

# Product Reference Guide



INA USA CORPORATION



# LINEAR CONTENTS



**PACIFIC INTERNATIONAL BEARING, INC.**  
2730 CAVANAGH CRT  
HAYWARD, CA 94545  
[www.pacificinternationalbearingsales.com](http://www.pacificinternationalbearingsales.com)

1-800-228-8895 • 510-887-6004  
FAX 510-887-6050

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 Retinax LX 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

Elges, Andrews and Corrotect are registered trademarks of INA USA Corporation.

Permaglide is a registered trademark and a product of KOLBENSCHMIDT AG, Neckarsulm, also produced in Greensburg, Indiana, USA.

All other products and company names are trademarks or registered trademarks of their respective companies.

ALL RIGHTS RESERVED

Reproduction of this publication in whole or in part without the express written consent of INA USA Corporation is prohibited.

Although every effort has been made to ensure the accuracy of the information contained in this catalog, INA shall not be liable for any omissions or errors. Purchasers should consult their own testing to determine the suitability of any product for a particular purpose. In no event shall INA be liable for any claims for damages based upon breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory.

All sales from catalog orders are subject to the Standard Terms and Conditions of Sale. Please contact your INA Sales Representative for a copy of the Standard Terms and Conditions of Sale.

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

©Copyright 1999, 2000, 2003 INA USA Corporation



## Use of INA Part Numbers & Suffixes

INA has extra options to give you the maximum flexibility in answering customer needs. Cage styles, seal types, internal clearances, and needle sorts are available to help you select the right part for your customers.

**UG** - Shell type open bearings come standard without grease (Example: SCE87 UG)

**AA040** - Shell type sealed bearings come standard with 40% Retinax LX2 (Example: SCE8799 AA040)

**0-7** - Radial needle roller & cage assemblies come standard with 0-7 Micron Needle Sorts  
(Example: NRA5X49.8G2 0-7, K25X33X24B 0-7)

*The table below provides a quick reference regarding our part numbers and integral suffixes. See each part section for part number schematics.*

PART / SUFFIX	DEFINITION	EXAMPLE
HK1010, SCE86PP	INA Part Number	SCE87, PASE1-1/2, RA100RR
2RS	2 Lip Seals	62032RS, 3200J2RS
2Z	2 Gap Shields	62032Z, 3300J2Z
J	Steel Cage	52100J, 3200J
KDD, KDDU	2 Gap Shields	LR5208KDD, LR5307KDDU
M	Bronze Cage	930M, 89460M
NPP, NPPU	2 Lip Seals	GRA100NPPB, LR5202NPPU
PP	2 Lip Seals	SCE87PP
RR	2 Land Riding Seals	G1103KRRB, RA100RR
TN	Plastic Cage	81102TN, 87410TN
X	Cylindrical OD for Track Rollers	NATV20PPX, NUTR20X
-	Normal Clearance	6203, 62032RS
C2	C2 Clearance	6302 C2, 63022Z C2
C3	C3 Clearance	6205 C3, 62052RS C3
C4	C4 Clearance	5305J C4, 6210 C4
AA040	40% - Shell Retinax LX2	HK1010 AA040
UG	Ungreased / Corrosion Protected	HK1010 UG
0-7	0-7 Micron - Needle Sort	NRA5X49.8G2 0-7, K25X33X24B 0-7
0-10	0-10 Micron - Needle Sort	AXK6590 0-10



# Section Contents

## LINEAR

<b>BEARING SERIES</b>	<b>BEARING DESCRIPTION</b>	<b>PAGE</b>
INFORMATION	LINEAR BEARINGS, GENERAL OVERVIEW	450
P / N IDENTIFICATION	LINEAR BEARINGS	460
COMPONENTS	LFS LINEAR BEARINGS	469
COMPONENTS	TS..W LINEAR BEARINGS	469
COMPONENTS	LFL LINEAR BEARINGS	469
COMPONENTS	LFCL LINEAR BEARINGS	469
COMPONENTS	LFR LINEAR BEARINGS	469
COMPONENTS	RUE LINEAR BEARINGS	469
COMPONENTS	KUSE LINEAR BEARINGS	469
COMPONENTS	KUVE LINEAR BEARINGS	469
COMPONENTS	KUVS LINEAR BEARINGS	469
COMPONENTS	KUE LINEAR BEARINGS	469
COMPONENTS	KUME LINEAR BEARINGS	469
RUE	LINEAR RECIRCULATING ROLLER BEARING AND GUIDEWAY ASSEMBLIES	470
RUE..H	LINEAR RECIRCULATING ROLLER BEARING AND GUIDEWAY ASSEMBLIES	472
RUKS	LOCKING ELEMENT	474
APLU	SHEET STEEL WIPER	476
BPLU	LUBRICATION ADAPTER PLATE	477
SMDE	MINIMAL QUANTITY LUBRICANT METERING UNIT	478
RUDS	DAMPING CARRIAGE	479
KUSE	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	480
KUSE..L	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	482
KUSE..H	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	484
KUSE..HL	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	486
APLSE	SHEET STEEL WIPER	488
AB KOL KWSE	COLLECTOR WIPER	489
BPLSE	LUBRICATION ADAPTER PLATE	490
FBALG KWSE	BELLOWS	491
KUVE	FOUR-ROW LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLY	492
KUVE..S,..SN, ..H	FOUR-ROW LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLY	494
KUVE..W,..WL	FOUR-ROW LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLY	496
KUE	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	498
KUE..H	LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	500
APLE	SHEET STEEL WIPER	502
BPLE	LUBRICATION ADAPTER PLATE	503
FBALG KWE	BELLOWS	504
KUVS	LINEAR BALL BEARING UNITS	506
KWVK..AL	CARRIAGES	508
TKVD	GUIDEWAYS	508



# Section Contents

## LINEAR

BEARING SERIES	BEARING DESCRIPTION	PAGE
KUME	MINIATURE LINEAR RECIRCULATING BALL BEARING AND GUIDEWAY ASSEMBLIES	510
LFCL	TRACK ROLLER LINEAR GUIDANCE SYSTEMS WITH HOLLOW SECTION CARRIAGE	512
LFL..SF	TRACK ROLLER LINEAR GUIDANCE SYSTEMS WITH OPEN CARRIAGE	514
LFKL..SF	TRACK ROLLER LINEAR GUIDANCE SYSTEMS WITH COMPACT CARRIAGE	516
LFDL	TRACK ROLLER LINEAR GUIDANCE SYSTEMS WITH BOGIE CARRIAGE	518
LFR	TRACK ROLLERS	520
LFZ	BOLTS	521
LFE	BOLTS	522
LFZ..A1	BOLTS	523
LFS	GUIDEWAYS	524
LFS..C	GUIDEWAYS	524
LFS..F	GUIDEWAYS	524
LFS..M	GUIDEWAYS	526
LFS..N	GUIDEWAYS	526
LFS..CH	GUIDEWAYS	528
LFS..FH	GUIDEWAYS	528
LFS..R	CURVED GUIDEWAYS	530
TSNW	SHAFT AND SUPPORT RAIL UNITS	531
TSNW..G	SHAFT AND SUPPORT RAIL UNITS	532
TSUW	SHAFT AND SUPPORT RAIL UNITS	533
TSSW	SHAFT AND SUPPORT RAIL UNITS	534
TSMW	SHAFT AND SUPPORT RAIL UNITS	535
AB LFR	CAP WIPERS	536
AB W	LUBRICATION AND WIPER UNITS	536
ANS LFS	END PLATES	537
AB	LUBRICATION AND WIPER UNITS	538
ABAL	SIDE PLATES	538
PAH	END STOPS	539
KA LFS	END COVERS	540
NAD	GROOVE STRIPS	540
ABTKO LFKL	ADAPTER	541
KX	MAX <sup>3</sup> INCH SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED	542
KXO	MAX <sup>3</sup> INCH SELF-ALIGNING LINEAR BALL BEARINGS - OPEN	542
KGX	MAX <sup>3</sup> INCH SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED WITH HOUSING	544
KGXO	MAX <sup>3</sup> INCH SELF-ALIGNING LINEAR BALL BEARINGS - OPEN WITH HOUSING	544
KTX	TANDEM MAX <sup>3</sup> INCH LINEAR BALL BEARINGS - CLOSED WITH HOUSING	546
KTXO	TANDEM MAX <sup>3</sup> INCH LINEAR BALL BEARINGS - OPEN WITH HOUSING	546
KS	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED	548
KSO	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - OPEN	548



# Section Contents

## LINEAR

BEARING SERIES	BEARING DESCRIPTION	PAGE
KGSG	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED WITH CAST 2 BOLT HOUSING	550
KGSS	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - ADJ. CLEARANCE WITH CAST 2 BOLT HOUSING	550
KGSO	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - OPEN WITH CAST 2 BOLT HOUSING	550
KGSAG	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED WITH CAST 4 BOLT HOUSING	552
KGSAS	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - ADJ. CLEARANCE WITH CAST 4 BOLT HOUSING	552
KGSAO	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - OPEN WITH CAST 4 BOLT HOUSING	552
KGSNG	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - CLOSED WITH EXTRUDED HOUSING	554
KGSNS	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - ADJ. CLEARANCE WITH EXTRUDED HOUSING	554
KGSNO	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - ADJ. CLEARANCE OPEN WITH EXTRUDED HOUSING	556
KGSNOS	MAX <sup>3</sup> METRIC SELF-ALIGNING LINEAR BALL BEARINGS - OPEN WITH EXTRUDED HOUSING	556
KTSG	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - CLOSED WITH EXTRUDED HOUSING	558
KTSS	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - ADJUSTABLE CLEARANCE WITH EXTRUDED HOUSING	558
KTSO	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - OPEN WITH EXTRUDED HOUSING	560
KTSOS	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - ADJ. CLEARANCE WITH OPEN EXTRUDED HOUSING	560
KGSC	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - OPEN WITH SIDE MOUNTED HOUSING	562
KGSCS	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - ADJUSTABLE CLEARANCE WITH SIDE MOUNTED HOUSING	562
KTFS	TANDEM MAX <sup>3</sup> METRIC LINEAR BALL BEARINGS - CLOSED WITH SIDE MOUNTED HOUSING	564
KH	LINEAR BALL BEARINGS	566
KGHK	LINEAR BALL BEARING AND HOUSING UNITS	568
KTHK	LINEAR BALL BEARING AND HOUSING UNITS	570
KGHW	LINEAR BALL BEARING AND HOUSING UNITS	572
KGHW T	LINEAR BALL BEARING AND HOUSING UNITS	574
KN	SELF-ALIGNING LINEAR BALL BEARINGS	576
KNO	SELF-ALIGNING LINEAR BALL BEARINGS, OPEN	576
KGN	SELF-ALIGNING LINEAR BALL BEARING AND HOUSING UNITS	578
KGNS	SELF-ALIGNING LINEAR BALL BEARING AND HOUSING UNITS	578
KGNO	SELF-ALIGNING LINEAR BALL BEARING AND HOUSING UNITS	580
KGNC	SELF-ALIGNING LINEAR BALL BEARING AND HOUSING UNITS	582



# Section Contents

## LINEAR

BEARING SERIES	BEARING DESCRIPTION	PAGE
KTN	TANDEM LINEAR BALL BEARING AND HOUSING UNITS	584
KTNO	TANDEM LINEAR BALL BEARING AND HOUSING UNITS - OPEN	586
KTFN	LINEAR BALL BEARING AND HOUSING UNITS	588
KB	LINEAR BALL BEARINGS	590
KBO	LINEAR BALL BEARINGS	590
KBS	LINEAR BALL BEARINGS	590
KGB	LINEAR BALL BEARING AND HOUSING UNITS	592
KGBO	LINEAR BALL BEARING AND HOUSING UNITS	592
KGBS	LINEAR BALL BEARING AND HOUSING UNITS	592
KGBA	LINEAR BALL BEARING AND HOUSING UNITS	594
KGBAO	LINEAR BALL BEARING AND HOUSING UNITS	594
KGBAS	LINEAR BALL BEARING AND HOUSING UNITS	594
KTB	LINEAR BALL BEARING AND HOUSING UNITS	596
KTBO	LINEAR BALL BEARING AND HOUSING UNITS	596
PAB	PERMAGLIDE LINEAR PLAIN BEARINGS	598
PAGBA	PERMAGLIDE LINEAR PLAIN BEARINGS	600
W	SHAFTS	602
WH	SHAFTS	604
TSNW	SHAFT AND SUPPORT RAIL UNITS	605
TSWW	SHAFT AND SUPPORT RAIL UNITS	605
TSUW	SHAFT AND SUPPORT RAIL UNITS	606
TSNW..G	SHAFT AND SUPPORT RAIL UNITS	607
TSSW	SHAFT AND SUPPORT RAIL UNITS	608
TSWWA	SHAFT AND SUPPORT RAIL UNITS	609
GWH..B	SHAFT SUPPORT BLOCKS	610
GWN..B	SHAFT SUPPORT BLOCKS	611
GW	SHAFT SUPPORT BLOCKS	612
TSN	SUPPORT RAILS	613
KBZ	LINEAR BALL BEARINGS	615
KBZ..OP	LINEAR BALL BEARINGS	616
KNZ	SELF ALIGNING LINEAR BALL BEARINGS	617
KNZ..OP	SELF ALIGNING LINEAR BALL BEARINGS	618
KGNZ	SELF ALIGNING MOUNTED UNITS	619
KGNZ..OP	SELF ALIGNING MOUNTED UNITS	620
KTNZ	SELF ALIGNING TANDEM MOUNTED UNITS	621
KTNZ..OP	SELF ALIGNING TANDEM MOUNTED UNITS	622
WZ	PRECISION GROUND SHAFTS	623
WZ..PDT	PRECISION GROUND SHAFTS	624
TSWZ	SHAFT SUPPORT RAILS	625





# Section Contents

## LINEAR

<b>BEARING SERIES</b>	<b>BEARING DESCRIPTION</b>	<b>PAGE</b>
TSWZ..PD	SHAFT SUPPORT RAILS	626
TSUZ	SHAFT SUPPORT RAILS	627
TSUZ..PD	SHAFT SUPPORT RAILS	628
MLFZ	RAIL	629
LFL	CARRIAGE	630
LFSB	RAIL	630
LFKL	CARRIAGE	631
MLF..ZR	LINEAR MODULAR UNIT WITH TRACK ROLLER GUIDANCE SYSTEM AND TOOTHED BELT DRIVE	632
MKUE..ZR	LINEAR MODULAR UNIT WITH RECIRCULATING BALL BEARING GUIDANCE SYSTEM AND TOOTHED BELT DRIVE	634
MKUE..KGT	LINEAR MODULAR UNIT WITH RECIRCULATING BALL BEARING GUIDANCE SYSTEM AND BALL SCREW DRIVE	636
RUS	LINEAR ROLLER BEARING BLOCK, WITH SEPARATOR	638
RUSZ	INCH LINEAR ROLLER BEARING BLOCK, WITH SEPARATOR	640
PR	LINEAR ROLLER BEARING BLOCK, FULL COMPLEMENT	642
VUS	ADJUSTING GIBS	644
RUSV	LINEAR ROLLER BEARINGS WITH INTEGRAL ADJUSTING GIB	646
RGT	PLANETARY ROLLER SCREW	648
KGS	ROLLED THREAD BALL SCREWS	658
KGF	FLANGED BALL NUT FOR BALL SCREWS	659
KGM	CYLINDRICAL BALL NUT FOR BALL SCREWS	660
KGS	ROLLED THREAD BALL SCREW - FORM D ENDS	661
KGS	ROLLED THREAD BALL SCREW - FORM W, N AND Z ENDS	662
BF	LINEAR FLAT STEEL CAGE & ROLLERS, SINGLE ROW	663
FF	LINEAR FLAT PLASTIC CAGE & ROLLERS, SINGLE ROW, SNAP CONNECTORS	663
H	LINEAR FLAT ALUMINUM CAGE & ROLLERS, SINGLE ROW	663
HR	LINEAR FLAT ALUMINUM & PLASTIC CAGE & CYLINDRICAL ROLLERS, SINGLE ROW	663
FF..ZW	LINEAR FLAT PLASTIC CAGE & ROLLERS, DOUBLE ROW, SNAP CONNECTORS	664
H..ZW	LINEAR FLAT ALUMINUM CAGE & ROLLERS, DOUBLE ROW	664
HR..ZW	LINEAR FLAT STEEL CAGE & ROLLERS, DOUBLE ROW	664
FFW	LINEAR FLAT PLASTIC CAGE & ROLLERS, DOUBLE ROW AT 90 DEGREE BEND, SNAP CONNECTORS	665
HRW	LINEAR FLAT STEEL CAGE & ROLLERS, DOUBLE ROW AT 90 DEGREE BEND	665
HW	LINEAR FLAT ALUMINUM CAGE & ROLLERS, DOUBLE ROW AT 90 DEGREE BEND	665





