



MINIATURE BEARINGS

Precision Miniature and
Instrument Bearings



MINIATURE BEARINGS

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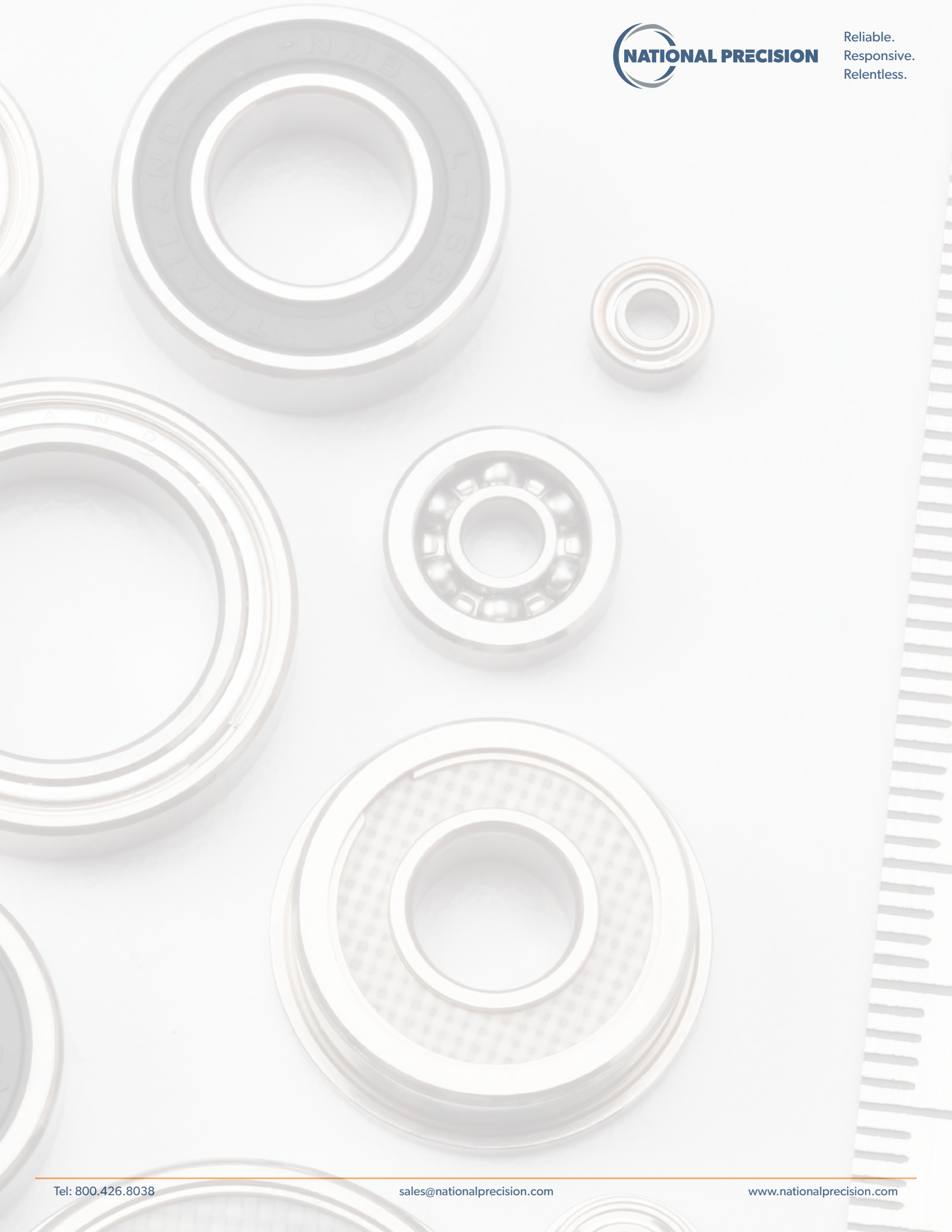
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Example: SS RI 418 ZZ H A5 P25 LO2

BASIC PART NUMBER			ADDITIONAL SPECIFICATIONS	
GROUP 1 MATERIAL	GROUP 2 TYPE	GROUP 3 BASIC SIZE	GROUP 4 SEALS & SHIELDS	GROUP 5 MODIFICATIONS
SS	RI	418	ZZ	
SS= AISI stainless steel (440C) No Code= Chrome alloy steel (52100) SE= AISI stainless steel rings (440C) with ceramic balls DD™= NMB 400 Series martensitic stainless steel S= 400 Series martensitic stainless steel (Std. Ref.) DS™= 400 Series high performance stainless steel and 440C balls	RI, R, L= Radial RIF, RF, LF= Flanged Radial F= Flanged, tapered O.D. MBRI, MBR, MBL= Inner ring relieved and separable MBRIF, MBRF, MBLF= Inner ring relieved and separable, flanged outer ring MDRI, MDR, MDL= Inner ring relieved and non-separable MDRIF, MDRF, MDLF= Inner ring relieved and non-separable, flanged outer ring MERI, MER, MEL= Outer ring relieved and non-separable MERIF, MERF, MELF= Outer ring relieved, flanged and non-separable MBF= Inner ring relieved and separable, outer ring flanged and O.D. tapered MDF= Inner ring relieved and non-separable, outer ring flanged and O.D. tapered	Inch Series First one or two digits indicates O.D. in 16ths of an inch. The following two or three digits indicate the bore size in a fraction of an inch, the first digit being the numerator and the second and third digits being the denominator. Metric Series First two digits indicate O.D. in mm. Second two digits indicate I.D. in mm. X= (following basic size) Indicates special internal design, assigned in numerical sequence. Example: X1, X2, etc.	Enclosures Z= Single metallic shield-removable ZZ= Double metallic shield-removable ZO= Single shield on side opposite flange D= Single rubber seal DD= Double rubber seal 2RS= Two rubber seals D1= Single Viton® seal DD1= Double Viton® seal L= Single glass-reinforced PTFE seal LL= Double glass-reinforced PTFE seal LO= Single seal on side opposite flange LZ= Glass reinforced PTFE seal and shield with seal on flange side ZL= Shield and glass reinforced PTFE seal with shield on flange side H= Single metallic shield non-removable HH= Double metallic shield non-removable K= Single metallic shield non-removable KK= Double metallic shield non-removable S= Single rubber seal, non-contact SS= Double rubber seal, non-contact	Extended Inner Ring EE= Both sides E= One side Special External Dimension A_ _ _= Larger than standard O.D. A= Semi-standard, larger width and O.D. bearing A_ _ _ _= Larger O.D. than standard and special width W= Wider than standard width Y= Narrower than standard width N= Larger or smaller bore than standard Special Design SD= Special design bearing

Note:

Radial Load Ratings shown are for 52100 chrome steel.

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DS™ is a Trademark of NHBB Corporation.

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GROUP 6 PREMIUM FEATURES	GROUP 7 CAGE	GROUP 8 ABEC TOLERANCES	GROUP 9 RADIAL PLAY	GROUP 10 TORQUE	GROUP 11 LUBRICANT
	H	A5	P25		LO2
MC= Premium ball & race finish for specific applications MT= Noiseless motor quality	CR= Ribbon PTFE coated F= Full ball complement H= Crown, land piloted J= Crown, acetal KB= Crown phenolic, paper base KC= Crown phenolic, linen base KF= Crown phenolic, linen, non keyhole type, outer land piloted KG= Crown phenolic, paper base, outer land piloted KM= Full type, phenolic, linen base KN= Full type, phenolic, paper base M4= Full type, polyimide M5= Crown, polyimide R= Ribbon, land piloted RD= Ribbon, ball piloted SF= Composite metal polymer retainer "silver" T1= Crown, specialty material	A1 = ABEC 1* A3 = ABEC 3, 3P A5 = ABEC 5, 5P, 5T A7 = ABEC 7, 7P, 7T A9 = ABEC 9, 9P Note: Selected ABEC 9 tolerances are available on all sizes. Please consult NP. *A1 miniature and instrument bearings of both the metric and inch configurations meet the tolerance of ABMA Standard 20 for ABEC 1 metric series bearings	P= Followed by two, three, or four numbers indicates the radial play limits in ten thousandths of an inch. Example: P25 indicates radial play of .0002" to .0005".	T= Followed by a number that indicates maximum starting torque in hundreds of mg. mm. Example: T15 indicates a maximum starting torque of 1500 mg. mm. RT= Followed by a number that indicates maximum running torque in hundreds of mg. mm. Example: RT15 indicates a maximum running torque of 1500 mg. mm.	Lubricant letter codes are followed by a number to indicate specific type. BC= Following lubricant code indicates barrier coating LB= Mixture of oil and solvent LD= Dry, no lubricant LF= Dry film LG= Greases LM= Mixture of oil and grease L0= Oils LY= Expanded list of oils and greases Grease Plate Code (follows lubricant code) GPL= Light GPM= Medium GPH= Heavy

Note:

The National Precision part numbering system identifies ball bearing size and design. This system is not a guide to create a customized ball bearing. Please use the numbering system to decipher the basic bearing numbers listed in the catalog, or to define a number given to you by a representative of National Precision. Please consult a member of the National Precision sales or engineering staff to help you design a new bearing or to interchange another manufacturer's part number.

Interchange Table

Miniature Precision Bearings

NHBB	NMB	MPB	RMB	BARDEN	OLD NHBB	GRW
SSRI2	DDRI2	S2C	UL1304X	SR09	SR09	SS1016
SSRI2 1/2	DDRI2 1/2	S2 1/2C	UL1505X	SR0	SR0	SS1191
SSRI2 1/2ZZ	DDRI2 1/2ZZ	S2 1/2CHH	ULZ1505X	SROSS	SR0PP	SS1191-2Z
SSRI3	DDRI3	S3C	R1706X	SR1	SR1	SS1397
SSRI3ZZ	DDRI3ZZ	S3CHH	RF1706X	SR1SS	SR1PP	SS1397-2Z
SSRI4	DDRI4	S4C	R2508X	SR1-4	SR1-4	SS5/64
SSRI4ZZ	DDRI4ZZ	S4CHH	RF2508X	SR1-4SS	SR1-4PP	SS5/64-2Z
SSRI3332	DDRI3332	S3332C	UL3006X	SR133	SR133	SS2380
SSRI3332ZZ	DDRI3332ZZ	S3332CHH	ULZ3006X	SR133SS	SR133PP	SS2380-2Z
SSRI5	DDRI5	S5C	R3010X	SR1-5	SR1-5	SS3/32
SSRI5ZZ	DDRI5ZZ	S5CHH	RF3010X	SR1-5SS	SR1-5PP	SS3/32-2Z
SSRI418	DDRI418	S418C	UL4008X	SR144	SR144	SS3175
SSRI418ZZ	DDRI418ZZ	S418CHH	ULZ4008X	SR144SS	SR144PP	SS3175-2Z
SSRI518	DDRI518	S518C	R4010X	SR2-5	SR2-5	SS1/8A
SSRI518ZZ	DDRI518ZZ	S518CHH	RF4010X	SR2-5SS	SR2-5PP	SS1/8A-2Z
SSRI618	DDRI618	S618C	–	SR2-6	SR2-6	SS1/8A/6
SSRI618ZZ	DDRI618ZZ	S618CHH	–	SR2-6SS	SR2-6PP	SS1/8A/6-2Z
SSR2	DDR2	SR2C	R4012X	SR2	SR2	SS1/8B
SSR2ZZ	DDR2ZZ	SR2CHH	RF4012X	SR2SS	SR2PP	SS1/8B-2Z
SSR2A	DDR2A	SR2AC	–	SR2A	SR2A	SS1/8B/083
SSR2ZZA	DDR2ZZA	SR2ACHH	–	SR2ASS	SR2APP	SS1/S/8B/083-2Z
SSRI5532	DDRI5532	S5532C	UL5010X	SR155	SR155	SS3967
SSRI5532ZZ	DDRI5532ZZ	S5532CHH	ULZ5010Z	SR155SS	SR155PP	SS3967-2Z
SSRI5632	DDRI5632	S5632C	UL6010X	SR156	SR156	SS4763A
SSRI5632ZZ	DDRI5632ZZ	S5632CHH	ULZ6010X	SR156SS	SR156PP	SS4763A-2Z
SSRI6632	DDRI6632	S6316C	UL6012X	SR166	SR166	SS4763B
SSRI6632ZZ	DDRI6632ZZ	S6316CHH	ULZ6012X	SR166SS	SR166PP	SS4763B-2Z
SSR3	DDR3	SR3R	R6016X	SR3	SR3	SS3/16
SSR3ZZ	DDR3ZZ	SR3RHH	RF6016X	SR3SS	SR3PP	SS3/16-2Z
SSRI614	DDRI614	S614C	UL8012X	SR168	SR168	SS6350A
SSRI614ZZ	DDRI614ZZ	S614CHH	ULZ8012X	SR168SS	SR168PP	SS6350A-2Z
SSRI814	DDRI814	S814C	UL8016X	SR188	SR188	SS6350B
SSRI814ZZ	DDRI814ZZ	S814CHH	ULZ8016X	SR188SS	SR188PP	SS6350B-2Z
SSR4	DDR4	SR4C	R8020X	SR4	SR4	SS1/4A
SSR4ZZ	DDR4ZZ	SR4CHH	RF8020X	SR4SS	SR4PP	SS1/4A-2Z
SSRI1214	DDRI1214	SR4AR	–	SR4A	SR4A	SS1/4
SSRI1214ZZ	DDRI1214ZZ	SR4ARHH	–	SR4ASS	SR4APPD	SS1/4-2Z
SSRI8516	DDRI8516	S8516R	UL10016X	SR1810	SR1810	SS7938
SSRI8516ZZ	DDRI8516ZZ	S8516RHH	ULZ10016X	SR1810SS	SR1810PP	SS7938-2Z
SSRI1438	DDRI1438	SR6R	R12028X	SR6	SR6	SS3/8
SSRI1438ZZ	DDRI1438ZZ	SR6RHH	RZ12028X	SR6SS	SR6PPD	SS3/8-2Z
SSRI1812	DDRI1812	SR8R	–	SR8	SR8	SS1/2
SSRI1812ZZ	DDRI1812ZZ	SR8RHH	–	SR8SS	SR8PPD	SS1/2-2Z
SSRI1212	DDRI1212	S812	–	SR1216	SR824	–

Note:

This chart is intended as a reference only. The users should consult with the listed manufacturers' catalogs to establish dimensional interchangeability. Ball complements and load ratings may differ although dimensionally equivalent. National Precision cannot be held responsible for any errors contained herein.

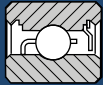
NHBB	NMB	MPB	RMB	BARDEN	OLD NHBB	GRW
SSRI1212ZZ	DDR11212ZZ	S812CHH	–	SR1216SS	SR824PP	–
SSRI1458	DDR11458	S1014	–	SR1420	SR1028	–
SSRI1458ZZ	DDR11458ZZ	S1014CHH	–	SR1420SS	SR1028PP	–
SSRI1412	DDR11412	–	–	–	SR6-5	–
SSRI1412ZZ	DDR11412ZZ	–	–	–	SR6-5PP	–
SSRI1634	DDR11634	S1216	–	SR1624	SR1232	–
SSRI1634ZZ	DDR11634ZZ	S1216CHH	–	SR1624SS	SR1232PP	–
SSRIF2	DDRIF2	S2FC	ULK1304X	SFR09	SFR09	–
SSRIF2 1/2	DDRIF2 1/2	S2 1/2FC	ULK1505X	SFR0	SFR0	SSF1191
SSRIF2 1/2ZZ	DDRIF2 1/2ZZ	S2 1/2FCHH	ULKZ1505X	SFR0SS	SFR0PP	SSF1191-2Z
SSRIF3	DDRIF3	S3FC	RK1706X	SFR1	SFR1	SSF1397
SSRIF3ZZ	DDRIF3ZZ	S3FCHH	RKF1706X	SFR1SS	SFR1PP	SSF1397-2Z
SSRIF4	DDRIF4	S4FC	RK2508X	SFR1-4	SFR1-4	SSF5/64
SSRIF4ZZ	DDRIF4ZZ	S4FCHH	RKF2508X	SFR1-4SS	SFR1-4PP	SSF5/64-2Z
SSRIF3332	DDRIF3332	S3332FC	ULK3006X	SFR133	SFR133	SSF2380
SSRIF3332ZZ	DDRIF3332ZZ	S3332FCHH	ULKZ3006X	SFR133SS	SFR133PP	SSF2380-2Z
SSRIF5	DDRIF5	S5FC	RK3010X	SFR1-5	SFR1-5	SSF3/32
SSRIF5ZZ	DDRIF5ZZ	S5FCHH	RKF3010X	SFR1-5SS	SFR1-5PP	SSF3/32-2Z
SSRIF418	DDRIF418	S418FC	ULK4008X	SFR144	SFR144	SSF3175
SSRIF418ZZ	DDRIF418ZZ	S418FCHH	ULKZ4008X	SFR144SS	SFR144PP	SSF3175-2Z
SSRIF518	DDRIF518	S518FC	RK4010X	SFR2-5	SFR2-5	SSF1/8A
SSRIF518ZZ	DDRIF518ZZ	S518FCHH	RKF4010X	SFR2-5SS	SFR2-5PP	SSF1/8A-2Z
SSRIF618	DDRIF618	S618FC	–	SFR2-6	SFR2-6	SSF1/8A/6
SSRIF618ZZ	DDRIF618ZZ	S618FCHH	–	SFR2-6SS	SFR2-6PP	SSF1/8A/6-2Z
SSRF2	DDRF2	SR2FC	RK4012X	SFR2	SFR2	SSF1/8B
SSRF2ZZ	DDRF2ZZ	SR2FCHH	RKF4012X	SFR2SS	SFR2PP	SSF1/8B-2Z
SSRIF5532	DDRIF5532	S5532FC	ULK5010X	SFR155	SFR155	SSF3967
SSRIF5532ZZ	DDRIF5532ZZ	S5532FCHH	ULKZ5010X	SFR155SS	SFR155PP	SSF3967-2Z
SSRIF5632	DDRIF5632	S5632FC	ULK6010X	SFR156	SFR156	SSF4763A
SSRIF5632ZZ	DDRIF5632ZZ	S5632FCHH	ULKZ6010X	SFR156SS	SFR156PP	SSF4763A-2Z
SSRIF6632	DDRIF6632	S6316FC	ULK6012X	SFR166	SFR166	SSF4763B
SSRIF6632ZZ	DDRIF6632ZZ	S6316FCHH	ULKZ6012X	SFR166SS	SFR166PP	SSF4763B-2Z
SSRF3	DDRF3	SR3FC	RK6016X	SFR3X3	SFR3	SSF3/16
SSRF3ZZ	DDRF3ZZ	SR3FCHH	RKF6016X	SFR3SS	SFR3PP	SSF3/16-2Z
SSRIF614	DDRIF614	S614FC	ULK8012X	SFR168	SFR168	SSF6350A
SSRIF614ZZ	DDRIF614ZZ	S614FCHH	ULKZ8012X	SFR168SS	SFR168PP	SSF6350A-2Z
SSRIF814	DDRIF814	S814FC	ULK8016X	SFR188	SFR188	SSF6350B
SSRIF814ZZ	DDRIF814ZZ	S814FCHH	ULKZ8016X	SFR188SS	SFR188PP	SSF6350B-2Z
SSRF4	DDRF4	SR4FC	RK8020X	SFR4	SFR4	SSF1/4A
SSRF4ZZ	DDRF4ZZ	SR4FCHH	RKF8020X	SFR4SS	SFR4PP	SSF1/4A-2Z
SSRIF8516	DDRIF8516	S8516FC	ULK10016X	SFR1810	SFR1810	SSF7938
SSRIF8516ZZ	DDRIF8516ZZ	S8516FCHH	ULKZ10016X	SFR1810SS	SFR1810PP	SSF7938-2Z
SSRIF1438	DDRIF1438	SR6FR	RK12028X	SFR6X5	SFR6D	SSF3/8
SSRIF1438ZZ	DDRIF1438ZZ	SR6FRHH	RKZ12028X	SFR6SS	SFR6PPD	SSF3/8-2Z

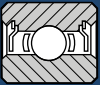
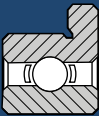
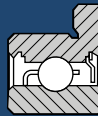
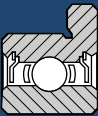
Note:

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Basic Dimension Data

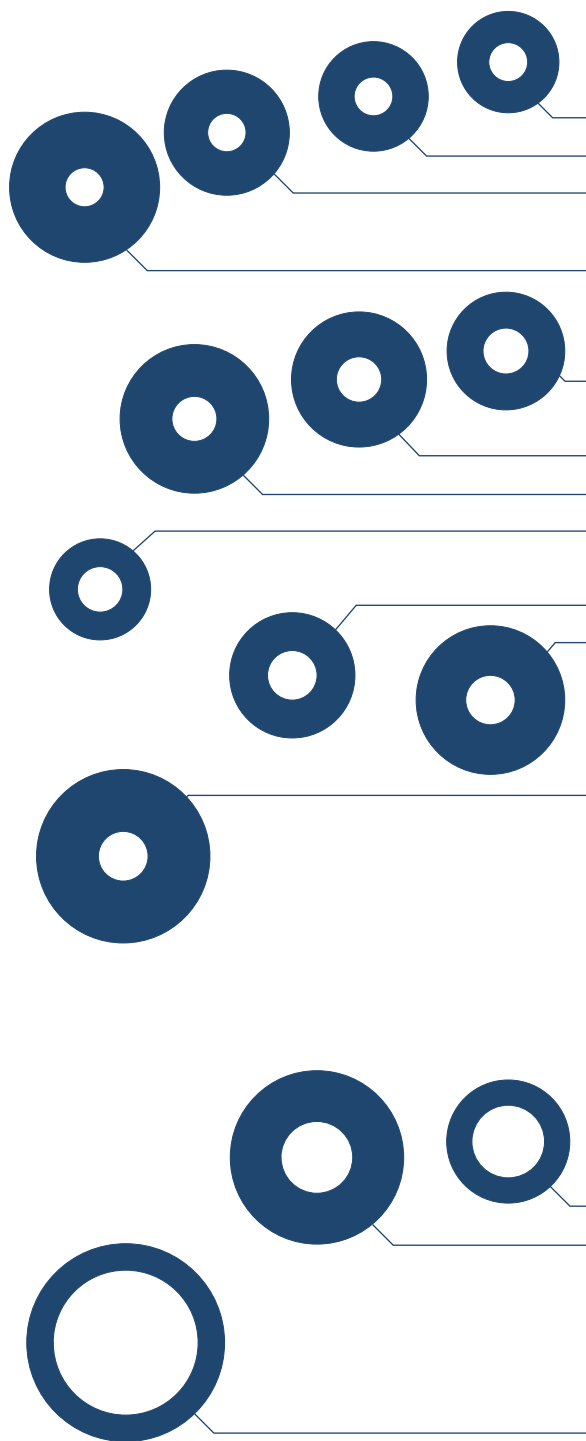
Overview

	BEARING BORE ID	OUTSIDE DIAMETER	UNFLANGED BASIC PART NUMBER	STANDARD REFERENCE PART NUMBER	BEARING WIDTH	
					B OPEN 	REF. TO PAGE #
	.0394	.1181	SSL-310	S681	.0394	pg 18
	.0400	.1250	SSRI-2	SR0-9	.0469	pg 10
	.0469	.1562	SSRI-2 1/2	SR0	.0625	pg 10
	.0550	.1875	SSRI-3	SR1	.0781	pg 10
	.0591	.1575	SSL-415	S681X	.0472	pg 18
	.0591	.1969	SSR-515	S691X	.0787	pg 20
	.0591	.2362	SSR-615	S601X	.0984	pg 20
	.0781	.2500	SSRI-4	SR1-4	.0937	pg 10
	.0787	.1969	SSL-520	S682	.0591	pg 18
	.0787	.2362	SSR-620	S692	.0906	pg 20
	.0787	.2756	SSR-720	S602	.1102	pg 20
	.0937	.1875	SSRI-3332	SR133	.0625	pg 10
	.0937	.3125	SSRI-5	SR1-5	.1094	pg 10
	.0984	.2362	SSL-625	S682X	.0709	pg 18
	.0984	.2756	SSR-725	S692X	.0984	pg 20
	.0984	.3150	SSR-825	S602X	.1102	pg 20
	.1181	.2362	SSL-630	SMR63	.0787	pg 18
	.1181	.2756	SSL-730	S683	.0787	pg 18
	.1181	.3150	SSR-830	S693	.1181	pg 20
	.1181	.3543	SSR-930	S603	.1181	pg 20
	.1181	.3937	SSR-1030	S623	.1575	pg 20
	.1250	.2500	SSRI-418	SR144	.0937	pg 10
	.1250	.3125	SSRI-518	SR2-5	.1094	pg 10
	.1250	.3750	SSRI-618	SR2-6	.1094	pg 10
	.1250	.3750	SSR-2	SR2	.1562	pg 10
	.1250	.5000	SSR-2A	SR2A	.1719	pg 10
	.1562	.3125	SSRI-5532	SR155	.1094	pg 10
	.1575	.2756	SSL-740	SMR74	.0787	pg 18
	.1575	.3150	SSL-840	SMR84	.0787	pg 18
	.1575	.3543	SSL-940	S684	.0984	pg 18
	.1575	.3937	SSL-1040	SR104	.1181	pg 18
	.1575	.4331	SSR-1140	S694	.1575	pg 20
	.1575	.4724	SSR-1240	S604	.1575	pg 20
	.1575	.5118	SSR-1340	S624	.1969	pg 20
	.1575	.6299	SSR-1640	S634	.1969	pg 20
	.1875	.3125	SSRI-5632	SR156	.1094	pg 10
	.1875	.3750	SSRI-6632	SR166	.1250	pg 10
	.1875	.5000	SSR-3	SR3	.1250	pg 10

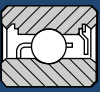
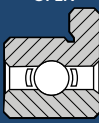
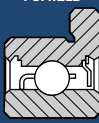
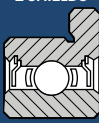
BEARING WIDTH		BEARING WIDTH		FLANGED BASIC PART NUMBER	FLANGED WIDTH		FLANGED WIDTH		FLANGED WIDTH	
B 1 SHIELD	REF. TO PAGE	B 2 SHIELDS	REF. TO PAGE		B OPEN	REF. TO PAGE	B 1 SHIELD	REF. TO PAGE	B 2 SHIELDS	REF. TO PAGE
										
----	----	----	----	SSLF-310	.0394	pg 18	----	----	----	----
----	----	----	----	SSRIF-2	.0469	pg 12	----	----	----	----
.0937	pg 11	.0937	pg 11	SSRIF-2 1/2	.0625	pg 12	.0937	pg 13	.0937	pg 13
.0937	pg 11	.1094	pg 11	SSRIF-3	.0781	pg 12	.1094	pg 13	.1094	pg 13
----	----	----	----	SSLF-415	.0472	pg 18	----	----	----	----
.1024	pg 21	.1024	pg 21	SSRF-515	.0787	pg 20	.1024	pg 21	.1024	pg 21
.1181	pg 21	.1181	pg 21	SSRF-615	.0984	pg 20	.1181	pg 21	.1181	pg 21
.1094	pg 11	.1406	pg 11	SSRIF-4	.0937	pg 12	.1406	pg 13	.1406	pg 13
----	----	.0906	pg 21	SSLF-520	.0591	pg 20	----	----	.0906	pg 21
.1181	pg 21	.1181	pg 21	SSRF-620	.0906	pg 20	.1181	pg 21	.1181	pg 21
.1378	pg 21	.1378	pg 21	SSRF-720	.1102	pg 20	.1378	pg 21	.1378	pg 21
.0937	pg 11	.0937	pg 11	SSRIF-3332	.0625	pg 12	.0937	pg 13	.0937	pg 13
.1094	pg 11	.1406	pg 11	SSRIF-5	.1094	pg 12	.1406	pg 13	.1406	pg 13
----	----	.1024	pg 19	SSLF-625	.0709	pg 18	----	----	.1024	pg 19
.1378	pg 21	.1378	pg 21	SSRF-725	.0984	pg 20	.1378	pg 21	.1378	pg 21
.1575	pg 21	.1575	pg 21	SSRF-825	.1102	pg 20	.1575	pg 21	.1575	pg 21
----	----	.0984	pg 19	SSLF-630	.0787	pg 18	----	----	.0984	pg 19
----	----	.1181	pg 19	SSLF-730	.0787	pg 18	----	----	.1181	pg 19
.1575	pg 21	.1575	pg 21	SSRF-830	.1181	pg 20	.1575	pg 21	.1575	pg 21
.1969	pg 21	.1969	pg 21	SSRF-930	.1181	pg 20	.1969	pg 21	.1969	pg 21
.1575	pg 21	.1575	pg 21	SSRF-1030	.1575	pg 20	.1575	pg 21	.1575	pg 21
.0937	pg 11	.1094	pg 11	SSRIF-418	.0937	pg 12	.1094	pg 13	.1094	pg 13
.1094	pg 11	.1406	pg 11	SSRIF-518	.1094	pg 13	.1406	pg 13	.1406	pg 13
.1094	pg 11	.1406	pg 11	SSRIF-618	.1094	pg 12	.1406	pg 13	.1406	pg 13
.1562	pg 11	.1562	pg 11	SSRF-2	.1562	pg 12	.1562	pg 13	.1562	pg 13
.1719	pg 11	.1719	pg 11	----	----	----	----	----	----	----
.1094	pg 11	.1250	pg 11	SSRIF-5532	.1094	pg 12	.1250	pg 13	.1250	pg 13
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----	----	.1575	pg 19	SSLF-1040	.1181	pg 18	----	----	.1575	pg 19
.1575	pg 21	.1575	pg 21	SSRF-1140	.1575	pg 20	.1575	pg 21	.1575	pg 21
.1575	pg 21	.1575	pg 21	SSRF-1240	.1575	pg 20	.1575	pg 21	.1575	pg 21
.1969	pg 21	.1969	pg 21	SSRF-1340	.1969	pg 20	.1969	pg 21	.1969	pg 21
----	----	.1969	pg 21	SSRF-1640	.1969	pg 20	.1969	pg 21	.1969	pg 21
.1094	pg 11	.1250	pg 11	SSRIF-5632	.1094	pg 12	.1250	pg 13	.1250	pg 13
.1250	pg 11	.1250	pg 11	SSRIF-6632	.1250	pg 12	.1250	pg 13	.1250	pg 13
.1960	pg 11	.1960	pg 11	SSRF-3	.1562	pg 12	.1960	pg 13	.1960	pg 13

Basic Dimension Data

Continued



BEARING BORE ID	OUTSIDE DIAMETER	UNFLANGED BASIC PART NUMBER	STANDARD REFERENCE PART NUMBER	BEARING WIDTH		
				B OPEN 	REF. TO PAGE	
.1969	.3150	SSL-850	SMR85	.0787	pg 18	
.1969	.3543	SSL-950	SMR95	.0984	pg 18	
.1969	.3937	SSL-1050	SMR105	.1181	pg 18	
.1969	.4331	SSL-1150	S685	.1181	pg 18	
.1969	.5118	SSR-1350	S695	.1575	pg 20	
.1969	.5512	SSR-1450	S605	.1969	pg 20	
.1969	.6299	SSR-1650	S625	.1969	pg 20	
.1969	.7480	SSR-1950	S635	.2362	pg 20	
.2362	.3937	SSL-1060	SMR106	.0984	pg 18	
.2362	.4724	SSL-1260	SMR126	.1181	pg 18	
.2362	.5118	SSL-1360	S686	.1378	pg 18	
.2362	.5906	SSR-1560	S696	.1969	pg 20	
.2362	.6693	SSR-1760	S606	.2362	pg 20	
.2362	.7480	SSR-1960	S626	.2362	pg 20	
.2500	.3750	SSRI-614	SR168	.1250	pg 10	
.2500	.5000	SSRI-814	SR188	.1250	pg 10	
.2500	.6250	SSR-4	SR4	.1960	pg 10	
.2500	.7500	SSRI-1214	SR4A	.2188	pg 10	
.2756	.4331	SSL-1170	SMR117	.0984	pg 18	
.2756	.5118	SSL-1370	SMR137	.1181	pg 18	
.2756	.5512	SSL-1470	S687	.1378	pg 18	
.2756	.7480	SSR-1970	S607	.2362	pg 20	
.2756	.8661	SSR-2270	S627	.2756	pg 20	
.3125	.5000	SSRI-8516	SR1810	.1562	pg 10	
.3150	.4724	SSL-1280	SMR128	.0984	pg 18	
.3150	.5512	SSL-1480	SMR148	.1378	pg 18	
.3150	.6299	SSL-1680	S688	.1575	pg 18	
.3150	.7480	SSR-1980	S698	.2362	pg 20	
.3150	.8661	SSR-2280	S608	.2756	pg 20	
.3543	.6693	SSL-1790	S689	.1575	pg 18	
.3543	.7874	SSL-2090	S699	.2362	pg 18	
.3543	1.0236	S629	----	.3150	----	
.3750	.6250	SSRI-1038	SR620	.1562	pg 10	
.3750	.8750	SSRI-1438	SR6	.2188	pg 10	
.3937	.7480	SSL-1910	S6800	.1969	pg 18	
.3937	1.0236	S6000	----	.3150	----	
.5000	.7500	SSRI-1212	SR824	.1562	pg 10	
.6250	.8750	SSRI-1458	SR1028	.1562	pg 10	
.7500	1.0000	SSRI-1634	SR1232	.1562	pg 10	

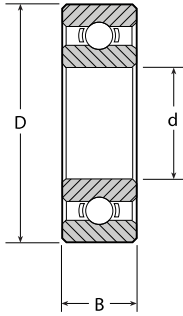
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----	----	.0984	pg 19	SSLF-850	.0787	pg 18	----	----	.0984	pg 19
----	----	.1181	pg 19	SSLF-950	.0984	pg 18	----	----	.1181	pg 19
----	----	.1575	pg 19	SSLF-1050	.1181	pg 18	----	----	.1575	pg 19
----	----	.1969	pg 19	SSLF-1150	.1181	pg 18	----	----	.1969	pg 19
.1575	pg 21	.1575	pg 21	SSRF-1350	.1575	pg 20	.1575	pg 21	.1575	pg 21
.1969	pg 21	.1969	pg 21	SSRF-1450	.1969	pg 20	.1969	pg 21	.1969	pg 21
.1969	pg 21	.1969	pg 21	SSRF-1650	.1969	pg 20	.1969	pg 21	.1969	pg 21
.2362	pg 21	.2362	pg 21	SSRF-1950	.2362	pg 20	.2362	pg 21	.2362	pg 21
----	----	.1181	pg 19	SSLF-1060	.0984	pg 18	----	----	.1181	pg 19
----	----	.1575	pg 19	SSLF-1260	.1181	pg 20	----	----	.1575	pg 19
----	----	.1969	pg 19	SSLF-1360	.1378	pg 18	----	----	.1969	pg 19
.1969	pg 21	.1969	pg 21	SSRF-1560	.1969	pg 20	.1969	pg 21	.1969	pg 21
.2362	pg 21	.2362	pg 21	SSRF-1760	.2362	pg 20	.2362	pg 21	.2362	pg 21
.2362	pg 21	.2362	pg 21	SSRF-1960	.2362	pg 18	.2362	pg 21	.2362	pg 21
.1250	pg 11	.1250	pg 11	SSRIF-614	.1250	pg 12	.1250	pg 13	.1250	pg 13
.1250	pg 11	.1875	pg 11	SSRIF-814	.1250	pg 12	.1875	pg 13	.1875	pg 13
.1960	pg 11	.1960	pg 11	SSRF-4	.1960	pg 12	.1960	pg 13	.1960	pg 13
.2812	pg 11	.2812	pg 11	----	----	----	----	----	----	----
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----	----	.1969	pg 19	SSLF-1470	.1378	pg 18	----	----	.1969	pg 19
.2362	pg 21	.2362	pg 21	----	----	----	----	----	----	----
.2756	pg 21	.2756	pg 21	SSRF-2270	.2756	pg 20	.2756	pg 21	.2756	pg 21
.1562	pg 11	.1562	pg 11	SSRIF-8516	.1562	pg 12	.1562	pg 13	.1562	pg 13
----	----	.1378	pg 19	SSLF-1280	.0984	pg 18	----	----	.1378	pg 19
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----	----	.1969	pg 19	SSLF-1680	.1575	pg 18	----	----	.1969	pg 19
.2362	pg 21	.2362	pg 21	----	----	----	----	----	----	----
.2756	pg 21	.2756	pg 21	SSRF-2280	.2756	pg 20	.2756	pg 21	.2756	pg 21
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.3150	----	.3150	----	----	----	----	----	----	----	----
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.2812	pg 11	.2812	pg 11	SSRIF-1438	.2812	pg 12	.2812	pg 13	.2812	pg 13
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.1562	pg 11	.1562	pg 11	----	----	----	----	----	----	----
.1562	pg 11	.1562	pg 11	----	----	----	----	----	----	----
.1562	pg 11	.1562	pg 11	----	----	----	----	----	----	----

Inch Series

Radial Open Bearings



Reliable.
Responsive.
Relentless.



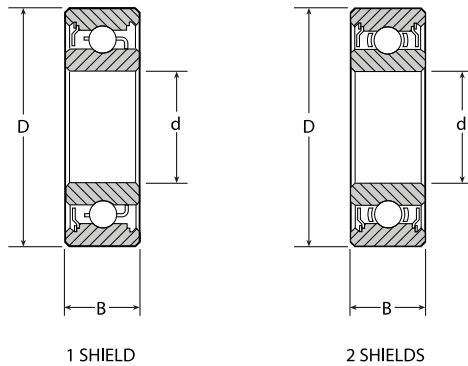
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	STANDARD REFERENCE NUMBER	BALL COMPLEMENT		LOAD RATING LBS	
					NUMBER	SIZE	DYNAMIC	STATIC
.0400	.1250	.0469	SSRI-2	SR0-9	6	.025	24	7
.0469	.1562	.0625	SSRI-2 1/2	SR0	6	1/32	35	11
.0550	.1875	.0781	SSRI-3	SR1	5	3/64	60	18
.0781	.2500	.0937	SSRI-4	SR1-4	6	3/64	75	24
.0937	.1875	.0625	SSRI-3332	SR133	7	1/32	42	13
.0937	.3125	.1094	SSRI-5	SR1-5	6	1/16	128	42
.1250	.2500	.0937	SSRI-418	SR144	7	1.0mm	64	22
.1250	.3125	.1094	SSRI-518	SR2-5	6	1/16	128	42
.1250	.3750	.1094	SSRI-618	SR2-6	6	1/16	128	42
.1250	.3750	.1562	SSR-2	SR2	7	1/16	146	51
.1250	.5000	.1719	SSR-2A	SR2A	7	1/16	66	23
.1562	.3125	.1094	SSRI-5532	SR155	7	3/64	88	33
.1875	.3125	.1094	SSRI-5632	SR156	7	3/64	88	33
.1875	.3750	.1250	SSRI-6632	SR166	8	1/16	161	62
.1875	.5000	.1562	SSR-3	SR3	7	3/32	295	110
.2500	.3750	.1250	SSRI-614	SR168	13	1.0mm	95	46
.2500	.5000	.1250	SSRI-814	SR188	10	1/16	187	84
.2500	.6250	.1960	SSR-4	SR4	8	3/32	331	134
.2500	.7500	.2188	SSRI-1214	SR4A	6	9/94	542	205
.3125	.5000	.1562	SSRI-8516	SR1810	11	1/16	198	95
.3750	.6250	.1562	SSRI-1038	SR620	12	1/16	205	84
.3750	.8750	.2188	SSRI-1438	SR6	7	5/32	743	309
.5000	.7500	.1562	SSRI-1212	SR824	16	1/16	238	112
.6250	.8750	.1562	SSRI-1458	SR1028	18	1/16	247	126
.7500	1.0000	.1562	SSRI-1634	SR1232	22	1/16	271	154

Inch Series

Radial Shielded Bearings



Reliable.
Responsive.
Relentless.



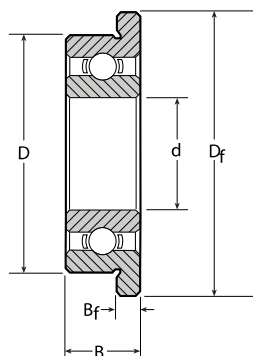
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"		BASIC PART NUMBER	STANDARD REFERENCE NUMBER	BALL COMPLEMENT		LOAD RATING LBS	
		1 SHIELD "B"	2 SHIELDS "B"			NUMBER	SIZE	DYNAMIC	STATIC
.0469	.1562	.0937	.0937	SSRI-2 1/2ZZ	SR0ZZ	6	1/32	35	11
.0550	.1875	.0937	.1094	SSRI-3ZZ	SR1ZZ	5	3/64	60	18
.0781	.2500	.1094	.1406	SSRI-4ZZ	SR1-4ZZ	6	3/64	75	24
.0937	.1875	.0937	.0937	SSRI-3332ZZ	SR133ZZ	7	1/32	44	13
.0937	.3125	.1094	.1406	SSRI-5ZZ	SR1-5ZZ	6	1/16	128	42
.1250	.2500	.0937	.1094	SSRI-418ZZ	SR144ZZ	7	1.0mm	64	22
.1250	.3125	.1094	.1406	SSRI-518ZZ	SR2-5ZZ	6	1/16	128	42
.1250	.375	.1094	.1406	SSRI-618ZZ	SR2-6ZZ	6	1/16	128	42
.1250	.375	.1562	.1562	SSR-2ZZ	SR2ZZ	7	1/16	146	51
.1250	.5000	.1719	.1719	SSR-2AZZ	SR2AZZ	7	1/16	66	26
.1562	.3125	.1094	.1250	SSRI-5532ZZ	SR155ZZ	7	3/64	88	33
.1875	.3125	.1094	.1250	SSRI-5632ZZ	SR156ZZ	7	3/64	88	33
.1875	.3750	.1250	.1250	SSRI-6632ZZ	SR166ZZ	8	1/16	161	62
.1875	.5000	.1960	.1960	SSR-3ZZ	SR3ZZ	7	3/32	295	110
.2500	.3750	.1250	.1250	SSRI-614ZZ	SR168ZZ	13	1.0mm	95	46
.2500	.5000	.1250	.1875	SSRI-814ZZ	SR188ZZ	10	1/16	187	84
.2500	.6250	.1960	.1960	SSR-4ZZ	SR4ZZ	8	3/32	331	134
.2500	.7500	.2812	.2812	SSRI-1214ZZ	SR4AZZ	6	9/64	542	205
.3125	.5000	.1562	.1562	SSRI-8516ZZ	SR1810ZZ	11	1/16	198	95
.3750	.6250	.1562	.1562	SSRI-1038ZZ	SR620ZZ	12	1/16	205	84
.3750	.8750	.2812	.2812	SSRI-1438ZZ	SR6ZZ	7	5/32	747	313
.5000	.7500	.1562	.1562	SSRI-1212ZZ	SR824ZZ	16	1/16	238	112
.6250	.8750	.1562	.1562	SSRI-1458ZZ	SR1028ZZ	18	1/16	247	126
.7500	1.0000	.1562	.1562	SSRI-1634ZZ	SR1232ZZ	22	1/16	271	154

Inch Series

Radial Flanged Open Bearings



Reliable.
Responsive.
Relentless.



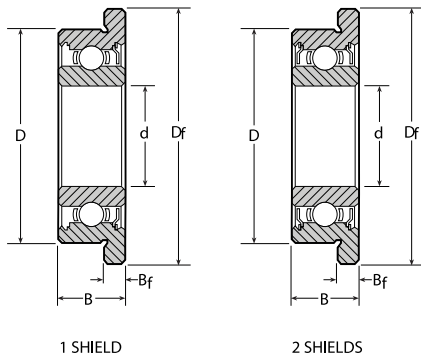
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
							NUMBER	SIZE	DYNAMIC	STATIC
.0400	.1250	.0469	SSRIF-2	SFR0-9	.171	.013	6	.025	24	7
.0469	.1562	.0625	SSRIF-2 1/2	SFR0	.203	.203	6	1/32	35	35
.0550	.1875	.0781	SSRIF-3	SFR1	.234	.023	5	3/64	60	18
.0781	.2500	.0937	SSRIF-4	SFR1-4	.296	.023	6	3/64	75	24
.0937	.1875	.0625	SSRIF-3332	SFR133	.234	.018	7	1/32	42	13
.0937	.3125	.1094	SSRIF-5	SFR1-5	.359	.023	6	1/16	128	42
.1250	.2500	.0937	SSRIF-418	SFR144	.296	.023	7	1.0mm	64	22
.1250	.3125	.1094	SSRIF-518	SFR2-5	.359	.023	6	1/16	128	42
.1250	.3750	.1094	SSRIF-618	SFR2-6	.422	.023	6	1/16	128	42
.1250	.3750	.1562	SSRF-2	SFR2	.440	.030	7	1/16	146	51
.1562	.3125	.1094	SSRIF-5532	SFR155	.359	.023	7	3/64	88	33
.1875	.3125	.1094	SSRIF-5632	SFR156	.359	.023	7	3/64	88	33
.1875	.3750	.1250	SSRIF-6632	SFR166	.422	.023	8	1/16	161	62
.1875	.5000	.1562	SSRF-3	SFR3	.565	.042	7	3/32	295	110
.2500	.3750	.1250	SSRIF-614	SFR168	.422	.023	13	1.0mm	95	46
.2500	.5000	.1250	SSRIF-814	SFR188	.547	.023	10	1/16	187	84
.2500	.6250	.1960	SSRF-4	SFR4	.690	.042	8	3/32	331	134
.3125	.5000	.1562	SSRIF-8516	SFR1810	.547	.031	11	1/16	198	95
.3750	.8750	.2812	SSRIF-1438	SFR6	.969	.062	7	5/32	743	309

Inch Series

Radial Flanged Shielded Bearings



Reliable.
Responsive.
Relentless.



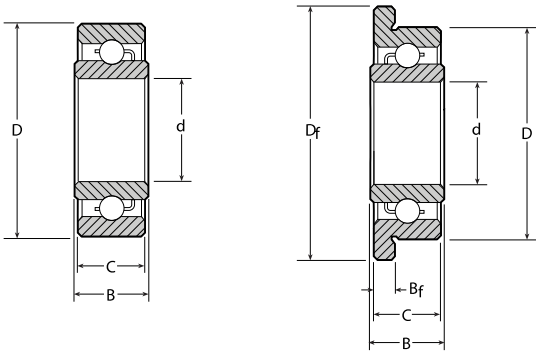
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	SHIELDED WIDTH	BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		1 OR 2 SHIELDS "B"					NUMBER	SIZE	DYNAMIC	STATIC
.0469	.1562	.0937	SSRIF-2 1/2ZZ	SFR0ZZ	.203	.031	6	1/32	35	11
.0550	.1875	.1094	SSRIF-3ZZ	SFR1ZZ	.234	.031	5	3/64	60	18
.0781	.2500	.1406	SSRIF-4ZZ	SFR1-4ZZ	.296	.031	6	3/64	75	24
.0937	.1875	.0937	SSRIF-3332ZZ	SFR133ZZ	.234	.031	7	1/32	42	13
.0937	.3125	.1406	SSRIF-5ZZ	SFR1-5ZZ	.359	.031	6	1/16	128	42
.1250	.2500	.1094	SSRIF-418ZZ	SFR144ZZ	.296	.031	7	1.0mm	64	22
.1250	.3125	.1406	SSRIF-518ZZ	SFR2-5ZZ	.359	.031	6	1/16	128	42
.1250	.3750	.1406	SSRIF-618ZZ	SFR2-6ZZ	.422	.031	6	1/16	128	42
.1250	.3750	.1562	SSRF-2ZZ	SFR2ZZ	.440	.030	7	1/16	146	51
.1562	.3125	.1250	SSRIF-5532ZZ	SFR155ZZ	.359	.036	7	3/64	88	33
.1875	.3125	.1250	SSRIF-5632ZZ	SFR156ZZ	.359	.036	7	3/64	88	33
.1875	.3750	.1250	SSRIF-6632ZZ	SFR166ZZ	.422	.031	8	1/16	161	62
.1875	.5000	.1960	SSRF-3ZZ	SFR3ZZ	.565	.042	7	3/32	295	110
.2500	.3750	.1250	SSRIF-614ZZ	SFR168ZZ	.422	.036	13	1.0mm	95	46
.2500	.5000	.1875	SSRIF-814ZZ	SFR188ZZ	.547	.045	10	1/16	187	84
.2500	.6250	.1960	SSRF-4ZZ	SFR4ZZ	.690	.042	8	3/32	331	134
.3125	.5000	.1562	SSRIF-8516ZZ	SFR1810ZZ	.547	.031	11	1/16	198	95
.3750	.8750	.2812	SSRIF-1438ZZ	SFR6ZZ	.969	.062	7	5/32	747	313

Inch Series

Extended Inner Ring Radial Open Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



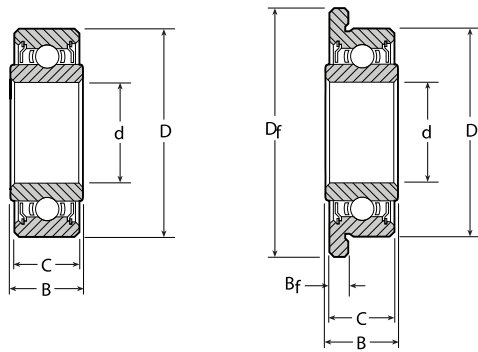
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH		BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		"B"	"C"				NUMBER	SIZE	DYNAMIC	STATIC
.0400	.1250	.0781	.0469	SSRI-2	.171	.013	6	.025 in	24	7
.0469	.1562	.0937	.0625	SSRI-2 1/2	.203	.013	6	1/32	35	11
.0550	.1875	.1094	.0781	SSRI-3	.234	.023	5	3/64	60	18
.0781	.2500	.1250	.0937	SSRI-4	.296	.023	6	3/64	75	24
.0937	.1875	.0937	.0625	SSRI-3332	.234	.018	7	1/32	42	13
.0937	.3125	.1406	.1094	SSRI-5	.359	.023	6	1/16	128	42
.1250	.2500	.1250	.0937	SSRI-418	.296	.023	7	1.0mm	64	22
.1250	.3125	.1406	.1094	SSRI-518	.359	.023	6	1/16	128	42
.1250	.3750	.1406	.1094	SSRI-618	.422	.023	6	1/16	128	42
.1250	.3750	.1875	.1562	SSR-2	.440	.030	7	1/16	146	51
.1562	.3125	.1406	.1094	SSRI-5532	.359	.023	7	3/64	88	33
.1875	.3125	.1406	.1094	SSRI-5632	.359	.023	7	3/64	88	33
.1875	.3750	.1562	.1250	SSRI-6632	.422	.023	8	1/16	161	62
.2500	.3750	.1562	.1250	SSRI-614	.422	.023	13	1.0mm	95	46
.2500	.5000	.1562	.1250	SSRI-814	.547	.023	10	1/16	187	84
.3125	.5000	.1875	.1562	SSRI-8516	.547	.031	11	1/16	198	95

Inch Series

Extended Inner Ring Radial Shielded Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.

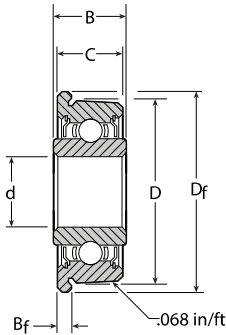


BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH 1 OR 2 SHIELDS		BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		"B"	"C"				NUMBER	SIZE	DYNAMIC	STATIC
.0469	.1562	.1250	.0937	SSRI-2 1/2ZZ	.203	.031	6	1/32	35	11
.0550	.1875	.1406	.1094	SSRI-3ZZ	.234	.031	5	3/64	60	18
.0781	.2500	.1719	.1406	SSRI-4ZZ	.296	.031	6	3/64	75	24
.0937	.1875	.1250	.0937	SSRI-3332ZZ	.234	.031	7	1/32	42	13
.0937	.3125	.1719	.1406	SSRI-5ZZ	.359	.031	6	1/16	128	42
.1250	.2500	.1406	.1094	SSRI-418ZZ	.296	.031	7	1.0mm	64	22
.1250	.3125	.1719	.1406	SSRI-518ZZ	.359	.031	6	1/16	128	42
.1250	.3750	.1719	.1406	SSRI-618ZZ	.422	.031	6	1/16	128	42
.1250	.3750	.1875	.1562	SSR-2ZZ	.440	.030	7	1/16	146	51
.1562	.3125	.1562	.1250	SSRI-5532ZZ	.359	.036	7	3/64	88	33
.1875	.3125	.1562	.1250	SSRI-5632ZZ	.359	.036	7	3/64	88	33
.1875	.3750	.1562	.1250	SSRI-6632ZZ	.422	.031	8	1/16	161	62
.1875	.5000	.2272	.1960	SSR-3ZZ	.565	.042	7	3/32	295	110
.2500	.3750	.1562	.1250	SSRI-614ZZ	.422	.036	13	1.0mm	95	46
.2500	.5000	.2188	.1875	SSRI-814ZZ	.547	.045	10	1/16	187	84
.2500	.6250	.2260	.1960	SSR-4ZZ	.690	.042	8	3/32	331	134
.3125	.5000	.1875	.1562	SSRI-8516ZZ	.547	.031	11	1/16	198	95

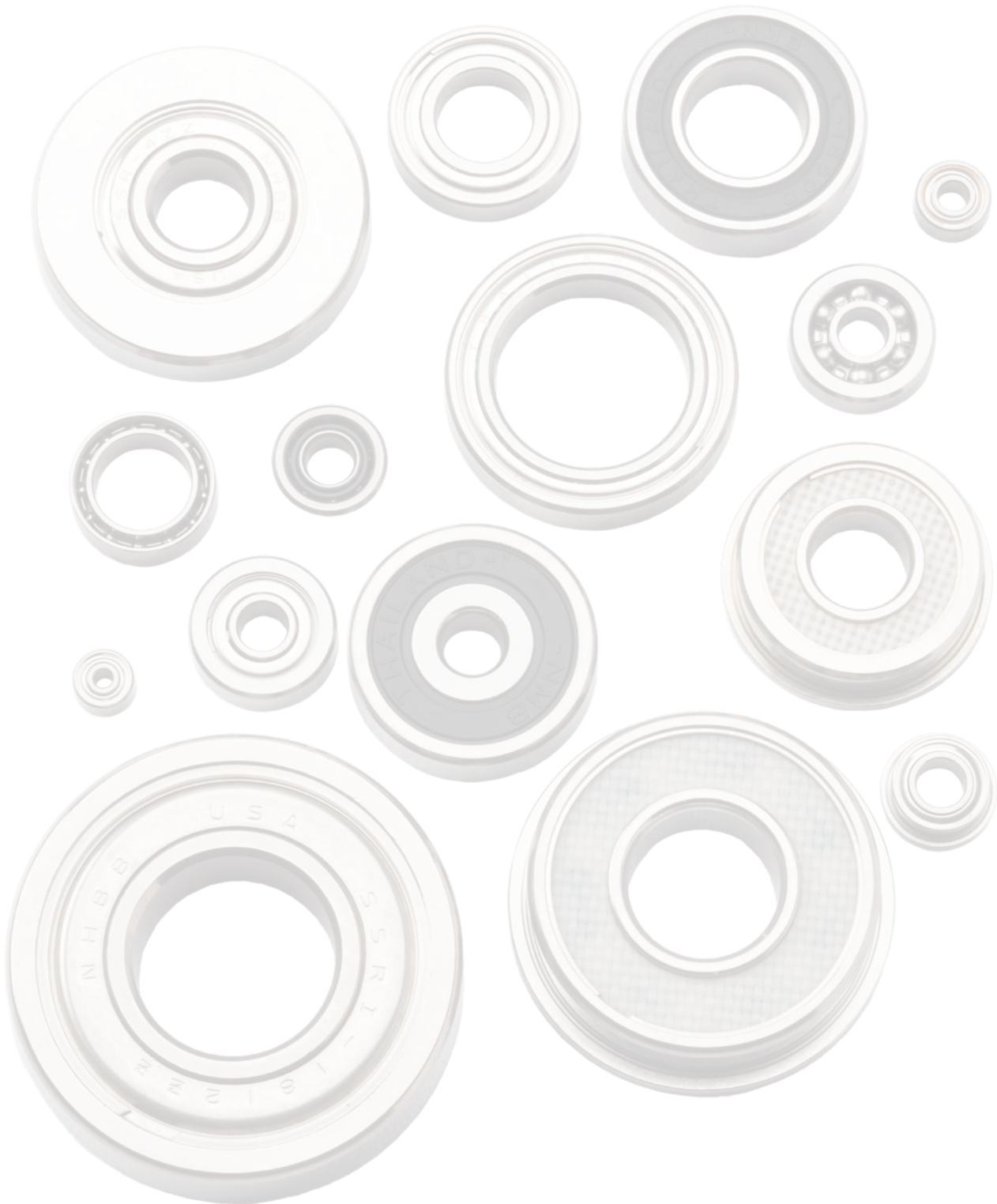
Inch Series
Tapered O.D. Radial Flanged Shielded Bearings



Reliable.
Responsive.
Relentless.



BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH 2 SHIELDS		BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		"B"	"C"				NUMBER	SIZE	DYNAMIC	STATIC
.1250	.3757	.1880	.1630	SSF-2ZZ	.438	.037	7	1/16	146	51
.1875	.5632	.2500	.2260	SSF-3ZZ	.625	.042	7	3/32	295	110
.2500	.6257	.2500	.2260	SSF-4ZZ	.687	.042	8	3/32	333	126
.3125	.6882	.2500	.2260	SSF-5ZZ	.750	.042	7	1/8	505	196

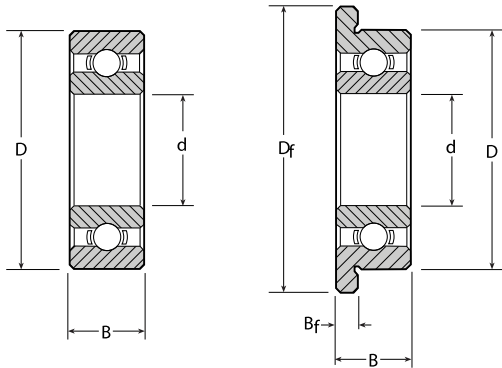


Metric L Series

Radial Open Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



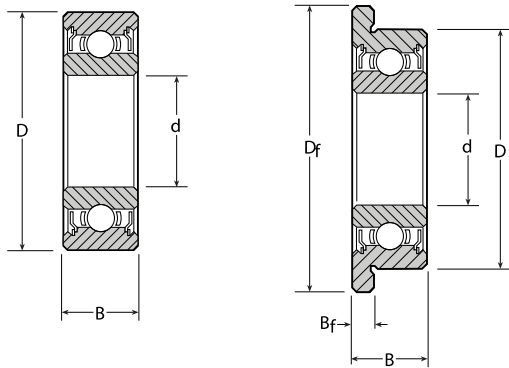
BORE DIAMETER "d"		OUTSIDE DIAMETER "D"		WIDTH "B"		BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	FLANGED BASIC NUMBER	BALL COMPLEMENT		LOAD RATING Kgs	
MM	INCH	MM	INCH	MM	INCH						NUMBER	SIZE	DYNAMIC	STATIC
1.0	.0394	3.0	.1181	1.0	.0394	SSL-310	S681	3.8	0.3	SSLF-310	7	0.5mm	9	3
1.5	.0591	4.0	.1575	1.2	.0472	SSL-415	S681X	5.0	0.4	SSLF-415	7	.635mm	13	4
2.0	.0787	5.0	.1969	1.5	.0591	SSL-520	S682	6.1	0.5	SSLF-520	7	1/32	19	6
2.5	.0984	6.0	.2362	1.8	.0709	SSL-625	S682X	7.1	0.5	SSLF-625	8	1/32	21	8
3.0	.1181	6.0	.2362	2.0	.0787	SSL-630	SMR63	7.2	0.6	SSLF-630	8	1/32	21	8
3.0	.1181	7.0	.2756	2.0	.0787	SSL-730	S683	8.1	0.5	SSLF-730	7	3/64	40	14
4.0	.1575	7.0	.2756	2.0	.0787	SSL-740	SMR74	8.2	0.6	SSLF-740	11	1/32	26	11
4.0	.1575	8.0	.3150	2.0	.0787	SSL-840	SMR84	9.2	0.6	SSLF-840	7	3/64	40	15
4.0	.1575	9.0	.3543	2.5	.0984	SSL-940	S684	10.3	0.6	SSLF-940	7	1/16	66	23
4.0	.1575	10.0	.3937	3.0	.1181	SSL-1040	SMR104	11.2	0.6	SSLF-1040	8	1/16	73	27
5.0	.1969	8.0	.3150	2.0	.0787	SSL-850	SMR85	9.2	0.6	SSLF-850	13	1/32	28	14
5.0	.1969	9.0	.3543	2.5	.0984	SSL-950	SMR95	10.2	0.6	SSLF-950	10	3/64	51	21
5.0	.1969	10.0	.3937	3.0	.1181	SSL-1050	SMR105	11.2	0.6	SSLF-1050	8	1/16	73	29
5.0	.1969	11.0	.4331	3.0	.1181	SSL-1150	S685	12.5	0.8	SSLF-1150	8	1/16	73	29
6.0	.2362	10.0	.3937	2.5	.0984	SSL-1060	SMR106	11.2	0.6	SSLF-1060	9	3/64	47	20
6.0	.2362	12.0	.4724	3.0	.1181	SSL-1260	SMR126	13.2	0.6	SSLF-1260	10	1/16	85	37
6.0	.2362	13.0	.5118	3.5	.1378	SSL-1360	S686	15.0	1.0	SSLF-1360	8	2.0mm	111	45
7.0	.2756	11.0	.4331	2.5	.0984	SSL-1170	SMR117	12.2	0.6	SSLF-1170	9	3/64	46	21
7.0	.2756	13.0	.5118	3.0	.1181	SSL-1370	SMR137	14.2	0.6	SSLF-1370	11	1/16	90	43
7.0	.2756	14.0	.5512	3.5	.1378	SSL-1470	S687	16.0	1.0	SSLF-1470	9	2.0mm	120	53
8.0	.3150	12.0	.4724	2.5	.0984	SSL-1280	SMR128	13.2	0.6	SSLF-1280	11	3/64	52	26
8.0	.3150	14.0	.5512	3.5	.1378	SSL-1480	SMR148	15.6	0.8	SSLF-1480	10	1/16	84	40
8.0	.3150	16.0	.6299	4.0	.1575	SSL-1680	S688	18.0	1.0	SSLF-1680	9	3/32	164	73
9.0	.3543	17.0	.6693	4.0	.1575	SSL-1790	S689	19.0	1.0	SSLF-1790	10	3/32	176	83
9.0	.3543	20.0	.7874	6.0	.2362	SSL-2090	S699	-	-	-	9	7/64	217	101
10.0	.3937	19.0	.7480	5.0	.1969	SSL-1910	S6800	-	-	-	9	7/64	217	101

Metric L Series

Radial Shielded Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



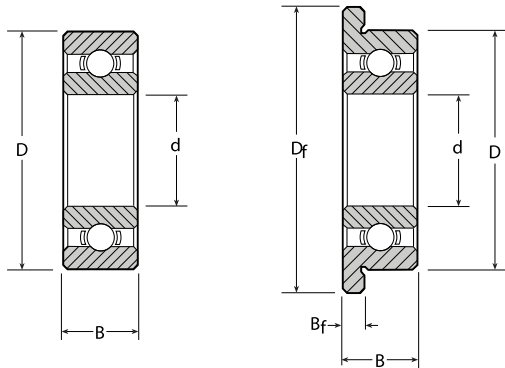
BORE DIAMETER "d"		OUTSIDE DIAMETER "D"		WIDTH "B"		BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	FLANGED BASIC NUMBER	BALL COMPLEMENT		LOAD RATING Kgs	
MM	INCH	MM	INCH	MM	INCH						NUMBER	SIZE	DYNAMIC	STATIC
2.0	.0787	5.0	.1969	2.3	.0906	SSL-520ZZ	S682ZZ	6.1	0.6	SSLF-520	7	1/32	19	6
2.5	.0984	6.0	.2362	2.6	.1024	SSL-625ZZ	S682XZZ	7.1	0.8	SSLF-625	8	1/32	21	8
3.0	.1181	6.0	.2362	2.5	.0984	SSL-630ZZ	SMR63ZZ	7.2	0.6	SSLF-630	8	1/32	21	8
3.0	.1181	7.0	.2756	3.0	.1181	SSL-730ZZ	S683ZZ	8.1	0.8	SSLF-730	7	3/64	40	14
4.0	.1575	7.0	.2756	2.5	.0984	SSL-740ZZ	SMR74ZZ	8.2	0.6	SSLF-740	11	1/32	26	11
4.0	.1575	8.0	.3150	3.0	.1181	SSL-840ZZ	SMR84ZZ	9.2	0.6	SSLF-840	7	3/64	40	15
4.0	.1575	9.0	.3543	4.0	.1575	SSL-940ZZ	S684ZZ	10.3	1.0	SSLF-940	7	1/16	66	23
4.0	.1575	10.0	.3937	4.0	.1575	SSL-1040ZZ	SMR104ZZ	11.6	0.8	SSLF-1040	8	1/16	73	27
5.0	.1969	8.0	.3150	2.5	.0984	SSL-850ZZ	SMR85ZZ	9.2	0.6	SSLF-850	13	1/32	28	14
5.0	.1969	9.0	.3543	3.0	.1181	SSL-950ZZ	SMR95ZZ	10.2	0.6	SSLF-950	10	3/64	51	21
5.0	.1969	10.0	.3937	4.0	.1575	SSL-1050ZZ	SMR105ZZ	11.6	0.8	SSLF-1050	8	1/16	73	29
5.0	.1969	11.0	.4331	5.0	.1969	SSL-1150ZZ	S685ZZ	12.5	1.0	SSLF-1150	8	1/16	73	29
6.0	.2362	10.0	.3937	3.0	.1181	SSL-1060ZZ	SMR106ZZ	11.2	0.6	SSLF-1060	9	3/64	47	20
6.0	.2362	12.0	.4724	4.0	.1575	SL-1260ZZ	SMR126ZZ	13.6	0.8	SSLF-1260	10	1/16	85	37
6.0	.2362	13.0	.5118	5.0	.1969	SSL-1360ZZ	S686ZZ	15.0	1.1	SSLF-1360	8	2.00mm	111	45
7.0	.2756	11.0	.4331	3.0	.1181	SSL-1170ZZ	SMR117ZZ	12.2	0.6	SSLF-1170	9	3/64	46	21
7.0	.2756	13.0	.5118	4.0	.1575	SSL-1370ZZ	SMR137ZZ	14.6	0.8	SSLF-1370	11	1/16	90	43
7.0	.2756	14.0	.5512	5.0	.1969	SSL-1470ZZ	S687ZZ	16.0	1.1	SSLF-1470	9	2.0mm	120	53
8.0	.3150	12.0	.4724	3.5	.1378	SSL-1280ZZ	SMR128ZZ	13.6	0.8	SSLF-1280	11	3/64	52	26
8.0	.3150	14.0	.5512	4.0	.1575	SSL-1480ZZ	SMR148ZZ	15.6	0.8	SSLF-1480	10	1/16	84	40
8.0	.3150	16.0	.6299	5.0	.1969	SSL-1680ZZ	S688ZZ	18.0	1.1	SSLF-1680	9	3/32	164	73
9.0	.3543	17.0	.6693	5.0	.1969	SSL-1790ZZ	S689ZZ	19.0	1.1	SSLF-1790	10	3/32	176	83
9.0	.3543	20.0	.7874	6.0	.2362	SSL-2090ZZ	S699ZZ	-	-	-	9	7/64	217	101
10.0	.3937	19.0	.7480	7.0	.2756	SSL-1910ZZ	S6800ZZ	-	-	-	9	7/64	217	101

Metric R Series

Radial Open Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



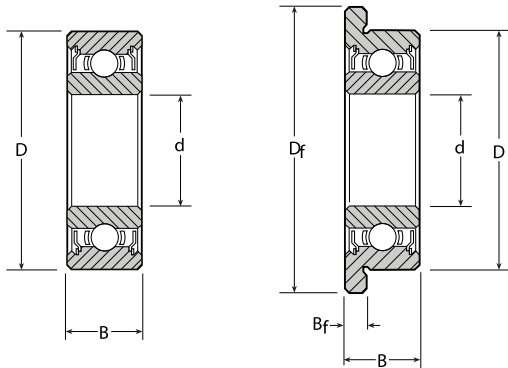
BORE DIAMETER "d"		OUTSIDE DIAMETER "D"		WIDTH "B"		BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	FLANGED BASIC NUMBER	BALL COMPLEMENT		LOAD RATING Kgs	
MM	INCH	MM	INCH	MM	INCH						NUMBER	SIZE	DYNAMIC	STATIC
1.5	.0591	5.0	.1969	2.0	.0787	SSR-515	S691X	6.5	0.6	SSRF-515	7	1/32	19	6
1.5	.0591	6.0	.2362	2.5	.0984	SSR-615	S601X	7.5	0.6	SSRF-615	6	3/64	33	10
2.0	.0787	6.0	.2362	2.3	.0906	SSR-620	S692	7.5	0.6	SSRF-620	7	1.0mm	29	10
2.0	.0787	7.0	.2756	2.8	.1102	SSR-720	S602	8.5	0.7	SSRF-720	7	3/64	39	13
2.5	.0984	7.0	.2756	2.5	.0984	SSR-725	S692X	8.5	0.7	SSRF-725	7	3/64	39	13
2.5	.0984	8.0	.3150	2.8	.1102	SSR-825	S602X	9.5	0.7	SSRF-825	6	1/16	57	18
3.0	.1181	8.0	.3150	3.0	.1181	SSR-830	S693	9.5	0.7	SSRF-830	6	1/16	57	18
3.0	.1181	9.0	.3543	3.0	.1181	SSR-930	S603	10.5	0.7	SSRF-930	7	1/16	65	23
3.0	.1181	10.0	.3937	4.0	.1575	SSR-1030	S623	11.5	1.0	SSRF-1030	7	1/16	66	23
4.0	.1575	11.0	.4331	4.0	.1575	SSR-1140	S694	12.5	1.0	SSRF-1140	8	1/16	73	29
4.0	.1575	12.0	.4724	4.0	.1575	SSR-1240	S604	13.5	1.0	SSRF-1240	7	2.0mm	98	36
4.0	.1575	13.0	.5118	5.0	.1969	SSR-1340	S624	15.0	1.0	SSRF-1340	7	3/32	134	50
4.0	.1575	16.0	.6299	5.0	.1969	SSR-1640	S634	18.0	1.0	SSRF-1640	7	7/64	177	69
5.0	.1969	13.0	.5118	4.0	.1575	SSR-1350	S695	15.0	1.0	SSRF-1350	8	2.0mm	110	43
5.0	.1969	14.0	.5512	5.0	.1969	SSR-1450	S605	16.0	1.0	SSRF-1450	7	3/32	136	52
5.0	.1969	16.0	.6299	5.0	.1969	SSR-1650	S625	18.0	1.0	SSRF-1650	7	7/64	177	69
5.0	.1969	19.0	.7480	6.0	.2362	SSR-1950	S635	22.0	1.5	SSRF-1950	6	5/32	287	109
6.0	.2362	15.0	.5906	5.0	.1969	SSR-1560	S696	17.0	1.2	SSRF-1560	7	7/64	177	69
6.0	.2362	17.0	.6693	6.0	.2362	SSR-1760	S606	19.0	1.2	SSRF-1760	6	3.5mm	231	86
6.0	.2362	19.0	.7480	6.0	.2362	SSR-1960	S626	22.0	1.5	SSRF-1960	6	5/32	287	109
7.0	.2756	19.0	.7480	6.0	.2362	SSR-1970	S607	-	-	-	7	1/8	229	93
7.0	.2756	22.0	.8661	7.0	.2756	SSR-2270	S627	25.0	1.5	SSRF-2270	7	5/32	337	140
8.0	.3150	19.0	.7480	6.0	.2362	SSR-1980	S689	22.0	1.5	SSRF-1980	7	1/8	229	89
8.0	.3150	22.0	.8661	7.0	.2756	SSR-2280	S608	25.0	1.5	SSRF-2280	7	5/32	337	140

Metric R Series

Radial Shielded Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



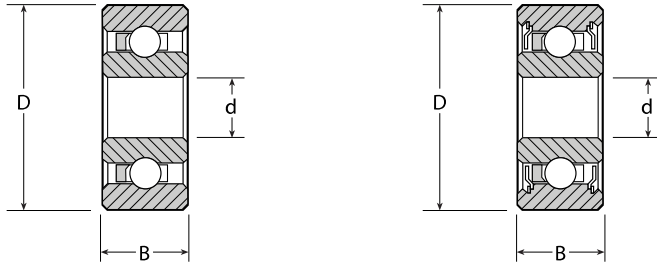
BORE DIAMETER "d"		OUTSIDE DIAMETER "D"		WIDTH "B"		BASIC PART NUMBER	STANDARD REFERENCE NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	FLANGED BASIC NUMBER	BALL COMPLEMENT		LOAD RATING Kgs	
MM	INCH	MM	INCH	MM	INCH						NUMBER	SIZE	DYNAMIC	STATIC
1.5	.0591	5.0	.1969	2.6	.1024	SSR-515ZZ	S691XZZ	6.5	0.8	SSRF-515ZZ	7	1/32	19	6
1.5	.0591	6.0	.2362	3.0	.1181	SSR-615ZZ	S601XZZ	7.5	0.8	SSRF-615ZZ	6	3/64	33	10
2.0	.0787	6.0	.2362	3.0	.1181	SSR-620ZZ	S692ZZ	7.5	0.8	SSRF-620ZZ	6	3/64	34	11
2.0	.0787	7.0	.2756	3.5	.1387	SSR-720ZZ	S602ZZ	8.5	0.9	SSRF-720ZZ	7	3/64	39	13
2.5	.0984	7.0	.2756	3.5	.1387	SSR-725ZZ	S692XZZ	8.5	0.9	SSRF-725ZZ	7	3/64	39	13
2.5	.0984	8.0	.3150	4.0	.1575	SSR-825ZZ	S602ZZ	9.5	0.9	SSRF-825ZZ	6	1/16	57	18
3.0	.1181	8.0	.3150	4.0	.1575	SSR-830ZZ	S693ZZ	9.5	0.9	SSRF-830ZZ	6	1/16	57	18
3.0	.1181	9.0	.3543	5.0	.1969	SSR-930ZZ	S603ZZ	10.5	1.0	SSRF-930ZZ	7	1/16	65	23
3.0	.1181	10.0	.3937	4.0	.1575	SSR-1030ZZ	S623ZZ	11.5	1.0	SSRF-1030ZZ	7	1/16	66	23
4.0	.1575	11.0	.4331	4.0	.1575	SSR-1140ZZ	S694ZZ	12.5	1.0	SSRF-1140ZZ	8	1/16	73	29
4.0	.1575	12.0	.4724	4.0	.1575	SSR-1240ZZ	S604ZZ	13.5	1.0	SSRF-1240ZZ	7	2.0mm	98	36
4.0	.1575	13.0	.5118	5.0	.1969	SSR-1340ZZ	S624ZZ	15.0	1.0	SSRF-1340ZZ	7	3/32	134	50
4.0	.1575	16.0	.6299	5.0	.1969	SSR-1640ZZ	S634ZZ	18.0	1.0	SSRF-1640ZZ	7	7/64	177	69
5.0	.1969	13.0	.5118	4.0	.1575	SSR-1350ZZ	S695ZZ	15.0	1.0	SSRF-1350ZZ	8	2.0mm	110	43
5.0	.1969	14.0	.5512	5.0	.1969	SSR-1450ZZ	S605ZZ	16.0	1.0	SSRF-1450ZZ	7	3/32	136	52
5.0	.1969	16.0	.6299	5.0	.1969	SSR-1650ZZ	S625ZZ	18.0	1.0	SSRF-1650ZZ	7	7/64	177	69
5.0	.1969	19.0	.7480	6.0	.2362	SSR-1950ZZ	S635ZZ	22.0	1.5	SSRF-1950ZZ	6	5/32	287	109
6.0	.2362	15.0	.5906	5.0	.1969	SSR-1560ZZ	S696ZZ	17.0	1.2	SSRF-1560ZZ	7	7/64	177	69
6.0	.2362	17.0	.6693	6.0	.2362	SSR-1760ZZ	S606ZZ	19.0	1.2	SSRF-1760ZZ	6	3.5mm	231	86
6.0	.2362	19.0	.7480	6.0	.2362	SSR-1960ZZ	S626ZZ	22.0	1.5	SSRF-1960ZZ	6	5/32	287	109
7.0	.2756	19.0	.7480	6.0	.2362	SSR-1970ZZ	S607ZZ	-	-	-	7	1/8	229	93
7.0	.2756	22.0	.8661	7.0	.2756	SSR-2270ZZ	S627ZZ	25.0	1.5	SSRF-2270ZZ	7	5/32	337	140
8.0	.3150	19.0	.7480	6.0	.2362	SSR-1980ZZ	S698ZZ	22.0	1.5	SSRF-1980ZZ	7	1/8	229	89
8.0	.3150	22.0	.8661	7.0	.2756	SSR-2280ZZ	S608ZZ	25.0	1.5	SSRF-2280ZZ	7	5/32	337	140

Specialty Products

Radial High Speed Bearings



Reliable.
Responsive.
Relentless.



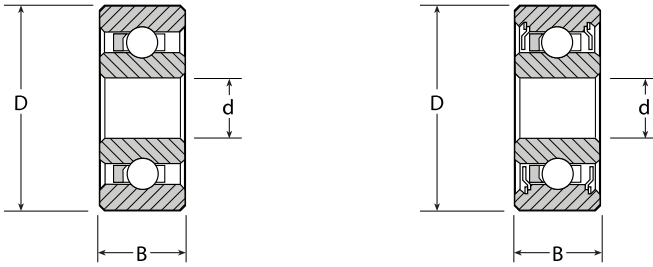
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	BALL COMPLEMENT		LOAD RATING LBS	
				NUMBER	SIZE	DYNAMIC	STATIC
.0937	.1875	.0625	SSRI-3332MC	7	1/32	19	6.5
.0937	.1875	.0937	SSRI-3332X3ZZMC	7	1/32	19	6.5
.0984	.1969	.0591	SSL-525MC	7	1/32	20	7
.1181	.2756	.0787	SSL-730MC	7	3/64	40	15
.1250	.2500	.0937	SSRI-418X5MC	8	1mm	33	12
.1250	.2500	.1094	SSRI-418X7ZZMC	8	1mm	33	12
.1250	.3125	.1094	SSRI-518MC	6	1/16	60	22
.1250	.3125	.1406	SSRI-518X3ZZMC	6	1/16	60	22
.1250	.3750	.1406	SSRI-618X3ZZMC	6	1/16	60	22
.1250	.3750	.1562	SSR-2XZZMC	7	1/16	66	26
.1250	.5000	.1719	SSR-2ZZAMC	7	1/16	66	26
.1562	.3125	.1094	SSRI-5532MC	7	3/64	41	15
.1562	.3125	.1250	SSRI-5532ZZMC	7	3/64	41	15
.1575	.2756	.0787	SSL-740MC	7	1/32	20	7
.1575	.3543	.0984	SSL-940MC	7	1/16	66	26
.1875	.3125	.1094	SSRI-5632MC	7	3/64	41	15
.1875	.3125	.1250	SSRI-5632ZZMC	7	3/64	41	15
.1875	.3750	.1250	SSRI-6632MC	8	1/16	76	31
.1875	.3750	.1250	SSRI-6632X5ZZMC	8	1/16	76	31
.1875	.5000	.1562	SSR-3MC	7	3/32	140	59
.1875	.5000	.1960	SSR-3X6ZZMC	7	3/32	140	59
.1969	.4331	.1969	SSL-1150ZZMC	7	1/16	66	26
.2362	.5118	.1969	SSL-1360ZZMC	8	.0787	115	49
.2500	.5000	.1250	SSRI-814MC	10	1/16	88	40
.2500	.5000	.1562	SSRI-8516ZSD502MC	11	1/16	93	43
.2500	.5000	.1875	SSRI-814ZZMC	10	1/16	88	40
.2500	.6250	.1960	SSR-4ZZMC	8	3/32	159	70
.2500	.6250	.1960	SSR-4X3ZZMC	8	3/32	159	70
.2500	.7500	.2188	SSRI-1214MC	6	9/64	412	193
.2500	.7500	.2812	SSRI-1214ZZMC	6	9/64	412	193

Specialty Products

Radial High Speed Bearings



Reliable.
Responsive.
Relentless.



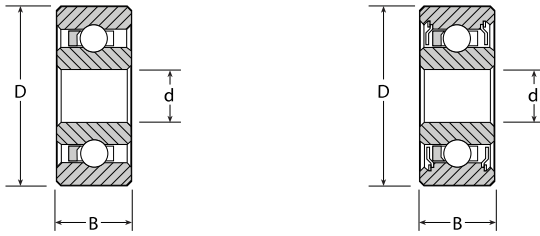
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	BALL COMPLEMENT		LOAD RATING LBS	
				NUMBER	SIZE	DYNAMIC	STATIC
.2756	.8661	.4060	SSR-2270ZZW301MC	7	5/32	569	273
.3125	.5000	.1562	SSRI-8516MC	11	1/16	93	43
.3125	.5000	.1562	SSRI-8516ZZSD505MC	11	1/16	93	43
.3150	.6299	.2362	SSL-1680ZZW06MC	9	3/32	170	79
.3150	.8661	.2756	SSR-2280MC	7	5/32	569	273
.3150	.8661	.4060	SSR-2280ZZW301MC	7	5/32	569	273
.3750	.6250	.1562	SSRI-1038ZMC	12	1/16	96	53
.3750	.6250	.1960	SSRI-1038ZZW11MC	12	1/16	96	53
.3750	.8750	.2188	SSRI-1438MC	7	5/32	569	273
.3750	.8750	.2812	SSRI-1438ZZMC	7	5/32	569	273
.5000	.7500	.1562	SSRI-1212ZMC	16	1/16	111	71
.5000	.7500	.1960	SSRI-1212ZZW11MC	16	1/16	111	71
.6250	.8750	.1562	SSRI-1458ZMC	18	1/16	116	81
.6250	.8750	.1960	SSRI-1458ZZW11MC	18	1/16	116	81
.7500	1.0000	.1562	SSRI-1634ZMC	22	1/16	127	99

Specialty Products

Angular Contact Bearings



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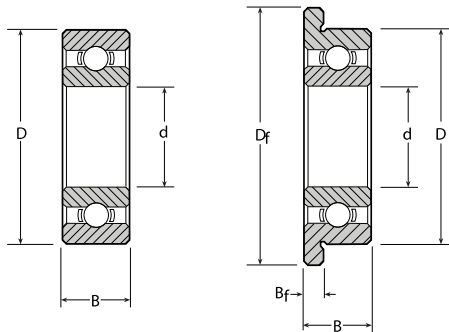
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	BALL COMPLEMENT		LOAD RATING LBS	
				NUMBER	SIZE	DYNAMIC	STATIC
.0787	.2362	.0906	SSMDR-620MC	7	.0394	29	10
.0937	.3125	.1094	SSMBRI-5SD502	6	1/16	60	22
.0937	.3125	.1094	MBRI-5SD507	6	1/16	60	22
.1181	.6299	.1969	MBR-1630	6	1/8	200	85
.1250	.2500	.0937	SSMDRI-418MC	8	1mm	33	12
.1250	.2500	.1094	SSMDRI-418ZWO5MC	8	1mm	33	12
.1250	.3125	.1094	SSMERI-518	6	1/16	60	22
.1250	.3750	.1562	SSMBR-2	7	1/16	66	26
.1250	.3750	.1562	MBR-2SD512	7	1/16	66	26
.1575	.2756	.0787	SSMDL-740MC	7	1/32	19	7
.1575	.6299	.1969	MBR-1640SD509	6	1/8	200	85
.1875	.5000	.1562	MBR-3SD503	8	3/32	159	70
.1875	.5000	.1562	MER-3SD509	8	3/32	152	67
.1875	.5000	.1562	SSMER-3SD509	8	3/32	152	67
.1969	.6299	.1969	MER-1650SD505	6	1/8	200	85
.2362	.7480	.2362	MBR-1960	6	5/32	300	135
.2362	.7480	.2362	MER-1960	6	5/32	338	154
.2500	.6250	.1960	SSMBR-4	8	3/32	159	70
.2500	.6250	.1960	MER-4SD504	9	3/32	172	79
.3150	.8661	.2756	MBR-2280SD503	7	5/32	344	162
.3150	.8661	.2756	MER-2280SD503	9	5/32	640	375
.3150	.8661	.2756	SSMER-2280SD502	9	5/32	640	375
.3543	.9449	.2756	SSMER-2490	10	5/32	663	376
.3543	1.0236	.3150	SSMER-2690	9	3/16	903	505
.3750	.8750	.2188	SSMBRI-1438	7	5/32	569	273
.3750	.8750	.2188	SSMERI-1438	9	5/32	671	351

Specialty Products

Modified Dimension Radial Open Unflanged & Flanged Bearings



Reliable.
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Relentless.



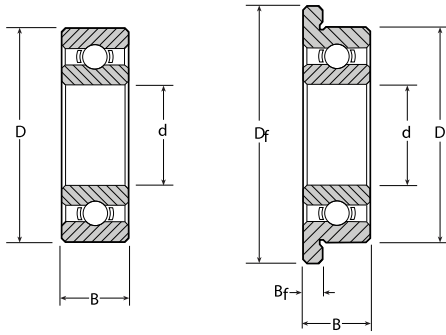
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"	BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
						NUMBER	SIZE	DYNAMIC	STATIC
.0400	.1250	.0469	SSRIF-2X2	.171	.013	6	.025	11	3
.0469	.1562	.0625	SSRIF-2 1/2SD501	.198	.013	6	1/32	16	5
.0781	.1875	.0625	SSRIF-3332SD503	.226	.018	8	1/32	35	14
.0781	.2500	.0625	SSRIF-418SD513	.296	.018	8	1mm	53	22
.0925	.1875	.0625	SSRI-3332N1MC	-	-	7	1/32	19	6
.0937	.3125	.0625	SSRI-3332A02	-	-	7	1/32	19	6
.0937	.4250	.0937	SSRI-418A62N	-	-	7	1mm	30	11
.0937	.4500	.1094	SSRI-5A62	-	-	6	1/16	60	22
.0947	.2500	.0937	SSRI-418N1	-	-	7	1mm	30	11
.1250	.2500	.0625	SSRI-418Y02	-	-	9	1/32	23	9
.1250	.3125	.1094	SSRIFW-518	.359	.029	6	1/16	60	22
.1250	.3750	.0650	SSRI-418A0223	-	-	9	1/32	23	9
.1250	.3750	.1094	SSRIF-618SD504	.412	.023	6	1/16	60	22
.1250	.4100	.1094	SSRIF-518A91	.438	.023	6	1/16	60	22
.1250	.4500	.1094	SSRI-518A62	-	-	6	1/16	60	22
.1250	.5000	.1094	SSRI-518A03	-	-	6	1/16	60	22
.1562	.4100	.1094	SSRIF-5532A91	.438	.023	7	3/64	41	15
.2500	.3750	.1094	SSRI-614Y05	-	-	13	.0394	43	21
.2500	.5000	.1250	SSRIF-814X3	.547	.023	8	5/64	114	48
.3750	.6250	.1250	SSRI-1038Y06	-	-	12	1/16	95	49
.3750	.8750	.2188	SSRIF-1438SD503	.969	.062	7	5/32	569	273

Specialty Products

Modified Dimension Radial Shielded Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



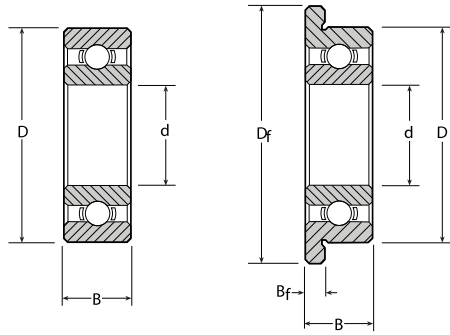
BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"		BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		1 SHIELD "B"	2 SHIELDS "B"				NUMBER	SIZE	DYNAMIC	STATIC
.0469	.1875	–	.0937	SSRI-2 1/2ZZA11	–	–	6	1/32	16	5
.0781	.2500	–	.0937	SSRIF-418ZZSD516	.296	.018	8	1mm	53	22
.0781	.2500	–	.1094	SSRI-4ZZY05	–	–	7	1mm	29	10
.0800	.2500	.1094	–	SSRI-4ZN6	–	–	6	3/64	35	12
.0902	.3125	.1094	–	SSRI-5ZN	–	–	8	3/64	44	17
.0932	.1875	–	.0937	SSRI-3332ZZN4MC	–	–	7	1/32	19	6
.0937	.4100	.1094	–	SSRI-5ZA91	–	–	6	1/16	60	22
.0937	.2500	.0937	–	SSRI-418ZN	–	–	7	1mm	30	11
.0937	.2500	–	.1094	SSRI-418ZZN	–	–	7	1mm	30	11
.0937	.2500	–	.0937	SSRI-418ZZY04N	–	–	8	1mm	33	12
.0937	.2750	.0625	–	SSRI-3332ZSD501	–	–	8	1/32	21	7
.0937	.2883	.0625	–	SSRI-3332ZA1202	–	–	8	1/32	21	8
.0937	.4100	.1094	–	SSRI-518ZA91N	–	–	6	1/16	60	22
.1250	.2500	–	.0937	SSRI-418ZZY04	–	–	8	1mm	33	12
.1250	.2500	.1094	–	SSRI-418ZW05	–	–	7	1mm	30	11
.1250	.3125	–	.1094	SSRI-518ZZY05	–	–	8	3/64	44	17
.1250	.3750	.0937	–	SSRI-418ZA02	–	–	8	1mm	33	12
.1250	.3750	–	.0937	SSRI-418ZZA0204	–	–	8	1mm	33	12
.1250	.3750	–	.1094	SSRI-618ZZY05	–	–	8	3/64	44	17
.1250	.3750	.1406	–	SSRIF-618ZSD09	.500	.040	6	1/16	60	22
.1250	.4100	.0937	–	SSRI-418ZA72	–	–	7	1mm	30	11
.1250	.4100	.1094	–	SSRI-518ZA91	–	–	6	1/16	60	22
.1250	.4250	.0937	–	SSRI-418ZA62	–	–	7	1mm	30	11
.1250	.4250	–	.1094	SSRI-418ZZA62	–	–	7	1mm	30	11
.1250	.4250	.1094	–	SSRI-518ZA71	–	–	6	1/16	60	22
.1250	.4375	.0937	–	SSRI-418ZA03	–	–	8	1mm	33	12
.1250	.4375	–	.0937	SSRI-418ZZ0304	–	–	8	1mm	33	12
.1250	.5000	–	.1094	SSRI-518ZZA0305	–	–	8	3/64	44	17
.1250	.5000	–	.1562	SSR-2ZZA01	–	–	7	1/16	66	26
.1250	.5000	.1250	–	SSRI-814ZSD524	–	–	10	1/16	88	40
.1250	.5000	.1875	–	SSRIF-814ZSD504	.547	.023	10	1/16	88	40
.1250	.5769	–	.1250	SSRI-6632ZZSD510	–	–	8	1/16	76	31
.1250	.7500	–	.1250	SSRI-6632ZZSD509	–	–	8	1/16	76	31
.1562	.3750	–	.1562	SSR-2ZZSD513	–	–	7	1/16	66	26
.1567	.3750	–	.1250	SSRI-6632ZZSD508	–	–	8	1/16	76	31

Specialty Products

Modified Dimension Radial Shielded Unflanged & Flanged Bearings



Reliable.
Responsive.
Relentless.



BORE DIAMETER "d"	OUTSIDE DIAMETER "D"	WIDTH "B"		BASIC PART NUMBER	FLANGE DIAMETER "Df"	FLANGE WIDTH "Bf"	BALL COMPLEMENT		LOAD RATING LBS	
		1 SHIELD "B"	2 SHIELDS "B"				NUMBER	SIZE	DYNAMIC	STATIC
.1567	.3750	—	.1562	SSR-2ZZSD502	—	—	7	1/16	66	26
.1875	.3125	.1094	—	SSRI-5632XZ	—	—	11	1mm	40	17
.1875	.3125	—	.1094	SSRI-5632XZZY05	—	—	11	1mm	40	17
.1875	.3125	—	.1250	SSRIF-5632XZZ	.359	.036	11	1mm	40	17
.1875	.3750	—	.1094	SSRI-5632XZZA0105	—	—	11	1mm	39	17
.1875	.3750	.1094	—	SSRI-6632XZY05	—	—	7	3/64	41	15
.1875	.4100	.1094	—	SSRI-5632ZA91	—	—	7	3/64	41	15
.1875	.4250	—	.1250	SSRI-5632ZZA71	—	—	7	3/64	41	15
.1875	.4250	.1094	—	SSRI-5632ZA71	—	—	8	3/64	45	17
.1875	.4375	—	.1094	SSRI-5632XZZA0205	—	—	11	1mm	40	17
.1875	.4600	.1094	—	SSRI-6632ZA6105	—	—	8	1/16	76	31
.1875	.5000	.1094	—	SSRI-6632ZA0205	—	—	8	1/16	76	31
.1875	.5000	—	.1250	SSRI-5632ZZA03	—	—	7	3/64	41	15
.1875	.5000	—	.1562	SSRI-6632ZZA0208	—	—	8	1/16	76	31
.1875	.5000	—	.1562	SSRIF-6632ZZA0208	.565	.042	8	1/16	76	31
.1875	.5000	—	.1562	SSR-3ZZY08	—	—	8	.0787	112	49
.1875	.5000	.1875	—	SSRIF-814ZSD503	.547	.023	10	1/16	88	40
.1875	.6250	—	.1960	SSR-3ZZA	—	—	7	3/32	140	59
.1875	.7435	—	.1960	SSR-3ZZA42	—	—	7	3/32	140	59
.1875	.7500	—	.1960	SSR-3ZZA02	—	—	7	3/32	140	59
.1875	.7717	—	.1960	SSR-3ZZA62	—	—	7	3/32	140	59
.1875	.8750	—	.1960	SSR-3ZZA03	—	—	7	3/32	140	59
.1875	.5000	—	.3125	SSR-3ZZW20	—	—	7	3/32	140	59
.2500	.4375	—	.1250	SSRI-614ZZA01	—	—	13	1mm	43	21
.2500	.5000	.1094	—	SSRI-614ZA0205	—	—	13	1mm	43	21
.2500	.5000	—	.1562	SSRI-8516ZZSD502	—	—	11	1/16	93	43
.2500	.5000	—	.1562	SSRIF-8516ZZSD502	.547	.042	11	1/16	93	43
.2500	.7500	—	.1960	SSR-4ZZA01	—	—	8	3/32	159	70
.2500	.8685	—	.1960	SSR-4ZZA12	—	—	8	3/32	159	70
.2500	1.0415	—	.1960	SSR-4ZZA63	—	—	8	3/32	159	70
.2500	.6250	—	.3120	SSR-4ZZSD548	—	—	8	3/32	159	70
.2500	.7050	—	.1960	SSR-4ZZSD561	—	—	8	3/32	159	70
.2756	.8661	—	.4060	SSR-2270ZZW301	—	—	7	5/32	569	273
.3125	.6250	—	.1562	SSRI-8516ZZA02	—	—	11	1/16	93	43
.3150	.8661	—	.4060	SSR-2280ZZW301	—	—	7	5/32	569	273
.3150	.8661	—	.4724	SSR-2280ZZW021	—	—	7	5/32	425	208
.3750	1.0000	—	.2812	SSRI-1438ZZA02	—	—	7	5/32	569	273

Specialty Products - Modified Dimension Shielded

Bearing Selection

To ensure optimal speed and load carrying capacity, several factors must be considered when choosing the proper bearing for your application. These factors include the ring material, design, shields & seals, cage, ABEC grade, radial play, and lubricant.

Materials

Miniature and instrument bearings are normally made of either stainless steel or chrome alloy steel. National Precision Bearing offers stainless steel for applications that require corrosion resistance, and 52100 chrome steel for maximum fatigue life. These materials are heat-treated to achieve optimum hardness and dimensional stability, and are suitable for most applications.

Design

The design of a bearing is critical in determining its load-carrying capability and maximum operating speed – factors which directly impact the bearing's operating life. Various types of bearings have been designed to meet the operating parameters of your application.

The radial or conrad bearing (also referred to as deep groove) is the most popular type due to its ability to handle radial and thrust loads in either direction. This type is offered with various seal or shield options.

The angular contact bearing is designed with a relieved shoulder to allow for a greater number of balls, thereby increasing its load-carrying capability. The angular contact design also allows for the use of a full section cage which is desirable for high speed applications. This type of bearing can handle thrust loads in one direction only.

Note: ABEC 1 miniature and instrument bearings of both the metric and inch configurations meet the tolerances of ABMA Standard 20 for ABEC 1 metric series bearings.

Shields and Seals

Shields and seals are used in ball bearings to retain lubricants and prevent particulate contamination from reaching the critical surfaces. Shields are popular for most applications; seals are used where minimal clearance to light contact is required. Seals offer greater deterrence to particulate contamination, but increase torque and limit operating speed.

Cages

The cage, also referred to as the retainer or separator, is the component that separates and positions the balls at approximately equal intervals around the bearing raceway. Proper selection of a bearing cage is critical for meeting the load, speed and temperature requirements of your applications.

ABEC Grade

When choosing the ABEC grade, the factors to be considered are: radial and axial runout requirements, bore and O.D. fits, and audible noise level. The table below shows the bore and O.D. size tolerances and the radial runout limits for each ABEC grade. Grades 3 and 7 are preferred for most standard applications. Normally, race finish and race geometry are superior in ABEC 5 and higher. National Precision Bearing recommends these grades for precision assemblies where low noise (mechanical or audible), minimal runout and long life are important considerations.

Radial Play

Radial Play is the free internal radial looseness between the balls and the races with no load applied to the bearing in any direction. Radial play is necessary to accommodate differential thermal expansions, the effects of interference fits, and to control axial play and deflection. The chart on page 7-3 of the Engineering Section shows the suggested radial play for some typical applications.

Lubricant

There are literally hundreds of lubricants available for ball bearings; selecting the optimal one is critical. Each has a particular characteristic which makes it suitable for a specific application. Unless torque is a problem, grease is preferred for prelubrication since it is less susceptible to migration and leakage. Grease can increase bearing torque by a factor of 1.2 to 5.0 depending on the grease type and quantity used.

ABEC GRADE	O.D. SIZE	RADIAL RUNOUT		MEAN DIAMETER TOLERANCE	
		INNER RING	OUTER RING	BORE	O.D.
1P	0 - 18mm (0 - .7086 in.)	.00040	.00060	+.0000 -.0003	+.0000 -.0003
	over 18 - 30mm (over .7086 - 1.1811 in.)	.00040	.00060	+.0000 -.0004	+.0000 -.0004
3P	0 - 30mm (0 - 1.1811 in.)	.00020	.00040	+.0000 -.0002	+.0000 -.0003
5P	0 - 30mm (0 - 1.1811 in.)	.00015	.00020	+.0000 -.0002	+.0000 -.0002
7P	0 - 30mm (0 - 1.1811 in.)	.00010	.00015	+.0000 -.0002	+.0000 -.0002
9P	0 - 18mm (0 - .7086 in.)	.00005	.00005	+.0000 -.0001	+.0000 -.0001
	over 18 - 30mm (over .7086 - 1.1811 in.)	.00010	.00010	+.0000 -.0001	+.0000 -.00015

When a ball bearing is running under a load, force is transmitted from one bearing ring to the other through the balls. Since the contact area between each ball and the rings is relatively small, moderate loads can produce stresses of tens, even hundreds of thousands of pounds per square inch. These internal stresses have a significant impact on bearing life and performance. Thus the internal geometry of a bearing—its radial play, raceway curvature and contact angle—must be carefully chosen so loads can be distributed for optimal performance.

Most ball bearings are assembled in such a way that a slight amount of looseness exists between the balls and the raceways. This looseness is referred to as radial play and axial play. Radial play is the maximum distance that one bearing ring can be displaced with respect to the other, in a direction perpendicular to the bearing axis when the bearing is in an unmounted state. Axial play, or end play, is the maximum relative displacement, in a direction parallel to the bearing axis, between the two rings of an unmounted ball bearing. Since radial play and axial play are both consequences of the same degree of looseness between the components, they bear a mutual dependence. Yet their values are usually quite different in magnitude. Radial play can often vary between .0002 and .0020, while axial play may range from .001 to .010. The suggested radial play ranges for typical applications should always be consulted when a device is in the initial design phase.

In most ball bearing applications, radial play is functionally more critical than axial play. While radial play has become the standard purchasing specification, you may also specify axial play requirements. Keep in mind, however, the values of radial play and axial play for any given bearing design are mathematically interdependent, and that radial play is affected by any interference fit between the shaft and bearing I.D. or between the housing and bearing O.D.

Suggested Radial Play

Typical Applications	Suggested Radial Play*
Small Precision High Speed Electric Motors	.0005 to .0008
Tape Guides, Belt Guides, Low Speed	.0002 to .0005
Tape Guides, Belt Guides, High Speed	.0005 to .0008
Gyro Gimbals, Horizontal Axis	.0002 to .0005
Gyro Gimbals, Vertical Axis	.0005 to .0008
Precision Gear Trains, Low Speed Electric Motors, Synchros and Servos	.0002 to .0005
Gyro Spin Bearings, Ultra-High Speed Turbines and Spindles	Consult NP

* In inches

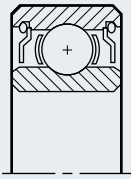
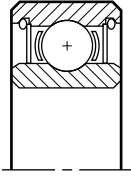
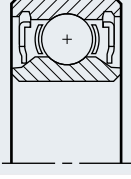
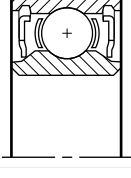
Standard Radial Play Ranges

Description	Radial Play Range*	NP Code
Tight	.0001 to .0003	P13
Normal	.0002 to .0005	P25
Loose	.0005 to .0008	P58
Extra Loose	.0008 to .0011	P811

* In inches
Non-standard ranges may be specified

Shields and seals are protective closures which retain lubricants and assist in preventing contaminants from reaching internal surfaces. In torque-sensitive applications, it may be advantageous to use shields rather than seals because there are no contacting surfaces to create drag. The following chart illustrates the more common type of shields and seals.

Consideration should be given to the compatibility of cage and shield type designs to allow for appropriate clearance. Consult with NP for availability.

DESCRIPTION	TYPE	DESIGN	MATERIAL	OPERATING TEMP MAX
Shield – Removable with snap wire. Minimal Clearance. Most popular	Z		Stainless Steel 300 Series	600 ° F
Seal - Removable with snap wire. Minimal clearance to light contact. Low torque.	L		Glass-reinforced Teflon	400 ° F
Seal - Excellent sealing characteristics	D		Buna-N Bonded to Steel Insert	250 ° F
Seal - Excellent sealing characteristics. High cost.	D1		Viton® Bonded to Steel Insert	400 ° F

Tolerances

Miniature and Instrument Ball Bearings Inner Ring*

The ABEC tolerances listed are current at this catalog's printing. These tolerances are reviewed regularly and updated as required. The ABMA standards may be obtained by contacting:

ABMA
1001 N. Fairfax Street, Suite 500
Alexandria, VA 22314-1587
Phone: 703.842.0030
www.americanbearings.org

CHARACTERISTIC	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Bore Tolerance Limits	+.0000 –.0003	+.0000 –.0002	+.0000 –.0002	+.0000 –.0002	+.0000 –.0001
Bore 2 pt. out of Roundness	–	–	.0001	.0001	.00005
Bore Taper	–	–	.0001	.0001	.00005
Radial Runout	.0004	.0002 ⁽¹⁾	.00015	.0001	.00005
Width Variation	–	–	.0002	.0001	.00005
Bore Runout with Face	–	–	.0003	.0001	.00005
Race Runout with Face	–	–	.0003	.0001	.00005

* In inches.

(1) Add .0001 to the tolerance if bore is over 10mm (.3937 inch)

OUTER RING*

CHARACTERISTIC	CONFIGURATION	SIZE RANGE	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Mean O.D. Tolerance Limits	All	0 - 18mm (0 - .7086)	+0.0000 -0.0003	+0.0000 -0.0003	+0.0000 -0.0002	+0.0000 -0.0002	+0.0000 -0.0001
	All	over 18 - 30mm (.7086 - 1.1181)	+0.0000 -0.0004	+0.0000 -0.0003	+0.0000 -0.0002	+0.0000 -0.0002	+0.0000 -0.00015
Maximum O.D. Tolerance Limits	Open	0 - 18mm (0 - .7086) over 18 - 30mm (.7086 - 1.1181)	+0.0001 -0.0004 +0.0001 -0.0005	+0.0001 -0.0004 +0.0001 -0.0004	+0.0000 -0.0002 +0.0000 -0.0002	+0.0000 -0.0002 +0.0000 -0.0002	+0.0000 -0.0001 +0.0000 -0.00015
	Shielded	0 - 18mm (0 - .7086) over 18 - 30mm (.7086 - 1.1181)	+0.0002 -0.0005 +0.0002 -0.0006	+0.0002 -0.0005 +0.0002 -0.0005	+0.00004 -0.00024 +0.00004 -0.00024	+0.00004 -0.00024 +0.00004 -0.00024	- - - -
O.D. 2 pt. out of Roundness	Open	0 - 18mm	-	-	.0001	.0001	.00005
	Open	over 18 - 30mm	-	-	.0001	.0001	.0008
	Shielded	0 - 30mm	-	-	.0002	.0002	
O.D. Taper	All	0 - 18mm	-	-	.0001	.0001	.0005
	All	over 18 - 30mm 0 - 30mm	- -	- -	.0001 .0002	.0001 .0002	.00008 -
Radial Runout	All	0 - 18mm	.0006	.0004	.0002	.00015	.00005
	All	over 18 - 30mm	.0006	.0004	.0002	.00015	.0001
Width Variation	All	0 - 30mm	-	-	.0002	.0001	.00005
O.D. Runout with Face	All	0 - 30mm	-	-		.00015	.00005
Race Runout with Face	Plain	0 - 18mm	-	-	.0003	.0002	.00005
	Plain	over 18 - 30mm	-	-	.0003	.0002	.0001
	Flanged	0 - 30mm	-	-	.0003	.0003	-
Flange Width Tolerance Limits		-	-	+0.0000 -0.0020	+0.0000 -0.0020	+0.0000 -0.0020	-
		-	-	-	-	-	-
Flange Diameter Tolerance Limits		-	-	+0.0050 -0.0020	+0.0000 -0.0010	+0.0000 -0.0010	-
		-	-	-	-	-	-

* In inches, unless otherwise indicated

RING WIDTH*

CHARACTERISTIC	CONFIGURATION	ABEC 1	ABEC 3P	ABEC 5P	ABEC 7P	ABEC 9P
Width	Single Bearing	+0.000 -0.005	+0.000 -0.005	+0.000 -0.001	+0.000 -0.001	+0.000 -0.001
	Duplex Pair	- -	- -	+0.000 -0.015	+0.000 -0.015	+0.000 -0.015

* In inches, unless otherwise indicated

Standard lubricants are LO1 Fuchs Lubricant Winsor L-245X oil and LG68 Royco 27 grease. The standard quantity of oil varies with bearing size, but is approximately one drop (3 - 6mg) per bearing up to R-2 size and two drops (6 - 12mg) for larger sizes. The standard quantity of grease is 30% $\pm$ 5% of the bearing's internal free volume.

CODE	BRAND NAME	BASIC TYPE	OPERATING TEMP F	USES
LO1	Fuchs Lubricant Winsor L-245X (MIL-L-6085)	Synthetic Oil	-65 to +300	Light general purpose oil. Low torque.
LY115	Dupont Krytox 143AC	Fluorinated Oil	-30 to +550	High temperature. Hostile chemical environments and low pressure.
LG20	Exxon Beacon 325	Synthetic Grease	-65 to +250	General purpose grease. Low torque.
LG68	Royal Royco 27 (MIL-G-23827)	Synthetic Grease	-100 to +275	Corrosion resistant. Heavy loads and high speed.
LRD77	Rheoplex 6000 HT	Synthetic Grease (Non-silicone)	-40 to +347	Oxidation inhibitor. High temperature and high speed.
LY48	Mobil Mobil 28 (MIL-G-81322)	Synthetic Hydrocarbon Grease	-65 to +350	Low torque. Low speed oscillation.
LY75	Chevron Black Pearl SRI-2	Mineral Grease	-20 to +350	Long life. Water resistant. High speed and high temperature.
LY101	Dupont Krytox 240AC (MIL-PRF-27617 III)	Fluorinated Grease	-30 to +550	High temperature.
LY121	Kyodo Multemp SRL	Synthetic Grease	-40 to +300	Very quiet. Low torque.
LY328	Castrol Braycote Micronic 601EF	Perfluorinated Polyether Grease	-112 to +400	Low pressure/vacuum environments. Hostile chemical environments.
LRD70	Nyco GN 25013 (MIL-G-25013)	Silicone Grease	-100 to +450	Light loads. High temperatures. Water resistance.
LY660	Exxon Mobil Polyrex EM	Channelling Mineral Grease	-20 to +350	Heavy loads. Minimum migration.
LY551	Minebea K-37	Polyurea	-50 to +300	High speed, rapid oscillation.
LY556	Aeroshell 33 BMS3-33 (MIL-PRF-23827C I)	Synthetic Grease	-100 to +250	General Aerospace.
LY223	Brayco Micronic 815Z	PFPE Oil	-50 to +400	Extreme temperature.

Typical Applications	Shaft Fit	Shaft Diameter	Housing Fit	Housing Diameter
Inner ring rotation (Inner ring press fit, outer ring loose fit)	.0000 - .0004T	d+.0000 d+.0002	.0000 - .00004L	D+.0002 D+.0000
Outer ring rotation (Inner ring loose fit, outer ring press fit)	.0000 - .0004L	d+.0002 d-.0004	.0000 - .0004T	D-.0002 D-.0004
Tape guide roller, pulley, cam follower, outer ring rotation	.0000 - .0004L	d-.0002 d-.0004	.0001L - .0003T	D-.0001 D-.0003
Drive motor (spring preload)	.0001T - .0003L	d-.0001 d-.0003	.0000 - .0004L	D+.0002 D-.0000
Precision synchro or servo	.0001T - .0003L**	d-.0001 d-.0003	.0001T - .0003L**	D+.0001 D-.0001
Potentiometer	.0001T - .0003L	d-.0001 d-.0003	.0000 - .0004L	D+.0002 D-.0000
Encoder spindle	.0001T - .0003L**	d-.0001 d-.0003	.0001L - .0003T**	D-.0001 D-.0003

* In inches

L = Loose Fit

T = Tight Fit

d = Bearing Bore as listed

D = Bearing O.D. as listed

**Bearing must be purchased with bore and O.D. coding

Example: To use SSR-2 bearing in a potentiometer the shaft diameter should be .1250 - .0001 to .1250 - .0003 or .1249 to .1247
 The housing should be .3750 + .0002 to .3750 - .0000 or .3752 to .3750

Table of Recommended Shoulder Diameter*

Basic Size	Minimum Shaft Shoulder Diameter	Maximum Housing Shoulder Diameter
SSRI-2	.060	.105
SSRI-2 1/2	.071	.132
SSRI-3	.079	.164
SSRI-4	.102	.226
SSRI-3332	.114	.168
SSRI-5	.122	.284
SSRI-418	.148	.226
SSRI-518	.153	.284
SSRI-618	.153	.347
SSRI-2	.179	.325
SSR-2A	.179	.446
SSRI-5532	.180	.288
SSR-1640X	.210	.580
SSRI-5632	.210	.288
SSRI-6632	.216	.347
SSR-3	.244	.446
SSR-1650X	.250	.580
SSR-1950	.250	.700
SSR-1960	.290	.700
SSRI-614	.272	.352

Basic Size	Minimum Shaft Shoulder Diameter	Maximum Housing Shoulder Diameter
SSRI-814	.284	.466
SSR-4	.310	.565
SSRI-1214	.322	.678
SSR-2270	.325	.810
SSR-2280	.370	.810
SSR-2690	.420	.950
SSRI-8516	.347	.466
SSRI-1038	.435	.565
SSRI-1438	.451	.799
SSR-2610	.470	.950
SSRI-1212	.560	.690
SSRI-1812	.625	1.025
SSRI-1458	.665	.835
SSRI-1634	.790	.960
SSRI-1218	.160	.710

* In inches

Fraction/Inch/Metric Conversion Table



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Fraction	Inch	mm
1/64	0.0156	0.3969
	0.0250	0.6350
1/32	0.0312	0.7937
	0.0394	1.0000
	0.0400	1.0160
3/64	0.0469	1.1906
	0.0472	1.2000
	0.0550	1.3970
	0.0591	1.5000
1/16	0.0625	1.5875
	0.0709	1.8000
5/64	0.0781	1.9844
	0.0787	2.0000
	0.0906	2.3012
3/32	0.0937	2.3812
	0.0984	2.5000
	0.1000	2.5400
	0.1024	2.6000
7/64	0.1094	2.7781
	0.1100	2.7940
	0.1102	2.8000
	0.1181	3.0000
1/8	0.1250	3.1750
	0.1256	3.1902
	0.1378	3.5000
9/64	0.1406	3.5719
5/32	0.1562	3.9687
	0.1575	4.0000
11/64	0.1719	4.3656
3/16	0.1875	4.7625
	0.1892	4.8057
	0.1969	5.0000
13/64	0.2031	5.1594
	0.2165	5.4991
7/32	0.2187	5.5562
15/64	0.2344	5.9531
	0.2362	6.0000
1/4	0.2500	6.3500
17/64	0.2656	6.7469
	0.2756	7.0000
9/32	0.2812	7.1437

	0.2883	7.3228
19/64	0.2969	7.5406
5/16	0.3125	7.9375
	0.3150	8.0000
21/64	0.3281	8.3344
11/32	0.3437	8.7312
	0.3543	9.0000
23/64	0.3594	9.1281
3/8	0.3750	9.5250
25/64	0.3906	9.9213
	0.3937	10.0000
13/32	0.4062	10.3187
	0.4100	10.4140
27/64	0.4219	10.7156
	0.4250	10.7950
	0.4331	11.0000
7/16	0.4375	11.1125
29/64	0.4531	11.5094
	0.4600	11.6840
15/32	0.4687	11.9062
	0.4724	12.0000
31/64	0.4844	12.3031
1/2	0.5000	12.7000
	0.5118	13.0000
33/64	0.5156	13.0968
17/32	0.5312	13.4937
35/64	0.5469	13.8906
	0.5512	14.0000
9/16	0.5625	14.2875
37/64	0.5781	14.6844
	0.5906	15.0000
19/32	0.5937	15.0812
39/64	0.6094	15.4781
5/8	0.6250	15.8750
	0.6299	16.0000
41/64	0.6406	16.2719
	0.6500	16.5100
21/32	0.6562	16.6687
	0.6620	16.8148
	0.6693	17.0000
43/64	0.6719	17.0656

11/16	0.6875	17.4625
45/64	0.7031	17.8594
	0.7087	18.0000
23/32	0.7187	18.2562
47/64	0.7344	18.6532
	0.7435	18.8849
	0.7480	19.0000
3/4	0.7500	19.0500
49/64	0.7656	19.4469
	0.7717	19.6012
25/32	0.7812	19.8433
	0.7874	20.0000
51/64	0.7969	20.2402
13/16	0.8125	20.6375
	0.8268	21.0000
53/64	0.8281	21.0344
27/32	0.8437	21.4312
55/64	0.8594	21.8281
	0.8661	22.0000
7/8	0.8750	22.2250
57/64	0.8906	22.6219
	0.9055	23.0000
29/32	0.9062	23.0187
59/64	0.9219	23.4156
15/16	0.9375	23.8125
	0.9449	24.0000
61/64	0.9531	24.2094
31/32	0.9687	24.6062
	0.9843	25.0000
63/64	0.9844	25.0031
1	1.0000	25.4000
	1.0236	26.0000
	1.0415	26.4541
	1.0480	26.6192
	1.0630	27.0000
	1.1025	28.0000
	1.1417	29.0000
	1.1812	30.0000
1-1/4	1.2500	31.7500
1-1/2	1.5000	38.1000
	1.5354	39.0000

	1.5748	40.0000
	1.6535	42.0000
1-3/4	1.7500	44.4500
	1.7717	45.0000
	1.8898	48.0000
	1.9685	50.0000
2	2.0000	50.8000
	2.0472	52.0000
	2.1654	55.0000
	2.2047	56.0000
2-1/4	2.2500	57.1500
	2.3622	60.0000
2-1/2	2.5000	63.5000
	2.5197	64.0000
2-3/4	2.7500	69.8500
	2.8346	72.0000
	2.9528	75.0000
3	3.0000	76.2000
	3.1496	80.0000
3-1/4	3.2500	82.5500
3-1/2	3.5000	88.9000
	3.5433	90.0000
3-3/4	3.7500	95.2500
	3.9370	100.0000
4	4.0000	101.6000
4-1/4	4.2500	107.9500
	4.3307	110.0000
4-1/2	4.5000	114.3000
	4.7244	120.0000
4-3/4	4.7500	120.6500
5	5.0000	127.0000
	5.1181	130.0000
5-1/4	5.2500	133.3500
5-1/2	5.5000	139.7000
	5.5118	140.0000
5-3/4	5.7500	146.0500
	5.9055	150.0000
6	6.0000	152.4000



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