8x15x3	0.315	8	0.591	15	0.118	3	0.001	0.4
SD 9x16x3	0.354	9	0.63	16	0.118	3	0.001	0.42
SD 10x17x3	0.394	10	0.669	17	0.118	3	0.001	0.44
SD 12x18x3	0.472	12	0.709	18	0.118	3	0.001	0.5
SD 12x19x3	0.472	12	0.748	19	0.118	3	0.001	0.6
SD 13x19x3	0.512	13	0.748	19	0.118	3	0.001	0.5
SD 14x20x3	0.551	14	0.787	20	0.118	3	0.001	0.5
SD 14x21x3	0.551	14	0.827	21	0.118	3	0.001	0.6
SD 14x22x3	0.551	14	0.866	22	0.118	3	0.002	0.7
SD 15x21x3	0.591	15	0.827	21	0.118	3	0.001	0.5
SD 15x23x3	0.591	15	0.906	23	0.118	3	0.002	0.7
SD 16x22x3	0.63	16	0.866	22	0.118	3	0.001	0.6
SD 16x24x3	0.63	16	0.945	24	0.118	3	0.002	0.8
SD 16x25x3	0.63	16	0.984	25	0.118	3	0.002	0.9
SD 17x23x3	0.669	17	0.906	23	0.118	3	0.001	0.6
SD 17x25x3	0.669	17	0.984	25	0.118	3	0.002	0.8
SD 18x24x3	0.709	18	0.945	24	0.118	3	0.001	0.6
SD 18x26x4	0.709	18	1.024	26	0.157	4	0.002	1.1
SD 19x27x4	0.748	19	1.063	27	0.157	4	0.002	1.1
SD 20x26x4	0.787	20	1.024	26	0.157	4	0.002	0.8
SD 20x28x4	0.787	20	1.102	28	0.157	4	0.002	1.1
SD 21x29x4	0.827	21	1.142	29	0.157	4	0.003	1.2
SD 22x28x4	0.866	22	1.102	28	0.157	4	0.002	0.9
SD 22x30x4	0.866	22	1.181	30	0.157	4	0.003	1.3
SD 24x32x4	0.945	24	1.26	32	0.157	4	0.003	1.4
SD 25x32x4	0.984	25	1.26	32	0.157	4	0.003	1.2
SD 25x33x4	0.984	25	1.299	33	0.157	4	0.003	1.3
SD 25x35x4	0.984	25	1.378	35	0.157	4	0.004	1.9
SD 26x34x4	1.024	26	1.339	34	0.157	4	0.003	1.4
SD 28x35x4	1.102	28	1.378	35	0.157	4	0.003	1.3
SD 28x37x4	1.102	28	1.457	37	0.157	4	0.004	1.9
SD 29x37x4	1.142	29	1.457	37	0.157	4	0.004	1.6
SD 29x38x4	1.142	29	1.496	38	0.157	4	0.004	1.9
SD 30x37x4	1.181	30	1.457	37	0.157	4	0.003	1.3
SD 30x40x4	1.181	30	1.575	40	0.157	4	0.005	2.1
SD 32x42x4	1.26	32	1.654	42	0.157	4	0.005	2.4
SD 32x45x4	1.26	32	1.772	45	0.157	4	0.008	3.6
SD 35x42x4	1.378	35	1.654	42	0.157	4	0.003	1.5
SD 35x45x4	1.378	35	1.772	45	0.157	4	0.006	2.5
SD 37x47x4	1.457	37	1.85	47	0.157	4	0.006	2.7
SD 38x48x4	1.496	38	1.89	48	0.157	4	0.006	2.8
SD 40x47x4	1.575	40	1.85	47	0.157	4	0.004	1.7
SD 40x50x4	1.575	40	1.969	50	0.157	4	0.006	2.9
SD 40x52x5	1.575	40	2.047	52	0.197	5	0.01	4.5
SD 42x52x4	1.654	42	2.047	52	0.157	4	0.007	3
SD 43x53x4	1.693	43	2.087	53	0.157	4	0.007	3.1



Metric Seals

SD SERIES

- Double lipped polyurethane seal



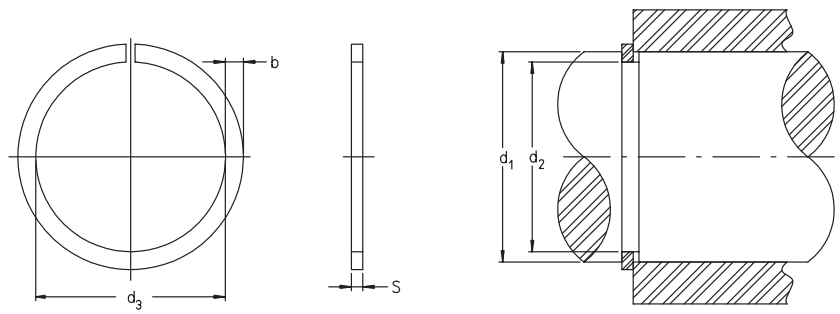
For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
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PART NUMBER	SHAFT d inch	SHAFT d mm	OD D inch	OD D mm	WIDTH b inch	WIDTH b mm	WEIGHT lbs	WEIGHT g
SD 45x52x4	1.772	45	2.047	52	0.157	4	0.004	1.9
SD 45x55x4	1.772	45	2.165	55	0.157	4	0.007	3.2
SD 50x58x4	1.969	50	2.283	58	0.157	4	0.005	2.4
SD 50x62x5	1.969	50	2.441	62	0.197	5	0.012	5.5

Shaft Snap Rings

WR SERIES

• Metric series



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.

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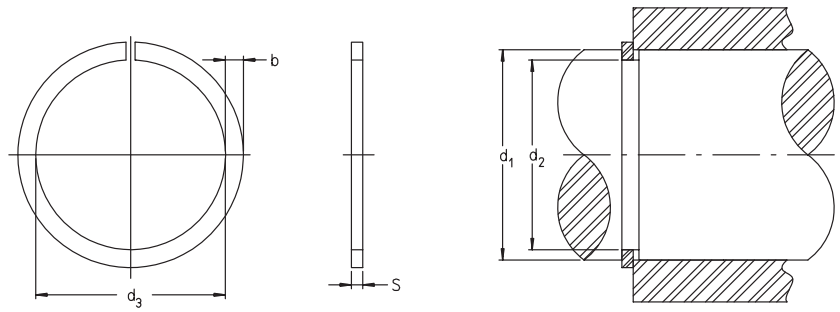
PART NUMBER	SHAFT DIA. d ₁	SHAFT DIA. d ₁	ID IN FREE STATE d ₃	ID IN FREE STATE d ₃	RADIAL SECTION b	RADIAL SECTION b	WIDTH s	WIDTH s	GROOVE DIA. d ₂	GROOVE DIA. d ₂	WEIGHT PER 1000 PIECES	WEIGHT PER 1000 PIECES	SPEED LIMIT
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	g	rpm
WR 4	0.158	4	0.146	3.7	0.032	0.8	0.020	0.5	0.150	3.8	0.044	20	275000
WR 5	0.197	5	0.185	4.7	0.039	1	0.020	0.5	0.189	4.8	0.11	50	192000
WR 6	0.236	6	0.221	5.6	0.043	1.1	0.028	0.7	0.224	5.7	0.198	90	141000
WR 7	0.276	7	0.256	6.5	0.047	1.2	0.028	0.7	0.264	6.7	0.265	120	134000
WR 8	0.315	8	0.291	7.4	0.051	1.3	0.039	1	0.299	7.6	0.441	200	108000
WR 9	0.354	9	0.331	8.4	0.051	1.3	0.039	1	0.339	8.6	0.529	240	80000
WR 10	0.394	10	0.370	9.4	0.051	1.3	0.039	1	0.378	9.6	0.551	250	68000
WR 11	0.433	11	0.402	10.2	0.051	1.3	0.039	1	0.413	10.5	0.639	290	64000
WR 12	0.472	12	0.441	11.2	0.051	1.3	0.039	1	0.453	11.5	0.662	300	53000
WR 14	0.551	14	0.516	13.1	0.059	1.5	0.047	1.2	0.532	13.5	1.103	500	45000
WR 15	0.591	15	0.551	14	0.069	1.75	0.047	1.2	0.567	14.4	1.455	660	44000
WR 16	0.630	16	0.591	15	0.069	1.75	0.047	1.2	0.606	15.4	1.521	690	38000
WR 17	0.669	17	0.630	16	0.069	1.75	0.047	1.2	0.646	16.4	1.588	720	34000
WR 18	0.709	18	0.669	17	0.069	1.75	0.047	1.2	0.685	17.4	1.654	750	30000
WR 19	0.748	19	0.705	17.9	0.069	1.75	0.047	1.2	0.724	18.4	1.764	800	29000
WR 20	0.787	20	0.736	18.7	0.069	1.75	0.047	1.2	0.756	19.2	1.852	840	26000
WR 21	0.827	21	0.776	19.7	0.069	1.75	0.047	1.2	0.795	20.2	1.918	870	23000
WR 22	0.866	22	0.815	20.7	0.069	1.75	0.047	1.2	0.835	21.2	2.007	910	21000
WR 24	0.945	24	0.886	22.5	0.069	1.75	0.047	1.2	0.906	23	2.183	990	18000
WR 25	0.984	25	0.925	23.5	0.069	1.75	0.047	1.2	0.945	24	2.205	1000	16000
WR 26	1.024	26	0.965	24.5	0.069	1.75	0.047	1.2	0.984	25	2.426	1100	15000
WR 28	1.102	28	1.043	26.5	0.091	2.3	0.059	1.5	1.063	27	4.653	2110	15000
WR 29	1.142	29	1.083	27.5	0.091	2.3	0.059	1.5	1.102	28	4.851	2200	14000
WR 30	1.181	30	1.122	28.5	0.091	2.3	0.059	1.5	1.142	29	5.138	2330	13000
WR 32	1.260	32	1.189	30.2	0.091	2.3	0.059	1.5	1.213	30.8	5.314	2410	13000
WR 35	1.378	35	1.307	33.2	0.091	2.3	0.059	1.5	1.331	33.8	5.535	2510	11000
WR 37	1.457	37	1.386	35.2	0.091	2.3	0.059	1.5	1.409	35.8	5.998	2720	9200
WR 38	1.496	38	1.425	36.2	0.091	2.3	0.059	1.5	1.449	36.8	6.24	2830	8700
WR 40	1.575	40	1.488	37.8	0.091	2.3	0.059	1.5	1.516	38.5	6.417	2910	8100
WR 42	1.654	42	1.567	39.8	0.091	2.3	0.059	1.5	1.595	40.5	6.836	3100	7000
WR 43	1.693	43	1.606	40.8	0.091	2.3	0.059	1.5	1.634	41.5	7.166	3250	6800
WR 44	1.732	44	1.646	41.8	0.091	2.3	0.059	1.5	1.673	42.5	7.321	3320	6300
WR 45	1.772	45	1.685	42.8	0.091	2.3	0.059	1.5	1.713	43.5	7.475	3390	5800
WR 47	1.850	47	1.764	44.8	0.091	2.3	0.059	1.5	1.791	45.5	7.673	3480	5500
WR 50	1.969	50	1.882	47.8	0.091	2.3	0.059	1.5	1.909	48.5	8.225	3730	4800
WR 52	2.047	52	1.961	49.8	0.091	2.3	0.059	1.5	1.988	50.5	8.644	3920	4300
WR 55	2.165	55	2.071	52.6	0.091	2.3	0.059	1.5	2.106	53.5	9.063	4110	4400
WR 58	2.284	58	2.189	55.6	0.091	2.3	0.059	1.5	2.224	56.5	9.702	4400	3800
WR 60	2.362	60	2.268	57.6	0.091	2.3	0.059	1.5	2.303	58.5	10.03	4550	3500
WR 62	2.441	62	2.347	59.6	0.091	2.3	0.059	1.5	2.382	60.5	10.08	4570	3250
WR 63	2.480	63	2.386	60.6	0.091	2.3	0.059	1.5	2.421	61.5	10.10	4580	3100
WR 65	2.559	65	2.465	62.6	0.091	2.3	0.059	1.5	2.500	63.5	10.23	4640	2850
WR 68	2.677	68	2.575	65.4	0.110	2.8	0.079	2	2.606	66.2	18.94	8590	2950
WR 70	2.756	70	2.654	67.4	0.110	2.8	0.079	2	2.685	68.2	19.21	8710	2750
WR 72	2.835	72	2.732	69.4	0.110	2.8	0.079	2	2.764	70.2	19.40	8800	2550



Shaft Snap Rings

WR SERIES

• Metric series



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

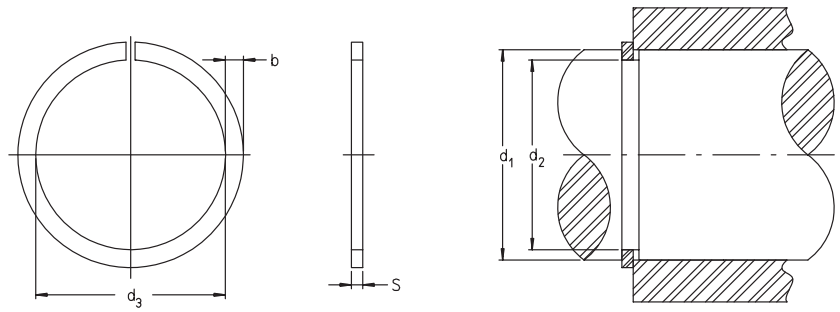
PART NUMBER	SHAFT DIA. d ₁	SHAFT DIA. d ₁	ID IN FREE STATE d ₃	ID IN FREE STATE d ₃	RADIAL SECTION b	RADIAL SECTION b	WIDTH s	WIDTH s	GROOVE DIA. d ₂	GROOVE DIA. d ₂	WEIGHT PER 1000 PIECES	WEIGHT PER 1000 PIECES	SPEED LIMIT
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	g	rpm
WR 73	2.874	73	2.772	70.4	0.110	2.8	0.079	2	2.803	71.2	19.63	8900	2500
WR 75	2.953	75	2.850	72.4	0.110	2.8	0.079	2	2.882	73.2	20.55	9320	2300
WR 80	3.150	80	3.047	77.4	0.110	2.8	0.079	2	3.079	78.2	21.32	9670	1950
WR 85	3.347	85	3.228	82	0.134	3.4	0.098	2.5	3.268	83	35.28	16000	2300
WR 90	3.543	90	3.425	87	0.134	3.4	0.098	2.5	3.465	88	35.28	16000	2000
WR 95	3.740	95	3.622	92	0.134	3.4	0.098	2.5	3.661	93	40.13	18200	1750
WR 100	3.937	100	3.819	97	0.134	3.4	0.098	2.5	3.858	98	41.68	18900	1560
WR 105	4.134	105	4.004	101.7	0.134	3.4	0.098	2.5	4.043	102.7	45.64	20700	1390
WR 110	4.331	110	4.197	106.6	0.134	3.4	0.098	2.5	4.240	107.7	46.09	20900	1240
WR 115	4.528	115	4.394	111.6	0.134	3.4	0.098	2.5	4.437	112.7	48.73	22100	1100
WR 120	4.724	120	4.587	116.5	0.134	3.4	0.098	2.5	4.634	117.7	53.14	24100	1000
WR 125	4.921	125	4.780	121.4	0.134	3.4	0.098	2.5	4.831	122.7	55.35	25100	920
WR 130	5.118	130	4.972	126.3	0.134	3.4	0.098	2.5	5.028	127.7	58.65	26600	830
WR 135	5.315	135	5.158	131	0.158	4	0.098	2.5	5.213	132.4	66.59	30200	830
WR 140	5.512	140	5.350	135.9	0.158	4	0.098	2.5	5.409	137.4	68.58	31100	760
WR 145	5.709	145	5.547	140.9	0.158	4	0.098	2.5	5.606	142.4	71.88	32600	690
WR 150	5.906	150	5.740	145.8	0.158	4	0.098	2.5	5.803	147.4	72.32	32800	640
WR 155	6.102	155	5.937	150.8	0.158	4	0.098	2.5	6.000	152.4	76.51	34700	590
WR 160	6.299	160	6.130	155.7	0.158	4	0.098	2.5	6.197	157.4	80.70	36600	545
WR 165	6.496	165	6.327	160.7	0.158	4	0.098	2.5	6.394	162.4	82.47	37400	500
WR 170	6.693	170	6.520	165.6	0.158	4	0.098	2.5	6.591	167.4	84.89	38500	470
WR 175	6.890	175	6.717	170.6	0.158	4	0.098	2.5	6.787	172.4	86.88	39400	430
WR 180	7.087	180	6.898	175.2	0.197	5	0.118	3	6.969	177	135	61200	600
WR 185	7.284	185	7.091	180.1	0.197	5	0.118	3	7.165	182	141	63900	590
WR 190	7.480	190	7.287	185.1	0.197	5	0.118	3	7.362	187	145	65900	550
WR 195	7.677	195	7.484	190.1	0.197	5	0.118	3	7.559	192	149	67500	510
WR 200	7.874	200	7.677	195	0.197	5	0.118	3	7.756	197	151	68400	480
WR 210	8.268	210	8.067	204.9	0.197	5	0.118	3	8.150	207	159	72000	420
WR 220	8.661	220	8.457	214.8	0.197	5	0.118	3	8.543	217	168	76300	380
WR 225	8.858	225	8.654	219.8	0.197	5	0.118	3	8.740	222	172	78000	360
WR 230	9.055	230	8.847	224.7	0.197	5	0.118	3	8.937	227	176	79800	340
WR 240	9.449	240	9.236	234.6	0.197	5	0.118	3	9.331	237	180	81700	310
WR 260	10.236	260	9.937	252.4	0.295	7.5	0.158	4	10.039	255	395	179000	430
WR 265	10.433	265	10.134	257.4	0.295	7.5	0.158	4	10.236	260	408	185200	410
WR 270	10.630	270	10.327	262.3	0.295	7.5	0.158	4	10.433	265	436	197700	380
WR 280	11.024	280	10.717	272.2	0.295	7.5	0.158	4	10.827	275	438	198700	360
WR 285	11.221	285	10.913	277.2	0.295	7.5	0.158	4	11.024	280	440	199500	345
WR 290	11.417	290	11.106	282.1	0.295	7.5	0.158	4	11.221	285	453	205300	320
WR 300	11.811	300	11.500	292.1	0.295	7.5	0.158	4	11.614	295	472	214200	300
WR 305	12.008	305	11.697	297.1	0.295	7.5	0.158	4	11.811	300	484	219400	290
WR 310	12.205	310	11.890	302	0.295	7.5	0.158	4	12.008	305	492	223100	270
WR 320	12.598	320	12.280	311.9	0.295	7.5	0.158	4	12.402	315	497	225300	255
WR 330	12.992	330	12.665	321.7	0.295	7.5	0.158	4	12.795	325	504	228600	240
WR 340	13.386	340	13.055	331.6	0.295	7.5	0.158	4	13.189	335	528	239300	220
WR 350	13.780	350	13.445	341.5	0.295	7.5	0.158	4	13.583	345	554	251200	205



Shaft Snap Rings

WR SERIES

- Metric series



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.

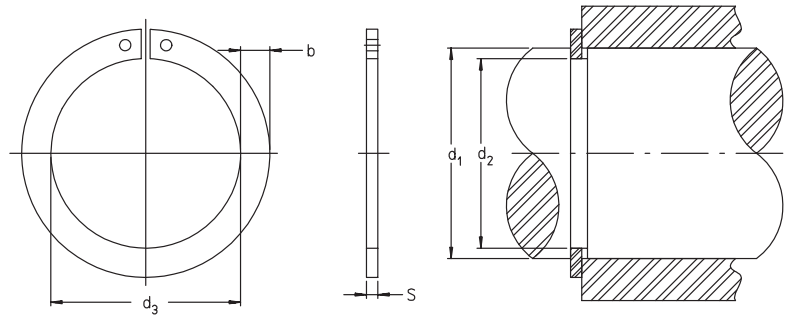
For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

PART NUMBER	SHAFT DIA. d ₁	SHAFT DIA. d ₁	ID IN FREE STATE d ₃	ID IN FREE STATE d ₃	RADIAL SECTION b	RADIAL SECTION b	WIDTH s	WIDTH s	GROOVE DIA. d ₂	GROOVE DIA. d ₂	WEIGHT PER 1000 PIECES	WEIGHT PER 1000 PIECES	SPEED LIMIT
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	g	rpm
WR 360	14.173	360	13.835	351.4	0.295	7.5	0.158	4	13.976	355	558	253100	195
WR 370	14.567	370	14.228	361.4	0.295	7.5	0.158	4	14.370	365	572	259200	180
WR 380	14.961	380	14.614	371.2	0.295	7.5	0.158	4	14.764	375	591	268000	170
WR 390	15.354	390	15.008	381.2	0.295	7.5	0.158	4	15.158	385	604	273900	160
WR 400	15.748	400	15.402	391.2	0.295	7.5	0.158	4	15.551	395	620	281100	145
WR 420	16.535	420	16.142	410	0.472	12	0.177	4.5	16.299	414	1191	540000	267
WR 460	18.110	460	17.697	449.5	0.472	12	0.177	4.5	17.874	454	1301	590000	224



Heavy Duty Shaft Snap Rings WRE SERIES

• Metric series



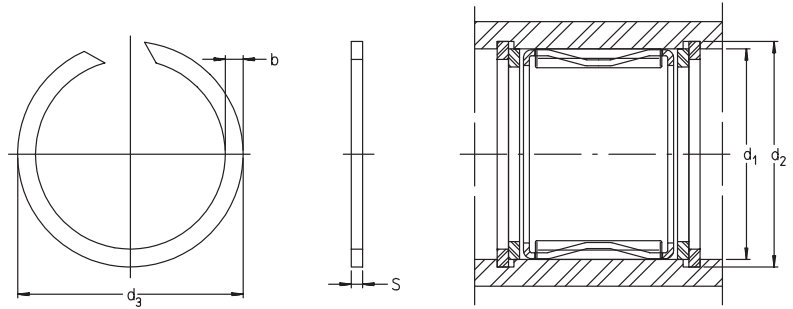
For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

PART NUMBER	SHAFT DIA. d ₁	SHAFT DIA. d ₁	FREE ID d ₃	FREE ID d ₃	RADIAL SECTION b	RADIAL SECTION b	WIDTH s	WIDTH s	GROOVE DIA. d ₂	GROOVE DIA. d ₂	WEIGHT PER 1000 PIECES	WEIGHT PER 1000 PIECES	SPEED LIMIT
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	kg	rpm
WRE 42	1.654	42	1.547	39.3	0.142	3.6	0.059	1.5	1.567	39.8	12.57	5.7	7680
WRE 47	1.850	47	1.744	44.3	0.142	3.6	0.059	1.5	1.764	44.8	14.00	6.35	5840
WRE 55	2.165	55	2.039	51.8	0.142	3.6	0.059	1.5	2.079	52.8	16.23	7.36	5660
WRE 62	2.441	62	2.315	58.8	0.142	3.6	0.059	1.5	2.354	59.8	18.21	8.26	4220
WRE 68	2.677	68	2.543	64.6	0.189	4.8	0.079	2	2.591	65.8	35.83	16.25	4710
WRE 75	2.953	75	2.819	71.6	0.189	4.8	0.079	2	2.866	72.8	39.43	17.88	3720
WRE 80	3.150	80	3.016	76.6	0.189	4.8	0.079	2	3.063	77.8	42.01	19.05	3180
WRE 90	3.543	90	3.398	86.3	0.228	5.8	0.098	2.5	3.457	87.8	71.60	32.47	3140
WRE 95	3.740	95	3.595	91.3	0.228	5.8	0.098	2.5	3.654	92.8	75.48	34.23	2760
WRE 100	3.937	100	3.776	95.9	0.228	5.8	0.098	2.5	3.835	97.4	79.56	36.08	2460
WRE 110	4.331	110	4.150	105.4	0.228	5.8	0.098	2.5	4.217	107.1	86.72	39.33	2090
WRE 115	4.528	115	4.347	110.4	0.228	5.8	0.098	2.5	4.413	112.1	90.60	41.09	1880
WRE 125	4.921	125	4.728	120.1	0.295	7.5	0.098	2.5	4.807	122.1	129	58.32	2080
WRE 130	5.118	130	4.917	124.9	0.295	7.5	0.098	2.5	5.004	127.1	133	60.5	1990
WRE 140	5.512	140	5.307	134.8	0.295	7.5	0.098	2.5	5.394	137	143	64.91	1660
WRE 145	5.709	145	5.504	139.8	0.295	7.5	0.098	2.5	5.591	142	148	67.18	1530
WRE 150	5.906	150	5.685	144.4	0.295	7.5	0.098	2.5	5.787	147	153	69.28	1530
WRE 160	6.299	160	6.067	154.1	0.295	7.5	0.098	2.5	6.181	157	163	73.7	1380
WRE 170	6.693	170	6.433	163.4	0.295	7.5	0.098	2.5	6.575	167	172	77.92	1330
WRE 180	7.087	180	6.811	173	0.386	9.8	0.118	3	6.929	176	289	131.09	1350
WRE 190	7.480	190	7.205	183	0.386	9.8	0.118	3	7.323	186	305	138.23	1190
WRE 200	7.874	200	7.579	192.5	0.386	9.8	0.118	3	7.717	196	320	145	1130
WRE 210	8.268	210	7.953	202	0.386	9.8	0.118	3	8.110	206	335	151.78	1080
WRE 220	8.661	220	8.347	212	0.386	9.8	0.118	3	8.504	216	350	158.91	960
WRE 225	8.858	225	8.543	217	0.472	12	0.118	3	8.701	221	443	200.88	1090
WRE 230	9.055	230	8.740	222	0.472	12	0.118	3	8.898	226	453	205.24	1030
WRE 240	9.449	240	9.114	231.5	0.472	12	0.118	3	9.291	236	471	213.54	990
WRE 260	10.236	260	9.823	249.5	0.551	14	0.158	4	10.000	254	792	359.35	950
WRE 270	10.630	270	10.197	259	0.551	14	0.158	4	10.394	264	821	372.25	910
WRE 280	11.024	280	10.591	269	0.551	14	0.158	4	10.787	274	851	385.84	840
WRE 290	11.417	290	10.984	279	0.551	14	0.158	4	11.181	284	881	399.43	770
WRE 300	11.811	300	11.358	288.5	0.551	14	0.158	4	11.575	294	909	412.33	740
WRE 310	12.205	310	11.732	298	0.638	16.2	0.158	4	11.969	304	1093	495.52	810
WRE 320	12.598	320	12.126	308	0.638	16.2	0.158	4	12.362	314	1127	511.24	750
WRE 340	13.386	340	12.894	327.5	0.638	16.2	0.158	4	13.150	334	1195	541.89	680
WRE 360	14.173	360	13.661	347	0.638	16.2	0.158	4	13.937	354	1262	572.55	610
WRE 380	14.961	380	14.370	365	0.638	16.2	0.158	4	14.724	374	1325	600.85	610
WRE 400	15.748	400	15.158	385	0.638	16.2	0.158	4	15.512	394	1433	650	540
WRE 420	16.535	420	15.945	405	0.787	20	0.177	4.5	16.260	413	2051	930	540
WRE 460	18.110	460	17.402	442	0.787	20	0.177	4.5	17.835	453	2229	1011	510

Housing Snap Rings

BR SERIES

• Metric series



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
 For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

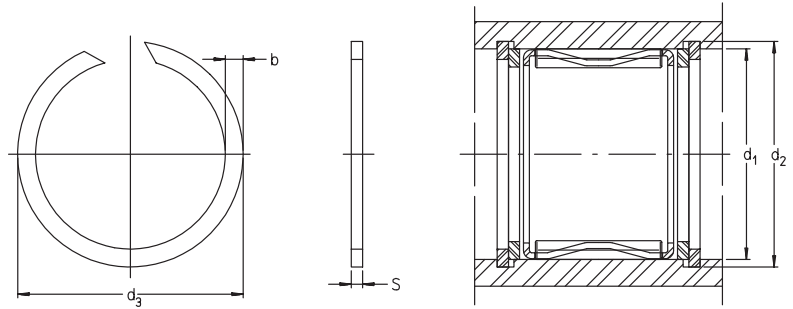
PART NUMBER	HSG BORE	HSG BORE	SNAP RING	SNAP RING	RADIAL	RADIAL	WIDTH	WIDTH	GROOVE	GROOVE	WEIGHT	WEIGHT
	d ₁	d ₁	OD	OD	SECTION	SECTION	s	s	DIA.	DIA.	PER 1000	PER 1000
	inch	mm	d ₃ min.	d ₃ min.	b	b	inch	mm	d ₂	d ₂	PIECES	PIECES
			inch	mm	inch	mm	inch	mm	inch	mm	lbs	kg
BR 7	0.276	7	0.295	7.5	0.039	1	0.031	0.8	0.291	7.4	0.198	0.09
BR 8	0.315	8	0.335	8.5	0.039	1	0.031	0.8	0.331	8.4	0.221	0.1
BR 9	0.354	9	0.374	9.5	0.043	1.1	0.031	0.8	0.37	9.4	0.287	0.13
BR 10	0.394	10	0.417	10.6	0.047	1.2	0.031	0.8	0.413	10.5	0.331	0.15
BR 11	0.433	11	0.457	11.6	0.051	1.3	0.039	1	0.453	11.5	0.463	0.21
BR 12	0.472	12	0.5	12.7	0.051	1.3	0.039	1	0.492	12.5	0.551	0.25
BR 13	0.512	13	0.543	13.8	0.051	1.3	0.039	1	0.535	13.6	0.617	0.28
BR 14	0.551	14	0.583	14.8	0.051	1.3	0.039	1	0.575	14.6	0.684	0.31
BR 15	0.591	15	0.622	15.8	0.051	1.3	0.039	1	0.614	15.6	0.75	0.34
BR 16	0.63	16	0.661	16.8	0.069	1.75	0.047	1.2	0.654	16.6	1.169	0.53
BR 17	0.669	17	0.701	17.8	0.069	1.75	0.047	1.2	0.693	17.6	1.213	0.55
BR 18	0.709	18	0.744	18.9	0.069	1.75	0.047	1.2	0.732	18.6	1.499	0.68
BR 19	0.748	19	0.783	19.9	0.069	1.75	0.047	1.2	0.772	19.6	1.588	0.72
BR 20	0.787	20	0.827	21	0.069	1.75	0.047	1.2	0.811	20.6	1.676	0.76
BR 21	0.827	21	0.866	22	0.069	1.75	0.047	1.2	0.85	21.6	1.742	0.79
BR 22	0.866	22	0.906	23	0.069	1.75	0.047	1.2	0.89	22.6	1.786	0.81
BR 23	0.906	23	0.945	24	0.069	1.75	0.047	1.2	0.929	23.6	1.94	0.88
BR 24	0.945	24	0.992	25.2	0.069	1.75	0.047	1.2	0.976	24.8	1.985	0.9
BR 25	0.984	25	1.031	26.2	0.069	1.75	0.047	1.2	1.016	25.8	2.007	0.91
BR 26	1.024	26	1.071	27.2	0.069	1.75	0.047	1.2	1.055	26.8	2.161	0.98
BR 27	1.063	27	1.11	28.2	0.069	1.75	0.047	1.2	1.094	27.8	2.448	1.11
BR 28	1.102	28	1.15	29.2	0.069	1.75	0.047	1.2	1.134	28.8	2.492	1.13
BR 29	1.142	29	1.189	30.2	0.069	1.75	0.047	1.2	1.173	29.8	2.536	1.15
BR 30	1.181	30	1.236	31.4	0.091	2.3	0.059	1.5	1.22	31	4.41	2
BR 31	1.22	31	1.276	32.4	0.091	2.3	0.059	1.5	1.26	32	4.476	2.03
BR 32	1.26	32	1.315	33.4	0.091	2.3	0.059	1.5	1.299	33	4.653	2.11
BR 33	1.299	33	1.354	34.4	0.091	2.3	0.059	1.5	1.339	34	4.983	2.26
BR 34	1.339	34	1.394	35.4	0.091	2.3	0.059	1.5	1.378	35	5.16	2.34
BR 35	1.378	35	1.433	36.4	0.091	2.3	0.059	1.5	1.417	36	5.204	2.36
BR 37	1.457	37	1.528	38.8	0.091	2.3	0.059	1.5	1.504	38.2	5.579	2.53
BR 38	1.496	38	1.567	39.8	0.091	2.3	0.059	1.5	1.543	39.2	5.755	2.61
BR 39	1.535	39	1.606	40.8	0.091	2.3	0.059	1.5	1.583	40.2	5.887	2.67
BR 40	1.575	40	1.646	41.8	0.091	2.3	0.059	1.5	1.622	41.2	6.174	2.8
BR 42	1.654	42	1.724	43.8	0.091	2.3	0.059	1.5	1.701	43.2	6.439	2.92
BR 43	1.693	43	1.764	44.8	0.091	2.3	0.059	1.5	1.74	44.2	6.681	3.03
BR 44	1.732	44	1.803	45.8	0.091	2.3	0.059	1.5	1.78	45.2	6.858	3.11
BR 45	1.772	45	1.843	46.8	0.091	2.3	0.059	1.5	1.819	46.2	7.166	3.25
BR 46	1.811	46	1.882	47.8	0.091	2.3	0.059	1.5	1.858	47.2	7.232	3.28
BR 47	1.85	47	1.921	48.8	0.091	2.3	0.059	1.5	1.898	48.2	7.254	3.29
BR 48	1.89	48	1.961	49.8	0.091	2.3	0.059	1.5	1.937	49.2	7.607	3.45
BR 50	1.969	50	2.039	51.8	0.091	2.3	0.059	1.5	2.016	51.2	7.872	3.57
BR 52	2.047	52	2.138	54.3	0.091	2.3	0.059	1.5	2.106	53.5	7.894	3.58
BR 53	2.087	53	2.177	55.3	0.091	2.3	0.059	1.5	2.146	54.5	8.423	3.82
BR 55	2.165	55	2.256	57.3	0.091	2.3	0.059	1.5	2.224	56.5	8.666	3.93
BR 57	2.244	57	2.335	59.3	0.091	2.3	0.059	1.5	2.303	58.5	9.085	4.12



Housing Snap Rings

BR SERIES

• Metric series



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
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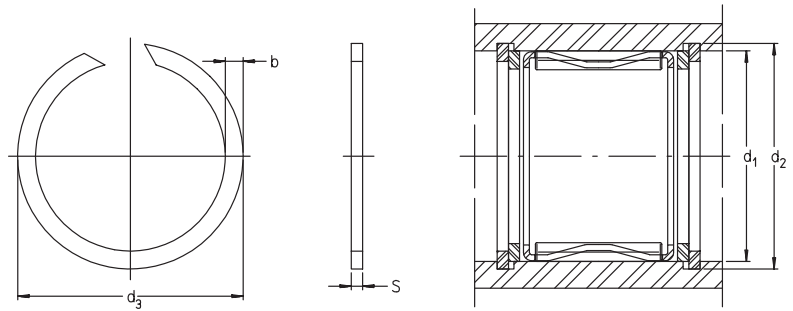
PART NUMBER	HSG BORE	HSG BORE	SNAP RING OD	SNAP RING OD	RADIAL SECTION	RADIAL SECTION	WIDTH	WIDTH	GROOVE DIA.	GROOVE DIA.	WEIGHT PER 1000	WEIGHT PER 1000
	d ₁	d ₁	d ₃ min.	d ₃ min.	b	b	s	s	d ₂	d ₂	PIECES	PIECES
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	kg
BR 58	2.283	58	2.374	60.3	0.091	2.3	0.059	1.5	2.343	59.5	9.107	4.13
BR 60	2.362	60	2.453	62.3	0.091	2.3	0.059	1.5	2.421	61.5	9.437	4.28
BR 62	2.441	62	2.531	64.3	0.091	2.3	0.059	1.5	2.5	63.5	9.746	4.42
BR 63	2.48	63	2.571	65.3	0.091	2.3	0.059	1.5	2.539	64.5	9.923	4.5
BR 65	2.559	65	2.65	67.3	0.091	2.3	0.059	1.5	2.618	66.5	10.408	4.72
BR 68	2.677	68	2.768	70.3	0.091	2.3	0.059	1.5	2.736	69.5	10.805	4.9
BR 70	2.756	70	2.846	72.3	0.091	2.3	0.059	1.5	2.815	71.5	10.871	4.93
BR 72	2.835	72	2.937	74.6	0.11	2.8	0.079	2	2.906	73.8	18.72	8.49
BR 73	2.874	73	2.976	75.6	0.11	2.8	0.079	2	2.945	74.8	18.787	8.52
BR 74	2.913	74	3.016	76.6	0.11	2.8	0.079	2	2.984	75.8	18.963	8.6
BR 76	2.992	76	3.094	78.6	0.11	2.8	0.079	2	3.063	77.8	19.602	8.89
BR 78	3.071	78	3.173	80.6	0.11	2.8	0.079	2	3.142	79.8	19.955	9.05
BR 79	3.11	79	3.213	81.6	0.11	2.8	0.079	2	3.181	80.8	19.999	9.07
BR 80	3.15	80	3.252	82.6	0.11	2.8	0.079	2	3.22	81.8	20.33	9.22
BR 81	3.189	81	3.291	83.6	0.11	2.8	0.079	2	3.26	82.8	20.529	9.31
BR 82	3.228	82	3.331	84.6	0.11	2.8	0.079	2	3.299	83.8	20.837	9.45
BR 83	3.268	83	3.37	85.6	0.11	2.8	0.079	2	3.339	84.8	21.234	9.63
BR 86	3.386	86	3.488	88.6	0.11	2.8	0.079	2	3.457	87.8	21.852	9.91
BR 88	3.465	88	3.583	91	0.134	3.4	0.098	2.5	3.543	90	33.957	15.4
BR 90	3.543	90	3.661	93	0.134	3.4	0.098	2.5	3.622	92	34.398	15.6
BR 92	3.622	92	3.74	95	0.134	3.4	0.098	2.5	3.701	94	36.603	16.6
BR 93	3.661	93	3.78	96	0.134	3.4	0.098	2.5	3.74	95	37.044	16.8
BR 95	3.74	95	3.858	98	0.134	3.4	0.098	2.5	3.819	97	37.265	16.9
BR 97	3.819	97	3.937	100	0.134	3.4	0.098	2.5	3.898	99	37.706	17.1
BR 98	3.858	98	3.976	101	0.134	3.4	0.098	2.5	3.937	100	38.588	17.5
BR 100	3.937	100	4.067	103.3	0.134	3.4	0.098	2.5	4.028	102.3	39.47	17.9
BR 102	4.016	102	4.146	105.3	0.134	3.4	0.098	2.5	4.106	104.3	40.572	18.4
BR 103	4.055	103	4.185	106.3	0.134	3.4	0.098	2.5	4.146	105.3	40.793	18.5
BR 105	4.134	105	4.264	108.3	0.134	3.4	0.098	2.5	4.224	107.3	41.234	18.7
BR 107	4.213	107	4.343	110.3	0.134	3.4	0.098	2.5	4.303	109.3	42.116	19.1
BR 108	4.252	108	4.382	111.3	0.134	3.4	0.098	2.5	4.343	110.3	42.557	19.3
BR 110	4.331	110	4.465	113.4	0.134	3.4	0.098	2.5	4.421	112.3	43.659	19.8
BR 112	4.409	112	4.543	115.4	0.134	3.4	0.098	2.5	4.5	114.3	44.762	20.3
BR 113	4.449	113	4.583	116.4	0.134	3.4	0.098	2.5	4.539	115.3	45.203	20.5
BR 115	4.528	115	4.661	118.4	0.134	3.4	0.098	2.5	4.618	117.3	45.423	20.6
BR 117	4.606	117	4.74	120.4	0.134	3.4	0.098	2.5	4.697	119.3	45.864	20.8
BR 118	4.646	118	4.78	121.4	0.134	3.4	0.098	2.5	4.736	120.3	46.526	21.1
BR 120	4.724	120	4.866	123.6	0.134	3.4	0.098	2.5	4.815	122.3	47.187	21.4
BR 123	4.843	123	4.984	126.6	0.134	3.4	0.098	2.5	4.933	125.3	48.51	22
BR 125	4.921	125	5.063	128.6	0.134	3.4	0.098	2.5	5.012	127.3	49.613	22.5
BR 127	5	127	5.142	130.6	0.134	3.4	0.098	2.5	5.091	129.3	50.715	23
BR 130	5.118	130	5.264	133.7	0.134	3.4	0.098	2.5	5.209	132.3	51.597	23.4
BR 133	5.236	133	5.382	136.7	0.134	3.4	0.098	2.5	5.327	135.3	53.802	24.4
BR 135	5.315	135	5.461	138.7	0.134	3.4	0.098	2.5	5.406	137.3	55.125	25
BR 137	5.394	137	5.539	140.7	0.134	3.4	0.098	2.5	5.484	139.3	55.787	25.3



Housing Snap Rings

BR SERIES

- Metric series



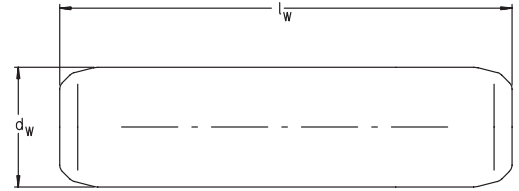
For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
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PART NUMBER	HSG BORE d ₁	HSG BORE d ₁	SNAP RING OD d ₃ min.	SNAP RING OD d ₃ min.	RADIAL SECTION b	RADIAL SECTION b	WIDTH s	WIDTH s	GROOVE DIA. d ₂	GROOVE DIA. d ₂	WEIGHT PER 1000 PIECES	WEIGHT PER 1000 PIECES
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	lbs	kg
BR 140	5.512	140	5.673	144.1	0.157	4	0.098	2.5	5.614	142.6	64.607	29.3
BR 143	5.63	143	5.791	147.1	0.157	4	0.098	2.5	5.732	145.6	66.371	30.1
BR 150	5.906	150	6.071	154.2	0.157	4	0.098	2.5	6.008	152.6	70.34	31.9
BR 153	6.024	153	6.189	157.2	0.157	4	0.098	2.5	6.126	155.6	71.883	32.6
BR 160	6.299	160	6.469	164.3	0.157	4	0.098	2.5	6.402	162.6	75.852	34.4
BR 163	6.417	163	6.587	167.3	0.157	4	0.098	2.5	6.52	165.6	76.293	34.6
BR 165	6.496	165	6.665	169.3	0.157	4	0.098	2.5	6.598	167.6	76.955	34.9
BR 170	6.693	170	6.866	174.4	0.157	4	0.098	2.5	6.795	172.6	79.821	36.2
BR 173	6.811	173	6.984	177.4	0.157	4	0.098	2.5	6.913	175.6	81.806	37.1
BR 175	6.89	175	7.063	179.4	0.157	4	0.098	2.5	6.992	177.6	82.247	37.3
BR 180	7.087	180	7.264	184.5	0.157	4	0.098	2.5	7.189	182.6	84.452	38.3
BR 183	7.205	183	7.382	187.5	0.157	4	0.098	2.5	7.307	185.6	90.405	41
BR 190	7.48	190	7.673	194.9	0.197	5	0.118	3	7.598	193	135.167	61.3
BR 195	7.677	195	7.87	199.9	0.197	5	0.118	3	7.795	198	135.828	61.6
BR 200	7.874	200	8.071	205	0.197	5	0.118	3	7.992	203	142.223	64.5
BR 205	8.071	205	8.268	210	0.197	5	0.118	3	8.189	208	146.412	66.4
BR 220	8.661	220	8.866	225.2	0.197	5	0.118	3	8.78	223	159.642	72.4
BR 230	9.055	230	9.264	235.3	0.197	5	0.118	3	9.173	233	165.816	75.2
BR 250	9.843	250	10.059	255.5	0.197	5	0.118	3	9.961	253	185.661	84.2
BR 270	10.63	270	10.933	277.7	0.295	7.5	0.157	4	10.827	275	383.67	174
BR 280	11.024	280	11.331	287.8	0.295	7.5	0.157	4	11.22	285	405.72	184
BR 300	11.811	300	12.122	307.9	0.295	7.5	0.157	4	12.008	305	432.18	196
BR 320	12.598	320	12.921	328.2	0.295	7.5	0.157	4	12.795	325	447.615	203
BR 325	12.795	325	13.118	333.2	0.295	7.5	0.157	4	12.992	330	454.23	206
BR 355	13.976	355	14.311	363.5	0.295	7.5	0.157	4	14.173	360	509.355	231
BR 375	14.764	375	15.102	383.6	0.295	7.5	0.157	4	14.961	380	529.2	240
BR 385	15.157	385	15.5	393.7	0.295	7.5	0.157	4	15.354	390	546.84	248
BR 395	15.551	395	15.898	403.8	0.295	7.5	0.157	4	15.748	400	566.685	257
BR 400	15.748	400	16.098	408.9	0.295	7.5	0.157	4	15.945	405	573.3	260
BR 420	16.535	420	16.894	429.1	0.295	7.5	0.157	4	16.732	425	610.785	277
BR 440	17.323	440	17.689	449.3	0.295	7.5	0.157	4	17.52	445	648.27	294



Needle Rollers

- Round and flat end



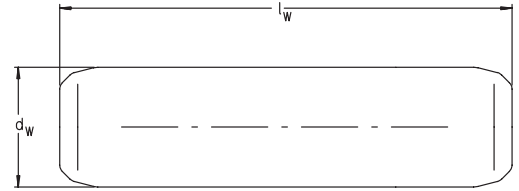
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PART NUMBER	DIAMETER		LENGTH		WEIGHT PER 1000	
	d_w inch	d_w mm	l_w inch	l_w mm	lbs	Kg
NRB 1x5.8	0.0394	1	0.2283	5.8	0.075	0.034
NRB 1x6.8	0.0394	1	0.2677	6.8	0.093	0.042
NRB 1x7.8	0.0394	1	0.3071	7.8	0.104	0.047
NRB 1x9.8	0.0394	1	0.3858	9.8	0.13	0.059
NRA 1.191x22	0.0469	1.191	0.8661	22	0.415	0.188
NRB 1.5x5.8	0.0591	1.5	0.2283	5.8	0.176	0.08
NRB 1.5x6.8	0.0591	1.5	0.2677	6.8	0.207	0.094
NRB 1.5x7.8	0.0591	1.5	0.3071	7.8	0.238	0.108
NRB1.5x8.3	0.0591	1.5	0.3268	8.3	0.265	0.12
NRB 1.5x9.8	0.0591	1.5	0.3858	9.8	0.3	0.136
NRB 1.5x11.8	0.0591	1.5	0.4646	11.8	0.362	0.164
NRB 1.5x13.8	0.0591	1.5	0.5433	13.8	0.421	0.191
NRBS 1.585x19.3	0.0624	1.585	0.7205	18.3	0.628	0.285
NRB 1.587x9.65	0.0625	1.587	0.3799	9.65	0.331	0.15
NRB 1.588x7.10	0.0625	1.588	0.2795	7.1	0.245	0.111
NRB 1.588x8	0.0625	1.588	0.315	8	0.276	0.125
NRB 1.588x14.4	0.0625	1.588	0.5669	14.4	0.496	0.225
NRBS 1.588x25.0	0.0625	1.588	0.9843	25	0.862	0.391
NRBS 1.588x27.1	0.0625	1.588	1.0669	27.1	0.935	0.424
NRB 1.664x10.6	0.0655	1.664	0.4173	10.6	0.401	0.182
NRBS 1.811x10.8	0.0713	1.811	0.4252	10.8	0.485	0.22
NRB 1.984x3.60	0.0781	1.984	0.1417	3.6	0.194	0.088
NRB 1.984x4.20	0.0781	1.984	0.1654	4.2	0.218	0.099
NRB 1.984x6.8	0.0781	1.984	0.2677	6.8	0.366	0.166
NRKS 1.984x9.27	0.0781	1.984	0.365	9.27	0.485	0.22
NRAS 1.984x19.0	0.0781	1.984	0.748	19	0.97	0.44
NRB 2x4.0	0.0787	2	0.1575	4	0.218	0.099
NRB 2x6.3	0.0787	2	0.248	6.3	0.309	0.14
NRB 2x7.8	0.0787	2	0.3071	7.8	0.419	0.19
NRB2x8.8	0.0787	2	0.3465	8.8	0.467	0.212
NRB 2x9.8	0.0787	2	0.3858	9.8	0.529	0.24
NRB 2x11.8	0.0787	2	0.4646	11.8	0.639	0.29
NRB 2x13.8	0.0787	2	0.5433	13.8	0.75	0.34
NRB 2x15.8	0.0787	2	0.622	15.8	0.86	0.39
NRB 2x17.8	0.0787	2	0.7008	17.8	0.97	0.44
NRB 2x19.8	0.0787	2	0.7795	19.8	1.08	0.49
NRB 2x21.8	0.0787	2	0.8583	21.8	1.191	0.54
NRB 2x22.55	0.0787	2	0.8878	22.55	1.235	0.56
NRA 2x23.8	0.0787	2	0.937	23.8	1.303	0.591
NRB 2.286x15.0	0.09	2.286	0.5906	15	1.058	0.48
NRB 2.398x14.3	0.0944	2.398	0.563	14.3	1.125	0.51
NRKS 2.40x9.91	0.0945	2.4	0.3902	9.91	0.781	0.354
NRB 2.5x6.8	0.0984	2.5	0.2677	6.8	0.582	0.264
NRB 2.5x7.8	0.0984	2.5	0.3071	7.8	0.662	0.3
NRB 2.5x9.8	0.0984	2.5	0.3858	9.8	0.838	0.38
NRB2.5x10.8	0.0984	2.5	0.4252	10.8	0.924	0.419



Needle Rollers

- Round and flat end



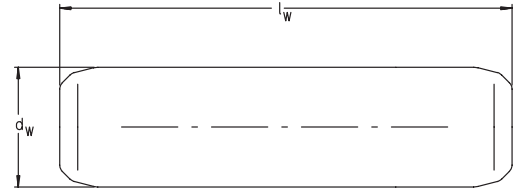
For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
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PART NUMBER	DIAMETER		LENGTH		WEIGHT PER 1000	
	d_w inch	d_w mm	l_w inch	l_w mm	lbs	Kg
NRB 2.5x11.8	0.0984	2.5	0.4646	11.8	0.992	0.45
NRB 2.5x13.8	0.0984	2.5	0.5433	13.8	1.169	0.53
NRB 2.5x15.8	0.0984	2.5	0.622	15.8	1.345	0.61
NRB 2.5x17.8	0.0984	2.5	0.7008	17.8	1.521	0.69
NRB 2.5x19.8	0.0984	2.5	0.7795	19.8	1.676	0.76
NRB 2.5x21.8	0.0984	2.5	0.8583	21.8	1.852	0.84
NRB 2.5x23.8	0.0984	2.5	0.937	23.8	2.029	0.92
NRB 2.5x26.55	0.0984	2.5	1.0453	26.55	2.271	1.03
NRA 2.5x27.8	0.0984	2.5	1.0945	27.8	2.377	1.078
NRA 2.779x12.70	0.1094	2.779	0.5	12.7	1.343	0.609
NRB 3x6.3	0.1181	3	0.248	6.3	8.319	3.773
NRA 3x8.8	0.1181	3	0.3465	8.8	1.058	0.48
NRB 3x9.8	0.1181	3	0.3858	9.8	1.191	0.54
NRB 3x10.8	0.1181	3	0.4252	10.8	1.33	0.603
NRB 3x11.8	0.1181	3	0.4646	11.8	1.433	0.65
NRB 3x13.8	0.1181	3	0.5433	13.8	1.676	0.76
NRB 3x15.8	0.1181	3	0.622	15.8	1.918	0.87
NRA 3x16.2	0.1181	3	0.6378	16.2	1.996	0.905
NRB 3x17.8	0.1181	3	0.7008	17.8	2.183	0.99
NRB 3x19.8	0.1181	3	0.7795	19.8	2.426	1.1
NRB 3x21.8	0.1181	3	0.8583	21.8	2.668	1.21
NRB 3x23.8	0.1181	3	0.937	23.8	2.911	1.32
NRB 3x25.8	0.1181	3	1.0157	25.8	3.153	1.43
NRB 3x27.8	0.1181	3	1.0945	27.8	3.396	1.54
NRB 3x29.8	0.1181	3	1.1732	29.8	3.55	1.61
NRAS 3.175x7	0.125	3.175	0.2756	7	0.966	0.438
NRA 3.175x19.05	0.125	3.175	0.75	19.05	2.628	1.192
NRA 3.175x21.60	0.125	3.175	0.8504	21.6	2.979	1.351
NRB 3.5x11.8	0.1378	3.5	0.4646	11.8	2.007	0.91
NRB 3.5x13.8	0.1378	3.5	0.5433	13.8	2.315	1.05
NRB 3.5x15.8	0.1378	3.5	0.622	15.8	2.624	1.19
NRB 3.5x17.8	0.1378	3.5	0.7008	17.8	2.977	1.35
NRB 3.5x19.8	0.1378	3.5	0.7795	19.8	3.33	1.51
NRB 3.5x21.8	0.1378	3.5	0.8583	21.8	3.682	1.67
NRB 3.5x23.8	0.1378	3.5	0.937	23.8	4.079	1.85
NRB 3.5x25.8	0.1378	3.5	1.0157	25.8	4.322	1.96
NRB 3.5x27.8	0.1378	3.5	1.0945	27.8	4.631	2.1
NRB 3.5x29.8	0.1378	3.5	1.1732	29.8	4.961	2.25
NRB 3.5x34.8	0.1378	3.5	1.3701	34.8	5.843	2.65
NRA 3.616x17.8	0.1424	3.616	0.7008	17.8	2.205	1
NRBS 3.967x5.97	0.1562	3.967	0.235	5.97	1.286	0.583
NRBS 3.967x14.1	0.1562	3.967	0.5551	14.1	2.867	1.3
NRAS 3.967x16.6	0.1562	3.967	0.6559	16.66	3.588	1.627
NRAS 3.967x22.8	0.1562	3.967	0.9	22.86	4.922	2.232
NRB 4x5.5	0.1575	4	0.2165	5.5	1.191	0.54
NRB 4x11.8	0.1575	4	0.4646	11.8	2.558	1.16



Needle Rollers

- Round and flat end



For details on part numbers, descriptive suffixes and various technical references, please refer to front of this section.
 For engineering or technical information contact your local sales representative or call Distributor Sales (800)523-6572.

PART NUMBER	DIAMETER		LENGTH		WEIGHT PER 1000	
	d _w inch	d _w mm	l _w inch	l _w mm	lbs	Kg
NRB 4x13.8	0.1575	4	0.5433	13.8	2.999	1.36
NRB 4x15.8	0.1575	4	0.622	15.8	3.418	1.55
NRB 4x17.8	0.1575	4	0.7008	17.8	3.859	1.75
NRB 4x19.8	0.1575	4	0.7795	19.8	4.3	1.95
NRB 4x21.8	0.1575	4	0.8583	21.8	4.719	2.14
NRB 4x23.8	0.1575	4	0.937	23.8	5.138	2.33
NRB 4x25.8	0.1575	4	1.0157	25.8	5.579	2.53
NRB 4x27.8	0.1575	4	1.0945	27.8	5.777	2.62
NRB 4x29.8	0.1575	4	1.1732	29.8	6.505	2.95
NRB 4x34.8	0.1575	4	1.3701	34.8	7.497	3.4
NRB 4x39.8	0.1575	4	1.5669	39.8	8.6	3.9
NRB 4.5x27.8	0.1772	4.5	1.0945	27.8	7.651	3.47
NRB 4.5x29.8	0.1772	4.5	1.1732	29.8	8.256	3.744
NRB 4.5x49.8	0.1772	4.5	1.9606	49.8	13.715	6.22
NRC 4.762x22.35	0.1875	4.762	0.8799	22.35	6.935	3.145
NRB 4.763x14.80	0.1875	4.763	0.5827	14.8	4.593	2.083
NRB 4.76x26	0.1875	4.763	1.0236	26	8.07	3.66
NRB 5x15.8	0.1969	5	0.622	15.8	5.358	2.43
NRB 5x19.8	0.1969	5	0.7795	19.8	6.681	3.03
NRB 5x21.8	0.1969	5	0.8583	21.8	7.409	3.36
NRB 5x23.8	0.1969	5	0.937	23.8	7.894	3.58
NRB 5x25.8	0.1969	5	1.0157	25.8	8.776	3.98
NRB 5x27.8	0.1969	5	1.0945	27.8	9.217	4.18
NRB 5x29.8	0.1969	5	1.1732	29.8	10.143	4.6
NRB 5x34.8	0.1969	5	1.3701	34.8	11.907	5.4
NRB 5x39.8	0.1969	5	1.5669	39.8	13.561	6.15
NRB 5x49.8	0.1969	5	1.9606	49.8	16.538	7.5
NRB 5.542x13.66	0.2182	5.542	0.5378	13.66	5.74	2.603
NRAS 5.905x25.4	0.2325	5.905	1	25.4	12.116	5.495
NRB 6x14.0	0.2362	6	0.5512	14	6.895	3.127
NRB 6x17.8	0.2362	6	0.7008	17.8	8.71	3.95
NRB 6x21.8	0.2362	6	0.8583	21.8	10.65	4.83
NRB 6x23.8	0.2362	6	0.937	23.8	11.642	5.28
NRB 6x25.8	0.2362	6	1.0157	25.8	12.613	5.72
NRA 6x34.8	0.2362	6	1.3701	34.8	17.139	7.773
NRB 6x39.8	0.2362	6	1.5669	39.8	19.47	8.83



NOTES



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