

LINEAR MOTION SOLUTIONS

Simplicity® Self-Lubricated Bearings, Guides, Systems & Slides



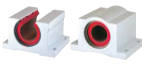
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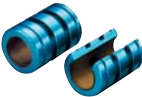
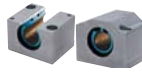
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The data and specifications in this publication have been carefully compiled and are believed to be accurate and correct. However, it is the responsibility of the user to determine and ensure the suitability of PBC Linear® products for a specific application. PBC Linear's only obligation will be to repair or replace without charge, any defective components if returned promptly. No liability is assumed beyond such replacement. Specifications are subject to change without notice. Consult www.pbclinear.com for the latest technical updates.

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SIMPLICITY® LINEAR SHAFTING - ISO METRIC

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SIMPLICITY® BALL BEARINGS - JIS METRIC

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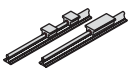
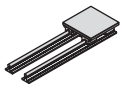
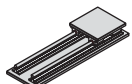
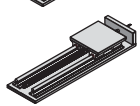
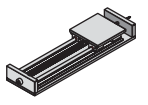
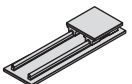
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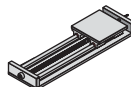
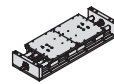
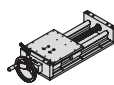
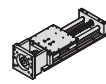
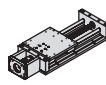
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Simplicity® Self-Lubricating Bearings

Ordering Information

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SERIES

FL - Standard Inch Series
 FM - ISO Metric Series
 FMT - Compact ISO Metric Thin Wall Series
 FG - "FAG™" Thin Wall Interchange
 FJ - JIS Standard Series
 PS - Inch Series Sleeve Bearings
 PSF - Inch Series Flange Bearings
 PSM - ISO Metric Series Sleeve Bearings
 PSFM - ISO Metric Series Flange Bearings

O.D. Features

NOTE: Available ONLY on the "FL, FM, FJ" series
No Entry - Standard Straight O.D. bearing
A - Crowned "self-aligning" O.D. bearing (closed only)

I.D. Features

NOTE: Does NOT apply to "PS, PSF, PSM, PSFM"
No Entry - Standard Precision running clearance on the I.D.
C - Compensated running clearance on the I.D.

Closed or Open Style

No Entry - Standard Closed bearing
N - Open series bearing (not available in "FLA")
NOTE: Available ONLY on the "FL, FM, FJ" series

Bearing Shell Material

NOTE: Available ONLY on "FL, FM, FMT, FG, FJ" series
No Entry - Standard Aluminum Alloy
***S** - 316 Stainless Steel
NOTE: Made to order. No finish plating or anodize available.

Nominal Shaft Diameter

NOTE: English units in 16ths of an inch
 Metric units in mm

FL

A

C

N

S

16

- D

E

JKM

Q

Seal Options

NOTE: Available only with "FL, FM, FJ" series.
D - Double seals of Standard Polymod® material
DU - Double seals of moly impregnated urethane material
DV - Double seals of viton - high temperature material
NOTE: Available size FL08-FL32 and FM20-FM80

Bearing Liner Material

No Entry - Standard FrelonGOLD® liner for hardened steel shafting and Feather Shafting®
***E** - Special FrelonJ® liner for soft shafting (aluminum, 300 series stainless steel, etc.)
***Limited availability may require special quote**

Internal Lubrication

NOTE: Available with "FL, FM and FJ" series only.
No Entry - Standard bearing - NO lube system
JKM - Thru hole, and internal felt wick to help lubrication retention and flow. (NOTE: Zerk fitting added to O.D. of PAC & PACM)
NOTE: Available for size "FM12 - FM80" only.

Special Modifications

NOTE: Consult Factory
No Entry - Standard Options
Q - Shipped Oil Free (Consult Factory)

The data and specifications in this publication have been carefully compiled and are believed to be accurate and correct. However, it is the responsibility of the user to determine and ensure the suitability of PBC Linear™ products for a specific application. PBC Linear's only obligation will be to repair or replace without charge, any defective components if returned promptly. No liability is assumed beyond such replacement. Specifications are subject to change without notice. Consult www.pbclinear.com for the latest technical updates.



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SERIES

NOTE: Standard Simplicity bearings are installed in housings

P - Standard Inch Pillow Blocks (FL)
PW - Inch Twin Pillow Blocks (FL)
PM - ISO Metric Pillow Blocks (FM)
SDS - Single Flange Mount Die Set (FLA)
SDSB - Single Flange Mount Die Set (FL)
DDS - Double Flange Mount Die Set (FLA)
DDSB - Double Flange Mount Die Set (FL)
SFP - Inch Single Flange Mounts (FL)
DFP - Inch Double Flange Mounts (FL)
PAC - Inch Die Set Bushings
PACM - ISO Metric Die Set Bushings
SFPM - ISO Metric Single Flange Mounts
DFPM - ISO Metric Double Flange Mounts
CFPM - ISO Metric Double Center Flange Mounts
SFPJ - JIS Metric Single Flange Mounts
DFPJ - JIS Metric Double Flange Mounts
CFPJ - JIS Metric Double Center Flange Mounts

Closed or Open Style

NOTE: Available ONLY on "P, PW, PM" series

No Entry - Standard Closed Series

N - Open Series

Housing I.D. Features

No Entry - Standard Spherical "self-aligning" I.D. in the housing.
 (Uses standard straight O.D. bearings)

B - Straight I.D. housing. (For rigid fit use standard bearing.
 For self-alignment use "FLA" bearings.)

NOTE: Available ONLY on "SFPM, DFPM, CFPM, SFPJ, DFPJ, CFPJ" series

No Entry - Standard Square Flange

R - Available Round Flange

Housings Only

No Entry - Housings with bearing included

E - Empty Housings with NO bearing included

Nominal Shaft Diameter

NOTE: English units in 16ths of an inch
 Metric units in mm

P **N** **B** **E** **16** - **C** **D** **E** **JKM** **Q**

Bearing I.D. Features

No Entry - Standard Precision running clearance on the I.D.

C - Compensated running clearance on the I.D.

Seal Options

NOTE: "PAC" and "PACM" available ONLY as "S, SU, or SV"

D - Double seals of Standard Polymod® material

DU - Double seals of moly impregnated urethane material

DV - Double seals of viton - high temperature material

Bearing Liner Material

No Entry - Standard FrelonGOLD® liner for hardened steel or ceramic coated aluminum

E - Special FrelonJ® liner for soft shafting
 (aluminum, 300 series stainless steel, 440 stainless steel shafting)

Internal Lubrication

No Entry - Standard pillowblock assembly with NO lubrication system

JKM - Thru holes, and internal felt wick to help lubrication retention and flow 1/4-28 Zerk.

Special Modifications

NOTE: Consult Factory

No Entry - Standard Options

Q - Shipped Oil Free (Consult Factory)

PLEASE NOTE: The catalog is designed to represent all possibilities, however may not all be standard parts. *These are options only - combination could lead to unavailable options.

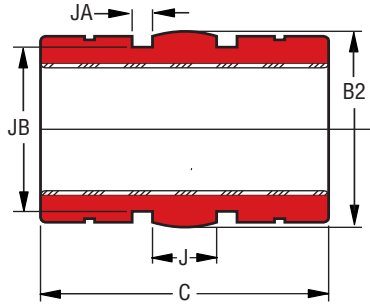


Linear Plane Bearing - FL

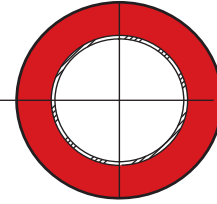
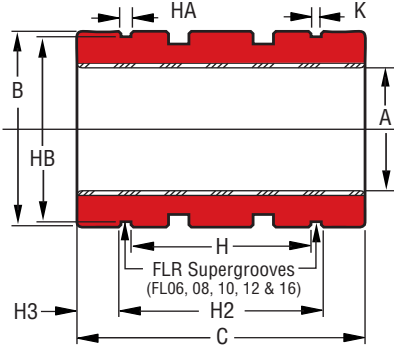
Simplicity® Self-Lubricating - Inch Series

FL LINEAR PLANE BEARINGS

*SELF-ALIGNING O.D. (FLA-XX)



STANDARD O.D. (FL-XX)



*Except for the O.D., bearings with the self-aligning feature have the same dimensions and tolerances as the standard bearing. There is a spherical crown on the O.D. to create the self-aligning feature. They are for use in a straight bore housing. Add an "A" to the part number per the example. More information on self-aligning bearings is on pages 41-42.

BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Allows additional running clearance				B STANDARD O.D.		B2		C LENGTH		CONCENTRIC	BEARING WEIGHT	K FLR RET. RING GR.
PART NO.		NOMINAL SIZE	A BEARING I.D.		PART NO.		A BEARING I.D.				SELF-ALIGNING FLA CROWN O.D.						
CLOSED	OPEN	(in.)	MIN.	MAX.	CLOSED	OPEN	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MAX.	(lbs.)	
FL 03	N / A	3/16	0.1877	0.1884	FLC 03	N / A	0.1897	0.1904	0.3740	0.3750	0.3725	0.3735	0.5470	0.5620	0.0010	0.0030	N / A
FL 04	FLN 04	1/4	0.2502	0.2511	FLC 04	FLCN 04	0.2522	0.2531	0.4990	0.5000	0.4975	0.4985	0.7350	0.7500	0.0010	0.0090	N / A
FL 06	FLN 06	3/8	0.3752	0.3761	FLC 06	FLCN 06	0.3772	0.3781	0.6240	0.6250	0.6225	0.6235	0.8600	0.8750	0.0010	0.0160	0.0720
FL 08	FLN 08	1/2	0.5002	0.5013	FLC 08	FLCN 08	0.5022	0.5033	0.8740	0.8750	0.8725	0.8735	1.2350	1.2500	0.0010	0.0410	0.0800
FL 10	FLN 10	5/8	0.6252	0.6263	FLC 10	FLCN 10	0.6272	0.6283	1.1240	1.1250	1.1225	1.1235	1.4850	1.5000	0.0010	0.0910	N / A
FL 12	FLN 12	3/4	0.7503	0.7516	FLC 12	FLCN 12	0.7533	0.7546	1.2490	1.2500	1.2475	1.2485	1.6100	1.6250	0.0010	0.1090	0.1710
FL 16	FLN 16	1	1.0003	1.0016	FLC 16	FLCN 16	1.0033	1.0046	1.5613	1.5625	1.5599	1.5609	2.2350	2.2500	0.0010	0.2280	0.1330
FL 20	FLN 20	1-1/4	1.2504	1.2519	FLC 20	FLCN 20	1.2544	1.2559	1.9988	2.0000	1.9974	1.9984	2.6100	2.6250	0.0010	0.4590	N / A
FL 24	FLN 24	1-1/2	1.5004	1.5019	FLC 24	FLCN 24	1.5044	1.5059	2.3738	2.3750	2.3724	2.3734	2.9850	3.0000	0.0010	0.7250	N / A
FL 32	FLN 32	2	2.0004	2.0022	FLC 32	FLCN 32	2.0054	2.0072	2.9986	3.0000	2.9973	2.9983	3.9850	4.0000	0.0010	1.4420	N / A
FL 40	FLN 40	2-1/2	2.5004	2.5022	FLC 40	FLCN 40	2.5054	2.5072	3.7484	3.7500	3.7472	3.7482	4.9850	5.0000	0.0013	2.8160	N / A
FL 48	FLN 48	3	3.0004	3.0022	FLC 48	FLCN 48	3.0064	3.0082	4.4980	4.5000	4.4970	4.4980	5.9850	6.0000	0.0015	4.9140	N / A
FL 64	FLN 64	4	4.0005	4.0026	FLC 64	FLCN 64	4.0065	4.0086	5.9980	6.0000	5.9970	5.9980	7.9850	8.0000	0.0020	11.8360	N / A

MOUNTING DIMENSIONAL INFORMATION

PART NO.		NOMINAL SIZE	H	HA	HB	TRUARC RET. RING PART NO.	J	JA	JB	PARKER O'RING PART NO.	H2	H3
CLOSED	OPEN	(in.)	BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.		BETWEEN O'RING GRVS.	O'RING GRV. WIDTH	O'RING GRV. DIA.		FLR BETWEEN RINGS	FLR RING EDGE
FL 03	N / A	3/16	0.375	0.030	0.352	N 5100-37	N / A	N / A	N / A	N / A	N / A	N / A
FL 04	FLN 04	1/4	0.437	0.041	0.467	N 5100-50	0.125	0.080	0.399	2-010	N / A	N / A
FL 06	FLN 06	3/8	0.562	0.041	0.587	N 5100-62	0.187	0.080	0.524	2-012	.711/.701	0.081
FL 08	FLN 08	1/2	0.875	0.048	0.820	N 5100-87	0.250	0.125	0.712	2-113	1.042/1.032	0.103
FL 10	FLN 10	5/8	1.000	0.058	1.060	N 5100-112	0.312	0.125	0.962	2-117	N / A	N / A
FL 12	FLN 12	3/4	1.062	0.058	1.177	N 5100-125	0.312	0.125	1.087	2-119	1.281/1.271	0.171
FL 16	FLN 16	1	1.625	0.070	1.471	N 5100-156	0.500	0.125	1.399	2-123	1.895/1.885	0.176
FL 20	FLN 20	1-1/4	1.875	0.070	1.889	N 5100-200	0.625	0.125	1.837	2-129	N / A	N / A
FL 24	FLN 24	1-1/2	2.250	0.089	2.241	N 5100-237	0.750	0.162	2.152	2-225	N / A	N / A
FL 32	FLN 32	2	3.000	0.105	2.839	N 5100-300	1.000	0.189	2.775	2-229	N / A	N / A
FL 40	FLN 40	2-1/2	3.750	0.123	3.553	N 5100-375	1.250	0.250	3.408	2-340	N / A	N / A
FL 48	FLN 48	3	4.500	0.123	4.309	N 5100-450	1.500	0.287	4.158	2-346	N / A	N / A
FL 64	FLN 64	4	6.000	0.145	5.748	N 5100-600	2.000	0.287	5.660	2-356	N / A	N / A

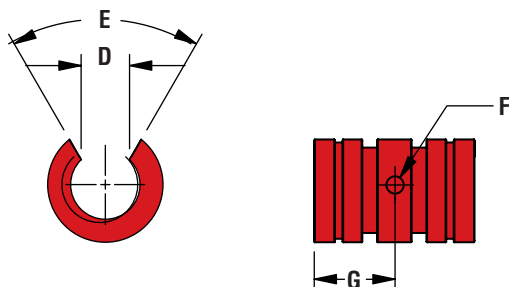
NOTES: FLR is not available on FL03 and FL04.

FLR is only available on FL06, FL08, FL10, FL12 and FL16.

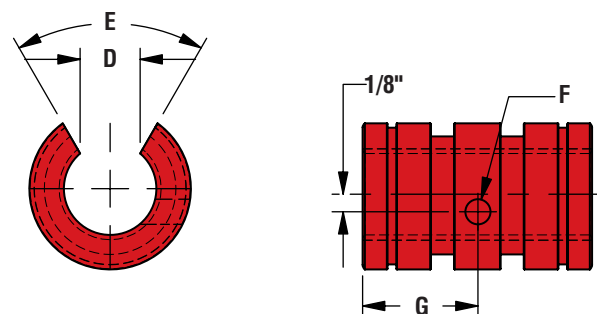


FL & FLN LINEAR BEARINGS

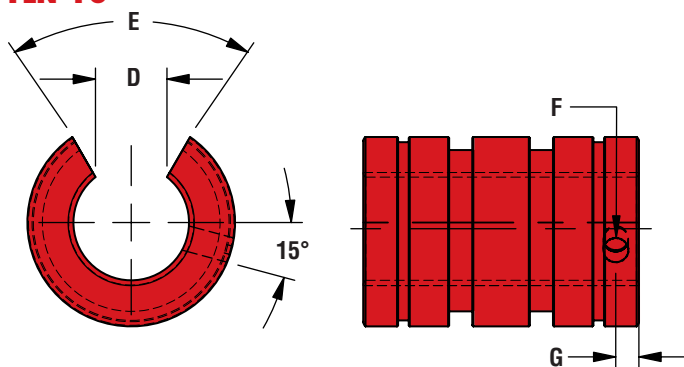
FLN 04 - FLN 06



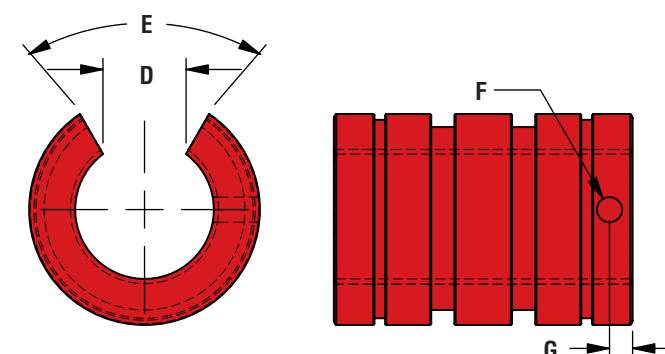
FLN 08



FLN 10



FLN 12 THRU FLN 64



OPEN DIMENSIONAL INFORMATION

PART NO.		NOMINAL SIZE	D SLOT WIDE MIN.	E SLOT ANGLE	F RETAINING HOLE DIA.	G RETAINING HOLE LOCATE (in.)	BEARING WEIGHTS (lbs.)
PRECISION	COMPENSATED	(in.)					
FLN 04	FLCN 04	1/4	0.188	60°	0.094	3/8	0.008
FLN 06	FLCN 06	3/8	0.250	60°	0.094	7/16	0.013
FLN 08	FLCN 08	1/2	0.313	60°	0.136	5/8	0.034
FLN 10	FLCN 10	5/8	0.375	60°	0.136	1/8	0.072
FLN 12	FLCN 12	3/4	0.438	60°	0.136	1/8	0.091
FLN 16	FLCN 16	1	0.563	60°	0.136	1/8	0.184
FLN 20	FLCN 20	1-1/4	0.625	60°	0.201	3/16	0.381
FLN 24	FLCN 24	1-1/2	0.750	60°	0.201	3/16	0.603
FLN 32	FLCN 32	2	1.000	60°	0.265	5/16	1.192
FLN 40	FLCN 40	2-1/2	1.250	60°	0.265	5/16	2.334
FLN 48	FLCN 48	3	1.500	60°	0.265	5/16	4.080
FLN 64	FLCN 64	4	2.000	60°	0.265	5/16	9.870

NOTE: All other dimensions same as closed bearing.

Frelon GOLD® and Frelon J are registered trademarks of PBC Linear™.

ACCESSORIES

Retaining Rings (Internal & External)	17
Seals, O-Rings, Zerk Fittings	17
Shafting (Steel, Ceramic Coated, Stainless Steel)	63-66
Support Rails	67

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA (sq. in.)	MAX. STATIC LOAD FRELON	
		GOLD (lbs.)	J (lbs.)
FL 03	0.110	220	100
FL 04	0.200	600	300
FL 06	0.340	1020	510
FL 08	0.650	1950	975
FL 10	0.980	2940	1470
FL 12	1.270	3810	1905
FL 16	2.350	7050	3525
FL 20	3.430	10830	5415
FL 24	4.700	14100	7050
FL 32	8.350	25050	12525
FL40	13.000	39000	19500
FL 48	18.800	56400	28200
FL 64	33.500	100500	50250

MAX. PV (ft./min. * psi)

Frelon Gold = 20000 PV

Frelon J = 10000 PV

MAX. Speed Running Dry (ft./min.)

Frelon Gold = 300 sfm

Frelon J = 140 sfm

MAX. Speed Running with Lubrication (ft./min.)

Frelon Gold = 825 sfm

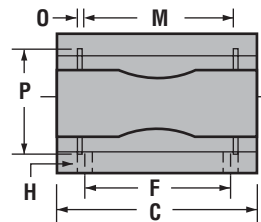
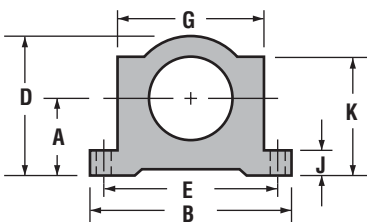
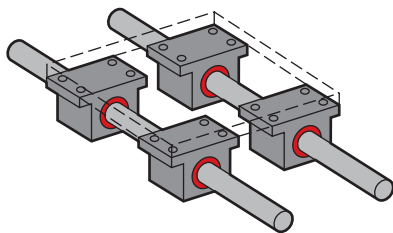
Frelon J = 400 sfm



Pillow Blocks - P & PN

Simplicity® Self-Lubricating

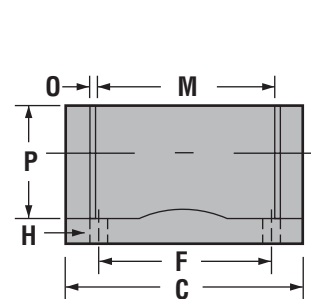
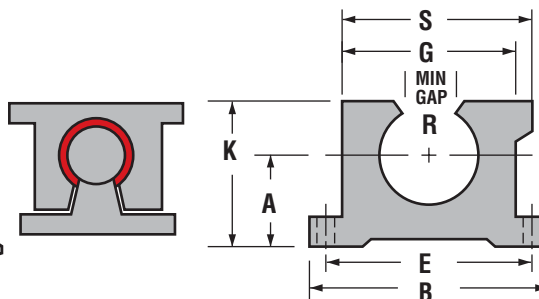
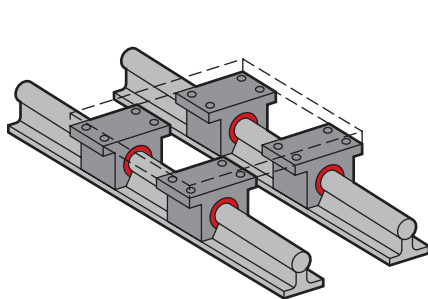
P & PN PILLOW BLOCKS



CLOSED PILLOW BLOCKS

PART NO. CLOSED		NOM. BRG. I.D.	A CENTERLINE	B	C	D	E	F	G BODY	H		J FLNG.		M GRV.	O GRV.	P GRV.	RETAINING RING PART NO.	MAX. STATIC LOAD (lbs.) FRELON		ASSEM. WT.
PRECISION	COMPEN.	MIN.	+/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK	K	SPACE	WIDTH	DIA.		GOLD	J	(lbs.)
P 04	P 04C	1/4"	0.437	1.625	1.19	0.813	1.312	0.750	1.000	#6	5/32"	0.188	0.750	0.750	0.039	0.532	6010026	600	300	0.099
P 06	P 06C	3/8"	0.500	1.750	1.31	0.938	1.437	0.875	1.125	#6	5/32"	0.188	0.875	0.875	0.039	0.665	6010027	1020	510	0.129
P 08	P 08C	1/2"	0.687	2.000	1.69	1.250	1.688	1.000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	6010028	1950	975	0.250
P 10	P 10C	5/8"	0.875	2.500	1.94	1.625	2.125	1.125	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	6010029	2940	1470	0.500
P 12	P 12C	3/4"	0.937	2.750	2.06	1.750	2.375	1.250	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	6010030	3710	1905	0.580
P 16	P 16C	1"	1.187	3.250	2.81	2.188	2.875	1.750	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	6010031	7050	3525	1.000
P 20	P 20C	1-1/4"	1.500	4.000	3.63	2.813	3.500	2.000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	6010032	10290	5145	2.000
P 24	P 24C	1-1/2"	1.750	4.750	4.00	3.250	4.125	2.500	3.500	1/4"	9/32"	0.500	2.875	3.000	0.086	2.519	6010033	14100	7050	3.000
P 32	P 32C	2"	2.125	6.000	5.00	4.063	5.250	3.250	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	6010034	25050	12525	6.500

- NOTES: (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 (2) All standard pillow blocks use standard "FL" series bearings found on page 10.
 (3) Straight bore, pre-assembled pillow blocks use standard "FL" series bearing.



OPEN PILLOW BLOCKS

PART NO. CLOSED		NOM. BRG. I.D.	A CENTERLINE	B	C	E	F	G BODY	H	J FLNG.	K	M GRV.	O GRV.	P GRV.	R MIN.	RETAINING RING PART NO.	MAX. STATIC LOAD (lbs.) FRELON		ASSEM. WT.	S OVERALL	
PRECISION	COMPEN.	MIN.	+/- .001	WIDTH	LENGTH	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK	HEIGHT	SPACE	WIDTH	DIA.	OPEN	GOLD	J	(lbs.)	WIDTH	
PN 08	PN 08C	1/2"	0.687	2.000	1.50	1.688	1.000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	0.313	6010035	1950	975	0.250	1.438
PN 10	PN 10C	5/8"	0.875	2.500	1.75	2.125	1.125	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	0.375	6010036	2940	1470	0.500	1.813
PN 12	PN 12C	3/4"	0.937	2.750	1.88	2.375	1.250	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	0.438	6010037	3710	1905	0.580	1.938
PN 16	PN 16C	1"	1.187	3.250	2.63	2.875	1.750	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	0.563	6010038	7050	3525	1.000	2.438
PN 20	PN 20C	1-1/4"	1.500	4.000	3.38	3.500	2.000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	0.625	6010039	10290	5145	2.000	3.125
PN 24	PN 24C	1-1/2"	1.750	4.750	3.75	4.125	2.500	3.500	1/4"	9/32"	0.500	2.875	3.000	0.086	2.519	0.750	6010040	14100	7050	3.000	3.625
PN 32	PN 32C	2"	2.125	6.000	4.75	5.250	3.250	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	1.000	6010041	25050	12525	6.500	4.688

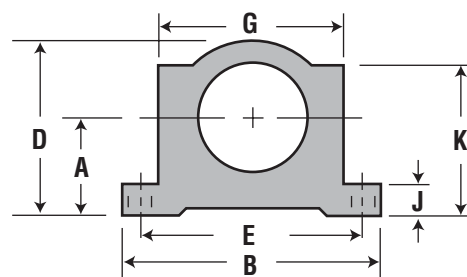
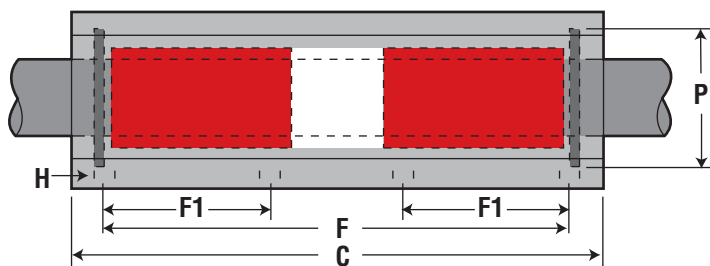
- NOTES: (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 (2) All standard pillow blocks use standard "FL" series bearings found on page 10.
 (3) All open pillow blocks have "notch".

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See Page 162 for SRB Series – Pre-assembled Pillow Block, Shaft and Support Rail.



PW & PWN TWIN PILLOW BLOCKS

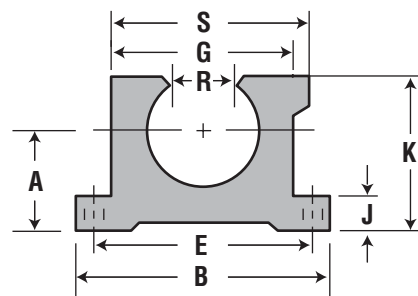
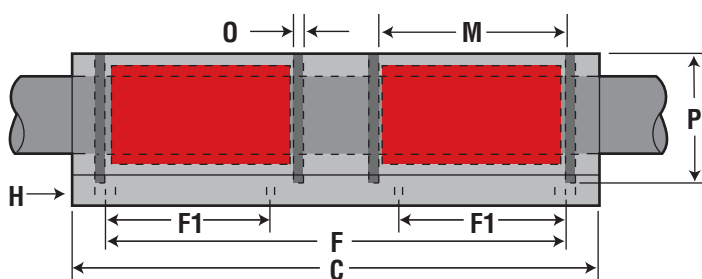


CLOSED TWIN PILLOW BLOCKS

PART NO. CLOSED		NOM. BRG. I.D.	A CENTERLINE	B	C	D	E	F	F1	G BODY	H		J FLNG.		P GRV.	RETAINING RING	MAX. STATIC LOAD (lbs.) FRELON		ASSEM. WT.
PRECISION	COMPEN.	MIN.	+/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK	K	DIA.	PART NO.	GOLD	J	(lbs.)
PW 04	PW 04C	1/4"	0.437	1.625	2.500	0.813	1.3120	2.0000	.750	1.000	#6	5/32"	0.188	0.750	0.532	6010026	1200	600	0.197
PW 06	PW 06C	3/8"	0.500	1.750	2.750	0.938	1.4370	2.2500	.875	1.125	#6	5/32"		0.875	0.665	6010027	2040	1020	0.258
PW 08	PW 08C	1/2"	0.687	2.000	3.500	1.250	1.6880	2.5000	1.000	1.375	#6	5/32"	0.250	1.125	0.931	6010028	3900	1950	0.500
PW 10	PW 10C	5/8"	0.875	2.500	4.000	1.625	2.1250	3.0000	1.125	1.750	#8	3/16"	0.281	1.438	1.197	6010029	5880	2940	1.000
PW 12	PW 12C	3/4"	0.937	2.750	4.500	1.750	2.3750	3.5000	1.250	1.875	#8	3/16"	0.313	1.563	1.330	6010030	7620	3810	1.125
PW 16	PW 16C	1"	1.187	3.250	6.000	2.188	2.8750	4.5000	1.750	2.375	#10	7/32"	0.375	1.938	1.671	6010031	14100	7050	2.188
PW 20	PW 20C	1-1/4"	1.500	4.000	7.500	2.813	3.5000	5.5000	2.000	3.000	#10	7/32"	0.438	2.500	2.122	6010032	20580	10290	4.250
PW 24	PW 24C	1-1/2"	1.750	4.750	9.000	3.250	4.1250	6.5000	2.500	3.500	1/4"	9/32"	0.500	2.875	2.519	6010033	28200	14100	6.375
PW 32	PW 32C	2"	2.125	6.000	10.000	4.063	5.2500	8.2500	3.250	4.500	3/8"	13/32"	0.625	3.625	3.182	6010034	50100	25050	13.500

- NOTES:** (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 (2) All standard pillow blocks use standard "FL" series bearings found on page 10.
 (3) Twin Closed Pillow Blocks use a spacer to separate the bearings.

- (4) Twin pillow blocks, closed, with no seal option: Use (2) standard bearings, based on compensated or std option.
 (5) Twin pillow blocks, closed, with double seal option: Use (2) single seal bearings.



OPEN TWIN PILLOW BLOCKS

PART NO. CLOSED		NOM. BRG. I.D.	A CENTERLINE	B	C	E	F	F1	G BODY	H		J FLNG.	K	M GRV.	O GRV.	P GRV.	R MIN.	RETAINING RING	MAX. STATIC LOAD (lbs.) FRELON		ASSEM. WT.	S OVERALL
PRECISION	COMPEN.	MIN.	+/- .001	WIDTH	LENGTH	+/- .010	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK	HEIGHT	SPACE	WIDTH	DIA.	OPEN	PART NO.	GOLD	J	(lbs.)	WIDTH
PWN 08	PWN 08C	1/2"	0.687	2.000	3.500	1.688	2.500	1.000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	0.313	6010035	3900	1950	0.400	1.438
PWN 10	PWN 10C	5/8"	0.875	2.500	4.000	2.125	3.000	1.125	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	0.375	6010036	5880	2940	0.910	1.813
PWN 12	PWN 12C	3/4"	0.937	2.750	4.500	2.375	3.500	1.250	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	0.438	6010037	7620	3810	1.060	1.938
PWN 16	PWN 16C	1"	1.187	3.250	6.000	2.875	4.500	1.750	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	0.563	6010038	14100	7050	1.970	2.438
PWN 20	PWN 20C	1-1/4"	1.500	4.000	7.500	3.500	5.500	2.000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	0.625	6010039	20580	10290	3.725	3.125
PWN 24	PWN 24C	1-1/2"	1.750	4.750	9.000	4.125	6.500	2.500	3.500	1/4"	9/32"	0.500	2.875	3.000	0.086	2.519	0.750	6010040	28200	14100	5.800	3.625
PWN 32	PWN 32C	2"	2.125	6.000	10.000	5.250	8.250	3.250	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	1.000	6010041	50100	25050	12.125	4.688

- NOTES:** (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 (2) All standard pillow blocks use standard "FL" series bearings found on page 10.
 (3) All open pillow blocks have "notch".

- (4) Twin pillowblocks, open, with no seal option: Use (2) standard open bearings, based on compensated or std option.
 (5) Twin pillowblocks, open, with double seal option: Use (2) double seal bearings.

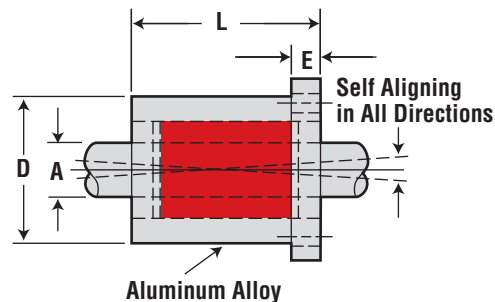
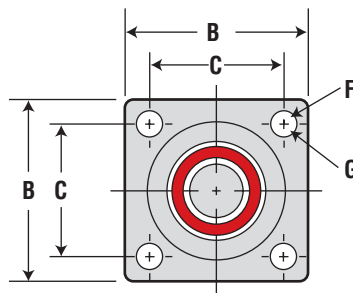
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Flange Mount - SFP & DFP

Simplicity® Self-Lubricating

SFP FLANGE MOUNTS

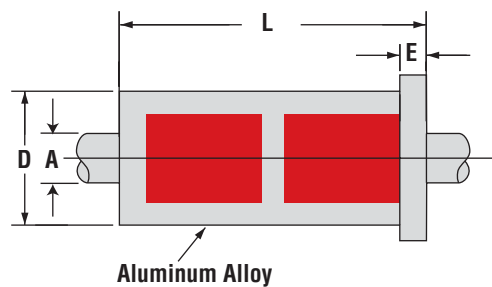
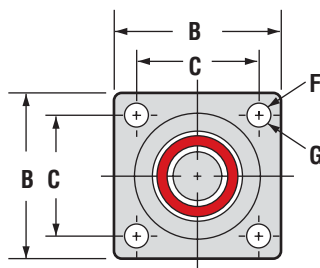


BASIC DIMENSIONAL INFORMATION

PART NO.		A BEARING NOMINAL SIZE	B FLANGE SQUARE	C HOLE SPACING	D BARREL DIA.	E FLANGE LENGTH	F BOLT SIZE	G HOLE SIZE	L LENGTH OVERALL	MAX. STATIC LOAD (lbs.) FRELON		ASSEMBLY WEIGHT (lbs.)
										GOLD	J	
SFP 08	SFP 08 C	1/2"	1.63	1.25	1.25	0.250	#8	0.187	1.687	1950	975	0.175
SFP 12	SFP 12 C	3/4"	2.38	1.75	1.75	0.375	#10	0.219	2.067	2940	1470	0.463
SFP 16	SFP 16 C	1"	2.75	2.125	2.25	0.500	1/4"	0.281	2.812	3810	1905	1.206

NOTES: All standard, pre-assembled "SFP" assemblies include a self-aligning housing and standard "FL" bearings found on page 10.
Straight bore "SFPB" assemblies include a straight bore housing and standard "FL" bearings.

DFP FLANGE MOUNTS



BASIC DIMENSIONAL INFORMATION

PART NO.		A BEARING NOMINAL SIZE	B FLANGE SQUARE	C HOLE SPACING	D BARREL DIA.	E FLANGE LENGTH	F BOLT SIZE	G HOLE SIZE	L LENGTH OVERALL	MAX. STATIC LOAD (lbs.) FRELON		ASSEMBLY WEIGHT (lbs.)
										GOLD	J	
DFP 08	DFP 08 C	1/2"	1.63	1.25	1.25	0.250	#8	0.187	3.375	3900	1950	0.325
DFP 12	DFP 12 C	3/4"	2.38	1.75	1.75	0.375	#10	0.219	4.188	5880	2940	0.825
DFP 16	DFP 16 C	1"	2.75	2.125	2.25	0.500	1/4"	0.281	5.625	7620	3810	1.750

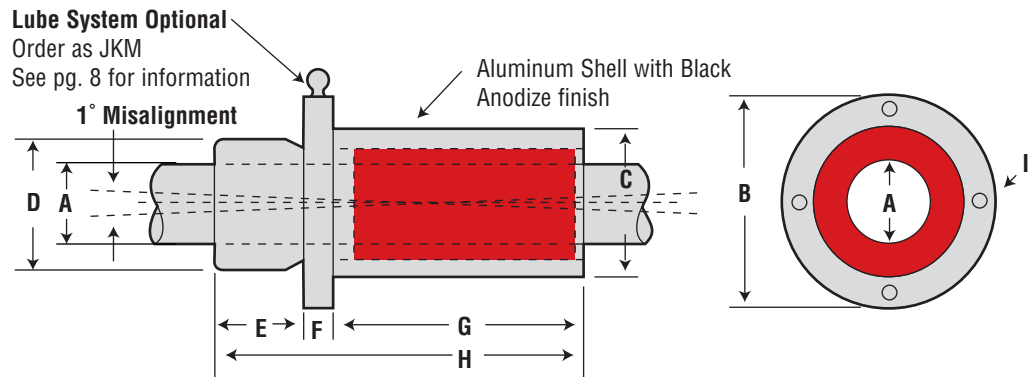
NOTES: All standard, pre-assembled "DFP" assemblies include a self-aligning housing and standard "FL" bearings found on page 10.
Straight bore "DFPB" assemblies include a straight bore housing and standard "FL" bearings.

Flange Mount Die Sets - SDS & DDS

Simplicity® Self-Lubricating



SDS FLANGE MOUNTS



Flange Mount Die Sets

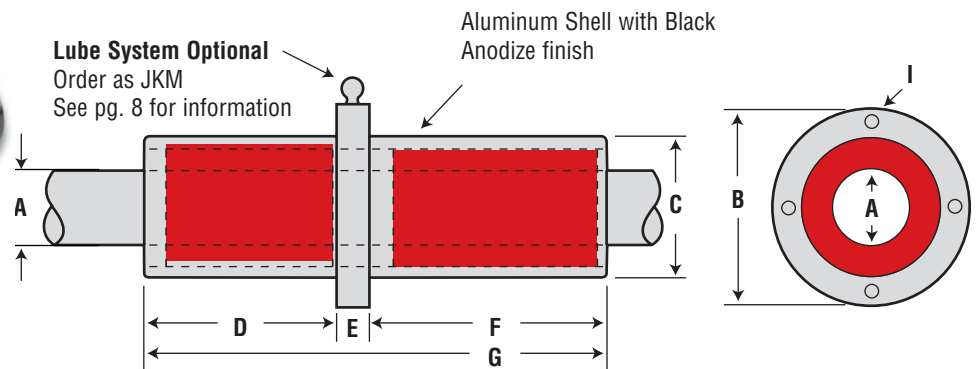
BASIC DIMENSIONAL INFORMATION

PART NO.		A BEARING NOMINAL SIZE	B FLANGE O.D.	C BARREL DIA.		D PILOT DIA.		E PILOT LENGTH	F FLANGE LENGTH	G HEAD LENGTH	H OVERALL LENGTH	I MOUNTING HOLES (4 PLACES)			MAX. STATIC LOAD (lbs.) FRELON		ASSEMBLY WEIGHT (lbs.)
PRECISION	COMPEN.			MIN.	MAX.	MIN.	MAX.					BOLT SIZE	HOLE SIZE	CIRCLE	GOLD	J	
SDS 16	SDS 16 C	1"	3.00	2.098	2.100	1.4995	1.500	0.875	0.562	2.500	3.927	1/4"	0.281	2.550	7050	3525	0.941
SDS 20	SDS 20 C	1-1/4"	3.50	2.598	2.600	1.7495	1.750	1.125	0.750	3.000	4.875	1/4"	0.281	3.050	10290	5145	1.852
SDS 24	SDS 24 C	1-1/2"	4.25	2.998	3.000	1.9990	2.000	1.375	1.000	3.500	5.875	3/8"	0.406	3.650	14100	7050	2.983
SDS 32	SDS 32 C	2"	5.00	3.748	3.750	2.4990	2.500	1.625	1.000	4.500	7.125	3/8"	0.406	4.400	25050	12525	5.032

NOTES: All standard, pre-assembled "SDS" assemblies include a straight bore housing and standard "FLA" bearings found on page 10.

All straight bore, pre-assembled "SDSB" assemblies include a straight bore housing and standard "FL" bearings found on page 10.

DDS FLANGE MOUNTS



BASIC DIMENSIONAL INFORMATION

PART NO.		A BEARING NOMINAL SIZE	B FLANGE O.D.	C BARREL DIA.		D LENGTH	E FLANGE LENGTH	F LENGTH	G OVERALL LENGTH	I MOUNTING HOLES (4 PLACES)			MAX. STATIC LOAD (lbs.) FRELON		ASSEMBLY WEIGHT (lbs.)
PRECISION	COMPEN.			MIN.	MAX.					BOLT SIZE	HOLE SIZE	CIRCLE	GOLD	J	
DDS 16	DDS 16 C	1"	3.00	2.098	2.100	2.5	0.562	3.500	6.563	1/4"	0.281	2.550	14100	7050	1.785
DDS 20	DDS 20 C	1-1/4"	3.50	2.598	2.600	3	0.750	4.250	8.000	1/4"	0.281	3.050	20580	10290	3.203
DDS 24	DDS 24 C	1-1/2"	4.25	2.998	3.000	3.5	1.000	5.000	9.500	3/8"	0.406	3.650	28200	14100	5.128
DDS 32	DDS 32 C	2"	5.00	3.748	3.750	4.5	1.000	6.500	12.000	3/8"	0.406	4.400	50100	25050	9.015

NOTES: All standard, pre-assembled "DDS" assemblies include a straight bore housing and standard "FLA" bearings found on page 10.

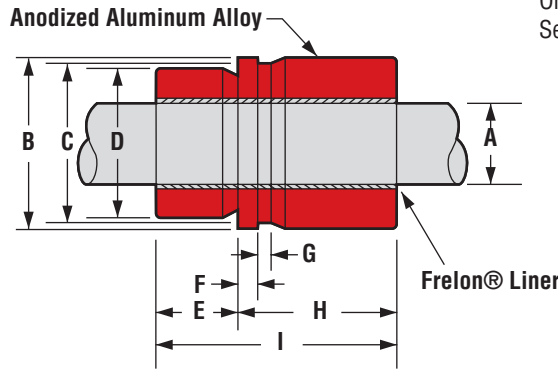
All straight bore, pre-assembled "DDSB" assemblies include a straight bore housing and standard "FL" bearings found on page 10.



Flange Mount Die Sets - PAC

Simplicity® Self-Lubricating

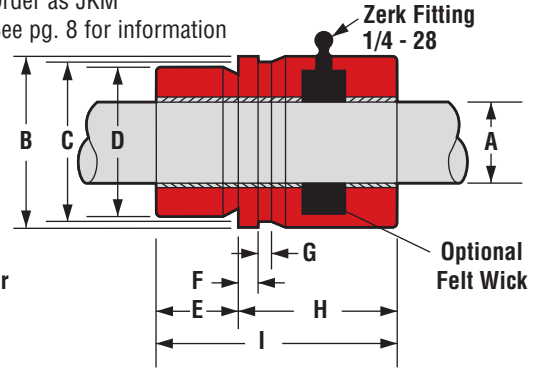
PAC FLANGE MOUNT DIE SETS



Lube System Optional

Order as JKM

See pg. 8 for information



BASIC DIMENSIONAL INFORMATION

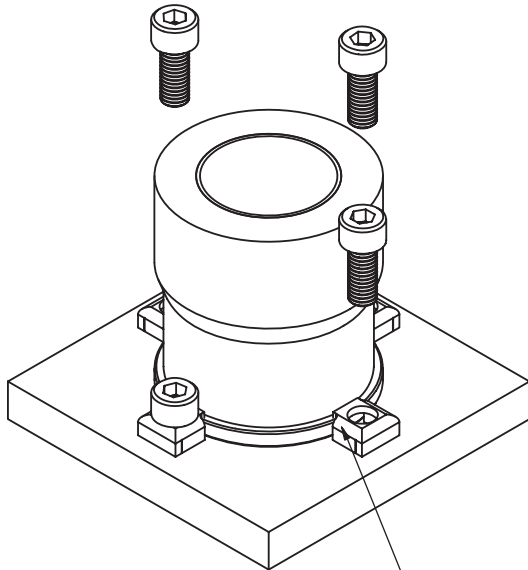
PART NO.	NOMINAL SIZE	A BEARING I.D.		PART NO.	A BEARING I.D.		B FLANGE & BARREL O.D.		C CLAMP DIA.	D PILOT O.D.		E PILOT LENGTH	F FLANGE LENGTH	G RECESS LENGTH	H HEAD LENGTH	I OVERALL LENGTH	EFFECTIVE SURFACE AREA	MAX STATIC LOAD (lbs.) FRELON		BEARING WEIGHT
		MIN.	MAX.		COMPENSATED	MIN.	MAX.	MIN.		MAX.	MIN.							MAX.	(sq. in.)	
PAC 750	3/4"	0.750	0.7510	PAC 750 C	0.7530	0.7540	1.285	1.300	1.012	1.1245	1.1250	0.812	0.188	0.712	2.000	2.812	2.209	6626	3313	0.625
PAC 100	1"	1.000	1.0010	PAC 100 C	1.0030	1.0040	1.723	1.738	1.450	1.4995	1.5000	0.875	0.188	0.812	2.250	3.125	3.272	9817	4909	1.000
PAC 125	1-1/4"	1.250	1.2510	PAC 125 C	1.2540	1.2550	2.097	2.112	1.825	1.7495	1.7500	1.125	0.188	0.812	2.375	3.500	4.581	13744	6872	1.500
PAC 150	1-1/2"	1.500	1.5012	PAC 150 C	1.5040	1.5050	2.346	2.361	2.075	1.9995	2.0000	1.375	0.188	1.112	2.750	4.125	6.480	19439	9719	2.000
PAC 200	2"	2.000	2.0014	PAC 200 C	2.0050	2.0064	3.095	3.110	2.825	2.4995	2.5000	1.625	0.188	1.112	3.000	4.625	9.687	29060	14530	4.188
PAC 250	2-1/2"	2.500	2.5016	PAC 250 C	2.5050	2.5065	3.595	3.610	3.325	2.9995	3.0000	1.875	0.188	1.112	3.500	5.375	14.072	42215	21108	6.000
PAC 300	3"	3.000	3.0020	PAC 300 C	3.0060	3.0080	4.345	4.360	4.075	3.6245	3.6250	1.875	0.188	1.112	4.000	5.875	18.457	55371	27685	10.000

NOTES: Formula used for effective surface area is $(\pi \times ID \times L)/3$

Max Static load is effective surface area times max load for Frelon GOLD®

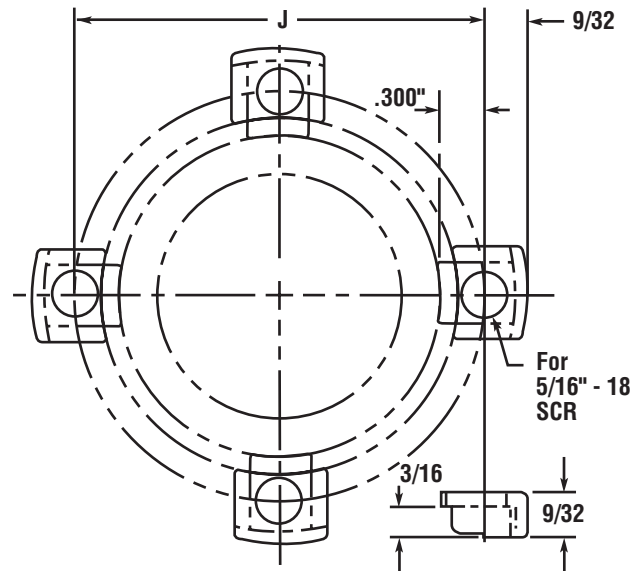
- 3000 psi is the rating for Frelon GOLD®

- 1500 psi is the rating for Frelon® J



4 PAC CLAMPS ARE SHIPPED WITH EACH DIESET

EXTRAS CAN BE ORDERED USING PART #: PACCLAMP



NOTE: DIMENSION FOR CALCULATING BOLT CIRCLE

$$J = C + .600"$$



RETAINING RINGS (EXTERNAL)

FL SERIES	PART NO.
FL03	6010001
FL04	6010002
FL06	6010003
FL08	6010004
FL10	6010005
FL12	6010006
FL16	6010007
FL20	6010008
FL24	6010009
FL32	6010010
FL40	6010011
FL48	6010012
FL64	6010013
FM SERIES	PART NO.
FM05	6010014
FM08	6010015
FM10	6010016
FM12	6010017
FM16	6010018
FM20	6010019
FM25	6010020
FM30	6010021
FM40	6010022
FM50	6010023
FM60	6010024
FM80	6010025

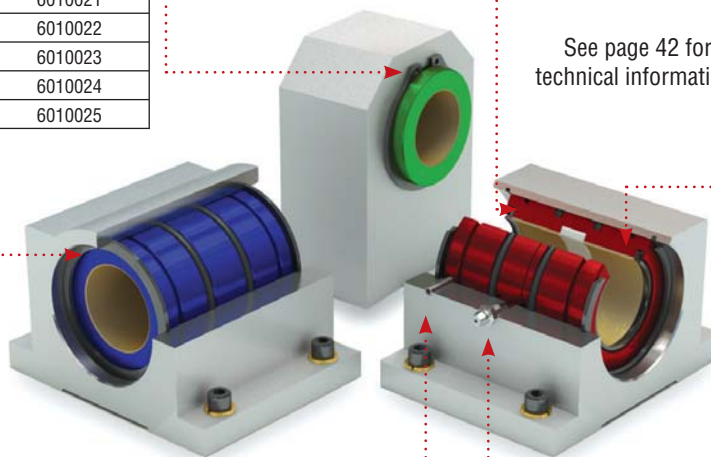
SEALS

FL SERIES	PART NO.		
OPEN	POLYMOD	VITON	URETHANE
FL08	6030001	6030009	6030017
FL10	6030002	6030010	6030018
FL12	6030003	6030011	6030019
FL16	6030004	6030012	6030020
FL20	6030005	6030013	6030021
FL24	6030006	6030014	6030022
FL32	6030007	6030015	6030023
FL40	6030008	6030016	6030024
FL48	*	*	6030025
FL64	*	*	6030026
FM SERIES	PART NO.		
FM20	*	*	6030027
FM25	*	*	6030028
FM30	*	*	6030029
FM35	*	*	6030030
FM40	*	*	6030031
FM50	*	*	6030032
FM60	*	*	6030033
FM80	*	*	6030034

O-RINGS

FL SERIES	PART NO.	
OPEN	NITRILE BUNO 70	VITON
FL04	6000001	*
FL06	6000002	6000037
FL08	6000003	6000038
FL10	6000004	6000039
FL12	6000005	6000040
FL16	6000006	6000041
FL20	6000007	6000042
FL24	6000008	6000043
FL32	6000009	6000044
FL40	6000010	6000045
FL48	6000011	6000046
FL64	6000012	6000047
FM/FJ SERIES	PART NO.	
FM05	6000013	*
FM08	6000014	*
FM10	6000015	*
FM12	6000016	*
FM16	6000017	*
FM20	6000018	*
FM25	6000019	*
FM30	6000020	*
FM40	6000021	*
FM50	6000022	*
FM60	6000023	*
FM80	6000024	*

See page 42 for technical information.



ZERK FITTINGS

INCH	PART NO.
1/4-28" Steel	6050002
1/4-28" Stainless	6050003
METRIC	PART NO.
M8x1.0 Steel	6050001
M8x1.0 Stainless	*

RETAINING RINGS (INTERNAL)

INCH OPEN	PART NO.		METRIC OPEN	PART NO.	
	STEEL	STAINLESS STEEL		STEEL	STAINLESS STEEL
PN08	6010035	6010064	PMN12	6010044	*
PN10	6010036	6010066	PMN16	6010045	*
PN12	6010037	6010068	PMN20	6010046	*
PN16	6010038	6010070	PMN25	6010047	*
PN20	6010039	6010072	PMN30	6010048	6010083
PN24	6010040	6010074	PMN40	6010049	*
PN32	6010041	6010076	PMN50	6010050	*
CLOSED	PART NO.		CLOSED	PART NO.	
P04	6010026	6010052	PM08	6010042	*
P06	6010027	6010053	PM10	6010043	*
P08	6010028	6010054	PM12	6010044	*
P10	6010029	6010055	PM16	6010045	*
P12	6010030	6010056	PM20	6010046	*
P16	6010031	6010057	PM25	6010047	*
P20	6010032	6010058	PM30	6010048	*
P24	6010033	6010059	PM40	6010049	*
P32	6010034	6010060	PM50	6010050	*

ROLL PIN

INCH OPEN	PART NO.
PN08	6060001
PN10	6060002
PN12	6060003
PN16	6060004
PN20	6060005
PN24	6060006
PN32	6060007
METRIC OPEN	PART NO.
PMN12	6060010
PMN16	6060009
PMN20	6060009
PMN25	6060010
PMN30	6060010
PMN40	6060012
PMN50	6060012



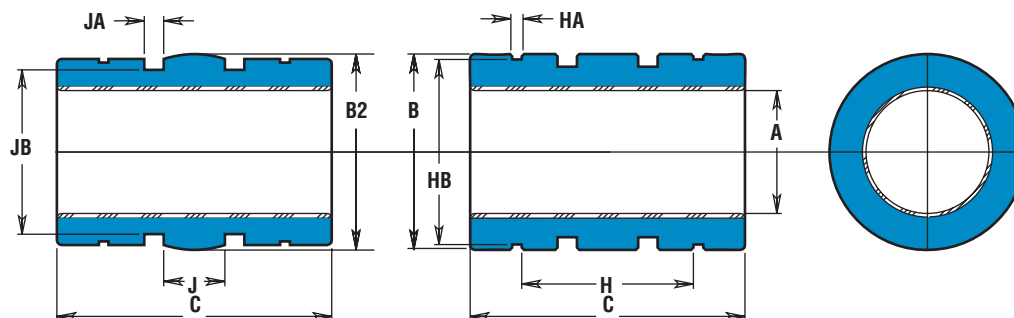
Linear Plane Bearing - FM

Simplicity® Self-Lubricating - ISO Metric

FM LINEAR BEARINGS

*SELF-ALIGNING O.D. (FMA-XX)

STANDARD O.D. (FM-XX)



*Except for the O.D., bearings with the self-aligning feature have the same dimensions and tolerances as the standard bearing. There is a spherical crown on the O.D. to create the self-aligning feature. They are used in a straight bore housing. Add an "A" to the part number per the example. More information on self-aligning bearings is on pages 41-42.

BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing				STANDARD O.D.		SEL-ALIGNING O.D. FMA		C LENGTH		CONCENTRIC MAX. (mm)	BEARING WEIGHT (kg.)
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		B O.D. (h7)		B2 O.D.					
CLOSED	OPEN	(mm)	MIN.	MAX.	CLOSED	OPEN	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
FM 05	FMN 05	5	5.010	5.028	FMC 05	FMCN 05	5.060	5.078	11.982	12	11.941	11.966	21.746	22	0.0254	0.004
FM 08	FMN 08	8	8.013	8.035	FMC 08	FMCN 08	8.063	8.085	15.982	16	15.941	15.966	24.746	25	0.0254	0.009
FM 10	FMN 10	10	10.013	10.035	FMC 10	FMCN 10	10.063	10.085	18.979	19	18.938	18.964	28.746	29	0.0254	0.014
FM 12	FMN 12	12	12.016	12.043	FMC 12	FMCN 12	12.066	12.093	21.979	22	21.938	21.963	31.746	32	0.0254	0.017
FM 16	FMN 16	16	16.016	16.043	FMC 16	FMCN 16	16.066	16.093	25.979	26	25.938	25.964	35.746	36	0.0254	0.028
FM 20	FMN 20	20	20.020	20.053	FMC 20	FMCN 20	20.096	20.129	31.975	32	31.938	31.963	44.746	45	0.0254	0.054
FM 25	FMN 25	25	25.020	25.053	FMC 25	FMCN 25	25.096	25.129	39.975	40	39.936	39.962	57.746	58	0.0254	0.109
FM 30	FMN 30	30	30.020	30.053	FMC 30	FMCN 30	30.096	30.129	46.975	47	46.937	46.962	67.746	68	0.0254	0.176
FM 40	FMN 40	40	40.025	40.064	FMC 40	FMCN 40	40.127	40.166	61.970	62	61.935	61.961	79.746	80	0.0254	0.356
FM 50	FMN 50	50	50.025	50.064	FMC 50	FMCN 50	50.127	50.166	74.970	75	74.935	74.960	99.746	100	0.0254	0.628
FM 60	FMN 60	60	60.030	60.076	FMC 60	FMCN 60	60.182	60.228	89.965	90	89.931	89.957	124.492	125	0.0380	1.117
FM 80	FMN 80	80	80.030	80.076	FMC 80	FMCN 80	80.182	80.228	119.965	120	119.931	119.957	164.492	165	0.0510	2.679

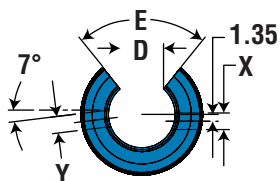
MOUNTING DIMENSIONAL INFORMATION

PART NO.		NOMINAL SIZE (mm)	H	HA	HB	RET. RING PART NO. (DIN 471)	J	JA	JB	METRIC O'RING PART NO.
CLOSED	OPEN		BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.		BETWEEN O'RING GRVS.	O'RING GRV. WIDTH	O'RING GRV. DIA.	
FM 05	FMN 05	5	12	1.14	11.5	12	5	2	9.86	9.7 x 1.3
FM 08	FMN 08	8	14	1.14	15.2	16	5.33	2	13.2	13 x 1.7
FM 10	FMN 10	10	19.4	1.32	18.0	19	5.63	2.44	15.7	15.5 x 2
FM 12	FMN 12	12	20	1.32	21.0	22	6	3.17	17.9	17.5 x 2.5
FM 16	FMN 16	16	22	1.32	24.9	26	8	3.17	21.9	21.5 x 2.5
FM 20	FMN 20	20	28	1.63	30.3	32	10	3.17	27.9	27.5 x 2.5
FM 25	FMN 25	25	40	1.90	37.5	40	12.5	3.17	35.9	35.5 x 2.5
FM 30	FMN 30	30	48	1.90	44.5	47	15	3.17	42.7	42.52 x 2.62
FM 40	FMN 40	40	56	2.20	59.0	62	20	4.1	56.3	56 x 3.5
FM 50	FMN 50	50	72	2.70	72.0	75	25	4.1	69.2	69 x 3.5
FM 60	FMN 60	60	95	3.20	86.4	90	30	7.1	81.7	81 x 5
FM 80	FMN 80	80	125	4.17	116.1	120	40	7.1	111.7	111 x 5

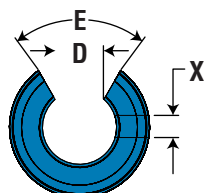


FM & FMN LINEAR BEARINGS

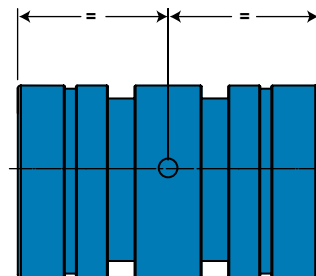
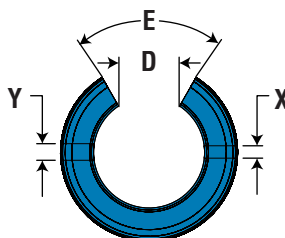
FMN 12 ONLY



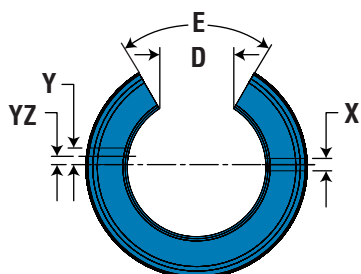
FMN 05 THRU FMN 10 & FMN 80



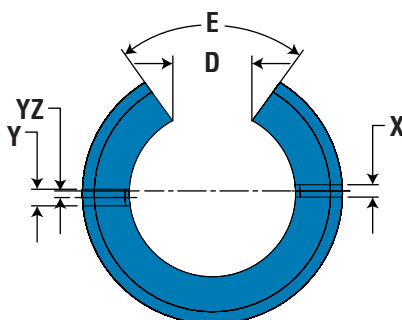
FMN 16 THRU FMN 20



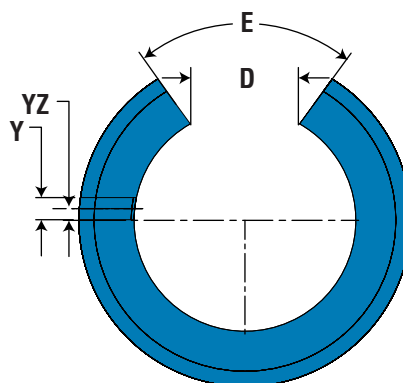
FMN 25 ONLY



FMN 30 THRU FMN 50



FMN 60 ONLY



OPEN DIMENSIONAL INFORMATION

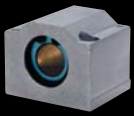
PART NO.	NOMINAL SIZE	D SLOT WIDE MIN.	E SLOT ANGLE	X RET. HOLE DIA.	Y RET. HOLE DIA.	YZ RET. HOLE LOCATE	BEARING WT. (kg.)
CLOSED	(mm)						
FMN 05	5	3.2	60	2.2	N / A	N / A	0.0034
FMN 08	8	5.1	60	3.0	N / A	N / A	0.0077
FMN 10	10	6.4	60	3.0	N / A	N / A	0.0119
FMN 12	12	7.6	78	3.0	3.0	7.0	0.0156
FMN 16	16	10.4	78	2.2	3.0	0	0.0213
FMN 20	20	10.8	60	2.2	3.0	0	0.0439
FMN 25	25	13.2	60	3.0	3.0	1.5	0.0893
FMN 30	30	14.2	72	3.0	3.0	2.0	0.1460
FMN 40	40	19.5	72	3.0	3.0	1.5	0.2948
FMN 50	50	24.0	72	3.0	5.0	2.5	0.5202
FMN 60	60	29.6	72	N / A	6.0	0	0.9199
FMN 80	80	39.0	72	N / A	8.0	0	2.2269

ACCESSORIES

Retaining Rings (Internal & External) 17
 Seals, O-Rings, Zerk Fittings 17
 Metric Shafting (Steel, Ceramic Coated, Stainless Steel) 68

LOAD & SPEED DATA

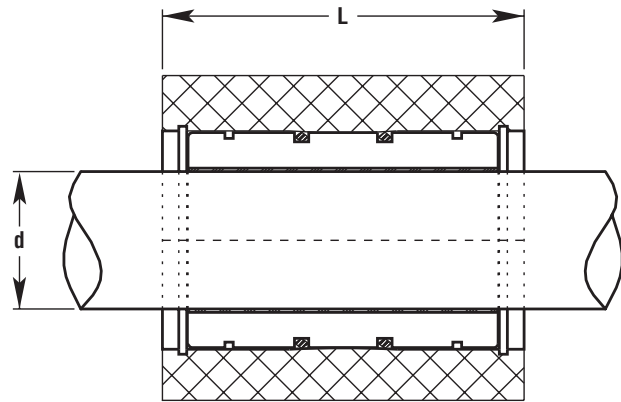
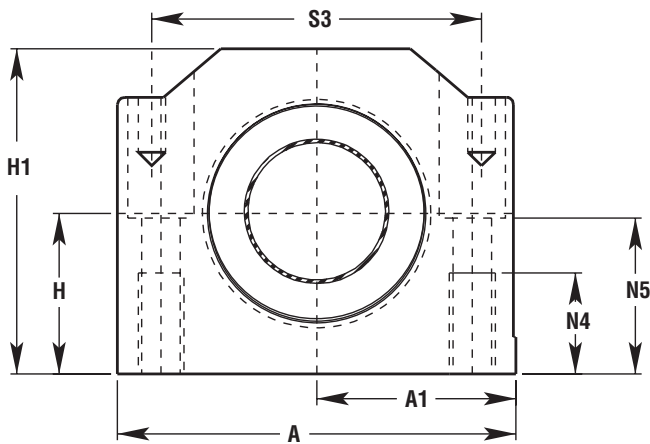
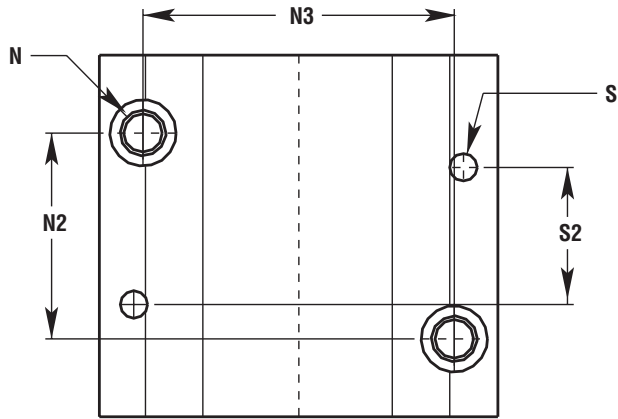
PART NO.	EFFECTIVE SURFACE AREA (sq. in.)	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA (cm ²)	MAX. STATIC LOAD FRELON	
		GOLD (lbs.)	J (lbs.)		GOLD (N)	J (N)
FMN 05	0.171	511	256	1.10	2276	1138
FMN 08	0.310	926	463	2.00	4120	2060
FMN 10	0.450	1345	672	2.90	5984	2992
FMN 12	0.589	1777	888	3.80	7907	3953
FMN 16	0.899	2667	1334	5.80	11870	5935
FMN 20	1.395	4167	2083	9.00	18541	9270
FMN 25	2.248	6715	3358	1.450	29881	14941
FMN 30	3.162	9444	4722	2.040	42026	21013
FMN 40	4.960	14814	7407	3.200	65923	32962
FMN 50	7.750	23147	11574	5.000	103005	51503
FMN 60	11.625	34721	17360	7.500	154508	77254
FMN 80	20.460	61120	30554	13.200	271933	135967
MAX. PV (m/min. * kg/sq. cm)		MAX. PV (m/s. * N/mm ²)				
Frelon Gold = 430 PV		Frelon Gold = 0.70 PV				
Frelon J = 215 PV		Frelon J = 0.35 PV				
MAX. Speed Running Dry (m/min.)		MAX. Speed Running Dry (m/s.)				
Frelon Gold = 91.4		Frelon Gold = 1.52				
Frelon J = 42.6		Frelon J = 0.71				
MAX. Speed Running with Lubrication (m/min.)		MAX. Speed Running with Lubrication (m/s.)				
Frelon Gold = 251.5		Frelon Gold = 4.19				
Frelon J = 122		Frelon J = 2.03				



Pillow Blocks - PM

Simplicity® Self-Lubricating

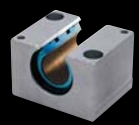
PM CLOSED PILLOW BLOCKS



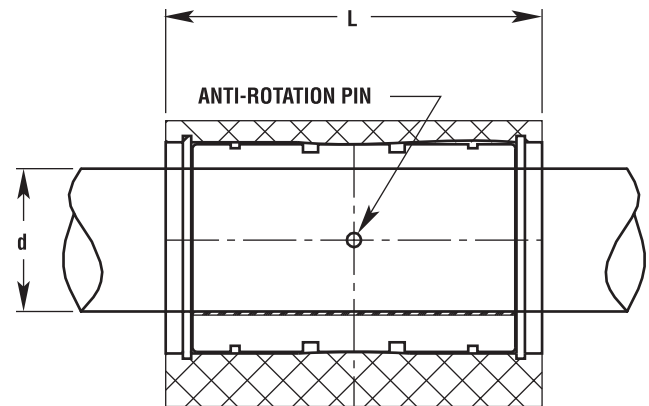
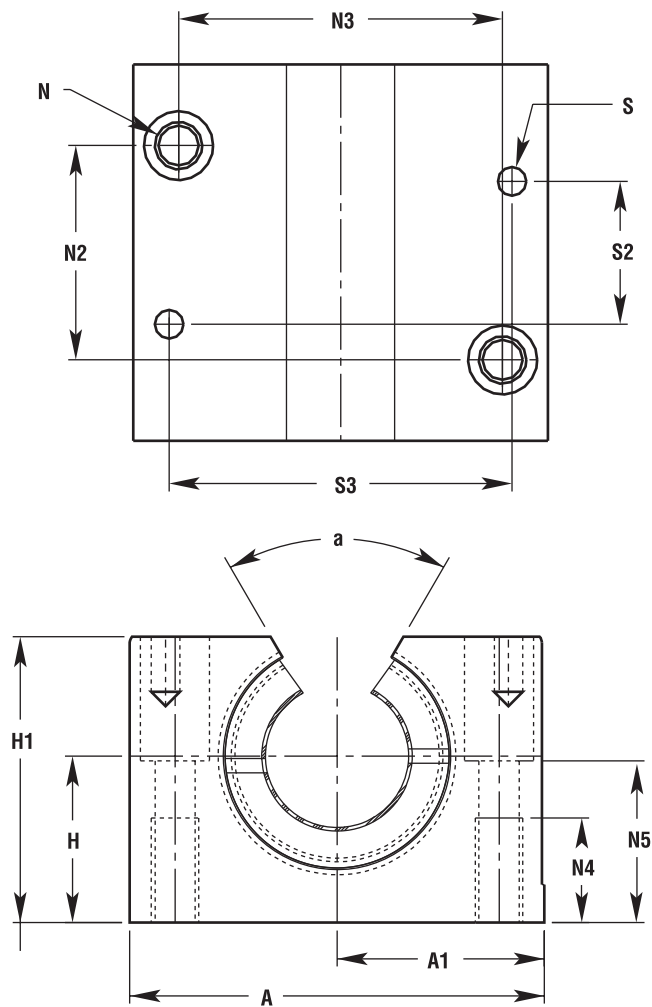
BASIC DIMENSIONAL INFORMATION

PART NO. CLOSED		d NOM. I.D.	H CENTERLINE	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	MAX. STATIC LOAD (lbs.) FRELON		MAX. STATIC LOAD (N) FRELON		ASSEM. WT.
PRECISION	COMPEN.	MIN.	.015	HEIGHT	WIDTH	.013	LENGTH	BOLT								GOLD	J	GOLD	J	(kg.)
PM 08	PM 08 C	8	15	28	35	17.5	32	M4 x 0.7	20.15	25.15	9	14.5	N / A	N / A	N / A	926	463	4120	206	0.069
PM 10	PM 10 C	10	16	31.5	40	20	36	M5 x 0.8	20.15	29.15	11	15	4	29	31	1345	672	5984	2992	0.095
PM 12	PM 12 C	12	18	35	43	21.5	39	M5 x 0.8	23.15	32.15	11	16.5	4	32	34	1777	888	7907	3953	0.118
PM 16	PM 16 C	16	22	42	53	26.5	43	M6 x 1.0	26.15	40.15	13	21	4	35	42	2667	1334	11870	5935	0.200
PM 20	PM 20 C	20	25	50	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	4167	2083	18541	9270	0.329
PM 25	PM 25 C	25	30	60	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	6715	3358	29881	14941	0.655
PM 30	PM 30 C	30	35	71	87	43.5	79	M10 x 1.5	45.15	68.15	22	34	6	30	72	9444	4722	42026	21013	1.020
PM 40	PM 40 C	40	45	91	108	54	91	M12 x 1.75	58.15	86.15	26	44	8	35	90	14814	7407	65923	32962	1.846
PM 50	PM 50 C	50	50	105	132	66	113	M16 x 2.0	50.20	108.20	34	49	10	42	108	23147	11574	103005	51503	3.169

- NOTES:** (1) Standard pillow block assembly includes self-aligning housing and precision bearing.
 (2) All standard metric pillow blocks use standard "FM" series bearings found on page 18.
 (3) Straight bore pillow block assembly includes standard O.D. "FM" series bearing in straight bore housing.



PMN OPEN PILLOW BLOCKS



BASIC DIMENSIONAL INFORMATION

PART NO. CLOSED		d NOM. I.D.	H CENTERLINE	H1	A	A1 CENTERLINE	L	N	N2	N3	N4	N5	S	S2	S3	a	MAX. STATIC LOAD (lbs.) FRELON		MAX. STATIC LOAD (N) FRELON		ASSEM. WT.
PRECISION	COMPEN.	MIN.	.015	HEIGHT	WIDTH	.013	LENGTH	BOLT									GOLD	J	GOLD	J	(kg.)
PMN 12	PMN 12C	12	18	28	43	21.5	39	M5 x 0.8	23.15	32.15	11	16.5	4	32	34	66	1777	888	7907	3953	0.096
PMN 16	PMN 16C	16	22	35	53	26.5	43	M6 x 1.0	26.15	40.15	13	21	4	35	42	68	2667	1334	11870	5935	0.162
PMN 20	PMN 20C	20	25	42	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	60	4167	2083	18541	9270	0.267
PMN 25	PMN 25C	25	30	51	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	60	6715	3358	29881	14941	0.536
PMN 30	PMN 30C	30	35	60	87	43.5	79	M10 x 1.5	45.15	68.15		34	6	30	72	60	9444	4722	42026	21013	0.831
PMN 40	PMN 40C	40	45	77	108	54	91	M12 x 1.75	58.15	86.15	26	44	8	35	90	60	14814	7407	65923	32962	1.499
PMN 50	PMN 50C	50	50	88	132	66	113	M16 x 2.0	50.20	108.20	34	49	10	42	108	60	23147	11574	103005	51503	2.539

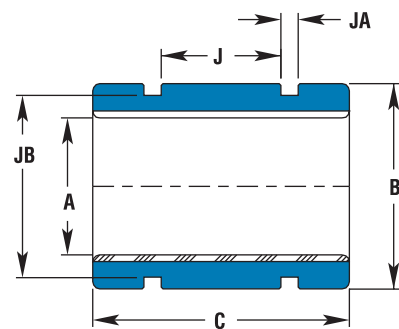
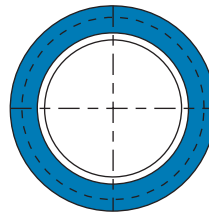
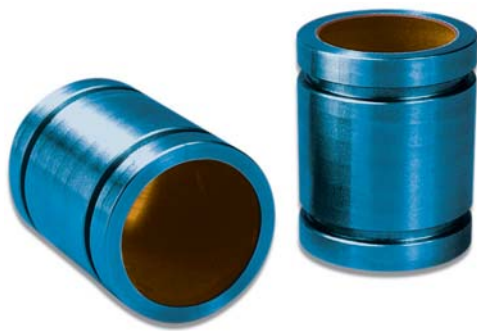
NOTES: (1) Standard pillow block assembly includes self-aligning housing and precision bearing.
(2) All standard metric pillow blocks use standard "FM" series bearings found on page 18.



Compact Thin Wall Bearing - FMT

Simplicity® Self-Lubricating

FMT COMPACT THIN WALL BEARINGS



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing				COMPENSATED I.D. SERIES Similar to standard ball bearing								
PART NO.	NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.	A BEARING I.D.							
CLOSED	(mm)	MIN.	MAX.	CLOSED	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MAX. (mm)	(kg.)
FMT 06	6	6.010	6.028	FMTC 06	6.060	6.078	11.982	12	21.746	22	0.0254	0.0057
FMT 08	8	8.013	8.035	FMTC 08	8.063	8.085	14.982	15	23.746	24	0.0254	0.0071
FMT 10	10	10.013	10.035	FMTC 10	10.063	10.085	16.982	17	25.746	26	0.0254	0.0085
FMT 12	12	12.016	12.043	FMTC 12	12.066	12.093	18.979	19	27.746	28	0.0254	0.0113
FMT 14	14	14.016	14.043	FMTC 14	14.066	14.093	20.979	21	27.746	28	0.0254	0.0128
FMT 16	16	16.016	16.043	FMTC 16	16.066	16.093	23.979	24	29.746	30	0.0254	0.0184
FMT 20	20	20.020	20.053	FMTC 20	20.096	20.129	27.979	28	29.746	30	0.0254	0.0227
FMT 25	25	25.020	25.053	FMTC 25	25.096	25.129	34.975	35	39.746	40	0.0254	0.0439
FMT 30	30	30.020	30.053	FMTC 30	30.090	30.129	39.975	40	49.746	50	0.0254	0.0652
FMT 40	40	40.025	40.064	FMTC 40	40.127	40.166	51.970	52	59.746	60	0.0254	0.1233
FMT 50	50	50.025	50.064	FMTC 50	50.127	50.166	61.970	62	69.746	70	0.0254	0.1772

MOUNTING DIMENSIONS

PART NO.		NOMINAL SIZE	J BETWEEN O-RING GRVS.	JA O-RING GRV. WIDTH	JB O-RING GRV. DIA.	METRIC O-RING PART NO.
PRECISION	COMPENSATED					
FMT 06	FMT 06	6	N / A	N / A	N / A	N / A
FMT 08	FMT 08	8	10.0	2.000	12.200	12 x 1.7
FMT 10	FMT 10	10	12.0	2.000	14.400	14 x 1.6
FMT 12	FMT 12	12	14.0	2.000	16.600	16 x 1.5
FMT 14	FMT 14	14	14.0	2.000	18.500	18 x 1.5
FMT 16	FMT 16	16	14.0	2.000	21.300	21.1 x 1.6
FMT 20	FMT 20	20	14.0	2.000	25.500	25 x 1.5
FMT 25	FMT 25	25	22.0	3.200	30.900	30.5 x 2.5
FMT 30	FMT 30	30	30.0	3.200	35.900	35.5 x 2.5
FMT 40	FMT 40	40	40.0	4.100	46.200	46 x 3.5
FMT 50	FMT 50	50	50.0	4.100	56.300	26 x 3.5

ACCESSORIES

Retaining Rings (Internal & External)	17
Seals, O-Rings, Zerk Fittings	17
Metric Shafting (Steel, Ceramic Coated, Stainless Steel)	68

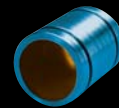
LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA (sq. cm.)	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA (cm ²)	MAX. STATIC LOAD FRELON	
		GOLD (lbs.)	J (lbs.)		GOLD (N)	J (N)
FMT 06	0.202	613	307	1.3	2727	1364
FMT 08	0.295	891	445	1.9	3963	1982
FMT 10	0.403	1204	602	2.6	5356	2678
FMT 12	0.527	1556	778	3.4	6926	3463
FMT 14	0.605	1816	908	3.9	8083	4042
FMT 16	0.744	2222	1111	4.8	9888	4944
FMT 20	0.930	2778	1389	6.0	12361	6180
FMT 25	1.550	4629	2315	10.0	20601	10301
FMT 30	2.325	6944	3472	15.0	30902	15451
FMT 40	3.720	11111	5555	24.0	49442	24721
FMT 50	5.425	16203	8102	35.0	72104	36052
MAX. PV (m/min. * kg/sq. cm) Frelon Gold = 430 PV Frelon J = 215 PV		MAX. PV (m/s. * N/mm ²) Frelon Gold = 0.70 PV Frelon J = 0.35 PV				
MAX. Speed Running Dry (m/min.) Frelon Gold = 91.4 Frelon J = 42.6		MAX. Speed Running Dry (m/s.) Frelon Gold = 1.52 Frelon J = 0.71				
MAX. Speed Running with Lubrication (m/min.) Frelon Gold = 251.5 Frelon J = 122		MAX. Speed Running with Lubrication (m/s.) Frelon Gold = 4.19 Frelon J = 2.03				

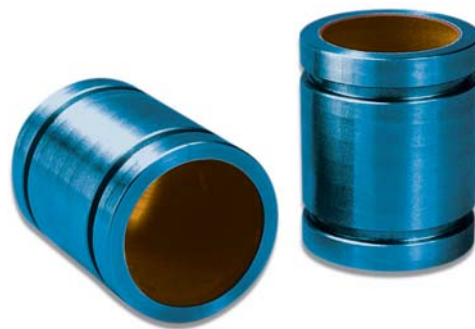
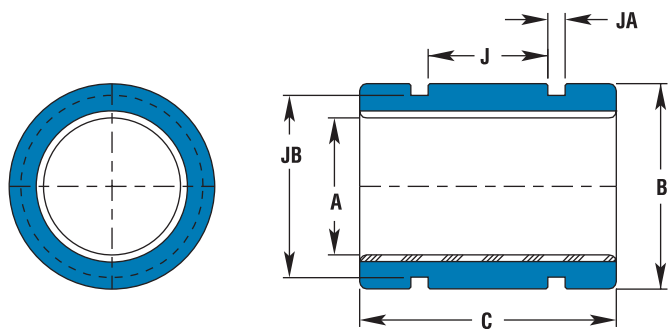
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Compact Thin Wall Bearing - FG

Simplicity® Self-Lubricating



FG COMPACT THIN WALL BEARINGS



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing				COMPENSATED I.D. SERIES Similar to standard ball bearing								
PART NO.	NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.	A BEARING I.D.							
CLOSED	(mm)	MIN.	MAX.	CLOSED	MIN.	MAX.	B O.D. (h7)		C LENGTH (h13)		CONCENTRIC	BEARING WEIGHT
FG 06	6	6.010	6.028	FGC 06	6.060	6.078	11.98	12	17.8	18	0.0254	0.004
FG 08	8	8.013	8.035	FGC 08	8.063	8.085	14.98	15	19.8	20	0.0254	0.006
FG 10	10	10.013	10.035	FGC 10	10.063	10.085	16.98	17	21.8	22	0.0254	0.008
FG 12	12	12.016	12.043	FGC 12	12.066	12.093	21.98	22	26.8	27	0.0254	0.018
FG 15	15	15.016	15.043	FGC 15	15.066	15.093	24.98	25	27.8	28	0.0254	0.022
FG 16	16	16.016	16.043	FGC 16	16.066	16.093	25.98	26	29.8	30	0.0254	0.025
FG 18	18	18.020	18.053	FGC 18	18.096	18.129	27.98	28	29.8	30	0.0254	0.027
FG 20	20	20.020	20.053	FGC 20	20.096	20.129	31.98	32	34.8	35	0.0254	0.044
FG 25	25	25.020	25.053	FGC 25	25.096	25.129	39.98	40	44.8	45	0.0254	0.091
FG 30	30	30.020	30.053	FGC 30	30.096	30.129	44.98	45	53.8	54	0.0254	0.127
FG 35	35	35.025	35.064	FGC 35	35.127	35.166	51.98	52	61.7	62	0.0254	0.189
FG 40	40	40.025	40.064	FGC 40	40.127	40.166	59.98	60	71.7	72	0.0254	0.301
FG 50	50	50.025	50.064	FGC 50	50.127	50.166	74.98	75	89.7	90	0.0254	0.596

MOUNTING DIMENSIONS

PART NO.		NOMINAL SIZE	J BETWEEN O-RING GRVS.	JA O-RING GRV. WIDTH	JB O-RING GRV. DIA.	METRIC O-RING PART NO.
PRECISION	COMPENSATED					
FG 06	FGC 06	6	N / A	N / A	N / A	N / A
FG 08	FGC 08	8	8.0	2.032	12.201	12 x 1.7
FG 10	FGC 10	10	8.3	2.032	14.415	14 x 1.6
FG 12	FGC 12	12	12.0	3.175	17.907	17.5 x 2.5
FG 15	FGC 15	15	12.7	3.175	20.671	20 x 2.65
FG 16	FGC 16	16	12.7	3.175	21.882	21.5 x 2.5
FG 18	FGC 18	18	14.0	3.175	23.885	23.5 x 2.5
FG 20	FGC 20	20	17.0	3.175	27.864	27.5 x 2.5
FG 25	FGC 25	25	24.0	3.175	35.865	35.5 x 2.5
FG 30	FGC 30	30	30.0	3.175	40.895	40 x 2.5
FG 35	FGC 35	35	36.0	4.115	46.200	46 x 3.5
FG 40	FGC 40	40	37.3	4.115	54.255	53 x 3.5
FG 50	FGC 50	50	50	4.115	69.215	69 x 3.5

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA (sq. cm.)	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA (cm²)	MAX. STATIC LOAD FRELON	
		GOLD (lbs.)	J (lbs.)		GOLD (N)	J (N)
FG 06	1.1	498	249	1.10	2217	1109
FG 08	1.6	741	370	1.60	3296	1648
FG 10	2.2	1018	509	2.20	4532	2266
FG 12	3.2	1499	749	3.20	6671	3335
FG 15	4.2	1944	972	4.20	8652	4326
FG 16	4.8	2222	1111	4.80	9888	4944
FG 18	5.4	2500	1250	5.40	11125	5562
FG 20	7.0	3241	1620	7.00	14421	7210
FG 25	11.3	5207	2604	11.30	23171	11586
FG 30	16.2	7500	3750	16.20	33374	16687
FG 35	21.7	10048	5024	21.70	44714	22357
FG 40	28.8	13333	6666	28.80	59331	29665
FG 50	45.0	20833	10416	45.00	92705	46352
MAX. PV (m/min. * kg/sq. cm) Frelon Gold = 430 PV Frelon J = 215 PV		MAX. PV (m/s. * N/mm²) Frelon Gold = 0.70 PV Frelon J = 0.35 PV				
MAX. Speed Running Dry (m/min.) Frelon Gold = 91.4 Frelon J = 42.6		MAX. Speed Running Dry (m/s.) Frelon Gold = 1.52 Frelon J = 0.71				
MAX. Speed Running with Lubrication (m/min.) Frelon Gold = 251.5 Frelon J = 122		MAX. Speed Running with Lubrication (m/s.) Frelon Gold = 4.19 Frelon J = 2.03				

ACCESSORIES

Retaining Rings (Internal & External)	17
Seals, O-Rings, Zerk Fittings	17
Metric Shafting (Steel, Ceramic Coated, Stainless Steel)	68

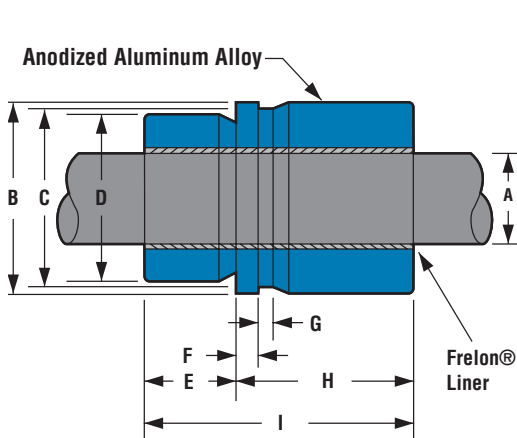
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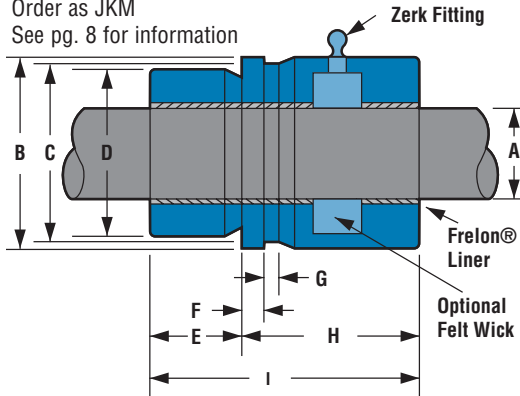
Die Set Bushing - PACM

Simplicity® Self-Lubricating

PACM DIE SET BUSHINGS



Lube System Optional
Order as JKM
See pg. 8 for information



BASIC DIMENSIONAL INFORMATION

PART NO.	NOMINAL SIZE	A BEARING I.D.		PART NO.	A BEARING I.D.		B FLANGE & BARREL O.D. (H7)		C CLAMP DIA.	D PILOT O.D. (H7)		E PILOT LENGTH	F FLANGE LENGTH	G RECESS LENGTH	H HEAD LENGTH	I OVERALL LENGTH	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON		BEARING WEIGHT
		MIN.	MAX.		MIN.	MAX.	MIN.	MAX.		MIN.	MAX.							GOLD	J	
PRECISION	(mm)	MIN.	MAX.	COMPENSATED	MIN.	MAX.	MIN.	MAX.	MIN.	MIN.	MAX.						(sq. cm)			(kg.)
PACM 19	19	19.020	19.053	PACM 19 C	19.096	19.129	33.975	34	29	27.979	28	18	5	18	52	70	13.928	28694	14411	0.282
PACM 25	25	25.020	25.053	PACM 25 C	25.096	25.129	43.975	44	39	37.975	38	23		20	57	80	20.944	43144	21670	0.551
PACM 32	32	32.020	32.053	PACM 32 C	32.096	32.129	52.970	53	48	44.975	45	26		64	90	30.159	62127	31196	0.834	
PACM 40	40	40.025	40.064	PACM 40 C	40.127	40.166	62.970	63	58	53.970	54	30		70	100	41.888	86289	43331	1.229	
PACM 50	50	50.025	50.064	PACM 50 C	50.127	50.166	78.970	79	74	64.970	65	35		75	110	57.596	118652	59576	2.055	
PACM 63	63	63.030	63.076	PACM 63 C	63.182	63.228	91.965	92	87	80.970	81	48		82	130	85.765	106056	88722	2.984	
PACM 80	80	80.030	80.076	PACM 80 C	80.182	80.228	110.965	111	106	99.965	100	48		102	150	125.664	258876	129992	4.772	

NOTES: Formula used for effective surface area is $(\pi \times ID \times L)/3$

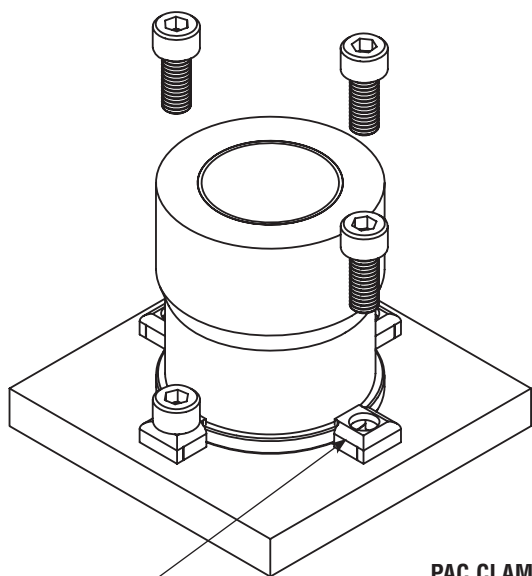
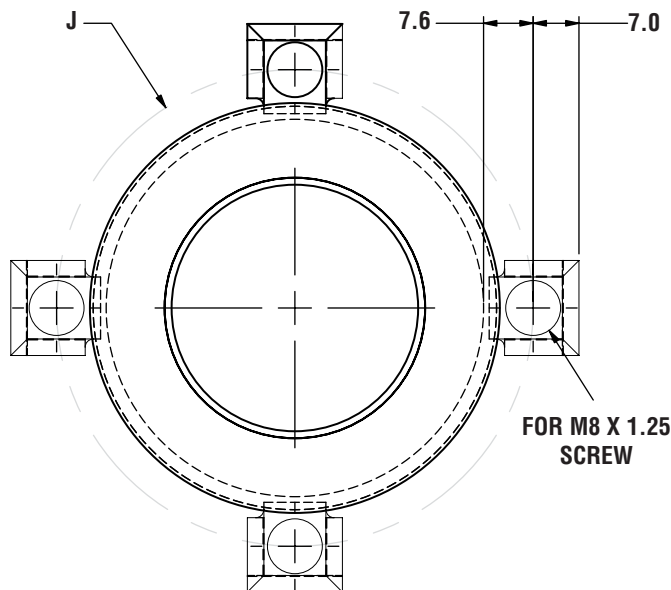
Max static load is effective surface area times max load for Frelon GOLD®

- 210 kgf/cm² is the rating for Frelon GOLD®

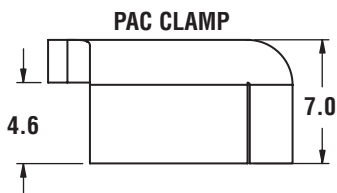
- 105.45 kgf/cm² is the rating for Frelon® J

NOTE: DIMENSION FOR CALCULATING BOLT CIRCLE

$$J = C + 15.8\text{mm}$$

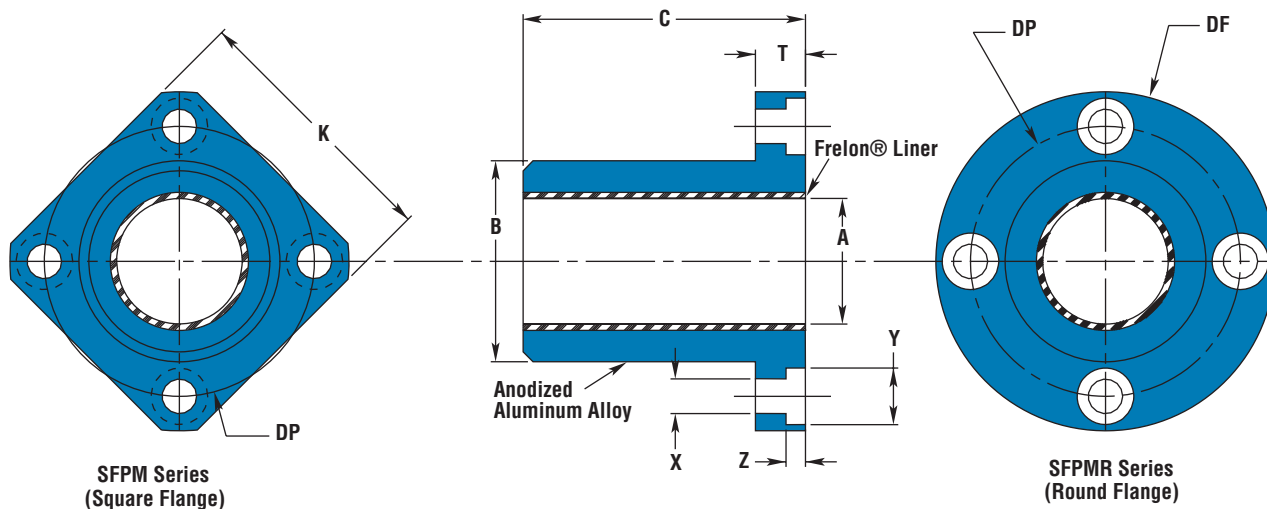


4 PAC CLAMPS ARE SHIPPED WITH EACH DIESET
EXTRAS CAN BE ORDERED USING PART #: PACCLAMP





SFPM FLANGE BEARINGS



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing				B BODY O.D. (h7)		C LENGTH (h13)		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON	
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.								
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	(sq. cm)	GOLD	J
SFPM 08	SFPMR 08	8	8.013	8.035	SFPM 08C	SFPMR 08C	8.063	8.085	15.982	16	24.8	25	2.094	4316	2168
SFPM 12	SFPMR 12	12	12.016	12.043	SFPM 12C	SFPMR 12C	12.066	12.093	21.979	22	31.8	32	4.021	8280	4159
SFPM 16	SFPMR 16	16	16.016	16.043	SFPM 16C	SFPMR 16C	16.066	16.093	25.979	26	35.8	36	6.032	12429	6239
SFPM 20	SFPMR 20	20	20.020	20.053	SFPM 20C	SFPMR 20C	20.096	20.129	31.975	32	44.8	45	9.425	19414	9751
SFPM 25	SFPMR 25	25	25.020	25.053	SFPM 25C	SFPMR 25C	25.096	25.129	39.975	40	57.7	58	15.184	31284	15706
SFPM 30	SFPMR 30	30	30.020	30.053	SFPM 30C	SFPMR 30C	30.096	30.129	46.975	47	67.7	68	21.363	44008	22102
SFPM 40	SFPMR 40	40	40.025	40.064	SFPM 40C	SFPMR 40C	40.127	40.166	61.970	62	79.7	80	33.510	69033	34669
SFPM 50	SFPMR 50	50	50.025	50.064	SFPM 50C	SFPMR 50C	50.127	50.166	74.970	75	99.7	100	52.360	107871	54161
SFPM 60	SFPMR 60	60	60.030	60.076	SFPM 60C	SFPMR 60C	60.182	60.228	89.965	90	124.6	125	78.540	161796	81246
SFPM 80	SFPMR 80	80	80.030	80.076	SFPM 80C	SFPMR 80C	80.182	80.228	119.965	120	164.6	165	138.230	284765	142991

NOTES: Formula used for effective surface area is $(\pi \cdot ID \cdot L)/3$
 Max static load is effective surface area times max load for Frelon GOLD®
 - 210 kgf/cm² is the rating for Frelon GOLD®
 - 105.45 kgf/cm² is the rating for Frelon® J

MOUNTING DIMENSIONAL INFORMATION

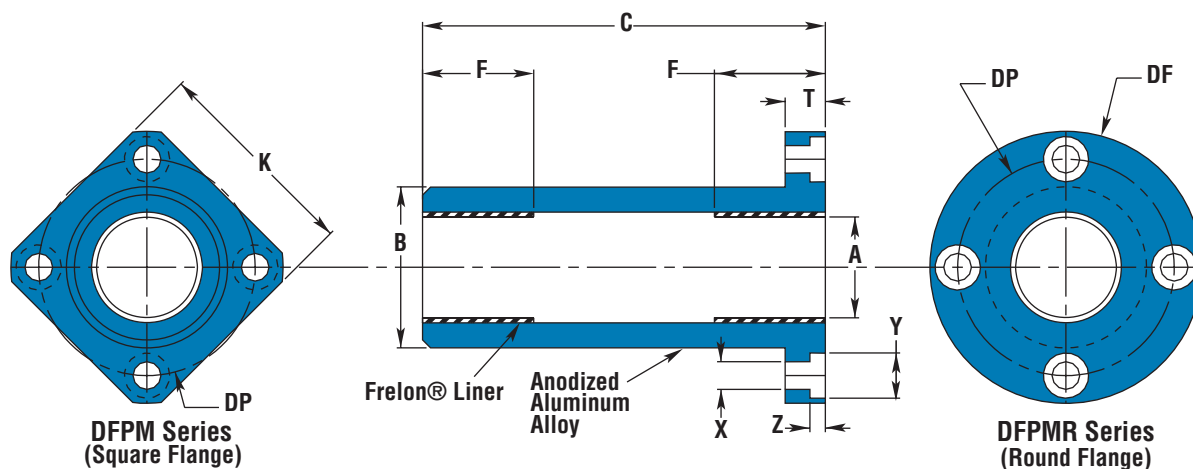
PART NO.		K SQUARE	Df O.D.	T LENGTH	Dp BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	SFPM WEIGHTS	SFPMR WEIGHTS
SQUARE	ROUND	MAX.	MAX.	MAX.								(kg.)	(kg.)
SFPM 08	SFPMR 08	25	32	8	24	3.5	6	3.1	M 3	0.012	0.012	0.018	0.022
SFPM 12	SFPMR 12	32	42	9	32	4.5	7.5	4.1	M 4			0.037	0.046
SFPM 16	SFPMR 16	35	46		36							0.047	0.058
SFPM 20	SFPMR 20	42	54	11	43	5.5	9	5.1	M 5	0.015	0.015	0.085	0.101
SFPM 25	SFPMR 25	50	62		51							0.156	0.172
SFPM 30	SFPMR 30	60	76	14	62	6.6	11	6.1	M 6			0.257	0.293
SFPM 40	SFPMR 40	75	98	18	80	9.0	14	8.1	M 8	0.017	0.017	0.500	0.595
SFPM 50	SFPMR 50	88	112		94							0.825	0.930
SFPM 60	SFPMR 60	106	134	24	112	11.0	17	11.1	M 10			0.020	0.020
SFPM 80	SFPMR 80	136	164		142					3.308	3.483		



Flange Bearing - DFPM

Simplicity® Self-Lubricating

DFPM FLANGE BEARING



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing									EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON		
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.										B BODY O.D. (h7)
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.					
DFPM 08	DFPMR 08	8	8.013	8.035	DFPM 08C	DFPMR 08C	8.063	8.085	15.982	16	44.7	45	12.1	2.027	4179	2099	
DFPM 12	DFPMR 12	12	12.016	12.043	DFPM 12C	DFPMR 12C	12.066	12.093	21.979	22	56.7	57	15.4	3.870	7976	4002	
DFPM 16	DFPMR 16	16	16.016	16.043	DFPM 16C	DFPMR 16C	16.066	16.093	25.979	26	69.7	70	20.4	6.836	14087	7073	
DFPM 20	DFPMR 20	20	20.020	20.053	DFPM 20C	DFPMR 20C	20.096	20.129	31.975	32	79.7	80	22.1	9.257	19071	9575	
DFPM 25	DFPMR 25	25	25.020	25.053	DFPM 25C	DFPMR 25C	25.096	25.129	39.975	40	111.6	112	33.1	17.331	35708	17933	
DFPM 30	DFPMR 30	30	30.020	30.053	DFPM 30C	DFPMR 30C	30.096	30.129	46.975	47	122.6	123	35	21.991	45303	22749	
DFPM 40	DFPMR 40	40	40.025	40.064	DFPM 40C	DFPMR 40C	40.127	40.166	61.970	62	150.6	151	44	36.861	75939	38131	
DFPM 50	DFPMR 50	50	50.025	50.064	DFPM 50C	DFPMR 50C	50.127	50.166	74.970	75	191.6	192	69.5	72.780	149936	75282	
DFPM 60	DFPMR 60	60	60.030	60.076	DFPM 60C	DFPMR 60C	60.182	60.228	89.965	90	208.6	209	73	91.735	188980	94892	

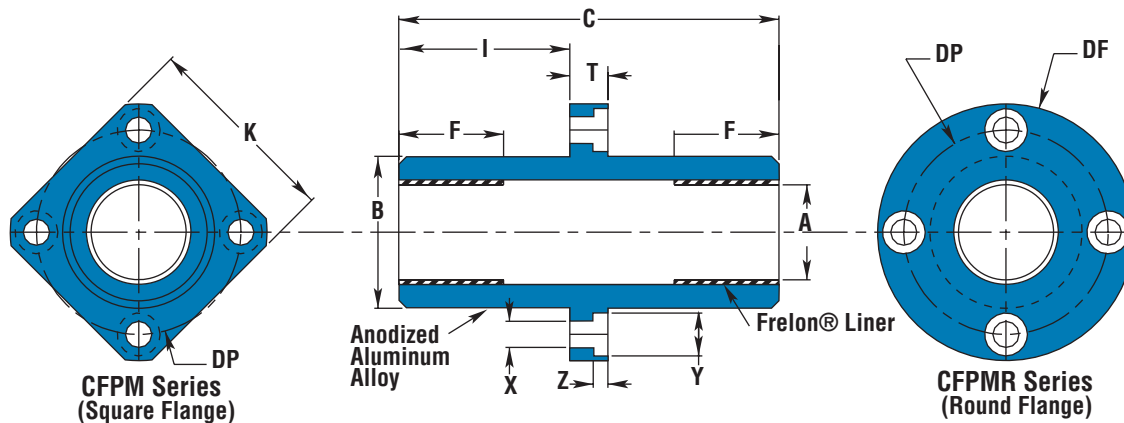
NOTES: Formula used for effective surface area is $(\pi * ID * L)/3$
 Max static load is effective surface area times max load for Frelon GOLD®
 - 210 kgf/cm² is the rating for Frelon GOLD®
 - 105.45 kgf/cm² is the rating for Frelon® J
 Frelon pads in each end (F dimension)

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K SQUARE	DI O.D.	T LENGTH	Dp BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	DFPM WEIGHTS	DFPMR WEIGHTS
SQUARE	ROUND	MAX.	MAX.	MAX.								(kg.)	(kg.)
DFPM 08	DFPMR 08	25	32	8	24	3.5	6	3.1	M 3	0.015	0.015	0.027	0.031
DFPM 12	DFPMR 12	32	42	9	32	4.5	7.5	4.1	M 4			0.055	0.064
DFPM 16	DFPMR 16	35	46		36							0.078	0.089
DFPM 20	DFPMR 20	42	54	11	43	5.5	9	5.1	M 5	0.017	0.017	0.133	0.149
DFPM 25	DFPMR 25	50	62		51							0.270	0.286
DFPM 30	DFPMR 30	60	76	14	62	6.6	11	6.1	M 6			0.413	0.450
DFPM 40	DFPMR 40	75	98	18	80	9.0	14	8.1	M 8	0.020	0.020	0.846	0.942
DFPM 50	DFPMR 50	88	112		94							1.450	1.556
DFPM 60	DFPMR 60	106	134	24	112	11.0	17	11.1	M 10			0.025	0.025



CFPM FLANGE BEARING



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing				B BODY O.D. (h7)		C LENGTH		I LENGTH TO FLNG.	F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON	
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.										
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.			(sq. cm)	GOLD	J
CFPM 08	CFPMR 08	8	8.013	8.035	CFPM 08C	CFPMR 08C	8.063	8.085	15.982	16	45.7	46.3	19.0	12.1	2.027	4179	2099
CFPM 12	CFPMR 12	12	12.016	12.043	CFPM 12C	CFPMR 12C	12.066	12.093	21.979	22	60.7	61.3	26.0	15.4	3.870	7976	4002
CFPM 16	CFPMR 16	16	16.016	16.043	CFPM 16C	CFPMR 16C	16.066	16.093	25.979	26	67.7	68.3	29.5	20.4	6.836	14087	7073
CFPM 20	CFPMR 20	20	20.020	20.053	CFPM 20C	CFPMR 20C	20.096	20.129	31.975	32	79.7	80.3	34.5	22.1	9.257	19071	9575
CFPM 25	CFPMR 25	25	25.020	25.053	CFPM 25C	CFPMR 25C	25.096	25.129	39.975	40	111.7	112.3	50.5	33.1	17.331	35708	17933
CFPM 30	CFPMR 30	30	30.020	30.053	CFPM 30C	CFPMR 30C	30.096	30.129	46.975	47	122.7	123.3	54.5	35	21.991	45303	22749
CFPM 40	CFPMR 40	40	40.025	40.064	CFPM 40C	CFPMR 40C	40.127	40.166	61.970	62	150.7	151.3	66.5	44	36.861	75939	38131
CFPM 50	CFPMR 50	50	50.025	50.064	CFPM 50C	CFPMR 50C	50.127	50.166	74.970	75	191.7	192.3	87.0	69.5	72.780	149936	75282
CFPM 60	CFPMR 60	60	60.030	60.076	CFPM 60C	CFPMR 60C	60.182	60.228	89.965	90	208.7	209.3	92.5	73	91.735	188980	94892

NOTES: Formula used for effective surface area is $(\pi * ID * L)/3$
 Max static load is effective surface area times max load for Frelon GOLD®
 - 210 kgf/cm² is the rating for Frelon GOLD®
 - 105.45 kgf/cm² is the rating for Frelon® J
 Frelon pads in each end (F dimension)

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K SQUARE	DI O.D.	T LENGTH	Dp BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	CFPM WEIGHTS	CFPMR WEIGHTS
SQUARE	ROUND	MAX.	MAX.	MAX.								(kg.)	(kg.)
CFPM 08	CFPMR 08	25	32	8	24	3.5	6	3.1	M 3	0.015	0.015	0.027	0.031
CFPM 12	CFPMR 12	32	42	9	32	4.5	7.5	4.1	M 4			0.058	0.067
CFPM 16	CFPMR 16	35	46		36							0.077	0.088
CFPM 20	CFPMR 20	42	54	11	43	5.5	9	5.1	M 5	0.017	0.017	0.133	0.149
CFPM 25	CFPMR 25	50	62		51							0.270	0.286
CFPM 30	CFPMR 30	60	76	14	62	6.6	11	6.1	M 6			0.413	0.450
CFPM 40	CFPMR 40	75	98	18	80	9.0	14	8.1	M 8	0.020	0.020	0.846	0.942
CFPM 50	CFPMR 50	88	112		94							1.450	1.556
CFPM 60	CFPMR 60	106	134	24	112	11.0	17	11.1	M 10			0.025	0.025

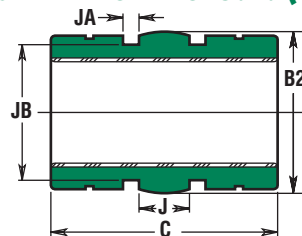


Linear Plane Bearing - FJ

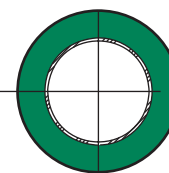
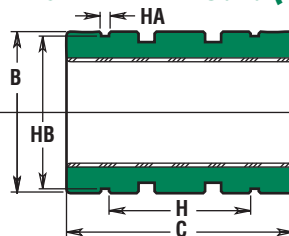
Simplicity® Self-Lubricating - JIS Metric

FJ LINEAR BEARING

*SELF-ALIGNING O.D. (FJA-XX)



STANDARD O.D. (FJ-XX)



*Except for the O.D. bearings with the self-aligning feature have the same dimensions and tolerances as the standard bearing. There is a spherical crown on the O.D. to create the self-aligning feature. They are for use in a straight bore housing. Add an "A" to the part number per the example. More information on self-aligning bearings is on page 41-42.

BASIC DIMENSIONAL INFORMATION

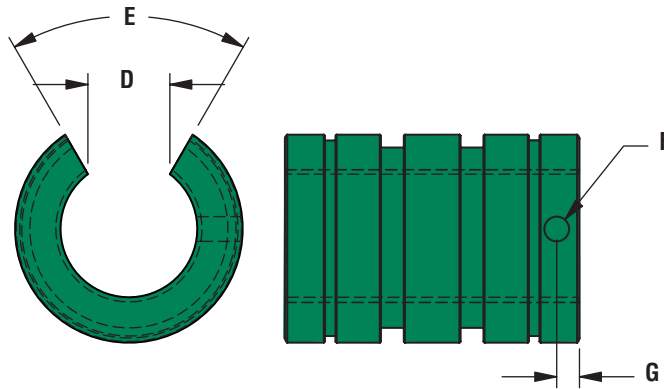
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Allows additional running clearance				STANDARD O.D.		SELF-ALIGNING O.D. FJA		C LENGTH		CONCENTRIC	BEARING WEIGHT
PART NO.		NOMINAL SIZE	A BEARING I.D.		PART NO.		A BEARING I.D.		B BEARING O.D.		B2 BEARING O.D.					
CLOSED	OPEN	(mm)	MIN.	MAX.	CLOSED	OPEN	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MAX.	(kg.)
FJ06	N / A	6	6.010	6.028	FJC 06	FJCN 06	6.06	6.078	11.989	12	11.943	11.968	18.8	19	0.0254	0.004
FJH 08	FJHN 08	8	8.013	8.035	FJCH 08	FJCHN 08	8.063	8.085	14.989	15	14.943	14.968	16.8	17	0.0254	0.005
FJ 08	FJN 08	8	8.013	8.035	FJC 08	FJCN 08	8.063	8.085	14.989	15	14.943	14.968	23.8	24	0.0254	0.008
FJ 10	FJN 10	10	10.013	10.035	FJC 10	FJCN 10	10.063	10.086	18.987	19	18.936	18.969	28.8	29	0.0254	0.015
FJ 12	FJN 12	12	12.016	12.043	FJC 12	FJCN 12	12.066	12.093	20.987	21	20.942	20.968	29.8	30	0.0254	0.018
FJ 13	FJN 13	13	13.016	13.043	FJC 13	FJCN 13	13.066	13.093	22.987	23	22.944	22.969	31.8	32	0.0254	0.024
FJ 16	FJN 16	16	16.016	16.043	FJC 16	FJCN 16	16.066	16.093	27.988	28	27.943	27.968	36.8	37	0.0254	0.039
FJ 20	FJN 20	20	20.020	20.053	FJC 20	FJCN 20	20.096	20.129	31.984	32	31.941	31.966	41.8	42	0.0254	0.052
FJ 25	FJN 25	25	25.020	25.053	FJC 25	FJCN 25	25.096	25.129	39.984	40	39.942	39.967	58.7	59	0.0254	0.119
FJ 30	FJN 30	30	30.020	30.053	FJC 30	FJCN 30	30.096	30.129	44.984	45	44.940	44.966	63.7	64	0.0254	0.149
FJ 35	FJN 35	35	35.020	35.053	FJC 35	FJCN 35	35.100	35.136	51.981	52	51.940	51.966	69.7	70	0.0254	0.212
FJ 38	FJN 38	38	38.025	38.064	FJC 38	FJCN 38	38.127	38.166	56.981	57	56.940	56.966	75.7	76	0.0254	0.284
FJ 40	FJN 40	40	40.025	40.064	FJC 40	FJCN 40	40.127	40.166	59.981	60	59.939	59.964	79.7	80	0.0254	0.333
FJ 50	FJN 50	50	50.025	50.064	FJC 50	FJCN 50	50.127	50.166	79.981	80	79.939	79.964	99.7	100	0.0254	0.823
FJ 60	FJN 60	60	60.030	60.076	FJC 60	FJCN 60	60.182	60.228	89.978	90	89.939	89.964	109.7	110	0.0254	1.024
FJ 80	FJN 80	80	80.030	80.076	FJC 80	FJCN 80	80.182	80.228	119.978	120	119.939	119.964	139.6	140	0.0380	2.359
FJ 100	FJN 100	100	100.030	100.076	FJC 100	FJCN 100	100.182	100.228	149.975	150	149.936	149.962	174.6	175	0.0510	4.651
FJ 120	FJN 120	120	120.035	120.089	FJC 120	FJCN 120	120.190	120.236	179.975	180	179.936	179.962	199.6	200	0.0510	7.706
FJ 150	FJN 150	150	150.035	150.089	FJC 150	FJCN 150	150.190	150.236	209.971	210	209.934	209.959	239.6	240	0.0510	11.104

MOUNTING DIMENSIONAL INFORMATION

PART NO.		NOMINAL SIZE	H	HA	HB	RET. RING PART NO. (JIS B 2904)	J	JA	JB	METRIC O'RING PART NO.
CLOSED	OPEN	(mm)	BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.		BETWEEN O'RING GRVS.	O'RING GRV. WIDTH	O'RING GRV. DIA.	
FJ06	N / A	6	11.3	1.15	11.5	STW - 12	4.293	2.032	9.859	9.7 x 1.3
FJH 08	FJHN08	8	9.2	1.15	14.3	STW - 15	2.540	2.362	12.243	12 x 1.7
FJ 08	FJN08	8	15.2	1.15	14.3	STW - 15	7.493	2.362	12.243	12 x 1.7
FJ 10	FJN 10	10	19.3	1.35	18.0	STW - 19	9.500	2.362	15.700	15.5 x 2
FJ 12	FJN 12	12	20.3	1.35	20.0	STW - 20	10.490	2.362	18.546	18 x 1.5
FJ 13	FJN 13	13	20.3	1.35	22.0	STW - 23	11.481	2.362	20.544	20 x 1.5
FJ 16	FJN 16	16	23.2	1.65	26.6	STW - 28	11.100	3.556	23.978	23.5 x 2.5
FJ 20	FJN 20	20	27.2	1.65	30.3	STW - 32	15.977	3.556	27.864	27.5 x 2.5
FJ 25	FJN 25	25	37.2	1.85	38.0	STW - 40	19.990	3.556	35.865	35.5 x 2.5
FJ 30	FJN 30	30	40.7	1.85	42.5	STW - 45	22.479	3.556	40.843	40 x 2.5
FJ 35	FJN 35	35	44.8	2.20	49.0	STW - 52	25.984	4.115	46.200	46 x 3.5
FJ 38	FJN 38	38	54.3	2.20	54.5	STW - 58	28.499	4.115	51.200	51 x 3.5
FJ 40	FJN 40	40	56.1	2.20	57.0	STW - 60	29.997	4.115	54.225	53 x 3.5
FJ 50	FJN 50	50	68.6	2.70	76.5	STW - 80	39.980	4.750	74.193	73 x 3.5
FJ 60	FJN 60	60	78.7	3.15	86.5	STW - 90	44.983	7.036	81.738	81 x 5
FJ 80	FJN 80	80	97.2	4.15	116.0	STW - 120	59.995	7.137	111.727	111 x 5
FJ 100	FJN 100	100	117.2	4.15	145.0	STW - 150	74.981	7.137	141.199	140 x 5.3
FJ 120	FJN 120	120	150.3	4.15	175.0	STW - 180	89.992	7.137	171.740	170 x 5
FJ 150	FJN 150	150	160.3	5.15	204.0	STW - 210	104.978	7.137	201.193	200 x 5.3



FJ & FJN LINEAR BEARING



OPEN DIMENSIONAL INFORMATION

PART NO.		NOMINAL SIZE (mm)	D SLOT WIDTH MIN.	E SLOT ANGLE	F RET. HOLE DIA.	G RET. HOLE LOC.	BEARING WEIGHTS	
CLOSED	OPEN						(kg.)	
FJHN 08	FJHCN 08	8	5.1	60	2.200	8.460	0.004	
FJN 08	FJCN 08					11.940	0.006	
FJN 10	FJCN 10	10	7.0	80	3.454	1.941	0.012	
FJN 12	FJCN 12	12	8.0			0.014		
FJN 13	FJCN 13	13	9.0			2.441	0.018	
FJN 16	FJCN 16	16	11.0			3.019	0.030	
FJN 20	FJCN 20	20		60	3.175	0.044		
FJN 25	FJCN 25	25	12.0	50	5.105	4.763	0.102	
FJN 30	FJCN 30	30	15.0				0.128	
FJN 35	FJCN 35	35	17.0				0.182	
FJN 38	FJCN 38	38	18.0				0.245	
FJN 40	FJCN 40	40	20.0	80	6.731	7.938	0.286	
FJN 50	FJCN 50	50	25.0				0.709	
FJN 60	FJCN 60	60	30.0				0.882	
FJN 80	FJCN 80	80	40.0				13.181	2.031
FJN 100	FJCN 100	100	50.0				14.500	4.005
FJN 120	FJCN 120	120	85.0				16.103	5.994
FJN 150	FJCN 150	150	105.0			17.350	8.637	

ACCESSORIES

Retaining Rings (Internal & External)	17
Seals, O-Rings, Zerk Fittings	17
Retaining Ring Groove Dimension.....	28

LOAD & SPEED DATA

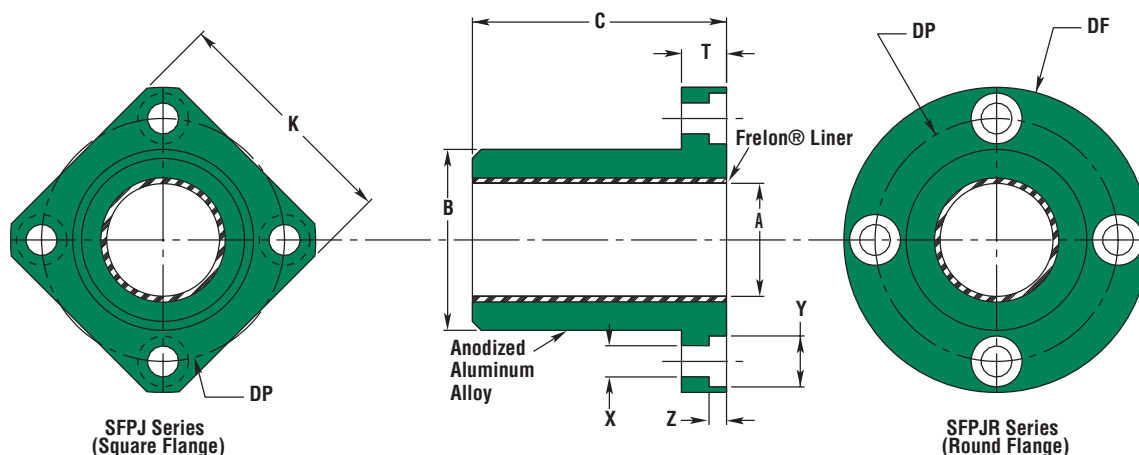
PART NO.	EFFECTIVE SURFACE AREA (sq.cm.)	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA (cm ²)	MAX. STATIC LOAD FRELON	
		GOLD (kg.)	J (kg.)		GOLD (N)	J (N)
FJ 06	1.1	528	264	1.14	2348	1174
FJH 08	1.4	630	315	1.40	2805	1402
FJ 08	1.9	890	445	1.90	3962	1981
FJ 10	2.9	1344	672	2.90	5982	2991
FJ 12	3.6	1666	833	3.60	7413	3707
FJ 13	4.0	1926	963	4.00	8570	4285
FJ 16	5.9	2741	1371	5.90	12199	6099
FJ 20	8.4	3887	1944	8.40	17298	8649
FJ 25	15.0	6827	3413	15.00	30379	15189
FJ 30	19.0	8885	4442	19.00	39538	19769
FJ 35	25.0	11340	5670	25.00	50462	25231
FJ 38	29.0	13363	6681	29.00	59464	29732
FJ 40	32.0	14808	7404	32.00	65896	32948
FJ 50	50.0	23138	11569	50.00	102963	51482
FJ 60	66.0	30542	15721	66.00	135911	67956
FJ 80	112.0	51829	25914	112.00	230637	115319
FJ 100	175.0	80982	40491	175.00	360371	180185
FJ 120	240.0	111061	55531	240.00	494222	247111
FJ 150	360.0	166592	83296	360.00	741334	370667
MAX. PV (m/min. * kg/sq. cm)		MAX. PV (m/s. * N/mm ²)				
Frelon Gold = 430 PV		Frelon Gold = 0.70 PV				
Frelon J = 215 PV		Frelon J = 0.35 PV				
MAX. Speed Running Dry (m/min.)		MAX. Speed Running Dry (m/s.)				
Frelon Gold = 91.4		Frelon Gold = 1.52				
Frelon J = 42.6		Frelon J = 0.71				
MAX. Speed Running with Lubrication (m/min.)		MAX. Speed Running with Lubrication (m/s.)				
Frelon Gold = 251.5		Frelon Gold = 4.19				
Frelon J = 122		Frelon J = 2.03				



Flange Bearing - SFPJ

Simplicity® Self-Lubricating

SFPJ FLANGE BEARING



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing										EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON	
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.										
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	(sq. cm)	GOLD	J		
SFPJ 06	SFPJR 06	6	6.010	6.028	SFPJ 06C	SFPJR 06C	6.060	6.078	11.982	12	18.8	19	1.194	2462	1236		
SFPJ 08	SFPJR 08	8	8.013	8.035	SFPJ 08C	SFPJR 08C	8.063	8.085	14.982	15	23.8	24	2.011	4140	2080		
SFPJ 10	SFPJR 10	10	10.013	10.035	SFPJ 10C	SFPJR 10C	10.063	10.085	18.979	19	28.8	29	3.037	6259	3139		
SFPJ 12	SFPJR 12	12	12.016	12.043	SFPJ 12C	SFPJR 12C	12.066	12.093	20.979	21	29.8	30	3.770	7770	3904		
SFPJ 13	SFPJR 13	13	13.016	13.043	SFPJ 13C	SFPJR 13C	13.066	13.093	22.979	23	31.8	32	4.356	8976	4503		
SFPJ 16	SFPJR 16	16	16.016	16.043	SFPJ 16C	SFPJR 16C	16.066	16.093	27.979	28	36.8	37	6.199	12773	6416		
SFPJ 20	SFPJR 20	20	20.020	20.053	SFPJ 20C	SFPJR 20C	20.096	20.129	31.975	32	41.8	42	8.796	18119	9104		
SFPJ 25	SFPJR 25	25	25.020	25.053	SFPJ 25C	SFPJR 25C	25.096	25.129	39.975	40	58.7	59	15.446	31824	15980		
SFPJ 30	SFPJR 30	30	30.020	30.053	SFPJ 30C	SFPJR 30C	30.096	30.129	44.975	45	63.7	64	20.106	41418	20797		
SFPJ 35	SFPJR 35	35	35.020	35.053	SFPJ 35C	SFPJR 35C	35.096	35.129	51.970	52	69.7	70	25.656	52856	26536		
SFPJ 40	SFPJR 40	40	40.025	40.064	SFPJ 40C	SFPJR 40C	40.127	40.166	59.970	60	79.7	80	33.510	69033	34669		
SFPJ 50	SFPJR 50	50	50.025	50.064	SFPJ 50C	SFPJR 50C	50.127	50.166	79.965	80	99.7	100	52.360	107871	54161		
SFPJ 60	SFPJR 60	60	60.030	60.076	SFPJ 60C	SFPJR 60C	60.182	60.228	89.965	90	109.6	110	69.115	142382	71495		
SFPJ 80	SFPJR 80	80	80.030	80.076	SFPJ 80C	SFPJR 80C	80.182	80.228	119.965	120	139.6	140	117.286	241620	121330		

NOTES: Formula used for effective surface area is $(\pi * ID * L)/3$

Max static load is effective surface area times max load for Frelon GOLD®

- 210 kgf/cm² is the rating for Frelon GOLD®

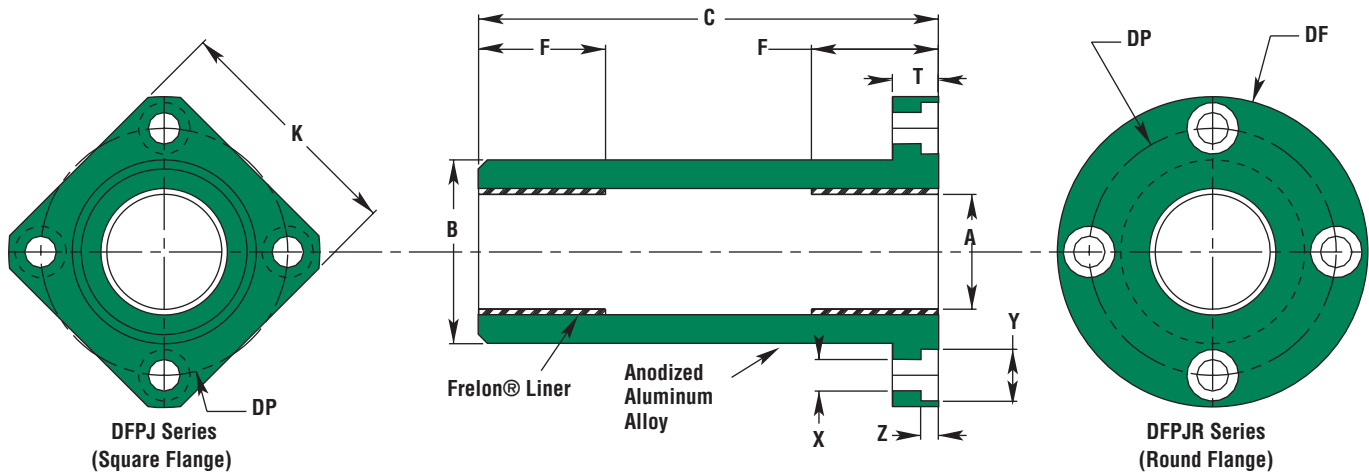
- 105.45 kgf/cm² is the rating for Frelon® J

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K	DF	T	Dp	X	Y	Z	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	SFPJ	SFPJR
SQUARE	ROUND	SQUARE MAX.	O.D. MAX.	LENGTH MAX.	BOLT CIRCLE	HOLE	C'BORE DIA.	C'BORE DEPTH				WEIGHTS (kg.)	WEIGHTS (kg.)
SFPJ 06	SFPJR 06	22	28	8	20	3.5	6	3.1	M 3	0.012	0.012	0.011	0.014
SFPJ 08	SFPJR 08	25	32	8	24	3.5	6	3.1	M 3	0.012	0.012	0.017	0.021
SFPJ 10	SFPJR 10	30	40	9	29	4.5	7.5	4.1	M 4	0.012	0.012	0.029	0.038
SFPJ 12	SFPJR 12	32	42	9	32	4.5	7.5	4.1	M 4	0.012	0.012	0.033	0.042
SFPJ 13	SFPJR 13	34	43	9	33	4.5	7.5	4.1	M 4	0.012	0.012	0.041	0.048
SFPJ 16	SFPJR 16	37	48	9	38	4.5	7.5	4.1	M 4	0.012	0.012	0.058	0.069
SFPJ 20	SFPJR 20	42	54	11	43	5.5	9	5.1	M 5	0.015	0.015	0.081	0.097
SFPJ 25	SFPJR 25	50	62	11	51	5.5	9	5.1	M 5	0.015	0.015	0.158	0.174
SFPJ 30	SFPJR 30	58	74	14	60	6.6	11	6.1	M 6	0.015	0.015	0.216	0.252
SFPJ 35	SFPJR 35	64	82	14	67	6.6	11	6.1	M 6	0.017	0.017	0.292	0.338
SFPJ 40	SFPJR 40	75	96	18	78	9.0	14	8.1	M 8	0.017	0.017	0.467	0.547
SFPJ 50	SFPJR 50	92	116	18	98	9.0	14	8.1	M 8	0.017	0.017	0.999	1.104
SFPJ 60	SFPJR 60	106	134	24	112	11.0	17	11.1	M 10	0.020	0.020	1.359	1.550
SFPJ 80	SFPJR 80	136	164	24	142	11.0	17	11.1	M 10	0.020	0.020	2.873	3.048



DFPJ FLANGE BEARING



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing				B BODY O.D. (h7)		C LENGTH		F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (N) FRELON	
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.									
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		(sq. cm)	GOLD	J
DFPJ 06	DFPJR 06	6	6.010	6.028	DFPJ 06C	DFPJR 06C	6.060	6.078	11.982	12	34.7	35	12	1.508	3110	1560
DFPJ 08	DFPJR 08	8	8.013	8.035	DFPJ 08C	DFPJR 08C	8.063	8.085	14.982	15	44.7	45	12	2.011	4140	2080
DFPJ 10	DFPJR 10	10	10.013	10.035	DFPJ 10C	DFPJR 10C	10.063	10.085	18.979	19	54.7	55	14	2.932	6043	3031
DFPJ 12	DFPJR 12	12	12.016	12.043	DFPJ 12C	DFPJR 12C	12.066	12.093	20.979	21	56.7	57	15	3.770	7770	3904
DFPJ 13	DFPJR 13	13	13.016	13.043	DFPJ 13C	DFPJR 13C	13.066	13.093	22.979	23	60.7	61	16	4.356	8976	4503
DFPJ 16	DFPJR 16	16	16.016	16.043	DFPJ 16C	DFPJR 16C	16.066	16.093	27.979	28	69.7	70	20	6.702	13803	6936
DFPJ 20	DFPJR 20	20	20.020	20.053	DFPJ 20C	DFPJR 20C	20.096	20.129	31.975	32	79.7	80	22	9.215	18982	9535
DFPJ 25	DFPJR 25	25	25.020	25.053	DFPJ 25C	DFPJR 25C	25.096	25.129	39.975	40	111.6	112	33	17.279	35600	17874
DFPJ 30	DFPJR 30	30	30.020	30.053	DFPJ 30C	DFPJR 30C	30.096	30.129	44.975	45	122.6	123	35	21.991	45303	22749
DFPJ 35	DFPJR 35	35	35.020	35.053	DFPJ 35C	DFPJR 35C	35.096	35.129	51.970	52	134.6	135	40	29.322	60410	30333
DFPJ 40	DFPJR 40	40	40.025	40.064	DFPJ 40C	DFPJR 40C	40.127	40.166	59.970	60	150.6	151	44	36.861	75939	38131
DFPJ 50	DFPJR 50	50	50.025	50.064	DFPJ 50C	DFPJR 50C	50.127	50.166	79.965	80	191.6	192	70	73.304	151015	75831
DFPJ 60	DFPJR 60	60	60.030	60.076	DFPJ 60C	DFPJR 60C	60.182	60.228	89.965	90	208.6	209	73	91.735	188980	94892

NOTES: Formula used for effective surface area is $(\pi \times ID \times L)/3$
 Max static load is effective surface area times max load for Frelon GOLD®
 - 210 kgf/cm² is the rating for Frelon GOLD®
 - 105.45 kgf/cm² is the rating for Frelon® J
 Frelon pads in each end (F dimension)

MOUNTING DIMENSIONAL INFORMATION

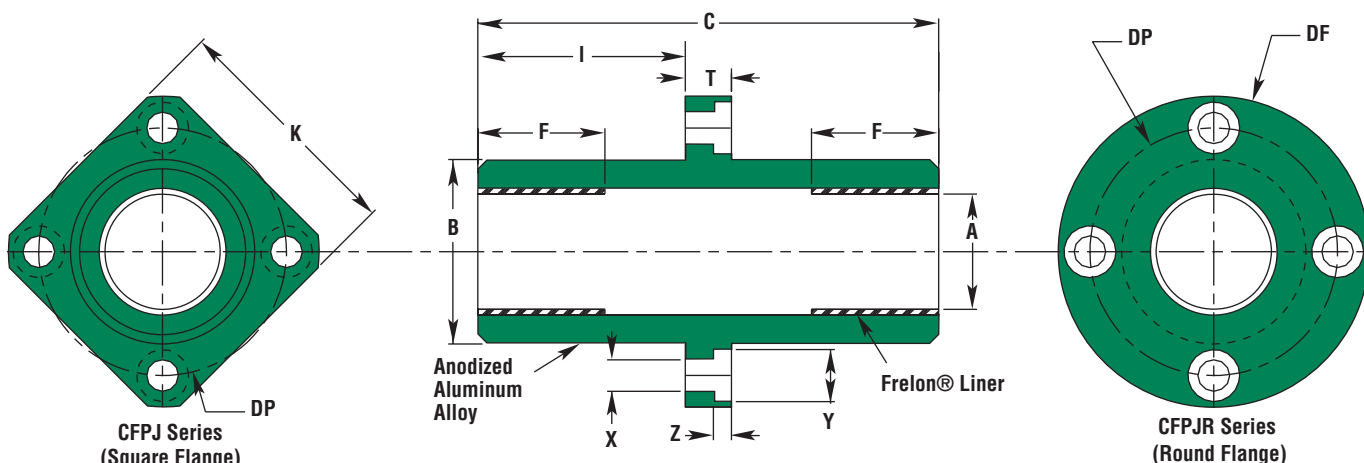
PART NO.		K SQUARE	DI O.D.	T LENGTH	Dp BOLT CIRCLE	X HOLE	Y C'BORE DIA.	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	DFPJ WEIGHTS	DFPJR WEIGHTS
SQUARE	ROUND	MAX.	MAX.	MAX.								(kg.)	(kg.)
DFPJ 06	DFPJR 06	22	28	8	20	3.5	6	3.1	M 3	0.015	0.015	0.015	0.018
DFPJ 08	DFPJR 08	25	32		24							0.024	0.028
DFPJ 10	DFPJR 10	30	40	9	29	4.5	7.5	4.1	M 4			0.044	0.053
DFPJ 12	DFPJR 12	32	42		32							0.051	0.060
DFPJ 13	DFPJR 13	34	43		33							0.063	0.071
DFPJ 16	DFPJR 16	37	48		38							0.096	0.107
DFPJ 20	DFPJR 20	42	54	11	43	5.5	9	5.1	M 5	0.017	0.017	0.133	0.149
DFPJ 25	DFPJR 25	50	62		51							0.270	0.286
DFPJ 30	DFPJR 30	58	74	14	60	6.6	11	6.1	M 6			0.360	0.397
DFPJ 35	DFPJR 35	64	82		67							0.501	0.547
DFPJ 40	DFPJR 40	75	96	18	78	9.0	14	8.1	M 8	0.020	0.020	0.776	0.856
DFPJ 50	DFPJR 50	92	116		98							1.780	1.885
DFPJ 60	DFPJR 60	106	134		24							112	11.0



Flange Bearing - CFPJ

Simplicity® Self-Lubricating

CFPJ FLANGE BEARING



BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing												
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.										
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	I LENGTH TO FLNG.	F LENGTH EACH END	EFFECTIVE SURFACE AREA (sq. cm)	GOLD	J
CFPJ 06	CFPJR 06	6	6.010	6.028	CFPJ 06C	CFPJR 06C	6.060	6.078	11.982	12	34.7	35.3	13.5	12	1.508	3110	1560
CFPJ 08	CFPJR 08	8	8.013	8.035	CFPJ 08C	CFPJR 08C	8.063	8.085	14.982	15	44.7	45.3	18.5	12	2.011	4140	2080
CFPJ 10	CFPJR 10	10	10.013	10.035	CFPJ 10C	CFPJR 10C	10.063	10.085	18.979	19	54.7	55.3	23.0	14	2.932	6043	3031
CFPJ 12	CFPJR 12	12	12.016	12.043	CFPJ 12C	CFPJR 12C	12.066	12.093	20.979	21	56.7	57.3	24.0	15	3.770	7770	3904
CFPJ 13	CFPJR 13	13	13.016	13.043	CFPJ 13C	CFPJR 13C	13.066	13.093	22.979	23	60.7	61.3	26.0	16	4.356	8976	4503
CFPJ 16	CFPJR 16	16	16.016	16.043	CFPJ 16C	CFPJR 16C	16.066	16.093	27.979	28	69.7	70.3	30.5	20	6.702	13803	6936
CFPJ 20	CFPJR 20	20	20.020	20.053	CFPJ 20C	CFPJR 20C	20.096	20.129	31.975	32	79.7	80.3	34.5	22	9.215	18982	9535
CFPJ 25	CFPJR 25	25	25.020	25.053	CFPJ 25C	CFPJR 25C	25.096	25.129	39.975	40	111.7	112.3	50.5	33	17.279	35600	17874
CFPJ 30	CFPJR 30	30	30.020	30.053	CFPJ 30C	CFPJR 30C	30.096	30.129	44.975	45	122.7	123.3	54.5	35	21.991	45303	22749
CFPJ 35	CFPJR 35	35	35.020	35.053	CFPJ 35C	CFPJR 35C	35.096	35.129	51.970	52	134.7	135.3	60.5	40	29.322	60410	30333
CFPJ 40	CFPJR 40	40	40.025	40.064	CFPJ 40C	CFPJR 40C	40.127	40.166	59.970	60	150.7	151.3	66.5	44	36.861	75939	38131
CFPJ 50	CFPJR 50	50	50.025	50.064	CFPJ 50C	CFPJR 50C	50.127	50.166	79.965	80	191.7	192.3	87.0	70	73.304	151015	75831
CFPJ 60	CFPJR 60	60	60.030	60.076	CFPJ 60C	CFPJR 60C	60.182	60.228	89.965	90	208.7	209.3	92.5	73	91.735	188980	94892

NOTES: Formula used for effective surface area is $(\pi \cdot ID \cdot L)/3$

Max static load is effective surface area times max load for Frelon GOLD®

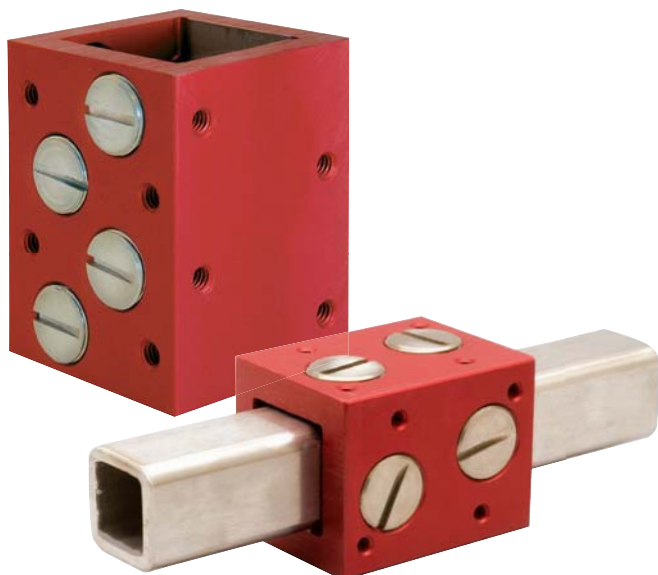
- 210 kgf/cm² is the rating for Frelon GOLD®

- 105.45 kgf/cm² is the rating for Frelon® J

Frelon pads in each end (F dimension)

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K SQUARE	DI O.D.	T LENGTH	Dp BOLT CIRCLE	X HOLE	Y C'BORE DIA.	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	CFPJ WEIGHTS	CFPJR WEIGHTS
SQUARE	ROUND	MAX.	MAX.	MAX.								(kg.)	(kg.)
CFPJ 06	CFPJR 06	22	28	8	20	3.5	6	3.1	M 3	0.015	0.015	0.015	0.018
CFPJ 08	CFPJR 08	25	32		24							0.024	0.028
CFPJ 10	CFPJR 10	30	40	9	29	4.5	7.5	4.1	M 4			0.044	0.053
CFPJ 12	CFPJR 12	32	42		32							0.051	0.060
CFPJ 13	CFPJR 13	34	43		33							0.063	0.071
CFPJ 16	CFPJR 16	37	48		38							0.096	0.107
CFPJ 20	CFPJR 20	42	54	11	43	5.5	9	5.1	M 5	0.017	0.017	0.133	0.149
CFPJ 25	CFPJR 25	50	62		51							0.270	0.286
CFPJ 30	CFPJR 30	58	74	14	60	6.6	11	6.1	M 6			0.360	0.397
CFPJ 35	CFPJR 35	64	82		67							0.501	0.547
CFPJ 40	CFPJR 40	75	96	18	78	9.0	14	8.1	M 8	0.020	0.020	0.776	0.856
CFPJ 50	CFPJR 50	92	116		98							1.780	1.885
CFPJ 60	CFPJR 60	106	134	24	112	11.0	17	11.1	M 10	0.025	0.025	2.329	2.519



Frelon GOLD®
APN16E



Frelon® J
APN16



PRODUCT OVERVIEW

- Runs on a single, square shaft eliminating costly components
- Maintains radial integrity and can eliminate the need for parallel shafting
- Can be mounted in any orientation
- Housings are aluminum alloy with a standard anodized finish
- Utilizes standard bearing plugs
- Adjustable to maintain tight running clearances, contingent upon shafting
- Bearing plugs are easily replaced

SAME CHARACTERISTICS OF THE STANDARD ROUND-WAY SIMPLICITY® BEARINGS:

- Self-lubricating
- High load capacity
- Wide temperature range (-400°F/+400°F)
(-240°C/+204°C)
- Excel in contaminated environments
- High shock loading abilities
- Low wear rates

ADJUSTABLE BEARING PLUGS

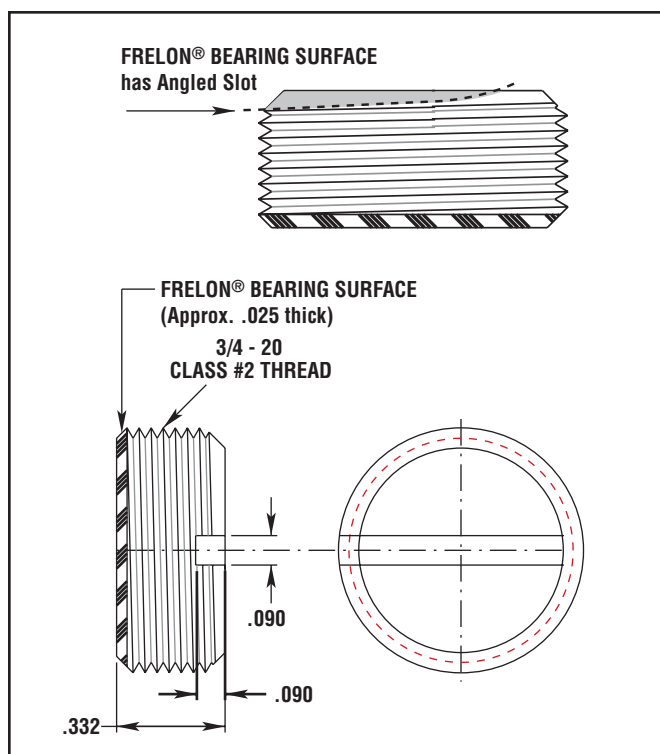
Plug material is 316 stainless steel.

BEARING MATERIAL: Frelon® J is standard for stainless square steel shafting (APN16 - E). Frelon GOLD® is also available for applications to be run on steel.

- Bearing plugs can be purchased separately
- Ideal for use in many applications as a wear pad
- Bearing surface area = .300 in²
- MAX Static Load Capacity per plug = 450 lbs.
- The use of green Loctite is recommended to hold the adjustable bearing plugs in position

ORDERING INFORMATION

PART NO.	DESCRIPTION
APN16E	Standard - Adjustable bearing plug with Frelon® J bearing liner. Use with 300 series stainless or soft shafting.
APN16	Optional - Adjustable bearing plug with Frelon GOLD® bearing liner. Use with steel shafting.





Square Bearings & Plugs

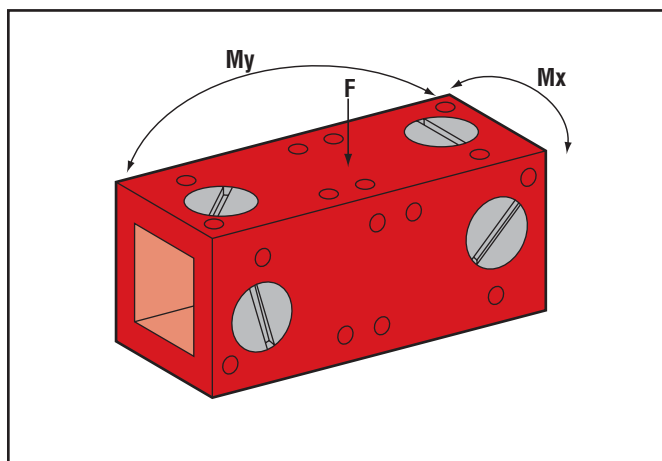
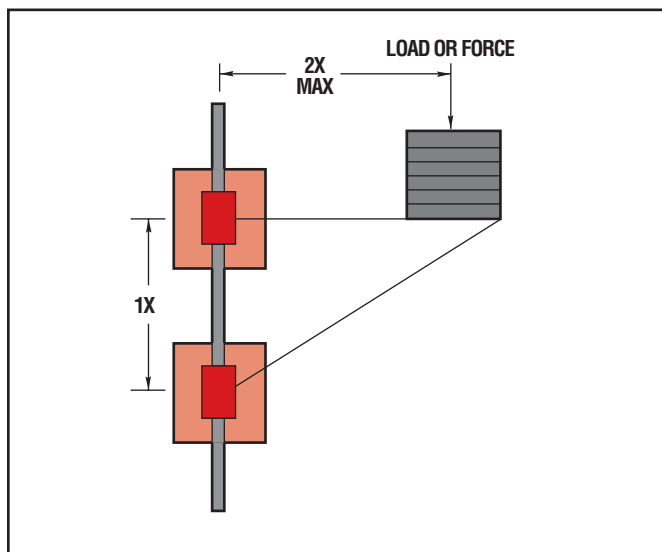
Technical Information

CUT-AWAY VIEW

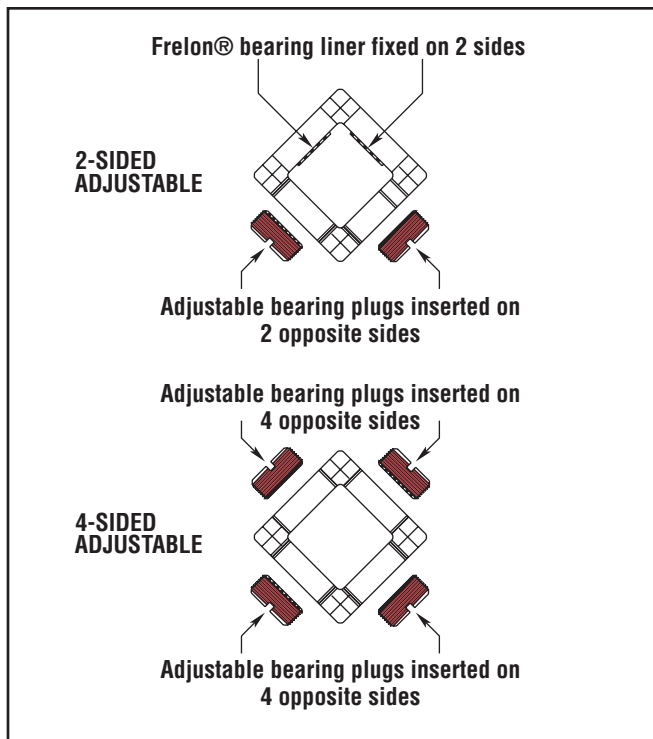


2-SIDED ADJUSTABLE

4-SIDED ADJUSTABLE



NOTE: Square shafting located on page 37.



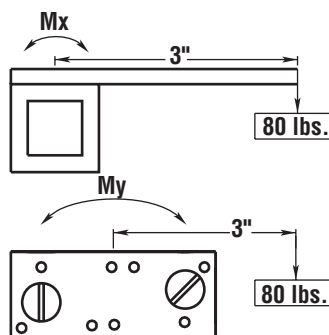
APPLICATION NOTE

Use removable Loctite thread locker to hold the adjustable bearing plugs in position.

Two parameters must be met in the design and use of square bearings:

1. The 2:1 ratio for cantilevered loads applies to square bearings in the same way as roundway Simplicity® bearings. Binding will occur if the ratio is not met! **NOTE:** if only one bearing is used, the 2:1 applies from plug centers.
2. The maximum load and moment load must be met. To calculate the acceptable cantilever or lever arm, multiply the length (from center of the bearing to the center of the load) times the weight. The result must be less than the moment load for that orientation.

EXAMPLE: Distance of cantilever = 3"
Amount of load = 40 lbs.
3" x 80 lbs. = 240 in.-lbs.



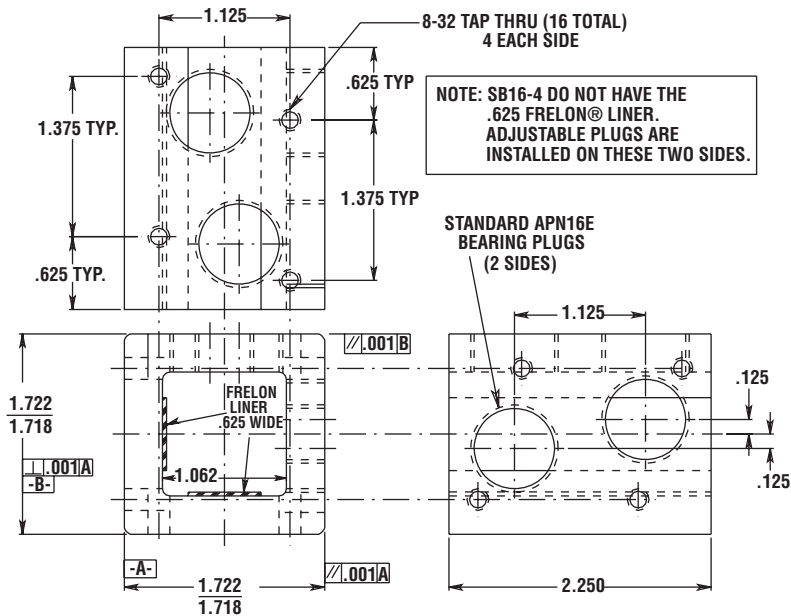
SQUARE BEARING LOAD INFORMATION

PART NO.	MAXIMUM MOMENTS (TORSIONAL CAPACITIES) (in.-lbs.)		MAXIMUM FORCE (lbs.)
	Mx	My	
SB16	74	165	920
SBL16		475	
SB24	416	402	1840
SBL24		1413	



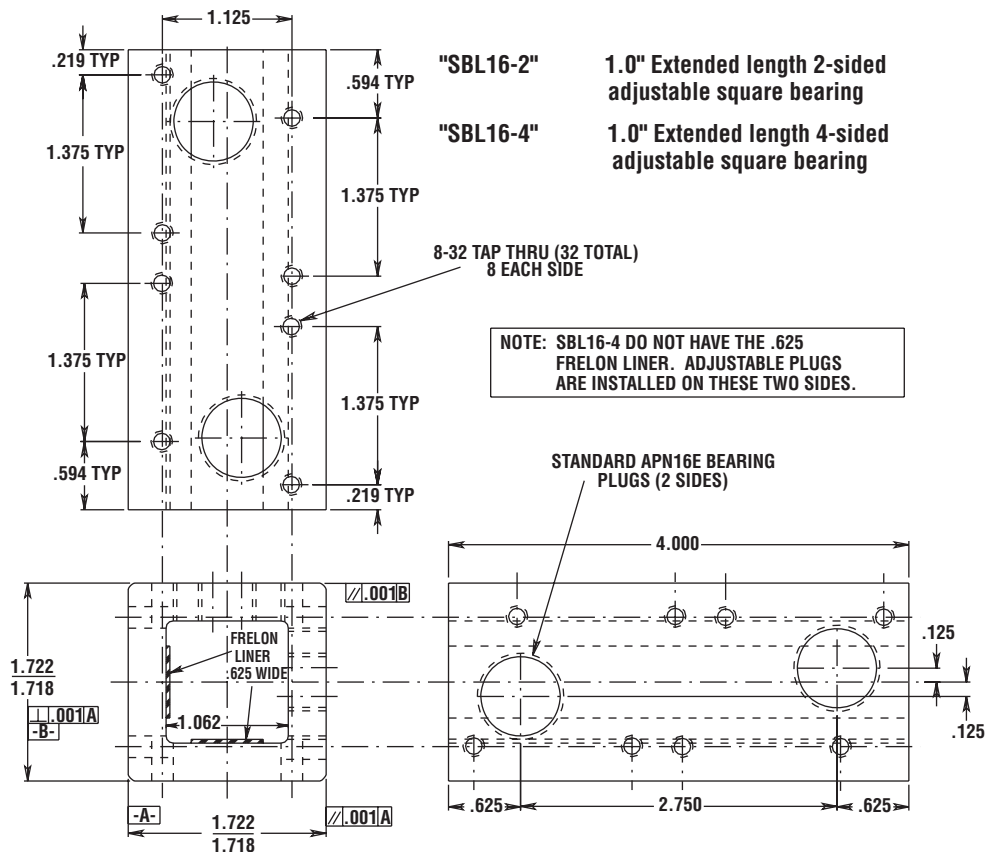
"SB16-2"
"SB16-4"

1.0" 2-Sided adjustable square bearing
1.0" 4-Sided adjustable square bearing



ORDERING INFORMATION

PART NO.	DESCRIPTION	BEARING WEIGHT (lbs.)
SB16-2E	Standard 1.0" two-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.48
SB16-2	Optional 1.0" two-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SB16-4E	Standard 1.0" four-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.56
SB16-4	Optional 1.0" four-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SBL16-2E	Standard 1.0" extended length, two-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.77
SBL16-2	Optional 1.0" extended length, two-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SBL16-4E	Standard 1.0" extended length, four-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.85
SBL16-4	Optional 1.0" extended length, four-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	



NOTE: Square shafting located on page 37.

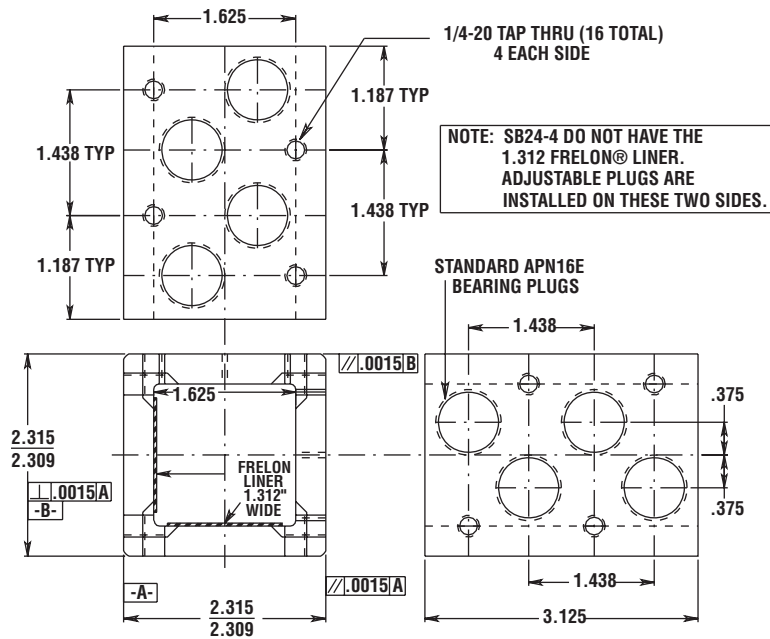


Square Bearings - 1.5"

Simplicity® Self-Lubricating

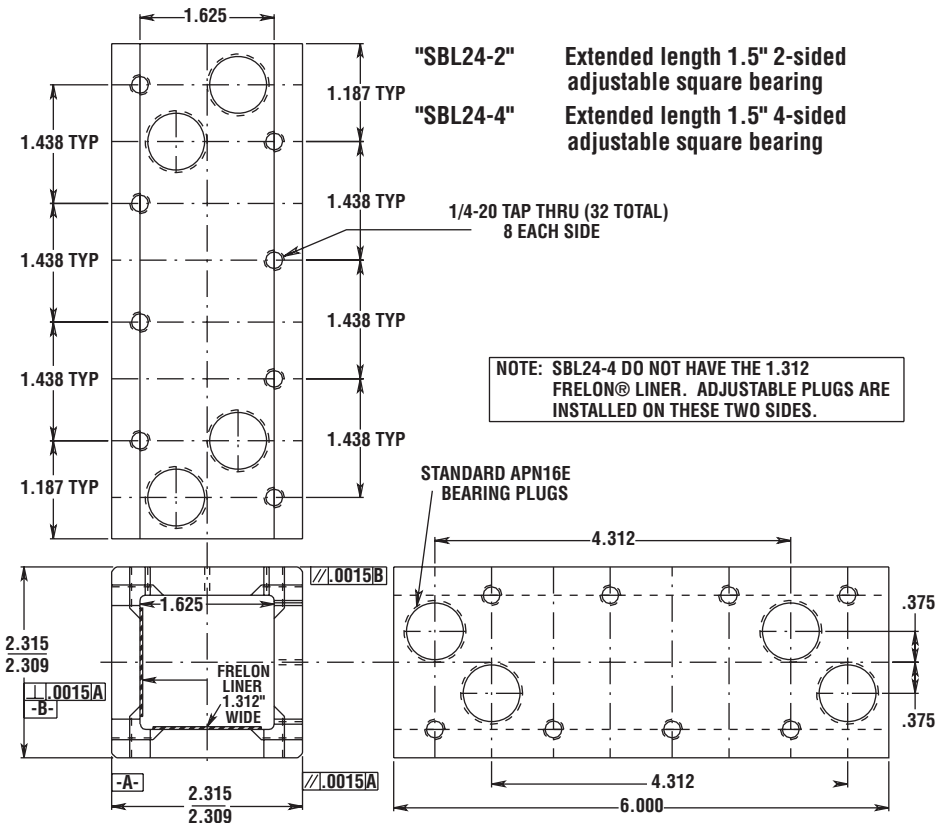
"SB24-2"
"SB24-4"

1.5" 2-Sided adjustable square bearing
1.5" 4-Sided adjustable square bearing



ORDERING INFORMATION

PART NO.	DESCRIPTION	BEARING WEIGHT (lbs.)
SB24-2E	Standard 1.5" two-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.96
SB24-2	Optional 1.5" two-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SB24-4E	Standard 1.5" four-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	1.12
SB24-4	Optional 1.5" four-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SBL24-2E	Standard 1.5" extended length, two-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	1.71
SBL24-2	Optional 1.5" extended length, two-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	
SBL24-4E	Standard 1.5" extended length, four-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	1.84
SBL24-4	Optional 1.5" extended length, four-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	



NOTE: Square shafting located on page 37.



SQUARE SHAFTING

- 304 Stainless steel (standard) is highly corrosion resistant
- Buffed and polished to provide an excellent running surface for Frelon® J
- Both 1" and 1.5" available cut to any length up to 10 feet
- Wall thickness is $\cong .120"$

ORDERING INFORMATION

PART NO.	DESCRIPTION	WT. (lbs./in.)
PST16-XX	Standard 1.0" 304 stainless steel square shafting	0.12
PST24-XX	Standard 1.5" 304 stainless steel square shafting	0.18

XX - Specify length in inches.

STEEL SHAFTING (PST)

XX++ - Specify length in inches.



MOUNTING ACCESSORIES

All mounting accessories are made from cast 356-T6 aluminum for good strength and corrosion resistance.



SQUARE CLAMP (PFL)

Includes: 2 M6 x 1 Hex head bolts

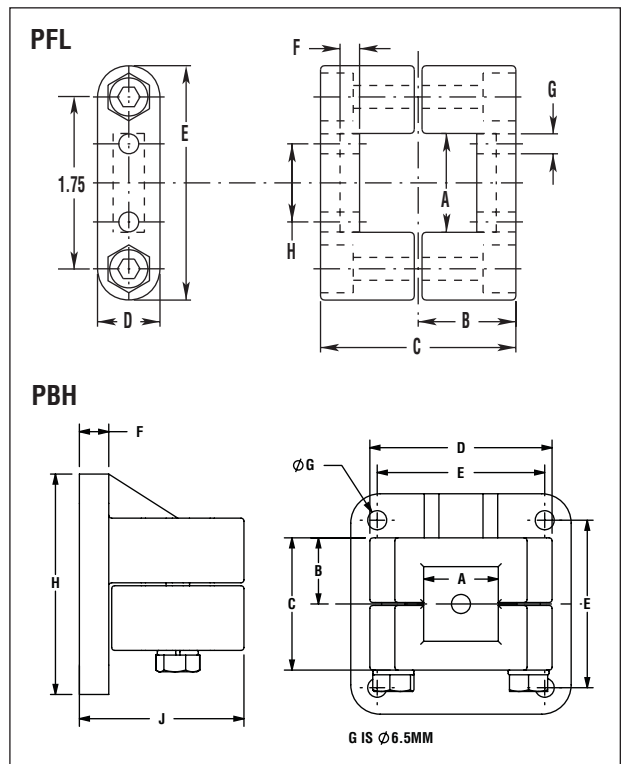


FLANGE BASE (PBH)

ORDERING INFORMATION

PART NO.	A	B	C	D	E	F	G	H	J
PFL1000	1.00	0.984	1.968	0.630	2.362	0.197	0.200	0.787	-
PFL1500	1.50	1.338	2.677	0.787	2.953	0.276	0.256	1.024	-
PBH1000	1.00	1.00	1.890	2.362	2.520	0.472	0.256	3.228	2.874
PBH1500	1.50	1.25	2.440	2.756	2.992	0.551	0.256	3.740	3.347

Other housing configurations are also available. Size specifications are available upon request.



ANGLE BRACKET - 1-1/2" only

PART NO. PAN1515



CROSS MOUNT - 1-1/2" only

PART NO. PXX1515



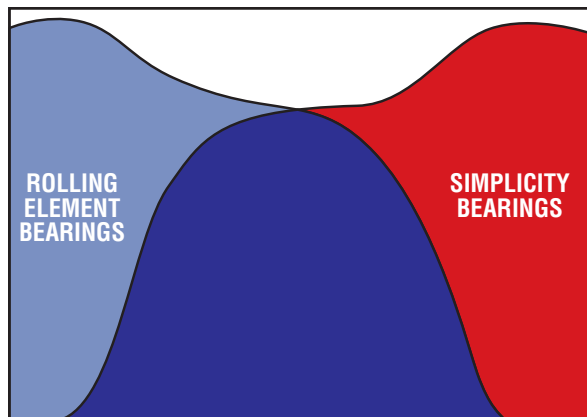
CROSS MOUNT ROUND & SQUARE - 1-1/2" only

PART NO. PXM1515



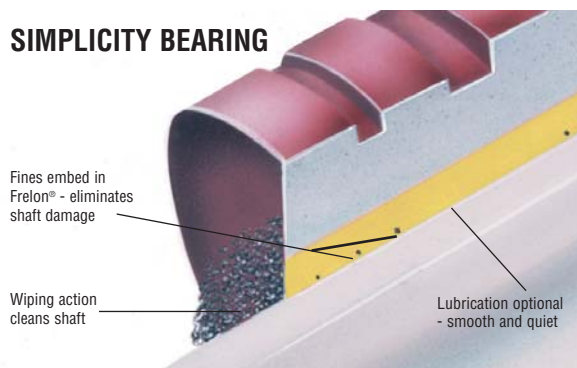
Simplicity® Advantages

Technical Information

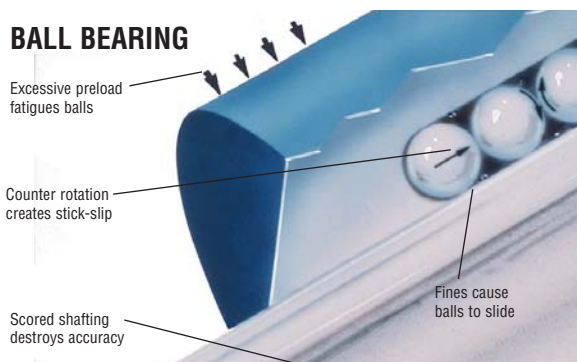


- | | | |
|--|--------------------------------------|--|
| <ul style="list-style-type: none"> • Machine Tool Accuracies • Preloaded - zero play • Very high speeds | <p>ALL OTHER APPLICATIONS</p> | <ul style="list-style-type: none"> • Water washdowns • Foundry & welding environments • Shock loads & vibration • Extreme temperatures |
|--|--------------------------------------|--|

SIMPLICITY BEARING



BALL BEARING



Plane bearing applications represent 25% of total worldwide bearing usage.

Why? Good engineering principles dictate the best bearing design for the application. Often ball bearings are asked to perform beyond their design capabilities. The rolling element industry has not helped users understand the limitations of their technology.

In 1983, linear ball bearing users came to PBC Linear's™ founding company Pacific Bearing® and asked for a linear bearing that simply would not fail. Dirt, vibration, shock loading, water washdowns, etc. were causing premature failure, often within days. After testing many material combinations, we chose the Simplicity design as the best solution.

In 1997, three years of rigorous development and testing resulted in the release of the next generation of plane bearing material – Frelon GOLD®. The original Simplicity bearings were improved with additional performance advantages. These are the advantages you will gain with Simplicity:

LINER

- Self-lubricating – requires no external lubricant
- Embeddability of hard particulate eliminates galling and shaft damage
- Dampens vibration for quiet and smooth operation

LOAD CAPACITY

- Frelon GOLD® supplies an average of 20x more load capacity than a standard linear ball bearing allowing the Design Engineer to use a more compact package
- Shock loads are absorbed without damage to components

PERFORMANCE

- Simultaneous linear, oscillating, and rotary motions expand possibilities
- Reliable friction characteristics that do not increase over the life of the bearing
- Liner material similar to energized Teflon® seals
- Close fit & wiping action - cleans shafting - eliminating the need for seals

LOW COST

- Average purchase price 15-30% less than competitive rolling element linear bearings
- Operates maintenance free
- Reliable, predictable life



FRELON® BEARING LINER MATERIALS

Frelon GOLD® and Frelon® J are a compound of Teflon® and fillers developed for improved performance over other bearings. They provide low wear, low friction, self-lubrication, and high strength.

TEFLON FEATURES:

- Self-lubricating (runs without added lubricant)
- Embeddability of hard particulate
- Wide temperature range (-400°F/+400°F)
(-240°C/+204°C)
- Chemically inert
- Vibration dampening (NO metal-to-metal contact)

FILLER BENEFITS:

- High load capacity
- High strength
- Low wear rate vs. other materials

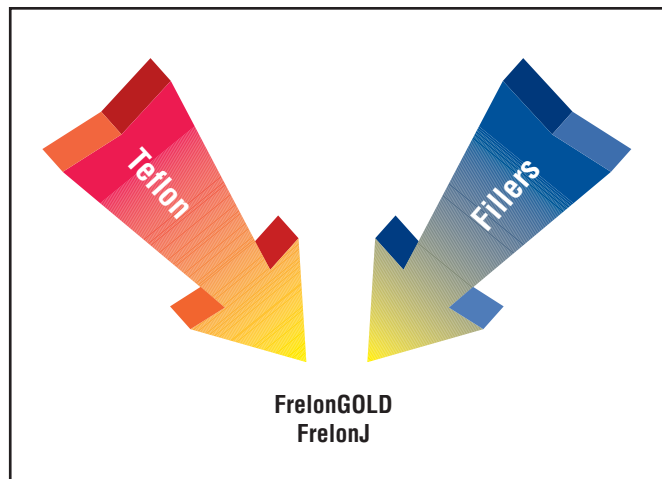
Frelon GOLD® is a dark gold colored high performance material with gold-colored fillers and is compatible with standard RC60 hardened steel shafting, RC70 ceramic coated and 440 stainless steel shafting.

Frelon® J is a yellow colored material specially formulated to provide the optimum performance with 300 series stainless steel and softer shafting like bare aluminum.

COMBINED FRELON® WITH PRECISION BEARING TECHNOLOGY TO CREATE SIMPLICITY®

- The Frelon liner is bonded to the bearing shell at the molecular level, which transfers the load and dissipates heat buildup throughout the bearing
- Will not rust or corrode due to anodized aluminum or stainless steel shell
- Patented self-aligning capabilities are standard (See pages 41-42 for information)
- Provides both linear, oscillating, rotary, or any combination of motions
- Maintenance free operation
- Will not damage shafting
- Smooth, quiet operation
- Highly accurate – all critical surfaces are ground on precision bearing grinders
- WILL NOT CATASTROPHICALLY FAIL!
- Longer life over competition
- 1.5 to 2 million inches of travel

Teflon® is a registered trademark of Dupont Corporation

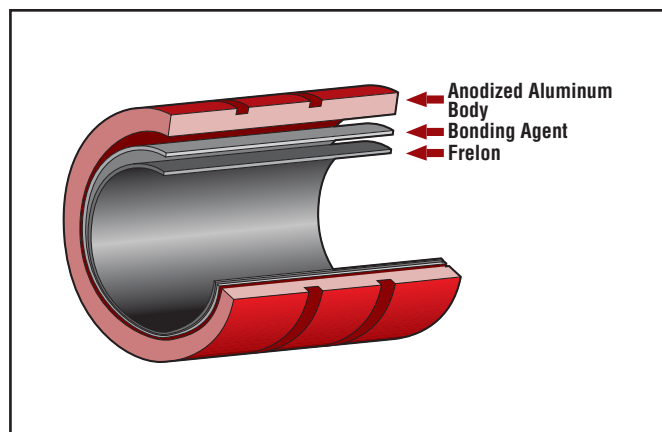


Frelon GOLD®

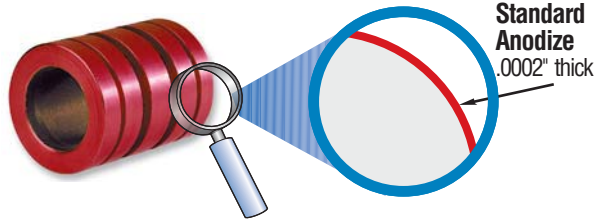
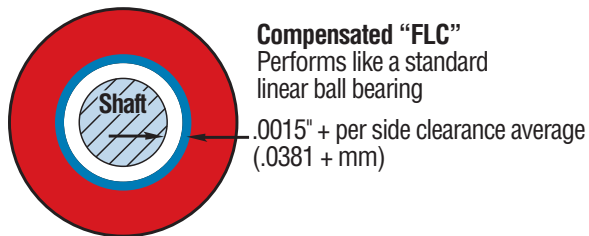
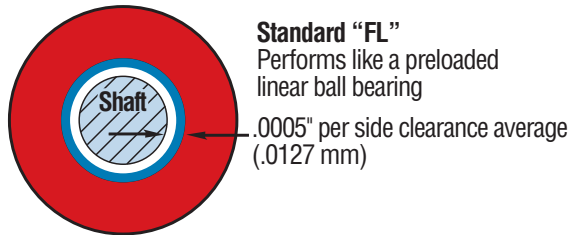
Frelon® J



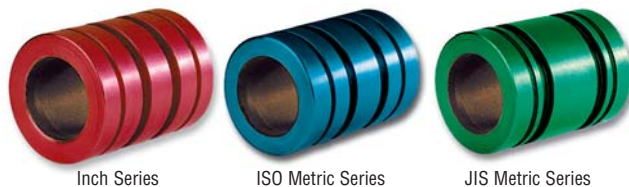
Bearing Plug Shown - See Page 33.



RUNNING CLEARANCE



STANDARD



OPTIONAL



RUNNING CLEARANCE

Simplicity bearings are available with two classes of running clearance.

PRECISION—"FL":

- Performs like a preloaded ball bearing
- Tightest running clearance approximately .001" (.025mm)
- Use in applications that require high precision

CAUTION: Not recommended for all parallel shaft applications. Any misalignment can cause binding on the shaft. See recommended "FLC".

COMPENSATED—"FLC":

- Performs like a standard ball bearing
- Additional clearance built into the I.D. (all other dimensions are the same as the precision bearings)
- Ideally suited for parallel shaft applications

NOTE: Many parallel shaft applications will run "FL" precision on one rail and "FLC" compensation on the opposite rail to accommodate slight misalignments.

BEARING SHELL

Simplicity bearings are available in a variety of configurations to help meet specific application needs.

- Standard is aluminum alloy with anodized finish (standard)
- Special 316 stainless steel (no plating) (optional)

MATERIALS:

Aluminum Alloy – Is a heat treated and artificially aged aluminum with good strength and corrosion resistance.

316 Stainless Steel – Has an excellent corrosion resistance and is widely used by the paper, food, and other industries.

FINISHES:

Standard Anodized – A sulfuric bath anodizing with a nickel acetate seal that will stand up to 14 days exposure in a 5% salt spray solution at 96°F. It is applied at a .0002" thickness.

NOTE: See page 62 for details on chemical resistance.



TOLERANCES

- All bearings are precision ground both I.D. and O.D. to provide the highest quality.
- Statistical Process Control (SPC) capabilities also increase final quality.

SELF-ALIGNMENT FEATURE

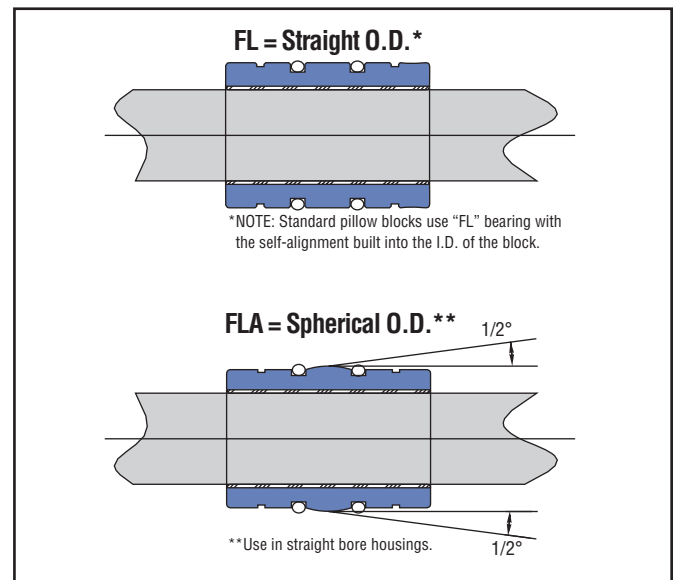
Simplicity bearings are available with a standard straight O.D. or a crowned self-aligning O.D.

“FL” – (Standard):

- Straight O.D.
- Standard pillow blocks have the self-aligning capability designed into the block using standard “FL” bearings for the final assembly

“FLA” – (Self-aligning O.D.):

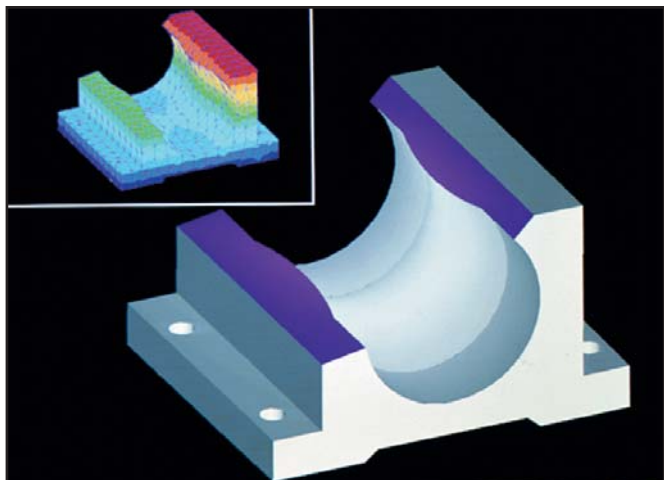
- Has a crown on the O.D. allowing the bearing to re-align itself in binding situations
- Specifically designed to easily retrofit straight bore housings
- The bearing will allow $1/2^\circ$ of misalignment capability from centerline (1° overall).
- O-rings are used on either side of the crown. This cushions and eliminates clatter in operation.





Pillow Blocks

Technical Information



PILLOW BLOCKS

- Made of aluminum alloy
- Pillow blocks are interchangeable with industry standard ball bearing pillow blocks
- Critical centerline dimensions hold accuracy within $\pm .001"$ on inch sizes and $\pm .015$ mm on metric sizes

FINISHES:

- Clear anodized finish (Standard)

Standard pillow blocks have built-in self-alignment in all directions.

- Standard pillow blocks have $1/2^\circ$ misalignment from centerline.
- This feature is built into the housing with a patented spherical radius at the midpoint of the block.
- This self-aligning capability will allow for some shaft deflection and misalignment.

Rigid or straight bore housings are available.

- This does not allow for any self-alignment and provides a very rigid assembly.
- They are typically used in single shaft applications.

O-RINGS

Used in standard pillow blocks and with self-aligning bearings.

Nitrile Buna 70 (standard) – A good general purpose rubber that is used in 98% of applications.
-65°F to 275°F (-50°C to 135°C)

Viton (special – designate with "V") – Used only in high temperature applications up to 400°F (up to 204°C).

SEALS

Use only in the most contaminated environments.

Polymod® (standard) – A high performance polymer modified material that reduces friction of a standard buna material by 50% and increases wear life

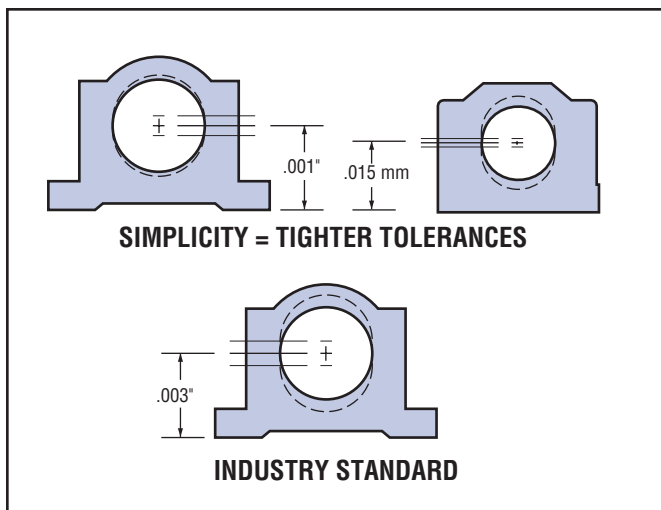
Polymod is a registered trademark of Polymod Technologies, Inc.

Temperature – -40 – +400°F

Urethane (special - designate with "U") – A moly-impregnated urethane scraper that is only for the severest applications - friction is greatly increased!

Temperature – -40 – +180°F

Viton™ (special - designate with "V") – Used only in high temperature applications up to 400°F (up to 204°C).





ATTENTION: 90% of applications do not require seals when using Simplicity bearings. The liner has a natural ability to wipe particles from the shafting. Any particulate (metal, sand, etc.) that does enter the bearing will embed itself into the soft liner not scoring the shafting or locking mechanical parts.

When ordering a bearing with any internal features (seals or internal lubrication), the bearing may or may not be shipped with extra internal grooves in addition to those needed for the ordered option. Low volume orders are more likely to have additional grooves. The extra grooves will not negatively impact the performance of the bearing.

Also, internal grooves are typically an anodized surface; however, in the interest of the quickest possible delivery, the internal grooves may not be anodized.

LUBRICATION SYSTEM

Order with "JKM" modifier

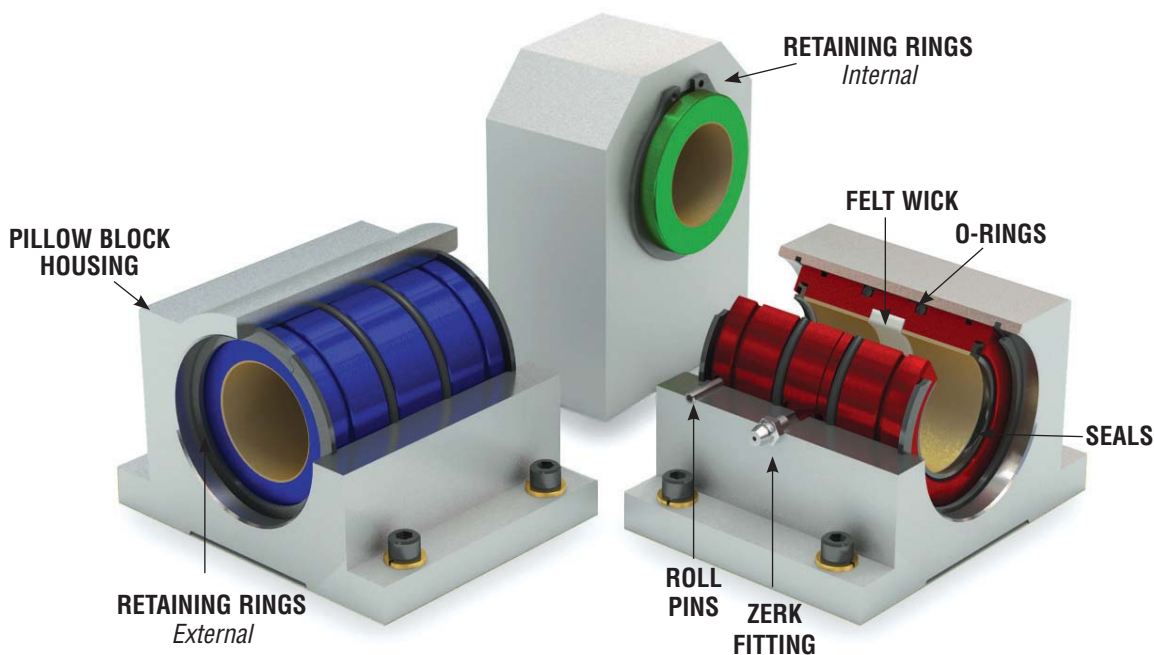
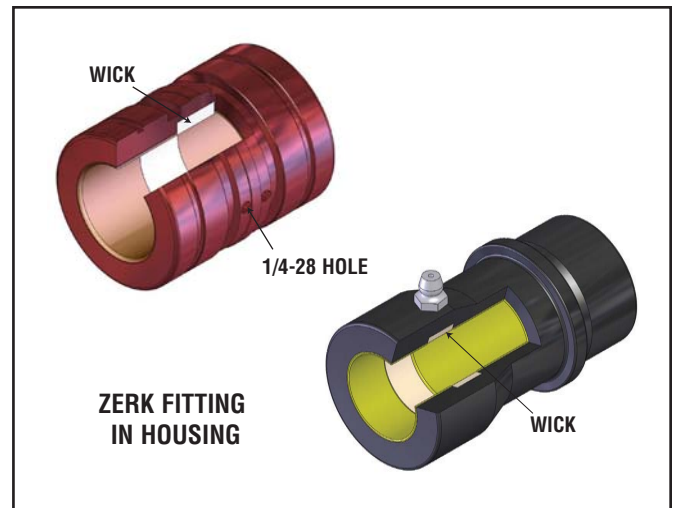
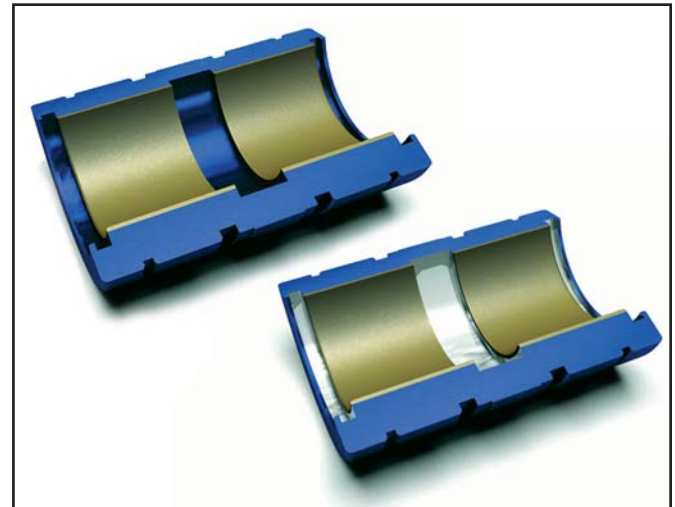
- Recommended for high speed, high load, and rotary or oscillating applications

LUBRICATION SYSTEM CONSISTS OF:

Felt wick – Retains oil lubricants (remove when using grease lubrication) Open glued / Closed are not

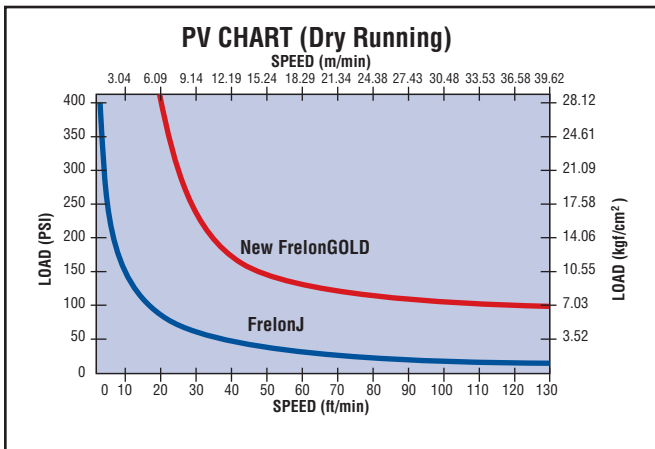
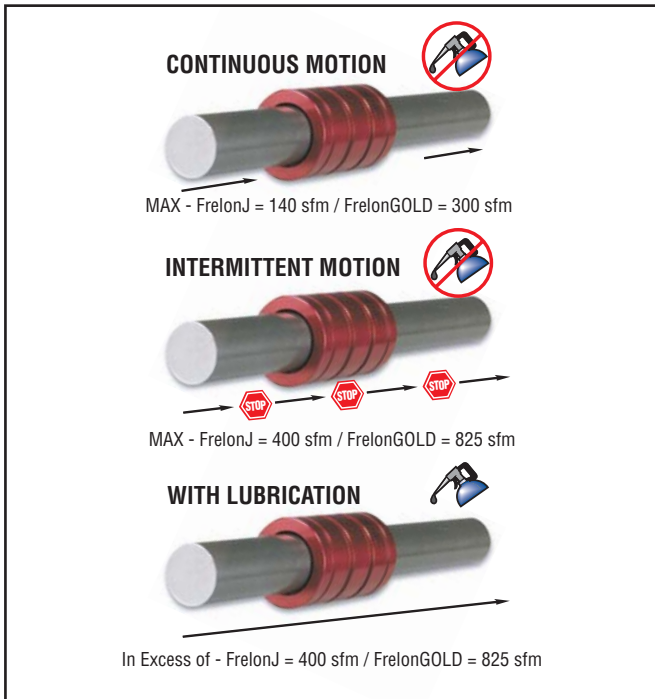
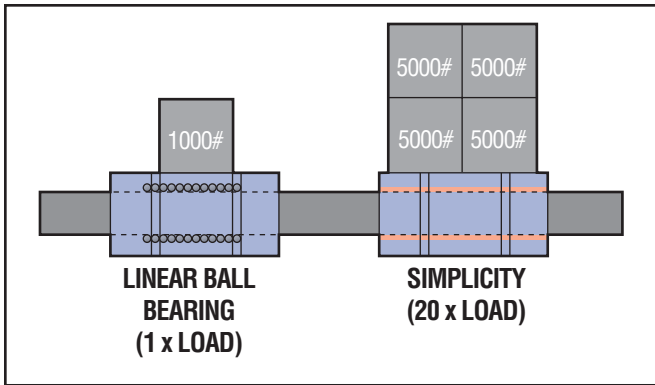
Zerk fitting– Installed into pillow block, other housing, or directly into die sets PAC, PACM

- One seal available / two is standard
- Smaller than clearance uses seals





Load Capacity Technical Information



LOAD CAPACITY OF LINER

Simplicity bearings can carry from 4 to 20 times the load of a linear ball bearing.

BEARING MATERIAL	STATIC LOAD CAPACITY
Frelon GOLD®	20.68 N/mm ²
Frelon® J	10.34 N/mm ²

- Allows the engineer to maintain performance in a smaller designed package

Example: Simplicity 1/2" I.D. = 1" I.D. linear ball bearing

- Shock loads and vibration are absorbed
- Metal to metal contact is eliminated providing a smoother, quieter running assembly

SPEED CHARACTERISTICS

Exceeding these speeds causes frictional heat and accelerates liner wear.

BEARING MATERIAL	NO LUBE CONTINUOUS MOTION	NO LUBE INTERMITTENT MOTION	WITH LUBRICATION*
Frelon GOLD®	300 sfm	825 sfm	825 sfm
	60 in./sec.	165 in./sec.	165 in./sec.
	1.524 m/sec.	4.19m/sec.	4.19 m/sec.
Frelon® J	140 sfm	400 sfm	400 sfm
	28 in./sec.	80 in./sec.	80 in./sec.
	.711 m/sec.	2.03 m/sec.	2.03 m/sec.

*Depending on the lubrication used, loads, and frequency of continuous or intermittent motion, speeds can be in excess of the numbers shown.

PERFORMANCE RATINGS (for Linear Motion)

Plane bearings are rated by their limiting PV which is a combination of load over a given surface area and the velocity.

BEARING MATERIAL	MAX. "PV"	MAX. "P"	MAX. "V" (NO LUBRICATION)
Frelon GOLD®	20,000 (psi) x ft./min.) or 430 (kgf/cm ² x m/min.)	3000 psi or 210.9 kgf/cm ²	300 sfm or 91.44 m/min.
Frelon® J	10,000 (psi x ft./min.) or 215 (kgf/cm ² x m/min.)	1500 psi or 105.45 kgf/cm ²	140 sfm or 42.66 m/min.

PV = The performance measurement of plane bearings

PV = P x V where P = pressure (load) in psi (kgf/cm²)

V = velocity (speed) in sfm (m/min.)

NOTE: All 3 parameters must be met by an application for the bearing to perform properly.



WEAR RATE/LIFE EXPECTANCY

The life expectancy of a Simplicity bearing is dependent on application parameters.

Factors that will affect life:

- Shaft hardness, surface finish, and preparation
- Length of travel
- Temperature
- Contamination
- Running clearance
- Lubrication
- Speed

The Radial Wear chart gives a guideline for a typical application at 10 psi (.703 kgf/cm²) traveling at 100 ft./min. (30.48 m/min.).

FACTORS AFFECTING WEAR RATE/LIFE

Shafting requirements for Frelon® bearing materials.

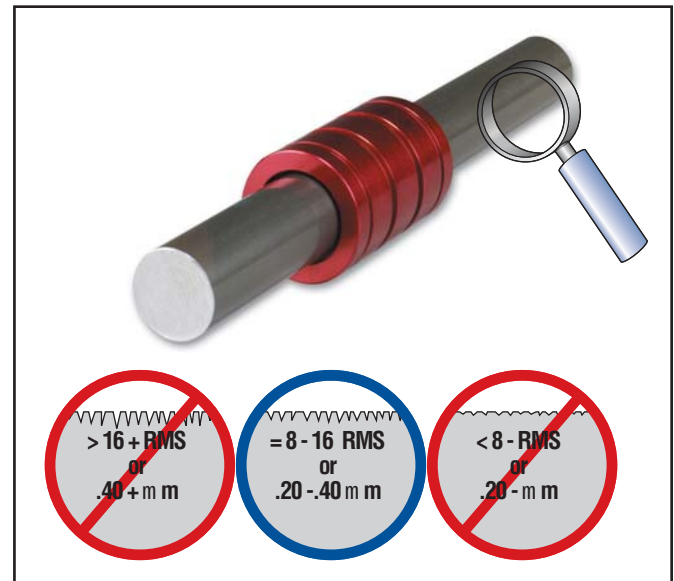
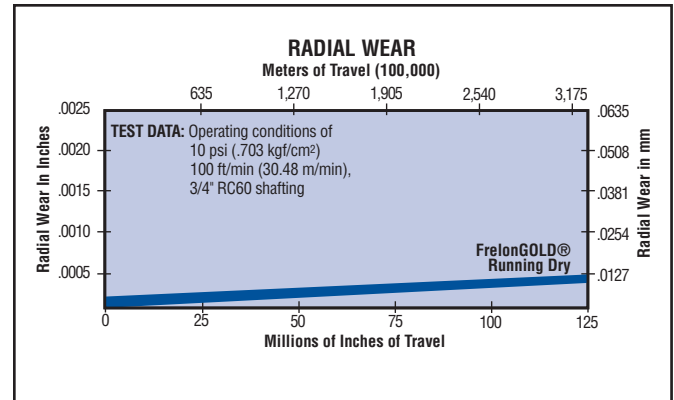
BEST PERFORMANCE:

- Finish of 8 - 12 RMS (Roughness Measurement System)
- Hardness of Rc 60

ACCEPTABLE PERFORMANCE:

- Finish of 8 - 16 RMS
- Hardness of Rc 35
- Surface finish requirements apply to all three Frelon bearing materials.
- Rougher shafting can be used, but both bearing and shafting will wear at accelerated rates and binding may occur.

NOTE: Consult factory if using chrome plated shafting
Polished < 8 RMS

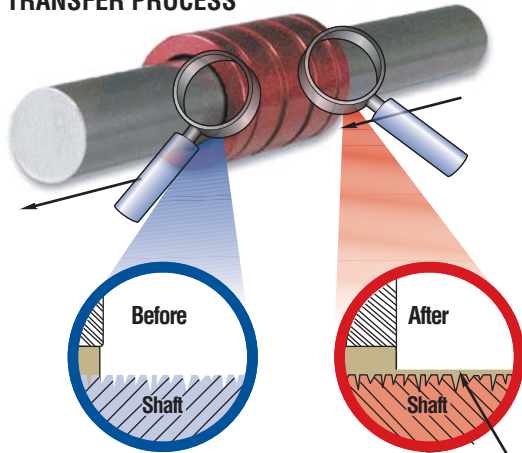




Transfer Process

Technical Information

FRELON® TRANSFER PROCESS



NOTE: At break-in, Frelon deposits a microscopic film on the shaft and fills the valleys in the surface finish creating a Frelon-on-Frelon running condition that is true self-lubrication.

TRANSFER PROCESS OF LINER TO SHAFT

The interaction of the Frelon® material and the shafting creates a natural, microscopic transfer of the Frelon to the running surface. A thin film is deposited on the shaft, and the valleys in the surface finish are filled in with Frelon material during the initial break-in period. This transfer creates the self-lubricating condition of Frelon riding on Frelon.

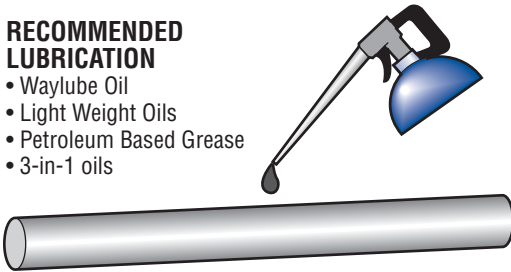
This break-in period will vary depending on several criteria:

1. Preparation of the shafting prior to installation - it is best to clean the shafting with a 3-in-1 type oil before installing the bearings. This ensures that the surface will receive a full transfer of material.
2. Speed, load, and length of stroke specific to the application - typically the initial transfer process will take approximately 50-100 strokes of continuous operation. The running clearance on the bearing will increase an average of .0002" to .0005", depending on the length of the stroke and surface requiring the transfer.
3. How often the shafting is cleaned - if the shafting is cleaned regularly, increased wear will be seen in the bearings. This is due to the transfer process being performed over and over again.

CAUTION: Do not repeatedly clean the shafting with alcohol! This will remove the previously transferred material entirely and increase the wear to the bearing liner.

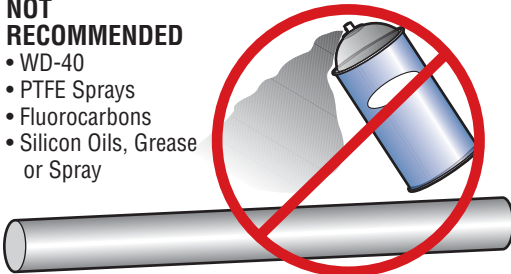
RECOMMENDED LUBRICATION

- Waylube Oil
- Light Weight Oils
- Petroleum Based Grease
- 3-in-1 oils



NOT RECOMMENDED

- WD-40
- PTFE Sprays
- Fluorocarbons
- Silicon Oils, Grease or Spray



WD40® is a registered trademark of the WD40 company

LUBRICATION

- Reduce friction up to 50%.
- Minimize wear of liner.
- Reduce heat buildup allowing greater speeds. Actual speeds achieved are dependent on type of lubricant and frequency of application.
- Aid in cleaning the shafting for a proper transfer process. A minimum of initial lubrication of Simplicity bearings is strongly recommended.



TEMPERATURE

Simplicity bearings can operate in a wide range of temperatures (-400°F/+400°F) (-240°C/+204°C). Temperature dependent on materials housed in pillow block and size of bearing.

- Maintains the same performance characteristics
- The thin liner allows heat to dissipate through the bearing shell

THERMAL EXPANSION

The standard bearing ID options are designed for use in most industrial applications.

For temperatures below 0° F, the standard I.D. is recommended. (FL series)

For extreme high temperatures, the Compensated I.D. bearing is recommended (FLC) for the increased running clearance.

CAUTION: It is always best to inspect actual size at extreme temperatures to insure proper running clearance.

ROTARY APPLICATIONS

Simplicity bearings will operate very well in rotary applications if applied properly.

Stationary rotary applications do not allow the heat to be spread over an extended area. It is retained in the I.D. of the bearing limiting speed and load.

- MAX Rotary Speed (No lube/continuous motion)
- 40 sfm (12.2 m/min.) for standard precision ID clearances
- 140 sfm (42.6 m/min.) for compensated ID clearances

$$V(\text{sfm}) = .262 \times d \times \text{RPM}$$

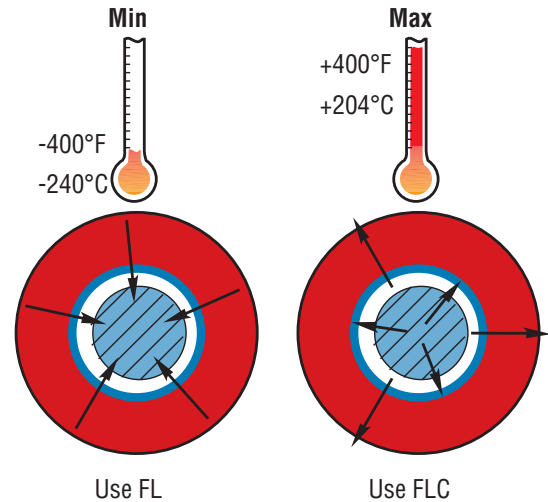
d = shaft diameter (inches)

RPM = revolutions per minute

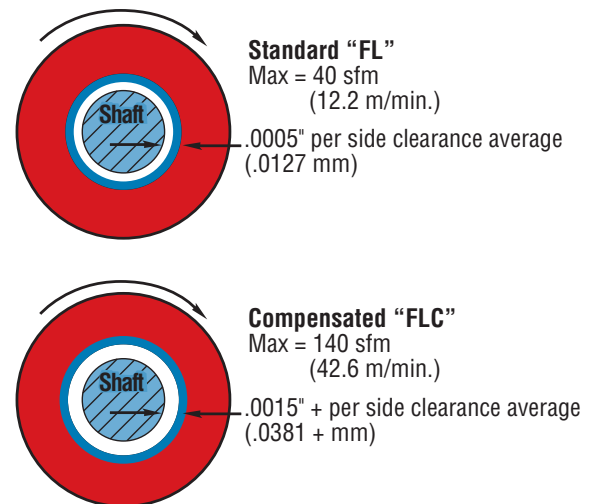
- Properly maintained lubrication can increase these speeds dramatically.

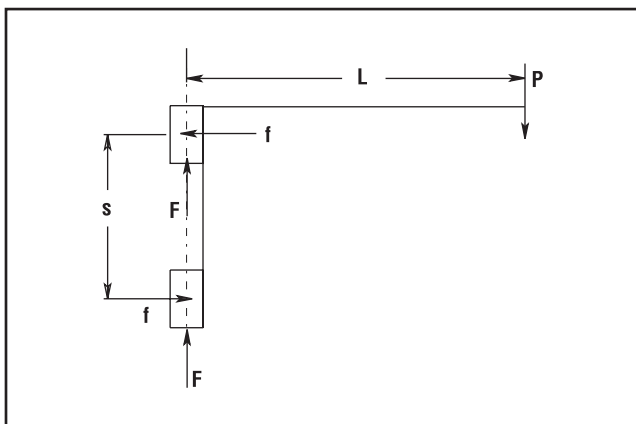
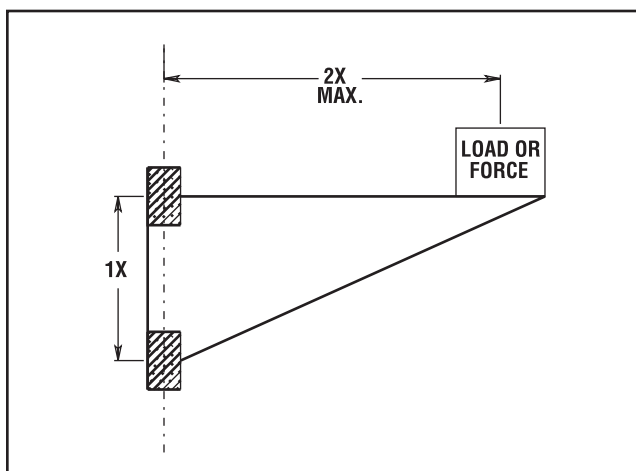
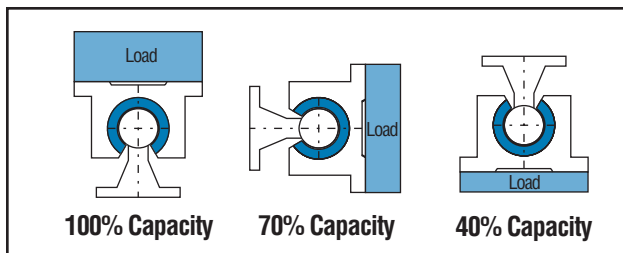
CAUTION: It is always best to do specific testing for rotary applications above these limits where lubrication is to be used.

TEMPERATURE EXTREMES



MAXIMUM ROTARY SPEEDS





OPEN BEARINGS ORIENTATION

Simplicity bearings can operate in any orientation.

Load capacities will vary on open bearings depending on the orientation in which they are being used.

CANTILEVERED LOADS

- Maximum 2:1 ratio
- $1x$ = bearing separation on same shaft
- $2x$ = distance from shaft to load or force

EXAMPLE: If $2x$ equals 10" then $1x$ must be at least 5"

CAUTION: BINDING will occur if the 2:1 ratio is exceeded!!

This principle is NOT load dependent! It is NOT due to edge loading. It is also NOT dependent on the driving force used! The bearings will bind whether hand or mechanically driven. This principle is a product of friction.

WORKING THROUGH THE FOLLOWING EQUATION WILL EXPLAIN WHY THIS IS A PRODUCT OF FRICTION:

P = force being applied

L = distance out from shaft that P is being applied

s = center to center spacing of bearings

f = resultant force on bearings by shaft

F = friction force on each bearing

μ = coefficient of friction (about .25 when not moving)

BALANCE THE MOMENTS:

$$f * s = L * P$$

$$L / s = f / P$$

COMPUTE FRICTION FORCE:

$$F = f * \mu$$

NOTE: Total friction force pushing up is $2 * F$. To lock up the slide, the total friction force must be equal to (or greater than) P .

$$P = 2 * F = 2 * f * \mu$$

SUBSTITUTE FOR P :

$$L / s = f / (2 * f * \mu) = 1 / (2 * \mu) \Rightarrow L / s = 1 / (2 * \mu)$$

NOTE: The forces drop out of the equation

Assume static coefficient of friction is .25 ($\mu = .25$) then $L / s = 2$ That is the 2:1 ratio.

There may be other factors that add to the braking effect, but the coefficient of friction is the main cause.

NOTE: Proper lubrication can help to drop friction and extend the 2:1 ratio.



COUNTERBALANCE

If holding the 2:1 ratio is not possible, one method of preventing binding problems is using a counter balance.

For efficient counter balances in horizontal applications, use this formula: $M * Y = W * Z$

NOTES: To avoid problems when running without mass: (M)
 $Z = 1-1/2 s$

W can be calculated - load on bearing will be:

$$\frac{M + W}{\text{\# of bearings}}$$

EXAMPLE: $50 * 24 = W * Z$ ($Z = 1-1/2 * 6 = 9$)

$$W = \frac{50 * 24}{9} = 133 \text{ lbs.}$$

$$\text{Load per bearing} = \frac{50 + 133}{4} = 45.75 \text{ lbs. / bearing}$$

CANTILEVER LOADS AND DRIVE FORCE LOCATION WITHOUT COUNTERBALANCE

d = distance from shaft to Drive Force

l = distance from shaft to the load center of gravity

s = center to center spacing of the bearings on the shaft
 (If non-self-aligning, then outside to outside distance should be used.)

$L = l / s$ = Load Force Ratio

$D = d / s$ = Drive Force Ratio

GENERAL RULES:

Drive Force Ratio (D) should never be larger than 2. A Drive Force Ratio (D) larger than 2 can cause the slide to lock up.

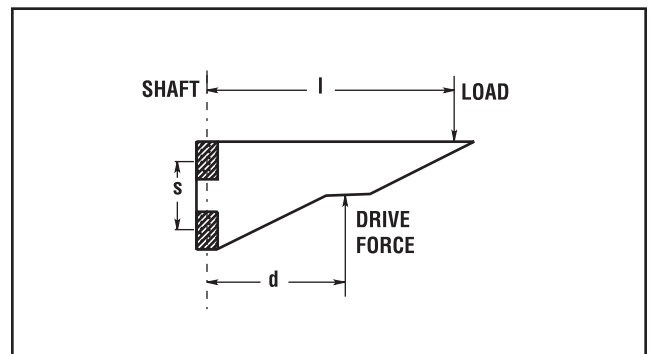
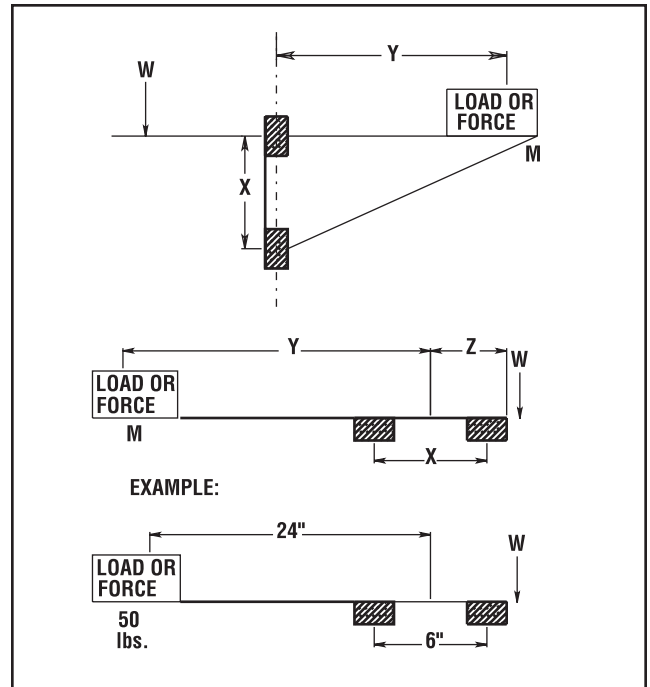
Load Force Ratio (L) can be larger than 2, but as this ratio increases, the drive force required to move the slide increases dramatically. A Load Force Ratio (L) larger than 4 is not recommended.

If the slide is occasionally operated unloaded, use the distance to the slide's center of gravity as the distance to the load (l).

VERTICAL APPLICATIONS:

If L is between 0 and 2, the lowest drive forces occur when the value of D is about 90% of L ($D = .9 \times L$). However, D values between 0 and L will work fine.

If L is between 2 and 4, use this equation: $D = 4 - L$



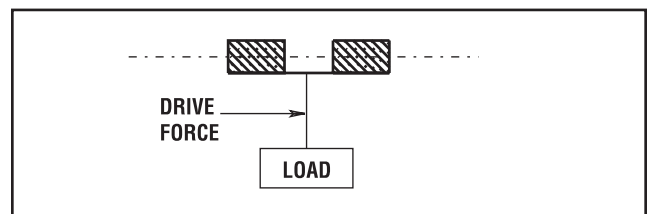
HORIZONTAL APPLICATIONS:

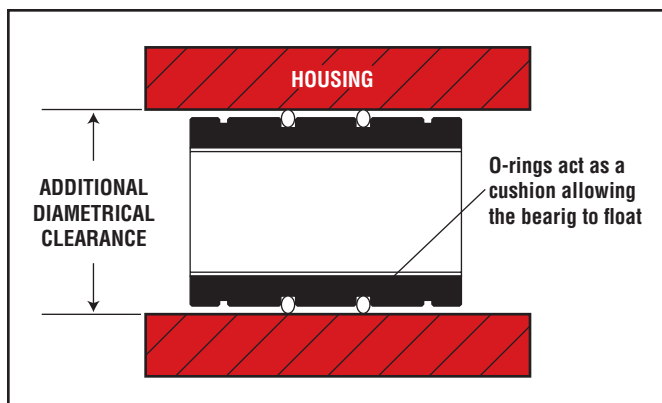
For best results, the drive force should be applied as close to the shaft as possible no matter what the value of the Load Force Ratio (L) is.

HANGING OR "TOP HEAVY" HORIZONTAL APPLICATIONS WITH HIGH ACCELERATION RATES:

If your application will have high acceleration forces, use this formula for the value of the Drive Force Ratio:

$$D = 0.8 \times L \times \sqrt{a} \text{ where } a \text{ is acceleration in g's.}$$





SEVERE MISALIGNMENT SOLUTIONS

Linear ball bearings will continue to operate in a misaligned condition, but will cause damage to shafting and catastrophically fail.

Simplicity bearings DO NOT tolerate misalignment. They simply will stop moving without any damage to the shafting. Self-aligning housings will aid in misalignment - up to $1/2^\circ$ from centerline.

POSSIBLE SOLUTIONS for use with Standard "FL":

Undersize the bearing O.D. (see chart) and install o-rings. See product pages for o-ring numbers.

Oversize the housing I.D. (see chart) and install the standard bearing with o-rings. See product pages for o-ring part numbers.

The additional clearance created by either method will allow the bearing to float in the housing and match the non-parallelism of the shafting.

CAUTION: This solution is only for SEVERE cases that the standard self-aligning will not accommodate.

NOTE: Maximum additional clearance and o-ring information for severe misalignment solutions on page 61. For complete installation instructions, see pages 58-61 in the Technical Section.

CHEMICAL RESISTANCE

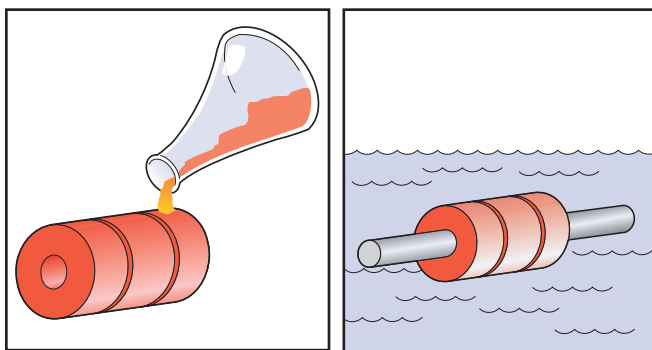
Simplicity bearings stand up to harsh environments.

Frelon® J – almost universal chemical inertness. Only molten sodium and fluorine at elevated temperatures and pressures show any signs of attack.

Frelon GOLD® – the fillers in the material can be attacked by deionized water and other harsh chemicals.

Anodized Aluminum Shell (Standard) – good chemical resistance in most industrial applications.

316 Stainless Steel Shell (Optional) – excellent chemical and corrosion resistance in harsh environments. (See page 62 for complete chemical interaction listing.)



SUBMERGED APPLICATIONS

Simplicity bearings will provide excellent performance in a submerged condition.

The bearings will employ the fluid as a lubricant showing increased velocities and wear life. Oils and non-salt water are especially effective.

NOTE: Please contact manufacturer before specifying Frelon GOLD for submerged applications.

VACUUMS/OUTGASSING/CLEANROOMS

Due to self-lubrication, low outgassing, and a minimum of particulate (buildup), Simplicity bearings are excellent in clean rooms and vacuums.

Testing has been done on the Frelon® materials in accordance with ASTM E-595-90 with acceptable maximums of 1.00% TML and .10% CVCM.

MATERIAL	% TML	% CVCM
Frelon	0.00	0.00
Frelon J	0.18	0.01

TML = Total Mass Loss

CVCM = Collected Volatile Condensable Materials



CLASSES OF PLANE BEARINGS

Simplicity bearings are in a class of bearings known as plane bearings, which means that they have no rolling elements. There are three classes of plane bearings:

Class I - Require an outside source of lubrication (oil, grease, etc.).

Class II - Lubrication is impregnated within the walls of the bearing. (Bronze, powder metal, etc.) Typically these bearings require an added lubricant also.

Class III - Self-lubricating bearings, which do not require added lubricants.

Simplicity bearings are Class III plane bearings and are self-lubricating.

RATING A PLANE BEARING

Plane bearing performance capacity is rated by PV.

P - pressure or load in pounds per square inch (psi) or kilograms per square centimeter (kg/cm²).

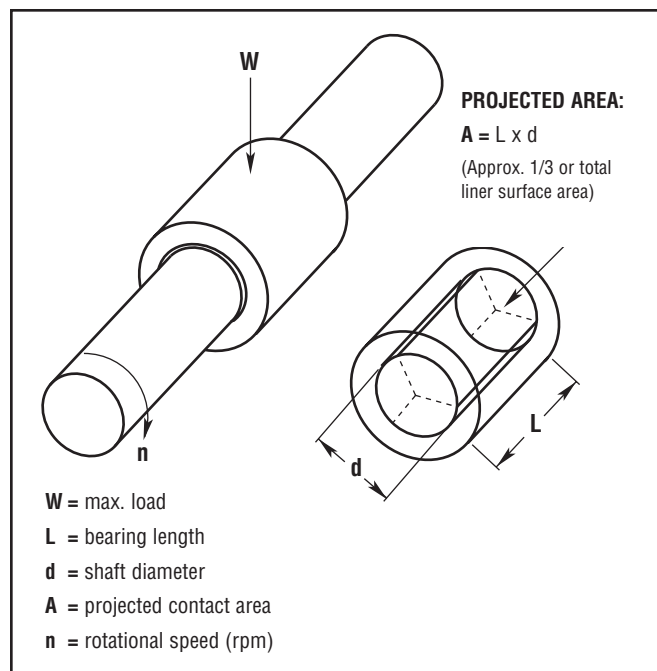
V - velocity or surface speed in feet per minute (fpm or sfm) or meters per minute (m/min.).

PV - pressure velocity value. (Pressure x Velocity)

SIMPLICITY MAXIMUM PERIMETER

MAXIMUM PARAMETERS	P	V (RUNNING DRY)	PV
Frelon®— J	1500 psi or 105.45 kgf/cm ²	140 sfm or 42.67 m/min.	10,000 psi x ft./min. or 215 kgf/cm ² x m/min.
Frelon GOLD®	3000 psi or 210.9 kgf/cm ²	300 sfm or 91.44 m/min.	20,000 psi x ft./min. or 430 kgf/cm ² x m/min.

NOTE: All three parameters must be met in order for the bearing to operate properly.



FORMULAS FOR RATINGS

PRESSURE IS OVER THE PROJECTED AREA OF LOAD:

$$A = L \times d$$

$$P = \frac{W}{A} \text{ psi (or kg/cm}^2\text{)}$$

VELOCITY:

Linear = total distance traveled in one minute

ROTATIONAL VELOCITY:

$$V = \frac{\pi \times d \times n}{12} \text{ fpm (or m/min.)}$$

PRESSURE VELOCITY VALUE (PV):

$$PV = P \times V \text{ psi x fpm (or kg/cm}^2 \times \text{m/min.)}$$

PV EQUIVALENTS

	INCH	TECHNICAL METRIC	INT'L METRIC (SI)
LOAD	1 psi	.0703 kgf/cm ²	.0069 N/mm ²
VELOCITY	1 ft./min.	.3048 m/min.	.00508 m/sec.
PV	1 PV	.0214 PV	.000036 PV
Frelon® ^J MAX PV	10,000	215	.36
Frelon GOL ^D ® MAX PV	20,000	430	.72



Wear Rate

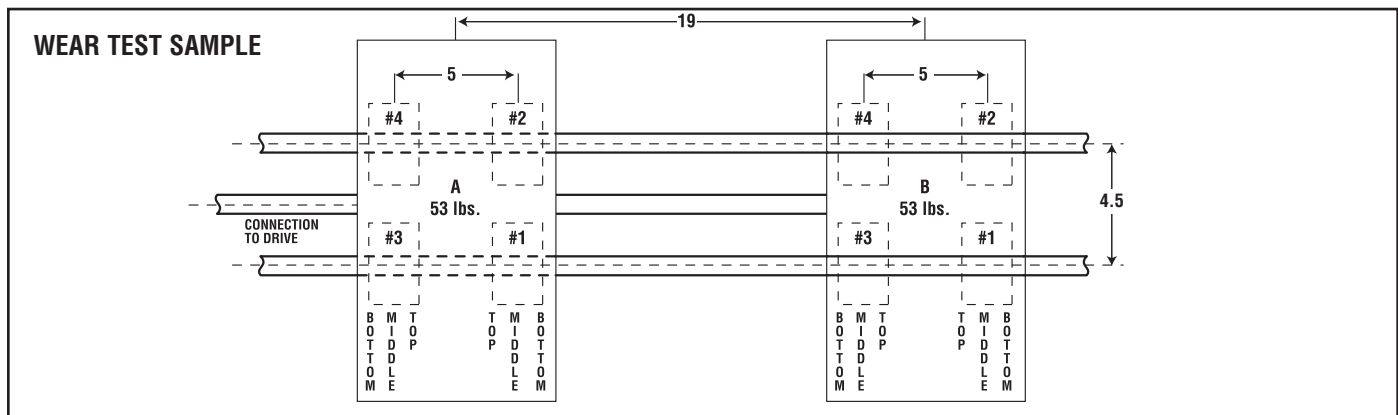
Technical Information

WEAR RATE VS. LIFE EXPECTANCY

A rolling element linear bearing's life expectancy is usually expressed in total inches or meters. A rolling element rotary bearing's life expectancy is expressed in hours of operation. Both are also rated for average (L-50) and minimum (L-10) life. L-50 life is the average life that can be expected from 50% of rolling element bearings. In other words, 50% will not reach the average life expectancy. L-10 life is the minimum life (1/5 the average life) expected from 90% of rolling element bearings. In other words, 10% will not reach the minimum life expectancy. Theoretically they could fail upon installation.

Plane bearings are not rated by a life expectancy but by the wear rate of the bearing material. Wear is greatly dependent upon the proper application of the bearing and material used. If it is not properly applied, it will fail. Failure, however, is subjective and dependent upon specific application requirements. 0.002" running clearance may not be acceptable in one application while another may be able to run a bearing until the liner is completely worn through. The user may then rotate it 30 degrees and continue to run it. This broad range of acceptability makes it difficult to determine life expectancy.

The first step is to determine what wear is acceptable for your application. Then utilizing the test data below, you can estimate the wear expected for your given application.



CONDUCTED BY: Pacific Bearing® Company

BEARING MATERIAL: Frelon GOLD®

SHAFT MATERIAL: Standard RC60 steel shafting

SURFACE FINISH: 8-12 RMS

SPEED: 140 fpm (70 cycles/min; 1,680"/min; 100,800"/hour; 2,419,200"/day)

STROKE: 12"

LOAD: 10.87 psi (53 lbs.)

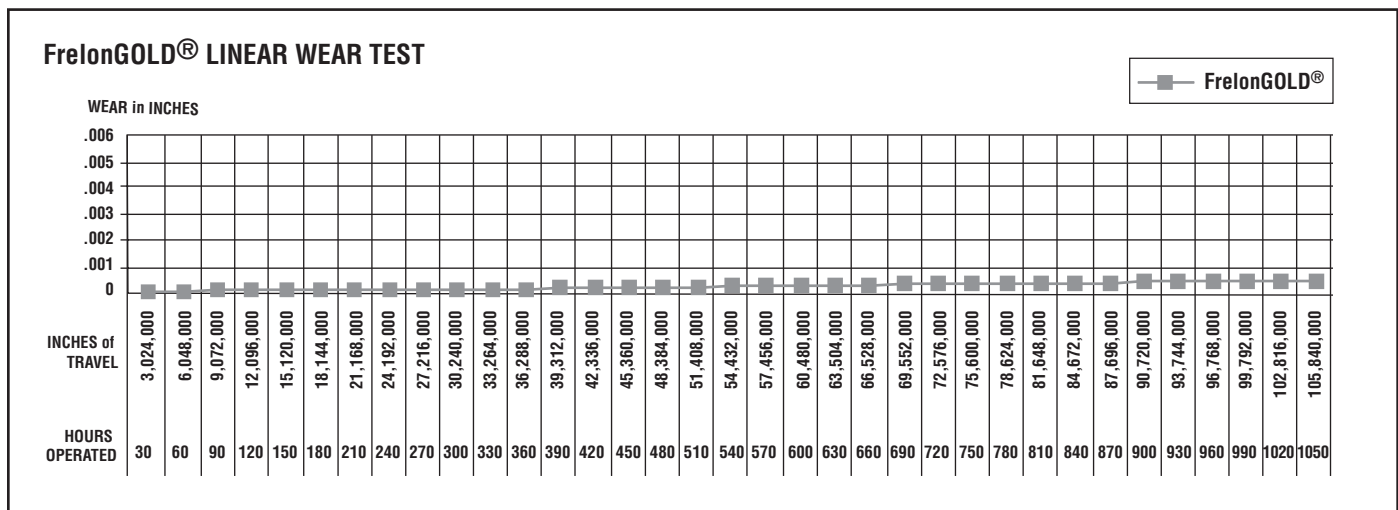
BEARINGS USED: FLN12 (3/4" open style bearings)

LUBRICATION: None

TOTAL WEAR TO BEARING MATERIAL:

Frelon GOLD® = .00042"

NOTE: Wear is an average of totals taken from 4 bearings per carriage.



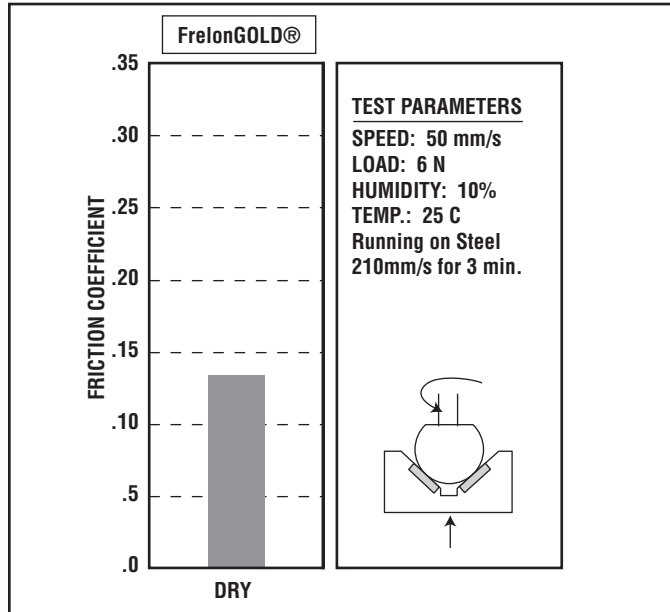


COEFFICIENT OF FRICTION

A frequent misconception of plane bearings is that wear and friction are basically synonymous, in that, high friction equals high wear or that low friction equals low wear. While there can be a relation between the two, they should be addressed as separate issues in the design process.

For example, dry running virgin (unfilled) Teflon® on steel's coefficient of friction (c.o.f.) is approximately .1 while filled Teflon's c.o.f. can range from .125 to .4 depending on the fillers used. By comparison, however, the virgin Teflon will wear at a much greater rate.

FRICTION TEST SAMPLE #1



CONDUCTED BY: Dr. Tillwich GmbH

MANAGING DIRECTOR: Mr. Werner Stehr (World leading tribologist with a seat on the ISOTC123 Committee establishing standards for tribological testing.)

BEARING MATERIAL: Frelon GOLD®

SHAFT MATERIAL: Standard RC60 steel shafting

SURFACE FINISH: 8-12 RMS

SPEED: 50 mm/sec

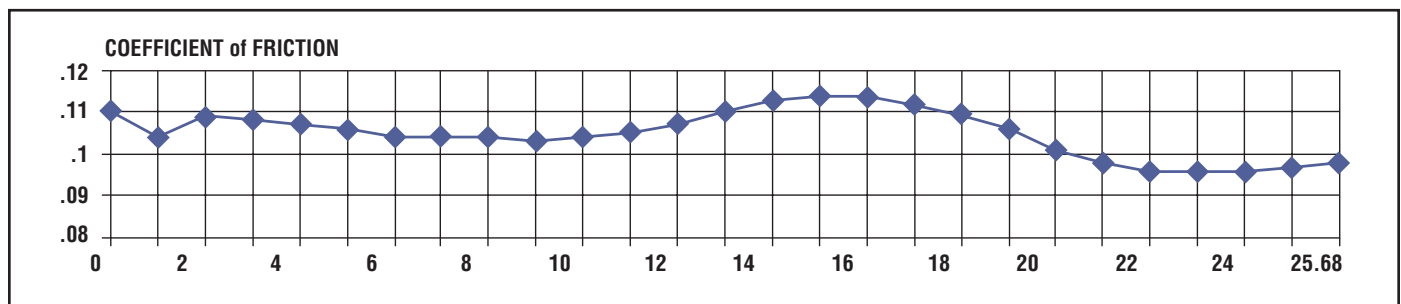
LOAD: 6 N

TEMP.: 25° C

LUBRICATION: None

AVG. COEFFICIENT OF FRICTION:
 Frelon GOL^D® = .125

FRICTION TEST SAMPLE #2



CONDUCTED BY: Frelon GOLD® material processor

BEARING MATERIAL: Frelon GOLD®

SHAFT MATERIAL: CRS 1018

SPEED: 100 fpm

LOAD: 100 psi

DURATION: 25.68 hours

LUBRICATION: None

SURFACE FINISH: 8 RMS

AVERAGE COF: 0.10

MAX. COF: 0.15

MIN. COF: 0.08

AVG. RUNNING TEMP.: 95.40° F



Load Capacity

Technical Information

LOAD CAPACITY (Pressure)

Depending upon the material used, a plane bearing's load capacity can greatly exceed a rolling element bearing. There are three basic reasons for this:

1. The area of surface contact with the shaft is far greater than rolling element bearings, which have point-to-point contact with a given number of balls.
2. A rolling element bearing must be oriented properly for the ball tracks to carry the load adequately, while a plane bearing can be mounted in any orientation.
3. Only one or two of the tracks in a rolling element bearing will actually carry any of the load applied.

Simplicity bearings have a thin liner that is bonded to a metal shell at the molecular level, allowing the load to be transferred throughout the bearing. This gives it an advantage over other plane bearings of solid plastic or polymer materials. These other materials will tend to "cold flow" under pressure. "Cold flow" means to deform or lose shape. The idea is similar to pressing your finger into a bar of soap - material will move or deform as pressure is applied.

LINEAR SURFACE SPEEDS (Velocity)

In typical applications, speed is a known quantity and easily converted. Typically feet per minute or meters per minute are used. The most important factor that speed (along with friction) produces is heat buildup. This is not a critical factor in most linear applications because the heat is dissipated over the length of travel, and it does not affect the bearing. Short stroke or extremely high speed applications may see the effects of heat buildup in thermal expansion and the bearing ID locking on the shaft. A compensated ID bearing (FLC) is recommended in these applications.

FACTORS THAT CONTRIBUTE TO WEAR LIFE

Proper mating of shaft and liner materials.

Surface finish 8-16 RMS (.20-.40mm) is required. Peaks in the surface that are polished to a radius provide the best running surface. Sharp peaks in the finish will be like a fine lapping compound wearing the I.D. of the bearing.

NOTE: Shafting damaged by use with ball bearings can be salvaged and used with Simplicity bearings. Spin in a lathe and polish with sand papers in this order: 120 grit, 180 grit, and 300 grit. This will also remove sharp peaks in the surface finish.

Surface speed - at high speeds, heat buildup will affect liner wear.

Break-in transfer - proper transfer process of the liner to the shaft. (pg. 46)

Lubrication - proper lubrication can greatly improve the wear rate of a bearing. At the same time, improper lubrication can increase wear and failure.

Load & Wear Relationship - Wear rate is proportional to load to the third power. (wear rate $\propto$ (load)³).

If load is reduced to 1/2, wear will be reduced to (1/2)³.

Contamination - while migrating into the bearing and embedding into the liner, certain types of contamination may, over time, cause increased wear to the liner.

NOTE: This is not an all inclusive list. There are many more factors within an application that can affect wear to different degrees. These are the major issues and the first things to address in a design.



TYPES AND EFFECTS OF LUBRICATION

Lubrication is any outside technique used for reducing the friction, wear, or both of a bearing. **Proper lubrication of Simplicity bearings is critical.** Evaluate lubrication needs on an application by application basis to determine whether or not it should be used at all, what type is needed, and how it is applied. Below are some criteria on which to base the lubricant decision:

DO NOT USE WD40™, PTFE sprays, or other oils, greases, or sprays that contain fluorocarbons or silicone. In testing, these lubricants have proven to cause long-term stick-slip problems with the Frelon lined bearings. They tend to become a gummy substance that ultimately increases friction.

RECOMMENDED LUBRICANTS:

- Waylube oils
- Lightweight oils
- 3-in-1 type oils
- Lightweight petroleum based greases

WD40™ is a registered trademark of the WD40 Corporation.

USING OILS WITH SIMPLICITY

DO NOT USE ANY TYPE OF MOTOR OIL OR OILS WITH ADDITIVES! These types of oils work well short term, but quickly become ineffective, and will cause stick-slip reactions in the bearing. As a rule of thumb, the less additives in the oil, the better the performance. Recommended oils are Mobil Vactra #2 (a way lube oil) and any standard 3-in-1 oil. The 3-in-1 oils are tremendous cleaning oils and are the best in preparing for a proper transfer of teflon to the shafting.

GREASE PRODUCTS

DO NOT USE A MOLY FILLED OR OTHER TYPE FILLED GREASES! They become like a lapping compound on the ID of the bearing and increase wear dramatically.

PROPER USE OF GREASES

Proper use of grease is critical for trouble-free operation.

Be sure the felt wick is removed from a “FL-xx-JKM” bearing because grease inserted through the zerk will cause the wick to act like a brake.

Do not fill all of the running clearance with grease! The temptation is to treat it like a rolling element bearing and fill it until it weeps from the end. This will cause greater friction and binding.

The rule of thumb for the bearing liner that “thin is better” applies to the use of grease also.

If grease is used and does not work in the application, it is possible to salvage the bearing with minimal work and to continue to operate. Follow the steps below:

1. If possible, remove the bearing from the housing, wipe the grease from the liner, use a 3-in-1 type oil to clean the excess remaining grease, and reinstall.
2. If it is not possible to remove the bearing, wipe as much grease as possible away from the ends of the bearing, then start to fill with a 3-in-1 type oil for cleaning the liner. To speed the cleaning process, apply forced air to the bearing through the zerk hole and continue using oil lubrication.

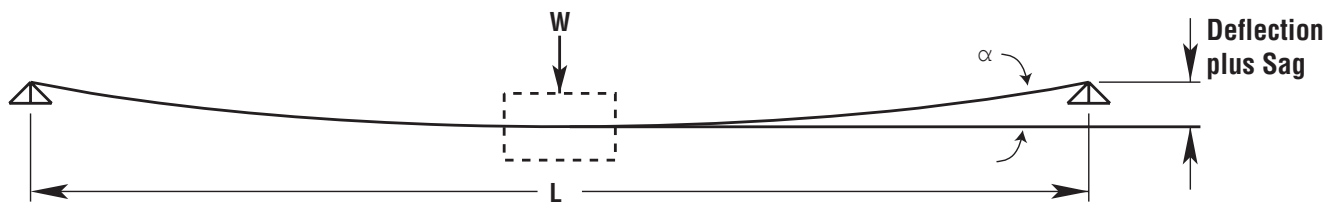
EFFECTS OF LUBRICATION

Lubrication can greatly increase the performance of a bearing when applied properly as noted earlier. Actual performance results for specific applications are difficult to predict due to the number of elements involved (temperature change with lube, useable life or aging of lubricant, etc.). Specific application testing is recommended to establish specific performance parameters. Below are charts with guidelines of performances.



Application Information

Technical Information



INCH

SHAFT DIAMETER	HARDENED STEEL		STAINLESS STEEL		FEATHER® SHAFT	
	D	S	D	S	D	S
3/16"	8.4×10^4	1.7×10^7	8.0×10^4	1.6×10^7	2.9×10^4	$1.65\text{E}+05$
1/4"	2.67×10^5	3.1×10^7	2.54×10^5	2.9×10^7	9.2×10^4	$2.93\text{E}+05$
3/8"	1.35×10^6	6.9×10^7	1.29×10^6	6.5×10^7	4.7×10^5	$6.58\text{E}+05$
1/2"	4.27×10^6	1.23×10^8	4.06×10^6	1.16×10^8	1.5×10^6	$1.17\text{E}+06$
5/8"	1.04×10^7	1.92×10^8	9.92×10^6	1.81×10^8	3.6×10^6	$1.83\text{E}+06$
3/4"	2.16×10^7	2.77×10^8	2.06×10^7	2.61×10^8	7.5×10^6	$2.63\text{E}+06$
1"	6.83×10^7	4.92×10^8	6.5×10^7	4.63×10^8	2.4×10^7	$4.68\text{E}+06$
1-1/4"	1.67×10^8	7.69×10^8	1.59×10^8	7.24×10^8	5.8×10^7	$7.31\text{E}+06$
1-1/2"	3.46×10^8	1.11×10^9	3.29×10^8	1.04×10^9	1.22×10^8	$1.05\text{E}+07$
2"	1.09×10^8	1.97×10^9	1.04×10^9	1.85×10^9	3.8×10^8	$1.87\text{E}+07$
2-1/2"	2.67×10^8	3.07×10^9	2.54×10^9	2.9×10^9	N/A	N/A
3"	5.53×10^9	4.43×10^9	5.27×10^9	4.17×10^9	N/A	N/A
4"	1.75×10^{10}	7.87×10^9	1.66×10^{10}	7.41×10^9	N/A	N/A

METRIC

SHAFT DIAMETER	HARDENED STEEL		STAINLESS STEEL	
	D	S	D	S
5 mm	2.94×10^8	3.12×10^{11}	2.8×10^8	2.94×10^{11}
6 mm	6.11×10^8	4.5×10^{11}	5.81×10^8	4.24×10^{11}
8 mm	1.93×10^9	8.0×10^{11}	1.84×10^9	7.53×10^{11}
10 mm	4.71×10^9	1.25×10^{12}	4.48×10^9	1.18×10^{12}
12 mm	9.77×10^9	1.8×10^{12}	9.3×10^9	1.69×10^{12}
13 mm	1.35×10^{11}	2.11×10^{12}	1.28×10^{11}	1.99×10^{12}
14 mm	1.81×10^{10}	2.45×10^{12}	1.72×10^{11}	2.31×10^{12}
16 mm	3.09×10^{10}	3.2×10^{12}	2.94×10^{11}	3.01×10^{12}
20 mm	7.54×10^{10}	5.0×10^{12}	7.17×10^{11}	4.71×10^{12}
25 mm	1.84×10^{11}	7.81×10^{12}	1.75×10^{11}	7.35×10^{12}
30 mm	3.82×10^{11}	1.12×10^{13}	3.63×10^{11}	1.06×10^{13}
35 mm	7.07×10^{11}	1.53×10^{13}	6.73×10^{11}	1.44×10^{13}
38 mm	9.82×10^{11}	1.8×10^{13}	9.35×10^{11}	1.7×10^{13}



SHAFT DEFLECTION

In applications where a support rail is not used, shaft deflection can become critical in the function of the bearing. If deflection is greater than the misalignment capabilities of a standard pillow block, binding can occur. Solutions would be to increase shaft and bearing size (to lessen the amount of deflection) or to use an open bearing configuration with a support rail. Follow the formulas below to check shaft deflection and sag.

FORMULA FOR INCH AND METRIC SHAFTING DEFLECTION

Total shaft deflection in horizontal applications:

$$\text{Tot. Def} = \text{Def} + \text{Sag}$$

$$\text{Def} = w \times L^3 / D$$

$$\text{Sag} = L^4 / S$$

Def = Pure deflection due to load at center of shaft (inches or mm)

Sag = Deflection of shaft due to its own weight (inches or mm)

L = Shaft unsupported length (inches or mm)

w = load being applied at center of shaft (lbs. or N)

D = Deflection coefficient (D = 48 x E x I)

S = Sag coefficient (S = E x I x 384 / (5 x sw))

NOTES: I = $\pi \times \text{diam}^4 / 64$

sw = $\pi \times \text{diam}^2 / 4 \times \text{density}$

E = Modulus of Elasticity (Young's modulus)

TOTAL DEFLECTION

ø1 in. Shaft

24 in. Length (L)

250 lbs. load (W)

$$\begin{aligned} \text{Deflection} &= \frac{W \times L^3}{D \text{ (from table)}} \\ &= \frac{250 \text{ lbs.} \times (24 \text{ in.})^3}{6.83 \times 10^7} \\ &= \frac{3,456,000 \text{ in.}^3 \text{ lbs.}}{68,300,000 \text{ in.}^2 \text{ lbs.}} \end{aligned}$$

$$\text{Deflection} = 0.0506 \text{ in.}$$

$$\begin{aligned} \text{SAG} &= \frac{L^4}{S \text{ (from table)}} \\ &= \frac{(24)^4}{4.92 \times 10^8} \end{aligned}$$

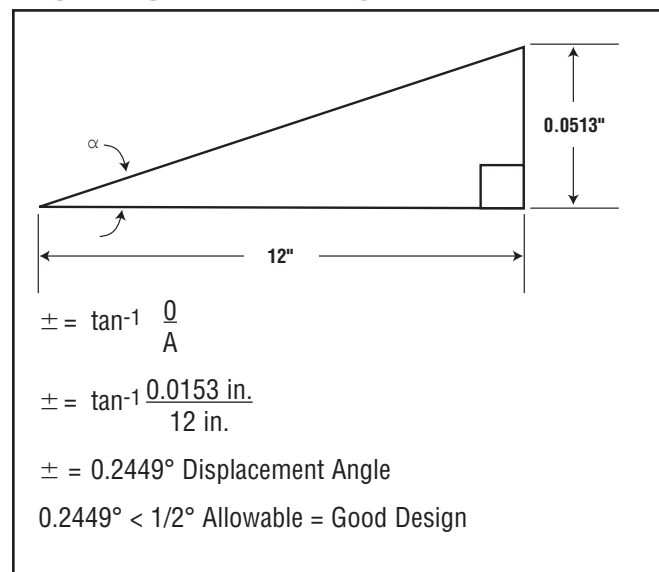
$$\text{SAG} = \frac{331,776 \text{ in.}^4}{492,000,000 \text{ in.}^3}$$

$$\text{SAG} = .000674 \text{ in.}$$

$$\begin{aligned} \text{Total Deflection} &= \text{Deflection} + \text{SAG} \\ &= 0.0506 \text{ in.} + .000674 \text{ in.} \end{aligned}$$

$$\text{Total Deflection} = 0.0513 \text{ in.}$$

DISPLACEMENT ANGLE





Installation

Technical Information

INSTALLING SIMPLICITY® BEARINGS

Applies to standard linear bearing series.

For sleeve and flange bearings, see product pages in the catalog.

PS - Page 154, PSM - Page 156, PSF - Page 155,
PSFM - Page 157

STRAIGHT BORE HOUSING - PRESS FIT BEARING

This type of configuration is NOT recommended for the vast majority of applications using Simplicity bearings.

It does NOT allow for any misalignment or shaft deflection.

Misalignment or shaft deflection will cause the bearing to bind on the shafting.

Extremely high precision applications may be able to employ this type of mounting. Typically the shafting has been aligned with a laser or some other highly precise equipment.

Due to bore closure in the pressing process, use a "C" series (compensated I.D.) bearing.

EXAMPLE: FLC24, FMC30, FJC30

The recommended installation procedure is to freeze the bearings at 0°F (-17.75°C) for 30-45 minutes. Using gloves, remove the bearings from the freezer and slip them into the housing. As they heat to room temperature, full contact between bearing and housing will be achieved. The greatest advantage to this technique over traditional pressing is greater accuracy in alignment.

This type of mounting will not allow for misalignment or shaft deflection. Both are very critical in the smooth operation of Simplicity bearings. A rolling element bearing may appear to initially operate in this condition, but it is operating in an extremely preloaded condition and will prematurely fail and in most cases destroy the shafting. Simplicity bearings will indicate the problem immediately upon installation by failing to move due to the binding condition. There are alternative mounting options that work extremely well.

PART NO.	MIN. HOUSING I.D. (inches)	MAX. HOUSING I.D. (inches)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)
FLC03	0.3729	0.3737	FMC05	11.972	11.995	FMTC06	11.954	11.972	FGC06	11.952	11.970	FJC06	11.961	11.979
FLC04	0.4978	0.4986	FMC08	15.954	15.972	FMTC08	14.954	14.972	FGC08	14.952	14.970	FJHC08	14.961	14.979
FLC06	0.6228	0.6236	FMC10	18.948	18.969	FMTC10	16.954	16.972	FGC10	16.952	16.970	FJC08	14.961	14.979
FLC08	0.8725	0.8734	FMC12	21.944	21.965	FMTC12	18.948	18.969	FGC12	21.945	21.966	FJC10	18.952	18.973
FLC10	1.1224	1.1234	FMC16	25.944	25.965	FMTC14	20.944	20.965	FGC15	24.945	24.966	FJC12	20.952	20.997
FLC12	1.2474	1.2484	FMC20	31.940	31.961	FMTC16	23.944	23.965	FGC16	25.945	25.966	FJC13	22.952	22.973
FLC16	1.5596	1.5607	FMC25	39.932	39.957	FMTC20	27.944	27.965	FGC18	27.945	27.966	FJC16	27.952	27.973
FLC20	1.9970	1.9981	FMC30	46.932	46.957	FMTC25	34.940	34.961	FGC20	31.945	31.966	FJC20	31.950	31.971
FLC24	2.3717	2.3729	FMC40	61.917	61.947	FMTC30	39.932	39.957	FGC25	39.937	39.962	FJC25	39.941	39.966
FLC32	2.9965	2.9977	FMC50	74.917	74.947	FMTC40	51.932	51.957	FGC30	44.937	44.962	FJC30	44.941	44.966
FLC40	3.7461	3.7473	FMC60	89.906	89.936	FMTC50	61.917	61.947	FGC35	51.937	51.962	FJC35	51.938	51.963
FLC48	4.4953	4.4966	FMC80	119.886	119.921				FGC40	59.927	59.957	FJC38	56.938	56.963
FLC64	5.9949	5.9963							FGC50	74.927	74.957	FJC40	59.928	59.958
												FJC50	79.922	79.952
												FJC60	89.919	89.949
												FJC80	119.899	119.934
												FJC100	149.896	149.931
												FJC120	179.875	179.915
												FJC150	209.849	209.895

NOTE: Use "C" (compensated I.D.) series bearings.



STRAIGHT BORE HOUSING - SLIP FIT BEARING

There are three basic configurations that work well, depending on the misalignment and shaft deflection in the application:

1. VIRTUALLY NO MISALIGNMENT

This method allows for NO or very little shaft deflection and misalignment. Standard I.D. bearings will need tighter alignment than a "C" series (compensated I.D.) bearing. Standard retention methods are acceptable. **EXAMPLE:** snap rings, epoxy, etc.

NOTE: If using epoxy, do not touch the bearing liner with the bonding agent!

This type of mounting will allow for minimum misalignment or shaft deflection. Both are very critical in the smooth operation of Simplicity bearings. A rolling element bearing may appear to initially operate in this condition, but it is operating in an extremely preloaded condition and will prematurely fail and in most cases destroy the shafting. Simplicity bearings will indicate the problem immediately upon installation by failing to move due to the binding condition.

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.	PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.	PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.	PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.	PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	(inches)	(inches)		(mm)	(mm)		(mm)	(mm)		(mm)	(mm)		(mm)	(mm)
FL03	0.3755	0.3764	FM05	12.016	12.043	FMT06	12.016	12.043	FG06	12.016	12.043	FJ06	12.016	12.043
FL04	0.5006	0.5017	FM08	16.016	16.043	FMT08	15.016	15.043	FG08	15.016	15.043	FJH08	15.016	15.043
FL06	0.6256	0.6267	FM10	19.020	19.053	FMT10	17.016	17.043	FG10	17.016	17.043	FJ08	15.016	15.043
FL08	0.8758	0.8771	FM12	22.020	22.053	FMT12	19.020	19.053	FG12	22.020	22.053	FJ10	19.020	19.053
FL10	1.1258	1.1271	FM16	26.020	26.053	FMT14	21.020	21.053	FG15	25.020	25.053	FJ12	21.020	21.053
FL12	1.2510	1.2525	FM20	32.025	32.064	FMT16	24.020	24.053	FG16	26.020	26.053	FJ13	23.020	23.053
FL16	1.5635	1.5650	FM25	40.025	40.064	FMT20	28.020	28.053	FG18	28.020	28.053	FJ16	28.020	28.053
FL20	2.0012	2.0030	FM30	47.025	47.064	FMT25	35.025	35.064	FG20	32.025	32.064	FJ20	32.025	32.064
FL24	2.3762	2.3780	FM40	62.030	60.076	FMT30	40.025	40.064	FG25	40.025	40.064	FJ25	40.025	40.064
FL32	3.0012	3.0030	FM50	75.030	75.076	FMT40	52.030	52.076	FG30	45.025	45.064	FJ30	45.025	45.064
FL40	3.7514	3.7535	FM60	90.036	90.090	FMT50	62.030	62.076	FG35	52.030	52.076	FJ35	52.030	52.076
FL48	4.5014	4.5035	FM80	120.036	120.090				FG40	60.030	60.076	FJ38	57.030	57.076
FL64	6.0017	6.0042							FG50	75.030	75.076	FJ40	60.030	60.076
												FJ50	80.030	80.076
												FJ60	90.036	90.090
												FJ80	120.036	120.090
												FJ100	150.043	150.106
												FJ120	180.043	180.106
												FJ150	210.050	210.122



Installation

Technical Information

STRAIGHT BORE HOUSING - SLIP FIT BEARING

2. STANDARD APPLICATIONS WITH AVERAGE MISALIGNMENT

A self-aligning O.D. bearing is recommended. **EXAMPLE:** FLA24, FMA30, FJA30

For details on the self-aligning O.D. feature, see page 41 of the product catalog.

The recommended method of retention for this mounting is a snap ring at each end.

NOTE: Do not use epoxy in this configuration. It will lock the bearing in place not allowing it to self-align. Be sure to install the o-rings around the O.D. of the bearing to reduce noise while the bearing is in operation.

PART NO.	MIN. HOUSING I.D. (inches)	MAX. HOUSING I.D. (inches)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)	PART NO.	MIN. HOUSING I.D. (mm)	MAX. HOUSING I.D. (mm)
FLA03	0.3755	0.3764	FMA05	12.016	12.043	FMT06	N / A	N / A	FG06	N / A	N / A	FJA06	12.016	12.043
FLA04	0.5006	0.5017	FMA08	16.016	16.043	FMT08			FG08			FJHA08	15.016	15.043
FLA06	0.6256	0.6267	FMA10	19.020	19.053	FMT10			FG10			FJA08	15.016	15.043
FLA08	0.8758	0.8771	FMA12	22.020	22.053	FMT12			FG12			FJA10	19.020	19.053
FLA10	1.1258	1.1271	FMA16	26.020	26.053	FMT14			FG15			FJA12	21.020	21.053
FLA12	1.2510	1.2525	FMA20	32.025	32.064	FMT16			FG16			FJA13	23.020	23.053
FLA16	1.5635	1.5650	FMA25	40.025	40.064	FMT20			FG18			FJA16	28.020	28.053
FLA20	2.0012	2.0030	FMA30	47.025	47.064	FMT25			FG20			FJA20	32.025	32.064
FLA24	2.3762	2.3780	FMA40	62.030	60.076	FMT30			FG25			FJA25	40.025	40.064
FLA32	3.0012	3.0030	FMA50	75.030	75.076	FMT40			FG30			FJA30	45.025	45.064
FLA40	3.7514	3.7535	FMA60	90.036	90.090	FMT50			FG35			FJA35	52.030	52.076
FLA48	4.5014	4.5035	FMA80	120.036	120.090				FG40			FJA38	57.030	57.076
FLA64	6.0017	6.0042							FG50			FJA40	60.030	60.076
												FJA50	80.030	80.076
												FJA60	90.036	90.090
												FJA80	120.036	120.090
												FJA100	150.043	150.106
												FJA120	180.043	180.106
												FJA150	210.050	210.122

NOTE: FMT and FG series are NOT available with a self-aligning O.D



STRAIGHT BORE HOUSING - SLIP FIT BEARING

3. SEVERE MISALIGNMENT

A standard O.D. bearing is recommended.

EXAMPLE: FL24, FM30, FJ30

Oversize the I.D. of the housing and install the bearing with o-rings. This will allow the bearing to “float” in the housing and match the misalignment or non-parallelism of the shafting.

The recommended method of retention for this mounting is a snap ring at each end.

NOTE: Do not use epoxy in this configuration. It will lock the bearing in place, not allowing it to self-align.

See page 50 of the product catalog for more details on this solution.

PART NO.	MAX. ADDITIONAL CLEARANCE (inches)	PART NO.	MAX. ADDITIONAL CLEARANCE (mm)	PART NO.	MAX. ADDITIONAL CLEARANCE (mm)	PART NO.	MAX. ADDITIONAL CLEARANCE (mm)	PART NO.	MAX. ADDITIONAL CLEARANCE (mm)
FL03	0.0070	FM05	0.203	FMT06	0.203	FG06	0.203	FJ06	0.203
FL04	0.0080	FM08		FMT08		FG08		FJH08	
FL06		FM10		FMT10		FG10		FJ08	
FL08		FM12		FMT12		FG12		FJ10	
FL10	0.0100	FM16	0.254	FMT14	0.254	FG15	0.254	FJ12	0.254
FL12		FM20		FMT16		FG16		FJ13	
FL16	0.0120	FM25	0.305	FMT20		FG18		FJ16	
FL20		FM30		FMT25	0.305	FG20	0.305	FJ20	0.305
FL24		FM40		FMT30		FG25		FJ25	
FL32	0.0160	FM50		FMT40		FG30		FJ30	
FL40		FM60	0.406	FMT50		FG35		FJ35	0.305
FL48		FM80	0.508			FG40		FJ38	
FL64	0.0200					FG50		FJ40	
								FJ50	0.406
								FJ60	
								FJ80	0.508
								FJ100	0.610
								FJ120	
								FJ150	



Chemical Reaction Chart

Technical Information

CHEMICAL REACTION CHART

The original Frelon® J has almost universal chemical inertness. Only molten sodium and fluorine at elevated temperatures and pressures show any signs of attack. It is approved for use with liquid oxygen, N2O2 hydrazine, UDMH, hydrocarbon fuels, high strength hydrogen peroxide, etc.

The Frelon GOLD® material is a composite of PTFE and a bearing filler. The PTFE is chemically inert. The chemical resistance shown in the chart below is defined by the compatibility of the filler with the various chemicals.

Other data in the chart below applies to the bearing shell and pillow block materials. The table is provided as a reference only. The data given will be affected by factors such as temperature, PV, degree of contact, strength of solution, etc. In each specific application, it is always advisable to conduct specific testing to determine suitability of use. This table only addresses general corrosion, NOT galvanic, SCC, or other types of corrosion. Corrosion rates are at room temperature unless otherwise noted.

Standard and hard coat data only apply when the coating is intact. If the coating is worn through or damaged, an area of galvanic and pitting corrosion will be created. Then use the bare aluminum data.

Standard Simplicity products use aluminum alloy, which is known to have

the best corrosion resistance of the high strength aluminum alloys. The sulfuric bath anodizing and nickel acetate sealing provide the best corrosion resistance available in anodized coatings. They can withstand a rigorous 14-day exposure in a 5% salt spray solution at 96°F per military specifications without significant damage. With the coating intact, it is considered to be inert in most fluids with a pH value between 5 and 8. Hard coat anodizing provides the same chemical resistance but is applied to a .002" thickness, providing a more durable surface that will stand up to greater abuse. However, if the coating is penetrated, the resistance is reduced.

Special stainless steel bearings use AISI 316 stainless, which has superior resistance over 303, 304, 420, 440, 17-4PH, and most other common stainless grades. 316 is generally considered to be the most corrosion resistant of conventional stainless steels.

NOTE: This information was compiled for Pacific Bearing® Company by Materials Engineering, Inc. of Virgil, IL. This specification information is believed to be accurate and reliable, however, no liability is assumed. INFORMATION IS FOR REFERENCE ONLY. USER MUST TEST SPECIFIC APPLICATIONS.

E = < .002" per year

G = < .020" per year

S = < .050" per year

U = > .050" per year

CHEMICAL	FRELON GOLD®	BARE ALUMINUM	STANDARD & HARD COAT ANODIZED ALUMINUM	316 STAINLESS STEEL	CHEMICAL	FRELON GOLD®	BARE ALUMINUM	STANDARD & HARD COAT ANODIZED ALUMINUM	316 STAINLESS STEEL
Acetic Acid, 20%	U	G	G	E	Hydrogen sulfide, dry	U	G	E	E
Acetone	G	E	E	E	JP-4	G	G	G	G
Ammonia, anhydrous	G	E	E	E	Kerosene	G	G	G	G
Ammonium hydroxide, 10%	U	U	U	E	Lactic acid, 10%	G	G	G	E
Ammonium chloride, 10%	U	U	U	G	Magnesium chloride, 50%	G	U	U	G
Ammyl acetate (122°F / 50°C)	G	E	E	E	Mercury	U	U	U	E
Barium hydroxide	U	U	U	G	Methyl alcohol	G	G	G	G
Beer	G	E	E	E	Methyl ethyl ketone	G	G	G	G
Boric acid solutions	G	E	E	G	Methylene chloride	G	E	E	G
Butane	G	G	G	G	Mineral oil	G	G	G	G
Calcium chloride, 20%	G	G	G	G	Naptha	G	G	G	G
Calcium hydroxide, 10%	G	G	G	G	Nitric acid, 70%	U	U	U	E
Carbon dioxide	G	E	E	G	Phosphoric acid, 10%	U	U	U	E
Carbon monoxide	G	E	E	E	Sodium chloride	G	U	U	E
Chlorine gas, dry	G	G	G	G	Sodium hydroxide, 20%	G	U	U	G
Chlorine gas, wet	U	U	U	U	Sodium hypochlorite, 20%	U	G	G	U
Chromic acid, 10%	U	G	E	E	Sodium peroxide, 10%	U	G	G	G
Citric acid, 5%	G	E	E	E	Steam (see water)	-	-	-	-
Ethyl acetate	G	E	E	G	Sulfur dioxide, wet	U	U	U	G
Ethyl alcohol	G	E	E	G	Sulfur dioxide, dry	G	G	G	G
Ethylene glycol	G	E	E	G	Sulfur trioxide	U	G	G	G
Ferric chloride, 50%	U	U	U	U	Sulfuric acid, 50%	U	U	U	U
Formic acid - Anhydrous	U	E	E	E	Sulfurous acid	U	G	G	E
Gasoline, Unleaded	G	G	G	G	Toluene (122°F / 50°C)	G	E	E	E
Hydrochloric acid, 20%	U	U	U	U	Turpentine	G	G	E	E
Hydrochloric acid, 35%	U	U	U	U	Water, demineralized	U	G	E	E
Hydrocyanic acid, 10%	U	G	G	G	Water, distilled	G	U	S	G
Hydrofluoric acid - dilute	U	U	U	U	Sea Water	G	G	E	G
Hydrofluoric acid, 48%	I	U	U	U	Water, sewage	G	U	S	G
Hydrogen	G	E	E	E	Xylene	G	G	G	G
Hydrogen peroxide - dilute	U	E	E	G	Zinc chloride solutions	U	U	U	G



NIL - RC60 STEEL - SOLID

- RC60 case hardened steel shafting, small diameter, pre-drilled and tapped shafting
- Class "L" Shaft finish - polished for optimum surface finish
- Suitable for Simplicity® bearings and linear ball bearings
- Available cut-to-length (± 0.0307) or in full random lengths
- Joinable for longer lengths

PART NUMBER	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "L"		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT PER INCH
	(inches)	MIN.	MAX.	(in.)	MIN.	(lbs.)
NIL02-xx	1/8"	0.1240	0.1245	252	N / A	0.004
NIL03-xx	3/16"	0.1865	0.1870	252	N / A	0.008
NIL04-xx	1/4"	0.2490	0.2495	252	0.030	0.014
NIL06-xx	3/8"	0.3740	0.3745	252	0.030	0.031
NIL08-xx	1/2"	0.4990	0.4995	180	0.060	0.055
NIL10-xx	5/8"	0.6240	0.6245	180	0.060	0.086
NIL12-xx	3/4"	0.7490	0.7495	180	0.060	0.125
NIL16-xx	1"	0.9990	0.9995	204	0.080	0.222
NIL20-xx	1-1/4"	1.2490	1.2495	204	0.080	0.348
NIL24-xx	1-1/2"	1.4989	1.4994	204	0.080	0.500
NIL32-xx	2"	1.9987	1.9994	204	0.100	0.890
NIL40-xx	2-1/2"	2.4985	2.4993	204	0.100	1.391
NIL48-xx	3"	2.9983	2.9992	204	0.100	2.003
NIL64-xx	4"	3.9976	3.9988	204	0.100	3.560

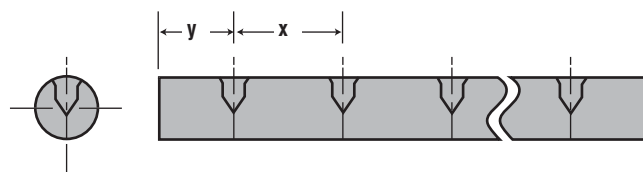
***NOTES:** Specify length in part number using inches.
 Example: for 1/2" shafting total length 15" = NIL08-15
 Surface finish 8 - 12 RMS.

RC60 STEEL SHAFTING,
SOLID, PRE-DRILLED AND TAPPED



Shafting - RC60 Steel

NIPDL - RC60- PRE-DRILLED & TAPPED



PART NUMBER	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "L"		HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT PER INCH
	(inches)	MIN.	MAX.	x	y		(in.)	(lbs.)
NIPDL08-xx	1/2"	0.4990	0.4995	4.00	2.00	6-32	180	0.055
NIPDL10-xx	5/8"	0.6240	0.6245			8-32		0.086
NIPDL12-xx	3/4"	0.7490	0.7495			10-32		0.125
NIPDL16-xx	1"	0.9990	0.9995	6.00	3.00	1/4-20	192	0.222
NIPDL20-xx	1-1/4"	1.2490	1.2495			5/16-18		0.348
NIPDL24-xx	1-1/2"	1.4989	1.4994			3/8-16		0.500
NIPDL32-xx	2"	1.9987	1.9994	8.00	4.00	1/2-13		0.890

NOTES: Specify length in part number using inches.
 For random lengths, add "R" to the part number.
 Example: for 1/2" shafting total length 15" = NIPDL08-15
 Customer specifies "y" dimension.



SMALL DIAMETER
SHAFTING
1/8" - 3/8"

NIL - RC60 - SMALL DIAMETER

PART NUMBER	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "L"		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT PER INCH
	(inches)	MIN.	MAX.	(in.)	MIN.	(lbs.)
NIL02-xx	1/8"	0.1240	0.1245	252	N / A	0.004
NIL03-xx	3/16"	0.1865	0.1870	252	N / A	0.008
NIL04-xx	1/4"	0.2490	0.2495	252	N / A	0.014
NIL06-xx	3/8"	0.3740	0.3745	252	0.040	0.031



Shafting & Support Rail - NILXXSS, SR & SRXXPD

440 Stainless Steel & Aluminum

NILXXSS - 440 STAINLESS STEEL - SOLID



- 440 stainless steel (Rc 52/55)
- Suitable for linear ball bearings
- Available in random lengths or cut-to-lengths
- Length tolerance of +/- 1/32"
- Available in pre-drilled see NIPDL (page 63)

PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "L"		LENGTH (in.)	HARDNESS DEPTH	WEIGHT
	(in.)	MIN.	MAX.	MAX.	MIN.	(lbs./in.)
NIL02SS-xx	1/8"	0.1240	0.1245	210	N/A	0.003
NIL03SS-xx	3/16"	0.1865	0.1870			0.008
NIL04SS-xx	1/4"	0.2490	0.2495			0.014
NIL06SS-xx	3/8"	0.3740	0.3745	252	0.040	0.031
NIL08SS-xx	1/2"	0.4990	0.4995	180	0.060	0.055
NIL10SS-xx	5/8"	0.6240	0.6245			0.087
NIL12SS-xx	3/4"	0.7490	0.7495			0.125
NIL16SS-xx	1"	0.9990	0.9995	204	0.080	0.222
NIL20SS-xx	1-1/4"	1.2490	1.2495			0.348
NIL24SS-xx	1-1/2"	1.4989	1.4994			0.498
NIL32SS-xx	2"	1.9987	1.9994		0.100	0.886

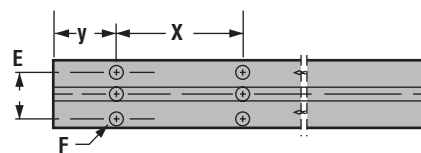
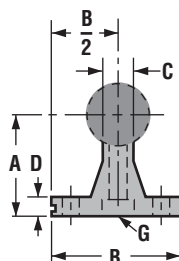
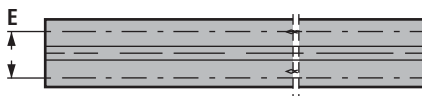
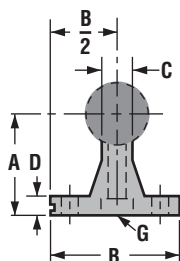
SR & SRXXPD - ALUMINUM - SUPPORT RAIL



NON-DRILLED (SR)



PRE-DRILLED (SRXXPD)



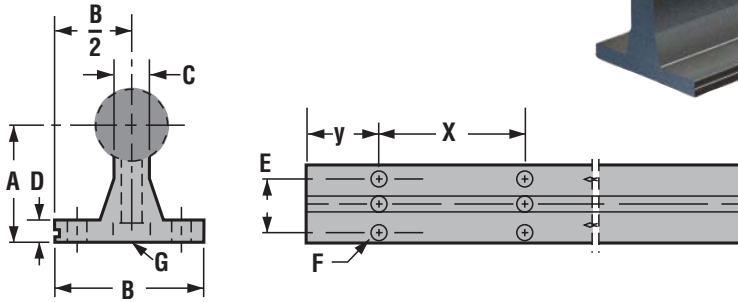
PART NO.		NOMINAL SIZE	A	B	C	D	E	RECOMMENDED HOLE SIZE G		WEIGHT
NON-DRILLED	PRE-DRILLED	(in.)	+/- .002					SCREW	HOLE	(lbs./in.)
SR08-xx	SR08PD-xx	1/2"	1.125	1.500	0.250	0.188	1.000	6-32 x 7/8"	0.169	0.045
SR10-xx	SR10PD-xx	5/8"	1.125	1.625	0.313	0.250	1.125	8-32 x 7/8"	0.193	0.058
SR12-xx	SR12PD-xx	3/4"	1.500	1.750	0.375	0.250	1.250	10-32 x 7/8"	0.221	0.077
SR16-xx	SR16PD-xx	1"	1.750	2.125	0.500	0.250	1.500	1/4-20 x 1-1/2"	0.281	0.104
SR20-xx	SR20PD-xx	1-1/4"	2.125	2.500	0.563	0.313	1.875	5/16-18 x 1-3/4"	0.343	0.145
SR24-xx	SR24PD-xx	1-1/2"	2.500	3.000	0.688	0.375	2.250	3/8-16 x 2"	0.406	0.210
SR32-xx	SR32PD-xx	2"	3.250	3.750	0.875	0.500	2.750	1/2-13 x 2-1/2"	0.531	0.342

NOTES: Specify length in part number. Example: for 1/2" shafting support rail to 24" length = SR08-24 (Aluminum alloy construction)
 Shafts & support rails sold separately. Maximum length = 4ft.
 Customer specifies "y" dimension.
 Shaft rails and assemblies are available in long lengths, consult factory.



SRA - ALUMINUM - RAIL ASSEMBLY

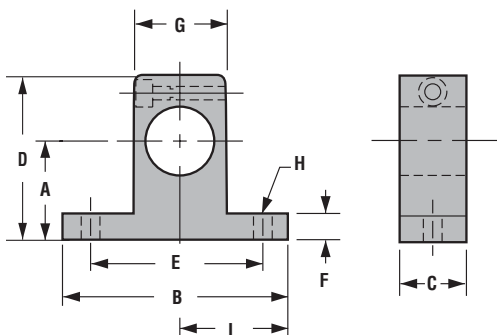
- (2) piece assembly RC60 steel shaft and aluminum support rail
- Cut-to-length or longer lengths available
- Shafting also available in 440 stainless steel & ceramic coated aluminum)



PART NO.	NOMINAL SHAFT SIZE	DIAMETER TOLERANCE		A	B	C	D	E	F		HOLE SPACING		MAX. LENGTH	WEIGHT
	(in.)	MIN.	MAX.	+/- .002					BOLT	HOLE	X	y	*(ft.)	(lbs./in.)
SRA08-xx	1/2	0.4988	0.4996	1.125	1.500	0.250	0.188	1.000	#6	0.169	4	2	4	0.101
SRA10-xx	5/8	0.6238	0.6246		1.625	0.313	0.250	1.125	#8	0.193				0.145
SRA12-xx	3/4	0.7488	0.7496	1.500	1.750	0.375		1.250	#10	0.221	6	3		0.202
SRA16-xx	1	0.9988	0.9996	1.750	2.125	0.500		1.500	1/4"	0.281				0.328
SRA20-xx	1-1/4	1.2488	1.2496	2.125	2.500	0.563	0.313	1.875	5/16"	0.343				0.493
SRA24-xx	1-1/2	1.4987	1.4995	2.500	3.000	0.688	0.375	2.250	5/16"	0.343	8	4		0.711
SRA32-xx	2	1.9985	1.9995	3.250	3.750	0.875	0.500	2.750	3/8"	0.406				1.231

NOTE: Specify length in part number using inches. Example: for 1/2" shafting total length 36" long = SRA08-36. Customer specifies "y" dimension.

NSB - ALUMINUM - END SUPPORT BLOCK



PART NO.	NOMINAL SIZE	A	B	C	D	E	F	G	H		I	WEIGHT
	(in.)	+/- .001				+/- .001			BOLT	HOLE	+/- .001	(lb.)
NSB04	1/4"	0.687	1.500	0.500	1.050	1.125	0.250	0.625	#6	5/32"	0.750	0.038
NSB06	3/8"	0.750	1.625	0.563	1.175	1.250		0.688			0.800	0.044
NSB08	1/2"	1.000	2.000	0.625	1.625	1.500	0.313	0.750	#8	3/16"	1.000	0.079
NSB10	5/8"		2.500	0.688	1.750	1.875		0.875			1.250	0.112
NSB12	3/4"	1.250	2.500	0.750	2.055	2.000		1.000	#10	7/32"	1.375	0.148
NSB16	1"	1.500	3.055	1.000	2.500	2.500	0.375	1.375			1.625	0.313
NSB20	1-1/4"	1.750	3.750	1.125	3.000	3.000	0.438	1.750	5/16"	11/32"	2.000	0.527
NSB24	1-1/2"	2.000	4.375	1.250	3.435	3.500	0.500	2.000			2.375	0.755
NSB32	2"	2.500	5.500	1.500	4.375	4.500	0.625	2.625	3/8"	13/32"	3.000	1.464



Shafting - CC & CCPDL

Ceramic Coated Aluminum

CC - CERAMIC COATED - SOLID

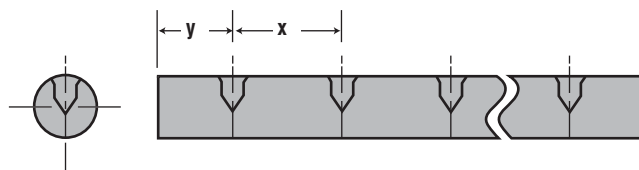


- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity Frelon GOLD® lined bearings
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

PART NO.	NOMINAL SHAFT SIZE	DIAMETER TOLERANCE		MAX. LENGTH	WEIGHT
	(in.)	MIN.	MAX.	(in.)	(lbs./in.)
CC03-xx	3/16	0.1863	0.1871	144	0.003
CC04-xx	1/4	0.2488	0.2496		0.005
CC06-xx	3/8	0.3738	0.3746		0.010
CC08-xx	1/2	0.4988	0.4996		0.019
CC10-xx	5/8	0.6238	0.6246		0.030
CC12-xx	3/4	0.7488	0.7496		0.043
CC16-xx	1	0.9988	0.9996		0.077
CC20-xx	1-1/4	1.2488	1.2496		0.120
CC24-xx	1-1/2	1.4987	1.4995		0.173
CC32-xx	2	1.9985	1.9995		0.308

NOTES: Specify length in part number using inches.
 Example: for 1/2" shafting total length 36" long = CC08-36.
 Ends of cut-to-length shafting are not coated.
 Fully coated shafting is available on special request.

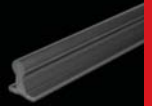
CCPDL - CERAMIC COATED - PRE-DRILLED & TAPPED



- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity Frelon GOLD® lined bearings
- Interchanges with standard pre-drilled shafting
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

PART NO.	NOMINAL SHAFT SIZE	DIAMETER TOLERANCE		HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT
	(in.)	MIN.	MAX.	x	y		(in.)	(lbs./in.)
CCPDL08-xx	1/2	0.4988	0.4996	4	2	6-32	144	0.019
CCPDL10-xx	5/8	0.6238	0.6246			8-32		0.030
CCPDL12-xx	3/4	0.7488	0.7496	6	3	10-32		0.043
CCPDL16-xx	1	0.9988	0.9996			1/4-20		0.077
CCPDL20-xx	1-1/4	1.2488	1.2496			5/16-18		0.120
CCPDL24-xx	1-1/2	1.4987	1.4995	8	4	3/8-16		0.173
CCPDL32-xx	2	1.9985	1.9995			1/2-13		0.308

NOTES: Specify length in part number using inches.
 Example: for 1/2" shafting total length 36" long = CCPDL08-36.
 Ends of cut-to-length shafting are not coated.
 Fully coated shafting is available on special request.
 Counterbore .063" from top.
 Customer specifies "y" dimension.

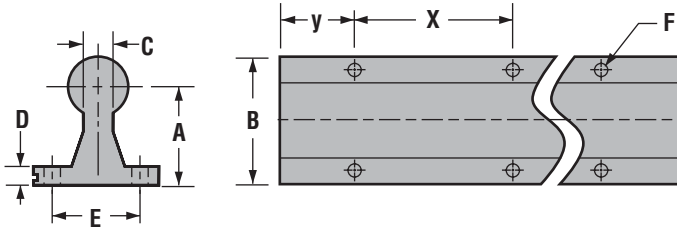


CCR - CERAMIC COATED - RAIL ASSEMBLY

- Aluminum alloy base material
- RC70 ceramic coated finish
- One piece integrated design eliminates assembly time
- Weld splatter, paints, and other contaminants will not stick to the shaft
- Non-magnetic and vibration resistant
- Economical, weight saving alternative to traditional steel shafting
- Designed to run with Simplicity Frelon GOLD® lined linear bearings
- Available pre-drilled and undrilled*



Rail Assembly - Ceramic



PART NO.	NOMINAL SHAFT SIZE	DIAMETER TOLERANCE		A	B	C	D	E	F		HOLE SPACING		MAX. LENGTH	WEIGHT
	(in.)	MIN.	MAX.	.002					BOLT	HOLE	x	y	*(ft.)	(lbs./in.)
CCR08-xx	1/2	0.4988	0.4996	1.125	1.500	0.250	0.188	1.000	#6	0.169	4	2	10'	0.019
CCR10-xx	5/8	0.6238	0.6246		1.625	0.313	0.250	1.125	#8	0.193				0.030
CCR12-xx	3/4	0.7488	0.7496	1.500	1.750	0.375		1.250	#10	0.221	6	3		0.043
CCR16-xx	1	0.9988	0.9996	1.750	2.125	0.500	1.500	1/4"	0.281	0.076				
CCR20-xx	1-1/4	1.2488	1.2496	2.125	2.500	0.563	0.313	1.875	5/16"	0.343	8	4		0.119
CCR24-xx	1-1/2	1.4987	1.4995	2.500	3.000	0.688	0.375	2.250						0.172
CCR32-xx	2	1.9985	1.9995	3.250	3.750	0.875	0.500	2.750	3/8"	0.406			0.305	

NOTES: Specify length in part number using inches. Example: for 1/2" shafting total length 36" long = CCR08-36.

Cut-to-length rails may not be coated on the ends.

Customer specifies "y" dimension.

DO NOT use with linear ball bearings.

*Undrilled rails are available on special request.



Shafting - NIM & NIPDM

RC60 Steel - ISO Metric

NIM - RC60 STEEL - SOLID

- RC60 case hardened steel shafting, small diameter, pre-drilled and tapped shafting
- Polished for optimum surface finish
- Suitable for Simplicity® bearings and linear ball bearings
- Available cut-to-length or in full random lengths
- Joinable for even longer lengths

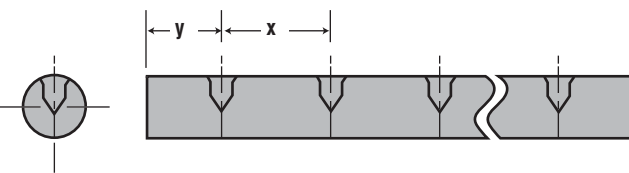
PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"		LENGTH in m*	HARDNESS DEPTH	WEIGHT (kg/m)
	(mm)	MIN.	MAX.	MAX.	MIN. (mm)	
NIM03-xx	3	2.991	3	6.4	1.0	0.06
NIM04-xx	4	3.991	4	6.4	1.0	0.1
NIM05-xx	5	4.991	5	6.4	1.0	0.15
NIM06-xx	6	5.991	6	6.4	1.0	0.23
NIM08-xx	8	7.991	8	6.4	1.0	0.39
NIM10-xx	10	9.991	10	6.4	1.0	0.62
NIM12-xx	12	11.989	12	4.6	1.0	0.89
NIM16-xx	16	15.989	16	4.6	1.7	1.57
NIM20-xx	20	19.987	20	4.6	1.7	2.45
NIM25-xx	25	24.987	25	5.2	2.7	3.8
NIM30-xx	30	29.987	30	5.2	2.7	5.5
NIM40-xx	40	39.984	40	5.2	2.7	9.8
NIM50-xx	50	49.984	50	5.2	3.7	15.3
NIM60-xx	60	59.981	60	5.2	3.7	22.2
NIM80-xx	80	79.981	80	5.2	3.7	39.5

*NOTES: Specify length in part number using millimeters.
Example: for 25 mm shafting total length 900mm = NIM25-900

RC60 STEEL SHAFTING, SOLID, PRE-DRILLED AND TAPPED



NIPDM - RC60 - PRE-DRILLED & TAPPED



PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"	HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT (kg/m)
	(mm)	(µm)	x	y		(m)	
NIPDM08-xx	8	+0/-9	101.6	50.8	M2 x .4	5.0	0.39
NIPDM10-xx	10	+0/-9	101.6	50.8	M3 x .5	5.0	0.62
NIPDM12-xx	12	+0/-11	120	60	M4 x .7	5.7	0.89
NIPDM16-xx	16	+0/-11	150	75	M5 x .8	5.7	1.57
NIPDM20-xx	20	+0/-13	150	75	M6 x 1.0	5.7	2.45
NIPDM25-xx	25	+0/-13	200	100	M8 x 1.25	5.7	3.80
NIPDM30-xx	30	+0/-13	200	100	M10 x 1.5	5.7	5.50

NOTES: Specify length in part number using mm.
For random lengths, add "R" to the part number.
Example: for 12mm shafting total length 97mm = NIPDM12-97
Customer specifies "y" dimension.



SMALL DIAMETER
SHAFTING
3MM - 10MM

NIM - RC60 - SMALL DIAMETER

PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"		LENGTH in m*	HARDNESS DEPTH	WEIGHT (kg/m)
	(mm)	MIN.	MAX.	MAX.	MIN. (mm)	
NIM03-xx	3	2.991	3	6.4	1.0	0.06
NIM04-xx	4	3.991	4	6.4	1.0	0.1
NIM05-xx	5	4.991	5	6.4	1.0	0.15
NIM06-xx	6	5.991	6	6.4	1.0	0.23
NIM08-xx	8	7.991	8	6.4	1.0	0.39
NIM10-xx	10	9.991	10	6.4	1.0	0.62

Shafting - NIM, CCM & CCMDL

440 Stainless Steel & Ceramic Coated



NIM - 440 STAINLESS STEEL - SOLID



- 440 Stainless Steel
- Suitable for linear ball bearings
- Available cut-to-lengths, random lengths, pre-drilled & tapped
- Length tolerance of +/-0.8mm

PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"	MAX. LENGTH	HARDNESS DEPTH	WEIGHT
	(mm)	(μ m)	(m)	MAX.	(kg/m)
NIM03SS-xx	3	+0/-8	5.0	1.0	0.06
NIM04SS-xx	4	+0/-8	5.0	1.0	0.10
NIM05SS-xx	5	+0/-8	5.0	1.0	0.15
NIM06SS-xx	6	+0/-8	5.0	1.0	0.23
NIM08SS-xx	8	+0/-9	5.0	1.0	0.39
NIM10SS-xx	10	+0/-9	5.0	1.0	0.62
NIM12SS-xx	12	+0/-11	5.7	1.0	0.89
NIM16SS-xx	16	+0/-11	5.7	1.7	1.57
NIM20SS-xx	20	+0/-13	5.7	1.7	2.45
NIM25SS-xx	25	+0/-13	5.7	2.7	3.80
NIM30SS-xx	30	+0/-13	5.7	2.7	5.50

CCM - CERAMIC COATED - SOLID

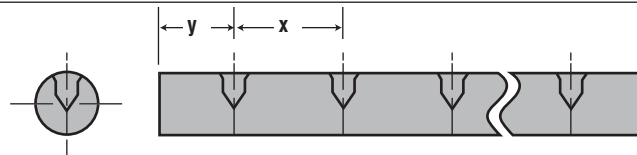


- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity Frelon GOLD® lined bearings
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"	MAX. LENGTH	WEIGHT
	(mm)	(μ m)	(m)	(kg/m)
CCM03-xx	3	+0/-8	3.7	0.01
CCM04-xx	4	+0/-8	3.7	0.02
CCM05-xx	5	+0/-8	3.7	0.03
CCM06-xx	6	+0/-8	3.7	0.04
CCM08-xx	8	+0/-9	3.7	0.07
CCM10-xx	10	+0/-9	3.7	0.10
CCM12-xx	12	+0/-11	3.7	0.15
CCM16-xx	16	+0/-11	3.7	0.26
CCM20-xx	20	+0/-13	3.7	0.41
CCM25-xx	25	+0/-13	3.7	0.63
CCM30-xx	30	+0/-13	3.7	0.92
CCM40-xx	40	+0/-16	3.7	1.63
CCM50-xx	50	+0/-16	3.7	2.55
CCM60-xx	60	+0/-19	3.7	3.70
CCM80-xx	80	+0/-19	3.7	6.58

NOTES: Specify length in part number using mm.
 Example: for 8mm shafting total length 97mm = CCM08-97
 Ends of cut-to-length shafting are not coated.
 Fully coated shafting is available on special request.

CCMPDL - CERAMIC COATED - PRE-DRILLED & TAPPED



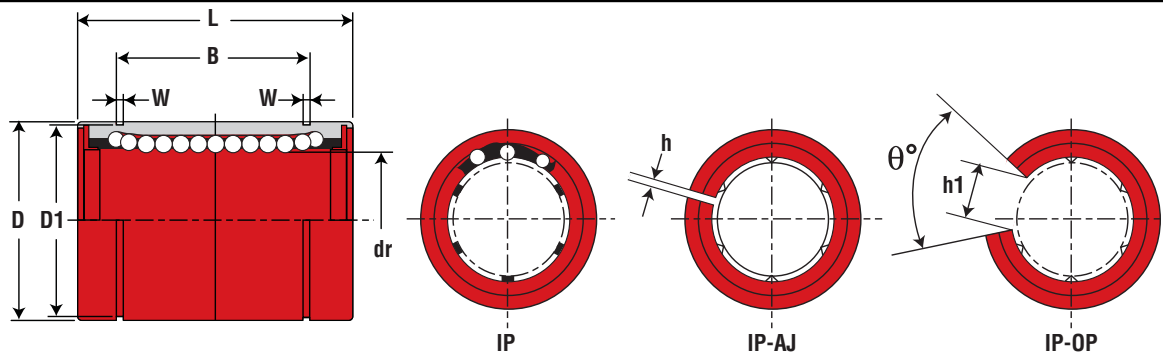
PART NO.	NOMINAL SIZE	DIAMETER TOLERANCE CLASS "M"	HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT
	(mm)	(μ m)	X	y		(m)	(kg/m)
CCMDL08-xx	8	+0/-9	101.6	50.8	M2 x .4	3.7	0.07
CCMDL10-xx	10	+0/-9	101.6	50.8	M3 x .5	3.7	0.10
CCMDL12-xx	12	+0/-11	120	60	M4 x .7	3.7	0.15
CCMDL16-xx	16	+0/-11	150	75	M5 x .8	3.7	0.26
CCMDL20-xx	20	+0/-13	150	75	M6 x 1.0	3.7	0.41
CCMDL25-xx	25	+0/-13	200	100	M8 x 1.25	3.7	0.63
CCMDL30-xx	30	+0/-13	200	100	M10 x 1.5	3.7	0.92

NOTES: Specify length in part number using mm.
 Example: for 10mm shafting total length 97mm = CCMDL08-97.
 Ends of cut-to-length shafting are not coated.
 Fully coated shafting is available on special request.
 Customer specifies "y" dimension.

Shaft rails and assemblies are available in long lengths, consult factory.



Linear Ball Bearings - IP Inch Series



IP - DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER (Inch /mm)	PART NUMBER							MAJOR DIMENSIONS & TOLERANCES					
	STANDARD CLOSE	BALL CIRCUIT	WEIGHT (g)	ADJUSTABLE POLYMER CAGE	WEIGHT (g)	STANDARD OPEN	WEIGHT (g)	dr (inch/ mm)	TOLERANCE (inch/ µm)	D (inch/ mm)	TOLERANCE (inch/ µm)	L (inch/ mm)	TOLERANCE (inch/ mm)
1/4 6.350	IP4G	4	10	-	10	-	10	0.2500 6.350	0/-0.0004 0/-9	0.5000 12.700	0/-0.00045 0/-11	0.7500 19.050	0/-0.008 0/-0.2
3/8 9.525	IP6G		15	-	15	-	15	0.3750 9.525		0.6250 15.875	0/-0.00050 0/-13	0.8750 22.225	
1/2 9.525	IP8G		42	IP8G-AJ	41	IP8G-OP	32	0.5000 12.700		0.8750 22.225		1.2500 31.750	
5/8 15.875	IP10G	5	85	IP10G-AJ	83	IP10G-OP	64	0.6250 15.875	0/-0.0004 0/-10	1.1250 28.575	0/-0.00065 0/-16	1.5000 38.100	0/-0.012 0/-0.3
3/4 19.050	IP12G		104	IP12G-AJ	102	IP12G-OP	86	0.7500 19.050		1.2500 31.750		1.625 41.275	
1 25.400	IP16G	6	200	IP16G-AJ	218	IP16G-OP	190	1.0000 25.400	0/-0.0005 0/-12	1.5625 39.688	0/-0.00075 0/-19	2.2500 57.150	0/-0.012 0/-0.3
1-1/4 31.750	IP20G		465	IP20G-AJ	455	IP20G-OP	390	1.2500 31.750		2.0000 50.800		2.6250 66.675	
1-1/2 38.100	IP24G		720	IP24G-AJ	710	IP24G-OP	610	1.5000 38.100		2.3750 60.325		3.0000 76.200	
2 50.800	IP32G		1,310	IP32G-AJ	1,290	IP32G-OP	1,120	2.0000 50.800		3.0000 76.200		4.0000 101.600	

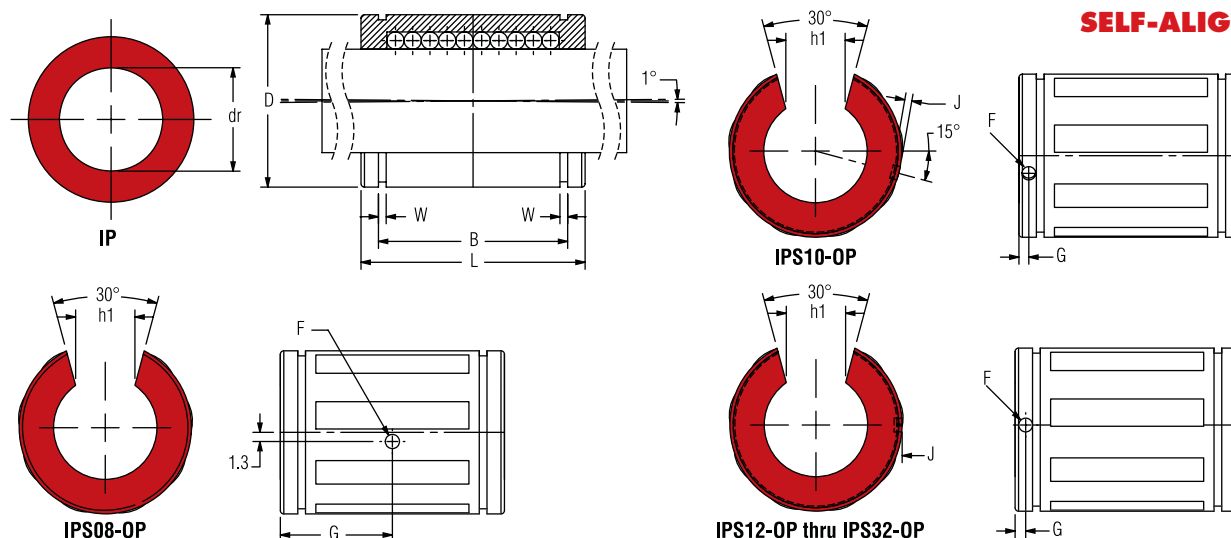
MAJOR DIMENSIONS & TOLERANCES										LOAD RATING			
NOMINAL SHAFT DIAMETER	B MAX/MIN (inch/ mm)	W MIN (inch/ mm)	D1 (inch/ mm)	h (inch/ mm)	h1 (inch/ mm)	θ°	TOL (inch/ µm)	ECCENTRICITY (inch/ µm)	MAX RADIAL CLEARANCE (inch/ µm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)
1/4 6.350	.515/.499 13.091/12.675	.0390 0.992	0.4687 11.906	.04 1	-	-	0/-0.008 0/-0.2	.0005 12	-0.0001 -3	206	46	265	60
3/8 9.525	.640/.624 16.256/15.850	.0390 0.992	0.5880 14.935		-	-				225	51	314	71
1/2 9.525	.967/.951 24.562/24.155	.0459 1.168	0.8209 20.853	.06 1.5	0.3400 7.937	80			-0.0001 -4	510	115	784	176
5/8 15.875	1.108/1.092 28.143/27.737	.0559 1.422	1.0590 26.899		0.3750 9.525					774	174	1,180	265
3/4 19.050	1.170/1.154 29.718/29.312	.0559 1.422	1.1760 29.870		0.4375 11.112	60	.0006 15	-0.0002 -6	862	194	1,370	308	
1 25.400	1.759/1.741 44.679/44.421	.0679 1.727	1.4687 37.306		0.5625 14.287	0/-0.010 0/-0.25			980	220	1,570	353	
1-1/4 31.750	2.009/1.991 51.029/50.571	.0679 1.727	1.8859 47.904	.10 2.5	0.6250 15.875	50	0/-0.012 0/-0.3	.0008 20	-0.0003 -8	1,570	353	2,740	616
1-1/2 38.100	2.415/2.397 61.341/60.884	.0859 2.184	2.2389 56.870	.12 3	0.7500 19.050					2,180	490	4,020	904
2 50.800	3.195/3.177 81.153/80.696	.1029 2.616	2.8379 72.085		1.000 25.400			.0010 25	-0.0005 -13	3,820	859	7,940	1,785

Linear Ball Bearings - IPS & IPS-OP

Inch Series



Ball Bearing - IPS



IPS - DIMENSIONAL INFORMATION

NOMINAL SHAFT DIA. (Inch/ mm)	PART NUMBER			MAJOR DIMENSIONS & TOLERANCES							LOAD RATING	
	STANDARD CLOSE	BALL CIRCUIT	WEIGHT (lbf)	dr (inch/ mm)	TOLERANCE	D (inch/ mm)	L (inch/ mm)	B	W	D1	Dynamic C lbf	Static Co lbf
1/4 6.350	IPS04	4	0.008 0.009	0.2500 6.350	0/-0.0005 (0/-12)	0.5000 12.700	0.7500 19.050	0.515	0.0390	0.4687	60	80
3/8 9.525	IPS06		0.013 0.014	0.3750 9.525		0.6250 15.875	0.8750 22.225	0.703	0.0390	0.5880	95	120
1/2 12.700	IPS08		0.042 0.043	0.5000 12.700		0.8750 22.225	1.2500 31.750	1.032	0.0459	0.8209	230	290
5/8 15.875	IPS10	5	0.101 0.103	0.6250 15.875		1.1250 28.575	1.5000 38.100	1.112	0.0559	1.0590	400	500
3/4 19.050	IPS12	6	0.123 0.123	0.7500 19.050		1.2500 31.750	1.625 41.275	1.272	0.0559	1.1760	470	590
1 25.400	IPS16	6	0.265 0.265	1.0000 25.400	0/-0.0006 0/-15	1.5625 39.688	2.2500 57.150	1.886	0.0679	1.4687	850	1060
1-1/4 31.750	IPS20		0.485 0.485	1.2500 31.750		2.0000 50.800	2.6250 66.675	2.011	0.0679	1.8859	1230	1530
1-1/2 38.100	IPS24		0.750 0.750	1.5000 38.100	0/-0.0008 0/-20	2.3750 60.325	3.0000 76.200	2.422	0.0859	2.2389	1480	1850
2 50.800	IPS32		1.389 1.411	2.0000 50.800		3.0000 76.200	4.0000 101.600	3.206	0.1029	2.8379	2430	3040

IPS-OP - DIMENSIONAL INFORMATION

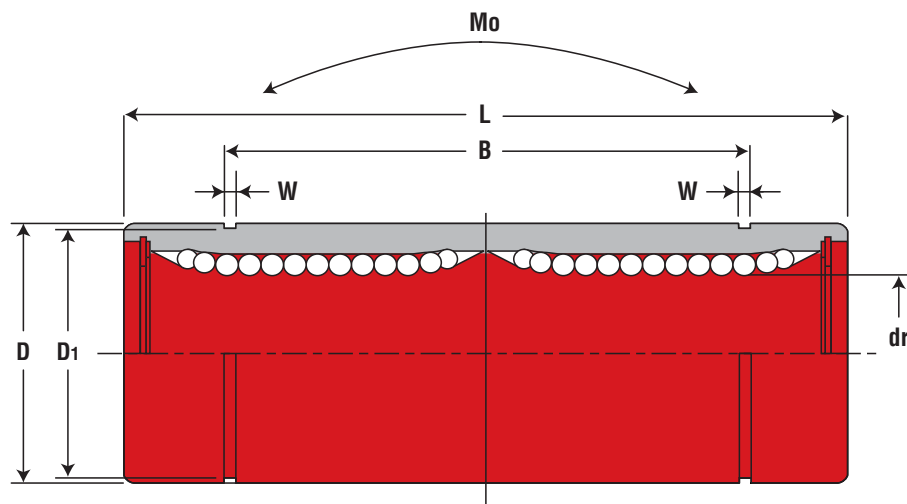
SHAFT DIA. (Inch/ mm)	PART NUMBER			MAJOR DIMENSIONS & TOLERANCES										LOAD RATING	
	STANDARD OPEN	BALL CIRCUIT	WEIGHT (lbf)	dr (inch/ mm)	D (inch/ mm)	L (inch/ mm)	F	G	B	W	D1	h1 (inch/ mm)	θ°	Dynamic C (lbf)	Static Co (lbf)
1/2 12.700	IPS08-OP	3	0.030	0.500	0.8750	1.250	0.140	0.630	1.032	0.050	0.320	0.320	30	210	190
5/8 15.875	IPS10-OP	4	0.060	0.625	1.1250	1.500	0.110	0.130	1.105	0.056	0.380	0.380	30	320	340
3/4 19.050	IPS12-OP	5	0.110	0.750	1.2500	1.625	0.140	0.130	1.270	0.056	0.430	0.430	30	510	430
1 25.400	IPS16-OP		0.210	1.000	1.5625	2.250	0.140	0.130	1.884	0.070	0.560	0.560	30	830	780
1-1/4 31.750	IPS20-OP		0.350	1.250	2.0000	2.625	0.200	0.190	2.004	0.068	0.630	0.630	30	1250	1270
1-1/2 38.100	IPS24-OP		0.670	1.500	2.3750	3.000	0.200	0.190	2.410	0.086	0.750	0.750	30	1520	1540
2 50.800	IPS32-OP		1.10	1.500	3.0000	4.000	0.270	0.310	3.193	0.105	1.000	1.000	30	2250	2580



Double Wide - IP-W

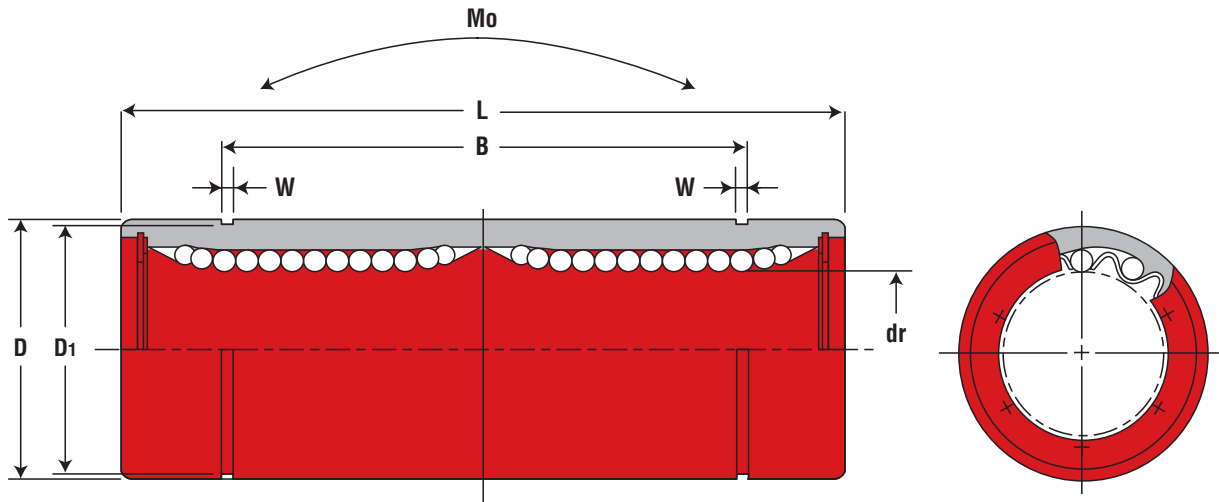
Linear Ball Bearings

Double Wide - IP-W



IP-W - DIMENSIONAL INFORMATION

	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (inch/ mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/ mm)	TOLERANCE (inch/ mm)	D (inch/ mm)	TOLERANCE (inch/ µm)	L (inch/ mm)	TOLERANCE (inch/ mm)
1/4 6.350	IP4GW	4	18	0.2500 6.350	0/-0.0004 0/-10	0.5000 12.700	0/-0.0005 0/-13	1.3750 34.925	0/-0.012 0/-0.3
3/8 9.525	IP6GW		28	0.3750 9.525		0.6250 15.875	0/-0.00065 0/-16	1.5938 40.481	
1/2 12.700	IP8GW		80	0.5000 12.700		0.8750 22.225		2.3750 60.235	
5/8 15.875	IP10GW	5	160	0.6250 15.875		1.1250 28.575	0/-0.00075 0/-19	2.8125 71.438	
3/4 19.050	IP12GW		195	0.7500 19.050	0/-0.0005 0/-12	1.2500 31.750		3.0937 78.581	0/-0.016 0/-0.4
1 25.400	IP16GW	6	410	1.0000 25.400		1.5625 39.688		4.2813 108.744	
1-1/4 31.750	IP20GW		820	1.2500 31.750	0/-0.0006 0/-15	2.0000 50.800	0/-0.0009 0/-22	5.0000 127.000	
1-1/2 38.100	IP24GW		1,250	1.5000 38.100		2.3750 60.325		5.6875 144.463	
2 50.800	IP32GW		2,350	2.0000 50.800		3.0000 76.200	0/-0.00100 0/-25	7.7500 196.850	



IP-W - DIMENSIONAL INFORMATION (cont.)

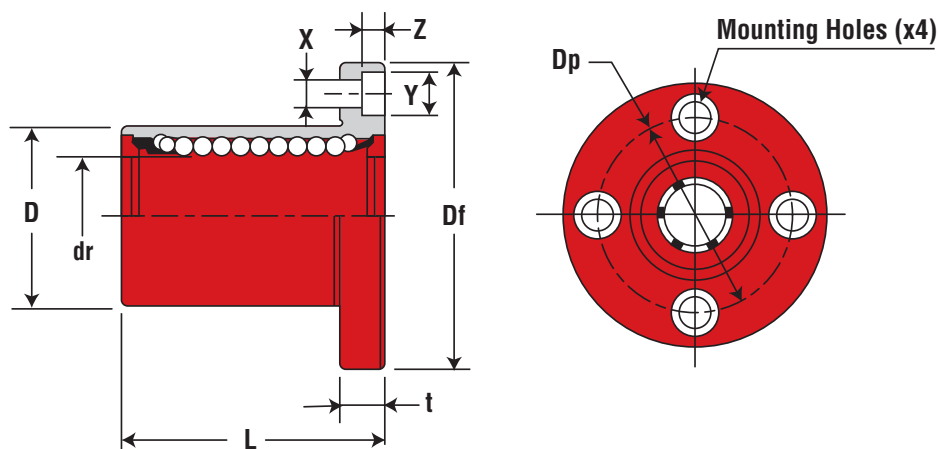
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES					LOAD RATING					NOMINAL SHAFT DIAMETER (inch/ mm)
B (inch/ mm)	TOLERANCE (inch/ mm)	W MIN (inch/ mm)	D1 (inch/ mm)	ECCENTRICITY (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	ALLOWABLE STATIC MOMENT Mo (N-m)	
1.0220 25.959	0/-0.012 0/-0.3	.0390 0.992	0.4687 11.906	.0006 15	323	73	530	119	2	1/4 6.350
1.2716 32.298		.0390 0.992	0.5880 14.935		353	79	630	142	2.7	3/8 9.525
1.9250 48.895		.0459 1.168	0.8209 20.853		813	183	1,570	353	11.5	1/2 12.700
2.2079 56.080		.0559 1.422	1.0590 26.899		1,230	277	2,350	528	20	5/8 15.875
2.3314 59.218			1.1760 29.870	.0008 20	1,370	308	2,740	616	26.5	3/4 19.050
3.5094 89.139	0/-0.16 0/-0.4	.0679 1.727	1.4687 37.306		1,570	353	3,140	706	41.2	1 25.400
4.0094 101.839			1.8859 47.904	.0010 25	2,500	562	5,490	1,234	84.8	1-1/4 31.750
4.8236 122.519		.0859 2.184	2.2389 56.870		3,430	771	8,040	1,807	143	1-1/2 38.100
6.3834 162.138		.1029 2.616	2.8379 72.085	.0012 30	6,080	1,367	15,900	3,574	399	2 50.800



Round Flange Mount - IPF

Linear Ball Bearings

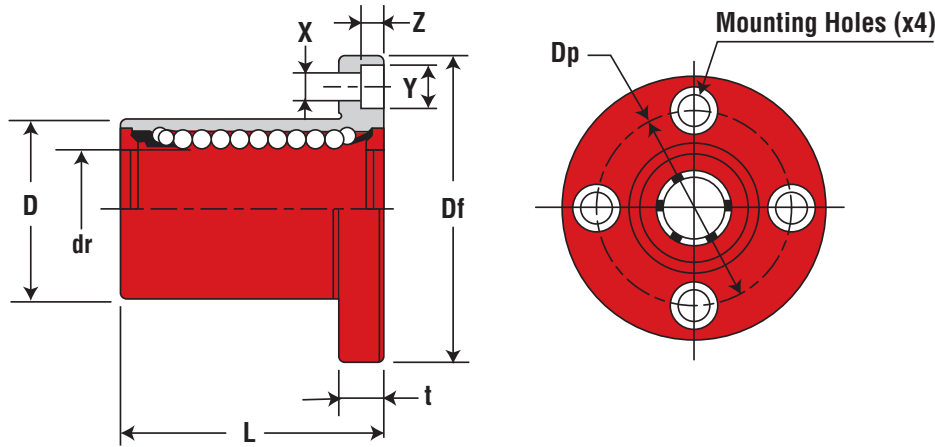


IPF - DIMENSIONAL INFORMATION

	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (inch/ mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/ mm)	TOLERANCE (inch/ μm)	D (inch/ mm)	TOLERANCE (inch/ μm)	L (inch/ mm)	TOLERANCE (inch/ mm)
1/4 6.350	IPF4G	4	32	0.2500 6.350	0/- .0004 0/-9	0.5000 12.700	0/- .0005 0/-13	0.7500 19.050	±0.012 ±0.3
3/8 9.525	IPF6G		47	0.3750 9.525		0.6250 15.875	0/- .00065 0/-16	0.8750 22.225	
1/2 6.350	IPF8G		88	0.5000 12.700		0.8750 22.225		1.2500 31.750	
5/8 15.875	IPF10G	5	140	0.6250 15.875	0/- .0004 0/-10	1.1250 28.575	0/- .00075 0/-19	1.5000 38.100	
3/4 19.050	IPF12G		190	0.7500 19.050		1.2500 31.750		1.6250 41.275	
1 25.400	IPF16G	6	325	1.0000 25.400	0/- .0005 0/-12	1.5625 39.688	0/- .0009 0/-22	2.2500 57.150	
1-1/4 31.750	IPF20G		665	1.2500 31.750		2.0000 50.800		2.6250 66.675	
1-1/2 38.100	IPF24G		1,100	1.5000 38.100		2.3750 60.325		3.0000 76.200	
2 50.800	IPF32G		1,760	2.0000 50.800		3.0000 76.200	0/- .0010 0/-25	4.0000 101.600	

Round Flange Mount - IPF

Linear Ball Bearings



Round Flange - IPF

IPF - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

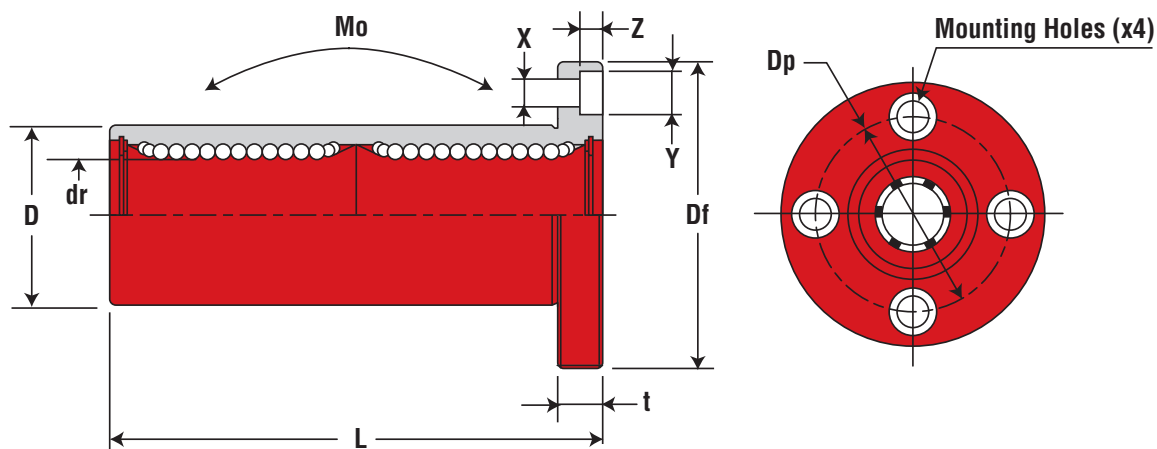
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING				NOMINAL SHAFT DIAMETER (inch/ mm)
Df (inch/ mm)	t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	
1.2500 31.750	.2190 5.556	0.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0005 12	.0005 12	206	46	265	60	1/4 6.350
1.5000 38.100	.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			225	51	314	71	3/8 9.525
1.7500 44.450	.2500 6.350	1.3120 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			510	115	784	176	1/2 6.350
2.0000 50.800	.2500 6.350	1.5620 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			774	174	1,180	265	5/8 15.875
2.1875 55.563	.3125 7.938	1.7180 43.660	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0006 15	.0006 15	862	194	1,370	308	3/4 19.050
2.5000 63.500	.3125 7.938	2.0310 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			980	220	1,570	353	1 25.400
3.1250 79.375	.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0008 20	.0008 20	1,570	353	2,740	616	1-1/4 31.750
3.7500 95.250	.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334	.0010 25	.0010 25	2,180	490	4,020	904	1-1/2 38.100
4.3750 111.125	.5000 12.700	3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,820	859	7,940	1,785	2 50.800



Round Flange - Double Mount - IPF-W

Linear Ball Bearings

Round Flange - IPF-W

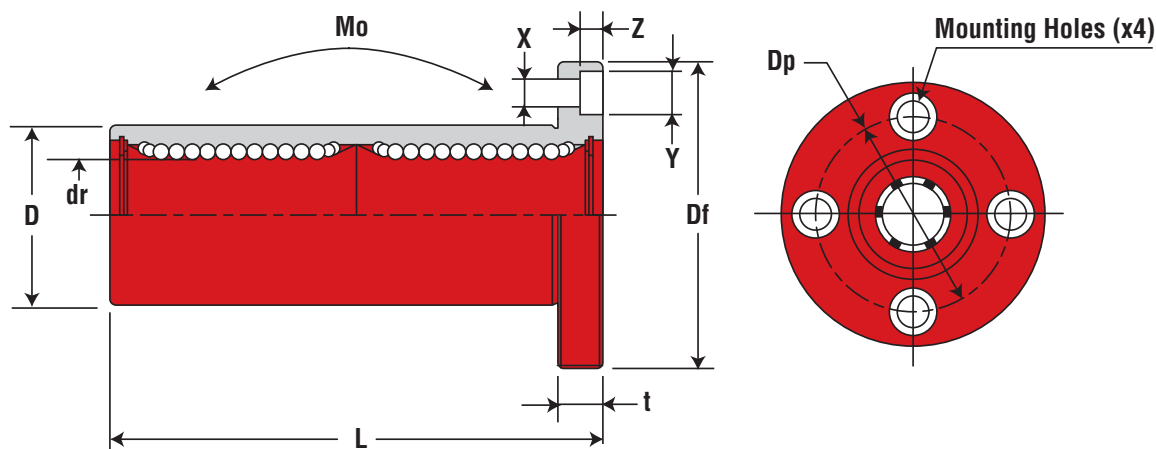


IPF-W - DIMENSIONAL INFORMATION

	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (inch/ mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/ mm)	TOLERANCE (inch/ µm)	D (inch/ mm)	TOLERANCE (inch/ µm)	L (inch/ mm)	TOLERANCE (inch/ mm)	Df (inch/ mm)
1/4 6.350	IPF4GW	4	40	0.2500 6.350	0/-0.0004 0/-10	0.5000 12.700	0/-0.0005 0/-13	1.375 34.925	±0.012 ±0.3	1.2500 31.750
3/8 9.525	IPF6GW		60	0.3750 9.525		0.6250 15.875	0/-0.00065 0/-16	1.5938 40.481		1.5000 38.100
1/2 12.700	IPF8GW		126	0.5000 12.700		0.8750 22.225		2.3750 60.325		1.7500 44.450
5/8 15.875	IPF10GW		215	0.6250 15.875		1.1250 28.575		2.8125 71.438		2.0000 50.800
3/4 19.050	IPF12GW	5	280	0.7500 19.050	0/-0.0005 0/-12	1.2500 31.750	0/-0.00075 0/-19	3.0937 78.581		2.1875 55.563
1 25.400	IPF16GW	6	515	1.0000 25.400		1.5625 39.688		4.2813 108.744		2.2500 63.500
1-1/4 31.750	IPF20GW		1,020	1.2500 31.750	0/-0.0006 0/-15	2.0000 50.800	0/-0.0009 0/-22	5.000 127.000		3.1250 79.375
1-1/2 38.100	IPF24GW		1,630	1.5000 38.100		2.3750 60.325		5.6875 144.463		3.7500 95.250
2 50.800	IPF32GW		2,800	2.0000 50.800		3.0000 76.200	0/-0.0010 0/-25	7.7500 196.850		4.3750 111.125

Round Flange - Double Mount - IPF-W

Linear Ball Bearings



Round Flange - IPF-W

IPF-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

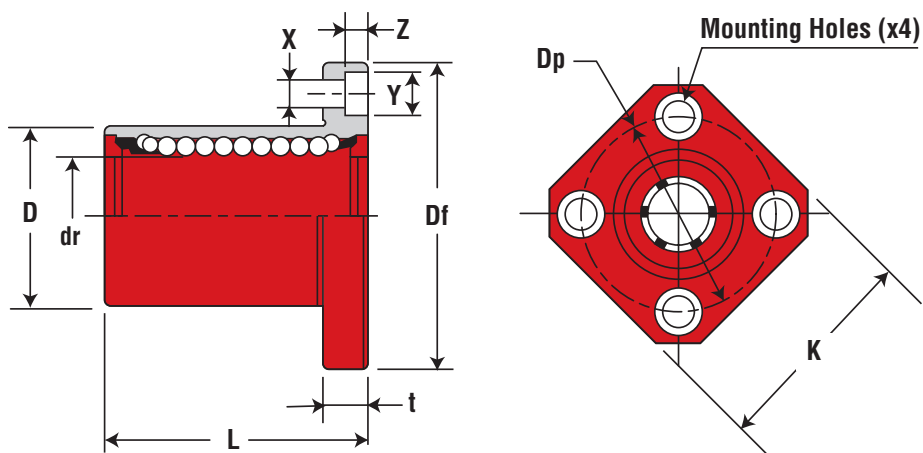
MAJOR DIMENSIONS & TOLERANCES					LOAD RATING					NOMINAL SHAFT DIAMETER (inch/ mm)
t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	ALLOWABLE STATIC MOMENT Mo (N-m)	
0.219 5.556	0.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0006 15	.0006 15	323	73	530	119	2	1/4 6.350
.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			353	79	630	142	2.7	3/8 9.525
.2500 6.350	1.312 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			813	183	1,570	353	11.5	1/2 12.700
.2500 6.350	1.5625 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			1,230	277	2,350	528	20	5/8 15.875
.3125 7.938	1.7188 43.656	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0008 20	.0008 20	1,370	308	2,740	616	26.5	3/4 19.050
.3125 7.938	2.0313 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			1,570	353	3,140	706	41.2	1 25.400
.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0010 25	.0010 25	2,500	562	5,490	1,234	84.8	1-1/4 31.750
.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,430	771	8,040	1,807	143	1-1/2 38.100
.5000 12.700	3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334	.0012 30	.0012 30	6,080	1,367	15,900	3,574	399	2 50.800



Square Flange Mount - IPK

Linear Ball Bearings

Square Flange - IPK

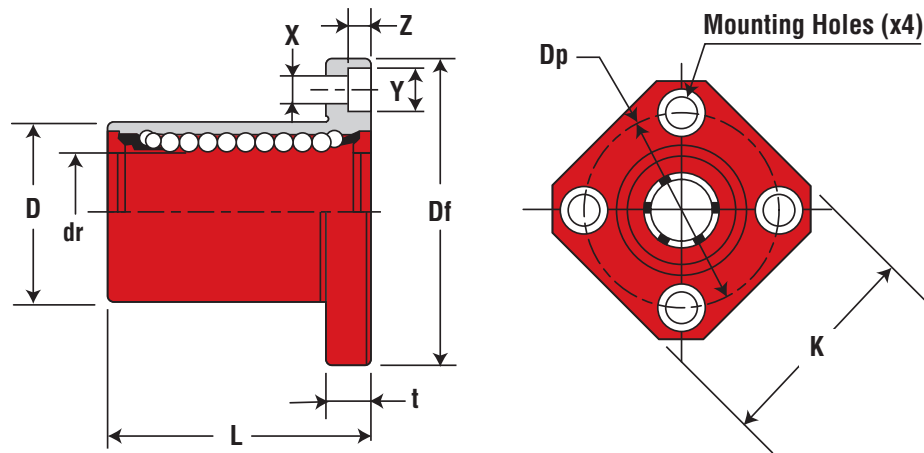


IPK - DIMENSIONAL INFORMATION

	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (inch/mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/mm)	TOLERANCE (inch/ μ m)	D (inch/mm)	TOLERANCE (inch/ μ m)	L (inch/mm)	TOLERANCE (inch/mm)	Df (inch/mm)
1/4 6.350	IPK4G	4	25	0.2500 6.350	0/-0.0004 0/-9	0.5000 12.700	0/-0.0005 0/-13	0.7500 19.050	± 0.012 ± 0.3	1.2500 31.750
3/8 9.525	IPK6G		32	0.3750 9.525		0.6250 15.875	0/-0.00065 0/-16	0.8750 22.225		1.5000 38.100
1/2 12.700	IPK8G		68	0.5000 12.700		0.8750 22.225		1.2500 31.750		1.7500 44.450
5/8 15.875	IPK10G		124	0.6250 15.875		1.1250 28.575		1.5000 38.100		2.0000 50.800
3/4 19.050	IPK12G	5	150	0.7500 19.050	0/-0.0004 0/-10	1.2500 31.750	0/-0.00075 0/-19	1.6250 41.275		2.1875 55.563
1 25.400	IPK16G	6	280	1.0000 25.400		1.5625 39.688		2.2500 57.150		2.5000 63.500
1-1/4 31.750	IPK20G		580	1.2500 31.750	0/-0.0005 0/-12	2.0000 50.800	0/-0.0009 0/-22	2.6250 66.675		3.1250 79.375
1-1/2 38.100	IPK24G		930	1.5000 38.100		2.3750 60.325		3.0000 76.200		3.7500 95.250
2 50.800	IPK32G		1,580	2.0000 50.800		3.0000 76.200	0/-0.0010 0/-25	4.0000 101.600		4.3750 111.125

Square Flange Mount - IPK

Linear Ball Bearings



Square Flange - IPK

IPK - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

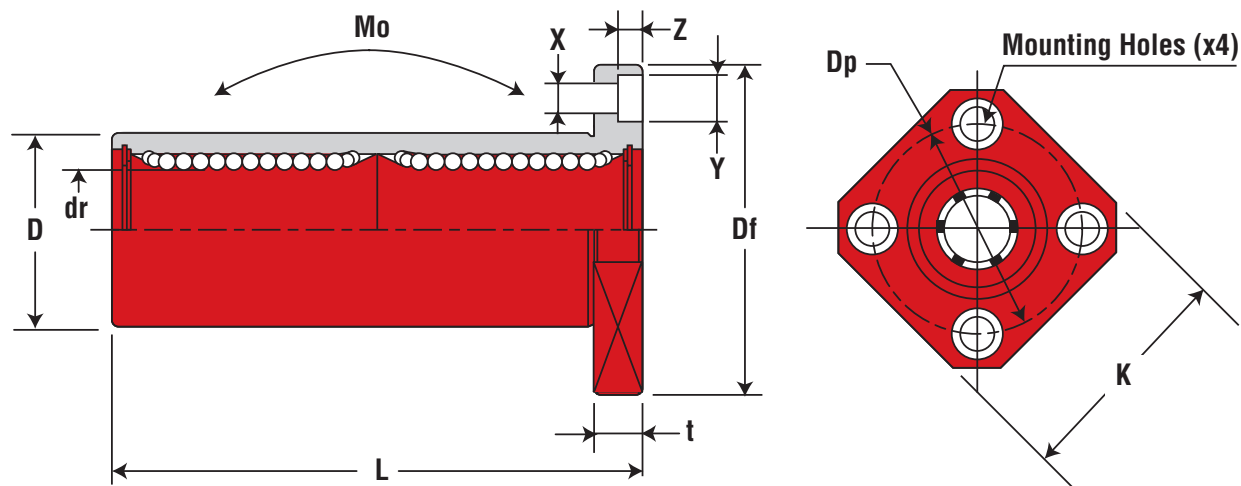
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING				
K (inch/ mm)	t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	NOMINAL SHAFT DIAMETER (inch/ mm)
1.0000 25.400	.2190 5.556	.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0005 12	.0005 12	206	46	265	60	1/4 6.350
1.2500 31.750	.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			225	51	314	71	3/8 9.525
1.3750 34.925		1.3120 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			510	115	784	176	1/2 12.700
1.5000 38.100		1.5620 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			774	174	1,180	265	5/8 15.875
1.6875 42.863	.3125 7.938	1.7180 43.660	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0006 15	.0006 15	862	194	1,370	308	3/4 19.050
2.0000 50.800		2.0310 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			980	220	1,570	353	1 25.400
2.5000 63.500	.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0008 20	.0008 20	1,570	353	2,740	616	1-1/4 31.750
3.0000 76.200	.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334	.0010 25	.0010 25	2,180	490	4,020	904	1-1/2 38.100
3.5000 88.900		3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,820	859	7,940	1,785	2 50.800



Square Flange Mount - Double Wide - IPK-W

Linear Ball Bearings

Square Flange - IPK-W

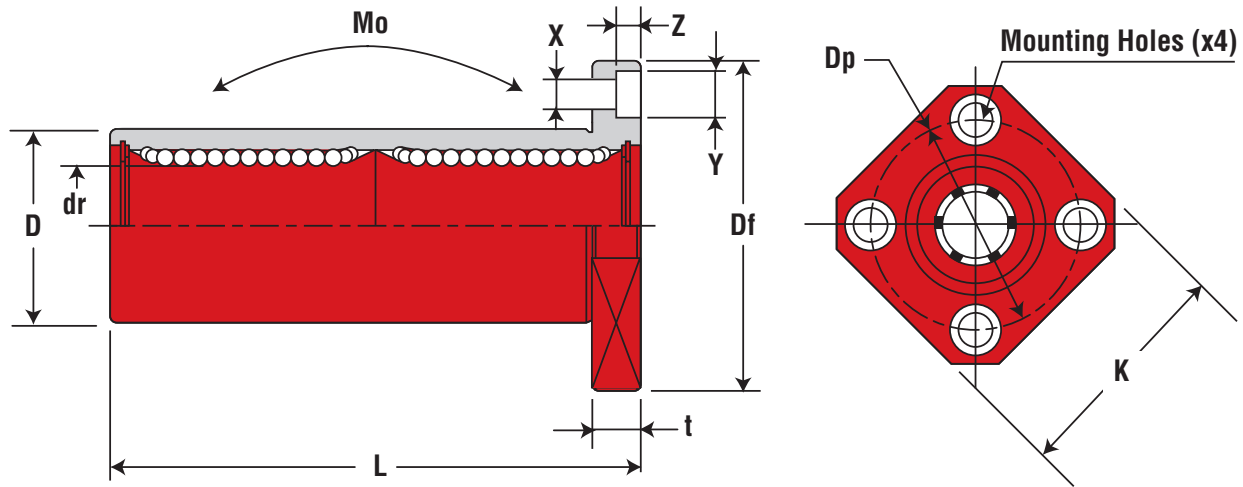


IPK-W DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (inch/mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/mm)	TOLERANCE (inch/ μ m)	D (inch/mm)	TOLERANCE (inch/ μ m)	L (inch/mm)	TOLERANCE (inch/mm)	Df (inch/mm)
1/4 6.350	IPK4GW	4	33	0.2500 6.350	0/- .0004 0/-10	0.5000 12.700	0/- .0005 0/-13	1.3750 34.925	± 0.012 ± 0.3	1.2500 31.750
3/8 9.525	IPK6GW		45	0.3750 9.525		0.6250 15.875	0/- .00065 0/-16	1.5938 40.481		1.5000 38.100
1/2 12.700	IPK8GW		106	0.5000 12.700		0.8750 22.225		2.3750 60.325		1.7500 44.450
5/8 15.875	IPK10GW		200	0.6250 15.875		1.1250 28.575		2.8125 71.438		2.0000 50.800
3/4 19.050	IPK12GW	5	240	0.7500 19.050	0/- .0005 0/-12	1.2500 31.750	0/- .00075 0/-19	3.0937 78.581		2.1875 55.563
1 25.400	IPK16GW	6	470	1.0000 25.400		1.5625 39.688		4.2813 108.744		2.5000 63.500
1-1/4 31.750	IPK20GW		935	1.2500 31.750	0/- .0006 0/-15	2.0000 50.800	0/- .0009 0/-22	5.0000 127.000		3.1250 79.375
1-1/2 38.100	IPK24GW		1,460	1.5000 38.100		2.3750 60.325		5.6875 144.463		3.7500 95.250
2 50.800	IPK32GW		2,620	2.0000 50.800		3.0000 76.200	0/- .0010 0/-25	7.7500 196.850		4.3750 111.125

Square Flange Mount - Double Wide - IPK-W

Linear Ball Bearings



Square Flange - IPK-W

IPK-W DIMENSIONAL INFORMATION

(Standard Steel Finish)

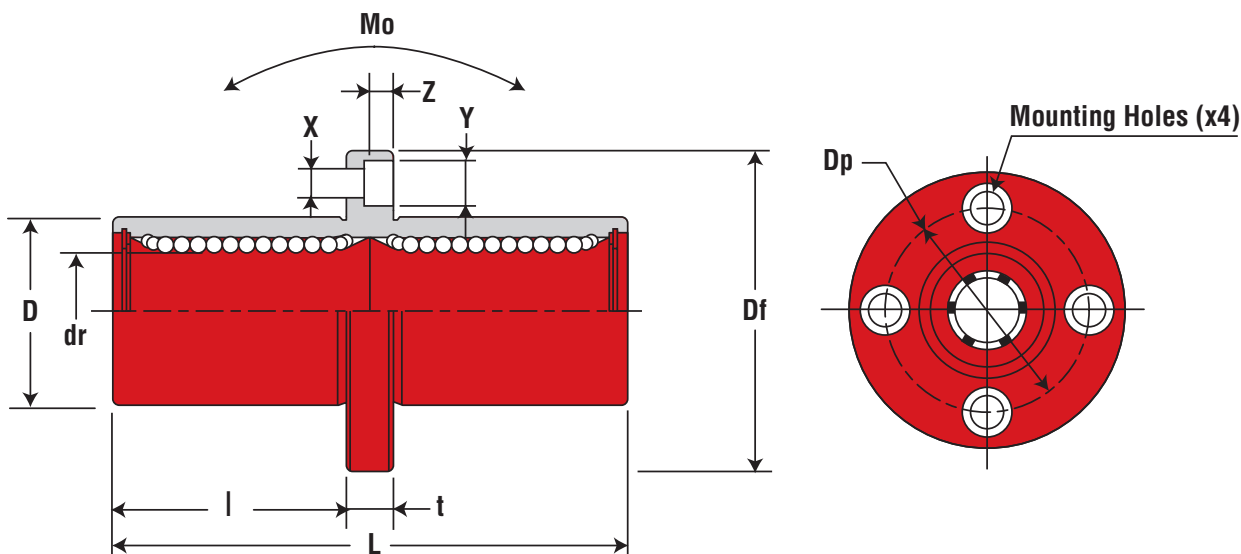
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING					
K (inch/ mm)	t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (inch/ mm)
1.0000 25.400	.2190 5.556	0.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0006 15	.0006 15	323	73	530	119	2	1/4 6.350
1.2500 31.750	.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			353	79	630	142	2.7	3/8 9.525
1.3750 34.925		1.3120 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			813	183	1,570	353	11.5	1/2 12.700
1.5000 38.100		1.5620 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			1,230	277	2,350	528	20	5/8 15.875
1.6875 42.863	.3125 7.938	1.7180 43.660	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0008 20	.0008 20	1,370	308	2,740	616	26.5	3/4 19.050
2.0000 50.800		2.0310 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			1,570	353	3,140	706	41.2	1 25.400
2.5000 63.500	.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0010 25	.0010 25	2,500	562	5,490	1,234	84.8	1-1/4 31.750
3.0000 76.200	.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,430	771	8,040	1,807	143	1-1/2 38.100
3.5000 88.900		3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334			6,080	1,367	15,900	3,574	399	2 50.800



Round Flange - Center Mount - IPFC

Linear Ball Bearings

Round Flange - IPFC

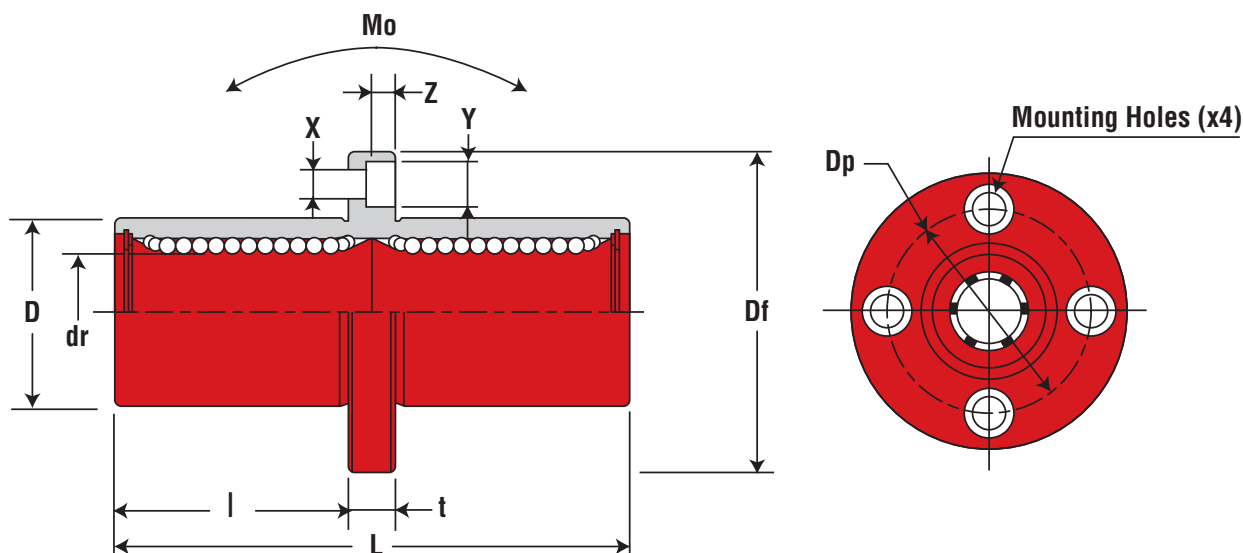


IPFC - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (inch/mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/mm)	TOLERANCE (inch/ μ m)	D (inch/mm)	TOLERANCE (inch/ μ m)	L (inch/mm)	TOLERANCE (inch/ μ m)	ℓ (inch/mm)
1/4 6.350	IPFC4G	4	40	.2500 6.350	0/- .0004 0/-10	.5000 12.700	0/- .0005 0/-13	1.3750 34.925	± 0.012 ± 0.3	.5781 14.684
3/8 9.525	IPFC6G		60	.3750 9.525		.6250 15.875	0/- .00065 0/-16	1.5938 40.481		.6719 17.066
1/2 12.700	IPFC8G		126	.5000 12.700		.8750 22.225		2.3750 60.235		1.0625 26.988
5/8 15.875	IPFC10G		215	.6250 15.875		1.1250 28.575	0/- .00075 0/-19	2.8125 71.438		1.2813 32.544
3/4 19.050	IPFC12G	5	280	.7500 19.050	0/- .0005 0/-12	1.2500 31.750		3.0937 78.581		1.3906 35.322
1 25.400	IPFC16G	6	515	1.0000 25.400		1.5625 39.688	0/- .0009 0/-22	4.2813 108.744		1.9844 50.403
1-1/4 31.750	IPFC20G		1,020	1.2500 31.750	0/- .0006 0/-15	2.0000 50.800		5.0000 127.000		2.3125 58.738
1-1/2 38.100	IPFC24G		1,630	1.5000 38.100		2.3750 60.325	0/- .0010 0/-25	5.6875 144.463		2.5938 65.882
2 50.800	IPFC32G		2,800	2.0000 50.800		3.0000 76.200		7.7500 196.850		3.6250 92.075

Round Flange - Center Mount - IPFC

Linear Ball Bearings



Round Flange - IPFC

IPFC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

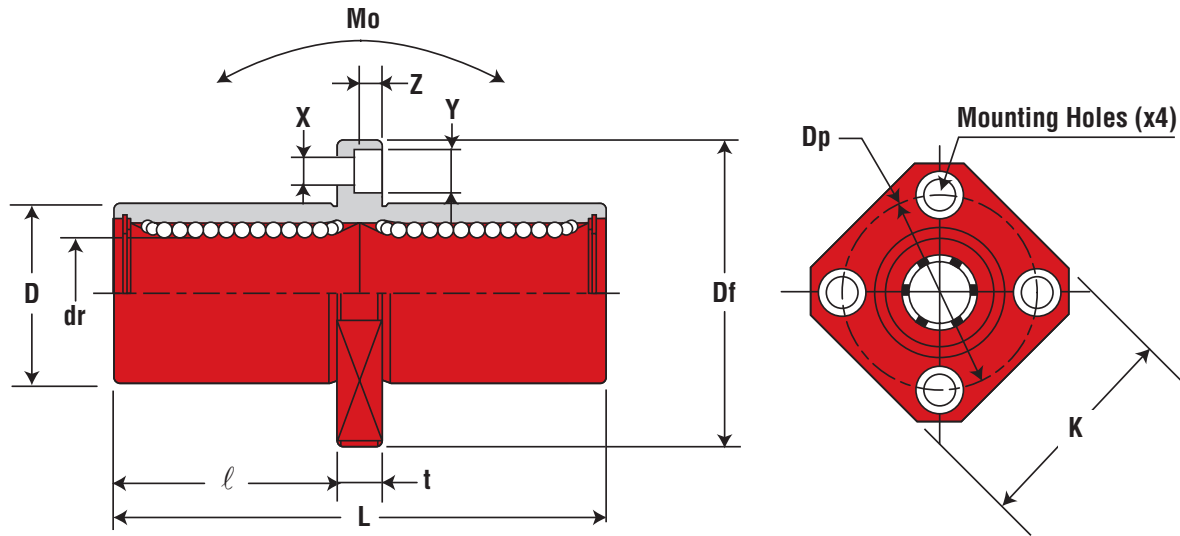
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING					NOMINAL SHAFT DIAMETER (inch/ mm)
Df (inch/ mm)	t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	ALLOWABLE STATIC MOMENT Mo (N-m)	
1.2500 31.750	.2190 5.556	0.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0006 15	.0006 15	323	73	530	119	2.0	1/4 6.350
1.5000 38.100	.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			353	79	630	142	2.7	3/8 9.525
1.7500 44.450	.2500 6.350	1.3120 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			813	183	1,570	353	11.5	1/2 12.700
2.0000 50.800	.2500 6.350	1.5620 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			1,230	277	2,350	528	20.0	5/8 15.875
2.1875 55.563	.3125 7.938	1.7180 43.660	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0008 20	.0008 20	1,370	308	2,740	616	26.5	3/4 19.050
2.5000 63.500	.3125 7.938	2.0310 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			1,570	353	3,140	706	41.2	1 25.400
3.1250 79.375	.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0010 25	.0010 25	2,500	562	5,490	1,234	84.8	1-1/4 31.750
3.7500 95.250	.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,430	771	8,040	1,807	143	1-1/2 38.100
4.3750 111.125	.5000 12.700	3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334	.0012 30	.0012 30	6,080	1,367	15,900	3,574	399	2 50.800



Square Flange - Center Mount - IPKC

Linear Ball Bearings

Square Flange - IPKC



IPKC - DIMENSIONAL INFORMATION

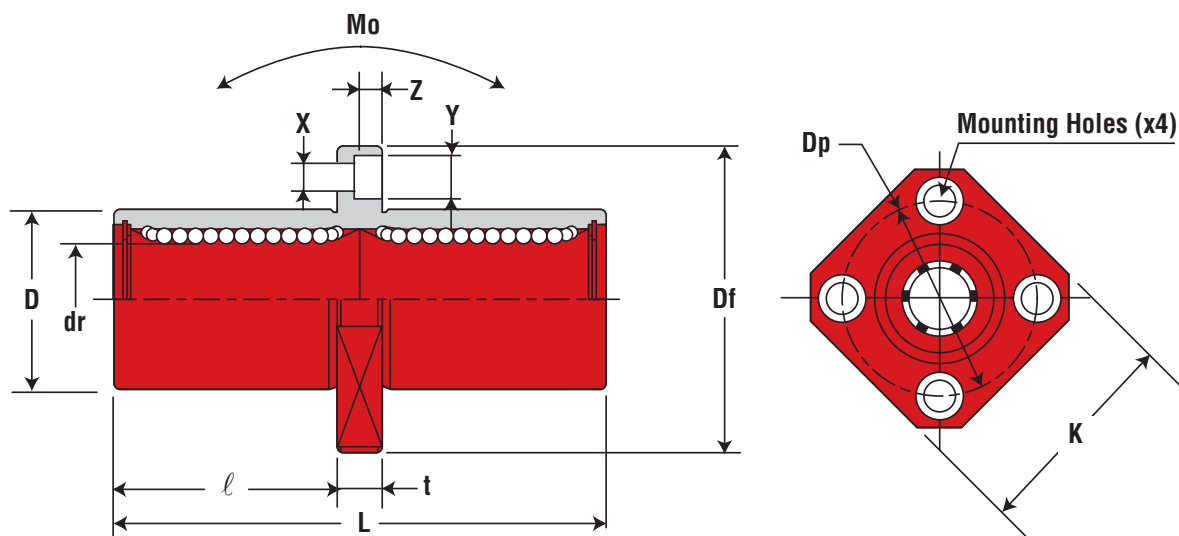
PART NUMBER		MAJOR DIMENSIONS & TOLERANCES									
NOMINAL SHAFT DIAMETER (inch/ mm)	POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (inch/ mm)	TOLERANCE (inch/ μm)	D (inch/ mm)	TOLERANCE (inch/ μm)	L (inch/ mm)	TOLERANCE (inch/ mm)	ℓ (inch/ mm)	Df (inch/ mm)
1/4 6.350	IPKC4G	4	33	0.2500 6.350	0/-0.0004 0/-10	0.5000 12.700	0/-0.0005 0/-13	1.3750 34.925	±0.012 ±0.3	0.5781 14.684	1.2500 31.750
3/8 9.525	IPKC6G		45	0.3750 9.525		0.6250 15.875	0/-0.00065 0/-16	1.5938 40.481		0.6719 17.066	1.5000 38.100
1/2 12.700	IPKC8G		106	0.5000 12.700		0.8750 22.225		2.3750 60.235		1.0625 26.988	1.7500 44.450
5/8 15.875	IPKC10G		200	0.6250 15.875		1.1250 28.575		2.8125 71.438		1.2813 32.544	2.0000 50.800
3/4 19.050	IPKC12G	5	240	0.7500 19.050	0/-0.0005 0/-12	1.2500 31.750	0/-0.00075 0/-19	3.0937 78.581		1.3906 35.322	2.1875 55.563
1 25.400	IPKC16G	6	470	1.0000 25.400		1.5625 39.688		4.2813 108.744		1.9800 50.403	2.5000 63.500
1-1/4 31.750	IPKC20G		935	1.2500 31.750	0/-0.0006 0/-15	2.0000 50.800	0/-0.0009 0/-22	5.0000 127.000		2.3125 58.738	3.1250 79.375
1-1/2 38.100	IPKC24G		1,460	1.5000 38.100		2.3750 60.325		5.6875 144.463		2.5938 65.882	3.7500 95.250
2 50.800	IPKC32G		2,620	2.0000 50.800		3.0000 76.200	0/-0.0010 0/-25	7.7500 196.850		3.6250 92.075	4.3750 111.125

Square Flange - Center Mount - IPKC

Linear Ball Bearings



Square Flange - IPKC



IPKC - DIMENSIONAL INFORMATION (cont.)

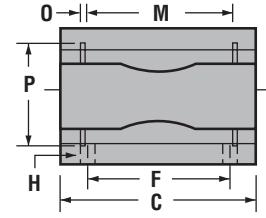
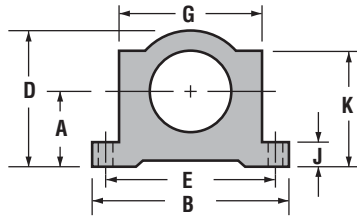
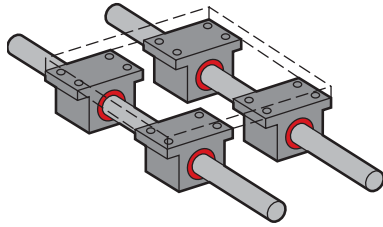
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES						LOAD RATING					NOMINAL SHAFT DIAMETER (inch/ mm)
K (inch/ mm)	t (inch/ mm)	Dp (inch/ mm)	X x Y x Z (inch/ mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	DYNAMIC C (lbs.)	STATIC Co (N)	STATIC Co (lbs.)	ALLOWABLE STATIC MOMENT Mo (N-m)	
1.0000 25.400	.2190 5.556	0.8750 22.225	.156 x .250 x .141 3.969 x 6.350 x 3.572	.0006 15	.0006 15	323	73	530	119	2.0	1/4 6.350
1.2500 31.750	.2500 6.350	1.0620 26.988	.1875 x .297 x .172 4.763 x 7.541 x 4.366			353	79	630	142	2.7	3/8 9.525
1.3750 34.925		1.3120 33.338	.1875 x .297 x .172 4.763 x 7.541 x 4.366			813	183	1,570	353	11.5	1/2 12.700
1.5000 38.100		1.5620 39.688	.1875 x .297 x .172 4.763 x 7.541 x 4.366			1,230	277	2,350	528	20.0	5/8 15.875
1.6875 42.863	.3125 7.938	1.7180 43.660	.219 x .344 x .203 5.556 x 8.731 x 5.159	.0008 20	.0008 20	1,370	308	2,740	6162	26.5	3/4 19.050
2.0000 50.800		2.0310 51.594	.219 x .344 x .203 5.556 x 8.731 x 5.159			1,570	353	3,140	706	41.2	1 25.400
2.5000 63.500	.3750 9.525	2.5625 65.088	.281 x .406 x .266 7.144 x 10.312 x 6.747	.0010 25	.0010 25	2,500	562	5,490	1,234	84.8	1-1/4 31.750
3.0000 76.200	.5000 12.700	3.0625 77.788	.344 x .500 x .328 8.731 x 12.700 x 8.334			3,430	771	8,040	1,807	143	1-1/2 38.100
3.5000 88.900		3.6875 93.662	.344 x .500 x .328 8.731 x 12.700 x 8.334			6,080	1,367	15,900	3,574	399	2 50.800



Pillow Block - IPP & IPPN

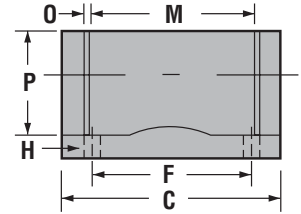
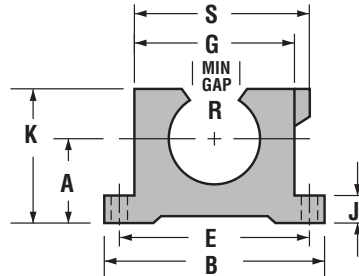
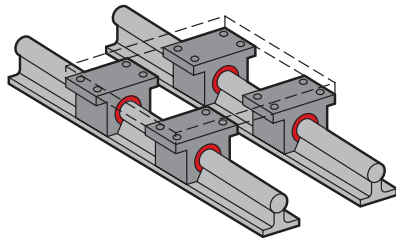
Linear Ball Bearings



IPP - CLOSED PILLOW BLOCKS

PART NO. CLOSED	NOM. BRG. I.D.	A	B	C	D	E	F	G	H		J	K	M	O	P	SMALLEY RET. RING	ASSEM. WT.
PRECISION	MIN.	CENTERLINE +/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	FLNG. THICK		GRV. SPACE	GRV. WIDTH	GRV. DIA.	RING PART NO.	(lbs.)
IPP04G	1/4"	0.437	1.625	1.19	0.813	1.3120	0.7500	1.000	#6	5/32"	0.188	0.750	0.750	0.039	0.532	WH-51	0.099
IPP06G	3/8"	0.500	1.750	1.31	0.938	1.4370	0.8750	1.125			0.188	0.875	0.875	0.039	0.665	WH-65	0.129
IPP08G	1/2"	0.687	2.000	1.69	1.250	1.6880	1.0000	1.375			0.250	1.125	1.250	0.046	0.931	WH-90	0.250
IPP10G	5/8"	0.875	2.500	1.94	1.625	2.1250	1.1250	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	WH-115	0.500
IPP12G	3/4"	0.937	2.750	2.06	1.750	2.3750	1.2500	1.875			0.313	1.563	1.625	0.056	1.330	WH-128	0.580
IPP16G	1"	1.187	3.250	2.81	2.188	2.8750	1.7500	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	WH-156	1.000
IPP20G	1-1/4"	1.500	4.000	3.63	2.813	3.5000	2.0000	3.000			0.438	2.500	2.625	0.068	2.122	WH-200	2.000
IPP24G	1-1/2"	1.750	4.750	4.00	3.250	4.1250	2.5000	3.500			1/4"	9/32"	0.500	2.875	3.000	0.086	2.519
IPP32G	2"	2.125	6.000	5.00	4.063	5.2500	3.2500	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	WH-300	6.500

- NOTES:** (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
(2) All standard pillow blocks use standard "IP" series bearings found on page 70.
(3) Straight bore, pre-assembled pillow blocks use standard "IP" series bearing.



IPPN - OPEN PILLOW BLOCKS

PART NO. CLOSED	NOM. BRG. I.D.	A	B	C	E	F	G	H		J	K	M	O	P	R	EATON RET. RING PART NO.	ASSEM. WT.	S
PRECISION	MIN.	CENTERLINE +/- .001	WIDTH +/- .010	LENGTH	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	FLNG THICK	HEIGHT	GRV. SPACE	GRV. WIDTH	GRV. DIA.	MIN. OPEN		(lbs.)	OVERALL WIDTH
IPPN08G	1/2"	0.687	2.000	1.50	1.6880	1.0000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	0.313	MNAN-87	0.250	1.438
IPPN10G	5/8"	0.875	2.500	1.75	2.1250	1.1250	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	0.375	MNAN-112	0.500	1.813
IPPN12G	3/4"	0.937	2.750	1.88	2.3750	1.2500	1.875			0.313	1.563	1.625	0.056	1.330	0.438	MNAN-125	0.580	1.938
IPPN16G	1"	1.187	3.250	2.63	2.8750	1.7500	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	0.563	MNAN-156	1.000	2.438
IPPN20G	1-1/4"	1.500	4.000	3.38	3.5000	2.0000	3.000			0.438	2.500	2.625	0.068	2.122	0.625	MNAN-200	2.000	3.125
IPPN24G	1-1/2"	1.750	4.750	3.75	4.1250	2.5000	3.500	1/4"	9/32"	0.500	2.875	3.000	0.086	2.519	0.750	MNAN-237	3.000	3.625
IPPN32G	2"	2.125	6.000	4.75	5.2500	3.2500	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	1.000	MNAN-300	6.500	4.688

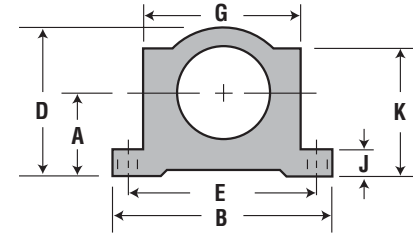
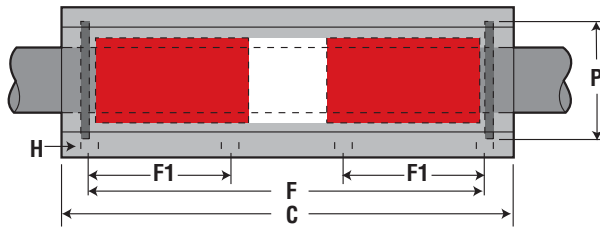
- NOTES:** (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
(2) All standard pillow blocks use standard "IP" series bearings found on page 70.
(3) All open pillow blocks have "notch".

Twin Pillow Block - IPPW & IPPWN

Linear Ball Bearings



Twin - IPPW & IPPWN

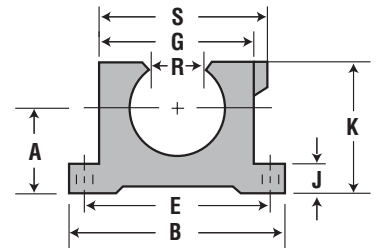
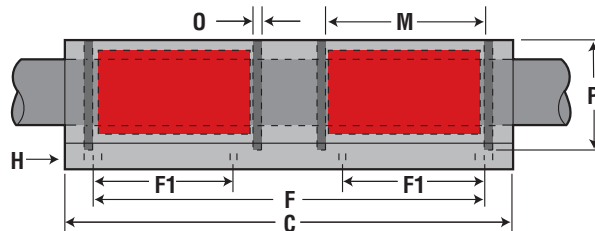


IPPW - TWIN CLOSED PILLOW BLOCKS

PART NO. CLOSED	NOM. BRG. I.D.	A CENTERLINE	B	C	D	E	F	F1	G	H		J	K	P	SMALLEY RET. RING PART NO.	ASSEM. WT. (lbs.)
PRECISION	MIN.	+/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	THICK	HEIGHT	GRV. DIA		
IPPW04G	1/4"	0.437	1.625	2.500	0.813	1.3120	2.0000	.750	1.000	#6	5/32"	0.188	0.750	0.532	WH-51	0.197
IPPW06G	3/8"	0.500	1.750	2.750	0.938	1.4370	2.2500	.875	1.125			0.188	0.875	0.665	WH-65	0.258
IPPW08G	1/2"	0.687	2.000	3.500	1.250	1.6880	2.5000	1.000	1.375			0.250	1.125	0.931	WH-90	0.500
IPPW10G	5/8"	0.875	2.500	4.000	1.625	2.1250	3.0000	1.125	1.750	#8	3/16"	0.281	1.438	1.197	WH-115	1.000
IPPW12G	3/4"	0.937	2.750	4.500	1.750	2.3750	3.5000	1.250	1.875			0.313	1.563	1.330	WH-128	1.125
IPPW16G	1"	1.187	3.250	6.000	2.188	2.8750	4.5000	1.750	2.375	#10	7/32"	0.375	1.938	1.671	WH-156	2.188
IPPW20G	1-1/4"	1.500	4.000	7.500	2.813	3.5000	5.5000	2.000	3.000			0.438	2.500	2.122	WH-200	4.250
IPPW24G	1-1/2"	1.750	4.750	9.000	3.250	4.1250	6.5000	2.500	3.500	1/4"	9/32"	0.500	2.875	2.519	WH-237	6.375
IPPW32G	2"	2.125	6.000	10.000	4.063	5.2500	8.2500	3.250	4.500	3/8"	13/32"	0.625	3.625	3.182	WH-300	13.500

NOTES: (1) All standard pillow blocks use standard "IP" series bearings found on page 70.

(2) Twin closed pillow blocks are non-self-aligning



IPPWN - TWIN OPEN PILLOW BLOCKS

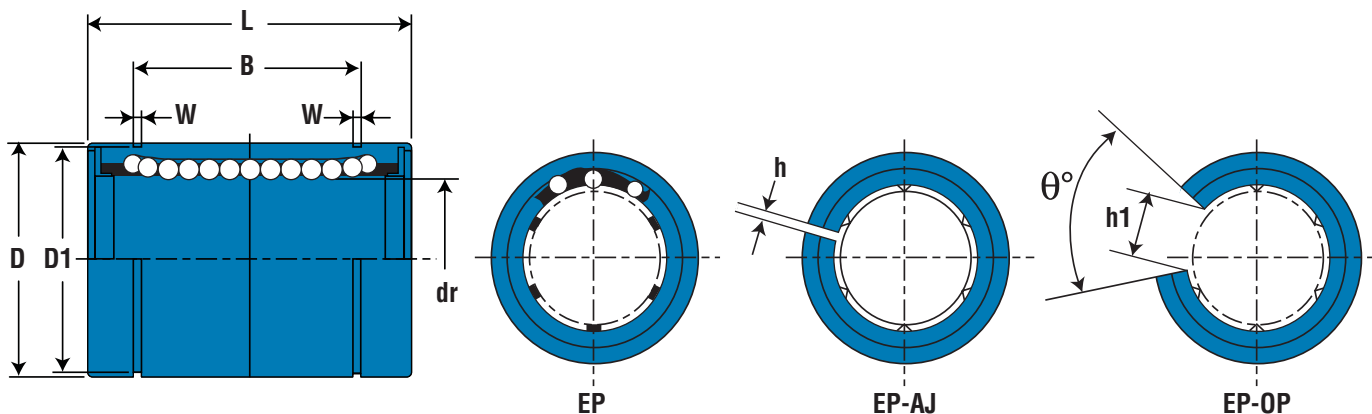
PART NO. OPEN	NOM. BRG. I.D.	A CENTERLINE	B	C	E	F	F1	G	H		J	K	M	O	P	R	EATON RET. RING PART NO.	ASSEM. WT. (lbs.)	S
PRECISION	MIN.	+/- .001	WIDTH	LENGTH	+/- .010	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	FLNG. THICK	HEIGHT	GRV. SPACE	GRV. WIDE	GRV. DIA.	MIN. OPEN		(lbs.)	OVERALL WIDTH
IPPWN08G	1/2"	0.687	2.000	3.500	1.6880	2.5000	1.000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	0.313	MNAN-87	0.400	1.438
IPPWN10G	5/8"	0.875	2.500	4.000	2.1250	3.0000	1.125	1.750	#8	3/16"	0.281	1.438	1.500	0.056	1.197	0.375	MNAN-112	0.910	1.813
IPPWN12G	3/4"	0.937	2.750	4.500	2.3750	3.5000	1.250	1.875			0.313	1.563	1.625	0.056	1.330	0.438	MNAN-125	1.060	1.938
IPPWN16G	1"	1.187	3.250	6.000	2.8750	4.5000	1.750	2.375	#10	7/32"	0.375	1.938	2.250	0.068	1.671	0.563	MNAN-156	1.970	2.438
IPPWN20G	1-1/4"	1.500	4.000	7.500	3.5000	5.5000	2.000	3.000			0.438	2.500	2.625	0.068	2.122	0.625	MNAN-200	3.725	3.125
IPPWN24G	1-1/2"	1.750	4.750	9.000	4.1250	6.5000	2.500	3.500	1/4"	9/32"	0.500	2.875	3.000	0.086	2.519	0.750	MNAN-237	5.800	3.625
IPPWN32G	2"	2.125	6.000	10.000	5.2500	8.2500	3.250	4.500	3/8"	13/32"	0.625	3.625	4.000	0.103	3.182	1.000	MNAN-300	12.125	4.688

NOTES: (1) All standard pillow blocks use standard "IP" series bearings found on page 70.

(2) All open pillow blocks have "notch".

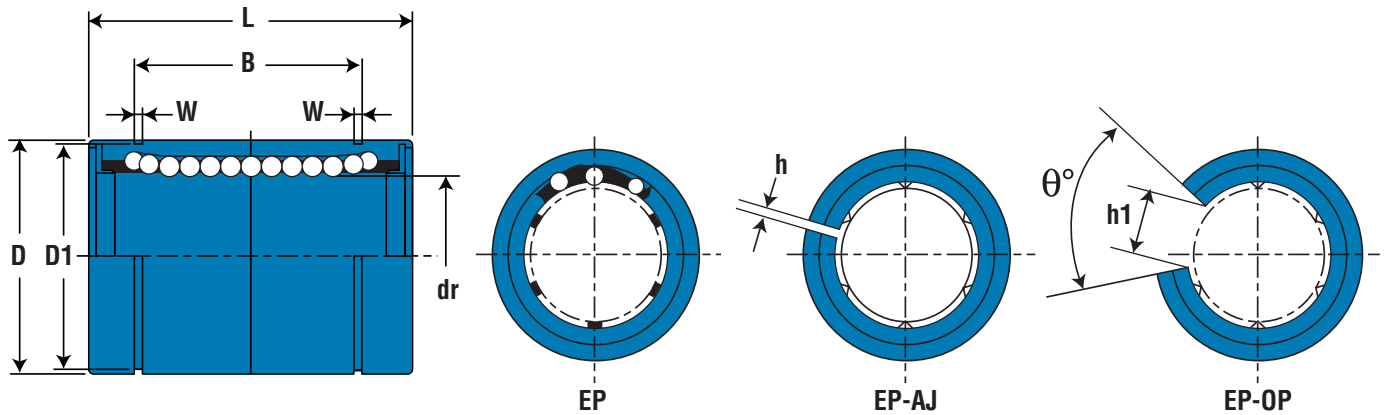


Linear Ball Bearings - EP ISO Metric



EP - DIMENSIONAL INFORMATION

NOMINAL SHAFT DIAMETER (mm)	PART NUMBER									MAJOR DIMENSIONS & TOLERANCES					
	CLOSED RESIN CAGE	BALL CIRCUIT	WEIGHT (g)	ADJUSTABLE POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	STANDARD OPEN POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
5	EP5G	4	11	-	4	-	-	3	-	5	+8 0	12	0 -8	22	0 -0.2
8	EP8G		22	-		-	-		-	8		16		25	
10	EP10G		36	-		-	-		-	10		19		29	
12	EP12G		45	EP12G-AJ		44	EP12G-OP		35	12		22	0 -9	32	
16	EP16G	5	60	EP16G-AJ	5	59	EP16G-OP	4	48	16	+9 -1	26		36	0 -0.3
20	EP20G		102	EP20G-AJ		100	EP20G-OP		84	20		32	0 -11	45	
25	EP25G	6	235	EP25G-AJ	6	230	EP25G-OP	5	195	25	+11 -1	40		58	0 -0.3
30	EP30G		360	EP30G-AJ		355	EP30G-OP		309	30		47	0 -13	68	
40	EP40G		770	EP40G-AJ		758	EP40G-OP		665	40	+13 -2	62		80	
50	EP50G		1,250	EP50G-AJ		1,230	EP50G-OP		1,080	50		75		100	



EP - DIMENSIONAL INFORMATION (cont.)

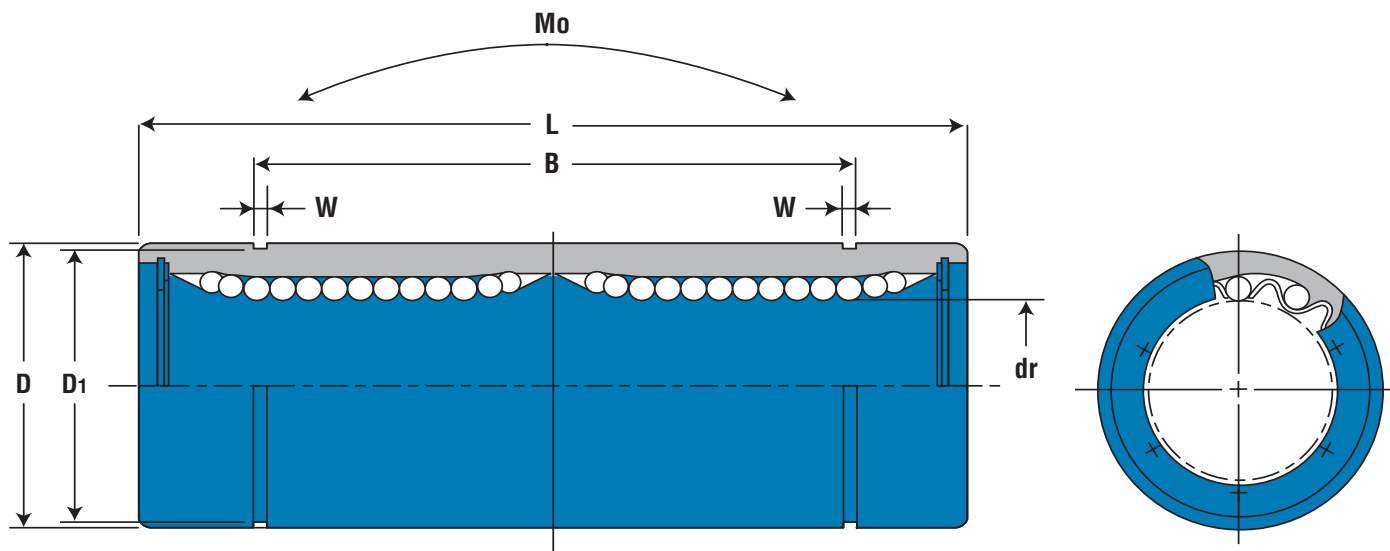
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES											LOAD RATING					
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	h (mm)	h1 (mm)	θ°	ECCENTRICITY (μm)	MAX RADIAL CLEARANCE (μm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)			
14.5	0 -0.3	1.1	+0.14 0	11.5	0 -0.11	1	-	-	12	-5	206	265	5			
16.5		1.1		15.2			-	-			265	402	8			
22		1.3		18			-	-			372	549	10			
22.9		1.3		21	0 -0.13	1.5	7.5	80		-7	510	784	12			
24.9		1.3		24.9			10				774	1,180	16			
31.5		1.6		30.3	0 -0.21	2	10	60	15	-9	882	1,370	20			
44.1	1.85	37.5		12.5			980				1,570	25				
52.1	1.85	44.5		0 -0.25			12.5				1,570	2,740	30			
60.6	0 -0.4	2.15		59	0 -0.30	3	16.8				50	17	-13	2,160	4,020	40
77.6		2.65		72			21							3,820	7,940	50



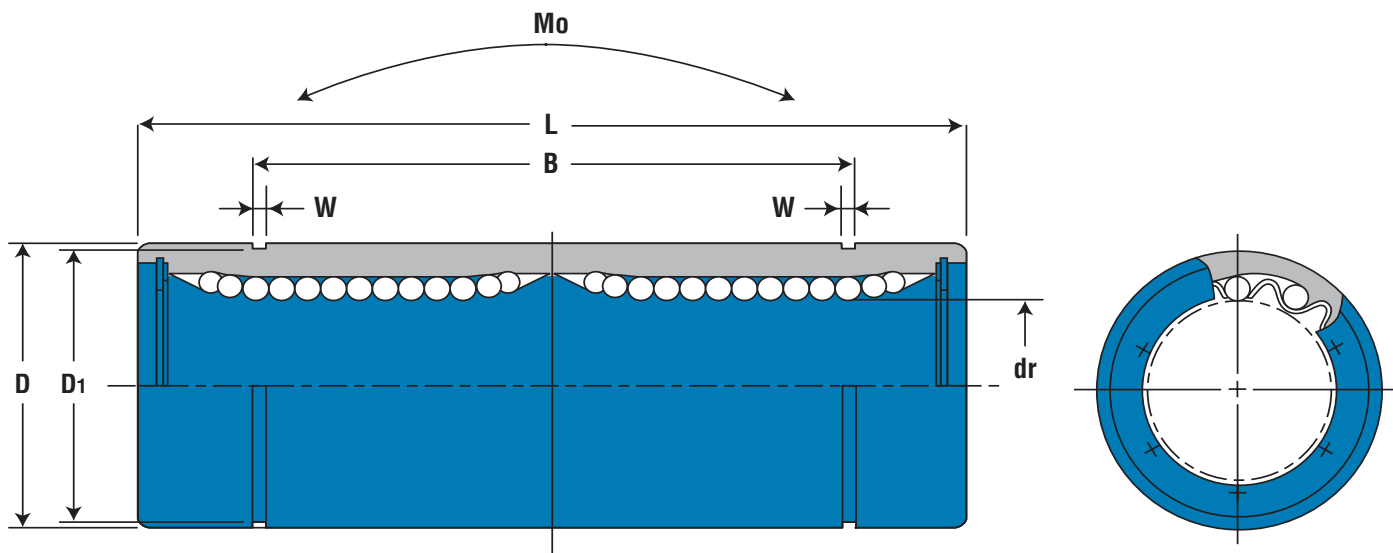
Double Wide - EP-W

Linear Ball Bearings



EP-W - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	EP8GW	4	40	8	+9 -1	16	0 -9	45	0 -0.3
12	EP12GW		80	12		22		57	
16	EP16GW	5	115	16	+11 -1	26	0 -11	68	
20	EP20GW		180	20		32		80	0 -0.4
25	EP25GW	6	430	25	+13 -2	40	0 -13	112	
30	EP30GW		615	30		47		123	
40	EP40GW		1,400	40	+16 -4	62	0 -15	151	
50	EP50GW		2,320	50		75	0 -20	192	



EP-W - DIMENSIONAL INFORMATION (cont.)

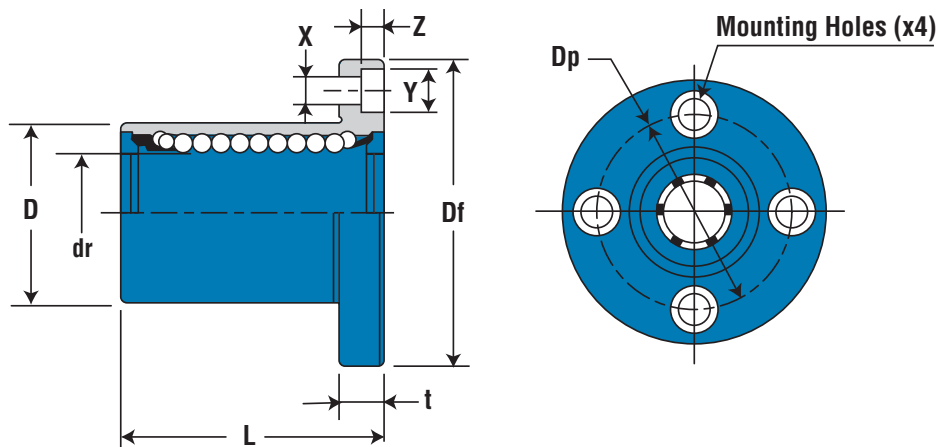
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES							LOAD RATING			
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	ECCENTRICITY (μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
33	0 -0.3	1.1	+14 0	15.2	0 -.11	15	421	804	4.3	8
45.8		1.3		21	0 -.13		813	1,570	11.7	12
49.8		1.3		24.9	0 -.21		921	1,780	14.2	16
61		1.6		30.3		17	1,370	2,740	25	20
82	0 -0.4	1.85		37.5	0 -.25		1,570	3,140	44	25
104.2		1.85		44.5			2,500	5,490	78.9	30
121.2		2.15		59	0 -.30	20	3,430	8,040	147	40
155.2		2.65		72			6,080	15,900	396	50



Round Flange Mount - EPF

Linear Ball Bearings

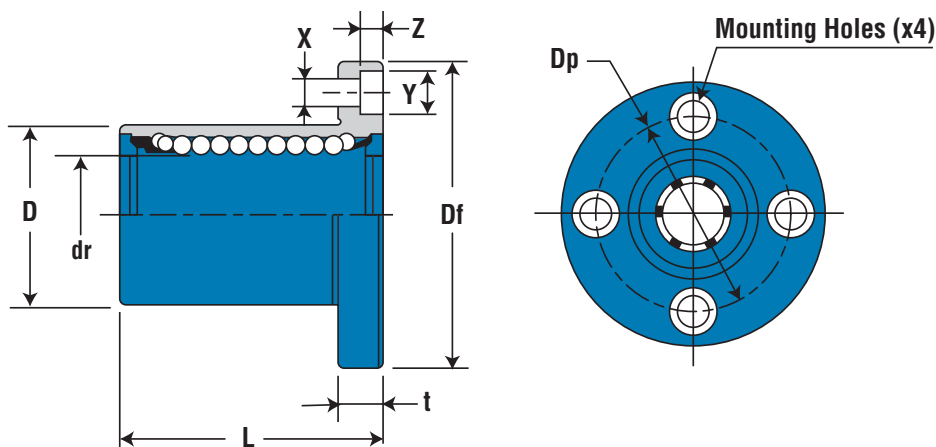


EPF - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	EPF8G	4	41	8	+8 0	16	0 -13	25	± 0.3
12	EPF12G		80	12		22	0 -16	32	
16	EPF16G	5	103	16	+9 -1	26		36	
20	EPF20G		182	20		32	0 -19	45	
25	EPF25G	6	335	25	+11 -1	40		58	
30	EPF30G		560	30		47		68	
40	EPF40G		1,175	40	+13 -2	62	0 -22	80	
50	EPF50G		1,745	50		75		100	

Round Flange Mount - EPF

Linear Ball Bearings



EPF - DIMENSIONAL INFORMATION (cont.)

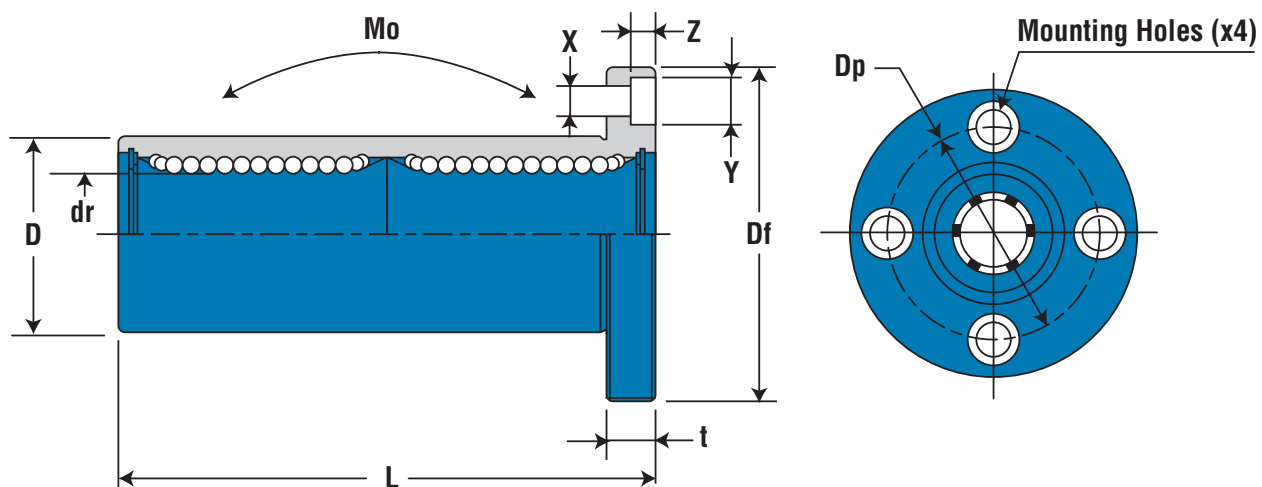
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES						LOAD RATING		NOMINAL SHAFT DIAMETER (mm)
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	
32	5	24	3.5 x 6.0 x 3.1	12	12	265	402	8
42	6	32	4.5 x 8.0 x 4.1			510	784	12
46		36	4.5 x 8.0 x 4.1			578	892	16
54	8	43	5.5 x 9.3 x 5.1	15	15	862	1,370	20
62		51	5.5 x 9.3 x 5.1			980	1,570	25
76	10	62	6.6 x 11.0 x 6.1			1,570	2,740	30
98	13	80	9.0 x 14.0 x 8.1	17	17	2,160	4,020	40
112		94	9.0 x 14.0 x 8.1			3,820	7,940	50



Round Flange Mount - Double Wide - EPF-W

Linear Ball Bearings

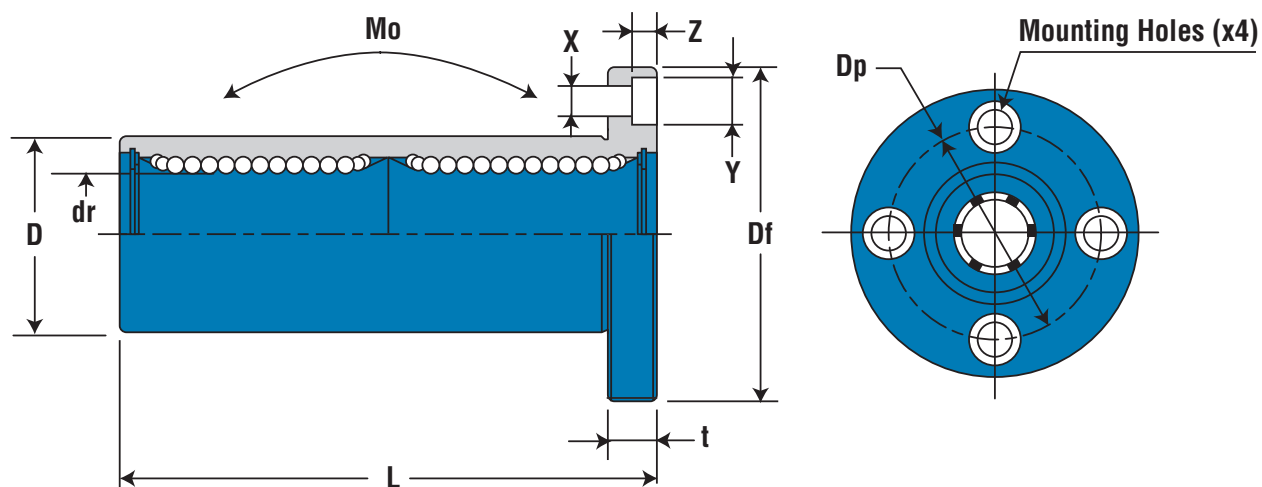


EPF-W - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	EPF8GW	4	59	8	+9 -1	16	0 -13	45	± 0.3
12	EPF12GW		110	12		22		57	
16	EPF16GW	5	160	16	+11 - 1	26	0 -16	68	
20	EPF20GW		260	20		32		80	
25	EPF25GW	6	540	25	+13 - 2	40	0 -19	112	
30	EPF30GW		815	30		47		123	
40	EPF40GW		1,805	40	+16 - 4	62	0 -22	151	
50	EPF50GW		2,820	50		75		192	

Round Flange Mount - Double Wide - EPF-W

Linear Ball Bearings



EPF-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

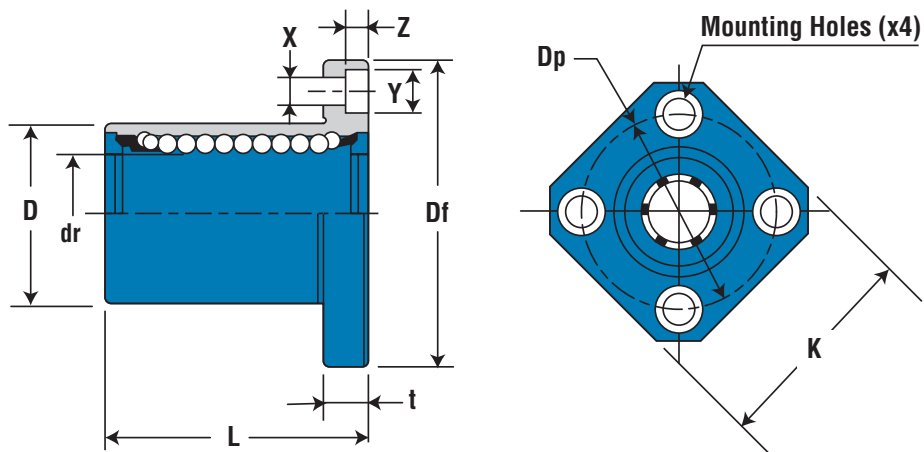
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6.5 x 3.1	15	15	421	804	4.3	8
42	6	32	4.5 x 8.0 x 4.1			813	1,570	11.7	12
46		36	4.5 x 8.0 x 4.1			921	1,780	14.2	16
54	8	43	5.5 x 9.3 x 5.1	17	17	1,370	2,740	25	20
62		51	5.5 x 9.3 x 5.1			1,570	3,140	44	25
76	10	62	6.6 x 11.0 x 6.1			2,500	5,490	78.9	30
98	13	80	9.0 x 14.0 x 8.1	20	20	3,430	8,040	147	40
112		94	9.0 x 14.0 x 8.1			6,080	15,900	396	50

Round Flange - EPF-W



Square Flange Mount - EPK

Linear Ball Bearings

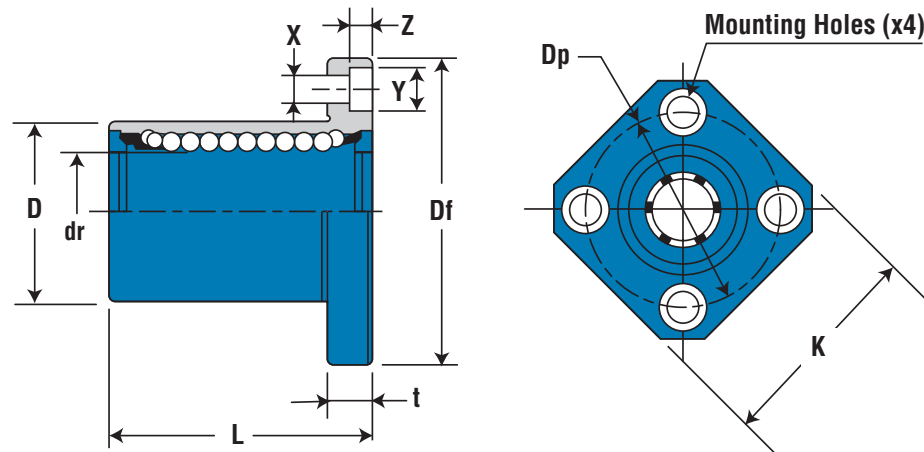


EPK - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	EPK8G	4	41	8	+8 0	16	0 -13	25	± 0.3
12	EPK12G		80	12		22	0 -16	32	
16	EPK16G	5	103	16	+9 -1	26	0 -16	36	
20	EPK20G		182	20		32	0 -16	45	
25	EPK25G	6	335	25	+11 -1	40	0 -19	58	
30	EPK30G		560	30		47	0 -19	68	
40	EPK40G		1,175	40	+13 -2	62	0 -22	80	
50	EPK50G		1,745	50		75	0 -22	100	

Square Flange Mount - EPK

Linear Ball Bearings



EPK - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

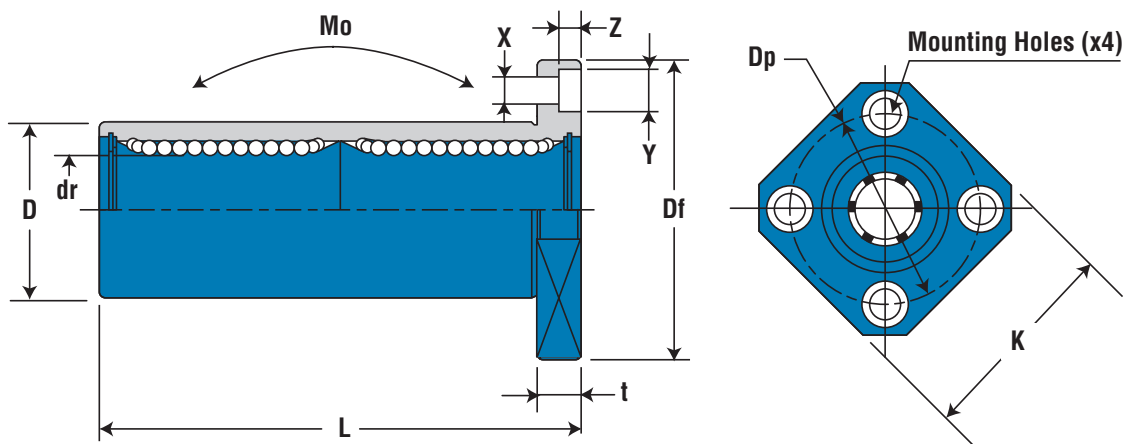
MAJOR DIMENSIONS & TOLERANCES							LOAD RATING		
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6.5 x 3.1	12	12	265	402	8
42	32	6	32	4.5 x 8.0 x 4.1			510	784	12
46	35		36	4.5 x 8.0 x 4.1			578	892	16
54	42	8	43	5.5 x 9.3 x 5.1	15	15	862	1,370	20
62	50		51	5.5 x 9.3 x 5.1			980	1,570	25
76	60	10	62	6.6 x 11.0 x 6.1			1,570	2,740	30
98	75	13	80	9.0 x 14.0 x 8.1	17	17	2,160	4,020	40
112	88		94	9.0 x 14.0 x 8.1			3,820	7,940	50

Square Flange - EPK



Square Flange Mount - Double Wide - EPK-W

Linear Ball Bearings

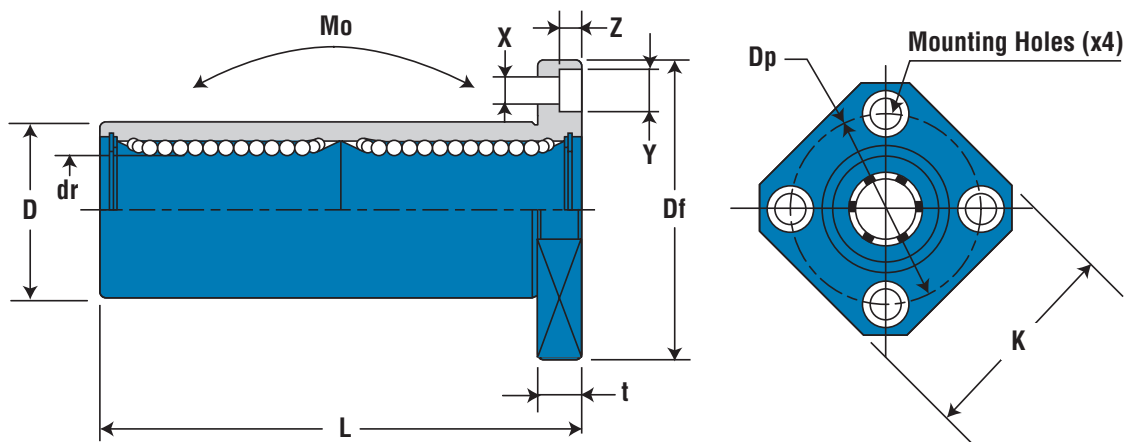


EPK-W - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	EPK8GW	4	51	8	+9 -1	16	0 -13	45	± 0.3
12	EPK12GW		90	12		22	0 -16	57	
16	EPK16GW	5	135	16	+11 -1	26		68	
20	EPK20GW		225	20		32	0 -19	80	
25	EPK25GW	6	500	25	+13 -2	40		112	
30	EPK30GW		720	30		47	0 -22	123	
40	EPK40GW		1,600	40	+16 -4	62		151	
50	EPK50GW		2,620	50		75		192	

Square Flange Mount - Double Wide - EPK-W

Linear Ball Bearings



EPK-W - DIMENSIONAL INFORMATION (cont.)

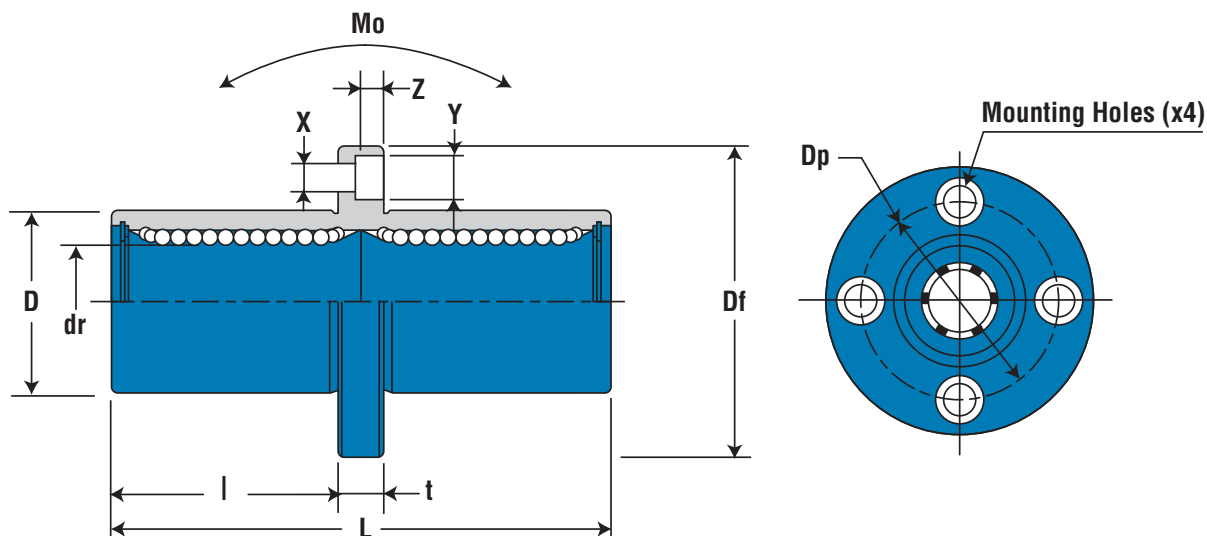
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES							LOAD RATING			
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6.5 x 3.1	15	15	421	804	4.3	8
42	32	6	32	4.5 x 8.0 x 4.1			813	1,570	11.7	12
46	35		36	4.5 x 8.0 x 4.1			921	1,780	14.2	16
54	42	8	43	5.5 x 9.3 x 5.1	17	17	1,370	2,740	25	20
62	50		51	5.5 x 9.3 x 5.1			1,570	3,140	44	25
76	60	10	62	6.6 x 11.0 x 6.1			2,500	5,490	78.9	30
98	75	13	80	9.0 x 14.0 x 8.1	20	20	3,430	8,040	147	40
112	88		94	9.0 x 14.0 x 8.1			6,080	15,900	396	50



Round Flange - Center Mount - EPFC

Linear Ball Bearings

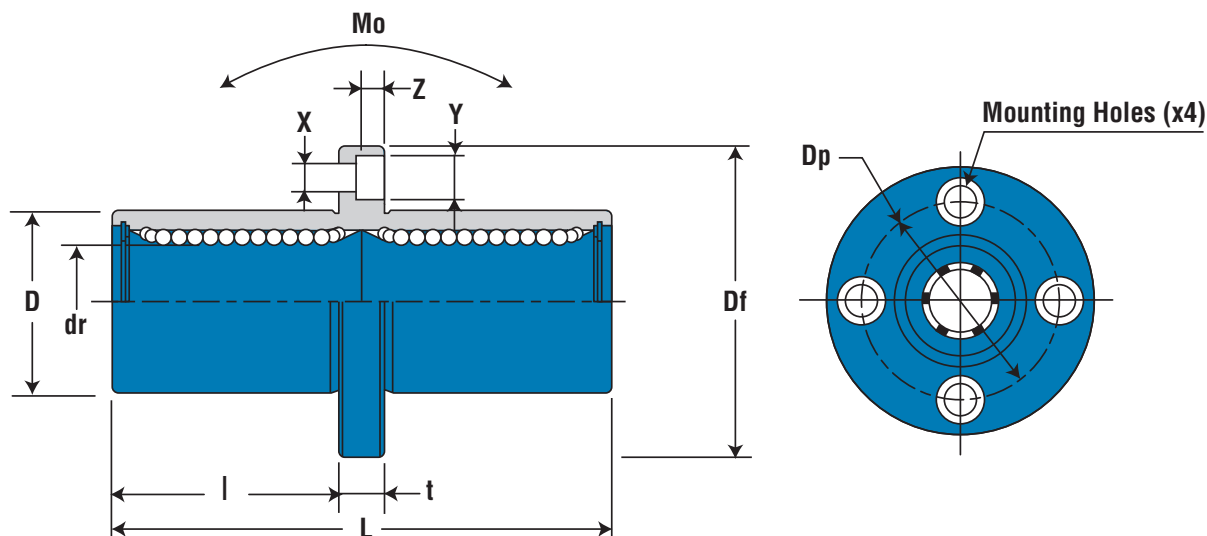


EPFC - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)	ℓ (mm)
8	EPFC8G	4	59	8	+9 -1	16	0 -13	45	± 0.3	20
12	EPFC12G		110	12		22	0 -16	57		25.5
16	EPFC16G	5	160	16	+11 -1	26		68		31
20	EPFC20G		260	20		32	0 -19	80		36
25	EPFC25G	6	540	25	+13 -2	40		112		52
30	EPFC30G		815	30		47	0 -22	123		56.5
40	EPFC40G		1,805	40	+16 -4	62		151		69
50	EPFC50G		2,820	50		75		192		89.5

Round Flange - Center Mount - EPFC

Linear Ball Bearings



EPFC - DIMENSIONAL INFORMATION (cont.)

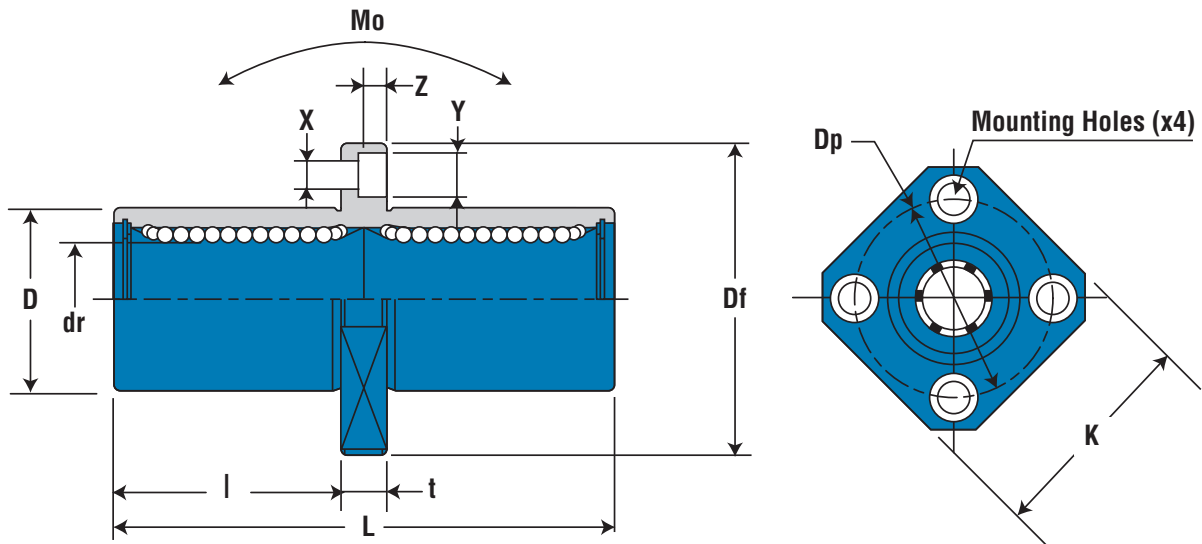
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			NOMINAL SHAFT DIAMETER (mm)
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	
32	5	24	3.5 x 6.5 x 3.1	15	15	421	804	4.3	8
42	6	32	4.5 x 8.0 x 4.1			913	1,570	11.7	12
46		36	4.5 x 8.0 x 4.1			921	1,780	14.2	16
54	8	43	5.5 x 9.3 x 5.1	17	17	1,370	2,740	25	20
62		51	5.5 x 9.3 x 5.1			1,570	3,140	44	25
76	10	62	6.6 x 11.0 x 6.1			2,500	5,490	78.9	30
98	13	80	9.0 x 14.0 x 8.1	20	20	3,430	8,040	147	40
112		94	9.0 x 14.0 x 8.1			6,080	15,900	396	50



Square Flange - Center Mount - EPKC

Linear Ball Bearings

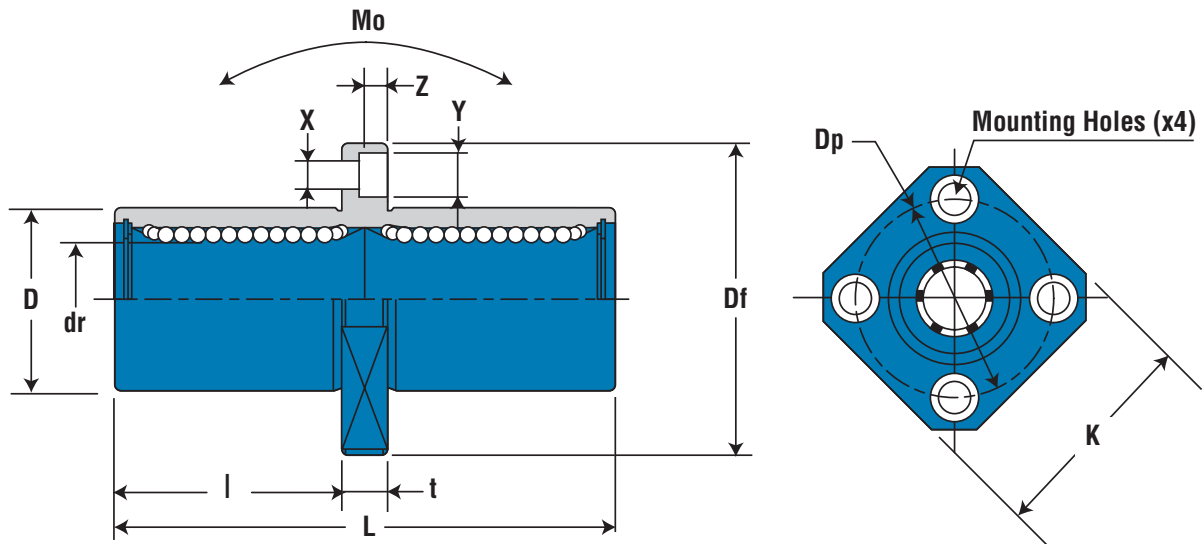


EPKC - DIMENSIONAL INFORMATION

NOMINAL SHAFT DIAMETER (mm)	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
		BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μ m)	D (mm)	TOLERANCE (μ m)	L (mm)	TOLERANCE (mm)
8	EPKC8G	4	51	8	+9 -1	16	0 -13	46	± 0.3
12	EPKC12G		90	12		22		61	
16	EPKC16G	5	135	16	+11 -1	26	0 -16	68	
20	EPKC20G		225	20		32		80	
25	EPKC25G	6	500	25	+13 -2	40	0 -19	112	
30	EPKC30G		720	30		47		123	
40	EPKC40G		1,600	40	+16 -4	62	0 -22	151	
50	EPKC50G		2,620	50		75		192	

Square Flange - Center Mount - EPKC

Linear Ball Bearings



EPKC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

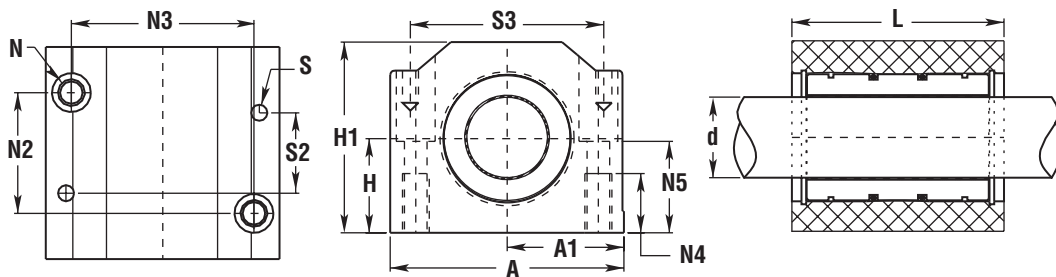
MAJOR DIMENSIONS & TOLERANCES								LOAD RATING			
ℓ (mm)	Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μ m)	PERPENDICULARITY FLANGE FACE to ID (inch/ μ m)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
20.5	32	25	5	24	3.5 x 6.5 x 3.1	15	15	421	804	4.3	8
27.5	42	32	6	32	4.5 x 8.0 x 4.1			913	1,570	11.7	12
31	46	35		36	4.5 x 8.0 x 4.1			921	1,780	14.2	16
36	54	42	8	43	5.5 x 9.3 x 5.1	17	17	1,370	2,740	25	20
52	62	50		51	5.5 x 9.3 x 5.1			1,570	3,140	44	25
56.5	76	60	10	62	6.6 x 11.0 x 6.1			2,500	5,490	78.9	30
69	98	75	13	80	9.0 x 14.0 x 8.1	20	20	3,430	8,040	147	40
89.5	112	88		94	9.0 x 14.0 x 8.1			6,080	15,900	396	50

Square Flange - EPKC



Pillow Block - EPPM & EPPMN

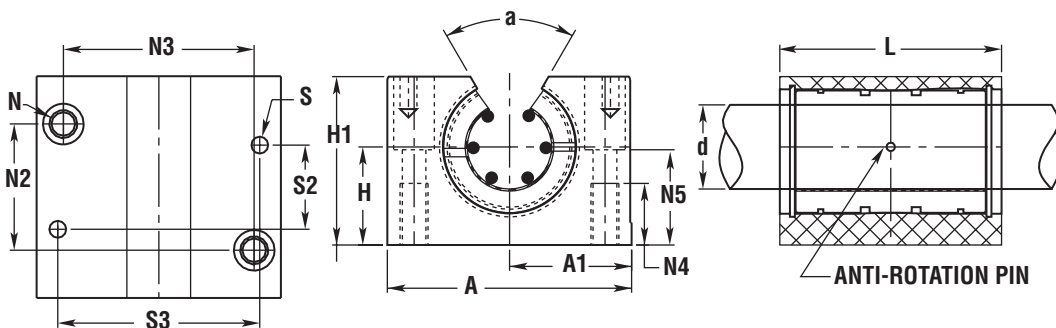
Linear Ball Bearings



EPPM - CLOSED PILLOW BLOCKS

PART NO.	d NOM. I.D.	H	H1	A	A1	L	N								ASSEM. WT.
PRECISION	MIN.	CENTERLINE .015	HEIGHT	WIDTH	.013	LENGTH	BOLT	N2	N3	N4	N5	S	S2	S3	(Kg.)
EPPM08G	8	15	28	35	17.5	32	M4 x 0.7	20.15	25.15	9	14.5	N / A	N / A	N / A	0.069
EPPM10G	10	16	31.5	40	20	36	M5 x 0.8		29.15	11	15	4	29	31	0.095
EPPM12G	12	18	35	43	21.5	39	M5 x 0.8	23.15	3.15		16.5		32	34	0.118
EPPM16G	16	22	42	53	26.5	43	M6 x 1.0	26.15	40.15	13	21	35	42	0.200	
EPPM20G	20	25	50	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	0.329
EPPM25G	25	30	60	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	0.655
EPPM30G	30	35	71	87	43.5	79	M10 x 1.5	45.15	68.15		34		30	72	1.020
EPPM40G	40	45	91	108	54	91	M12 x1.75	58.15	86.15	26	44	8	35	90	1.846
EPPM50G	50	50	105	132	66	113	M16 x 2.0	50.20	108.2	34	49	10	42	108	3.169

- NOTES:**
- (1) Standard pillow block assembly includes self-aligning housing.
 - (2) All standard metric pillow blocks use standard "EP" series bearings found on page 88-89.
 - (3) Straight bore pillow block assembly includes standard O.D. "EP" series bearing in straight bore housing.



EPPMN - OPEN PILLOW BLOCKS

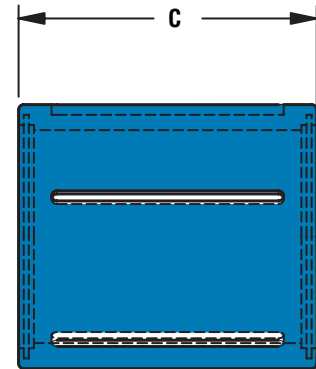
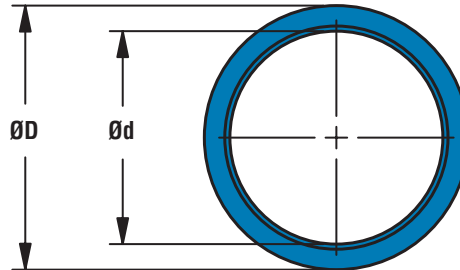
PART NO.	d NOM. I.D.	H	H1	A	A1	L	N									ASSEM. WT.
PRECISION	MIN.	CENTERLINE .015	HEIGHT	WIDTH	CENTERLINE .013	LENGTH	BOLT	N2	N3	N4	N5	S	S2	S3	a	(kg.)
EPPMN12G	12	18	28	43	21.5	39	M5 x 0.8	23.15	32.15	11	16.5	4	32	34	66	0.096
EPPMN16G	16	22	35	53	26.5	43	M6 x 1.0	26.15	40.15	13	21		35	42	68	0.162
EPPMN20G	20	25	42	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	60	0.267
EPPMN25G	25	30	51	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	60	0.536
EPPMN30G	30	35	60	87	43.5	79	M10 x 1.5	45.15	68.15		34		30	72	60	0.831
EPPMN40G	40	45	77	108	54	91	M12 x 1.75	58.15	86.15	26	44	8	35	90	60	1.499
EPPMN50G	50	50	88	132	66	113	M16 x 2.0	50.20	108.2	34	49	10	42	108	60	2.539

- NOTES:**
- (1) Standard pillow block assembly includes self-aligning housing
 - (2) All standard metric pillow blocks use standard "EP" series bearings found on page 88-89.

(For empty pillow block with no bearings included add LBB after the part number.)

Compact Thin Wall - KHP

Linear Ball Bearings



KHP - BASIC DIMENSIONAL INFORMATION

(Standard Steel Finish)

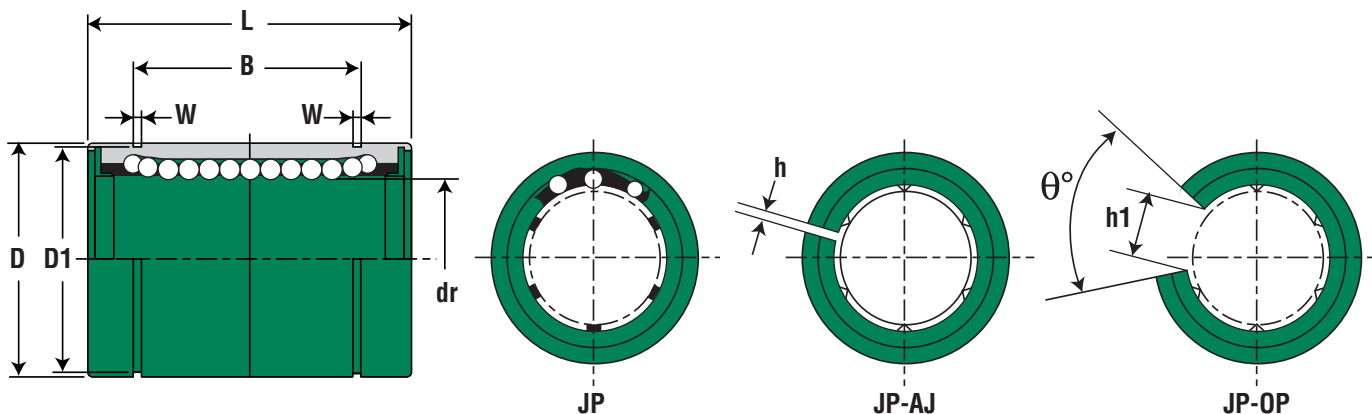
PART NO.	DIMENSIONS (mm)										LOAD RATING	
	Ød	TOLERANCES		ØD	TOLERANCES		C	TOLERANCES		WEIGHT	DYNAMIC C	STATIC Co
	mm	Max (µm)	Min (µm)	mm	Max (µm)	Min (µm)	mm	Max (µm)	Min (µm)	(g)	(N)	(N)
KHP6	6	12	0	12	0	-11	22	0	-520	7.0	400	239
KHP8	8	15	0	15	0	-11	24	0	-520	12.0	435	280
KHP10	10	15	0	17	0	-11	26	0	-520	14.5	500	370
KHP12	12	18	0	19	0	-13	28	0	-520	18.5	620	510
KHP14	14	18	0	21	0	-13	28	0	-520	20.5	620	520
KHP16	16	18	0	24	0	-13	30	0	-520	27.5	800	620
KHP20	20	21	0	28	0	-13	30	0	-520	32.5	950	790
KHP25	25	21	0	35	0	-16	40	0	-620	66.0	1,990	1,670
KHP30	30	21	0	40	0	-16	50	0	-620	95.0	2,880	2,700
KHP40	40	25	0	40	0	-19	60	0	-740	182.0	4,400	4,450
KHP50	50	25	0	52	0	-19	70	0	-740	252.0	5,500	6,300

Compact Thin Wall - KHP



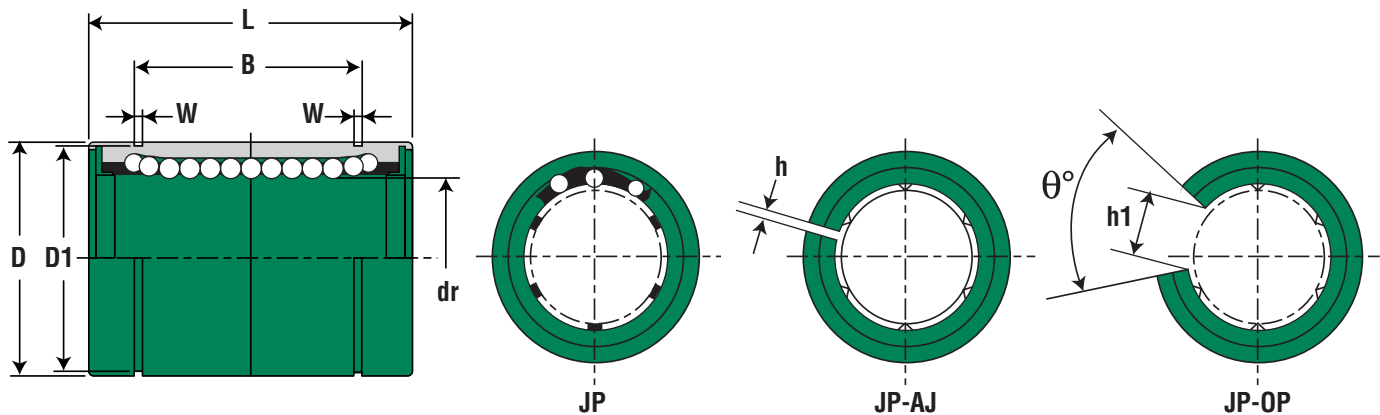
Linear Ball Bearings - JP

JIS Metric



JP - DIMENSIONAL INFORMATION

PART NUMBER										MAJOR DIMENSIONS & TOLERANCES					
NOMINAL SHAFT DIAMETER (mm)	STANDARD CLOSE POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	ADJUSTABLE POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	STANDARD OPEN POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	JP8G	4	17	-	4	-	-	3	-	8	0 -9	15	0 -11	24	0 -0.2
10	JP10G		36	-		-	-		-	10		19	0 -13	29	
12	JP12G		42	JP12G-AJ		42	JP12G-OP		32	12		21		30	
13	JP13G		49	JP13G-AJ		48	JP13G-OP		37	13		23		32	
16	JP16G	5	76	JP16G-AJ	5	75	JP16G-OP	4	58	16	0 -10	28	0 -16	37	0 -0.3
20	JP20G		100	JP20G-AJ		98	JP20G-OP		79	20		32		42	
25	JP25G	6	240	JP25G-AJ	6	237	JP25G-OP	5	203	25	0 -12	40	0 -19	59	0 -0.3
30	JP30G		270	JP30G-AJ		262	JP30G-OP		228	30		45		64	
35	JP35G		425	JP35G-AJ		420	JP35G-OP		355	35		52		70	
40	JP40G		654	JP40G-AJ		640	JP40G-OP		546	40		60		80	
50	JP50G		1,700	JP50G-AJ		1,680	JP50G-OP		1,420	50		80		100	



JP - DIMENSIONAL INFORMATION (cont.)

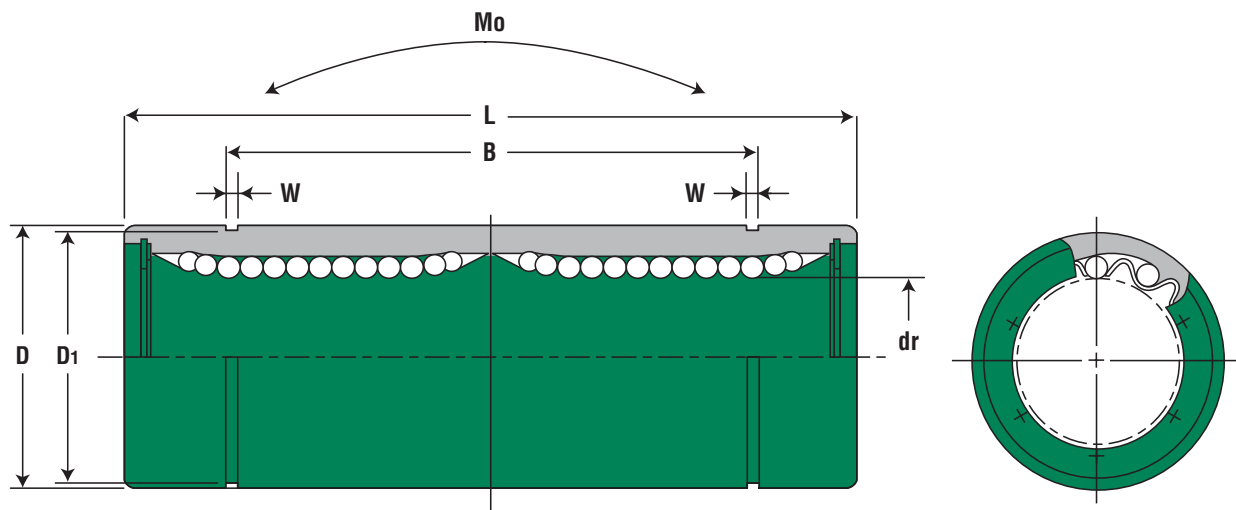
(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCES											LOAD RATING		
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	h (mm)	h1 (mm)	l (°)	ECCENTRICITY (μm)	MAX RADIAL CLEARANCE (μm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
17.5	0 -0.2	1.1	+0.14 0	14.3	0 -0.11	-	-	-	12	-3	260	400	8
22		1.3		18		-	-	-		-4	370	540	10
23		1.3		20	0 -0.13	1.5	8	80			410	590	12
23		1.3		22			9				500	770	13
26.5		1.6		27	0 -0.21		11	-6		770	1,170	16	
30.5		1.6		30.5		11	60		860	1,370	20		
41	0 -0.3	1.85		38	0 -0.25	2	12	15	-8	980	1,560	25	
44.5		1.85		43		2.5	15			1,560	2,740	30	
49.5		2.1		49			17	50	20	1,660	3,130	35	
60.5		2.1		57	0 -0.30	3	20			-10	2,150	4,010	40
74		2.6	76.5	25			-13			3,820	7,930	50	



Double Wide - JP-W

Linear Ball Bearings

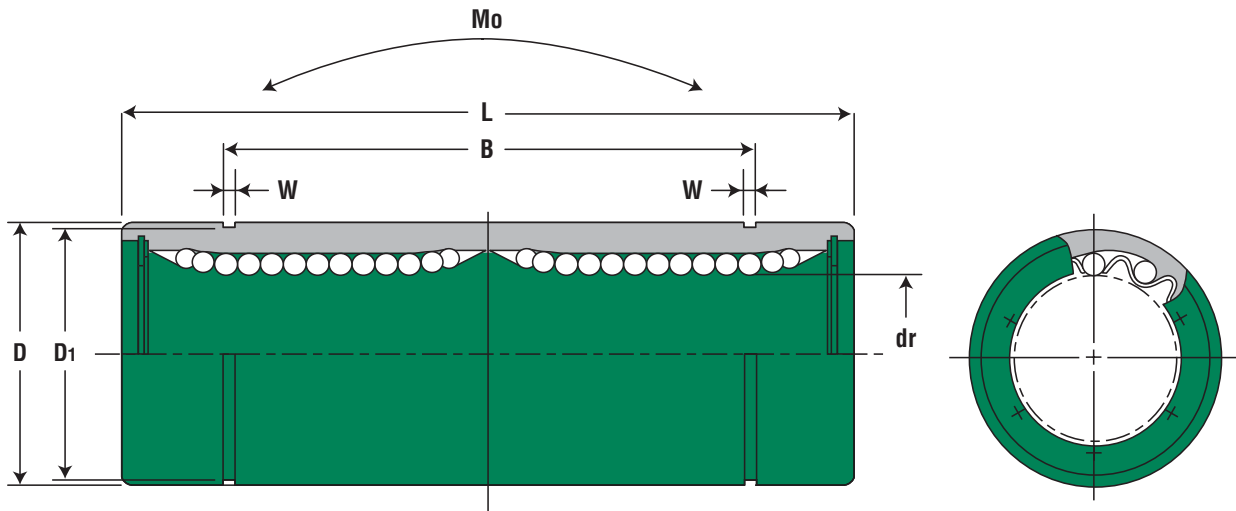


JP-W - DIMENSIONAL INFORMATION

	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μ m)	D (mm)	TOLERANCE (μ m)	L (mm)	TOLERANCE (mm)
8	JP8GW	4	31	8	0 -10	15	0 -13	45	0 -0.3
12	JP12GW		80	12		21	0 -16	57	
16	JP16GW	5	145	16	0 -12	28		70	0 -0.4
20	JP20GW		180	20		32	0 -19	80	
25	JP25GW	6	440	25	0 -15	40		112	0 -0.4
30	JP30GW		580	30		45	0 -22	123	
40	JP40GW		1,170	40	0 -15	60		151	
50	JP50GW		3,100	50		80		192	

Double Wide - JP-W

Linear Ball Bearings



JP-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

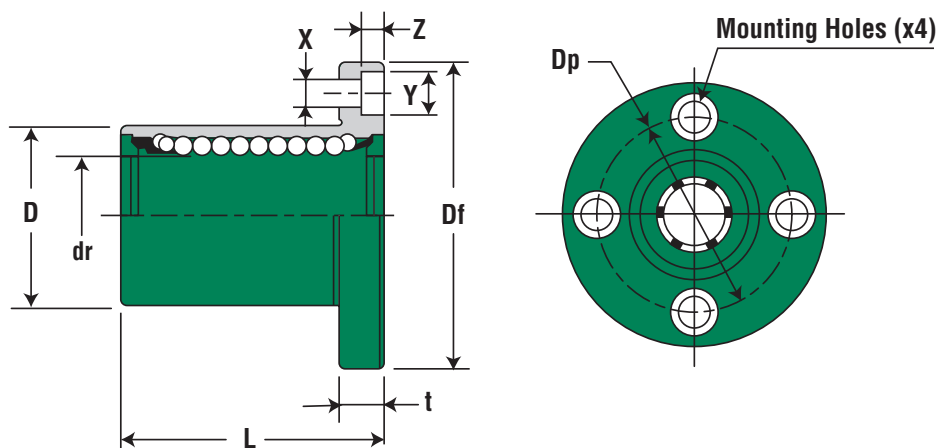
MAJOR DIMENSIONS & TOLERANCES							LOAD RATING			
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	ECCENTRICITY (μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
35	0 -0.3	1.1	+14 0	14.3	0 -0.11	15	431	784	4.3	8
46		1.3		20	0 -0.13		657	1,200	10.9	12
53		1.6		27	0 -0.21		1,230	2,350	19.7	16
61		1.6		30.5		20	1,400	2,750	26.8	20
82	0 -0.4	1.85		38	0 -0.25		1,560	3,140	43.4	25
89		1.85		43			2,490	5,490	82.8	30
121		2.1		57	0 -0.30	25	3,430	8,040	147	40
148		2.6		76.5			6,080	15,900	397	50

Double Wide - JP-W



Round Flange Mount - JPF

Linear Ball Bearings

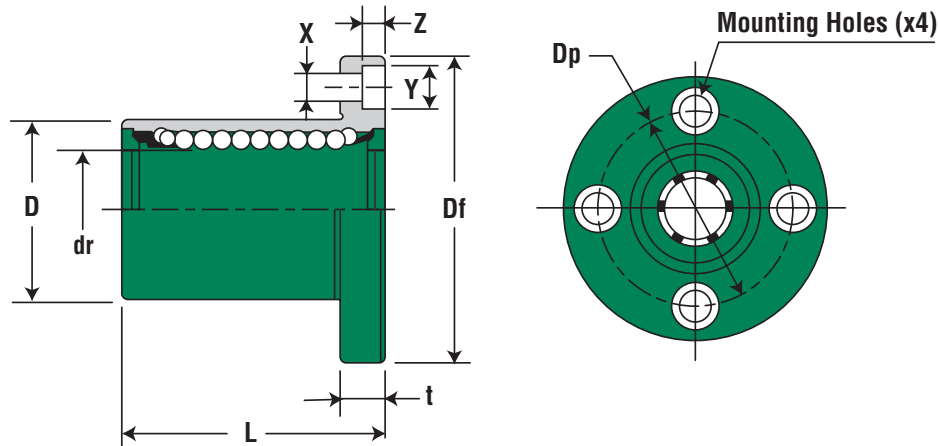


JPF - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μ m)	D (mm)	TOLERANCE (μ m)	L (mm)	TOLERANCE (mm)
8	JPF8G	4	37	8	0 -9	15	0 -13	24	± 0.3
12	JPF12G		76	12		21	0 -16	30	
16	JPF16G	5	120	16	0 -10	28		37	
20	JPF20G		180	20		32	0 -19	42	
25	JPF25G	6	340	25	0 -12	40		59	
30	JPF30G		470	30		45	0 -22	64	
40	JPF40G		1,060	40	0 -12	60		80	
50	JPF50G		2,200	50		80		100	

Round Flange Mount - JPF

Linear Ball Bearings



JPF - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

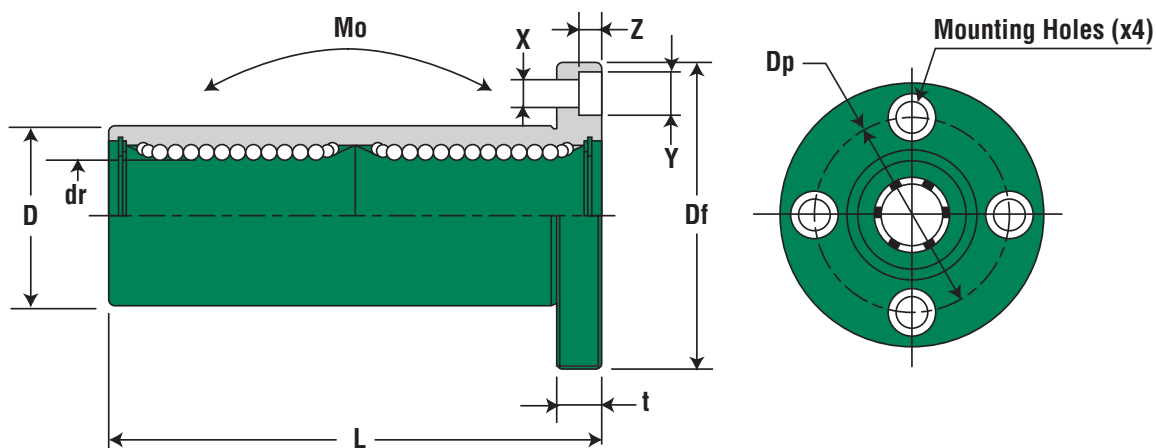
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING		
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	12	12	274	392	8
42	6	32	4.5 x 7.5 x 4.1			510	784	12
48		38				774	1,180	16
54	8	43	5.5 x 9 x 5.1	15	15	882	1,370	20
62		51				980	1,570	25
74	10	60	6.6 x 11 x 6.1			1,570	2,740	30
96	13	78	9 x 14 x 8.1	20	20	2,160	4,020	40
116		98				3,820	7,940	50

Round Flange - JPF



Round Flange Mount - Double Wide - JPF-W

Linear Ball Bearings

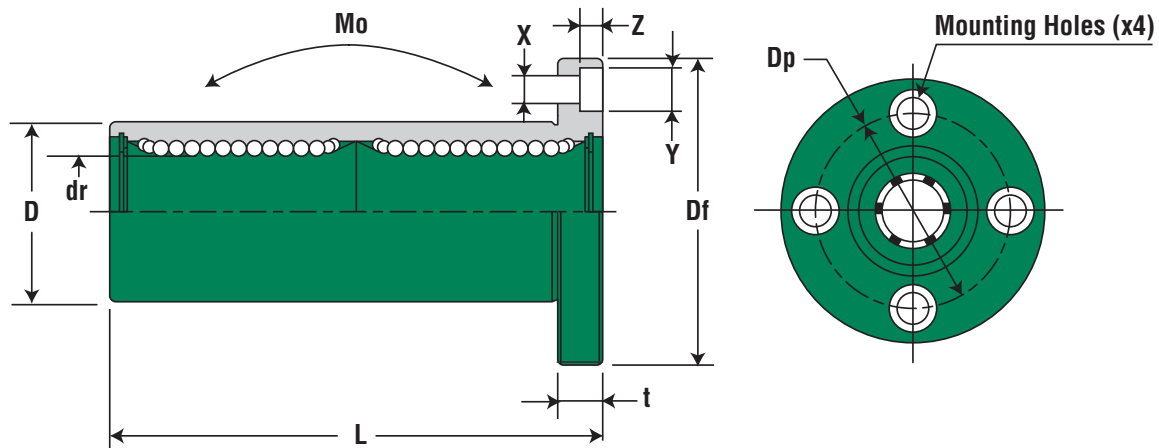


JPF-W - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	JPF8GW	4	51	8	0 -10	15	0 -13	45	± 0.3
12	JPF12GW		110	12		21	0 -16	57	
16	JPF16GW	5	190	16	0 -12	28		70	
20	JPF20GW		260	20		32	0 -19	80	
25	JPF25GW	6	540	25	0 -15	40		112	
30	JPF30GW		680	30		45	0 -22	123	
40	JPF40GW		1,570	40	0 -15	60		151	
50	JPF50GW		3,600	50		80		192	

Round Flange Mount - Double Wide - JPF-W

Linear Ball Bearings



JPF-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

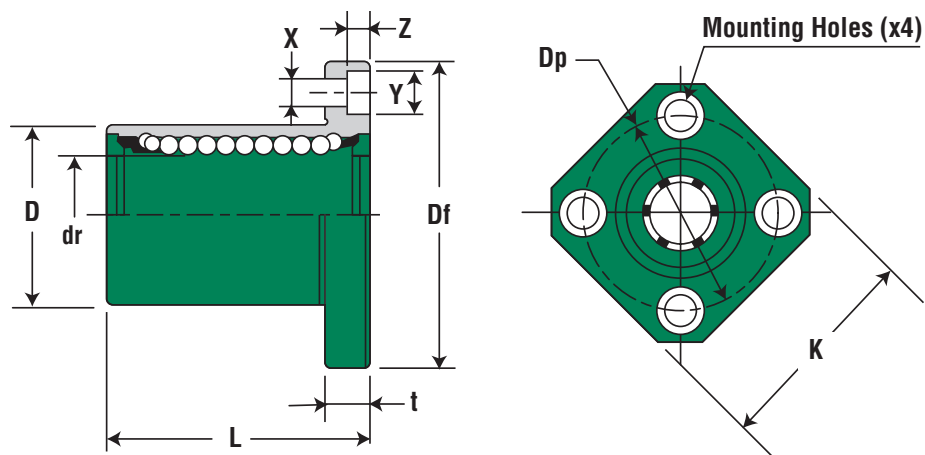
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	6	32	4.5 x 7.5 x 4.1			813	1,570	10.9	12
48	6	38				1,230	2,350	19.7	16
54	8	43	5.5 x 9 x 5.1	20	20	1,400	2,740	26.8	20
62	8	51				1,560	3,140	43.4	25
74	10	60	6.6 x 11 x 6.1			2,490	5,490	82.8	30
96	13	78	9 x 14 x 8.1	25	25	3,430	8,040	147	40
116	13	98				6,080	15,900	397	50

Round Flange - JPF-W



Square Flange Mount - JPK

Linear Ball Bearings

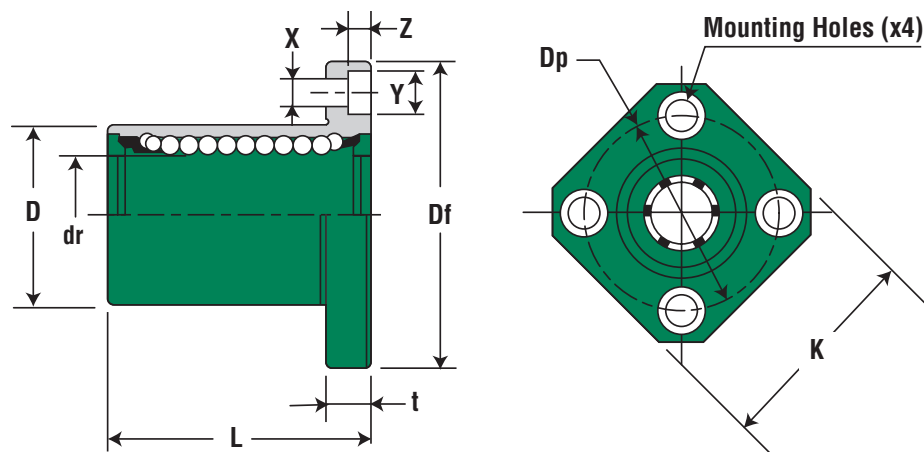


JPK SERIES - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	JPK8G	4	37	8	0 -9	15	0 -13	24	± 0.3
12	JPK12G		76	12		21	0 -16	30	
16	JPK16G	5	120	16		28		37	
20	JPK20G		180	20	0 -10	32	0 -19	42	
25	JPK25G	6	340	25		40		59	
30	JPK30G		470	30		45		64	
40	JPK40G		1,060	40	0 -12	60	0 -22	80	
50	JPK50G		2,200	50		80		100	

Square Flange Mount - JPK

Linear Ball Bearings



JPK - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

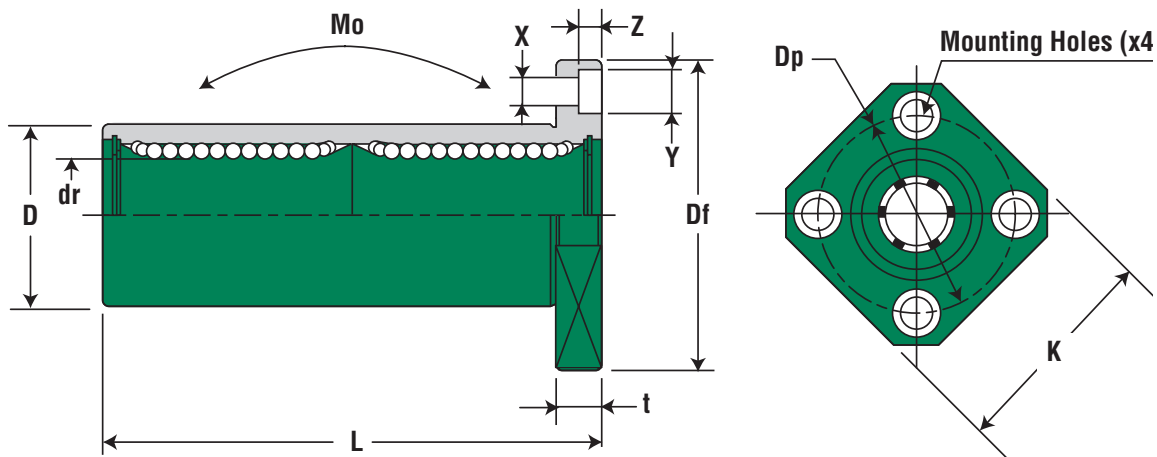
MAJOR DIMENSIONS & TOLERANCE							LOAD RATING		
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6 x 3.1	12	12	274	392	8
42	32	6	32	4.5 x 7.5 x 4.1			510	784	12
48	37		38				774	1,180	16
54	42	8	43	5.5 x 9 x 5.1	15	15	882	1,370	20
62	50		51				980	1,570	25
74	58	10	60	6.6 x 11 x 6.1			1,570	2,740	30
96	75	13	78	9 x 14 x 8.1	20	20	2,160	4,020	40
116	92		98				3,820	7,940	50

Square Flange - JPK



Square Flange Mount - Double Wide - JPK-W

Linear Ball Bearings

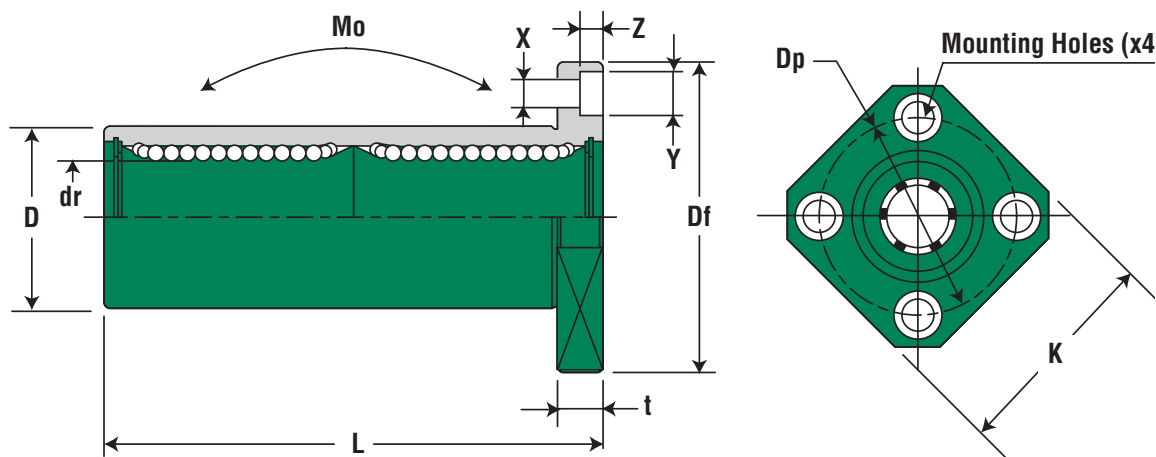


JPK-W - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)
8	JPK8GW	4	43	8	0 -10	15	0 -13	45	± 0.3
12	JPK12GW		90	12		21	0 -16	57	
16	JPK16GW	5	165	16		28		70	
20	JPK20GW		225	20	0 -12	32	0 -19	80	
25	JPK25GW	6	500	25		40		112	
30	JPK30GW		590	30		45		123	
40	JPK40GW		1,380	40	0 -15	60	0 -22	151	
50	JPK50GW		3,400	50		80		192	

Square Flange Mount - Double Wide - JPK-W

Linear Ball Bearings



JPK-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

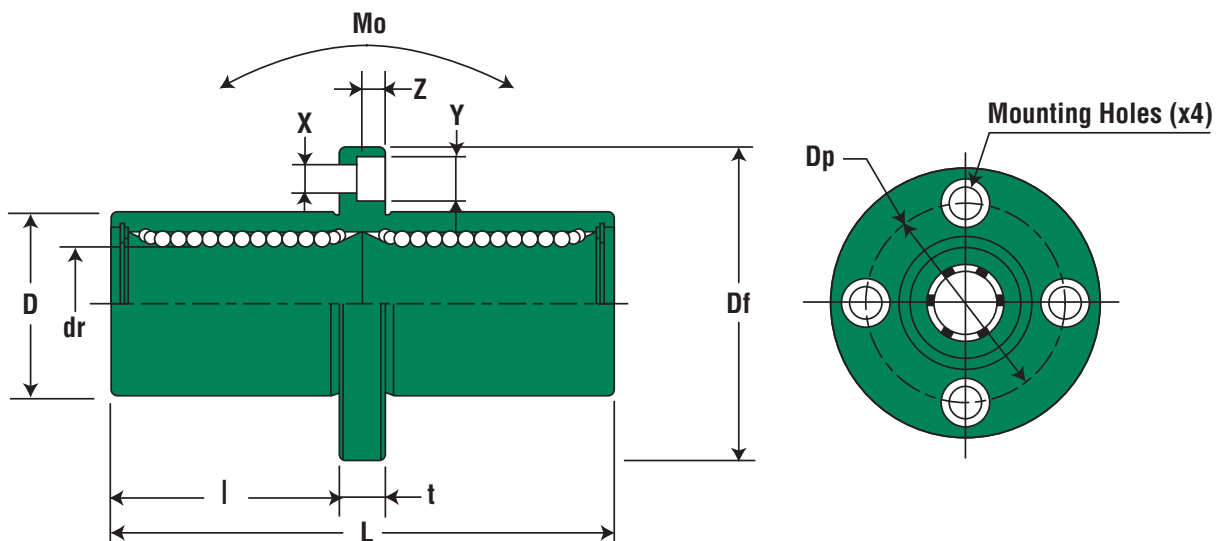
MAJOR DIMENSIONS & TOLERANCE							LOAD RATING			
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	32	6	32	4.5 x 7.5 x 4.1			813	1,570	10.9	12
48	37		38				1,230	2,350	19.7	16
54	42	8	43	5.5 x 9 x 5.1	20	20	1,400	2,740	26.8	20
62	50		51				1,560	3,140	43.4	25
74	58	10	60	6.6 x 11 x 6.1			2,490	5,490	82.8	30
96	75	13	78	9 x 14 x 8.1	25	25	3,430	8,040	147	40
116	92		98				6,080	15,900	397	50

Square Flange - JPK-W



Round Flange - Center Mount - JPFC

Linear Ball Bearings

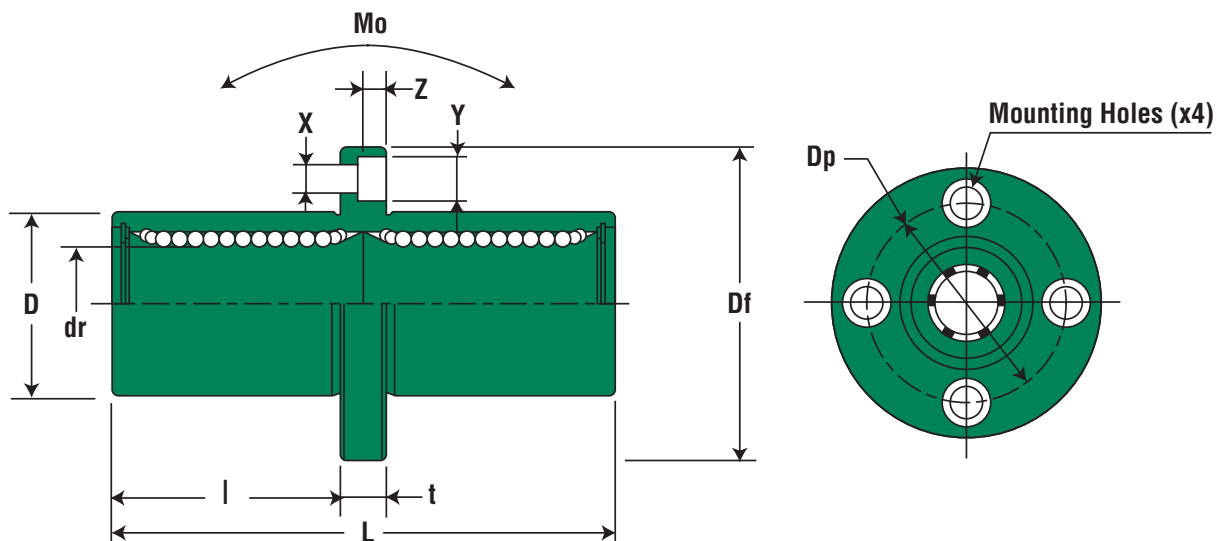


JPFC - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (μ m)	D (mm)	TOLERANCE (μ m)	L (mm)	TOLERANCE (mm)	ℓ (mm)
8	JPFC8G	4	51	8	0 -10	15	0 -13	45	± 0.3	20.0
12	JPFC12G		110	12		21	0 -16	57		25.5
16	JPFC16G	5	190	16		28		70		32.0
20	JPFC20G		260	20		32		80		36.0
25	JPFC25G	6	540	25	0 -12	40	0 -19	112		52.0
30	JPFC30G		680	30		45		123		56.5
40	JPFC40G		1,570	40	0 -15	60	0 -22	151		69.0
50	JPFC50G		3,600	50		80		192		89.5

Round Flange - Center Mount - JPFC

Linear Ball Bearings



JPFC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

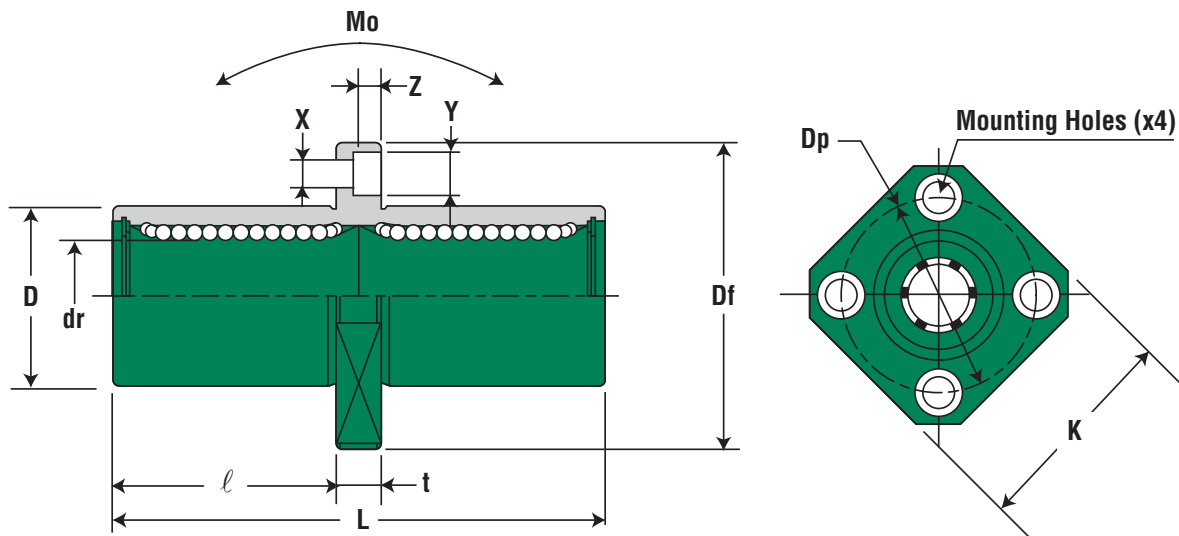
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ μm)	PERPENDICULARITY FLANGE FACE to ID (inch/ μm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	6	32	4.5 x 7.5 x 4.1			813	1,570	10.9	12
48		38				1,230	2,350	19.7	16
54	8	43	5.5 x 9 x 5.1	20	20	1,400	2,740	26.8	20
62		51				1,560	3,140	43.4	25
74	10	60	6.6 x 11 x 6.1			2,490	5,490	82.8	30
96	13	78	9 x 14 x 8.1	25	25	3,430	8,040	147	40
116		98				6,080	15,900	397	50

Round Flange - JPFC



Square Flange - Center Mount - JPKC

Linear Ball Bearings

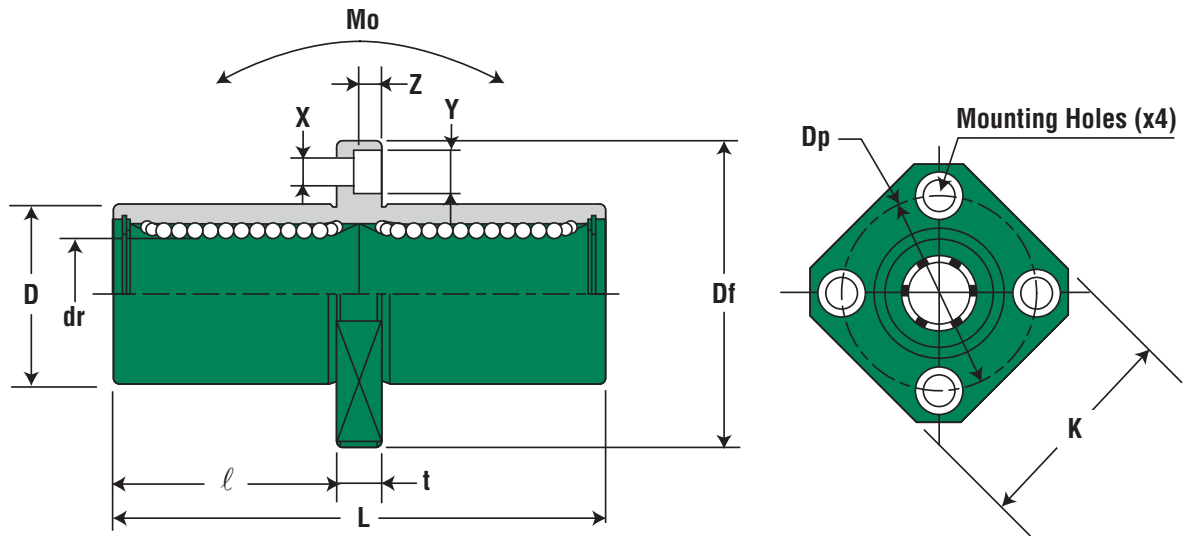


JPKC - DIMENSIONAL INFORMATION

PART NUMBER		MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	d_r (mm)	TOLERANCE (μm)	D (mm)	TOLERANCE (μm)	L (mm)	TOLERANCE (mm)	ℓ (mm)
8	JPKC8G	4	43	8	0 -10	15	0 -13	45	± 0.3	20
12	JPKC12G		90	12		21	0 -16	57		25.5
16	JPKC16G		165	16		28		70		32
20	JPKC20G	5	225	20	0 -12	32	0 -19	80		36
25	JPKC25G		500	25		40		112		52
30	JPKC30G	6	590	30		45		123		56.5
40	JPKC40G		1,380	40	0 -15	60	0 -22	151		69
50	JPKC50G		3,400	50		80		192		89.5

Square Flange - Center Mount - JPKC

Linear Ball Bearings



JPKC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANCE							LOAD RATING			
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	32	6	32	4.5 x 7.5 x 4.1			813	1,570	10.9	12
48	37		38				1,230	2,350	19.7	16
54	42	8	43	5.5 x 9 x 5.1	20	20	1,400	2,740	26.8	20
62	50		51				1,560	3,140	43.4	25
74	58	10	60	6.6 x 11 x 6.1			2,490	5,490	82.8	30
96	75	13	78	9 x 14 x 8.1	25	25	3,430	8,040	147	40
116	92		98				6,080	15,900	397	50

Square Flange - JPKC



Linear Ball Bearings

Product Overview

PRODUCT OVERVIEW

High Precision and Rigidity

The Simplicity® ball bearing is produced from a solid steel outer cylinder and incorporates an industrial strength polymer retainer.

Ease of Assembly

The standard type of Simplicity® ball bearing can be loaded from any direction. Precision control is possible using only the shaft supporter, and the mounting surface can be machined easily.

Ease of Replacement

Simplicity® ball bearing of each type are completely interchangeable because of their standardized dimensions and strict precision control. Replacement because of wear or damage is therefore easy and accurate.

Variety of Types

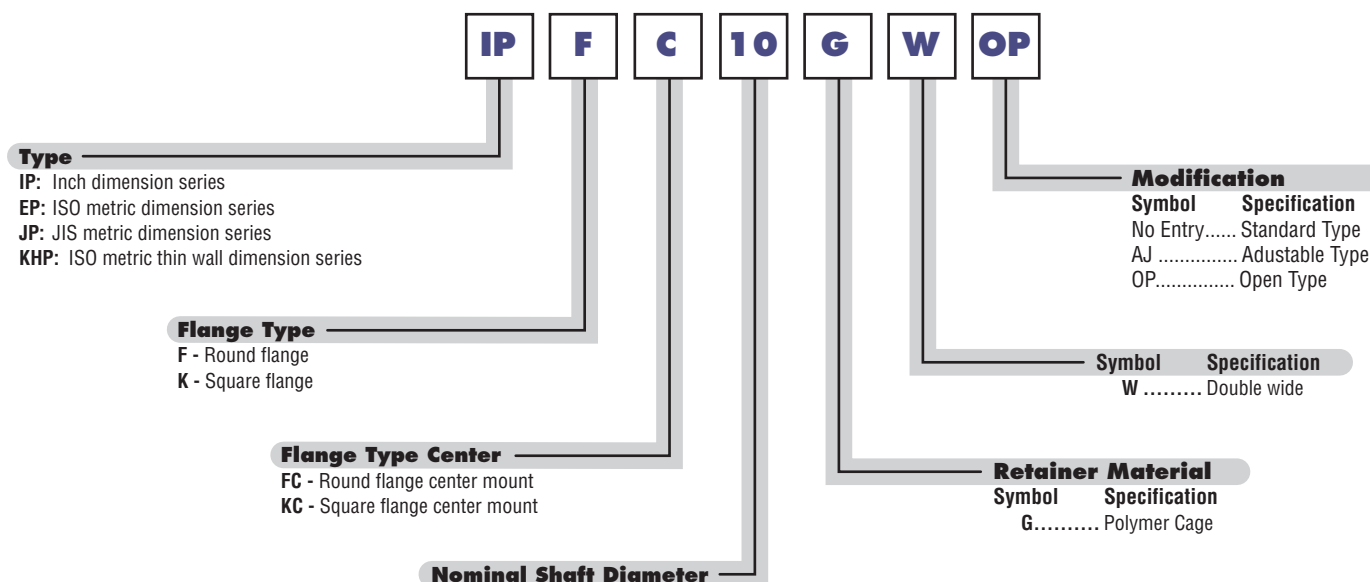
PBC offers a full line of Simplicity® ball bearings: the standard, integral single-retainer closed type, the clearance adjustable type and the open types. The user can choose from among these according to the application requirements to be met.

- Simplicity® ball bearing consists of an outer cylinder, ball retainer, balls, double seals and two end rings. The ball retainer which holds the balls in the recirculating tracks is held inside the outer cylinder by end rings.



- Those parts are assembled to optimize their required functions.
- The outer shell is heat treated to ensure long life.
- The ball retainer is molded from a durable polymer to ensure smooth and quiet motion.

ORDERING INFORMATION



NOTE: Precision of inscribed circle diameters and outside diameters for the clearance adjustable type (...-AJ) and the open type (...-OP) indicates the value obtained before the corresponding type is subjected to cutting process.



LOAD RATING AND LIFE EXPECTANCY

The life (L) of a linear bushing can be obtained from the following equation with the basic dynamic load rating and the load applied to the bush:

$$L = \left(\frac{f_H \cdot f_T \cdot f_C \cdot C}{f_W \cdot P} \right)^3 \cdot 50 \text{ ————— } 1$$

L : Rated life (km)

C : Basic dynamic load rating (N/lbf)

P : Working load (N/lbf)

f_W : Load coefficient

f_H : Hardness factor (see page 126)

f_T : Temperature coefficient (see page 126)

f_C : Contact coefficient (see page 126)

The lifespan (L_h) of a linear ball bushing in hours can be obtained by calculating the traveling distance per unit time. The lifespan can be obtained from the following equation if the stroke length and the number of strokes are constant:

$$L_h = \left(\frac{L \cdot 10^3}{2 \cdot s \cdot n_1 \cdot 60} \right) \text{ ————— } (2)$$

L_h : Lifespan (hr)

L : Rated life (km)

s : Stroke length (m)

n_1 : Number of strokes per minute (cpm)

50: Constant base line (km)

RELATION BETWEEN BALL CIRCUITS AND LOAD RATING

The Simplicity® linear ball bearings are constructed so that the ball circuits are spaced equally. The load rating varies according to the loaded position. The load ratings of the linear ball bearings from the dimensional tables are per track and increased loading can be achieved by equally sharing the load between the tracks.

The following table shows the increased value by the number of ball circuits in such cases:

LOAD RATING

Basic Dynamic Load Rating (C) -

This term is arrived at based on an evaluation of a number of identical linear systems individually run in the same conditions, if 90% of them can run with the load (with a constant value in a constant direction) for a distance of 50 km without damage caused by rolling fatigue. This is the basis of the rating.

Allowable Static Moment (M) -

This term defines the allowable limit value of static moment load, with reference to the amount of permanent deformation similar to that used for evaluation of basic rated load (C_0).

Static Safety Factor (fs) -

This factor is used based on the application condition as shown in Table 1.

TABLE 1 - STATIC SAFETY FACTORS

CONDITION OF USE	LOW LIMIT OF fs
When the shaft has less deflection and shock	1 to 2
When elastic deformation should be considered with respect to cantilever load	2 to 4
When the equipment is subject to vibration and impacts	3 to 5

Basic Static Load Rating (C_0) -

This term defines a static load such that, at the contacting position where the maximum stress is exercised, the sum of the permanent deformation of the rolling elements and that of the rolling plane is 0.0001 times of the diameter of the rolling elements.

Number of Rows	4	5	6
C_0 Load Rating Specified on the Tables			
C_{0max} Maximum Load Rating			
Load Ratio C_{0max}/C_0	1.414	1.463	1.280

NOTES: 3 track bearing is equal.

Open bearing load is de-rated by 50% if going against the opening.



Clearance & Mounting

Linear Ball Bearings

CLEARANCE & FIT

Standard-type Simplicity® linear ball bearings matched to a shaft that provides inadequate clearance may result in early bearing failure and/or rough linear motion. The clearance adjustable linear ball bearings and open linear ball bearings can be adjusted when assembled in the housing by controlling the housing bore. However, too much clearance will increase

the deformation of the linear ball bearing, which will affect its precision and life. Therefore, the appropriate clearance between the ball bearing and shaft, and the appropriate linear ball bearing housing bore are required based on application.

Table 2 shows recommended fit of the linear ball bearing:

TABLE 2

MODEL	DIVISION	SHAFT		HOUSING	
		NORMAL FIT	TRANSITIONAL	LOOSE FIT	TIGHT FIT
JP	High Precision	g6	h6	H7	J7
IP	High Precision	g6	h6	H7	J7
EP	High Precision	h6	j6	H7	J7

SHAFT & HOUSING

To optimize performance of the Simplicity® linear ball bearing it is recommended that a high precision shaft and pillow block are required.

Shaft

The rolling balls in the Simplicity® linear ball bearing are in line contact with the shaft surface. Therefore, the shaft dimensions, tolerance, surface finish, and hardness greatly affect the performance of the linear ball bearing. The shaft should be manufactured to the following tolerances:

- 1) Surface finish critically affects the smooth rolling of balls;
Shaft surface finish should be 6-8 micro (RA# 7.2 to 10.8 a 1.11 to 1 ratio).

- 2) Shaft hardness should be HRC 60 to 64. Hardness less than HRC 60 will decrease the life/load, see page 126.

- 3) Preload increases the frictional resistance slightly. If the preload is too tight, the deformation of the bearing sleeve will shorten the linear ball bearing's life.

Housing

There are a wide variety of housings differing in design, machining, and mounting. See Table 2 (above) and the following section on mounting requirements.

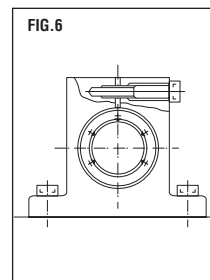
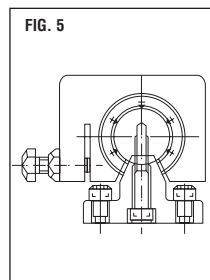
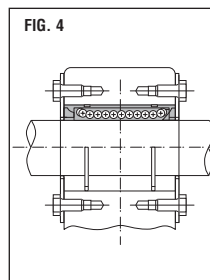
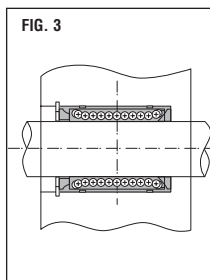
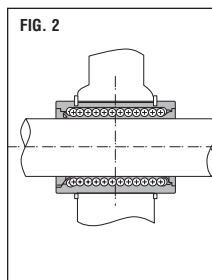
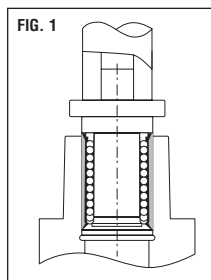
MOUNTING

When inserting the linear ball bearing into the housing, do not hit the linear ball bearing on the end-retaining ring, but apply pressure either by hand or arbor on the linear ball bearing sleeve (See Fig.1) To insert the shaft into the mounted linear ball bearing, make sure the shaft is chamfered and be careful not to push on the balls by inserting the shaft at an angle.

NOTE: If two shafts are used in parallel, the parallelism is an important factor to assure smooth linear movement and not damage the linear ball bearings.

Examples of Mounting

The popular way to mount linear ball bearings is with a slight preload. PBC Linear recommends a slight clearance fit-up to ensure proper life. The examples, Figs. 2 to 6, show the inserted linear ball bearing using a variety of retention methods.





RATING LIFE

Rating Life of the Linear System -

As long as the linear system reciprocates while being loaded, continuous stress acts on the linear system to cause flaking on the rolling bodies and planes because of material fatigue. The traveling distance of linear system until the first flaking occurs is called the life of the systems. The life of the system varies even for the systems of the same dimensions, structure, material, heat treatment and processing method, when used in the same conditions. This variation is brought about from the essential variations in the material fatigue itself. The rating life defined below is used as an index for the life expectancy of the linear system.

Rating Life (L) -

Rating life is the total travelling distance that 90% of a group of systems of the same size can reach without causing any flaking when they operate under the same conditions. The rating life can be obtained from the following equation with the basic dynamic load rating and the load on the linear system:

$$\text{For ball type: } L = \left(\frac{C}{P} \right)^3 \cdot 50 \quad (1)$$

L : Rating life (km)

C: Basic dynamic load rating (N)

P : load (N)

Consideration and influence of vibration impact loads and distribution of load should be taken into account when designing a linear motion system. It is difficult to calculate

the actual load. The rating life is also affected by the operating temperature. In these conditions, the expression (1) is arranged as follows:

For ball type:

$$L = \left(\frac{f_H \cdot f_T \cdot f_C \cdot C}{f_W \cdot P} \right)^3 \cdot 50$$

L : Rating life (km)

f_H : Hardness factor (See Fig.1)

C : Basic dynamic load rating (N)

f_T : Temperature coefficient (See Fig.2)

P : Load (N)

f_C : Contact coefficient (See Table 2)

f_W : Load coefficient (See Table 3)

The rating life in hours can be calculated by obtaining the travelling distance per unit time. The rating life in hours can be obtained from the following expression when the stroke length and the number of strokes are constant:

$$L_h = \left(\frac{L \cdot 10^3}{2\ell_s \cdot n_1 \cdot 60} \right)$$

L_h : Rating life in hours (hr)

ℓ_s : Stroke length (m)

L : Rating life (km)

n_1 : No. of strokes per minute (cpm)

SAMPLE CALCULATIONS

- Obtaining the rated life L and lifespan L_h of the Simplicity® linear ball bearing used in the following conditions:

Linear ball bearing EP20G
Stroke length 50mm
Number of strokes per minute 50cpm
Load per bush 490N

The basic dynamic load rating of the linear ball bearing is 882N from the dimension tables. From equation (1), therefore, the rated life L is obtained as follows:

$$L = \left(\frac{f_H \cdot f_T \cdot f_C \cdot C}{f_W \cdot P} \right)^3 \cdot 50 \quad f_H = f_T = f_C = f_W = 1.0$$

$$= \left(\frac{882}{490} \right)^3 \cdot 50 = 292 \text{ km}$$

From equation (2), the lifespan L_h is obtained as follows:

$$L_h = \frac{L \cdot 10^3}{2 \cdot \ell_s \cdot n_1 \cdot 60} = \frac{292 \cdot 10^3}{2 \cdot 0.05 \cdot 50 \cdot 60} = 973 \text{ hr}$$

- Select the linear ball bearing type by satisfying the following conditions:

Number of linear bushing used 4
Stroke length 1m
Traveling speed 10m/min.
Number of strokes per minute 5cpm
Lifespan 10,000hr
Total load 980N

From equation (2), the traveling distance within the lifespan is obtained as follows:

$$L = 2 \cdot \ell_s \cdot n_1 \cdot 60 \cdot L_h = 6,000 \text{ km}$$

From equation (1), the basic dynamic load rating is obtained as follows:

$$C = \sqrt[3]{\frac{L}{50} \cdot \left(\frac{f_W}{f_H \cdot f_T \cdot f_C} \right) \cdot P} = 1492 \text{ N}$$

Assume the following with a pair of shafts each with two linear ball bearings: $f_C = 0.81$ $f_W = f_T = f_H = 1$

As a result, EP20G is selected from the dimension table as the Simplicity® linear ball bearing type satisfying the value of C.

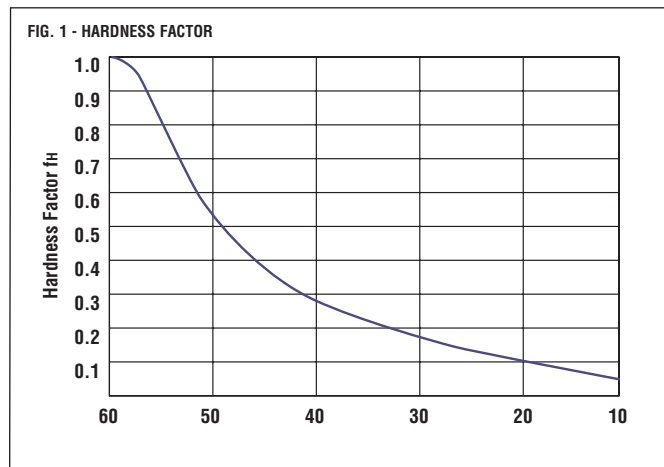


Rating Life Linear Ball Bearings

RATING LIFE (cont.)

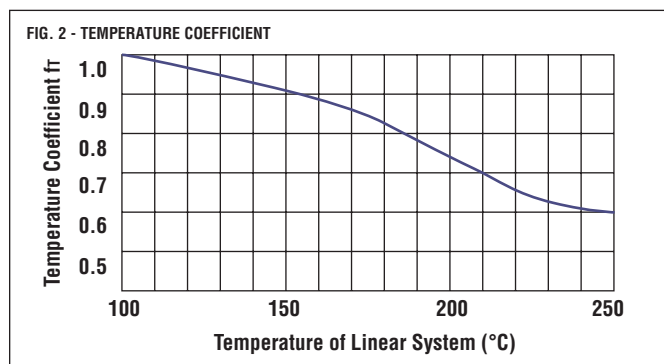
Hardness Factor (f_H)

The shaft must be sufficiently hardened when a linear bushing is used. If not properly hardened, permissible load is lowered and the life of the linear ball bearings will be shortened.



Temperature Coefficient (f_T)

If the temperature of the linear system exceeds 100°C, hardness of the linear system and the shaft lowers to decrease the permissible load compared to that of the linear system used at room temperature. As a result, the abnormal temperature rise shortens the rating life.



NOTES: Maximum temperature of plastic retainer 212°F or 100°C.
Maximum temperature 176° per Table 6.

Contact Coefficient (f_c)

Generally two or more linear bearings are used on one shaft. Thus, the load on each linear system differs depending on each processing accuracy. Because the linear bushings are not loaded equally, the number of linear bushings per shaft changes the permissible load off the system.

TABLE 2 - CONTACT COEFFICIENT

NUMBER OF LINEAR SYSTEMS PER SHAFT	CONTACT COEFFICIENT f_c
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

Load Coefficient (f_w)

When calculating the load on the linear system, it is necessary to accurately obtain object weight, inertial force based on motion speed, moment load, and each transition as time passes. However, it is difficult to calculate those values accurately because reciprocating motion involves the repetition of start and stop as well as vibration and impact. A more practical approach is to obtain the load coefficient by taking the actual operating conditions into account.

TABLE 3 - LOAD COEFFICIENT

OPERATING CONDITIONS	f_w
Operation at low speed (15m/min.or less) without impulsive shock from outside	1.0 to 01.5
Operation at intermediate speed (60m/min.or less) without impulsive shock	1.5 to 2.0
Operation at high speed (over 60m/min.) with impulsive shock from outside	2.0 to 3.5



FRictional RESISTANCE

The static frictional resistance of the Simplicity® linear system is so low that it is only slightly different from the kinetic frictional resistance, enabling smooth linear movement from low to high speeds. In general, the frictional resistance is expressed by the following equation.

$$F = \mu \cdot W + f$$

F : Frictional resistance μ : Coefficient of friction

W : Load weight f : Sealing resistance

The frictional resistance of each PBC linear system depends on the model, load weight, speed, and lubricant. The sealing resistance depends on the lip interference and lubricant, regardless of the load weight. The sealing resistance of one linear system is about 200 to 500 gf. The coefficient of friction depends on the load weight, moment load, and preload.

TABLE 5 - COEFFICIENT OF LINEAR SYSTEM FRICTIONS (μ)		
LINEAR SYSTEM TYPE	MODELS	COEFFICIENT OF FRICTION (μ)
Linear Bearing	JP, EP, IP	0.002 to 0.003

AMBIENT WORKING TEMPERATURE

The ambient working temperature range for each PBC linear system depends on the model. Consult PBC on use outside the recommended temperature range.

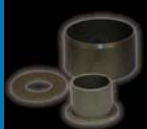
Temperature conversion equation:

$$C = \frac{5}{9}(F - 32) \quad F = 32 + \frac{9}{5}C$$

TABLE 6 - AMBIENT WORKING TEMPERATURE		
LINEAR SYSTEM TYPE	MODELS	AMBIENT WORKING TEMPERATURE
Linear Ball Bearing	JP, EP, IP	-20 to 80°C, -4 to 176°F

LUBRICATION AND DUST PREVENTION

Using PBC linear systems without lubrication increases the abrasion of the rolling elements, shortening the life span. The PBC linear systems therefore require appropriate lubrication. For lubrication PBC recommends turbine oil conforming to ISO Standards G32 to G68 or lithium base soap grease No.2. Some PBC linear systems are sealed to block dust out and seal lubricant in. If used in a harsh or corrosive environment a protective cover should be used.



Polymer Plane Bearings

Product Overview

PRODUCT OVERVIEW

PBC Linear's light-weight polymer sleeve are used in a variety of applications with specially formulated compounds with the following advantages:

- Absorb vibrations
- Anti-corrosive
- Chemically resistant
- Lightweight
- Provide additional functions (integral seals, grease retention pockets etc.)
- Highly economic
 - Lower unit costs
 - Fewer components
 - No maintenance costs

Additional advantages of compound plane bearings:

- Modified for various applications
- Low density
- Adjustability with electric insulation and conductivity
- Suitable for dry runs
- Friendly to edge loading
- Can show magnetic properties
- Resistant to ionizing radiation

FEATURES & BENEFITS

Maintenance-Free Self-Lubricated

PBC compounds lubricants in balanced ratios into the polymer matrix and ensure through fiberate micro-wear during running in for clean and continuous auto lubrication. During micro-wear a transfer coating is built enabling optimal sliding performance. The basic polymers and their additives already own good tribological properties.

Long Service Life

The homogeneous structure of the compound plane bearings prevent thin run or wear layers which would shorten service life right from the beginning. The basic polymer with its mainly synthetic reinforcement additives forms an intimate matrix for other additives. There is no abrasive wear of the shafts because the commonly used glass fibers have been removed.

Low Friction

Static and dynamic coefficients of friction are close to each other due to the high amount of PTFE and other special additives in the compounds. Thus, we ensure stick-slip-free running at lower speeds. The plane bearing also runs with much less noise. The frictional behavior of the compound plane bearings depends mainly on temperature, sliding



speeds, types of movement and loads. Surface structure and the circumstances of dry running or greasing standards substantially influence frictional behavior. Through the appropriate lubrication the coefficient of friction can be reduced even further.

High Dimensional Stability

All compound plane bearings take in virtually no water, which can be disregarded to dimensional accuracy in connection with the installation. Fiber strengthening reduces thermal expansion/contraction and improves the press-fit at higher temperatures.

Minimal Wear

Compound plane bearings are extremely wear resistant in rotating and axial bearings as well as in hinge movements under high loads.

High Loading Capacity

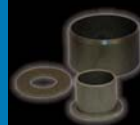
Our compound plane bearings can withstand immense forces and pressures. As well as edge loads, which do not cause problems in contrast to common plane bearings made of non-ferrous metals or composite materials. Depending on the compound chosen, high pressures are also permissible.

Broad Temperature Range

Depending on the material temperatures of -200°C/-328°F up to +250 °C can be withstood during application. Always check the compound specifications in each application with regard to temperature tolerances.

Improved Thermal Conductivity

Polymer compound plane bearings show an improved thermal conductivity. Higher rpm/sfm during continuous operation are possible thanks to a better press-fit of the plane bearing in its housing. This is achieved through fiber strengthening.



PLANE BEARINGS FOR ALL APPLICATIONS

PBC Linear™ produces compound plane bearings through an injection molding process.

We can help you select a suitable material for a specific application from our wide range of materials. Our technical staff will support you at every step of the way. PBC will find the best compound for your application – with regard to costs as well as effectiveness/performance.

Whether you are looking for standard parts or custom/proprietary components we can provide standard plane bearings. Special components and seals are available as well.

Standard Plane Bearings

Standard bearings are stocked in compounds A and E:

- Bushings
- Flanged bushings
- Thrust washers
- Bushings with integral seals

Plane Bearings with Integral Seals

Plane bearings with integral seals have proven superior in sustaining the basic advantages of our compound plane bearings even in tough environments.

- Integral seals keep away dirt and water from the bearing
- Initial lubrication is suggested
- Safe from corrosion

As a standard we provide bearings with double-sided integral seals.

HIGH PERFORMANCE SPECIALITY

High performance plane bearings are a specialty of PBC Linear™, which is distinguished by a quality-analytic separation of the bearing function. We manufacture them by multi cavity injection molding process. These are high filled and form a stable basic body and a sliding layer with the most favorable wear and friction values. Additionally, we include specially arrayed grease retention pockets. Integrated elastomer integral seals complement these bearings.

They show the particular qualities of:

- Increased application possibilities
- Corrosion resistance
- Low weight
- Optimized performance
- Optimal adaptation to your requirements through suitable combinations of materials and design



The layers of our high performance plane bearings are built up as follows:

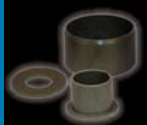
- **Outer layer:** A high-filled basic body guarantees press-fit and pressure capacity with high temperatures as well as with high stress
- **Inner layer:** Tribologically modified sliding layer for optimal wear and friction characteristics

SPECIALITY PARTS

We can deliver special forms and dimensions of parts under wear and friction demands, which we design, and manufacture individually along your requirements. Our service covers the material side as well as dimensional interpretation of the component.

Other special components examples:

- Gearwheels, tooth racks
- Plane bearings with integrated grease retention pockets and integral seals
- Slide ring seals
- Half sockets, ball sockets
- Spherical plane bearings/components
- Split bushings
- High performance plane bearings
- Thrust washers
- Multi-component parts



Polymer Plane Bearings

Product Overview

HOW TO CHOOSE THE BEST MATERIAL

The optimal application of a plane bearing in a system essentially depends on temperature, sliding speed, the occurring loads and environmental influences. We offer a wide spectrum of materials for the most varied applications. The technical data should give you an orientation and simplify the choice. In general, testing is advised.

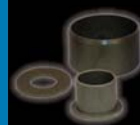
With only few exceptions we incorporate the use of glass fibers, which considerably enhances sliding performance and increases service life. Nevertheless, with synthetic fiber reinforcement the press-fit in housings show increased temperature dependence. As a rule, the temperature in continuous use should not exceed 60% of the maximum sliding surface temperature or the safety in the system may be compromised.

Our technical staff not only offer you a wide choice of materials but we can provide additional detailed technical data. Apart from the material offered we also have access to all the other commonly used polymers or we can use some suitable material from our own Value Added Polymer series of compounds. Furthermore, we can design the optimal material for your demands in our in-house developing department and then produce the new material to meet your requirements.



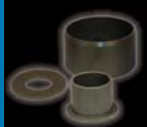
COMPOUND BEARING MARKETS

- Automotive
- Agricultural machinery
- Mechanical engineering
- Hydraulics
- Light engineering
- Valves
- Chemical apparatus
- Pneumatics
- Oven construction
- Semiconductor production lines
- Electric motors
- Textile machinery
- Medical and laboratory technology
- Pumps
- Printing presses
- Paper making machines
- Household appliances
- Food industry



COMPOUNDS

COMPOUND		A	E	B	C	D	F	G
BASIS POLYMER		PEEK	PBT	PAI	PBT	PBT	POM	PPS
Additives		carbon fibers, graphite, PTFE	bronze, PTFE	graphite, PTFE, additives	aramide fibers, bronze, PTFE	long glass fibers, PTFE, bronze, MoS ₂	PTFE	glass fibers, PTFE
Color		black	brown	dark grey	olive	grey	white	light brown
Density	g/cm ³	1.48	1.65	1.5	1.48	1.60	1.52	1.73
Water vapor RT/50% rF	%	0.10	0.10	0.3	0.15	0.30	0.2	0.05
MECHANICAL PROPERTIES								
Tensile strength	MPa	150	40	164	100	100	50	155
Modulus of elasticity	GPa	6.5	2.8	6.6	4.2	6.4	2.5	13
Specific load, static	MPa	150	70	150	80	90	60	120
THERMAL PROPERTIES								
Thermal conductivity	W/mK	0.60	0.26	0.53	0.27	0.26	0.32	0.34
Coefficient of thermal expansion	10 ⁻⁶ 1/K	30	14	25	13	25	120	30
Max. sliding surface temperature	°C	-100 +250	-40 +100	-120 +240	-40 +120	-50 +130	-40 +80	-40 +200
Max. temperature, unloaded	°C	+300	+120	+280	+150	+200	+140	+250
TRIBOLOGICAL PROPERTIES								
Max. sliding speed, rotating	m/s	1.5	1.0	2.5	1.0	1.2	1.0	1.2
Max. sliding speed, linear	m/s	5.0	3.0	4.5	4.0	4.5	4.0	4.5
Max. pv-value	MPa • m/s	3.5	0.8	4.0	1.0	1.1	0.6	2.6
Abstract		0.10 - 0.20	0.10 - 0.20	0.10 - 0.40	0.10 - 0.20	0.10 - 0.20	0.07 - 0.20	0.15 - 0.30
Description		Suitable for heavy loads Universal chemical resistance High temperatures	High loads Strong Machineable	Inexpensive material High temperature Special additives to improve the tribological properties	High loads Strong	High loads Strong Stable at high temperatures	This material is suitable mainly for the contact with food or applications in medical technology. The Compound is safe, corresponds to appropriate BGA/FDA	High loads Strong Press-fit High temperatures
			STOCKED		PRODUCED TO ORDER			



Chemical Resistance

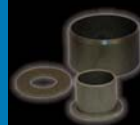
Polymer Plane Bearings

CHEMICAL RESISTANCE (Cont.)

CHEMICAL	A	E	B	C	D	F	G
Acetic acid, 5 %	+	+	+	+	+	+	+
Acetone	+	+		-	+	+	+
Ammonia, 10 %	-	-	-	-	-	+	+
Carbon tetrachloride	+	+	+	+	+	+	+
Caustic soda, 5 %	+	+	+	+	+	+	-
Diesel	+	+	+	+	+	+	+
Formic acid, 5 %	+	+	+	-	+	+	+
Gas	+	+	+	+	+	+	+
HFC-Water-Glycol, 70 °C	+	+	+	+	+	+	+
Hydrochloric acid, 5 %	+	-	+	-	-	-	-
Kerosene	+	+	+	+	+	+	+
Mineral oil, 70 °C	+	+	+	+	+	+	+
Nitric acid, 5 %	+	-	+	-	-	-	-
Paraffin	+	+	+	+	+	+	+
Seawater	+	+	+	+	+	+	+
Sulfuric acid, 5 %	+	+	+	+	+	-	+
Water	+	+	+	+	+	+	+
	STOCKED		PRODUCED TO ORDER				

+ Usage trouble-free, no corrosion expected

- Usage not recommended (chemical pit the compound and it is expected to react in a negative way)



These PBC materials (maintenance free) are standardized compounds for our plane bearings. Upon request we can also provide other standard and special bearings and sliding elements made of different materials or with divergent dimensions.

We solve a variety of problems and produce special forms as well as special dimensions according to your application needs even if they are not included in our tables.

COMPOUND A

Characteristics:

- Thermoplastic compound made of PEEK polymer matrix reinforced with synthetic fibers and modified with triboadditives
- Highly efficient high temperature material with high chemical and good wear resistance
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: black

Applications:

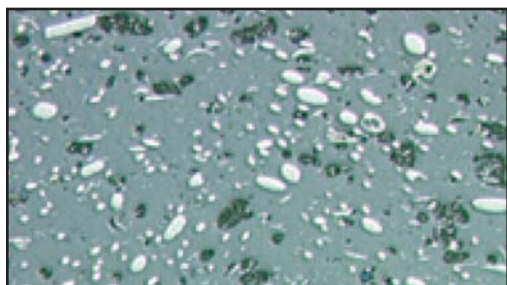
Industry – textile and knitting machinery, baking machinery, relay and control valves, powder coating equipment, chemical plants, armatures

Availability:

In stock – bearings, flanged bearings. Production to order – thrust washers, special parts of all kinds

Material structure:

PEEK + carbon fibers + PTFE + graphite



Grinding pattern A

Operation conditions:

Dry good
Oil lubricated. optimum
Grease lubricated optimum
Water lubricated optimum
Medium lubricated optimum

COMPOUND E

Characteristics:

- Filled thermoplastic compound made of PBT polymer matrix and triboadditives
- Good sliding performance under moderate operational conditions
- The E standard program is interchangeable with bushings according to DIN1494/ISO3547
- Very cost-effective sliding material
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: brown

Applications:

Industry – medical equipment, textile machinery, transport devices, apparatus engineering, furniture, materials handling technology, electronics, valve technology, agricultural machinery

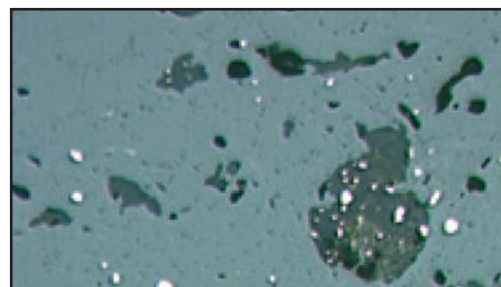
Availability:

In stock - bushings, flanged bushings, bushings with integrated sealings, thrust washers.

Production to order - special parts of all kinds

Material structure:

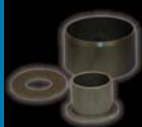
PBT + powdered bronze + PTFE



Grinding pattern E

Operational conditions:

Dry good good
Oil lubricated good
Grease lubricated good
Water lubricated less good
Medium lubricated less good



Compound B & C

Polymer Plane Bearings

COMPOUND B

Characteristics:

- Injection-molded polyamidimide modified with special additives
- Irreversible cross-linking through by thermal treatment
- High temperature material for demanding components with low thermal expansion
- High toughness and mechanical consistency
- High wear resistance against vibrating oscillations
- Good chemical resistance
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: dark grey

Applications:

Automobile industry – automatic transmission, pumps, labyrinth seal in turbo blowers, piston rings, valve seats, integral seals

Industry – continuous furnace, cockles for coating, textile machinery

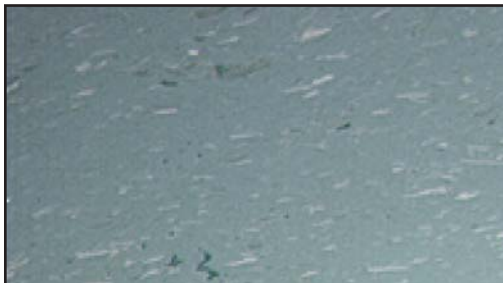
Other – aviation and astronautics, extreme high- and low-level temperature operations

Availability:

Production to order – bearings and special parts of all kinds

Material structure:

PAI + graphite + PTFE + additive



Grinding pattern B

Operational conditions:

Drygood
 Oil lubricatedvery good
 Grease lubricatedgood
 Water lubricated.....good
 Medium.....good

COMPOUND C

Characteristics:

- Thermoplastic compound made of PBT polymer matrix reinforced with long glass fibers and modified with triboadditives
- Improved performance compared to E, as well as lower wear rate and less shrinkage
- Excellent press-fit by long glass fibers
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: olive

Applications:

Industry – medical equipment, textile machinery, transport devices, apparatus engineering, furniture, materials handling technology, electronics, valve technology, agricultural machinery

Availability:

Production to order – bushings, flanged bushings, bushings with integrated sealings, thrust washers special parts of all kinds.

Material structure:

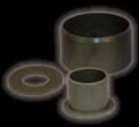
PBT + powdered bronze + PTFE + aramid fibers



Grinding pattern C

Operational conditions:

Drygood
 Oil lubricated.....good
 Grease lubricatedgood
 Water lubricated.....good
 Medium lubricatedless good



COMPOUND D

Characteristics:

- Thermoplastic compound made of PBT polymer matrix reinforced with long glass fibers and modified with triboadditives
- Good sliding performance under moderate operational conditions
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: grey

Applications:

Automobile industry – hinges, guides for sliding and lifting covers

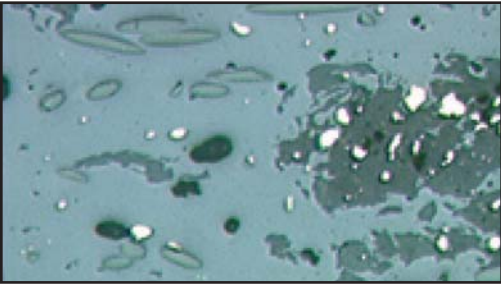
Industry – formed parts for machinery and apparatus engineering, adjustment devices

Availability:

Production to order – bushings, flanged bushings, thrust washers, special parts of all kinds

Material structure:

PBT + long glass fibers + powdered bronze + PTFE



Grinding pattern D

Operational conditions:

Drygood
Oil lubricatedgood
Grease lubricatedgood
Water lubricatedless good
Medium lubricatedless good

COMPOUND F

Characteristics:

- Thermoplastic compound made of made of POM polymer matrix with PTFE
- Corresponds to BGA/FDA recommendations. Suitable for contact with food.
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: white

Applications:

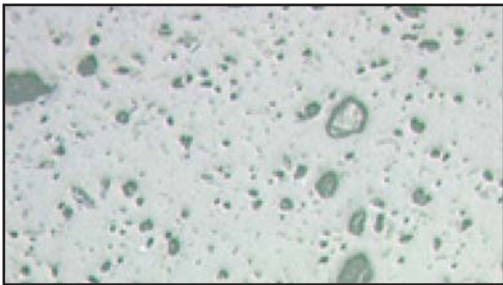
Industry – racks and packaging machines, pumps, butcher's shop equipment, medical equipment

Availability:

Production to order – bushings, flanged bushings, thrust washers, bushings with integrated seals, special parts of all kinds

Material structure:

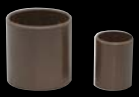
POM + PTFE



Grinding pattern F

Operational conditions:

Dry goodgood
Oil lubricatedgood
Grease lubricatedgood
Water lubricatedless good
Medium lubricatedless good



Compound G

Polymer Plane Bearings

COMPOUND G

Characteristics:

- Thermoplastic compound made of PPS polymer matrix reinforced with glass fibers and triboadditives
- High hydrolysis and temperature resistance
- Good sliding performance under moderate operational conditions
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: beige

Applications:

Industry – various outdoor applications

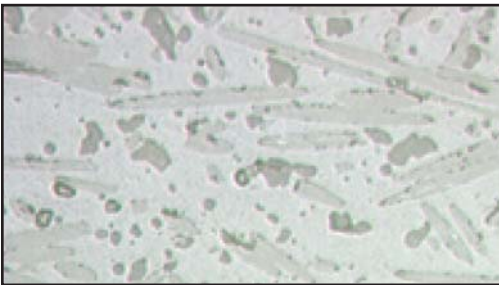
Automobile industry – rear windscreen wiper, pump bearing

Availability:

Production to order – bushings, flanged bushings, thrust washer, special parts of all kinds

Material structure:

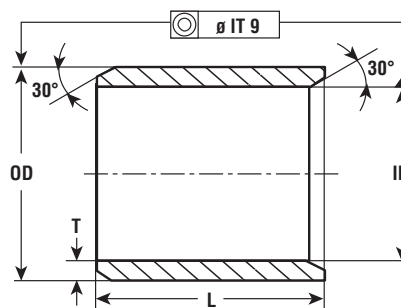
PPS + glass fibers + PTFE



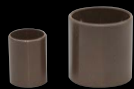
Grinding pattern G

Operational conditions:

Dryless good
Oil lubricatedgood
Grease lubricatedgood
Water lubricatedgood
Medium lubricatedgood

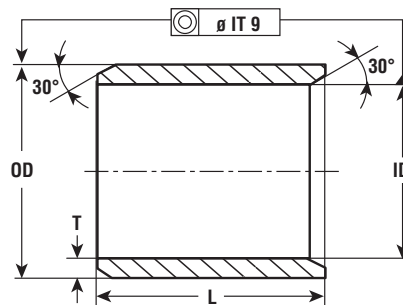


PART NUMBER	DIMENSIONS			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-002.0-003.5-003.0-E	2.0	3.5	3.0	0.03	+0.012 0	+0.046 +0.006
B-003.0-004.5-004.0-E	3.0	4.5	4.0	0.06		
B-003.0-004.5-006.0-E	3.0	4.5	6.0	0.09		
B-003.5-007.8-005.0-E	3.5	7.8	5.0	0.31	+0.015 0	+0.058 +0.010
B-004.0-005.5-004.0-E	4.0	5.5	4.0	0.07	+0.012 0	
B-004.0-005.5-006.0-E	4.0	5.5	6.0	0.11		
B-005.0-007.0-004.8-E	5.0	7.0	4.8	0.15	+0.015 0	
B-005.0-007.0-005.0-E	5.0	7.0	5.0	0.16		
B-005.0-007.0-008.0-E	5.0	7.0	8.0	0.25		
B-005.0-007.0-010.0-E	5.0	7.0	10.0	0.31		
B-006.0-008.0-006.0-E	6.0	8.0	6.0	0.22		
B-006.0-008.0-008.0-E	6.0	8.0	8.0	0.29		
B-006.0-008.0-010.0-E	6.0	8.0	10.0	0.36		
B-008.0-010.0-005.0-E	8.0	10.0	5.0	0.23		
B-008.0-010.0-006.0-E	8.0	10.0	6.0	0.28		
B-008.0-010.0-008.0-E	8.0	10.0	8.0	0.37		
B-008.0-010.0-010.0-E	8.0	10.0	10.0	0.47		
B-008.0-010.0-012.0-E	8.0	10.0	12.0	0.56		
B-008.0-010.0-015.0-E	8.0	10.0	15.0	0.70		
B-008.0-012.0-007.0-E	8.0	12.0	7.0	0.73	+0.018 0	
B-008.0-012.0-010.0-E	8.0	12.0	10.0	1.04		
B-010.0-012.0-008.0-E	10.0	12.0	8.0	0.46		
B-010.0-012.0-009.0-E	10.0	12.0	9.0	0.51		
B-010.0-012.0-010.0-E	10.0	12.0	10.0	0.57		
B-010.0-012.0-012.1-E	10.0	12.0	12.1	0.69		
B-010.0-012.0-015.0-E	10.0	12.0	15.0	0.86		
B-010.0-012.0-020.0-E	10.0	12.0	20.0	1.14		
B-010.0-012.0-025.0-E	10.0	12.0	25.0	1.43		
B-010.0-014.0-008.0-E	10.0	14.0	8.0	1.00		
B-010.0-014.0-010.0-E	10.0	14.0	10.0	1.24		
B-010.0-014.0-012.0-E	10.0	14.0	12.0	1.49		
B-010.0-014.0-028.0-E	10.0	14.0	28.0	3.48		
B-012.0-014.0-008.0-E	12.0	14.0	8.0	0.54	+0.086 +0.016	
B-012.0-014.0-010.0-E	12.0	14.0	10.0	0.67		
B-012.0-014.0-012.0-E	12.0	14.0	12.0	0.81		
B-012.0-014.0-014.0-E	12.0	14.0	14.0	0.94		
B-012.0-014.0-015.0-E	12.0	14.0	15.0	1.01		
B-012.0-014.0-020.0-E	12.0	14.0	20.0	1.35		
B-012.0-014.0-030.0-E	12.0	14.0	30.0	2.02		

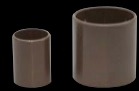


Compound E

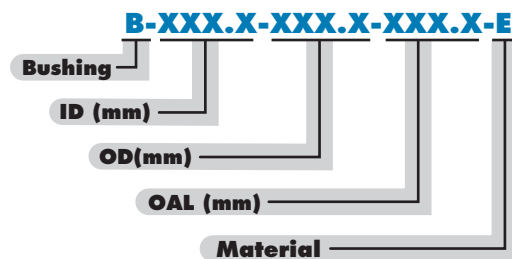
Polymer Plane Bearings



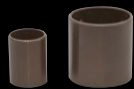
PART NUMBER	DIMENSIONS			WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-012.0-016.0-012.0-E	12.0	16.0	12.0	1.74	+0.018 0	+0.086 +0.016
B-012.0-016.0-020.0-E	12.0	16.0	20.0	2.90		
B-012.0-017.0-020.0-E	12.0	17.0	20.0	3.76		
B-012.0-018.0-010.0-E	12.0	18.0	10.0	2.33		
B-013.0-015.0-010.0-E	13.0	15.0	10.0	0.73		
B-013.0-015.0-020.0-E	13.0	15.0	20.0	1.45		
B-014.0-016.0-010.0-E	14.0	16.0	10.0	0.78		
B-014.0-016.0-015.0-E	14.0	16.0	15.0	1.17		
B-014.0-016.0-020.0-E	14.0	16.0	20.0	1.56		
B-014.0-016.0-025.0-E	14.0	16.0	25.0	1.94		
B-014.0-018.0-014.0-E	14.0	18.0	14.0	2.32		
B-014.0-018.0-020.0-E	14.0	18.0	20.0	3.32		
B-015.0-017.0-010.0-E	15.0	17.0	10.0	0.83		
B-015.0-017.0-015.0-E	15.0	17.0	15.0	1.24		
B-015.0-017.0-020.0-E	15.0	17.0	20.0	1.66		
B-015.0-017.0-025.0-E	15.0	17.0	25.0	2.07		
B-016.0-018.0-007.0-E	16.0	18.0	7.0	0.62		
B-016.0-018.0-010.0-E	16.0	18.0	10.0	0.88		
B-016.0-018.0-012.0-E	16.0	18.0	12.0	1.06		
B-016.0-018.0-015.0-E	16.0	18.0	15.0	1.32		
B-016.0-018.0-020.0-E	16.0	18.0	20.0	1.76		
B-016.0-018.0-025.0-E	16.0	18.0	25.0	2.20		
B-016.0-020.0-020.0-E	16.0	20.0	20.0	3.73	+0.021 0	+0.104 +0.020
B-018.0-020.0-015.0-E	18.0	20.0	15.0	1.48		
B-018.0-020.0-020.0-E	18.0	20.0	20.0	1.97		
B-018.0-020.0-025.0-E	18.0	20.0	25.0	2.46		
B-018.0-021.0-020.0-E	18.0	21.0	20.0	3.03		
B-018.0-022.0-018.0-E	18.0	22.0	18.0	3.73		
B-018.0-024.0-018.0-E	18.0	24.0	18.0	5.88		
B-018.0-024.0-028.0-E	18.0	24.0	28.0	9.14		
B-020.0-023.0-010.0-E	20.0	23.0	10.0	1.67		
B-020.0-023.0-015.0-E	20.0	23.0	15.0	2.51		
B-020.0-023.0-020.0-E	20.0	23.0	20.0	3.34		
B-020.0-023.0-025.0-E	20.0	23.0	25.0	4.18		
B-020.0-023.0-030.0-E	20.0	23.0	30.0	5.02		
B-020.0-024.0-020.0-E	20.0	24.0	20.0	4.56		
B-020.0-025.0-015.0-E	20.0	25.0	15.0	4.37		
B-020.0-025.0-020.0-E	20.0	25.0	20.0	5.83		
B-020.0-029.0-030.0-E	20.0	29.0	30.0	17.14		
B-022.0-024.0-010.0-E	22.0	24.0	10.0	1.19		



ORDERING INFORMATION

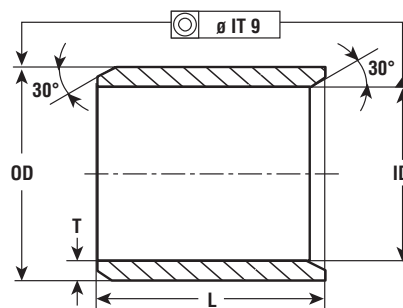


PART NUMBER	DIMENSIONS			WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-022.0-025.0-015.0-E	22.0	25.0	15.0	2.74	+0.021 0	+0.104 +0.020
B-022.0-025.0-020.0-E	22.0	25.0	20.0	3.65		
B-022.0-025.0-025.0-E	22.0	25.0	25.0	4.57		
B-022.0-025.0-030.0-E	22.0	25.0	30.0	5.48		
B-022.0-027.0-020.0-E	22.0	27.0	20.0	6.35		
B-022.0-028.0-020.0-E	22.0	28.0	20.0	7.78		
B-024.0-027.0-015.0-E	24.0	27.0	15.0	2.97		
B-024.0-027.0-020.0-E	24.0	27.0	20.0	3.97		
B-024.0-027.0-030.0-E	24.0	27.0	30.0	5.95		
B-025.0-028.0-015.0-E	25.0	28.0	15.0	3.09		
B-025.0-028.0-020.0-E	25.0	28.0	20.0	4.12		
B-025.0-028.0-025.0-E	25.0	28.0	25.0	5.15		
B-025.0-028.0-030.0-E	25.0	28.0	30.0	6.18		
B-025.0-028.0-035.0-E	25.0	28.0	35.0	7.21		
B-025.0-028.0-050.0-E	25.0	28.0	50.0	10.30		
B-025.0-030.0-018.0-E	25.0	30.0	18.0	6.41		
B-025.0-030.0-020.0-E	25.0	30.0	20.0	7.13		
B-025.0-030.0-022.0-E	25.0	30.0	22.0	7.84		
B-025.0-030.0-023.0-E	25.0	30.0	23.0	8.20		
B-025.0-030.0-025.0-E	25.0	30.0	25.0	8.91		
B-025.0-030.0-030.0-E	25.0	30.0	30.0	10.69		
B-025.0-032.0-025.0-E	25.0	32.0	25.0	12.93	+0.025 0	+0.125 +0.025
B-028.0-031.0-030.0-E	28.0	31.0	30.0	6.88		
B-028.0-032.0-015.0-E	28.0	32.0	15.0	4.67		
B-028.0-032.0-020.0-E	28.0	32.0	20.0	6.22		
B-028.0-032.0-025.0-E	28.0	32.0	25.0	7.78		
B-028.0-032.0-028.0-E	28.0	32.0	28.0	8.71		
B-028.0-032.0-030.0-E	28.0	32.0	30.0	9.33		
B-030.0-032.0-020.0-E	30.0	32.0	20.0	3.21		
B-030.0-034.0-020.0-E	30.0	34.0	20.0	6.64		
B-030.0-034.0-025.0-E	30.0	34.0	25.0	8.29		
B-030.0-034.0-030.0-E	30.0	34.0	30.0	9.95		
B-030.0-034.0-040.0-E	30.0	34.0	40.0	13.27		
B-030.0-035.0-014.0-E	30.0	35.0	14.0	5.90		
B-030.0-035.0-030.0-E	30.0	35.0	30.0	12.64		
B-030.0-037.0-040.0-E	30.0	37.0	40.0	24.31		
B-032.0-036.0-020.0-E	32.0	36.0	20.0	7.05		
B-032.0-036.0-025.0-E	32.0	36.0	25.0	8.81		
B-032.0-036.0-030.0-E	32.0	36.0	30.0	10.57		
B-032.0-036.0-040.0-E	32.0	36.0	40.0	14.10		

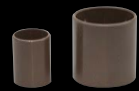


Compound E

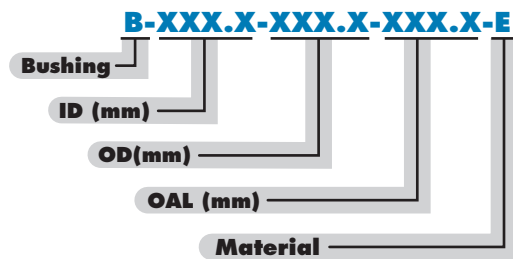
Polymer Plane Bearings



PART NUMBER	DIMENSION			WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-032.0-036.0-050.0-E	32.0	36.0	50.0	17.62	+0.025 0	+0.125 +0.025
B-032.0-036.0-054.0-E	32.0	36.0	54.0	19.03		
B-032.0-038.0-042.0-E	32.0	38.0	42.0	22.86		
B-032.0-040.0-025.0-E	32.0	40.0	25.0	18.66		
B-035.0-039.0-010.0-E	35.0	39.0	10.0	3.84		
B-035.0-039.0-020.0-E	35.0	39.0	20.0	7.67		
B-035.0-039.0-025.0-E	35.0	39.0	25.0	9.59		
B-035.0-039.0-030.0-E	35.0	39.0	30.0	11.51		
B-035.0-039.0-040.0-E	35.0	39.0	40.0	15.34		
B-035.0-039.0-050.0-E	35.0	39.0	50.0	19.18		
B-036.0-040.0-025.0-E	36.0	40.0	25.0	9.85		
B-036.0-040.0-040.0-E	36.0	40.0	40.0	15.76		
B-036.0-040.0-050.0-E	36.0	40.0	50.0	19.70		
B-036.0-042.0-030.0-E	36.0	42.0	30.0	18.19		
B-038.0-042.0-025.0-E	38.0	42.0	25.0	10.37		
B-040.0-042.0-025.0-E	40.0	42.0	25.0	5.31		
B-040.0-044.0-020.0-E	40.0	44.0	20.0	8.71		
B-040.0-044.0-025.0-E	40.0	44.0	25.0	10.89		
B-040.0-044.0-030.0-E	40.0	44.0	30.0	13.06		
B-040.0-044.0-040.0-E	40.0	44.0	40.0	17.42		
B-040.0-044.0-050.0-E	40.0	44.0	50.0	21.77		
B-040.0-045.0-040.0-E	40.0	45.0	40.0	22.03		
B-043.0-046.0-030.0-E	43.0	46.0	30.0	10.38		
B-045.0-050.0-020.0-E	45.0	50.0	20.0	12.31		
B-045.0-050.0-025.0-E	45.0	50.0	25.0	15.39		
B-045.0-050.0-030.0-E	45.0	50.0	30.0	18.47		
B-045.0-050.0-040.0-E	45.0	50.0	40.0	24.62		
B-045.0-050.0-045.0-E	45.0	50.0	45.0	27.70		
B-045.0-050.0-050.0-E	45.0	50.0	50.0	30.78		
B-045.0-050.0-060.0-E	45.0	50.0	60.0	36.93		
B-050.0-055.0-020.0-E	50.0	55.0	20.0	13.61	+0.030 0	+0.150 +0.030
B-050.0-055.0-025.0-E	50.0	55.0	25.0	17.01		
B-050.0-055.0-030.0-E	50.0	55.0	30.0	20.41		
B-050.0-055.0-040.0-E	50.0	55.0	40.0	27.21		
B-050.0-055.0-050.0-E	50.0	55.0	50.0	34.02		
B-050.0-055.0-060.0-E	50.0	55.0	60.0	40.82		
B-050.0-055.0-070.0-E	50.0	55.0	70.0	47.62		
B-050.0-058.0-040.0-E	50.0	58.0	40.0	44.79		
B-055.0-060.0-040.0-E	55.0	60.0	40.0	29.81		
B-055.0-060.0-060.0-E	55.0	60.0	60.0	44.71		



ORDERING INFORMATION

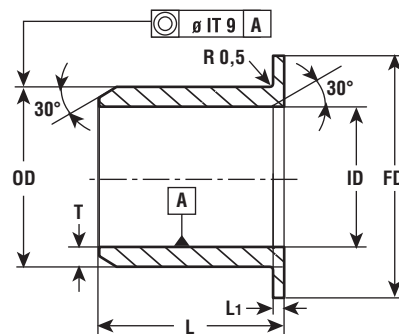


PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID (mm)	OD (mm)	L (mm)		HOUSING H7 (mm)	ID AFTER FITTING: F10 (mm)
B-055.0-065.0-040.0-E	55.0	65.0	40.0	62.20	+0.030 0	+0.150 +0.030
B-060.0-065.0-030.0-E	60.0	65.0	30.0	24.30		
B-060.0-065.0-040.0-E	60.0	65.0	40.0	32.40		
B-060.0-065.0-060.0-E	60.0	65.0	60.0	48.60		
B-060.0-065.0-070.0-E	60.0	65.0	70.0	56.70		
B-064.0-068.0-052.5-E	64.0	68.0	52.5	35.92		
B-065.0-070.0-040.0-E	65.0	70.0	40.0	34.99		
B-065.0-070.0-060.0-E	65.0	70.0	60.0	52.48		
B-068.0-072.0-010.0-E	68.0	72.0	10.0	7.26		
B-070.0-075.0-040.0-E	70.0	75.0	40.0	37.58		
B-070.0-075.0-060.0-E	70.0	75.0	60.0	56.37		
B-070.0-075.0-070.0-E	70.0	75.0	70.0	65.77		
B-070.0-075.0-080.0-E	70.0	75.0	80.0	75.16		
B-075.0-080.0-025.0-E	75.0	80.0	25.0	25.11		
B-075.0-080.0-032.0-E	75.0	80.0	32.0	32.14		
B-075.0-080.0-040.0-E	75.0	80.0	40.0	40.17	+0.035 0	+0.176 +0.036
B-080.0-085.0-040.0-E	80.0	85.0	40.0	42.76		
B-080.0-085.0-050.0-E	80.0	85.0	50.0	53.46		
B-080.0-085.0-060.0-E	80.0	85.0	60.0	64.15		
B-080.0-085.0-080.0-E	80.0	85.0	80.0	85.53		
B-080.0-085.0-100.0-E	80.0	85.0	100.0	106.91		
B-085.0-090.0-040.0-E	85.0	90.0	40.0	45.36		
B-085.0-090.0-080.0-E	85.0	90.0	80.0	90.71		
B-089.0-094.0-020.0-E	89.0	94.0	20.0	23.72		
B-090.0-095.0-050.0-E	90.0	95.0	50.0	59.94		
B-090.0-095.0-090.0-E	90.0	95.0	90.0	107.88	+0.040 0	+0.203 +0.043
B-100.0-105.0-050.0-E	100.0	105.0	50.0	66.42		
B-100.0-105.0-095.0-E	100.0	105.0	95.0	126.19		
B-100.0-105.0-100.0-E	100.0	105.0	100.0	132.83		
B-120.0-125.0-050.0-E	120.0	125.0	50.0	79.37		
B-120.0-125.0-150.0-E	120.0	125.0	150.0	238.12		
B-125.0-130.0-030.0-E	125.0	130.0	30.0	49.57		
B-125.0-130.0-060.0-E	125.0	130.0	60.0	99.14	+0.046 0	+0.235 +0.050
B-130.0-135.0-050.0-E	130.0	135.0	50.0	85.85		
B-130.0-135.0-060.0-E	130.0	135.0	60.0	103.02		
B-150.0-155.0-060.0-E	150.0	155.0	60.0	118.58	+0.046 0	+0.235 +0.050
B-195.0-200.0-014.0-E	195.0	200.0	14.0	35.83		



Flange - Compound E

Polymer Plane Bearings

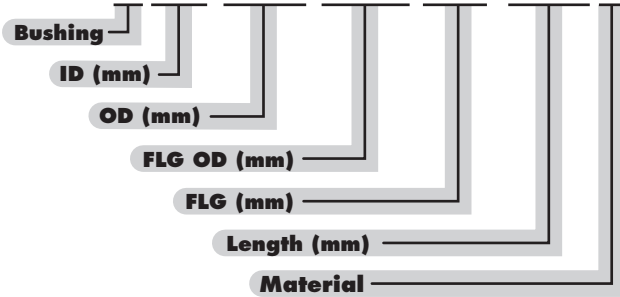


PART NUMBER	DIMENSION					WEIGHT	FITTING TOLERANCE		
	ID [mm]	OD [mm]	FD [mm]	L1 [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]	
F-003-004.5-007.0-0.75-003.0-E	3.0	4.5	7.0	0.75	3.0	0.07	+0.012 0	+0.046 +0.006	
F-003-004.5-007.0-0.75-005.0-E	3.0	4.5	7.0	0.75	5.0	0.10			
F-004-005.5-009.0-0.75-003.0-E	4.0	5.5	9.0	0.75	3.0	0.10			
F-004-005.5-009.0-0.75-004.0-E	4.0	5.5	9.0	0.75	4.0	0.12			
F-004-005.5-009.0-0.75-006.0-E	4.0	5.5	9.0	0.75	6.0	0.16			
F-005-007.0-010.0-1.00-004.0-E	5.0	7.0	10.0	1.00	4.0	0.19	+0.015 0	+0.058 +0.010	
F-005-007.0-010.0-1.00-006.0-E	5.0	7.0	10.0	1.00	6.0	0.25			
F-006-008.0-012.0-1.00-004.0-E	6.0	8.0	12.0	1.00	4.0	0.25			
F-006-008.0-012.0-2.50-005.5-E	6.0	8.0	12.0	2.50	5.5	0.46			
F-006-008.0-012.0-1.00-006.0-E	6.0	8.0	12.0	1.00	6.0	0.32			
F-006-008.0-012.0-1.00-008.0-E	6.0	8.0	12.0	1.00	8.0	0.39			
F-006-008.0-012.0-1.00-010.0-E	6.0	8.0	12.0	1.00	10.0	0.47			
F-006-019.5-025.0-2.00-005.0-E	6.0	19.5	25.0	2.00	5.0	2.86	+0.021 0		
F-008-010.0-015.0-1.00-004.5-E	8.0	10.0	15.0	1.00	4.5	0.37	+0.015 0	+0.071 +0.013	
F-008-010.0-015.0-1.00-005.5-E	8.0	10.0	15.0	1.00	5.5	0.42			
F-008-010.0-014.0-1.00-008.0-E	8.0	10.0	14.0	1.00	8.0	0.50			
F-008-010.0-015.0-1.00-009.5-E	8.0	10.0	15.0	1.00	9.5	0.61			
F-008-010.0-014.0-1.00-010.0-E	8.0	10.0	14.0	1.00	10.0	0.59			
F-008-010.0-014.0-2.00-012.0-E	8.0	10.0	14.0	2.00	12.0	0.81			
F-008-012.0-018.0-2.00-008.0-E	8.0	12.0	18.0	2.00	8.0	1.30	+0.018 0		
F-008-012.0-021.0-2.00-008.0-E	8.0	12.0	21.0	2.00	8.0	1.60			
F-008-012.0-016.0-2.00-010.0-E	8.0	12.0	16.0	2.00	10.0	1.33			
F-010-012.0-016.0-1.00-006.0-E	10.0	12.0	16.0	1.00	6.0	0.49			
F-010-012.0-018.0-1.00-007.0-E	10.0	12.0	18.0	1.00	7.0	0.63			
F-010-012.0-022.0-1.00-007.0-E	10.0	12.0	22.0	1.00	7.0	0.84			
F-010-012.0-016.0-2.00-012.0-E	10.0	12.0	16.0	2.00	12.0	0.97			
F-010-012.0-019.0-2.00-016.0-E	10.0	12.0	19.0	2.00	16.0	1.47			
F-010-012.0-018.0-1.00-017.0-E	10.0	12.0	18.0	1.00	17.0	1.20			
F-010-014.0-018.0-2.00-010.0-E	10.0	14.0	18.0	2.00	10.0	1.58			
F-010-016.0-020.5-2.00-011.0-E	10.0	16.0	20.5	2.00	11.0	2.65			
F-010-017.0-031.0-2.00-025.0-E	10.0	17.0	31.0	2.00	25.0	7.86			
F-011-014.0-017.0-1.50-006.5-E	11.0	14.0	17.0	1.50	6.5	0.81	+0.086 +0.016		
F-012-014.0-018.0-1.00-010.0-E	12.0	14.0	18.0	1.00	10.0	0.84			
F-012-014.0-018.0-1.00-012.0-E	12.0	14.0	18.0	1.00	12.0	0.97			
F-012-014.0-018.0-2.00-012.0-E	12.0	14.0	18.0	2.00	12.0	1.14			
F-012-014.0-017.0-0.50-004.0-E	12.0	14.0	17.0	0.50	4.0	1.68			



ORDERING INFORMATION

F-XXX-XXX.X-XXX.X-X.XX-XXX.X-E



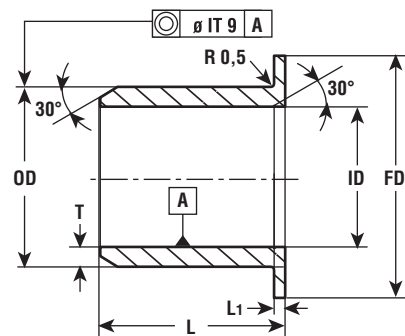
Flange - Compound E

PART NUMBER	DIMENSION					WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	FD [mm]	L1 [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
F-012-015.0-022.0-1.00-006.0-E	12.0	15.0	22.0	1.00	6.0	0.97	+0.018 0	+0.086 +0.016
F-012-016.0-020.0-2.00-008.0-E	12.0	16.0	20.0	2.00	8.0	1.53		
F-012-016.0-020.0-2.00-010.0-E	12.0	16.0	20.0	2.00	10.0	1.82		
F-012-016.0-020.0-2.00-012.0-E	12.0	16.0	20.0	2.00	12.0	2.11		
F-012-016.0-020.0-2.00-015.0-E	12.0	16.0	20.0	2.00	15.0	2.55		
F-012-016.0-020.0-2.00-019.0-E	12.0	16.0	20.0	2.00	19.0	3.13		
F-014-016.0-020.0-1.00-009.0-E	14.0	16.0	20.0	1.00	9.0	0.89		
F-014-016.0-022.0-1.00-012.0-E	14.0	16.0	22.0	1.00	12.0	1.23		
F-014-016.0-020.0-2.00-014.0-E	14.0	16.0	20.0	2.00	14.0	1.46		
F-014-016.0-020.0-2.00-015.0-E	14.0	16.0	20.0	2.00	15.0	1.54		
F-014-018.0-022.0-2.00-009.5-E	14.0	18.0	22.0	2.00	9.5	1.99		
F-014-018.0-022.0-2.00-014.0-E	14.0	18.0	22.0	2.00	14.0	2.74		
F-015-017.0-023.0-1.00-017.0-E	15.0	17.0	23.0	1.00	17.0	1.72		
F-016-018.0-024.0-1.00-012.0-E	16.0	18.0	24.0	1.00	12.0	1.38		
F-016-018.0-024.0-1.00-017.0-E	16.0	18.0	24.0	1.00	17.0	1.82		
F-016-018.0-032.0-1.50-021.0-E	16.0	18.0	32.0	1.50	21.0	3.21	+0.021 0	+0.104 +0.020
F-016-018.0-022.0-2.00-022.0-E	16.0	18.0	22.0	2.00	22.0	2.35		
F-016-020.0-028.0-2.00-015.0-E	16.0	20.0	28.0	2.00	15.0	3.79		
F-016-020.0-024.0-2.00-016.0-E	16.0	20.0	24.0	2.00	16.0	3.44		
F-016-020.0-024.0-2.00-022.0-E	16.0	20.0	24.0	2.00	22.0	4.56		
F-017-021.0-025.0-2.00-022.0-E	17.0	21.0	25.0	2.00	22.0	4.81		
F-018-020.0-026.0-1.00-012.0-E	18.0	20.0	26.0	1.00	12.0	1.54		
F-018-020.0-026.0-1.00-017.0-E	18.0	20.0	26.0	1.00	17.0	2.03		
F-018-020.0-024.0-2.00-022.0-E	18.0	20.0	24.0	2.00	22.0	2.62		
F-018-020.0-026.0-1.00-022.0-E	18.0	20.0	26.0	1.00	22.0	2.52		
F-018-022.0-026.0-2.00-006.8-E	18.0	22.0	26.0	2.00	6.8	1.91		
F-018-022.0-026.0-2.00-018.0-E	18.0	22.0	26.0	2.00	18.0	4.23		
F-019-021.0-024.0-0.50-015.0-E	19.0	21.0	24.0	0.50	15.0	1.64		
F-020-023.0-030.0-1.50-012.0-E	20.0	23.0	30.0	1.50	12.0	2.73		
F-020-023.0-030.0-2.00-012.0-E	20.0	23.0	30.0	2.00	12.0	2.97		
F-020-023.0-030.0-2.00-015.0-E	20.0	23.0	30.0	2.00	15.0	3.47		
F-020-023.0-030.0-2.00-020.0-E	20.0	23.0	30.0	2.00	20.0	4.30		
F-020-023.0-030.0-2.00-022.0-E	20.0	23.0	30.0	2.00	22.0	4.64		
F-020-023.0-030.0-2.00-025.0-E	20.0	23.0	30.0	2.00	25.0	5.14		
F-020-023.0-035.0-2.00-025.0-E	20.0	23.0	35.0	2.00	25.0	5.98		
F-020-024.0-030.0-2.00-015.0-E	20.0	24.0	30.0	2.00	15.0	4.26		
F-020-024.0-024.6-3.00-020.0-E	20.0	24.0	24.6	3.00	20.0	4.67		



Flange - Compound E

Polymer Plane Bearings

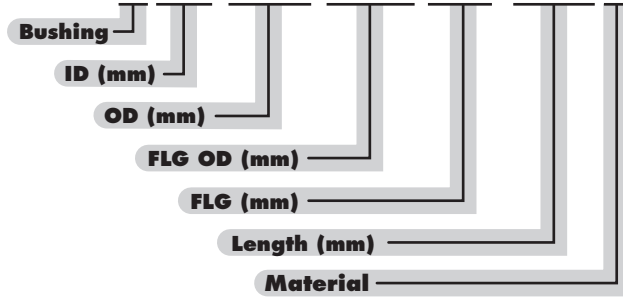


PART NUMBER	DIMENSION					WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	FD [mm]	L1 [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
F-020-024.0-030.0-2.00-020.0-E	20.0	24.0	30.0	2.00	20.0	5.40	+0.021 0	+0.104 +0.020
F-020-025.0-030.0-2.00-015.0-E	20.0	25.0	30.0	2.00	15.0	5.09		
F-022-025.0-033.0-1.50-023.5-E	22.0	25.0	33.0	1.50	23.5	5.20		
F-022-028.0-033.0-2.00-020.0-E	22.0	28.0	33.0	2.00	20.0	8.57		
F-024-027.0-032.5-2.00-022.0-E	24.0	27.0	32.5	2.00	22.0	5.21		
F-025-028.0-035.0-2.00-022.0-E	25.0	28.0	35.0	2.00	22.0	5.68		
F-025-028.0-035.0-2.00-025.0-E	25.0	28.0	35.0	2.00	25.0	6.29		
F-025-028.0-035.0-2.00-032.0-E	25.0	28.0	35.0	2.00	32.0	7.74		
F-025-030.0-035.0-2.50-020.0-E	25.0	30.0	35.0	2.50	20.0	8.18		
F-025-030.0-033.0-2.00-023.0-E	25.0	30.0	33.0	2.00	23.0	8.69		
F-025-030.0-035.0-2.50-025.0-E	25.0	30.0	35.0	2.50	25.0	9.96		
F-025-030.0-033.0-2.00-027.0-E	25.0	30.0	33.0	2.00	27.0	10.11		
F-025-030.0-033.0-2.00-032.0-E	25.0	30.0	33.0	2.00	32.0	11.89		
F-025-032.0-038.0-2.50-018.5-E	25.0	32.0	38.0	2.50	18.5	10.93	+0.025 0	
F-025-034.0-040.0-3.50-040.0-E	25.0	34.0	40.0	3.50	40.0	29.54		
F-026-029.0-031.0-2.00-007.0-E	26.0	29.0	31.0	2.00	7.0	1.81	+0.021 0	+0.125 +0.025
F-028-032.0-038.0-2.00-017.0-E	28.0	32.0	38.0	2.00	17.0	6.38	+0.025 0	
F-028-032.0-038.0-2.00-028.0-E	28.0	32.0	38.0	2.00	28.0	9.80		
F-030-034.0-045.0-2.00-018.0-E	30.0	34.0	45.0	2.00	18.0	8.22		
F-030-034.0-045.0-2.00-022.0-E	30.0	34.0	45.0	2.00	22.0	9.55		
F-030-034.0-045.0-2.00-032.0-E	30.0	34.0	45.0	2.00	32.0	12.87		
F-030-035.0-038.0-2.00-015.5-E	30.0	35.0	38.0	2.00	15.5	7.10		
F-030-035.0-042.0-2.50-030.0-E	30.0	35.0	42.0	2.50	30.0	14.38		
F-030-036.0-050.0-3.00-020.0-E	30.0	36.0	50.0	3.00	20.0	14.94		
F-030-038.0-042.0-5.00-025.0-E	30.0	38.0	42.0	5.00	25.0	19.70		
F-032-036.0-036.8-3.00-025.0-E	32.0	36.0	36.8	3.00	25.0	9.04		
F-032-036.0-042.0-2.00-032.0-E	32.0	36.0	42.0	2.00	32.0	12.49		
F-035-039.0-048.0-2.00-010.0-E	35.0	39.0	48.0	2.00	10.0	5.87		
F-035-039.0-050.0-2.00-012.0-E	35.0	39.0	50.0	2.00	12.0	7.14		
F-035-039.0-048.0-2.00-013.0-E	35.0	39.0	48.0	2.00	13.0	7.02		
F-035-039.0-047.0-2.00-016.0-E	35.0	39.0	47.0	2.00	16.0	7.92		
F-035-039.0-050.0-2.00-022.0-E	35.0	39.0	50.0	2.00	22.0	10.98		
F-035-039.0-050.0-2.00-032.0-E	35.0	39.0	50.0	2.00	32.0	14.81		
F-035-039.0-050.0-2.00-040.0-E	35.0	39.0	50.0	2.00	40.0	17.88		
F-035-039.0-050.0-2.00-050.0-E	35.0	39.0	50.0	2.00	50.0	21.72		
F-040-044.0-055.0-2.00-025.0-E	40.0	44.0	55.0	2.00	25.0	13.71		



ORDERING INFORMATION

F-XXX-XXX.X-XXX.X-X.XX-XXX.X-E



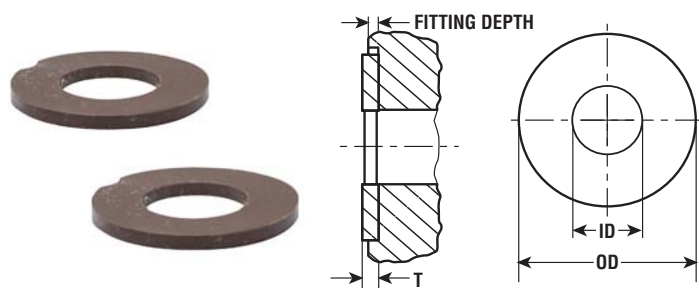
Flange - Compound E

PART NUMBER	DIMENSION					WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	FD [mm]	L1 [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
F-040-044.0-052.0-2.50-040.0-E	40.0	44.0	52.0	2.50	40.0	19.91	+0.025 0	+0.125 +0.025
F-040-044.0-055.0-2.00-040.0-E	40.0	44.0	55.0	2.00	40.0	20.24		
F-040-045.0-052.0-2.50-040.0-E	40.0	45.0	52.0	2.50	40.0	24.23		
F-045-050.0-060.0-2.50-032.0-E	45.0	50.0	60.0	2.50	32.0	23.26		
F-045-050.0-060.0-2.50-038.0-E	45.0	50.0	60.0	2.50	38.0	26.95		
F-045-050.0-062.0-2.00-038.0-E	45.0	50.0	62.0	2.00	38.0	26.87		
F-045-050.0-060.0-2.50-045.0-E	45.0	50.0	60.0	2.50	45.0	31.26		
F-045-050.0-060.0-2.50-050.0-E	45.0	50.0	60.0	2.50	50.0	34.34		
F-050-055.0-063.0-2.00-010.0-E	50.0	55.0	63.0	2.00	10.0	9.25	+0.030 0	+0.150 +0.030
F-050-055.0-065.0-2.00-020.0-E	50.0	55.0	65.0	2.00	20.0	16.72		
F-050-055.0-065.0-2.50-020.5-E	50.0	55.0	65.0	2.50	20.5	17.83		
F-050-055.0-065.0-2.50-024.0-E	50.0	55.0	65.0	2.50	24.0	20.22		
F-050-055.0-065.0-2.50-032.0-E	50.0	55.0	65.0	2.50	32.0	25.66		
F-050-055.0-065.0-2.50-050.0-E	50.0	55.0	65.0	2.50	50.0	37.91		
F-050-056.0-070.0-3.00-025.0-E	50.0	56.0	70.0	3.00	25.0	27.46		
F-055-060.0-070.0-2.50-040.0-E	55.0	60.0	70.0	2.50	40.0	34.02		
F-055-060.0-070.0-2.50-060.0-E	55.0	60.0	70.0	2.50	60.0	48.92		
F-060-064.0-075.0-2.50-060.0-E	60.0	64.0	75.0	2.50	60.0	43.52		
F-060-065.0-075.0-2.50-040.0-E	60.0	65.0	75.0	2.50	40.0	36.93		
F-060-065.0-075.0-2.50-060.0-E	60.0	65.0	75.0	2.50	60.0	53.13		
F-065-070.0-080.0-2.50-040.0-E	65.0	70.0	80.0	2.50	40.0	39.85		
F-065-070.0-080.0-2.50-060.0-E	65.0	70.0	80.0	2.50	60.0	57.34		
F-070-075.0-085.0-2.50-040.0-E	70.0	75.0	85.0	2.50	40.0	42.76		
F-070-075.0-085.0-2.50-070.0-E	70.0	75.0	85.0	2.50	70.0	70.95		
F-075-080.0-090.0-2.50-040.0-E	75.0	80.0	90.0	2.50	40.0	45.68	+0.035 0	+0.176 +0.036
F-075-080.0-090.0-2.50-070.0-E	75.0	80.0	90.0	2.50	70.0	75.81		
F-080-085.0-095.0-2.50-040.0-E	80.0	85.0	95.0	2.50	40.0	48.60		
F-080-085.0-095.0-2.50-080.0-E	80.0	85.0	95.0	2.50	80.0	91.36		
F-090-095.0-110.0-2.50-050.0-E	90.0	95.0	110.0	2.50	50.0	69.90		
F-090-095.0-110.0-2.50-090.0-E	90.0	95.0	110.0	2.50	90.0	117.85		
F-100-105.0-120.0-2.50-050.0-E	100.0	105.0	120.0	2.50	50.0	77.35		
F-100-105.0-120.0-2.50-090.0-E	100.0	105.0	120.0	2.50	90.0	130.48		
F-110-115.0-130.0-2.50-090.0-E	110.0	115.0	130.0	2.50	90.0	143.12	+0.040 0	+0.203 +0.043
F-140-145.0-160.0-2.50-040.0-E	140.0	145.0	160.0	2.50	40.0	88.69		
F-140-145.0-165.0-2.50-060.0-E	140.0	145.0	165.0	2.50	60.0	130.89		

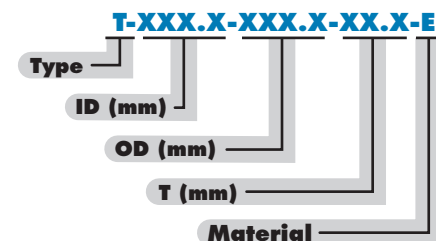
Thrust Washers - Compound E

Polymer Plane Bearings

THRUST WASHERS WITHOUT MOUNTING HOLE

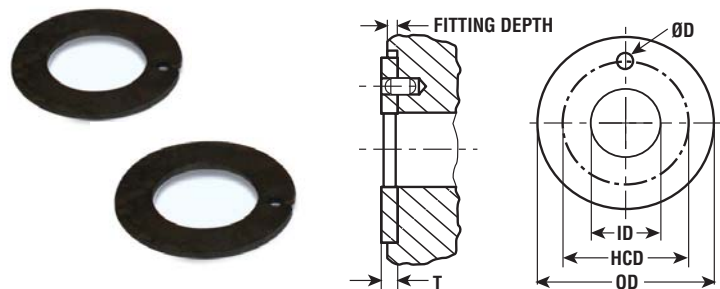


ORDERING INFORMATION

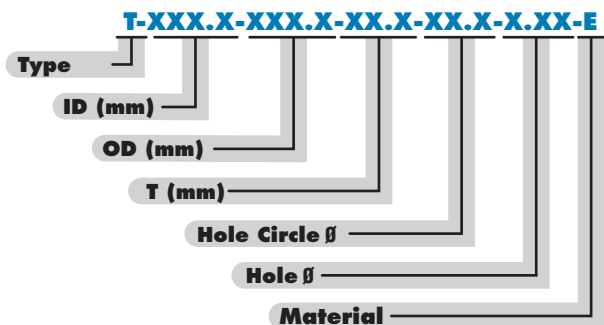


PART NUMBER	ID [mm]	OD [mm]	T [mm]	FITTING DEPTH [mm]	WEIGHT [g]
T-010.0-020.0-01.5-E	10.0	20.0	1.5	0.95 - 1.20	0.58
T-010.0-022.0-01.5-E	10.0	22.0	1.5	0.95 - 1.20	0.75
T-011.2-015.0-01.5-E	11.2	15.0	1.5	0.95 - 1.20	0.19
T-012.0-020.0-02.0-E	12.0	20.0	2.0	1.25 - 1.60	0.66
T-015.0-030.0-02.0-E	15.0	30.0	2.0	1.25 - 1.60	1.75
T-016.0-032.0-02.5-E	16.0	32.0	2.5	1.60 - 2.00	2.49
T-018.5-031.8-01.5-E	18.5	31.8	1.5	0.95 - 1.20	1.30
T-026.0-044.0-01.5-E	26.0	44.0	1.5	0.95 - 1.20	2.45
T-028.5-042.0-01.5-E	28.5	42.0	1.5	0.95 - 1.20	1.85
T-037.0-052.0-02.0-E	37.0	52.0	2.0	1.25 - 1.60	3.46
T-038.0-062.0-01.5-E	38.0	62.0	1.5	0.95 - 1.20	4.67
T-068.0-080.0-02.0-E	68.0	80.0	2.0	1.25 - 1.60	4.60
T-075.0-093.0-01.0-E	75.0	93.0	1.0	0.60 - 0.80	3.92
T-080.5-093.0-01.5-E	80.5	93.0	1.5	0.95 - 1.20	4.22
T-080.5-114.0-01.5-E	80.5	114.0	1.5	0.95 - 1.20	12.67
T-104.0-126.0-01.5-E	104.0	126.0	1.5	0.95 - 1.20	9.84
T-120.0-140.0-02.5-E	120.0	140.0	2.5	1.60 - 2.00	16.85
T-140.0-160.0-03.0-E	140.0	160.0	3.0	1.90 - 2.40	23.33
T-141.0-164.0-03.0-E	141.0	164.0	3.0	1.90 - 2.40	27.27
T-160.0-190.0-02.0-E	160.0	190.0	2.0	1.25 - 1.60	27.21
T-160.0-200.0-02.0-E	160.0	200.0	2.0	1.25 - 1.60	37.32

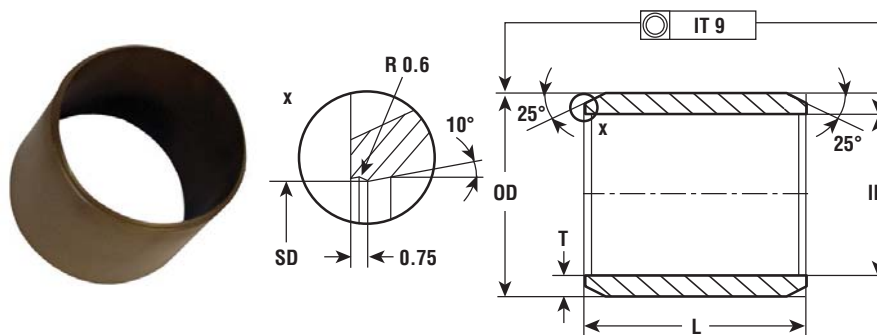
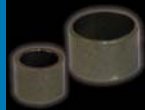
THRUST WASHERS WITH MOUNTING HOLE



ORDERING INFORMATION

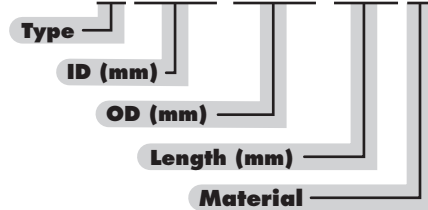


PART NUMBER	ID [mm]	OD [mm]	T [mm]	FITTING DEPTH [mm]	HOLE CIRCLE D [mm]	PIN HOLE D [mm]	WEIGHT [g]
T-012.0-024.0-01.5-18.0-1.75-E	12.0	24.0	1.5	0.95 - 1.20	18.0	1.75	1.75
T-014.0-026.0-01.5-20.0-2.25-E	14.0	26.0	1.5	0.95 - 1.20	20.0	2.25	2.25
T-016.0-030.0-01.5-22.0-2.25-E	16.0	30.0	1.5	0.95 - 1.20	22.0	2.25	1.24
T-018.0-032.0-01.5-25.0-2.25-E	18.0	32.0	1.5	0.95 - 1.20	25.0	2.25	1.35
T-020.0-036.0-01.5-28.0-3.25-E	20.0	36.0	1.5	0.95 - 1.20	28.0	3.25	1.73
T-022.0-038.0-01.5-30.0-3.25-E	22.0	38.0	1.5	0.95 - 1.20	30.0	3.25	1.85



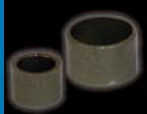
ORDERING INFORMATION

S-XXX.X-XXX.X-XX.X-E



Seal - Compound E

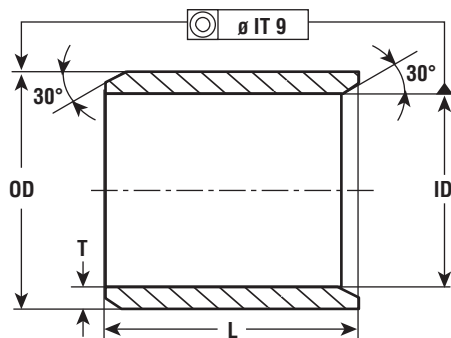
PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
S-040.0-044.0-025.0-E	40.0	44.0	25.0	10.9	+0.025 0	+0.125 +0.025
S-040.0-044.0-040.0-E	40.0	44.0	40.0	17.4		
S-045.0-050.0-030.0-E	45.0	50.0	30.0	18.5		
S-045.0-050.0-050.0-E	45.0	50.0	50.0	30.8		
S-045.0-050.0-060.0-E	45.0	50.0	60.0	36.9		
S-050.0-055.0-040.0-E	50.0	55.0	40.0	27.2	+0.030 0	+0.150 +0.030
S-050.0-055.0-050.0-E	50.0	55.0	50.0	34.0		
S-050.0-055.0-060.0-E	50.0	55.0	60.0	40.8		
S-050.0-058.0-040.0-E	50.0	58.0	40.0	44.8		
S-050.0-066.0-060.0-E	50.0	66.0	60.0	144.3		
S-060.0-065.0-050.0-E	60.0	65.0	50.0	40.5		
S-060.0-065.0-060.0-E	60.0	65.0	60.0	48.6		
S-070.0-075.0-050.0-E	70.0	75.0	50.0	47.0		
S-070.0-075.0-060.0-E	70.0	75.0	60.0	56.4		
S-072.0-077.0-065.0-E	72.0	77.0	65.0	62.8		
S-075.0-080.0-080.0-E	75.0	80.0	80.0	80.3	+0.035 0	
S-080.0-085.0-060.0-E	80.0	85.0	60.0	64.1		
S-080.0-085.0-095.0-E	80.0	85.0	95.0	101.6		



Ultra High Temperature Resistant - A

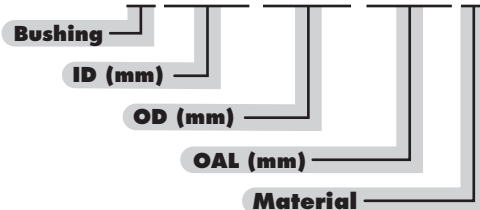
Polymer Plane Bearings

Temp. Resistant - A



ORDERING INFORMATION

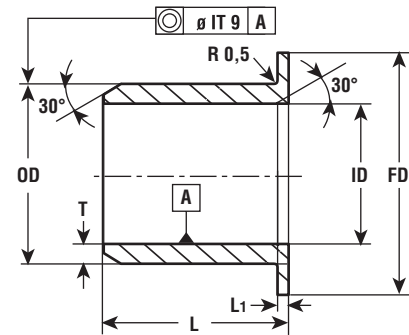
B-XXX.X-XXX.X-XXX.X-A



PART NUMBER	DIMENSION			WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-003.0-004.5-006.0-A	3.0	4.5	6.0	0.08	+0.012 0	+0.046 +0.006
B-004.0-005.5-008.0-A	4.0	5.5	8.0	0.13		
B-005.0-007.0-005.0-A	5.0	7.0	5.0	0.14	+0.015 0	+0.058 +0.010
B-005.0-007.0-015.0-A	5.0	7.0	15.0	0.42		
B-006.0-008.0-020.0-A	6.0	8.0	20.0	0.65	+0.018 0	+0.071 +0.013
B-008.0-010.0-015.0-A	8.0	10.0	15.0	0.63		
B-008.0-012.0-012.0-A	8.0	12.0	12.0	1.12	+0.021 0	+0.086 +0.016
B-010.0-012.0-012.0-A	10.0	12.0	12.0	0.61		
B-010.0-012.0-020.0-A	10.0	12.0	20.0	1.02	+0.025 0	+0.104 +0.020
B-012.0-014.0-020.0-A	12.0	14.0	20.0	1.21		
B-014.0-016.0-012.0-A	14.0	16.0	12.0	0.84	+0.030 0	+0.125
B-014.0-016.0-025.0-A	14.0	16.0	25.0	1.74		
B-015.0-017.0-025.0-A	15.0	17.0	25.0	1.86	+0.035 0	+0.150 +0.030
B-016.0-018.0-020.0-A	16.0	18.0	20.0	1.58		
B-020.0-023.0-010.0-A	20.0	23.0	10.0	1.50	+0.035 0	+0.176 +0.036
B-020.0-023.0-015.0-A	20.0	23.0	15.0	2.25		
B-020.0-023.0-020.0-A	20.0	23.0	20.0	3.00	+0.035 0	
B-020.0-023.0-030.0-A	20.0	23.0	30.0	4.50		
B-025.0-028.0-030.0-A	25.0	28.0	30.0	5.54	+0.035 0	
B-030.0-034.0-015.0-A	30.0	34.0	15.0	4.46		
B-030.0-034.0-040.0-A	30.0	34.0	40.0	11.90	+0.035 0	
B-035.0-039.0-050.0-A	35.0	39.0	50.0	17.20		
B-040.0-044.0-050.0-A	40.0	44.0	50.0	19.53	+0.035 0	
B-045.0-050.0-050.0-A	45.0	50.0	50.0	27.61		
B-050.0-055.0-060.0-A	50.0	55.0	60.0	36.62	+0.035 0	
B-060.0-065.0-070.0-A	60.0	65.0	70.0	50.85		
B-070.0-075.0-040.0-A	70.0	75.0	40.0	33.71	+0.035 0	
B-070.0-075.0-080.0-A	70.0	75.0	80.0	67.42		
B-075.0-080.0-060.0-A	75.0	80.0	60.0	54.05	+0.035 0	
B-080.0-085.0-080.0-A	80.0	85.0	80.0	76.72		
B-090.0-095.0-090.0-A	90.0	95.0	90.0	96.77	+0.035 0	
B-100.0-105.0-090.0-A	100.0	105.0	90.0	107.23		

Ultra High Temperature Resistant - A

Polymer Plane Bearings



Temp. Resistant - A

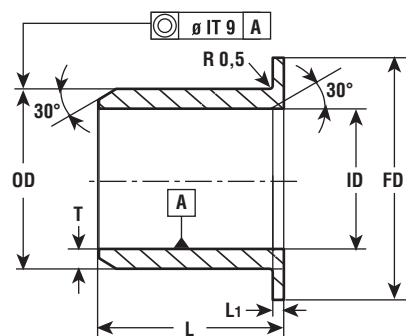
PART NUMBER	DIMENSION					WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	FD [MM] [mm]	L1 [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
F-002-003.5-004.8-0.50-004.0-A	2.0	3.5	4.8	0.50	4.0	0.04	+0.012 0	+0.046 +0.006
F-004-005.5-009.5-0.75-004.0-A	4.0	5.5	9.5	0.75	4.0	0.12		+0.015 0
F-005-007.0-011.0-1.00-005.0-A	5.0	7.0	11.0	1.00	5.0	0.22		
F-006-008.0-012.0-1.00-010.0-A	6.0	8.0	12.0	1.00	10.0	0.42		
F-008-010.0-015.0-1.00-009.5-A	8.0	10.0	15.0	1.00	9.5	0.54	+0.018 0	
F-010-012.0-018.0-1.00-012.0-A	10.0	12.0	18.0	1.00	12.0	0.82		
F-010-012.0-018.0-1.00-017.0-A	10.0	12.0	18.0	1.00	17.0	1.08		
F-010-012.0-018.0-1.00-020.0-A	10.0	12.0	18.0	1.00	20.0	1.23		
F-012-014.0-020.0-1.00-020.0-A	12.0	14.0	20.0	1.00	20.0	1.45		
F-014-016.0-022.0-1.00-017.0-A	14.0	16.0	22.0	1.00	17.0	1.45		+0.021 0
F-015-017.0-023.0-1.00-020.0-A	15.0	17.0	23.0	1.00	20.0	1.77		
F-016-018.0-024.0-1.00-012.0-A	16.0	18.0	24.0	1.00	12.0	1.24		
F-016-018.0-024.0-1.00-020.0-A	16.0	18.0	24.0	1.00	20.0	1.87		
F-018-020.0-026.0-1.00-014.0-A	18.0	20.0	26.0	1.00	14.0	1.56		
F-018-020.0-026.0-1.00-020.0-A	18.0	20.0	26.0	1.00	20.0	2.09	+0.104 +0.020	
F-018-020.0-024.0-2.00-022.0-A	18.0	20.0	24.0	2.00	22.0	2.35		
F-020-023.0-030.0-1.50-016.5-A	20.0	23.0	30.0	1.50	16.5	3.12		
F-020-023.0-030.0-2.00-020.0-A	20.0	23.0	30.0	2.00	20.0	3.86		
F-020-023.0-030.0-1.50-021.5-A	20.0	23.0	30.0	1.50	21.5	3.87		
F-025-028.0-035.0-1.50-021.5-A	25.0	28.0	35.0	1.50	21.5	4.74		
F-028-030.0-034.0-1.00-006.0-A	28.0	30.0	34.0	1.00	6.0	1.11		



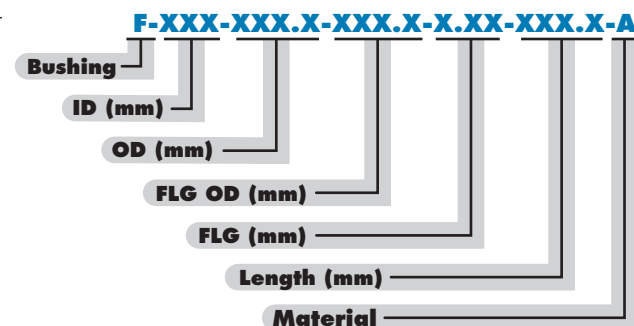
Ultra High Temperature Resistant - A

Polymer Plane Bearings

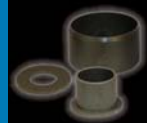
Temp. Resistant - A



ORDERING INFORMATION



PART NUMBER	DIMENSION					WEIGHT [g]	FITTING TOLERANCE	
	ID [mm]	OD [mm]	FD [mm]	L1 [mm]	L [mm]		HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
F-030-034.0-042.0-2.00-026.0-A	30.0	34.0	42.0	2.00	26.0	9.15	+0.025 0	+0.104 +0.020
F-030-034.0-045.0-2.00-037.0-A	30.0	34.0	45.0	2.00	37.0	13.03		+0.125 +0.025
F-035-039.0-050.0-2.00-040.0-A	35.0	39.0	50.0	2.00	40.0	16.04		
F-035-039.0-050.0-2.00-050.0-A	35.0	39.0	50.0	2.00	50.0	19.48		
F-040-044.0-055.0-2.00-016.0-A	40.0	44.0	55.0	2.00	16.0	8.78		
F-040-044.0-052.0-2.00-030.0-A	40.0	44.0	52.0	2.00	30.0	13.50		
F-040-044.0-055.0-2.00-040.0-A	40.0	44.0	55.0	2.00	40.0	18.15		
F-045-050.0-058.0-2.50-026.0-A	45.0	50.0	58.0	2.50	26.0	16.87		
F-045-050.0-058.0-2.40-050.0-A	45.0	50.0	58.0	2.40	50.0	30.02	+0.030 0	+0.150 +0.030
F-050-055.0-065.0-2.50-050.0-A	50.0	55.0	65.0	2.50	50.0	34.00		
F-050-057.5-063.0-2.50-012.0-A	50.0	57.5	63.0	2.50	12.0	13.17		
F-055-060.0-070.0-2.50-060.0-A	55.0	60.0	70.0	2.50	60.0	43.88		
F-060-065.0-075.0-2.50-040.0-A	60.0	65.0	75.0	2.50	40.0	33.13		
F-060-065.0-075.0-2.50-070.0-A	60.0	65.0	75.0	2.50	70.0	54.92		
F-065-070.0-080.0-2.50-060.0-A	65.0	70.0	80.0	2.50	60.0	51.44		
F-070-075.0-085.0-2.50-070.0-A	70.0	75.0	85.0	2.50	70.0	63.64		
F-070-075.0-085.0-2.50-080.0-A	70.0	75.0	85.0	2.50	80.0	72.07	+0.035 0	+0.176 +0.036
F-080-085.0-095.0-2.50-080.0-A	80.0	85.0	95.0	2.50	80.0	81.95		
F-090-095.0-110.0-2.50-090.0-A	90.0	95.0	110.0	2.50	90.0	105.70		
F-100-105.0-130.0-2.50-090.0-A	100.0	105.0	130.0	2.50	90.0	124.30		



TOLERANCE

Polymer plane bearings are suitable as press-in bushing, preferably used in housings with tolerance H7. The press fit oversize depends on the nominal diameter and the respective material. The press fit oversize is about 0.5 - 1.5% according to the chosen diameter.

After assembly the inside diameter adjusts itself to the nominal value. A certain clearance in the bearing is necessary to guarantee faultless operation under all operational conditions. Inside diameter lies in the range of tolerance F10 according to compound.

Shafts are mainly in tolerance h9 - h7. The ideal sliding counterpart is steel with a ground surface (surface roughness value with parameter Ra 0.4 to 0.8 μ m) and a minimum hardness of 50 HRC. Apart from hardened steel nearly all other common shaft materials can be used: stainless steel, carbon steel, non-ferrous metals and plastics. Special compounds are available for soft shafts made for example out of non-ferrous metals or aluminum alloys. Thus, we can achieve very low to no wear in the sliding counterpart.

For special applications please contact us. We are able to formulate service life on the basis of our tests for and experience from a huge number of applications.

MACHINING

Polymer plane bearings can be reworked without problem.

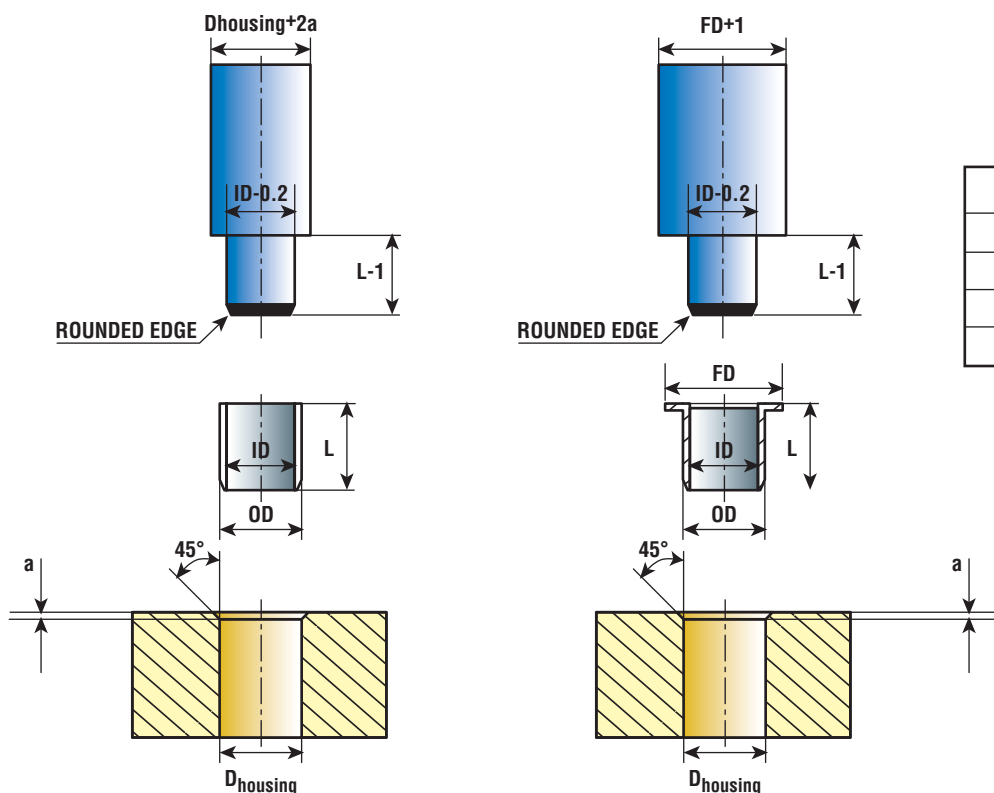
Milling, turning on a lathe, sawing or cutting can be done, however, please do not alter I.D.

LUBRICATION

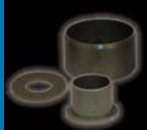
Compound plane bearings are self-lubricating and maintenance-free. Nevertheless, initial lubrication during assembly or cooling by environmental media can multiply loading capacity and service life. The compounds are resistant against most of the common greases and oils. Detailed information can be obtained from the chemicals resistance list in this catalog or you can receive a detailed list on request.

ASSEMBLY

It is preferable to press polymer plane bearings into the housing with an arbor parallel to the axis. The one-sided chamfer on the bearing simplifies assembly. A similar chamfer should also be part of the housing.



WIDTH OF CHAMFER	
D_{housing}	a
≤ 12	0,8
$12 < D_{\text{housing}} \leq 65$	1,2
> 65	2,3



Polymer Plane Bearings

Technical Data

HOW THE SURROUNDINGS INFLUENCE PLANE BEARINGS

Polymer plane bearings made of specially modified compounds for the best operating results in maintenance-poor or maintenance-free surroundings. Through many years of experiences we have continuously improved our materials. Today, we are able to cover a large segment of applications with our products.

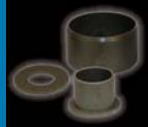
Many factors have an influence on the successful operation of plane bearings. Temperature is a determining factor. Polymers change their properties more radically at different temperatures than conventional metal-polymer bearings.

Approximate values and orientation cannot replace a test under real everyday conditions of a system. Check operational temperature, loads, life, safety and the insertion tolerance and lubrication edge pressures or unwanted inclusion of dirt particles.

NOMENCLATURE

The following parameters and variables are being used:

TERM	FORMULA TYPE	UNIT
radial bearing load	F	N
inner diameter	d	mm
bushing width	L	mm
wall thickness	s	mm
sliding speed	v	m/s
coefficient of friction	ϑ	
environment temperature	ϑ_U	°C
max. sliding surface temperature	$\vartheta_{\max}$	°C
specific load	p	MPa
revolutions per minute	n	U/min
rotation angle	φ	°
compensation constant PV-value	k_1, k_2	
thermal conductivity compound	λ_C	W/mK
thermal conductivity shaft	λ_W	W/mK



AVERAGE LOAD

The active radial force affecting the plane bearing and the projected supporting surface combine to the average load. The value results from this formula:

$$\bar{p} = \frac{F}{d \cdot L} [N/mm^2]$$

SLIDING SPEED

Sliding speed is either the direct result of the linear speed or with rotating movements results from the revs:

$$v = \frac{n \cdot d \cdot \pi}{1000 \cdot 60} [m/s]$$

or with oscillator movements result in:

$$v = \frac{d \cdot \pi}{60 \cdot 100} \cdot \frac{2\varphi \cdot n}{360} [m/s]$$

PERMISSIBLE PV VALUE

The permissible PV value is the product of sliding speed and the corresponding load allowance. With polymer plane bearings the PV value can be determined via the following formula:

$$\bar{p}v_{\max} = \frac{\pi \cdot \Delta\vartheta}{\mu} \left(\frac{k_1 \cdot \lambda_c}{s} + \frac{k_2 \cdot \lambda_w}{2L} \right) \cdot 10^{-3} [MPa \cdot \frac{m}{s}]$$

and $\Delta\vartheta = \vartheta_{\max} - \vartheta_u$

The permissible PV value should be greater or equal to the PV value formulated from speed and load data for the final application!

LIFE EXPECTANCY OF A PLANE BEARING

To calculate the service life the complete group of possible strains must be taken into consideration. If in doubt, talk to a member of our skilled and experienced technical staff. They will help you interpreting and calculating the length of service life.

The following correction factors apply:

BUSHING WALL THICKNESS s	k_1	k_2
≤ 2 mm	0.50	0.042
> 2 mm	0.75	0.058

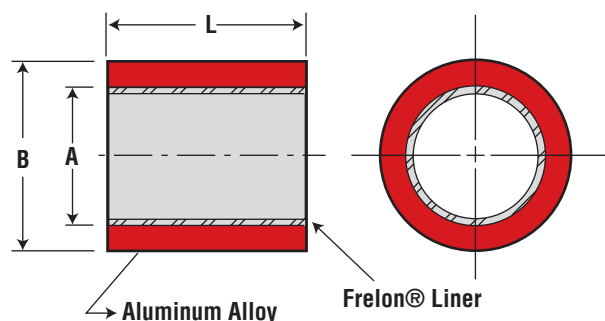
The following thermal conductivities have to be applied to the shaft material:

MATERIAL	SHAFT THERMAL CONDUCTIVITY λ [W/mK]
Aluminum bronze	120
Aluminum alloy	156
Brass	80
Bronze	46
Carbon Steel	46
Cast iron	60
Low alloy steel	55
Phosphor bronze	75
Stainless steel	15



Sleeve Bearings - PS Inch Series

PS SLEEVE BEARINGS



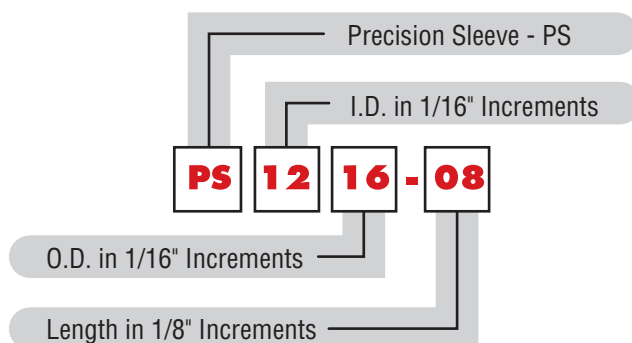
BASIC DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D.		L LENGTH		MAX. STATIC LOAD (lbs.) FRELO®		BEARING WEIGHT (oz.)	RECOMMENDED HOUSING BORE			
													SLIP FIT & EPOXY		PRESS FIT	
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	GOLD	J		MIN.	MAX.	MIN.	MAX.
PS0305-02	3/16"	5/16"	1/4"	0.1890	0.1900	0.3135	0.3145	0.230	0.250	130	65	0.02	0.3145	0.3155	0.3125	0.3130
PS0305-04	3/16"	5/16"	1/2"	0.1890	0.1900	0.3135	0.3145	0.480	0.500	272	136	0.04	0.3145	0.3155	0.3125	0.3130
PS0406-02	1/4"	3/8"	1/4"	0.2515	0.2525	0.3760	0.3770	0.230	0.250	174	87	0.03	0.3770	0.3780	0.3750	0.3755
PS0406-03	1/4"	3/8"	3/8"	0.2515	0.2525	0.3760	0.3770	0.355	0.375	268	134	0.04	0.3770	0.3780	0.3750	0.3755
PS0406-04	1/4"	3/8"	1/2"	0.2515	0.2525	0.3760	0.3770	0.480	0.500	362	181	0.05	0.3770	0.3780	0.3750	0.3755
PS0610-04	3/8"	5/8"	1/2"	0.3765	0.3775	0.6260	0.6270	0.480	0.500	542	271	0.14	0.6270	0.6280	0.6250	0.6255
PS0610-06	3/8"	5/8"	3/4"	0.3765	0.3775	0.6260	0.6270	0.730	0.750	824	412	0.20	0.6270	0.6280	0.6250	0.6255
PS0710-06	7/16"	5/8"	3/4"	0.4390	0.4400	0.6260	0.6270	0.730	0.750	962	481	0.23	0.6270	0.6280	0.6250	0.6255
PS0812-04	1/2"	3/4"	1/2"	0.5015	0.5025	0.7510	0.7520	0.480	0.500	722	361	0.15	0.7520	0.7530	0.7500	0.7505
PS0812-06	1/2"	3/4"	3/4"	0.5015	0.5025	0.7510	0.7520	0.730	0.750	1098	549	0.25	0.7520	0.7530	0.7500	0.7505
PS0812-08	1/2"	3/4"	1"	0.5015	0.5025	0.7510	0.7520	0.980	1.000	1474	737	0.35	0.7520	0.7530	0.7500	0.7505
PS1014-06	5/8"	7/8"	3/4"	0.6265	0.6275	0.8760	0.8770	0.730	0.750	1372	686	0.30	0.8770	0.8780	0.8750	0.8755
PS1014-08	5/8"	7/8"	1"	0.6265	0.6275	0.8760	0.8770	0.980	1.000	1842	921	0.45	0.8770	0.8780	0.8750	0.8755
PS1216-08	3/4"	1"	1"	0.7515	0.7525	1.0010	1.0020	0.980	1.000	2210	1105	0.50	1.0020	1.0030	0.9995	1.0000
PS1620-12	1"	1-1/4"	1-1/2"	1.0015	1.0025	1.2510	1.2520	1.480	1.500	4446	2223	0.95	1.2520	1.2530	1.2490	1.2500
PS2024-16	1-1/4"	1-1/2"	2"	1.2515	1.2525	1.5010	1.5020	1.980	2.000	7434	3717	1.55	1.5020	1.5030	1.4990	1.5000
PS2428-16	1-1/2"	1-3/4"	2"	1.5015	1.5025	1.7510	1.7520	1.980	2.000	8918	4459	1.80	1.7520	1.7530	1.7490	1.7500
PS2832-24	1-3/4"	2"	3"	1.7515	1.7525	2.0010	2.0020	2.980	3.000	15658	7829	3.15	2.0020	2.0030	1.9990	2.0000
PS3236-24	2"	2-1/4"	3"	2.0015	2.0025	2.2510	2.2520	2.980	3.000	17894	8947	3.55	2.2520	2.2530	2.2490	2.2500
PS4044-24	2-1/2"	2-3/4"	3"	2.5015	2.5025	2.7510	2.7520	2.980	3.000	22364	11182	4.85	2.7520	2.7530	2.7490	2.7500
PS4852-28	3"	3-1/4"	3-1/2"	3.0015	3.0025	3.2510	3.2520	3.480	3.500	31336	15668	6.10	3.2520	3.2530	3.2485	3.2495

INSTALLATION INSTRUCTIONS

- Slip the bearing sleeve into the housing and epoxy into place with Loctite® or similar type bonding agent.
CAUTION: Do NOT let any of the adhesive touch the bearing liner. It will harden and interfere with the running clearance.
- Freeze the bearings at 0°F (-17.75°C) for 30-45 minutes. Using gloves, remove the bearings from the freezer and slip them into the housing. As they heat to room temperature, full contact between the bearing and housing will be achieved. The greatest advantage to this technique over traditional pressing is greater accuracy in alignment.

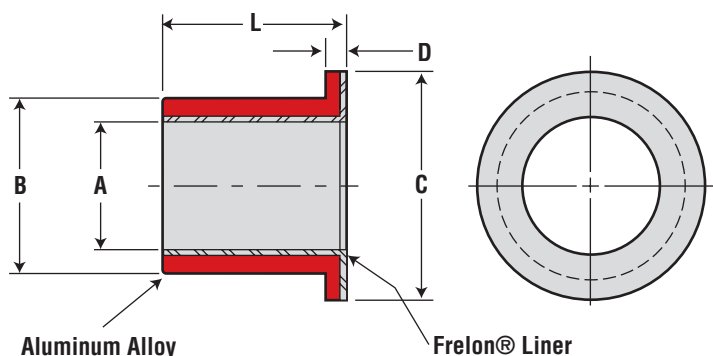
ORDERING INFORMATION



NOTE: Lengths not listed above must be specially quoted.



PSF SLEEVE BEARINGS



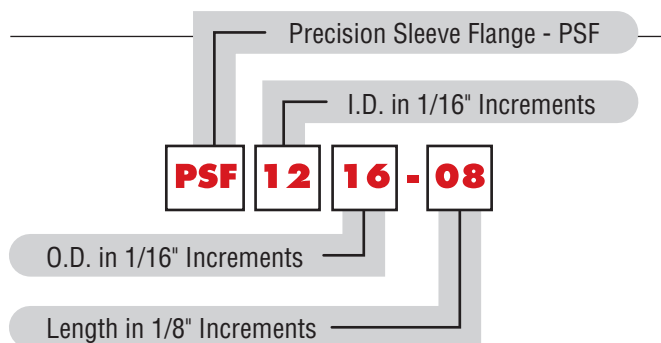
BASIC DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D.		C FLANGE O.D.	D FLANGE WIDTH	L LENGTH		MAX. STATIC LOAD (lbs.) FRELOX		BEARING WEIGHT	RECOMMENDED HOUSING BORE			
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.			MIN.	MAX.	GOLD	J	(oz.)	SLIP FIT & EPOXY		PRESS FIT	
PSF0305-02	3/16"	5/16"	1/4"	0.1890	0.1900	0.3135	0.3145	0.4370	0.0625	0.230	0.250	130	65	0.023	0.3145	0.3155	0.3125	0.3130
PSF0305-04	3/16"	5/16"	1/2"	0.1890	0.1900	0.3135	0.3145	0.4370	0.0625	0.480	0.500	272	136	0.044	0.3145	0.3155	0.3125	0.3130
PSF0406-02	1/4"	3/8"	1/4"	0.2515	0.2525	0.3760	0.3770	0.5000	0.0625	0.230	0.250	174	87	0.031	0.3770	0.3780	0.3750	0.3755
PSF0406-03	1/4"	3/8"	3/8"	0.2515	0.2525	0.3760	0.3770	0.5000	0.0625	0.355	0.375	268	134	0.044	0.3770	0.3780	0.3750	0.3755
PSF0406-04	1/4"	3/8"	1/2"	0.2515	0.2525	0.3760	0.3770	0.5000	0.0625	0.480	0.500	362	181	0.055	0.3770	0.3780	0.3750	0.3755
PSF0610-04	3/8"	5/8"	1/2"	0.3765	0.3775	0.6260	0.6270	0.8750	0.1250	0.480	0.500	542	271	0.20	0.6270	0.6280	0.6250	0.6255
PSF0610-06	3/8"	5/8"	3/4"	0.3765	0.3775	0.6260	0.6270	0.8750	0.1250	0.730	0.750	824	412	0.25	0.6270	0.6280	0.6250	0.6255
PSF0710-06	7/16"	5/8"	3/4"	0.4390	0.4400	0.6260	0.6270	0.9375	0.1250	0.730	0.750	962	481	0.20	0.6270	0.6280	0.6250	0.6255
PSF0812-04	1/2"	3/4"	1/2"	0.5015	0.5025	0.7510	0.7520	1.0000	0.1250	0.480	0.500	722	361	0.25	0.7520	0.7530	0.7500	0.7505
PSF0812-06	1/2"	3/4"	3/4"	0.5015	0.5025	0.7510	0.7520	1.0000	0.1250	0.730	0.750	1098	549	0.30	0.7520	0.7530	0.7500	0.7505
PSF0812-08	1/2"	3/4"	1"	0.5015	0.5025	0.7510	0.7520	1.0000	0.1250	0.980	1.000	1474	737	0.40	0.7520	0.7530	0.7500	0.7505
PSF1014-06	5/8"	7/8"	3/4"	0.6265	0.6275	0.8760	0.8770	1.0000	0.1250	0.730	0.750	1372	686	0.35	0.8770	0.8780	0.8750	0.8755
PSF1014-08	5/8"	7/8"	1"	0.6265	0.6275	0.8760	0.8770	1.0000	0.1250	0.980	1.000	1842	921	0.45	0.8770	0.8780	0.8750	0.8755
PSF1216-08	3/4"	1"	1"	0.7515	0.7525	1.0010	1.0020	1.2500	0.1250	0.980	1.000	2210	1105	0.55	1.0020	1.0030	0.9995	1.0000
PSF1620-12	1"	1-1/4"	1-1/2"	1.0015	1.0025	1.2510	1.2520	1.5000	0.1250	1.480	1.500	4446	2223	1.05	1.2520	1.2530	1.2490	1.2500
PSF2024-16	1-1/4"	1-1/2"	2"	1.2515	1.2525	1.5010	1.5020	1.7500	0.1250	1.980	2.000	7434	3717	1.80	1.5020	1.5030	1.4990	1.5000
PSF2428-16	1-1/2"	1-3/4"	2"	1.5015	1.5025	1.7510	1.7520	2.0000	0.1250	1.980	2.000	8918	4459	2.16	1.7520	1.7530	1.7490	1.7500
PSF2832-24	1-3/4"	2"	3"	1.7515	1.7525	2.0010	2.0020	2.2500	0.1250	2.980	3.000	15658	7829	3.30	2.0020	2.0030	1.9990	2.0000
PSF3236-24	2"	2-1/4"	3"	2.0015	2.0025	2.2510	2.2520	2.5000	0.1250	2.980	3.000	17894	8947	3.75	2.2520	2.2530	2.2490	2.2500
PSF4044-24	2-1/2"	2-3/4"	3"	2.5015	2.5025	2.7510	2.7520	3.0000	0.1250	2.980	3.000	22364	11182	4.60	2.7520	2.7530	2.7490	2.7500
PSF4852-28	3"	3-1/4"	3-1/2"	3.0015	3.0025	3.2510	3.2520	3.5000	0.1250	3.480	3.500	31336	15668	6.30	3.2520	3.2530	3.2485	3.2495

INSTALLATION INSTRUCTIONS

- Slip the bearing sleeve into the housing and epoxy into place with Loctite® or similar type bonding agent.
CAUTION: Do NOT let any of the adhesive touch the bearing liner. It will harden and interfere with the running clearance.
- Freeze the bearings at 0°F (-17.75°C) for 30-45 minutes. Using gloves, remove the bearings from the freezer and slip them into the housing. As they heat to room temperature, full contact between the bearing and housing will be achieved. The greatest advantage to this technique over traditional pressing is greater accuracy in alignment.

ORDERING INFORMATION



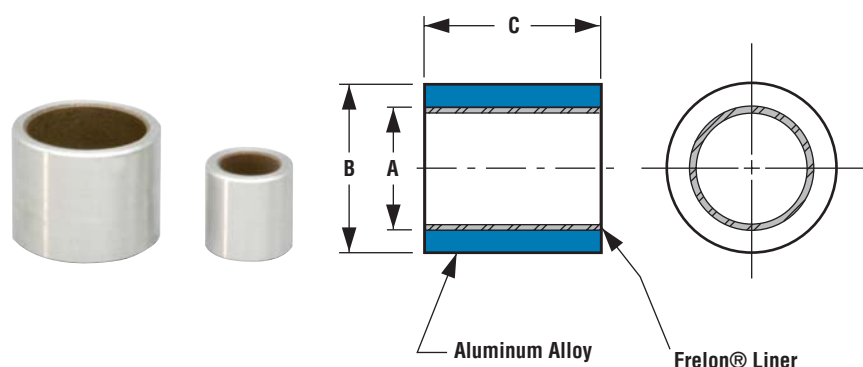
NOTE: Lengths not listed above must be specially quoted.



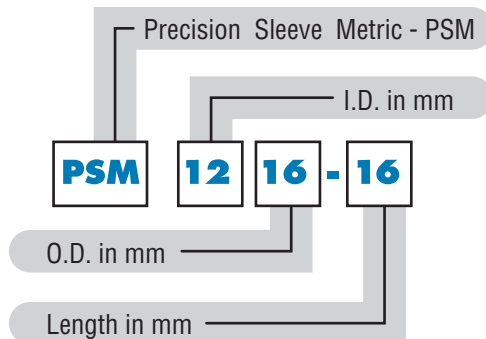
Sleeve Bearings - PSM

ISO Metric

PSM SLEEVE BEARINGS



ORDERING INFORMATION



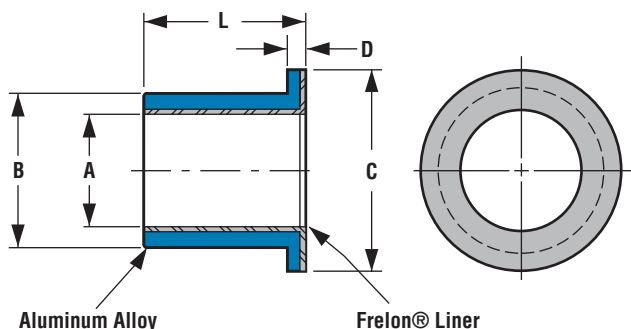
DIMENSIONAL INFORMATION

NOTE: Lengths not listed below must be quoted.

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D. (S7)		C LENGTH		MAX. STATIC LOAD (N) FRELON		MAX. STATIC LOAD (N) FRELON		BEARING WEIGHT (kg.)	RECOMMENDED HOUSING BORE			
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	GOLD	J	GOLD	J		SLIP FIT & EPOXY	MIN.	MAX.	PRESS FIT
PSM0610-06	6	10	6	6.028	6.058	10.023	10.038	5.75	6	76	38	745	373	0.00084	10.038	10.063	10.000	10.015
PSM0610-10	6	10	10	6.028	6.058	10.023	10.038	9.75	10	126	63	1236	618	0.00140	10.038	10.063	10.000	10.015
PSM0812-08	8	12	8	8.033	8.066	12.028	12.046	7.75	8	134	67	1314	657	0.00140	12.046	12.071	12.000	12.018
PSM0812-12	8	12	12	8.033	8.066	12.028	12.046	11.75	12	202	101	1981	990	0.00210	12.046	12.071	12.000	12.018
PSM0814-08	8	14	8	8.033	8.066	14.028	14.046	7.75	8	134	67	1314	657	0.00231	14.046	14.071	14.000	14.018
PSM0814-12	8	14	12	8.033	8.066	14.028	14.046	11.75	12	202	101	1981	990	0.00347	14.046	14.071	14.000	14.018
PSM1014-10	10	14	10	10.033	10.066	14.028	14.046	9.75	10	210	105	2059	1030	0.00210	14.046	14.071	14.000	14.018
PSM1014-16	10	14	16	10.033	10.066	14.028	14.046	15.75	16	336	168	3295	1647	0.00336	14.046	14.071	14.000	14.018
PSM1216-12	12	16	12	12.034	12.070	16.028	16.046	11.75	12	302	151	2961	1481	0.00294	16.046	16.071	16.000	16.018
PSM1216-16	12	16	16	12.034	12.070	16.028	16.046	15.75	16	404	202	3962	1981	0.00392	16.046	16.071	16.000	16.018
PSM1519-16	15	19	16	15.034	15.070	19.035	19.056	15.75	16	504	252	4942	2471	0.00476	19.046	19.071	19.000	19.018
PSM1620-12	16	20	12	16.041	16.080	20.035	20.056	11.50	12	404	202	3962	1981	0.00378	20.056	20.081	20.000	20.021
PSM1620-16	16	20	16	16.041	16.080	20.035	20.056	15.50	16	538	269	5276	2638	0.00505	20.056	20.081	20.000	20.021
PSM1620-25	16	20	25	16.041	16.080	20.035	20.056	24.50	25	840	420	8237	4119	0.00788	20.056	20.081	20.000	20.021
PSM2025-16	20	25	16	20.042	20.084	20.035	20.056	15.50	16	672	336	6590	3295	0.00787	20.056	25.081	25.000	25.021
PSM2025-20	20	25	20	20.042	20.084	20.035	20.056	19.50	20	840	420	8237	4119	0.00984	20.056	25.081	25.000	25.021
PSM2025-25	20	25	25	20.042	20.084	20.035	20.056	24.50	25	1050	525	10296	5148	0.01230	20.056	25.081	25.000	25.021
PSM2025-30	20	25	30	20.042	20.084	20.035	20.056	29.50	30	1260	630	12356	6178	0.01476	20.056	25.081	25.000	25.021
PSM2530-20	25	30	20	20.042	25.084	30.035	30.056	19.50	20	1050	525	10296	5148	0.01202	30.056	30.081	30.000	30.021
PSM2530-25	25	30	25	20.042	25.084	30.035	30.056	24.50	25	1312	656	12865	6433	0.01503	30.056	30.081	30.000	30.021
PSM2530-30	25	30	30	20.042	25.084	30.035	30.056	29.50	30	1576	788	15454	7727	0.01803	30.056	30.081	30.000	30.021
PSM2535-25	25	35	25	25.050	25.096	35.043	35.068	24.50	25	1312	656	12865	6433	0.03276	35.068	35.093	35.000	30.021
PSM2535-35	25	35	35	25.050	25.096	35.043	35.068	34.50	35	1838	919	18023	9012	0.04586	35.068	35.093	35.000	30.021
PSM3035-25	30	35	25	30.050	30.096	35.043	35.068	24.50	25	1576	788	15454	7727	0.01777	35.068	35.093	35.000	30.021
PSM3035-30	30	35	30	30.050	30.096	35.043	35.068	29.50	30	1890	945	18533	9267	0.02133	35.068	35.093	35.000	30.021
PSM3040-35	30	40	35	30.050	30.096	40.043	40.068	34.50	35	2206	1103	21632	10816	0.05349	40.068	40.093	40.000	40.025
PSM3040-50	30	40	50	30.050	30.096	40.043	40.068	49.50	50	3150	1575	30889	15444	0.07641	40.068	40.093	40.000	40.025
PSM3545-25	35	45	25	35.052	35.102	40.043	40.068	24.50	25	1838	919	18023	9012	0.04365	45.068	45.093	45.000	45.025
PSM3545-40	35	45	40	35.052	35.102	40.043	40.068	39.50	40	2940	1470	28830	14415	0.06983	45.068	45.093	45.000	45.025
PSM3545-50	35	45	50	35.052	35.102	40.043	40.068	49.50	50	3676	1838	36047	18023	0.08729	45.068	45.093	45.000	45.025
PSM4050-30	40	50	30	40.052	40.102	50.043	50.068	29.50	30	2520	1260	24711	12356	0.05891	50.068	50.093	50.000	50.025
PSM4050-40	40	50	40	40.052	40.102	50.043	50.068	39.50	40	3360	1680	32948	16474	0.07855	50.068	50.093	50.000	50.025
PSM5060-35	50	60	35	50.062	50.133	60.053	60.099	34.50	35	3676	1838	36047	18023	0.08419	60.099	60.124	60.000	60.030
PSM5060-50	50	60	50	50.062	50.133	60.053	60.099	49.50	50	5250	2625	51482	25741	0.12027	60.099	60.124	60.000	60.030
PSM6070-60	60	70	60	60.063	60.139	70.053	70.099	59.50	60	7560	3780	74133	37067	0.17052	70.099	70.124	70.000	70.030



PSFM SLEEVE BEARINGS



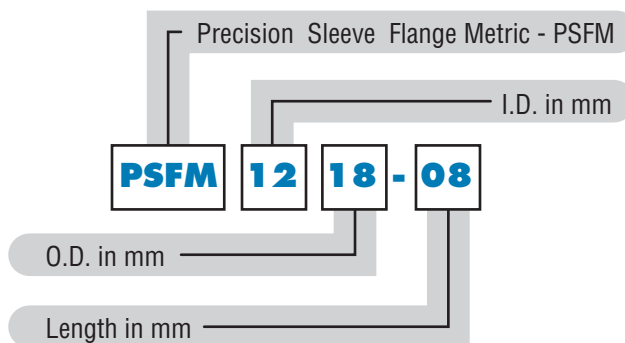
DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D. (\$7)		C FLANGE O.D.	D FLANGE WIDTH	L LENGTH		MAX. STATIC LOAD (kg.) FRELON		MAX. STATIC LOAD (N) FRELON		BEARING WEIGHT	RECOMMENDED HOUSING BORE			
																	SLIP FIT & EPOXY		PRESS FIT	
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.			MIN.	MAX.	GOLD	J	GOLD	J	(kg.)	MIN.	MAX.	MIN.	MAX.
PSFM0610-06	6	10	6	6.028	6.058	10.023	10.038	14	2	5.75	6	76	38	745	373	0.00126	10.038	10.063	10.000	10.015
PSFM0610-10	6	10	10	6.028	6.058	10.023	10.038	14	2	9.75	10	126	63	1236	618	0.00182	10.038	10.063	10.000	10.015
PSFM0812-06	8	12	6	8.033	8.066	12.028	12.046	16	2	5.75	6	100	50	981	490	0.00153	12.046	12.071	12.000	12.018
PSFM0812-08	8	12	8	8.033	8.066	12.028	12.046	16	2	7.75	8	134	67	1314	657	0.00189	12.046	12.071	12.000	12.018
PSFM0812-12	8	12	12	8.033	8.066	12.028	12.046	16	2	11.75	12	202	101	1981	990	0.00259	12.046	12.071	12.000	12.018
PSFM1016-08	10	16	8	10.033	10.066	16.028	16.046	22	3	7.75	8	168	84	1647	824	0.00421	16.046	16.071	16.000	16.018
PSFM1016-10	10	16	10	10.033	10.066	16.028	16.046	22	3	9.75	10	210	105	2059	1030	0.00489	16.046	16.071	16.000	16.018
PSFM1016-16	10	16	16	10.033	10.066	16.028	16.046	22	3	15.75	16	336	168	3295	1647	0.00694	16.046	16.071	16.000	16.018
PSFM1218-08	12	18	8	12.034	12.070	18.028	18.046	24	3	7.75	8	202	101	1981	990	0.00478	18.046	18.071	18.000	18.018
PSFM1218-12	12	18	12	12.034	12.070	18.028	18.046	24	3	11.75	12	302	151	2961	1481	0.00636	18.046	18.071	18.000	18.018
PSFM1519-16	15	19	16	15.034	15.070	19.028	19.046	25	3	15.50	16	504	252	4942	2471	0.00647	19.046	19.071	19.000	19.018
PSFM1620-16	16	20	16	16.041	16.080	20.035	20.056	27	3	15.55	16	538	269	5276	2638	0.00718	20.056	20.081	20.000	20.021
PSFM1620-20	16	20	20	16.041	16.080	20.035	20.056	27	3	19.50	20	672	336	6590	3295	0.00844	20.056	20.081	20.000	20.021
PSFM1620-25	16	20	25	16.041	16.080	20.035	20.056	27	3	24.50	25	840	420	8237	4119	0.01002	20.056	20.081	20.000	20.021
PSFM2026-20	20	26	20	20.042	20.084	26.035	26.056	32	3	19.50	20	840	420	8237	4119	0.01432	26.056	26.081	26.000	26.021
PSFM2026-30	20	26	30	20.042	20.084	26.035	26.056	32	3	29.50	30	1260	630	12356	6178	0.02035	26.056	26.081	26.000	26.021
PSFM2530-20	25	30	20	25.042	25.084	30.035	30.056	39	3.5	19.50	20	1050	525	10296	5148	0.01672	30.056	30.081	30.000	30.021
PSFM2530-25	25	30	25	25.042	25.084	30.035	30.056	39	3.5	24.50	25	1312	656	12865	6433	0.01973	30.056	30.081	30.000	30.021
PSFM2530-32	25	30	32	25.042	25.084	30.035	30.056	39	3.5	31.50	32	1680	840	16474	8237	0.02394	30.056	30.081	30.000	30.021
PSFM3038-30	30	38	30	30.050	30.096	38.043	38.068	46	4	29.50	30	1890	945	18533	9267	0.04145	38.068	38.093	38.000	38.021
PSFM3545-35	35	45	35	35.052	35.102	45.043	45.068	55	5	34.50	35	2572	1286	25221	12611	0.07192	45.068	45.093	45.000	45.025
PSFM4050-40	40	50	40	40.052	40.102	50.043	50.068	60	5	39.50	40	3360	1680	32948	16474	0.09044	50.068	50.093	50.000	50.025
PSFM5060-50	50	60	50	50.062	50.133	60.053	60.099	70	5	49.50	50	5250	2625	51482	25741	0.13429	60.099	60.124	60.000	60.030

INSTALLATION INSTRUCTIONS

- Slip the bearing sleeve into the housing and epoxy into place with Loctite™ or similar type bonding agent.
CAUTION: Do NOT let any of the adhesive touch the bearing liner. It will harden and interfere with the running clearance.
- Freeze the bearings at 0°F (-17.75°C) for 30-45 minutes. Using gloves, remove the bearings from the freezer and slip them into the housing. As they heat to room temperature, full contact between the bearing and housing will be achieved. The greatest advantage to this technique over traditional pressing is greater accuracy in alignment.

ORDERING INFORMATION



NOTE: Lengths not listed above must be quoted.



Simplicity® Linear Slides

Product Overview

PRODUCT OVERVIEW

Simplicity slides effectively today in some of the toughest environments industry has to offer:

- Fiberglass manufacturing and processing plants
- Stone cutters and other quarry applications
- Auto manufacturing facilities
- Welding and assembly lines
- Foundries
- Machine Tools

Standard components include:

- Mounting plate
- Four pillow block assemblies
- Two (2) steel shafts with corrosion resistant finish
- Two (2) aluminum support rails

MODULAR COMPONENTS

SRB - pre-assembled shaft, rail and bearing

SRB2 - support rail, guide bar, and two standard Simplicity pillow blocks

SRBT - support rail, guide bar, and one standard Simplicity pillow block

HIGH PROFILE

RS - comes with standard components

RPS - comes with standard components and includes bottom support plate with precision alignment

1RPS - same as "RPS" with ball screw and one end supported with end plate

2RPS - same as "RPS" with ball screw and both ends with end plates

LOW PROFILE

LRPS - low profile support rail version of a standard RPS

2LRPS - low profile support rail version of a standard 2RPS

ACCESSORIES:

- Hand crank with ball screw lock rotational lock
- Handwheel (Foldaway)
- Direct drive NEMA 23 & 34 motor bracket kit

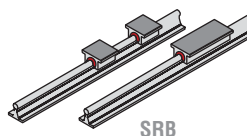
Call for more information. Special quotation requests for your specific application are welcome!

Many of the toughest applications and environments do not use standard off-the-shelf components. We excel at these challenges. Call our application engineers for an evaluation and quotation on a slide for your needs.

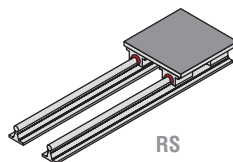
NOTE: Miniature and unitized stages and slides can be found on page 190-191.



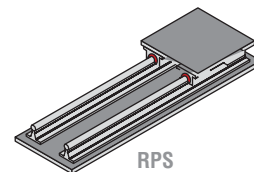
simplicity®



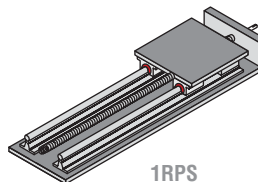
SRB



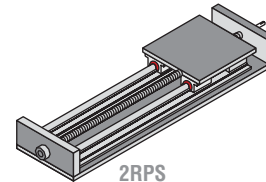
RS



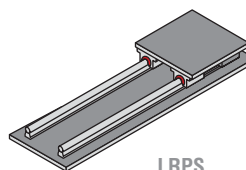
RPS



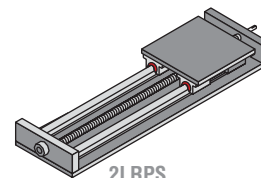
1RPS



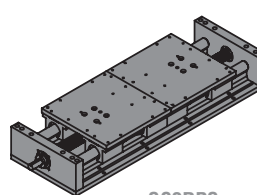
2RPS



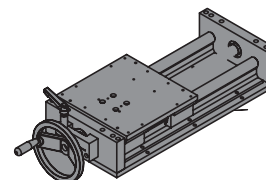
LRPS



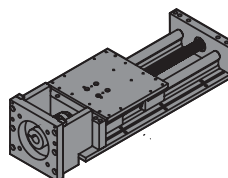
2LRPS



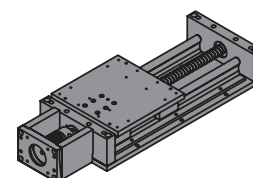
SC2RPS



2HCR-2HWL



2N42, 56, 143



2N34



SLIDE SELECTION INFORMATION

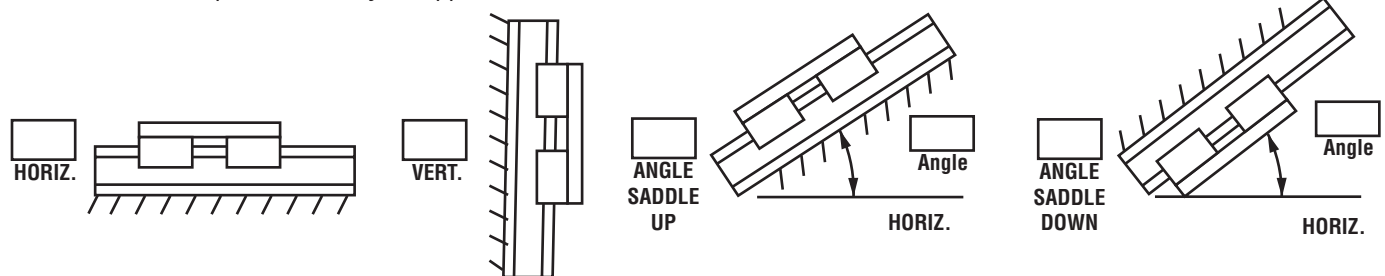
1. Determine the size and stroke of slide.
2. Is a lube system required?
3. Please furnish the following to the factory:
 - a. Model designation
 - b. Lube system requirements
 - c. Mounting orientation, saddle position if mounted at an angle
 - d. Load to be carried and approximate center of gravity from saddle center
 - e. Location and magnitude of any force which resists the motion of the slide
 - f. Acceleration rate and maximum velocity of the saddle
 - g. Deceleration rate
 - h. Service life requirements
 - i. Type of environment the slide will operate in

MODEL NUMBER

Series Code	Size Code	Length Code	Ball Screw Lead Code
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MOUNTING ORIENTATION

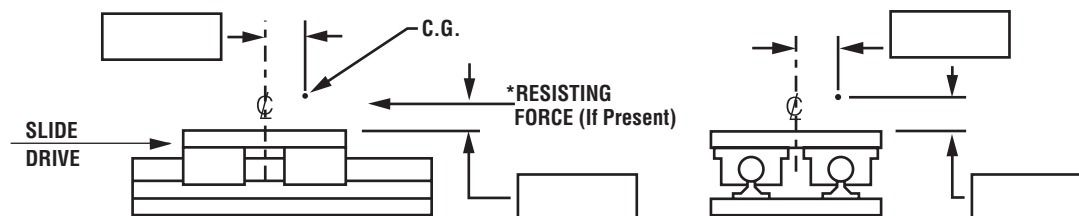
Please indicate the parameters of your application in the boxes below.



Cycle Rate:		Per Hour:		Per Minute:	
Max. Saddle Velocity:		Inch/Second:			
Acceleration Rate:		Inches/Second ² :			
Deceleration Rate:		Inches/Second ² :			
Load:		lbs.			

LOCATION OF CENTER OF GRAVITY FROM SADDLE CENTER

Please indicate the parameters of your application in the boxes below.



*Example of "Resisting Force" would be tool thrust for a drill head mounted on slide.

Resisting Force:		lbs.
Life Requirement:		Strokes Hours

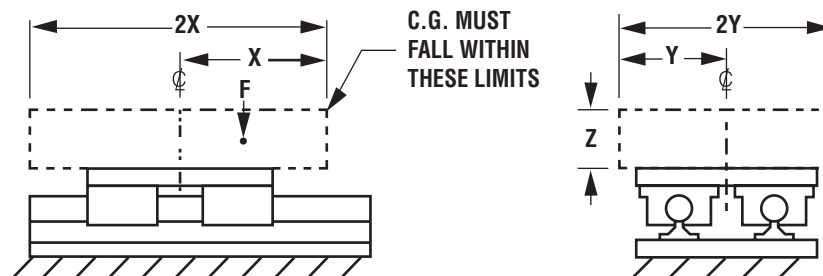


Load Capacities

Simplicity® Linear Slides

For non-lubricated slide applications where speeds are less than 90 feet/minute (18 inches/seconds). All slides are to be fully supported and rigidly mounted.

STANDARD MOUNTING

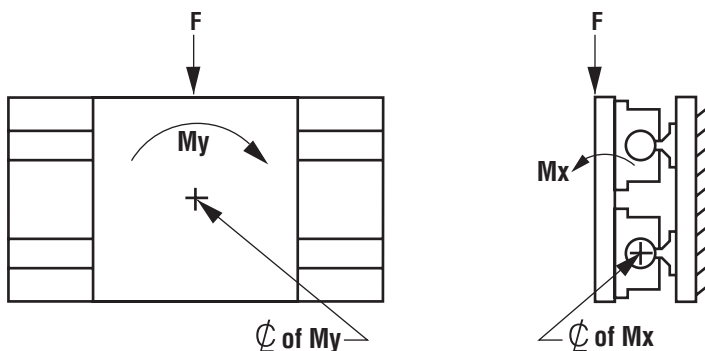


RECOMMENDED SAFE LOADING*

SIZE	F MAX. (lbs.)	F MAX. (N)	X (in.)	Y (in.)	Z (in.)
08	1450	6450	4.00	2.37	3.00
10	2200	9786	4.75	2.76	3.50
12	2850	12677	5.00	2.85	4.00
16	5275	23464	5.50	3.37	4.50
20	7750	34473	6.75	4.05	5.50
24	10600	47151	7.86	4.90	6.50
32	18750	83400	10.75	6.00	9.00

*Load ratings for Simplicity plane bearings only.

SIDE MOUNTING



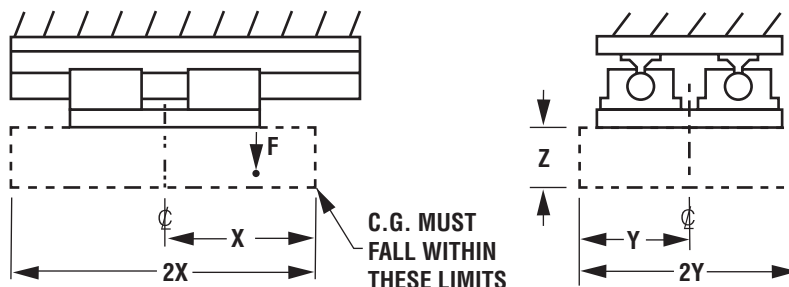
RECOMMENDED SAFE LOADING*

SIZE	F MAX. (lbs.)	My (in.-lbs.)	Mx (in.-lbs.)	F MAX. (N)	My (Nm)	Mx (Nm)
08	540	910	1500	2402	103	169
10	760	1680	2750	3381	190	311
12	840	1710	2875	3737	193	325
16	1050	3300	4430	4671	373	501
20	1750	6175	8750	7784	698	989
24	2100	9600	12600	9341	1085	1424
32	3300	19000	28050	14679	2147	3169

*Load ratings for Simplicity plane bearings only.



INVERTED MOUNTING

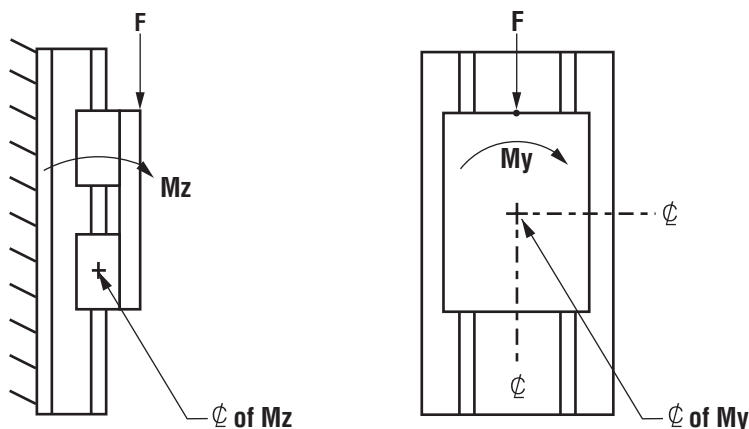


RECOMMENDED SAFE LOADING*

SIZE	F MAX. (lbs.)	F MAX. (N)	X (in.)	Y (in.)	Z (in.)
08	195	867	4.85	2.91	3.00
10	285	1268	5.69	3.33	3.50
12	315	1401	6.52	3.75	4.00
16	450	2002	7.31	4.58	4.50
20	712	3167	8.84	5.42	5.50
24	900	4003	10.50	6.67	6.50
32	1425	6339	14.67	8.33	9.00

*Load ratings for Simplicity plane bearings only.

VERTICAL MOUNTING



RECOMMENDED SAFE LOADING*

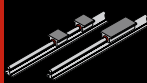
SIZE	F MAX. (lbs.) ^{1,2}	My (in.-lbs.)	Mz (in.-lbs.)	F MAX. (N)	My (Nm)	Mz (Nm)
08	260	1445	1500	1157	163	169
10	300	2750	2750	1334	311	311
12	300	2875	2875	1334	325	325
16	600	5000	4430	2669	565	501
20	675	9500	8750	3003	1073	989
24	710	14400	12600	3158	1627	1424
32	900	32300	28050	4003	3649	3169

*Load ratings for Simplicity plane bearings only.

¹ Applies only when using 2RPS & 2LRPS slides

² If "F" is exceeded consult factory.

Footnote: w/RPS, FMAX is dependent upon customer's method of moving the slide.



Linear Slides - SRB

Simplicity®

SRB – Preassembled Shaft, Rail, & Bearing

PART NUMBER DIMENSIONS

SERIES			SIZE		L	SHAFT DIA.	A	B	C	D	E _T	F _T	E ₂	F ₂	G	H	J	K	M	N	P	R	S
SRBXY	X	XXX	- 08	XX	- XXX.XXX	.500	1.125	2.00	1.688	1.50	2.500	3.500	1.000	1.687	.250	1.812	4.000	2.00	1.125	.156	.169	1.000	.188
SRBXY	X	XXX	- 10	XX	- XXX.XXX	.625	1.125	2.50	2.125	1.62	3.000	4.000	1.125	1.937	.281	2.000	4.000	2.00	1.437	.188	.193	1.125	.250
SRBXY	X	XXX	- 12	XX	- XXX.XXX	.750	1.500	2.75	2.375	1.75	3.500	4.500	1.250	2.062	.312	2.438	6.000	3.00	1.562	.188	.221	1.250	.250
SRBXY	X	XXX	- 16	XX	- XXX.XXX	1.000	1.750	3.25	2.875	2.12	4.500	6.000	1.750	2.812	.375	2.938	6.000	3.00	1.937	.219	.281	1.500	.250
SRBXY	X	XXX	- 20	XX	- XXX.XXX	1.250	2.125	4.00	3.500	2.50	5.500	7.500	2.000	3.625	.437	3.625	6.000	3.00	2.500	.219	.343	1.875	.312
SRBXY	X	XXX	- 24	XX	- XXX.XXX	1.500	2.500	4.75	4.125	3.00	6.500	9.000	2.500	4.000	.500	4.250	8.000	4.00	2.875	.281	.343	2.250	.375
SRBXY	X	XXX	- 32	XX	- XXX.XXX	2.000	3.250	6.00	5.250	3.75	8.250	10.000	3.250	5.000	.625	5.375	8.000	4.00	3.625	.406	.406	2.750	.500

- Enter rail length in inches XXX.XXX (EX: 96" = 096.000)
- Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
- Shaft diameter dimension in 1/16" increments
- Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
- Seals: **Blank** = None **S** = Single Seals **D** = Double Seals
 Note "D" double seals are included with standard ball bearings
- Pillow Block Style: **2** = Two single PN bearings **T** = One Twin PWN bearing for "Y"
3 = Three single PN bearings **T2** = Two Twin PWN bearings for "Y"
C = Compensated
- Bearing Type: **Blank** = Simplicity Frelon GOLD® **E** = Simplicity Frelon® J **B** = Ball Bearing

Dimensions in inches

MATERIAL:

Support Rail - Aluminum Alloy

Shafting - Alloy Steel, 440 stainless steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum

Simplicity Bearings - Composite Teflon® and aluminum alloy

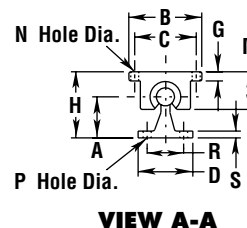
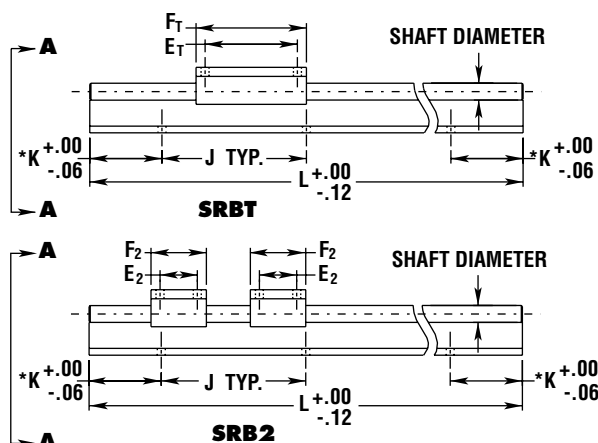
Simplicity Pillow Blocks - Aluminum Alloy

Screws, Retaining Rings, Spring Pins - Alloy Steel

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																							
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076	080
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076	080
12		012		018		024		030		036		042		048		054		060		066		072		078
16		012		018		024		030		036		042		048		054		060		066		072		078
20		012		018		024		030		036		042		048		054		060		066		072		078
24			016			024			032		040			048			056		064			072		080
32						024			032		040			048			056		064			072		080

*Contact manufacturer for longer or non-standard lengths - see non-standard lengths ordering example.

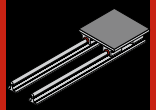


*For standard length dimensions consult chart for "K" dimension.

*For non-standard length dimensions "K" can be calculated with the following formula (in all cases equal on both ends).

$$K(\text{non-std}) = (K(\text{from chart}) - (\Delta L/2)).$$

Where ΔL = next longer standard length - desired length.



RS – Rail Mounted Slide Assembly

PART NUMBER DIMENSIONS

SERIES			SIZE		L	SHAFT DIA.	W	H	A	B	C	D	E	G	J	R	TAP	HOLE DIA.
RS	X	XXX	- 08	XX	XXX.XXX	.500	6.000	2.188	1.125	2.00	3.500	1.500	.375	5.500	4.000	1.000	10-24	.17
RS	X	XXX	- 10	XX	XXX.XXX	.625	7.000	2.375	1.125	2.50	4.000	1.625	.375	6.312	4.000	1.125	1/4-20	.19
RS	X	XXX	- 12	XX	XXX.XXX	.750	8.000	2.938	1.500	2.75	4.500	1.750	.500	7.125	6.000	1.250	1/4-20	.22
RS	X	XXX	- 16	XX	XXX.XXX	1.000	9.000	3.438	1.750	3.25	5.500	2.125	.500	8.312	6.000	1.500	1/4-20	.28
RS	X	XXX	- 20	XX	XXX.XXX	1.250	11.000	4.375	2.125	4.00	6.500	2.500	.750	10.000	6.000	1.875	5/16-18	.34
RS	X	XXX	- 24	XX	XXX.XXX	1.500	13.000	5.000	2.500	4.75	8.000	3.000	.750	12.000	8.000	2.250	5/16-18	.34
RS	X	XXX	- 32	XX	XXX.XXX	2.000	18.000	6.375	3.250	6.00	10.000	3.750	1.000	15.880	8.000	2.750	3/8-16	.41

Dimensions in inches

- Enter rail length in inches XXX.XXX (EX: 28" = 028.000)
- Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with stainless steel or chrome plate shafting)
- Shaft diameter dimension in 1/16" increments
- Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
- Bearing Type: **Blank** = Simplicity Frelon GOLD® **E** = Simplicity Frelon® J **B** = Ball Bearing

MATERIAL:

Aluminum Alloy - Top Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, Chrome Plated, 440 or 303 Stainless Steel

NOTE: For lengths over 48", guide bars will be continuous, but rail supports will have a minimum of one break every 48". Lengths and mounting provisions to your specifications are available - consult factory.

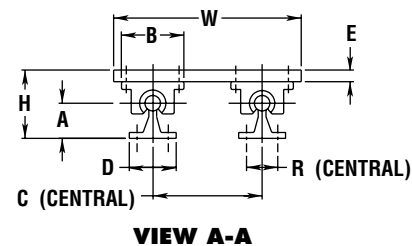
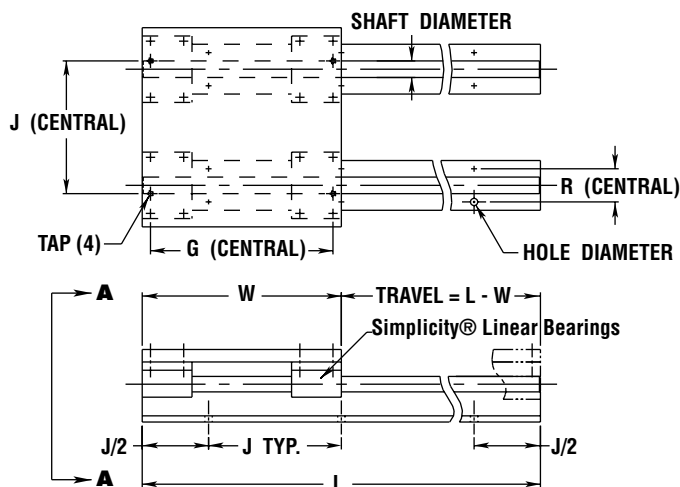
ORDERING EXAMPLE:

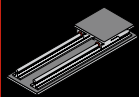
To order a slide with a 0.625 diameter alloy steel shaft, Simplicity bearings with Frelon GOLD® and 28" rail length, specify part number RS-10-028.000

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																			
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064	
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064	
12		012		018		024		030		036		042		048		054		060		066
16		012		018		024		030		036		042		048		054		060		066
20		012		018		024		030		036		042		048		054		060		066
24			016		024			032		040			048			056		064		072
32					024			032		040			048			056		064		072

*Contact manufacturer for longer lengths.





Linear Slides - RPS

Simplicity®

RPS - Rail Mounted & Plate Supported Slide Assembly

PART NUMBER DIMENSIONAL INFORMATION

SERIES			SIZE		L	SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	TAP	HOLE
RPS	X	XXX	- 08	XX	- XXX	.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	10-24	.22
RPS	X	XXX	- 10	XX	- XXX	.625	7.000	2.750	1.125	2.50	4.000	1.625	.375	1.00	6.312	4.000	1/4-20	.28
RPS	X	XXX	- 12	XX	- XXX	.750	8.000	3.438	1.500	2.75	4.500	1.750	.500	1.25	7.125	6.000	1/4-20	.28
RPS	X	XXX	- 16	XX	- XXX	1.000	9.000	3.938	1.750	3.25	5.500	2.125	.500	1.25	8.312	6.000	1/4-20	.28
RPS	X	XXX	- 20	XX	- XXX	1.250	11.000	5.125	2.125	4.00	6.500	2.500	.750	1.50	10.000	6.000	5/16-18	.34
RPS	X	XXX	- 24	XX	- XXX	1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	5/16-18	.34
RPS	X	XXX	- 32	XX	- XXX	2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3/8-16	.41

Dimensions in inches.

- Enter rail length in inches XXX.XXX (EX: 28" = 028.000)
- Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
- Shaft diameter dimension in 1/16" increments
- Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
- Bearing Type: **Blank** = Simplicity Frelon GOLD® **E** = Simplicity Frelon® J **B** = Ball Bearing

MATERIAL:

Aluminum Alloy - Top Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, 440 Stainless Steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum

NOTE: For lengths over 48", guide bars will be continuous, but rail supports will have a minimum of one break every 48". Lengths and mounting provisions to your specifications are available - consult factory.

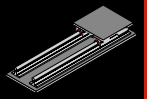
ORDERING EXAMPLE:

To order a slide with a 0.625 diameter alloy steel shaft, Simplicity bearings with Frelon GOLD® and 28" rail length, specify part number RPS-10-028.000

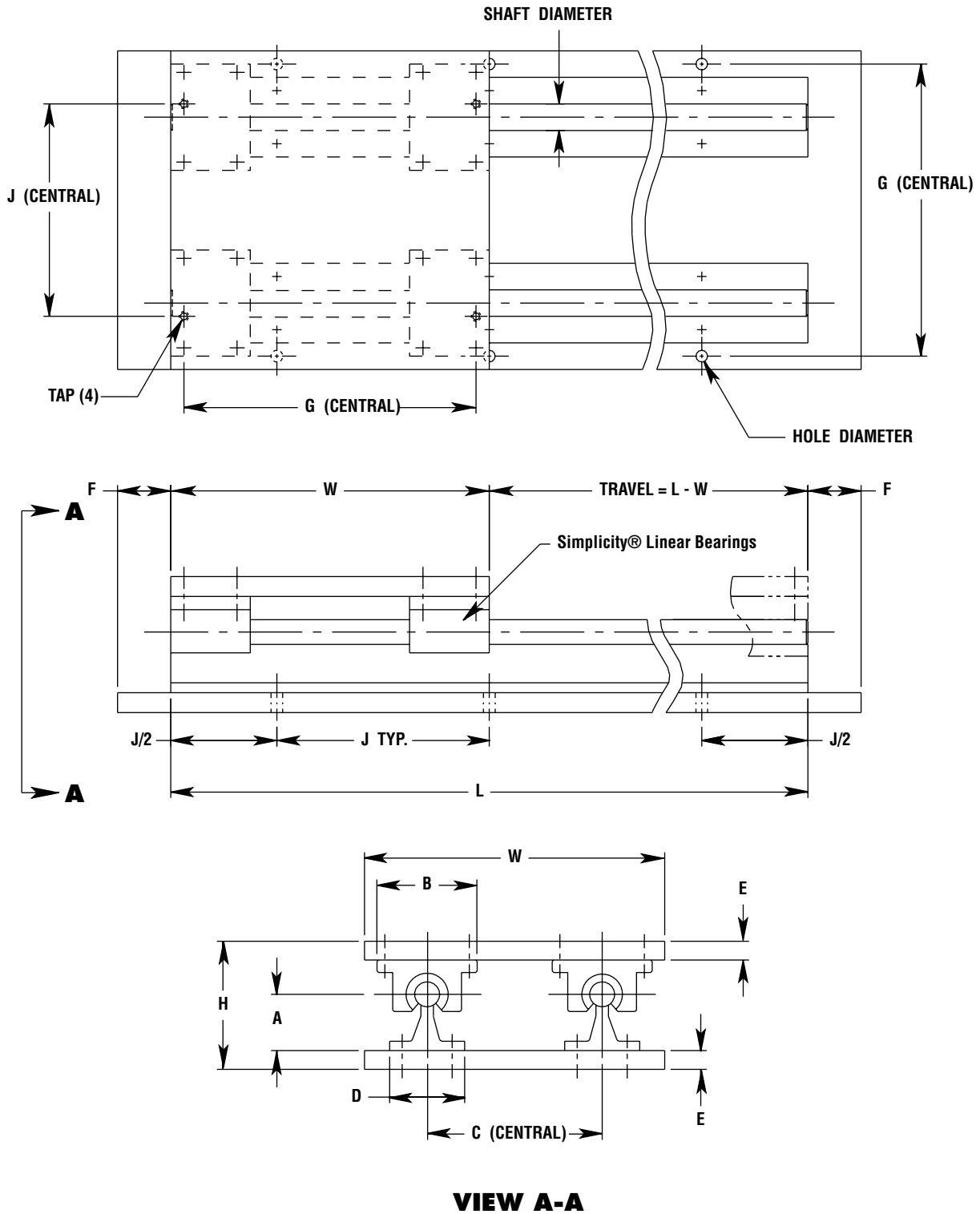
STANDARD LENGTH TABLE (Inches)

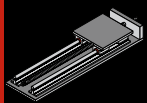
SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024			032		040			048			056		064			072			080		088			096

*Contact manufacturer for longer lengths.



RPS - Rail Mounted & Plate Supported Slide Assembly





Linear Slides - 1RPS

Simplicity®

1RPS - Rail Mounted & Plate Supported - Ball Screw Driven (Supported on one end)

PART NUMBER

SERIES			SIZE		L	LEAD
2RPS	X	XXX	- 08	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 10	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 12	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 16	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 20	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 24	XX	- XXX.XXX	- YYY
2RPS	X	XXX	- 32	XX	- XXX.XXX	- YYY

MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, Chrome Plated, 440 or 303 Stainless Steel

ORDERING EXAMPLE:

To order a slide with a 0.625 diameter 440 stainless steel shaft, 28" rail length, .200" right hand select ball screw, specify part number 1RPS-10SS-028.000-AR1.

Substitute standard or select lead code from table for "YYY"

Enter rail length in inches XXX.XXX (EX: 28" = 028.000)

Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST

NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting

Shaft diameter dimension in 1/16" increments

Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick

Bearing Type: **Blank** = Frelon GOLD® **E** = Frelon® J **B** = Ball Bearing

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	ARO	ALO						ARO = .200 Right Hand
10	ARO	ALO						ALO = .200 Left Hand
12	ARO	ALO						BRO = .250 Right Hand
16			BRO	BLO	CRO	DRO		BLO = .250 Left Hand
20			BRO	BLO	CRO	DRO		CRO = .500 Right Hand
24			BRO	BLO	CRO	DRO	DLO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	DLO = 1.000 Left Hand
								ERO = 1.875 Right Hand

SELECT LEAD TABLE

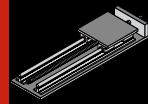
Accurate to less than .003" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	AR1	AL1						AR1 = .200 Right Hand
10	AR1	AL1						AL1 = .200 Left Hand
12	AR1	AL1						BR1 = .250 Right Hand
16			BR1	BL1	CR1	DR1		BL1 = .250 Left Hand
20			BR1	BL1	CR1	DR1		CR1 = .500 Right Hand
24			BR1	BL1	CR1	DR1	DL1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	DL1 = 1.000 Left Hand
								ER1 = 1.875 Right Hand

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)											
08	008	012	016		020	024	028		032			
10	008	012	016		020	024	028		032			
12		012		018		024		030		036		042
16		012		018		024		030		036		042
20		012		018		024		030		036		042
24			016			024			032	040		048
32						024			032	040		048

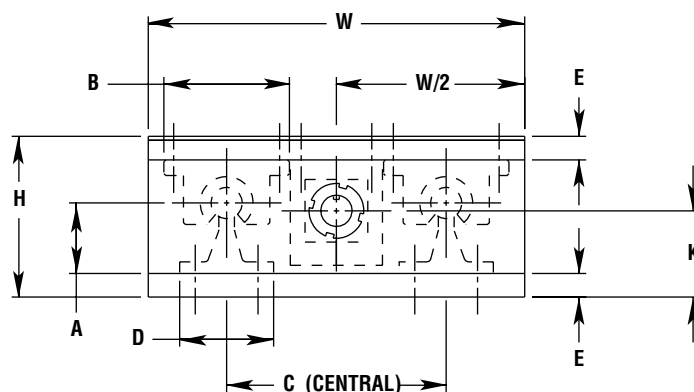
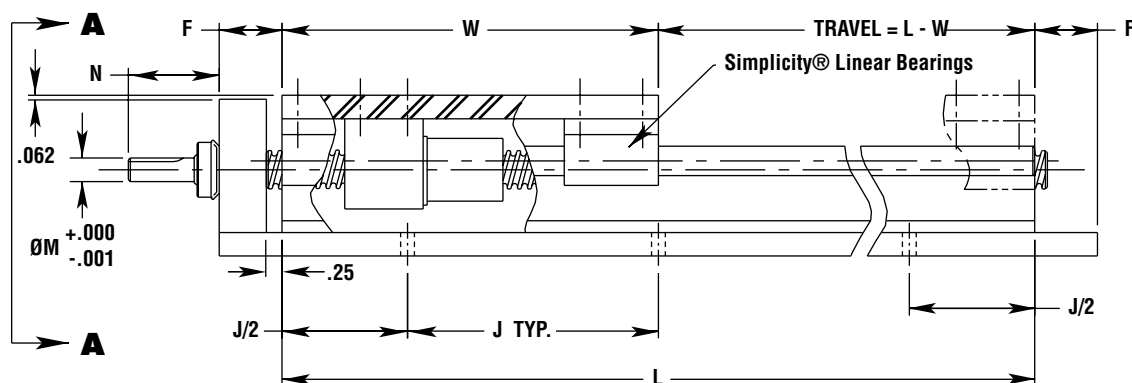
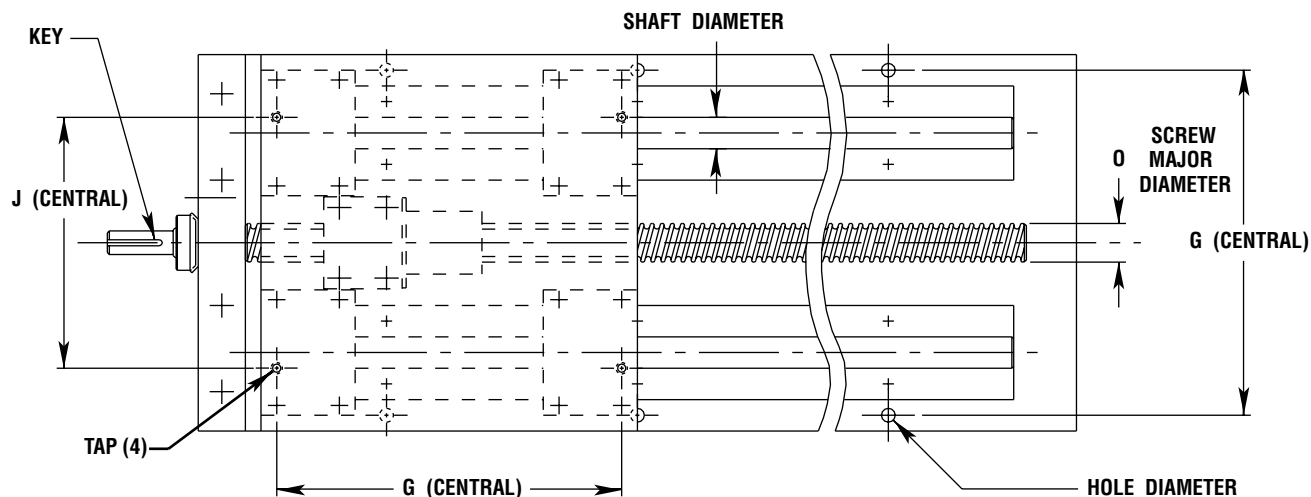
*NOTE: Contact manufacturer for longer lengths.



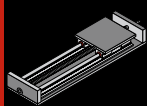
1RPS - DIMENSIONAL INFORMATION

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	TAP	HOLE	KEY
.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	1.375	.375	1.45	.63	10-24	.22	3/32 sq X 5/8 lg
.625	7.000	2.750	1.125	2.50	4.000	1.625	.375	1.00	6.312	4.000	1.375	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
.750	8.000	3.438	1.500	2.75	4.500	1.750	.500	1.25	7.125	6.000	1.500	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
1.000	9.000	3.938	1.750	3.25	5.500	2.125	.500	1.25	8.312	6.000	2.125	.625	1.76	1.00	1/4-20	.28	3/16 sq X 1" lg
1.250	11.000	5.125	2.125	4.00	6.500	2.500	.750	1.50	10.000	6.000	2.375	.625	1.76	1.00	5/16-18	.34	3/16 sq X 1" lg
1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	1.000	2.31	1.50	5/16-18	.34	1/4 sq X 1.62 lg
2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	1.000	2.31	1.50	3/8-16	.41	1/4 sq X 1.62 lg

Dimensions in inches.



VIEW A-A



Linear Slides - 2RPS

Simplicity®

2RPS - Rail Mounted & Plate Supported - Ball Screw Driven (Supported on both ends)

PART NUMBER

SERIES				SIZE		L	LEAD
2RPS	X	XXX	-	08	XX	XXX.XXX	YYY
2RPS	X	XXX	-	10	XX	XXX.XXX	YYY
2RPS	X	XXX	-	12	XX	XXX.XXX	YYY
2RPS	X	XXX	-	16	XX	XXX.XXX	YYY
2RPS	X	XXX	-	20	XX	XXX.XXX	YYY
2RPS	X	XXX	-	24	XX	XXX.XXX	YYY
2RPS	X	XXX	-	32	XX	XXX.XXX	YYY

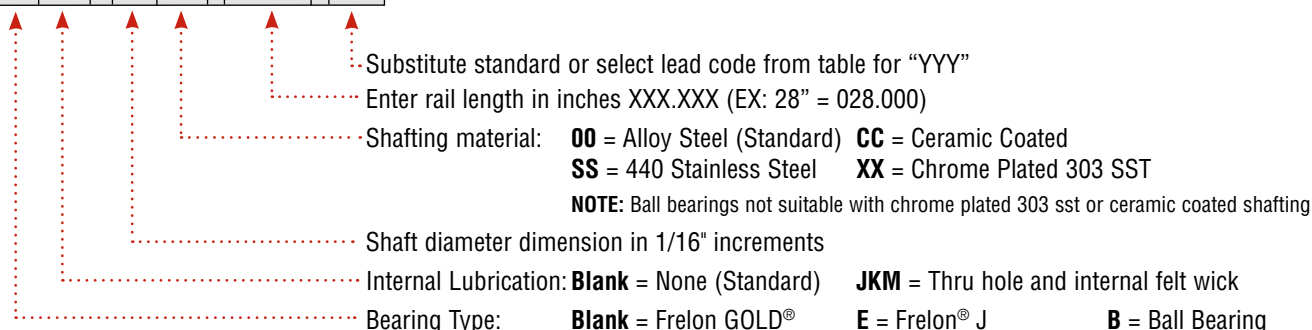
MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, Chrome Plated, 440 or 303 Stainless Steel

ORDERING EXAMPLE:

To order a slide with a 0.625 diameter alloy steel shaft, 28" rail length, .200" right hand select ball screw, specify part number 2RPS-1000-028.000-AR1.



STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	ARO	ALO						ARO = .200 Right Hand
10	ARO	ALO						ALO = .200 Left Hand
12	ARO	ALO						BRO = .250 Right Hand
16			BRO	BLO	CRO	DRO		BLO = .250 Left Hand
20			BRO	BLO	CRO	DRO		CRO = .500 Right Hand
24			BRO	BLO	CRO	DRO	DLO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	DLO = 1.000 Left Hand
								ERO = 1.875 Right Hand

SELECT LEAD TABLE

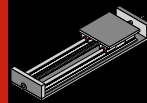
Accurate to less than .003" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	AR1	AL1						AR1 = .200 Right Hand
10	AR1	AL1						AL1 = .200 Left Hand
12	AR1	AL1						BR1 = .250 Right Hand
16			BR1	BL1	CR1	DR1		BL1 = .250 Left Hand
20			BR1	BL1	CR1	DR1		CR1 = .500 Right Hand
24			BR1	BL1	CR1	DR1	DL1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	DL1 = 1.000 Left Hand
								ER1 = 1.875 Right Hand

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024			032		040			048			056		064			072			080		088			096

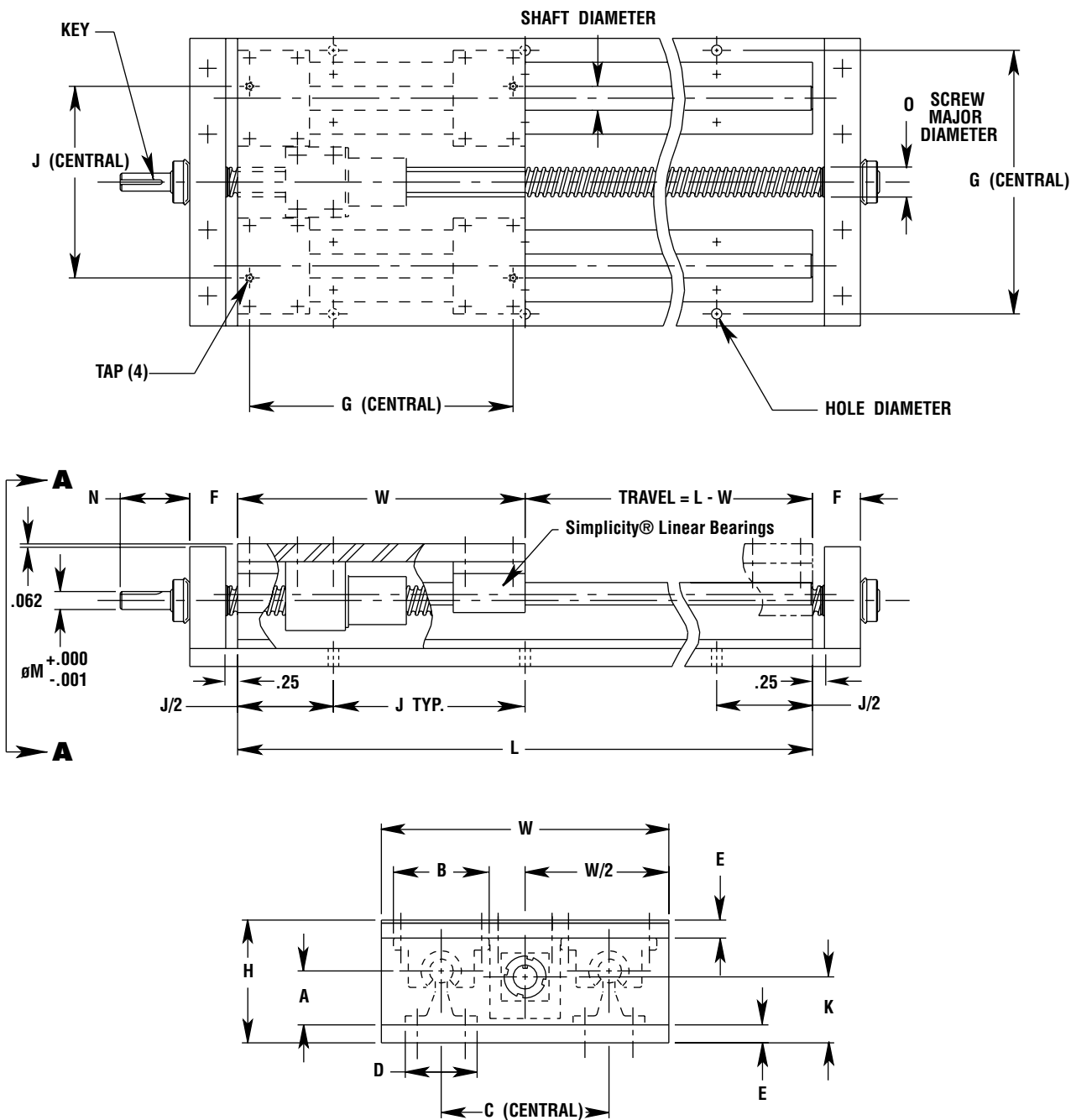
*NOTE: Contact manufacturer for longer lengths.



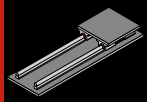
2RPS - DIMENSIONAL INFORMATION

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	TAP	DIA.	KEY
.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	1.375	.375	1.45	.63	10-24	.22	3/32 sq X 5/8 lg
.625	7.000	2.750	1.125	2.50	4.000	1.625	.375	1.00	6.312	4.000	1.375	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
.750	8.000	3.438	1.500	2.75	4.500	1.750	.500	1.25	7.125	6.000	1.500	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
1.000	9.000	3.938	1.750	3.25	5.500	2.125	.500	1.25	8.312	6.000	2.125	.625	1.76	1.00	1/4-20	.28	3/16 sq X 1" lg
1.250	11.000	5.125	2.125	4.00	6.500	2.500	.750	1.50	10.000	6.000	2.375	.625	1.76	1.00	5/16-18	.34	3/16 sq X 1" lg
1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	1.000	2.31	1.50	5/16-18	.34	1/4 sq X 1.62 lg
2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	1.000	2.31	1.50	3/8-16	.41	1/4 sq X 1.62 lg

Dimensions in inches.



VIEW A-A



Low Profile Linear Slides - LRPS

Simplicity®

LRPS - Rail Mounted & Plate Supported Slide Assembly

PART NUMBER DIMENSIONAL INFORMATION

SERIES			SIZE		L	SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	TAP	HOLE DIA.
LRPS	X	XXX	- 08	XX	- XXX.XXX	.500	6.000	2.000	.563	2.00	3.500	.37	.375	1.00	5.500	4.000	10-24	.22
LRPS	X	XXX	- 10	XX	- XXX.XXX	.625	7.000	2.313	.688	2.50	4.000	.45	.375	1.00	6.312	4.000	1/4-20	.28
LRPS	X	XXX	- 12	XX	- XXX.XXX	.750	8.000	2.688	.750	2.75	4.500	.51	.500	1.25	7.125	6.000	1/4-20	.28
LRPS	X	XXX	- 16	XX	- XXX.XXX	1.000	9.000	3.188	1.000	3.25	5.500	.69	.500	1.25	8.312	6.000	1/4-20	.28
LRPS	X	XXX	- 20	XX	- XXX.XXX	1.250	11.000	4.188	1.188	4.00	6.500	.78	.750	1.50	10.000	6.000	5/16-18	.34
LRPS	X	XXX	- 24	XX	- XXX.XXX	1.500	13.000	4.625	1.375	4.75	8.000	.93	.750	1.50	12.000	8.000	5/16-18	.34
LRPS	X	XXX	- 32	XX	- XXX.XXX	2.000	18.000	5.875	1.750	6.00	10.000	1.18	1.000	1.75	15.875	8.000	3/8-16	.41

Enter rail length in inches XXX.XXX (EX: 28" = 028.000)
 Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
 Shaft diameter dimension in 1/16" increments
 Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
 Bearing Type: **Blank** = Frelon GOLD® **E** = Frelon® J **B** = Ball Bearing

MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, 440 Stainless Steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum

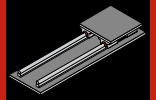
ORDERING EXAMPLE:

To order a slide with a 0.625 diameter 303 stainless steel shaft, Simplicity bearings with Frelon® J and 28" rail length, specify part number LRPSE-10XX-028.000

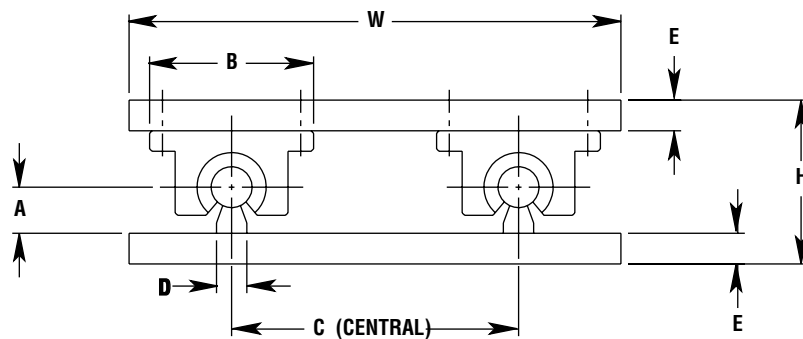
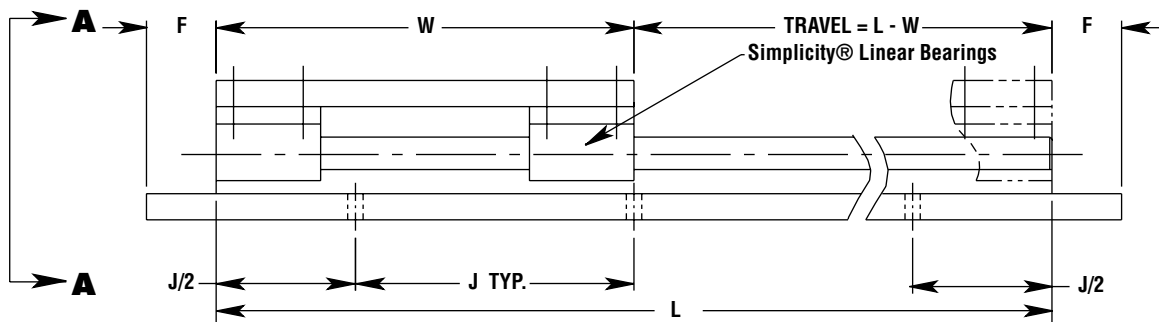
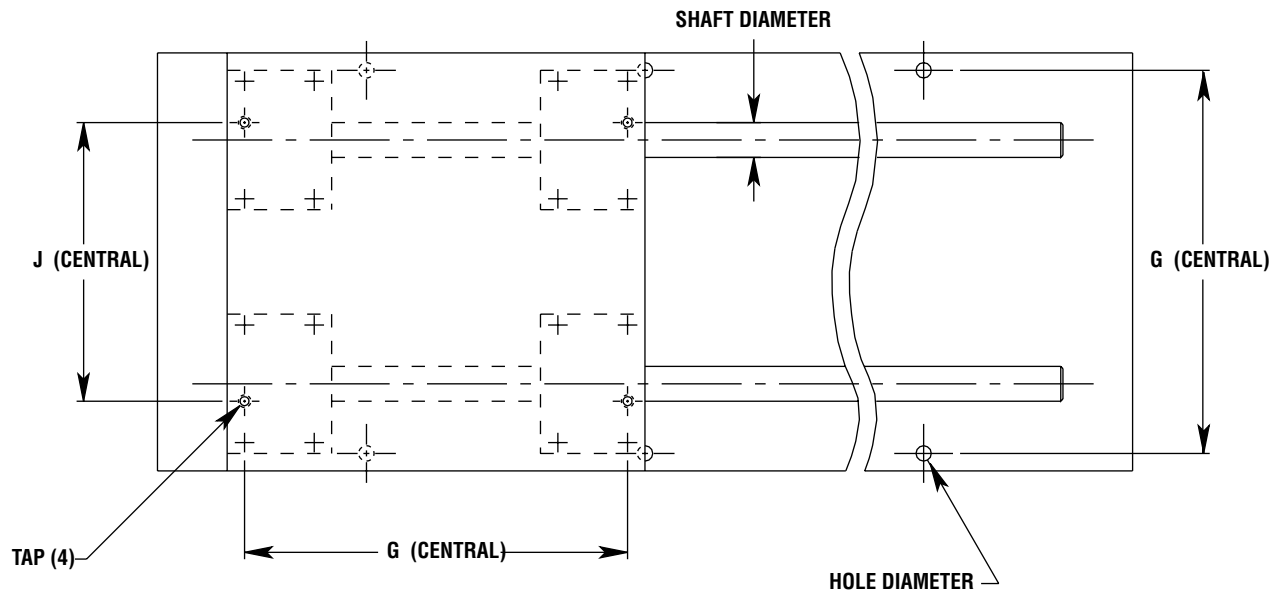
STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024			032		040			048			056		064			072			080		088			096

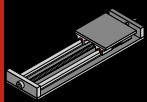
*NOTE: Contact manufacturer for longer lengths.



LRPS - Rail Mounted & Plate Supported Slide Assembly



VIEW A-A



Low Profile Linear Slides - 2LRPS

Simplicity®

2LRPS - Mounted & Plate Supported - Ball Screw Driven (Supported on Both Ends)

PART NUMBER

SERIES				SIZE		L	LEAD
2LRPS	X	XXX	-	08	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	10	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	12	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	16	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	20	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	24	XX	- XXX.XXX	- YYY
2LRPS	X	XXX	-	32	XX	- XXX.XXX	- YYY

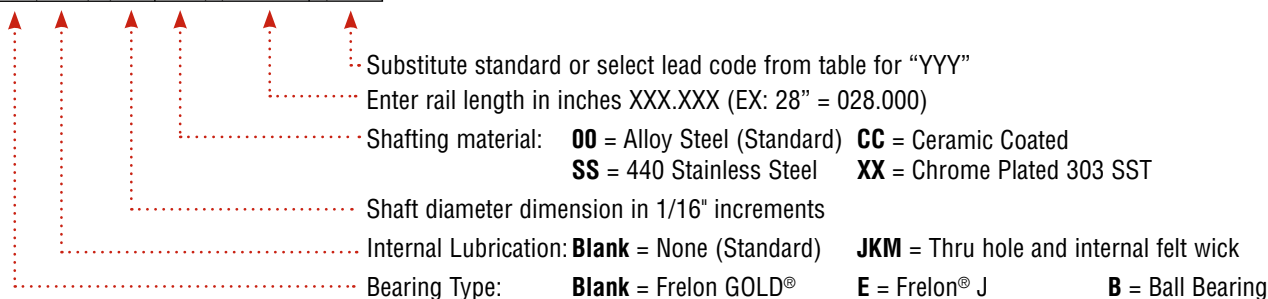
MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, Chrome Plated, 440 or 303 Stainless Steel

ORDERING EXAMPLE:

To order a slide with a 0.625 diameter alloy steel shaft, 28" rail length, .200" right hand select ball screw - specify part number, 2LRPS-10-028.000-AR1



NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	ARO	ALO						ARO = .200 Right Hand
10	ARO	ALO						ALO = .200 Left Hand
12	ARO	ALO						BRO = .250 Right Hand
16			BRO	BLO	CRO	DRO		BLO = .250 Left Hand
20			BRO	BLO	CRO	DRO		CRO = .500 Right Hand
24			BRO	BLO	CRO	DRO	DLO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	DLO = 1.000 Left Hand
								ERO = 1.875 Right Hand

SELECT LEAD TABLE

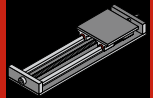
Accurate to less than .003" per foot accumulative

SIZE	AVAILABLE LEAD CODES							LEAD CODES
08	AR1	AL1						AR1 = .200 Right Hand
10	AR1	AL1						AL1 = .200 Left Hand
12	AR1	AL1						BR1 = .250 Right Hand
16			BR1	BL1	CR1	DR1		BL1 = .250 Left Hand
20			BR1	BL1	CR1	DR1		CR1 = .500 Right Hand
24			BR1	BL1	CR1	DR1	DL1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	DL1 = 1.000 Left Hand
								ER1 = 1.875 Right Hand

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024			032		040			048			056		064			072			080		088			096

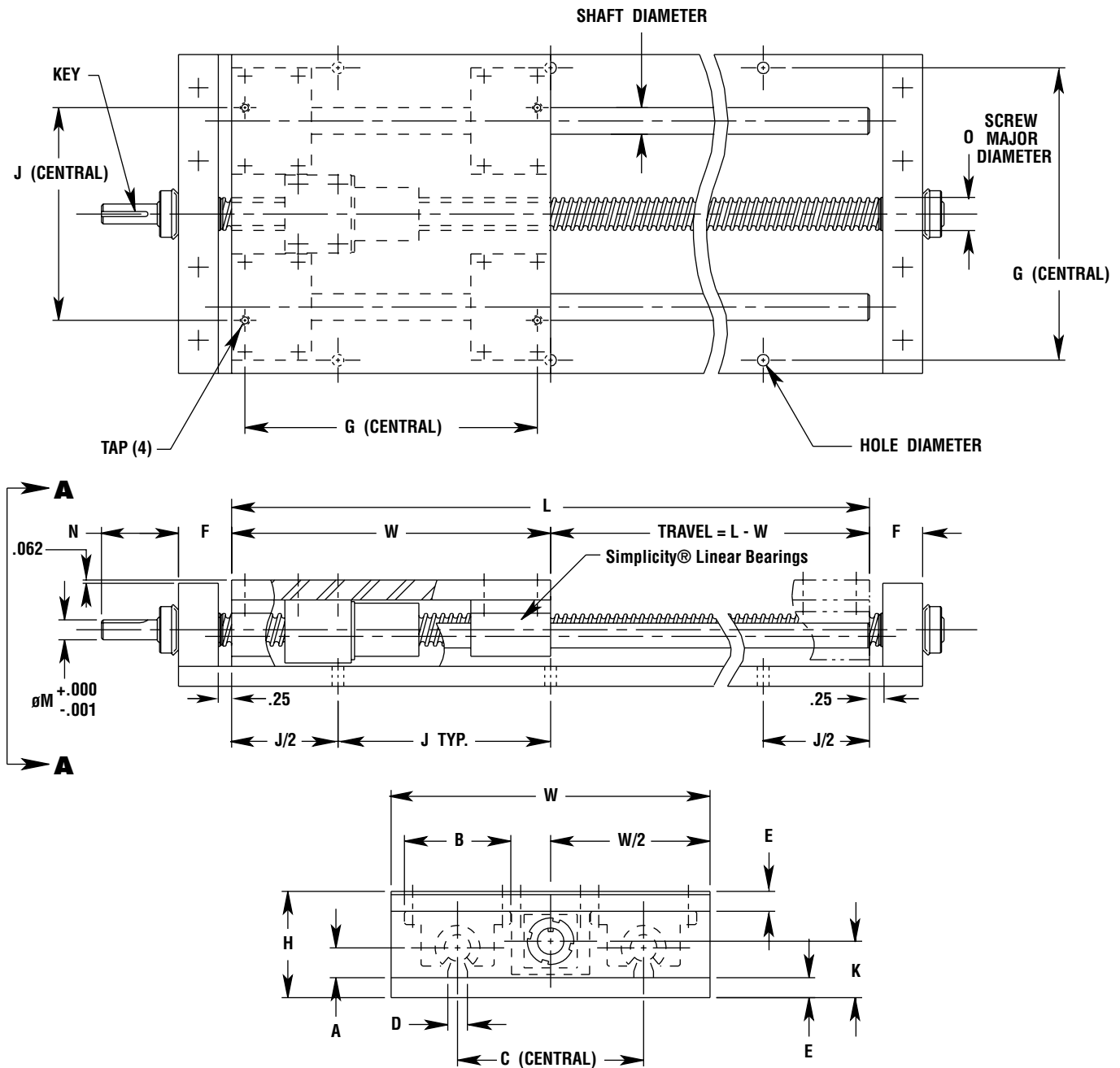
*NOTE: Contact manufacturer for longer lengths.



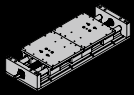
2LRPS - DIMENSIONAL INFORMATION

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	P	TAP	DIA.	KEY
.500	6.0	2.000	0.563	2.00	3.5	0.37	0.375	1.00	5.50	4.0	1.000	0.375	1.45	0.63	0.031	10-24	.22	3/32 sq X 5/8 lg
.625	7.0	2.313	0.688	2.50	4.0	0.45	0.375	1.00	6.31	4.0	1.156	0.375	1.45	0.63	0.031	1/4-20	.28	3/32 sq X 5/8 lg
.750	8.0	2.688	0.750	2.75	4.5	0.51	0.500	1.25	7.13	6.0	1.344	0.375	1.45	0.63	0.031	1/4-20	.28	3/32 sq X 5/8 lg
1.000	9.0	3.188	1.000	3.25	5.5	0.69	0.500	1.25	8.31	6.0	1.594	0.625	1.76	1.00	0.062	1/4-20	.28	3/16 sq X 1" lg
1.250	11.0	4.188	1.188	4.00	6.5	0.78	0.750	1.50	10.00	6.0	2.094	0.625	1.76	1.00	0.062	5/16-18	.34	3/16 sq X 1" lg
1.500	13.0	4.625	1.375	4.75	8.0	0.93	0.750	1.50	12.00	8.0	2.312	1.000	2.31	1.50	0.062	5/16-18	.34	1/4 sq X 1.62 lg
2.000	18.0	5.875	1.750	6.00	10.0	1.18	1.000	1.75	15.88	8.0	2.937	1.000	2.31	1.50	0.062	3/8-16	.41	1/4 sq X 1.62 lg

Dimensions in inches.



VIEW A-A



Self Centering Linear Slides - SC2RPS

Simplicity®

SC2RPS - Self-Centering Slide Assembly

PART NUMBER

SERIES				SIZE		L	LEAD
SC2RPS	X	XXX	-	08	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	10	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	12	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	16	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	20	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	24	XX	- XXX.XXX	- YYY
SC2RPS	X	XXX	-	32	XX	- XXX.XXX	- YYY

MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks

Shafting - Alloy Steel, Chrome Plated, 440 or 303 Stainless Steel

Rolled ball screw, ball nut assembly, and rigid coupling.

ORDERING EXAMPLE: SC2RPS-10-056.000-ALR1

Substitute standard or select lead code from table for "YYY"

Enter rail length in inches XXX.XXX (EX: 28" = 028.000)

Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated

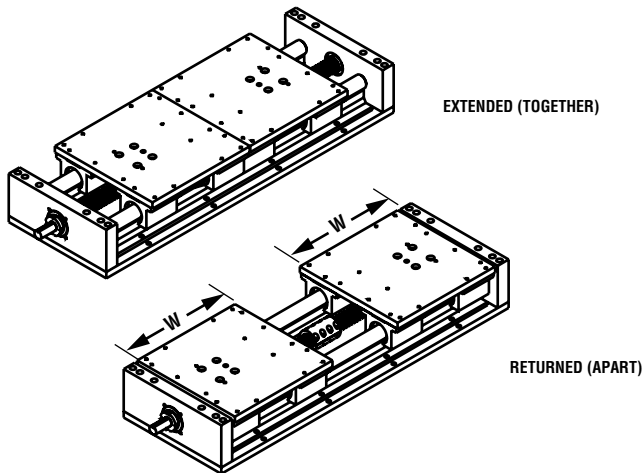
SS = 440 Stainless Steel **XX** = Chrome Plate 303 SST

NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting

Shaft diameter dimension in 1/16" increments

Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick

Bearing Type: **Blank** = Frelon GOLD® **E** = Frelon® J **B** = Ball Bearing



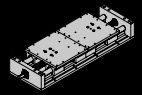
LEAD CODE TABLE STANDARD & SELECT BALL SCREW

SIZE	AVAILABLE LEAD CODE			LEAD CODES
08	ALRX			ALRX = .200 Leads
10	ALRX			BLRX = .250 Leads
12	ALRX			DLRX = 1.000 Leads
16		BLRX		One left and one right hand lead ballscrew on each self-centering slide assembly.
20		BLRX		
24		BLRX	DLRX	
32		BLRX	DLRX	
For Standard Lead: Replace X with 0 <i>Accurate to less than .007" per foot accumulative</i>				
For Select Lead: Replace X with 1 <i>Accurate to less than .003" per foot accumulative</i>				

STANDARD LENGTH TABLE (Inches)

SIZES	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	016			020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096	
10	016			020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096	
12			018		024			030		036		042		048		054		060		066		072		078		084		090		096
16					024			030		036		042		048		054		060		066		072		078		084		090		096
20					024			030		036		042		048		054		060		066		072		078		084		090		096
24								032			040			048			056		064			072			080		088			096
32										040			048			056		064			072			080		088				096

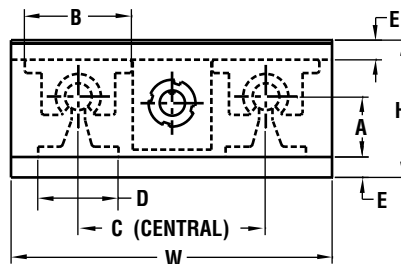
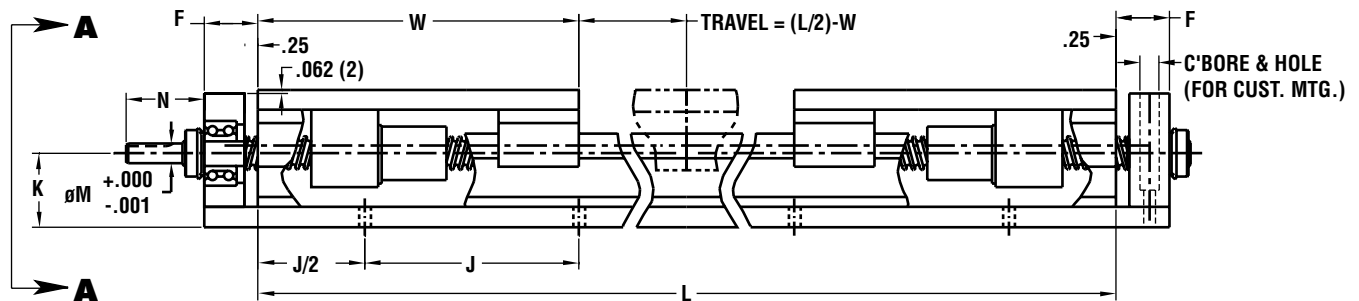
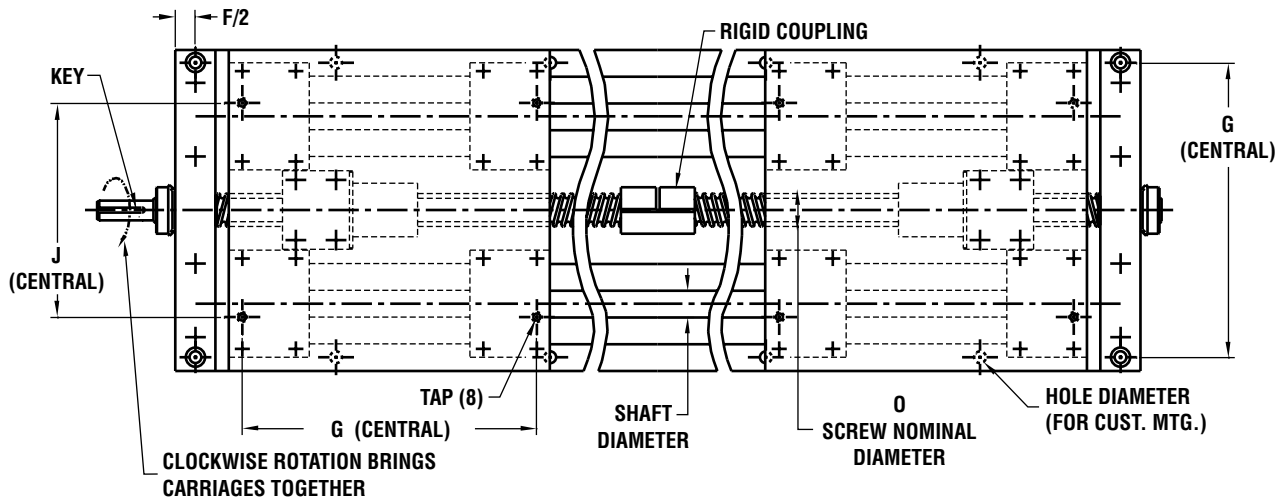
*NOTE: Contact manufacturer for longer lengths.



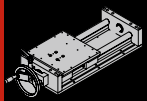
SC2RPS - DIMENSIONAL INFORMATION

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	TAP	HOLE	KEY
.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	1.375	.375	1.45	.63	10-24	.22	3/32 sq X 5/8 lg
.625	7.000	2.750	1.125	2.50	4.000	1.625	.375	1.00	6.312	4.000	1.375	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
.750	8.000	3.438	1.500	2.75	4.500	1.750	.500	1.25	7.125	6.000	1.500	.375	1.45	.63	1/4-20	.28	3/32 sq X 5/8 lg
1.000	9.000	3.938	1.750	3.25	5.500	2.125	.500	1.25	8.312	6.000	2.125	.625	1.76	1.00	1/4-20	.28	3/16 sq X 1" lg
1.250	11.000	5.125	2.125	4.00	6.500	2.500	.750	1.50	10.000	6.000	2.375	.625	1.76	1.00	5/16-18	.34	3/16 sq X 1" lg
1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	1.000	2.31	1.50	5/16-18	.34	1/4 sq X 1.62 lg
2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	1.000	2.31	1.50	3/8-16	.41	1/4 sq X 1.62 lg

Dimensions in inches.



VIEW A-A



Handcrank & Ball Screw Rotational Lock - 2HCR / 2HWL

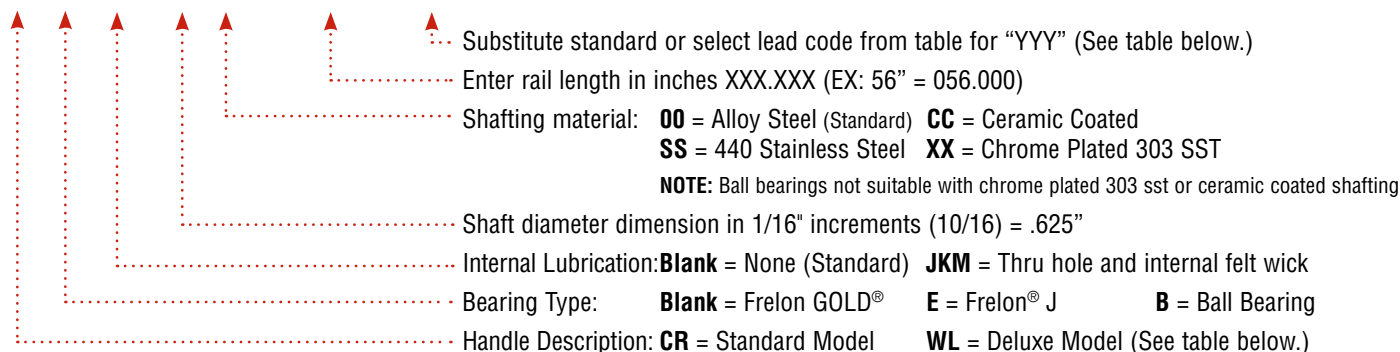
Simplicity® Linear Slides

2HCR/2HWL – Slide Assembly with Handcrank & Ball Screw Rotational Lock

PART NUMBER

DIMENSIONAL INFORMATION

SERIES			SIZE		L	LEAD	SHAFT DIA.	W	H	A	B	C	D	E	F	G	J
2HXX	X	XXX	- 08	XX	- XXXX.XXXX	- YYY	.500	6.000	2.562	1.125	2.00	3.500	1.50	.375	.75	5.500	4.000
2HXX	X	XXX	- 10	XX	- XXXX.XXXX	- YYY	.625	7.000	2.750	1.125	2.50	4.000	1.62	.375	.75	6.312	4.000
2HXX	X	XXX	- 12	XX	- XXXX.XXXX	- YYY	.750	8.000	3.438	1.500	2.75	4.500	1.75	.500	1.00	7.125	6.000
2HXX	X	XXX	- 16	XX	- XXXX.XXXX	- YYY	1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500	1.00	8.312	6.000
2HXX	X	XXX	- 20	XX	- XXXX.XXXX	- YYY	1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750	1.25	10.000	6.000
2HXX	X	XXX	- 24	XX	- XXXX.XXXX	- YYY	1.500	13.000	5.750	2.500	4.75	8.000	3.00	.750	1.25	12.000	8.000
2HXX	X	XXX	- 22	XX	- XXXX.XXXX	- YYY	2.000	18.000	7.375	3.250	6.00	10.000	3.75	1.000	1.50	15.875	8.000



MATERIAL:

Aluminum Alloy -Top Plate, Bottom Plate, Rail Supports and Pillow Blocks

Shafting - Alloy Steel, 440 Stainless Steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum. Rolled ball screw and ball nut assembly.

ORDERING EXAMPLE: 2HWL-20-054.000-AR1

HANDLE DESCRIPTION

CR	STANDARD MODEL Cast aluminum counter balanced hand crank. 24 and 32 (only) spoked cast iron hand wheel with rigid, revolving crank handle.	
WL	DELUXE MODEL Aluminum hand wheel with fold-away composite handle.	

LEAD CODE TABLE STANDARD & SELECT BALL SCREWS

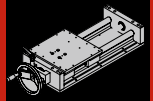
SIZE	AVAILABLE LEAD CODE								LEAD CODES	
08	ARX	ALX							ARX = .200 Right Hand	
10	ARX	ALX							ALX = .200 Left Hand	
12	ARX	ALX							BRX = .250 Right Hand	
16			BRX	BLX	CRX	DRX			BLX = .250 Left Hand	
20			BRX	BLX	CRX	DRX			CRX = .500 Right Hand	
24			BRX	BLX	CRX	DRX	DLX	ERX	DRX = 1.000 Right Hand	
32			BRX	BLX	CRX	DRX	DLX	ERX	DLX = 1.000 Left Hand	
For Standard Lead: Replace X with 0 <i>Accurate to less than .007" per foot accumulative</i>									ERX = 1.875 Right Hand	
For Select Lead: Replace X with 1 <i>Accurate to less than .003" per foot accumulative</i>										

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024			032		040			048			056		064			072			080		088			096

Handcrank & Ball Screw Rotational Lock - 2HCR / 2HWL

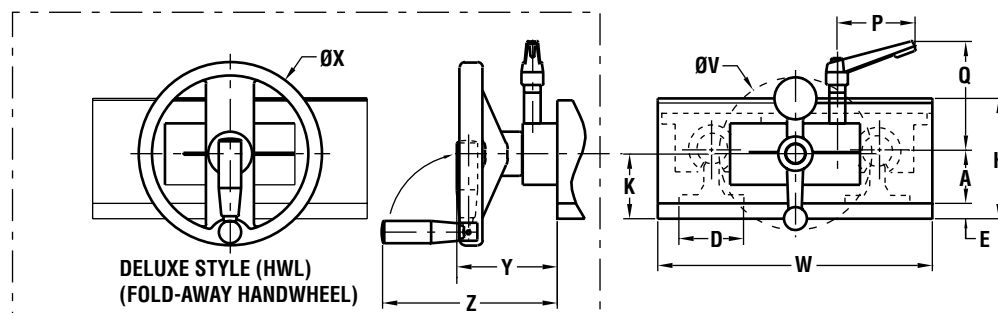
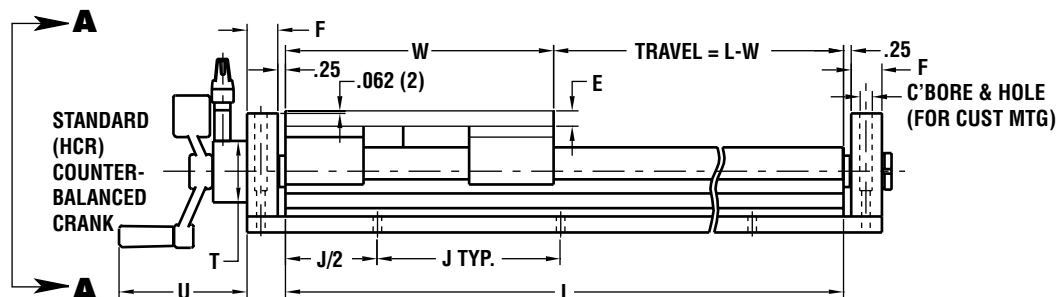
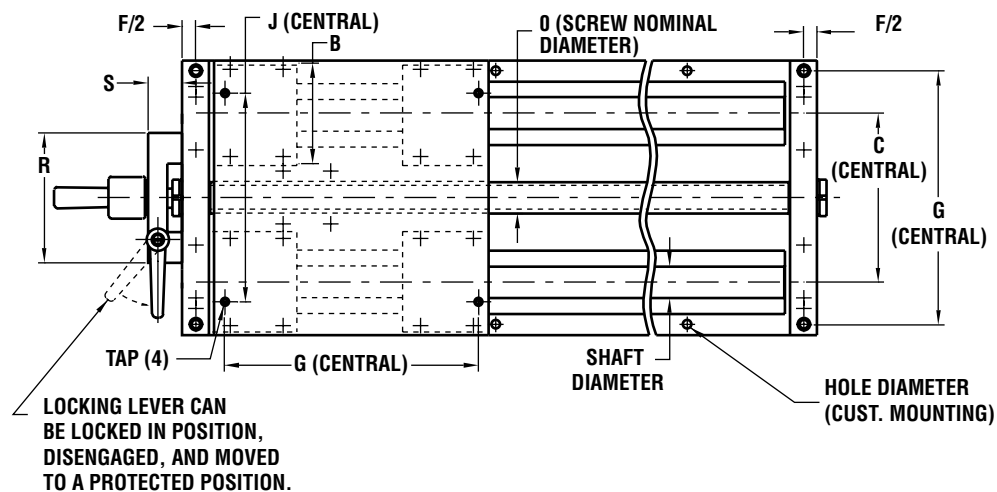
Simplicity® Linear Slides



2HCR/2HWL - Slide Assembly with Handcrank & Ball Screw Rotational Lock

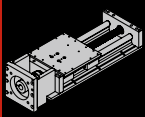
K	O	P	Q	R	S	T	U	V	X	Y	Z	TAP	HOLE DIA.	SIZE
1.38	.631	2.56	3.85	3.000	.875	1.312	4.000	4.000	4.00	2.655	4.855	10-24	.22	08
1.38	.631	2.56	3.85	3.000	.875	1.312	4.000	4.000	4.00	2.655	4.855	1/4-20	.28	10
1.50	.631	2.56	3.85	3.000	.875	1.312	4.000	4.000	4.00	2.655	4.855	1/4-20	.28	12
2.12	1.000	2.56	3.69	4.250	1.125	2.000	4.250	5.000	6.00	3.185	5.745	1/4-20	.28	16
2.38	1.000	2.56	3.69	4.250	1.125	2.000	4.250	5.000	6.00	3.185	5.745	5/16-18	.34	20
2.88	1.500	3.15	5.81	6.500	1.500	3.000	6.900	8.000	8.00	4.310	7.460	5/16-18	.34	24
3.88	1.500	3.15	5.81	6.500	1.500	3.000	6.900	8.000	8.00	4.310	7.460	3/8-16	.41	32

Dimensions in inches.



VIEW A-A

Handcrank - 2HCR / 2HWL



NEMA Drive Kit - 2N42, 56, 143

Simplicity® Linear Slides

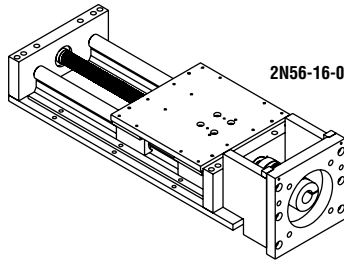
2N42, 56, 143 - Slide Assembly/NEMA Drive Kit

PART NUMBER

DIMENSIONAL INFORMATION

SERIES			SIZE		L	LEAD	SHAFT DIA.	W	H	A	B	C	D	E
2NXX	X	XXX	- 16	XX	XXX.XXXX	- YYY	1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500
2NXX	X	XXX	- 20	XX	XXX.XXXX	- YYY	1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750
2NXX	X	XXX	- 24	XX	XXX.XXXX	- YYY	1.500	13.000	5.750	2.500	4.75	8.000	3.00	.750
2NXX	X	XXX	- 32	XX	XXX.XXXX	- YYY	18.000	7.375	3.250	6.00	10.000	3.75	1.000	

- Substitute standard or select lead code from table for "YYY" (See table below.)
- Enter rail length in inches XXX.XXX (EX: 54" = 054.000)
- Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
- Shaft diameter dimension in 1/16" increments (12/16) = .750"
- Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
- Bearing Type: **Blank** = Frelon GOLD® **E** = Frelon® J **B** = Ball Bearing
- Motor Mounting Dimensions (See table below.)



2N56-16-018-BRO REF.

MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks and Coupling

Shafting - Alloy Steel, 440 Stainless Steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum. Rolled ball screw and ball nut assembly.

ORDERING: 2N56-16-054.000-BR1

MOTOR MOUNTING DIMENSIONS

SERIES	DRIVE	R	S	V	X	Y	Z	COUPLING MAX ² TORQUE DYNAMIC CAPACITY
42A	NEMA 32	3.000	.375	5.000	.28	3.750	2.652	200 in-lbs.
42B	NEMA 42	2.188	.625	5.000	5/16-18	4.950	3.500	
56	NEMA 56	4.500	.625	7.000	.41	5.875	4.154	
143	NEMA 143/145	4.500	.875	7.000	.41	5.875	4.154	

NOTE: Contact manufacturer for international drives and low profile slide assembly availability.

² Due to ball screw and nut life/torque capacities for 16 and 20 size slides, do not exceed 100 in-lbs. of input torque without consulting manufacturer.

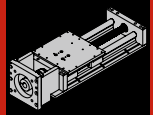
LEAD CODE TABLE STANDARD & SELECT BALL SCREWS

SIZE	AVAILABLE LEAD CODE						LEAD CODES
16	BRX	BLX	CRX	DRX			BRX = .250 Right Hand
20	BRX	BLX	CRX	DRX			BLX = .250 Left Hand
24	BRX	BLX	CRX	DRX	DLX	ERX	CRX = .500 Right Hand
32	BRX	BLX	CRX	DRX	DLX	ERX	DRX = 1.000 Right Hand
For Standard Lead: Replace X with 0 Accurate to less than .007" per foot accumulative							DLX = 1.000 Left Hand
For Select Lead: Replace X with 1 Accurate to less than .003" per foot accumulative							ERX = 1.875 Right Hand

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																	
16	012	018	024	030	036	042	048	054	060	066	072	078	084	090	096			
20	012	018	024	030	036	042	048	054	060	066	072	078	084	090	096			
24		016	024		032	040	048		056	064	072		080	088	096			
32			024		032	040	048		056	064	072		080	088	096			

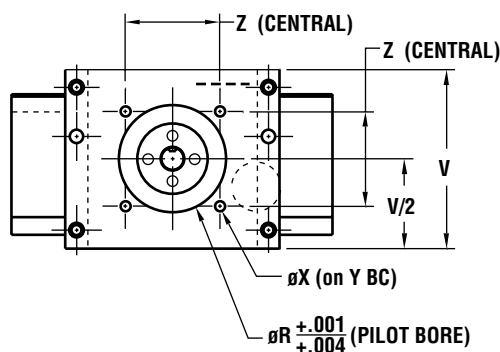
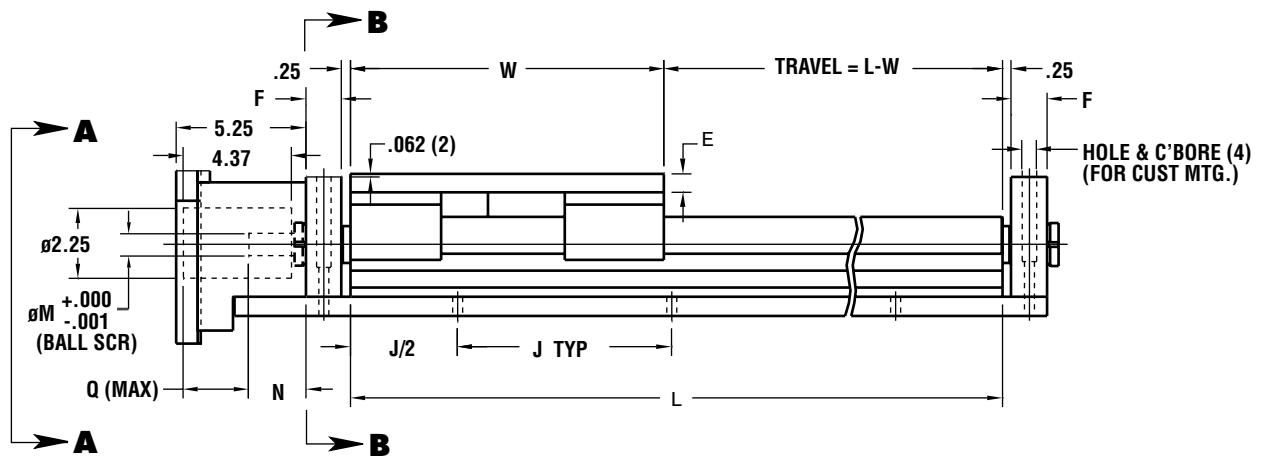
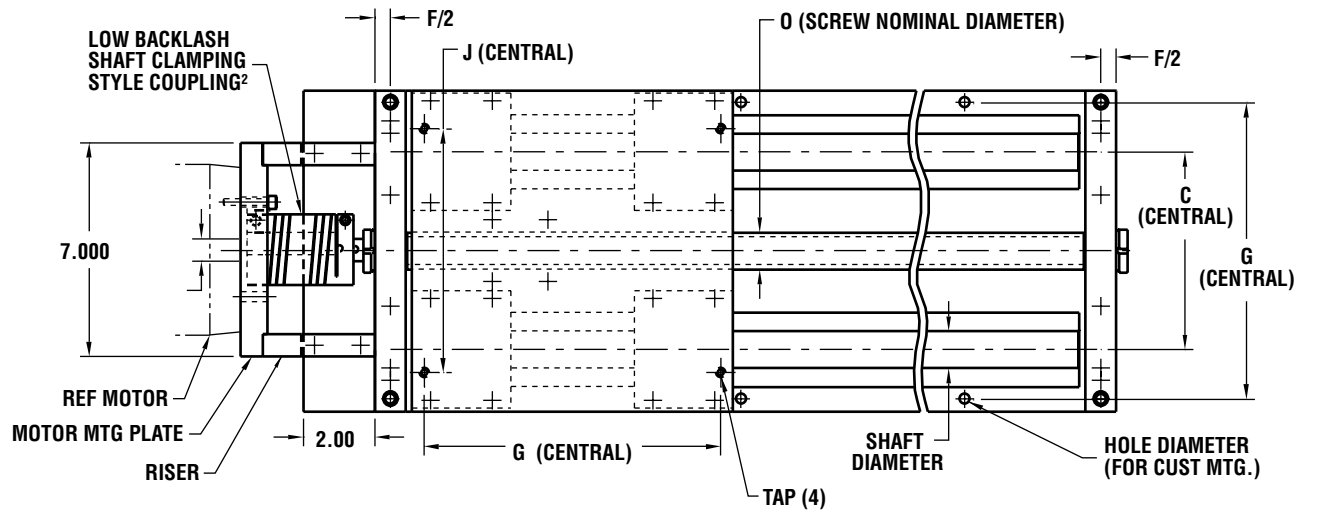
*NOTE: Contact manufacturer for longer lengths.



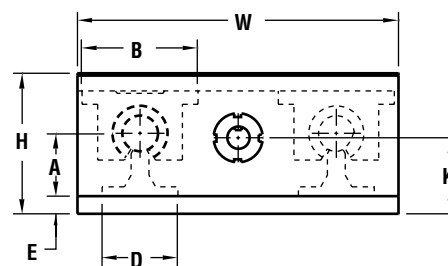
2N42, 56, 143 - Slide Assembly/NEMA Drive Kit

F	G	J	K	M	N	O	Q	TAP	HOLE	SIZE
1.00	8.312	6.000	2.125	.625	1.76	1.000	3.00	1/4-20	.28	16
1.25	10.000	6.000	2.375	.625	1.76	1.000	3.00	5/16-18	.34	20
1.25	12.000	8.000	2.875	.875	2.31	1.500	2.62	5/16-18	.34	24
1.50	15.875	8.000	3.875	.875	2.31	1.500	2.62	3/8-16	.41	32

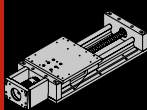
Dimensions in inches.



VIEW A-A



VIEW B-B



NEMA Drive Kit - 2N23 & 2N34

Simplicity® Linear Slides

2N23 & 2N34 - Slide Assembly/NEMA Drive Kit

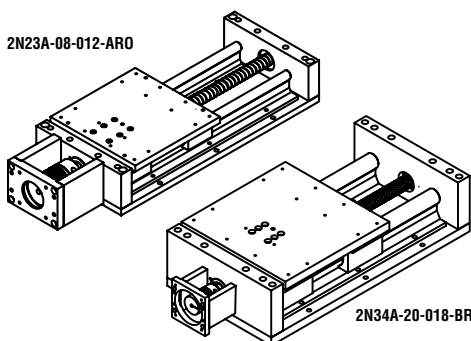
PART NUMBER

DIMENSIONAL INFORMATION

SERIES			SIZE		L	LEAD	SHAFT DIA.	W	H	A	B	C	D	E
2NXX	X	XXX	- 08	XX	- XXX.XXXX	- YYY	.500	6.000	2.562	1.125	2.00	3.500	1.50	.375
2NXX	X	XXX	- 10	XX	- XXX.XXXX	- YYY	.625	7.000	2.750	1.125	2.50	4.000	1.62	.375
2NXX	X	XXX	- 12	XX	- XXX.XXXX	- YYY	.750	8.000	3.438	1.500	2.75	4.500	1.75	.500
2NXX	X	XXX	- 16	XX	- XXX.XXXX	- YYY	1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500
2NXX	X	XXX	- 20	XX	- XXX.XXXX	- YYY	1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750

- Substitute standard or select lead code from table for "YYY" (See table below.)
- Enter rail length in inches XXX.XXX (EX: 54" = 054.000)
- Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated
SS = 440 Stainless Steel **XX** = Chrome Plated 303 SST
NOTE: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
- Shaft diameter dimension in 1/16" increments (12/16) = .750"
- Internal Lubrication: **Blank** = None (Standard) **JKM** = Thru hole and internal felt wick
- Bearing Type: **Blank** = Frelon GOLD® **E** = Frelon® J **B** = Ball Bearing
- Motor Mounting Dimensions (See table below.)

2N23A-08-012-ARO



2N34A-20-018-BRO

MATERIAL:

Aluminum Alloy - Top Plate, Bottom Plate, Rail Supports, Pillow Blocks, Coupling and Motor Mount

Shafting - Alloy Steel, 440 Stainless Steel (SST), Chrome Plated 303 SST and Ceramic Coated Aluminum. Rolled ball screw and ball nut assembly.

ORDERING: 2N23A-10-056.000-AR1

MOTOR MOUNTING DIMENSIONS

SERIES	DRIVE	R	S	V	X	Y	Z	COUPLING MAX ² TORQUE DYNAMIC CAPACITY
23A	NEMA 23	1.502	.250	2.500	10-32	2.625	1.856	50 in-lbs.
23B	NEMA 23	1.502	.375	2.500	10-32	2.625	1.856	
34A	NEMA 34	1.880	.375	3.500	10-32	3.875	2.740	
34B	NEMA 34	1.880	.500	3.500	10-32	3.875	2.740	

NOTE: Contact manufacturer for international drives and low profile slide assembly availability.
² Due to ball screw and nut life/torque capacities for 08, 10 or 12 size slides, do not exceed 30 in-lbs. of input torque.

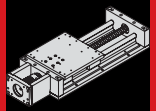
LEAD CODE TABLE STANDARD & SELECT BALL SCREW

SIZE	AVAILABLE LEAD CODE						LEAD CODES
08	ARX	ALX					ARX = .200 Right Hand
10	ARX	ALX					ALX = .200 Left Hand
12	ARX	ALX					BRX = .250 Right Hand
16			BRX	BLX	CRX	DRX	BLX = .250 Left Hand
20			BRX	BLX	CRX	DRX	CRX = .500 Right Hand
For Standard Lead: Replace X with 0 Accurate to less than .007" per foot accumulative							DRX = 1.000 Right Hand
For Select Lead: Replace X with 1 Accurate to less than .003" per foot accumulative							

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE RAIL LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096

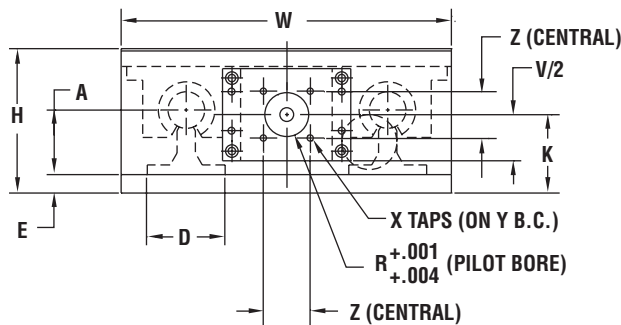
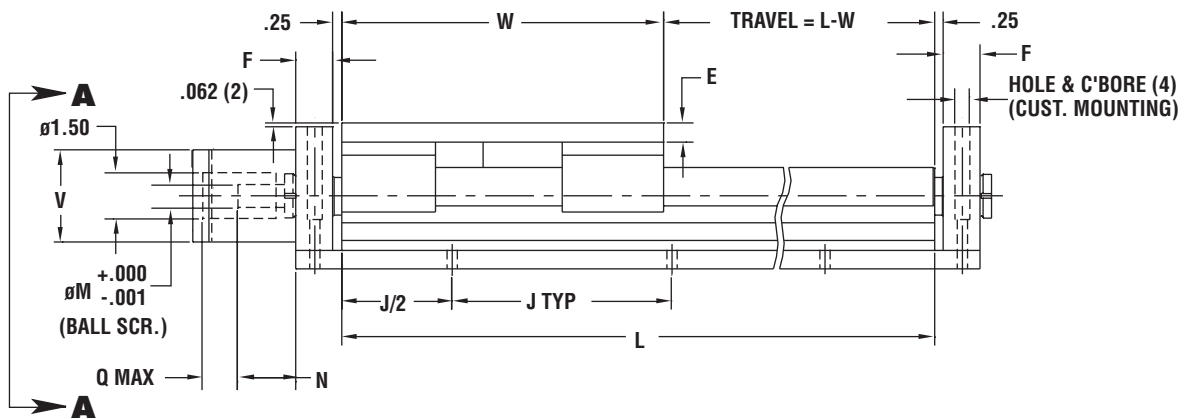
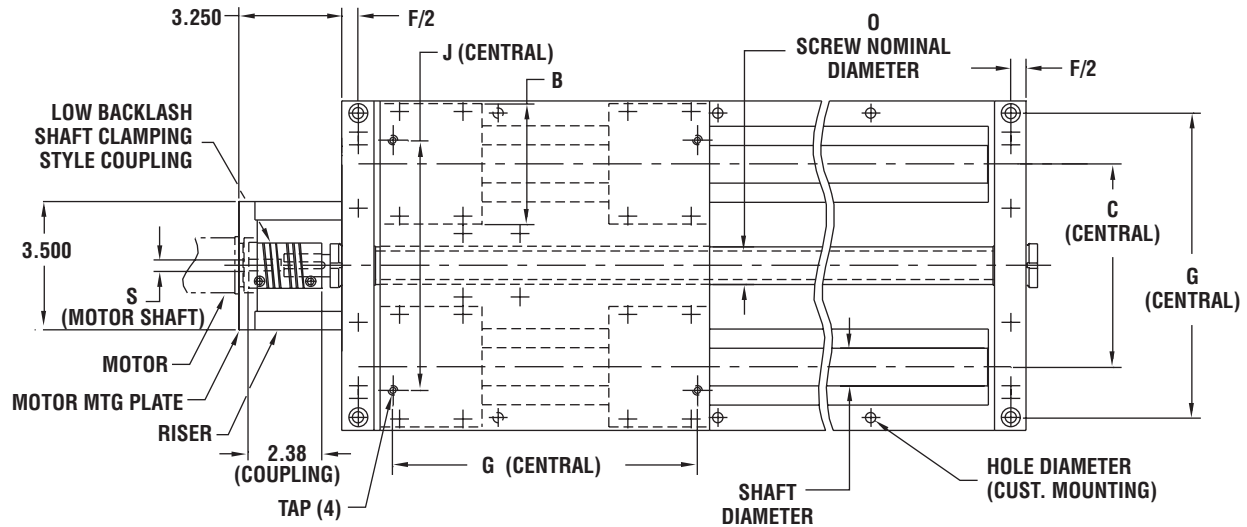
*NOTE: Contact manufacturer for longer lengths.



2N23 & 2N34 - Slide Assembly/NEMA Drive Kit

F	G	J	K	M	N	O	Q	TAP	HOLE	SIZE
.75	5.500	4.000	1.375	.375	1.45	.631	1.31	10-24	.22	08
.75	6.312	4.000	1.375	.375	1.45	.631	1.31	1/4-20	.28	10
1.00	7.125	6.000	1.500	.375	1.45	.631	1.31	1/4-20	.28	12
1.00	8.312	6.000	2.125	.625	1.76	1.000	1.19	1/4-20	.28	16
1.25	10.000	6.000	2.375	.625	1.76	1.000	1.19	5/16-18	.34	20

Dimensions in inches.



VIEW A-A



Column Load Chart

Simplicity® Linear Slides

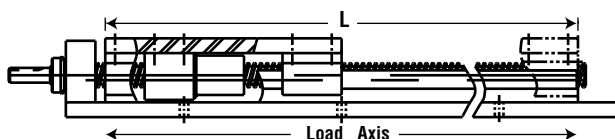
COMPRESSION (COLUMN) LOAD: A load that tends to buckle or compress the screw shaft.

HOW TO USE CHART:

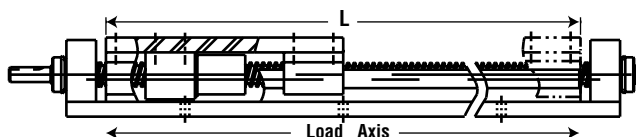
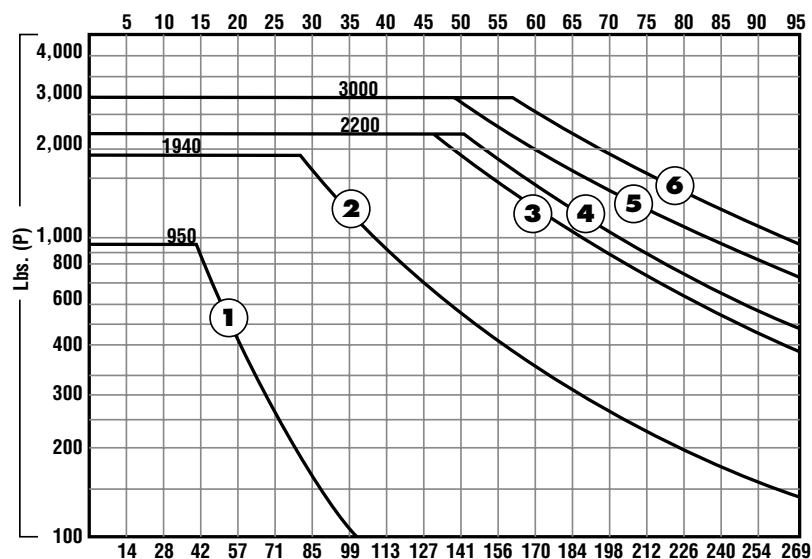
1. Determine maximum compression load (lbs.)
2. Determine slide length. ("L" dimension)
3. Determine end fixity and slide designation (2RPS & 2LRPS)
4. Find the point at which load and length intersect.
5. Select a slide above or to the right of the intersecting point.

Applies Primarily to Vertical Application

***NOTE:** Chart figures at 80% of actual load. **DO NOT EXCEED THESE FIGURES.**



LENGTH TABLE	
SERIES	PAGE #
1RPS	166-167
1LRPS	170



LENGTH TABLE	
SERIES	PAGE #
2RPS	168-169
2LRPS	172-173

CURVE #	SLICE SERIES SIZE, LEAD
1	2RPS-08-(AR OR AL) 2LRPS-08-(AR OR AL) 2RPS-10-(AR OR AL) 2LRPS-10-(AR OR AL) 2RPS-12-(AR OR AL) 2LRPS-12-(AR OR AL) D = .500
2	2RPS-16-(BR OR BL) 2LRPS-16-(BR OR BL) 2RPS-20-(BR OR BL) 2LRPS-20-(BR OR BL) 2RPS-16-DR 2LRPS-16-DR 2RPS-20-DR 2LRPS-20-DR D = .840 2RPS-16-CR 2LRPS-16-CR 2RPS-20-CR 2LRPS-20-CR D = .870
3	2RPS-24-(DR OR DL) 2LRPS-24-(DR OR DL) 2RPS-32-(DR OR DL) 2LRPS-32-(DR OR DL) D = 1.140
4	2RPS-24-ER 2LRPS-24-ER 2RPS-32-ER 2LRPS-32-ER D = 1.190
5	2RPS-24-CR 2LRPS-24-CR 2RPS-32-CR 2LRPS-32-CR D = 1.260
6	2RPS-24-(BR OR BL) 2LRPS-24-(BR OR BL) 2RPS-32-(BR OR BL) 2LRPS-32-(BR OR BL) D = 1.375

COLUMN LOAD FORMULAS*:

$$P_c = C_c \cdot 14.03 \times 10^6 \cdot \left(\frac{D^4}{L^2} \right)$$

P_c = Critical column load (lbs.)

D = Root diameter of screw (in.) (See chart)

L = Slide length (in.)

C_c = End fixity factor

C_c = .25 for 1RPS & 1LRPS

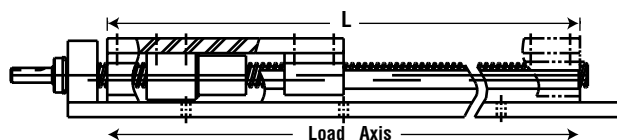
C_c = 2.0 for 2RPS & 2LRPS



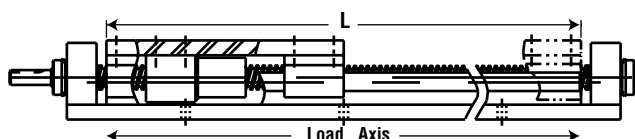
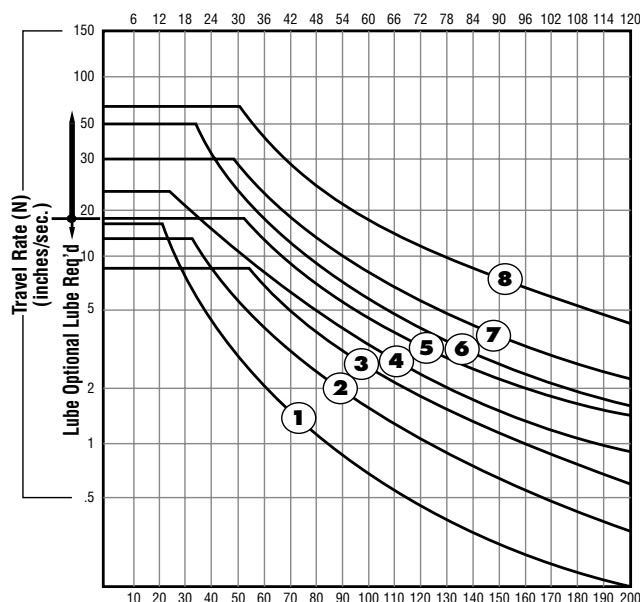
CRITICAL SPEED: The maximum speed at which a ball screw or ball nut can rotate without producing destructive resonant vibrations. The critical speed is a function of the ball screw diameter, the unsupported length of screw, rigidity of bearing supports, and RPM.

HOW TO USE CHART:

1. Determine end fixity. How many ends are fixed? (Slide designation, 2RPS & 2LRPS)
2. Determine slide length. ("L" dimension)
3. Find the length – fixity vertical line, read up to find the intersecting, at the required travel rate.
4. Select a slide above or to the right of the intersection point.
5. Higher speeds and/or longer lengths are available as cost effective specials, having a larger ball screw and bearings. (Consult manufacturer.)



LENGTH TABLE	
SERIES	PAGE #
1RPS	166-167
1LRPS	170



LENGTH TABLE	
SERIES	PAGE #
2RPS	168-169
2LRPS	172-173

CURVE #	SLICE SERIES SIZE, LEAD	
1	2RPS-08-(AR or AL) 2LPS-08-(AR or AL) 2RPS-10-(AR or AL) 2LPS-10-(AR or AL) D = .500 H = .200	2RPS-12-(AR or AL) 2LPS-12-(AR or AL)
2	2RPS-16-(BR or BL) 2LPS-16-(BR or BL) D = .840 H = .250	2RPS-20-(BR or BL) 2LPS-20-(BR or BL)
3	2RPS-24-(BR or BL) 2LPS-24-(BR or BL) D = 1.375 H = .250	2RPS-32-(BR or BL) 2LPS-32-(BR or BL)
4	2RPS-16-(CR) 2LPS-16-(CR) D = .870 H = .500	2RPS-20-(CR) 2LPS-20-(CR)
5	2RPS-24-(CR) 2LPS-24-(CR) D = 1.260 H = .500	2RPS-32-(CR) 2LPS-32-(CR)
6	2RPS-16-(DR) 2LPS-16-(DR) D = .840 H = 1.000	2RPS-20-(DR) 2LPS-20-(DR)
7	2RPS-24-(DR or DL) 2LPS-24-(DR or DL) D = 1.140 H = 1.000	2RPS-32-(DR or DL) 2LPS-32-(DR or DL)
8	2RPS-24-(ER) 2LPS-24-(ER) D = 1.190 H = 1.875	2RPS-32-(ER) 2LPS-32-(ER)

CRITICAL SPEED FORMULAS*:

$$N = C_s \cdot 7.93 \times 10^4 \cdot \left(\frac{DH}{L^2} \right)$$

N = Critical speed (Maximum) (expressed in inches/sec.)

D = Root diameter of screw (in.rev.) (See chart)

H = Lead of screw (in.) (See chart)

L = Slide length (in.)

C_s = End fixity factor

C_s = 0.36 for 1RPS & 1LRPS

C_s = 1.47 for 2RPS & 2LRPS

*NOTE: Chart figures at 80% of actual load.

DO NOT EXCEED THESE FIGURES.

Mini-Rail® Miniature Linear Guides

Product Overview

PRODUCT OVERVIEW

An economical alternative to conventional miniature linear guides, Mini-Rail requires no maintenance, is fully interchangeable with industry standard sizes and is maintained in stock for quick delivery.

Mini-Rail miniature linear guides are available in five sizes: 7, 9, 12, 15 and 20mm - in lengths up to 3600mm, meaning no cumbersome butt joints. These guides are precision manufactured out of lightweight aluminum alloys to ensure long life and corrosion resistance.

- No rolling elements
- Self-lubricating Frelon GOLD® Liner
- Withstands vibration and shock
- Corrosion-resistant - ideal in harsh environments
- Ceramic coated, aluminum rail
- Compact design- small footprint

CARRIAGE CONFIGURATIONS

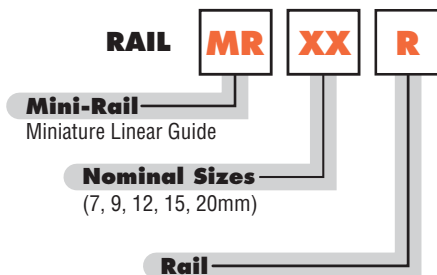
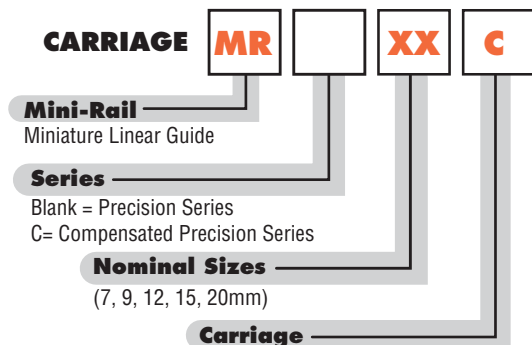
Precision Series: Ceramic coated rails and carriages are corrosion resistant. Frelon GOLD® self-lubricating liner delivers the best overall performance, the highest loads, the best wear life, and speeds. Most precise running clearance for high precision applications.

Compensated Precision Series: Same as Precision Series except with additional clearance provided to tolerate misalignment.

APPLICATIONS

- Medical Precision
- Food Processing
- Automation
- Electronics
- Mobile Home Components
- Packaging
- Product Movement
- Printing
- Semi-conductor

ORDERING INFORMATION



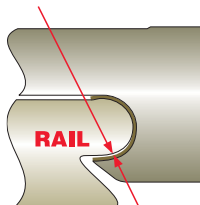
EXAMPLE: MRC20C
MR20R

See following page for Mini-Rail full assembly ordering.



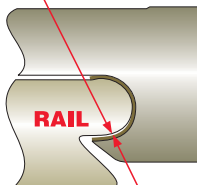
Precision Series

.025 - .051mm
Running Clearance
(CERAMIC COATED)



Compensated Precision Series

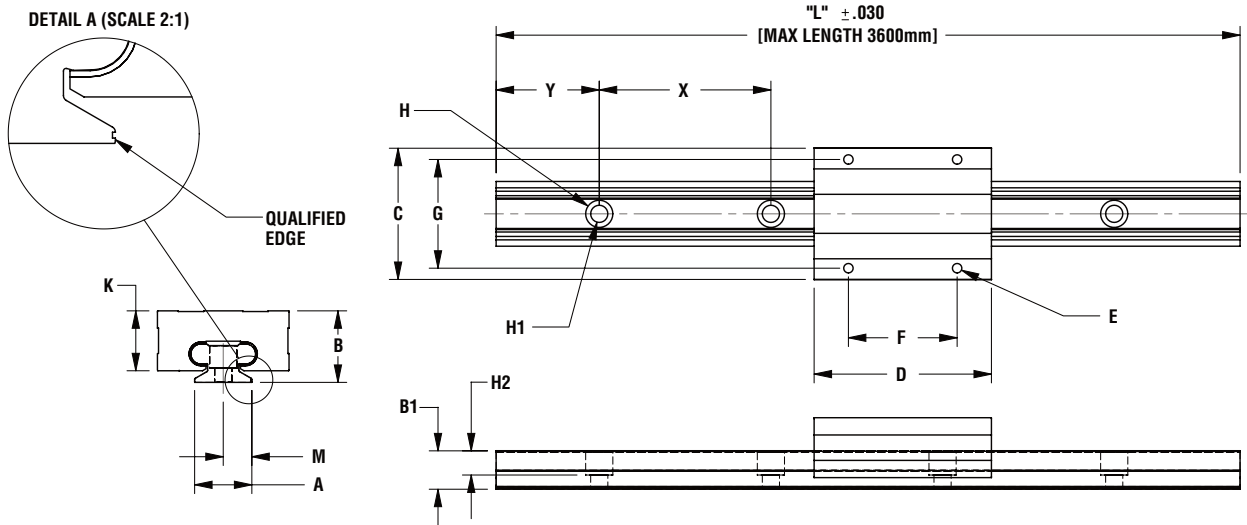
.064 - .089mm
Running Clearance
(CERAMIC COATED)



Frelon GOLD® and Frelon® J are Teflon® based materials that are truly self-lubricating. Frelon® materials are bonded to the carriage creating a one-piece unit.



MINI-RAIL - MR



(Maximum Length 3600mm)

Materials: 6061-T6 aluminum rail and carriage, Frelon GOLD® or Frelon® J liner

Max V: 300 sfm for Frelon GOLD, 140 sfm for Frelon J

Max P: 3000 psi for Frelon GOLD, 1500 psi for Frelon J

PART NUMBER	RUNNING CLEARANCE	A	B	B1	C	D	E		F	G	H	H ₁	H ₂	K	M	Y	X	RAIL WT. (gram/mm)	CARRIAGE WT. (gram)
		BASE WIDTH (mm)	OVERALL HEIGHT	RAIL HEIGHT	CARRIAGE WIDTH	CARRIAGE LENGTH	CARRIAGE MTG. HOLE SIZE	CARRIAGE MTG. HOLE DEPTH	CARRIAGE MTG. HOLE CTR. TO CTR.	RAIL HOLE SIZE			CARRIAGE HEIGHT	RAIL MTG. HOLE TO QUALIFIED EDGE	RAIL HOLE TO END	RAIL HOLE CTR. TO CTR.			
MR7-XXX	.025 - .051	7	8	6.1	17	24	M2 x 0.4	THRU	8	12	4.2	2.4	2.3	6.2	3.5	5	15	0.10	5.7
MRC7-XXX	.064 - .089																		
MR9-XXX	.025 - .051	9	10	7.1	20	30	M3 x 0.5		13	15	4.5	2.6	3	8.0	4.5	7.5	20	0.16	8.5
MRC9-XXX	.064 - .089																		
MR12-XXX	.025 - .051	12	13	8.0	27	34			15	20	6	3.5	10.7	6	10	25	0.22	20.0	
MRC12-XXX	.064 - .089																		
MR15-XXX	.025 - .051	15	16	9.2	32	42			20	25			4.5	14.1	7.5	15	40	0.38	34.0
MRC15-XXX	.064 - .089																		
MR20-XXX	.025 - .051	20	25	13.4	46	62	M4 x 0.7	12.5	38	38	9.5	6	8.5	21.2	10	20	60	0.48	127.9
MRC20-XXX	.064 - .089																		

NOTES: Cut-to-length rails are available up to 3600mm.

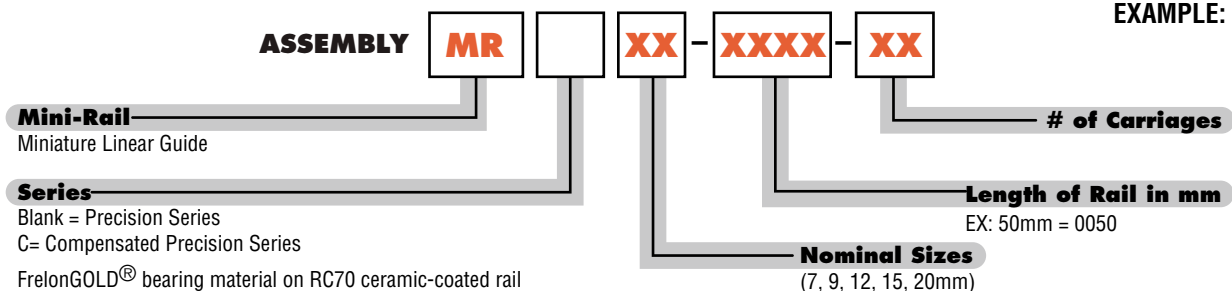
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

All carriage mounting holes are through tapped except MR20 12.5mm of thread.

The "Y" dimension will remain constant at one end unless requested otherwise.

Add the overall length of the rail to the part number (EX: "MR12-0220" for a Precision Series assembly with a 220mm rail)

ORDERING INFORMATION



EXAMPLE: MR12-0220-2



Mini-Rail® - MR

Technical Information

STATIC LOAD DATA

The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

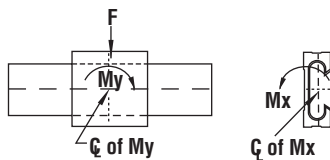
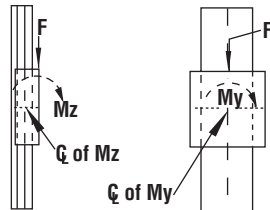
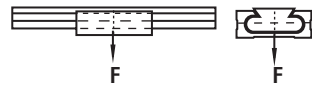
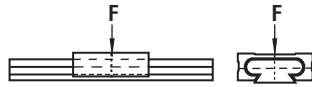
SIZE	F (N)	MSL (N)*
7	445	734
9	667	1557
12	1334	1957
15	2224	3114
20	3559	6005

*Max static load in Newtons.

SIZE	F (N)
7	89
9	125
12	222
15	356
20	578

SIZE	My (N-m)	Mx (N-m)	Mz (N-m)
7	2.3	1.8	1.8
9	5.0	3.2	3.2
12	9.0	5.6	5.6
15	15.1	9.0	9.0
20	24.9	14.7	14.7

SIZE	F (N)	My (N-m)	Mx (N-m)	Mz (N-m)
7	133	2.3	1.8	1.8
9	222	5.0	3.2	3.2
12	400	9.0	5.6	5.6
15	667	15.1	9.0	9.0
20	1112	24.9	14.7	14.7



PERFORMANCE RATINGS FOR LINEAR MOTION

Plane bearings are rated by their limiting PV, which is a combination of load over a given surface area and the velocity.

BEARING MATERIAL	MAX. "PV"	MAX. "P"	MAX. "V" (NO LUBRICATION)
Frelon GOLD®	20,000 (psi x ft./min.) or 0.7 N/mm ² x m/s	3000 psi or 20.68 N/mm ²	300 sfm or 1.524 m/s
Frelon® J	10,000 (psi x ft./min.) or 0.35 N/mm ² x m/s	1500 psi or 10.34 N/mm ²	140 sfm or 0.711 m/s

PV = The performance measurement of plane bearings.

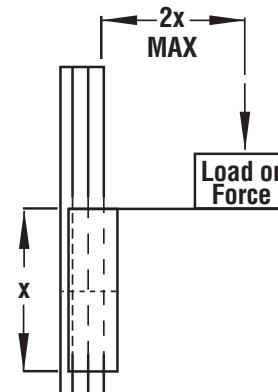
PV = P x V, where P = pressure (load) in psi (kgf/cm²)

V = velocity (speed) in sfm (m/min.)

NOTE: All three parameters must be met by an application for the bearing to perform properly.

CANTILEVERED LOADS

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded. This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact factory or website for additional information.



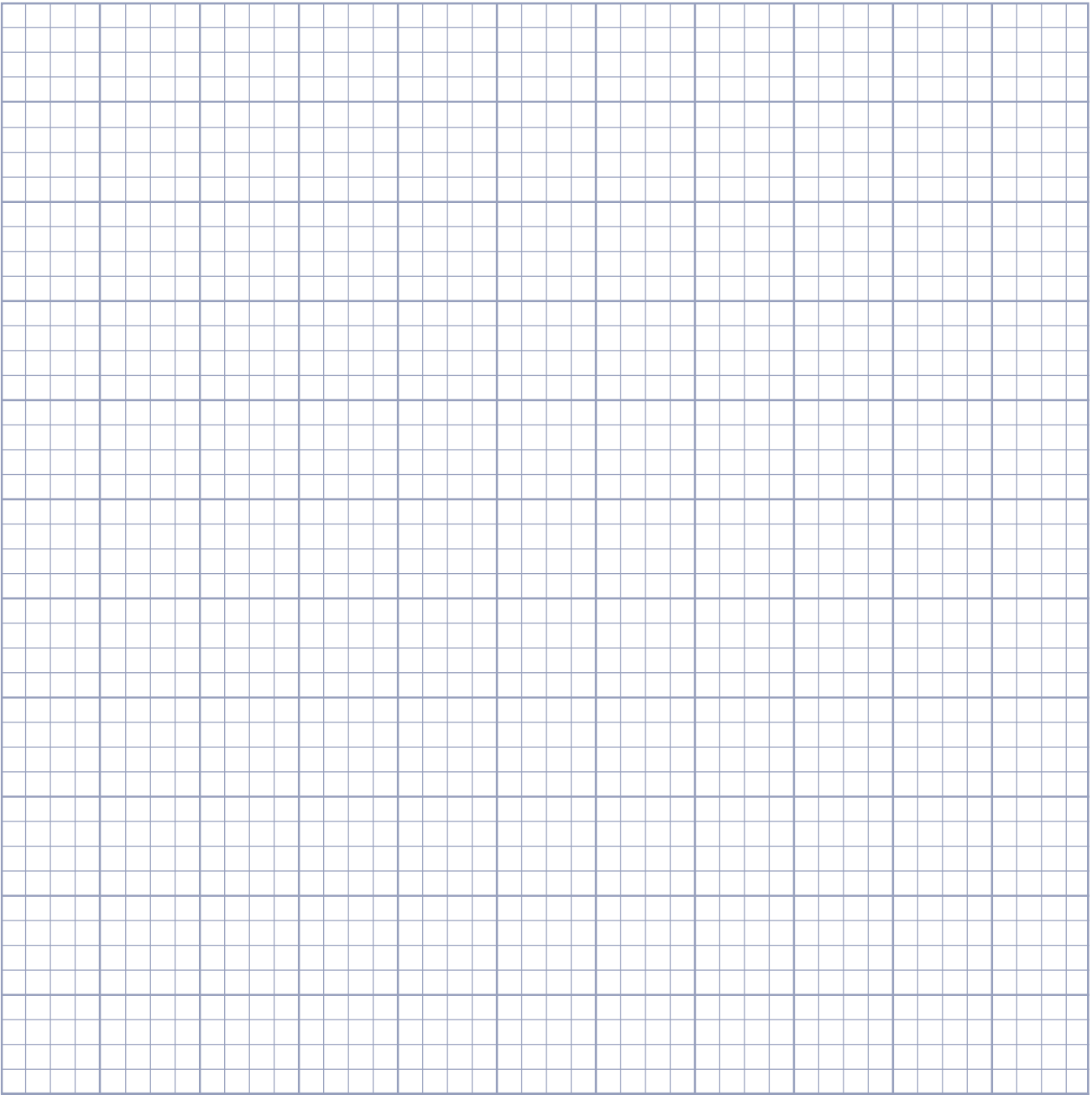
LOAD/MOMENT CONVERSION

N = 4.45 x (lbs.)

N-m = 0.113 x (in.-lbs.)

Design & Layout Options

Name:				Date:					
Dept.:				Phone:			Fax:		
Company:				Machine Type/Name:					
Email:									
Address:									





Low Profile Mini-Rail® - LPM

Miniature Guide/Slide Motion Systems

LOW PROFILE MINI-RAIL® - LPM

- Low profile for small spaces
- Low cost polymer slider
- Molded SS threaded Inserts
- Double rail track
- Ideal in harsh environments
- Available in four sizes



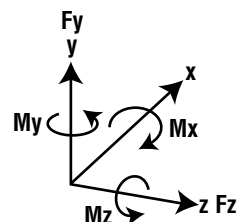
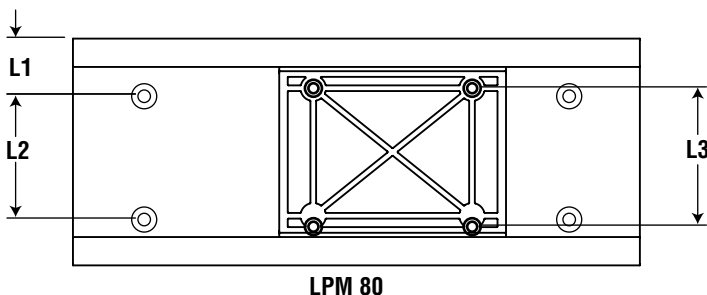
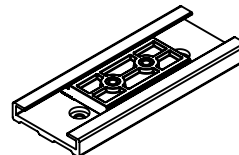
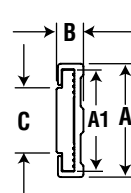
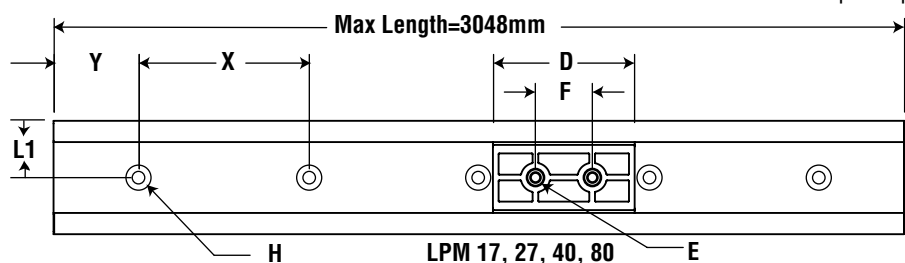
Materials: SimGlide™-J Polymer slider (UL 94 HB flammability rating)
Molded-in stainless steel thread inserts
Anodized aluminum rails

Operating Temperatures: -35C to 65C (-30F to 150F)

Chemical Resistance: Resistant to lubricants, fuels, dyes, weak acids

Maximum Velocity: 10 m/s

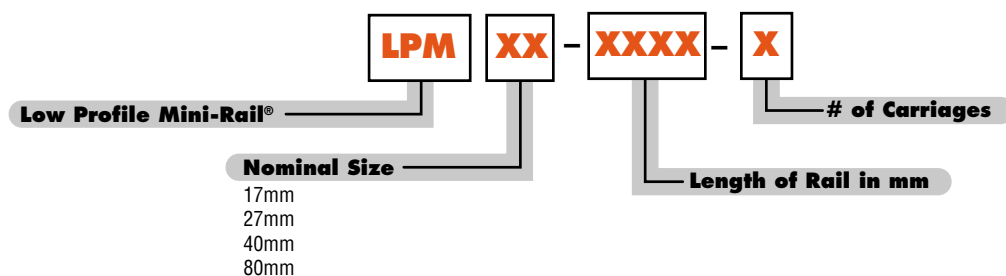
Load Reduction Factor: 0.7-1.0 for low speed application; 0.4-0.7 for medium speed application; 0.1-0.4 for high speed application



PART NUMBER	A1	A	B	C	D	E	F	H (C'BORE)	L1	L2	L3	Y	X	CAR- RIAGE WT.	RAIL UNIT WT.	LOAD CAPACITY									
																Fy		Fz		Mx		My		Mz	
																(N)	(lbs.)	(N)	(lbs.)	(N-m)	(lbs.- in.)	(N-m)	(lbs.- in.)	(N-m)	(lbs.- in.)
LPM17	14.6	17	6	9.6	25	M3 x 0.5	14	M3 SBHCS	8.5	N/A	N/A	20	60	1.1	0.15	35	8	10	2.5	0.2	1.5	0.3	2.5	0.2	1.5
LPM27	24	27	9.5	14	40	M4 x 0.7	20	M4 SBHCS	13.5	N/A	N/A	20	60	4.8	0.33	130	30	85	20	1	10	2.5	20	1	10
LPM40	36	40	9.5	23	50	M4 x 0.7	20	M4 SBHCS	20	N/A	N/A	20	60	9.8	0.38	270	60	150	35	2.5	25	5	50	2.5	25
LPM80	75.2	80	12.0	57	80	M4 x 0.7	56	M4 SBHCS	20	40	45	25	150	32.3	1.07	515	120	250	55	7	60	14	125	7	60

NOTE: Apply a load reduction factor 0.25 on Fy rating if the system is used inverted.

ORDERING INFORMATION



EXAMPLE: LPMXX-XXXX-X



MINI-RAIL® ROLLER CARRIAGE - MRR

- Durable polymer rollers ensure quiet operation
- Factory adjusted
- Rails can be butt-jointed for unlimited travel
- Pre-lubricated for long life
- Smooth operation
- Light loads



Materials: POM based polymer coated rollers
LaZer Straight™ ceramic coated aluminum rails
300 series stainless steel roller shafts

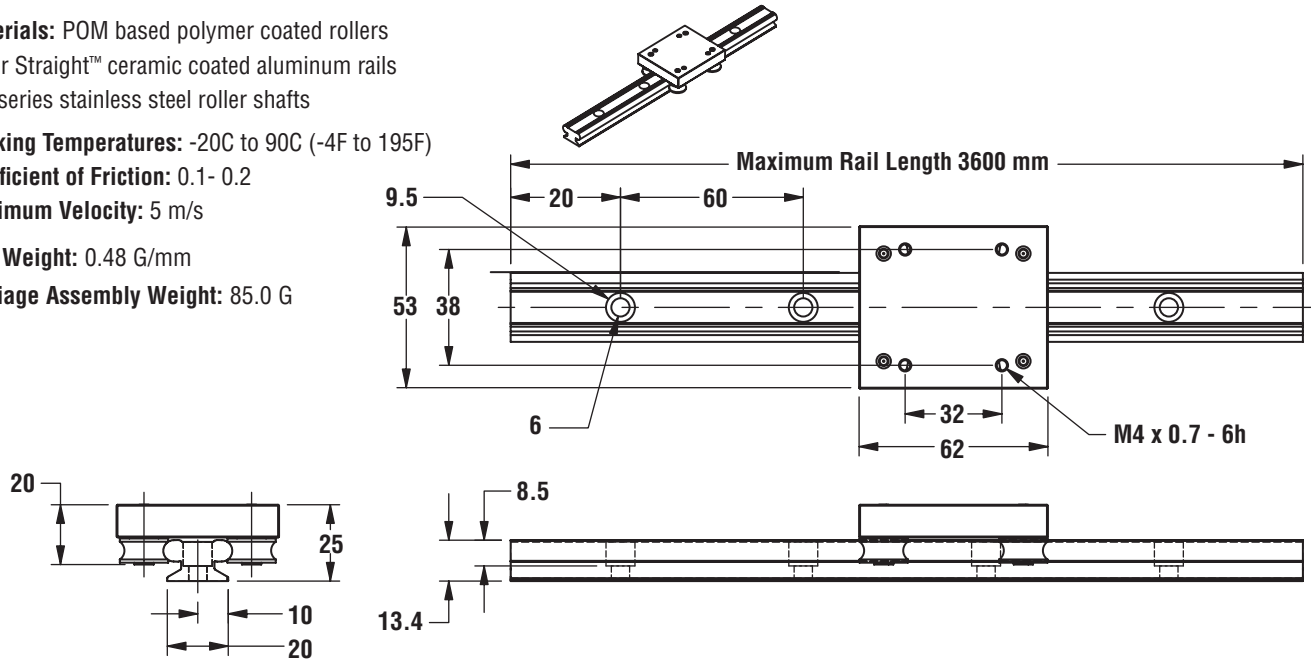
Working Temperatures: -20C to 90C (-4F to 195F)

Coefficient of Friction: 0.1- 0.2

Maximum Velocity: 5 m/s

Rail Weight: 0.48 G/mm

Carriage Assembly Weight: 85.0 G



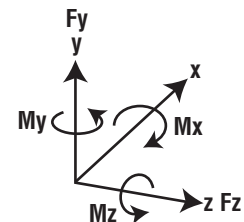
NOTES: Add the overall length of the rail "L" to the part number.
EXAMPLE "MRR20-220" for a 220mm long rail.

Cut-to-length rails are available up to 3600mm.

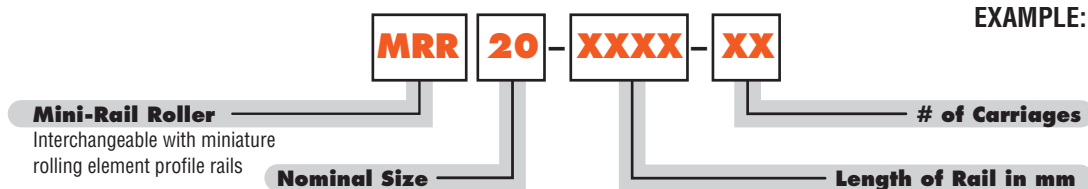
"Y" dimension will remain constant at one end unless requested otherwise.

LOAD CAPACITY

PART NUMBER	LOAD CAPACITY									
	Fy		Fz		Mx		My		Mz	
	(lbs.)	(N)	(lbs.)	(N)	(lbs.-in.)	(N-m)	(lbs.-in.)	(N-m)	(lbs.-in.)	(N-m)
MRR20	25	110	45	205	10	1.2	83	9.4	21	2.4



ORDERING INFORMATION



EXAMPLE: MRR20-XXXX-XX

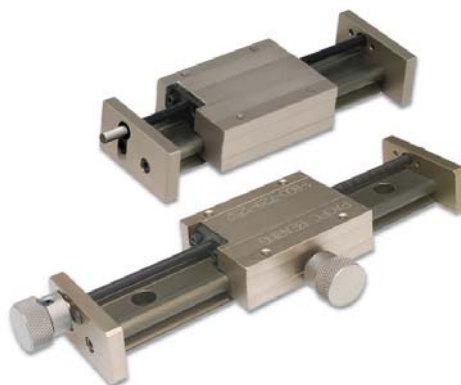


Mini-Rail® - LS

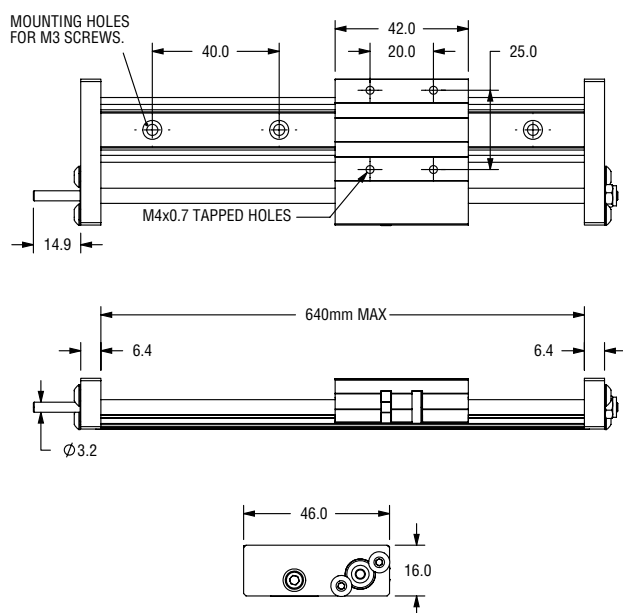
Miniature Lead Screw - Driven Slides

MINI-RAIL® LS - LEAD SCREW DRIVEN

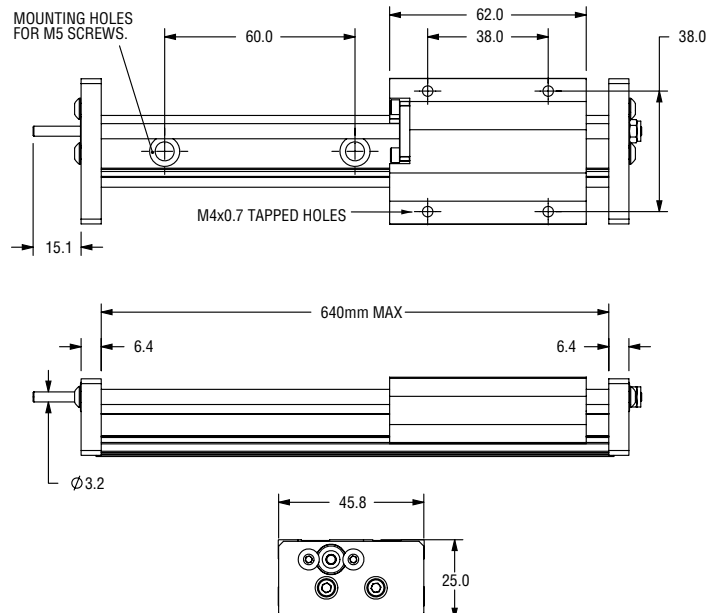
- Right hand rolled thread
- 303 stainless steel screw with TFE coating
- Self-lubricating Polyacetal, anti-backlash nut
- Lengths up to 640mm
- Three (3) leads available
- Optional hand brake



MR15LS

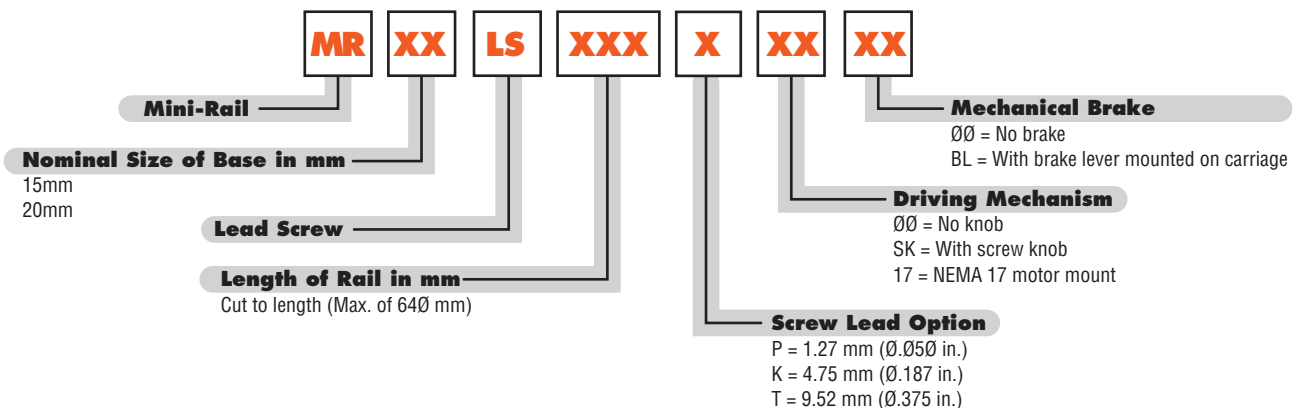


MR20LS



NOTES: Maximum length for lead screw driven MR is 640mm.
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

ORDERING INFORMATION





MINI-RAIL® MS - LEAD SCREW DRIVEN

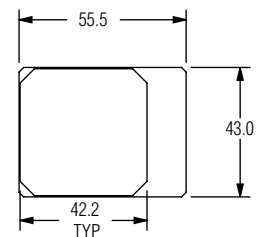
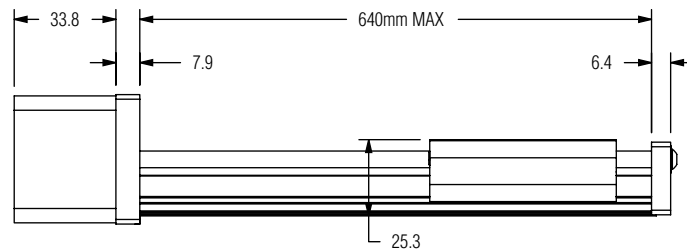
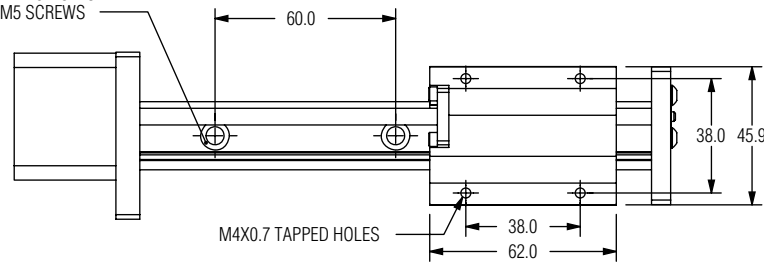
- Robust design - outstanding reliability
- Fewer parts - less maintenance
- Preloaded drive nut - eliminates backlash
- High torque stepper motor (NEMA 17)
- Low cost
- Lengths up to 640 mm
- Ball bearing supports
- Integral screw
- Three (3) leads available



Mini-Rail® - MS

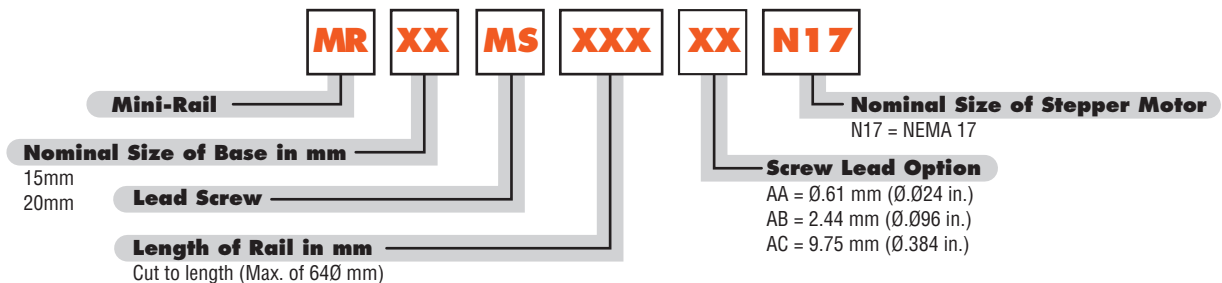
MR20MS

MOUNTING HOLES
FOR M5 SCREWS



NOTES: Maximum length for lead screw driven MR is 640mm.
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

ORDERING INFORMATION





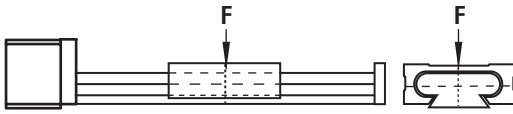
Mini-Rail® LS/MS

Technical Information

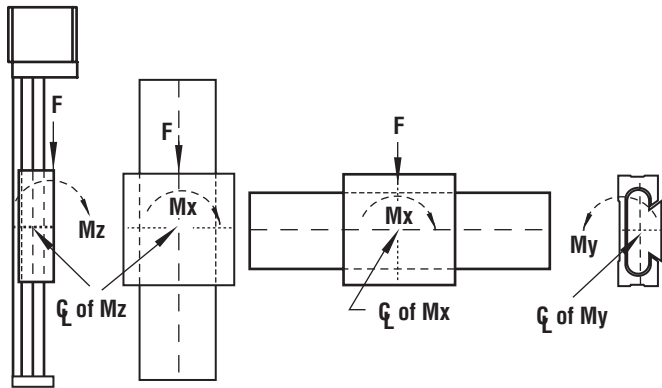
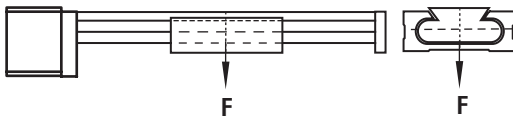
STATIC LOAD DATA

The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

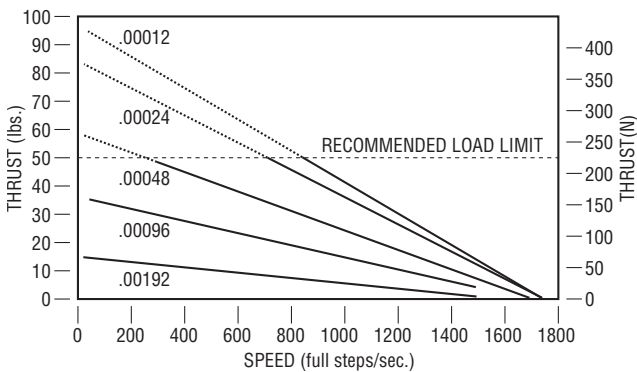
F (N)	MSL (N)*
3559	6005



F (N)
578



F (N)	Mx (N-m)	My (N-m)	Mz (N-m)
1112	24.9	14.7	14.7



Size 17 Stepper Motor with 5.54mm (0.218") Screw

LINEAR TRAVEL PER STEP
.001524 mm (.00006")
.003048 mm (.00012")
.006096 mm (.00024")
.012192 mm (.00048")
.024384 mm (.00096")
.048768 mm (.00192")

NOTES: Rail ends are NOT coated. Fully coated rails are available upon request.

PERFORMANCE RATINGS FOR LINEAR MOTION

Plane bearings are rated by their limiting PV, which is a combination of load over a given surface area and the velocity.

BEARING MATERIAL	MAX. "PV"	MAX. "P"	MAX. "V" (NO LUBRICATION)
Frelon GOLD®	20,000 (psi x ft./min.) or 0.7 N/mm² x m/s	3000 psi or 20.68 N/mm²	300 sfm or 1.524 m/s

PV = The performance measurement of plane bearings

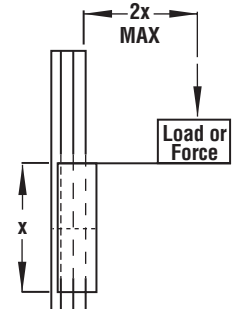
PV = P x V where P = pressure (load) in psi (kgf/cm²)

V = velocity (speed) in sfm (m/min.)

NOTE: All three parameters must be met by an application for the bearing to perform properly.

CANTILEVERED LOADS

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded. This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact factory or website for additional information.



LOAD/MOMENT CONVERSION

N = 4.45 x (lbs.)

N-m = 0.113 x (in-lbs.)

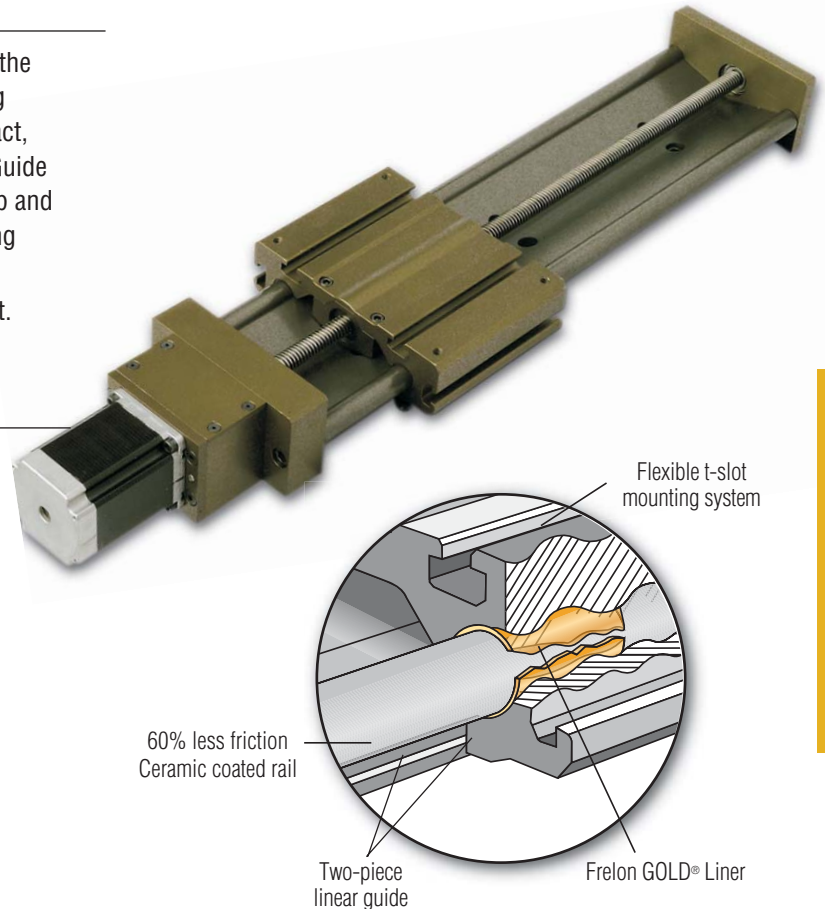


PRODUCT OVERVIEW

Based on proven Simplicity® linear bearing technology, the Uni-Guide contain Frelon GOLD® self-lubricating bearing material. This material results in no metal to metal contact, while dampening vibrations and shock loads. The Uni-Guide unique two-piece assembly eliminates tolerance stack up and the integrated lightweight packages can drop into existing applications making installation easy. Ideal for low cost automation, positioning tables and packaging equipment.

FEATURES & BENEFITS

- Two-piece assembly - lightweight and eliminates tolerance stack
- Self-lubricating - Frelon GOLD® provides low wear, low friction, and high strength
- Lengths up to 10' - butt-joinable for longer lengths
- Mounting Flexibility
 - Pre-drilled rails
 - T-slots & mounting holes on carriages
 - Side or top mounting
- Easy drop in unit - no alignment needed
- Drive options
 - Ball
 - Lead screw (includes motor and drive)
 - Belt Driven
- Corrosion-Resistant - ideal in washdown environments
- Pre-engineered - ready to use



Uni-Guide

Uni-guide

MODULAR GUIDE SYSTEM

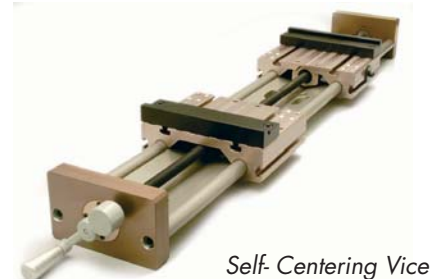
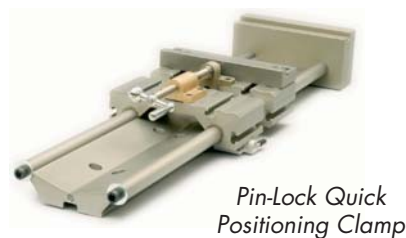
**UNLIMITED DESIGN OPTIONS
AND VERSATILITY.**

ACCESSORIES*

- | | |
|----------------------|------------------|
| • Hand Brake & Crank | • Motor Mount |
| • Vise Block | • End Block |
| • Ratchet Pin | • Pin Lock Clamp |

APPLICATION EXAMPLES

(Application examples require accessories. Contact manufacturer for availability)



* Optional configurations and special carriages are available. Contact manufacturer for availability.

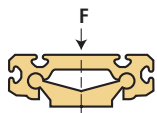
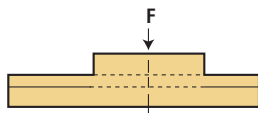


Uni-Guide

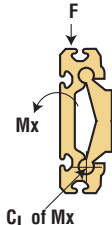
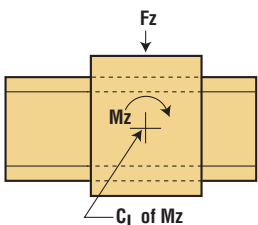
Technical & Ordering Information

STATIC LOADS WITH NO DRIVE MECHANISM

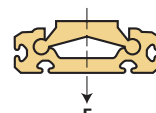
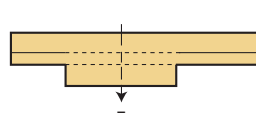
The numbers below are for guides only in a static condition. The drive mechanism selected (lead screw, ball screw, cylinder, etc.) becomes the limiting factor when calculating maximum load and speed capacities. The user is responsible for determining the maximum capacity for the complete system based on the manufacturer's data for their drive configuration.



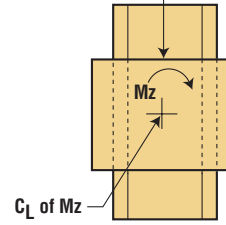
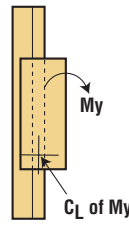
SIZE	F MAX LOAD (lbs.)	F MAX LOAD (N)
D075	500	2,224
D100	750	3,336
D125	1,000	4,448



SIZE	F MAX LOAD (lbs.)	Mx (in./lbs.)	Mz (in./lbs.)	F MAX LOAD (N)	Mx (Nm)	Mz (Nm)
D075	250	340	350	1,112	38	40
D100	375	650	730	1,668	73	82
D125	500	1,200	1,225	2,224	136	138



SIZE	F MAX LOAD (lbs.)	F MAX LOAD (N)
D075	125	556
D100	190	845
D125	250	1,112

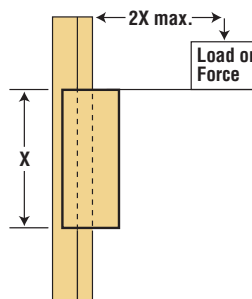


SIZE	My (in./lbs.)	Mz (in./lbs.)	My (Nm)	Mx (Nm)
D075	340	350	38	40
D100	650	730	73	82
D125	1,200	1,225	136	138

Designs must also operate within the following dynamic parameters:

- Maximum Loads (P) = from charts above
- Maximum Speed Dry (V) = 300 ft./min. (1.524 m/s)
- Maximum PV (pressure x velocity) = 20,000 (0.70 N/mm² x m/s)
- PV Example: Load = 85 psi
Speed = 180 ft./min.
PV = 85 x 180 = 15,300 PV

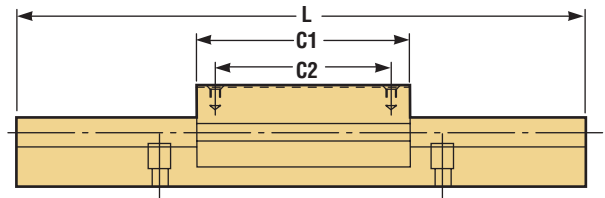
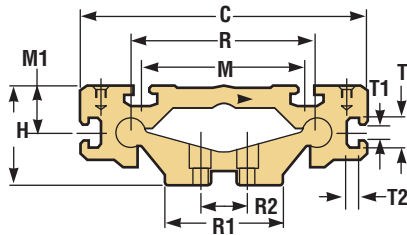
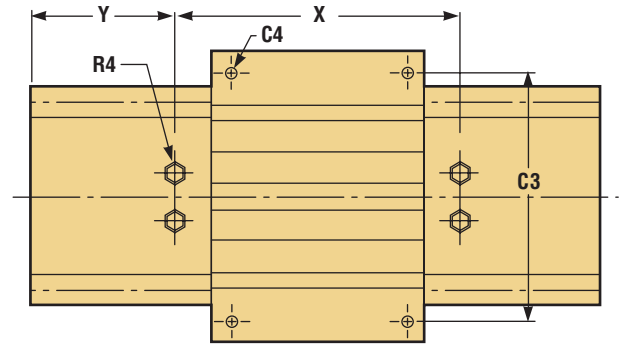
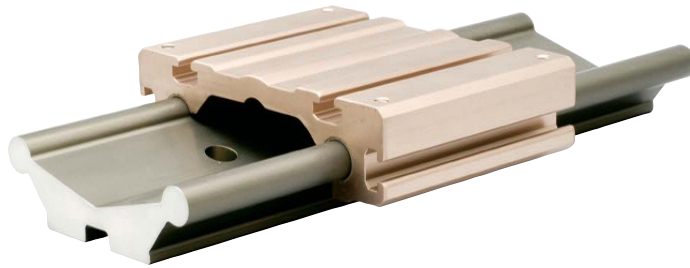
NOTE: Frelon GOLD® bearing material coefficient of friction is 0.125.



If the drive mechanism (lead screw, ball screw, cylinder, etc.) is centered on the carriage, the load may not exceed a 2:1 ratio to the length of the bearings or binding will occur.

ORDERING INFORMATION

D	L	M	100	A	CHB	-xxx	P	M	-X	# of Carriages
Series D - Standard Uni-Guides										
Carriage Options No Entry - Standard Carriage L - Extended Length Carriage										
Mounting Hole Options No Entry - Standard Inch Sizes M - Metric Size Mounting Holes										
Nominal Size 75mm, 100mm, 125mm Based on mm from shaft center-to-center										
Drive Options No Entry - No Drive Mechanism A - Right Hand Lead Screw with Standard Pitch A1 - Right Hand Lead Screw with Optional Pitch (See pages 196-198 for specifications.) Notes: Screw options require attaching collar. Call the factory for other optional drive mechanisms.										
Data Entry Option No Entry - No Options M - Optional MMI Keypad (Man-to-Machine Interface)										
Power and Control Options No Entry - No Power Options P - Standard Motor with Motor Mount, Programmable Drive, Cables and Software (must have "N" in Drive Mounting Option) Note: Kits available for NEMA motor										
Overall Rail Length "D" Series - enter length of rail in inches xxx.xxx (EX: 6" = 006.000) "DM" Series - enter length of rail in mm xxxx (EX: 3500mm = 0350)										
Drive Mounting Options No Entry - No Drive Mounting Options H - Hand Crank N - NEMA Standard Motor Mount (See pages 196-198 for specifications.) HB - Handbrake (requires handcrank and screw) CHB - Carriage Handbrake (not offered with screw driven options)										



STANDARD INCH SERIES WITH NO DRIVE MECHANISM (inches)

PART NUMBER	R	R1	R2	X	R4	Y	H	C	C1		C2		C3	C4	M	M1	L MAX-FEET
					BOLT SIZE				STANDARD	STANDARD	EXTENDED	EXTENDED		BOLT SIZE			
D075-xxx	2.95	2	0.75	4	1/4	2	1.625	4.6	3.5	3	4.5	4	4	10-32	2.6	.819	12
D100-xxx	3.94	2.6	1	6	5/16	3	2.125	6.1	4.5	3.75	6	5.25	5.25	1/4-20	3.5	1.02	
D125-xxx	4.92	3.3	1.25		3/8	3	2.625	7.6	6	5.25	7.5	6.75	6.75	5/16-18	4.33	1.30	

CARRIAGE TYPES

PART NO.	DRILL	DEPTH	TAP	DEPTH
D075-xxx	.159	.534	10-32	.440
D100-xxx	.201	.750	1/4-20	.500
D125-xxx	.257		5/16-18	.625

T-SLOT INFORMATION (inches)

PART NO.	T	T1	T2
D075-xxx	.590	.256	.236
D100-xxx	.661	.319	.268
D125-xxx			

METRIC SERIES WITH NO DRIVE MECHANISM (mm)

PART NUMBER	R	R1	R2	X	R4	Y	H	C	C1		C2		C3	C4	M	M1	L MAX-FEET
					BOLT SIZE				STANDARD	STANDARD	EXTENDED	EXTENDED		BOLT SIZE			
DM075-xxx	75	51	20	120	M 6	60	41.3	117	85	73	110	98	105	M 5	66	16.5	3.66m
DM100-xxx	100	66	25	150	M 8	75	54	155	115	95	150	130	135	M 6	89	26	
DM125-xxx	125	84	30	200	M 10	100	66.7	193	150	130	190	170	175	M 8	110	33	

STANDARD LENGTHS CHART (inches)

PART NO.	8"	12"	16"	18"	20"	24"	28"	30"	32"	36"	40"	42"	48"
D075-xxx	X		X		X		X		X		X		
D100-xxx		X		X		X		X		X		X	
D125-xxx													X

T-SLOT INFORMATION (mm)

PART NO.	T	T1	T2
DM075-xxx	15.0	6.5	6.0
DM100-xxx	16.8	8.1	6.8
DM125-xxx			

WEIGHTS

PART NO.	RAIL PER INCH	STANDARD CARRIAGE	EXTENDED CARRIAGE
	(lbs.)	(lbs.)	(lbs.)
D075-xxx	0.19	0.98	1.26
D100-xxx	0.32	2.12	2.82
D125-xxx	0.48	4.56	5.7

RAIL Ø APPROXIMATE	
D075 =	.470 = 12mm
D100 =	.630 = 16mm
D125 =	.820 = 22mm

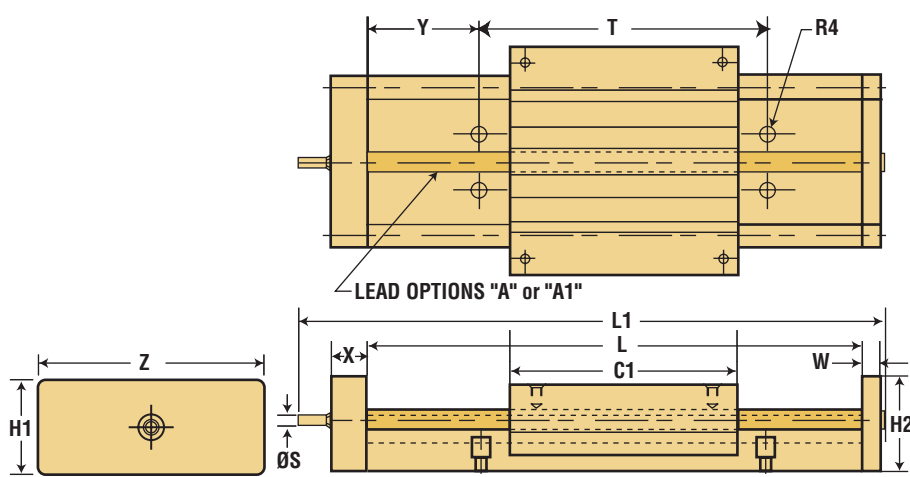
Straightness - ±.002"/ft



Uni-Guide - D075

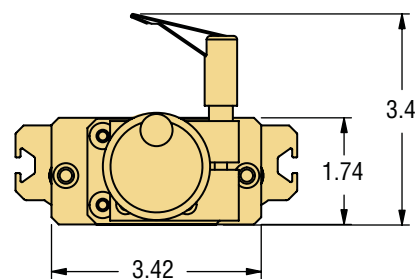
Slides, Tables & Stages

D075



OPTIONAL HAND BRAKE

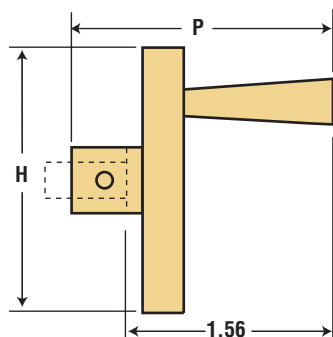
NOTE: available only with optional hand crank



PART NO.	P	H
D075AHB	2.31	1.75

PART NO.	STROKE (L-C1)	L	L1	C1	NOMINAL SCREW DIA.	STANDARD LEAD A	OPTIONAL LEAD A1	S	Y	T	R4	W	X	Z	H1	H2
D075xx-12	8.5	12	13.93	3.5	3/8"	0.250	0.500	0.187	2	4	1/4	0.375	0.625	3.42	1.75	1.625
D075xx-16	12.5	16	17.93													
D075xx-20	16.5	20	21.93													
D075xx-24	20.5	24	25.93													

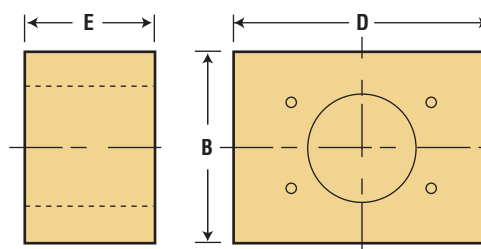
OPTIONAL HAND CRANK



PART NO.	P	H
75H	2.31	1.75

*See order codes on page 199 to integrate.

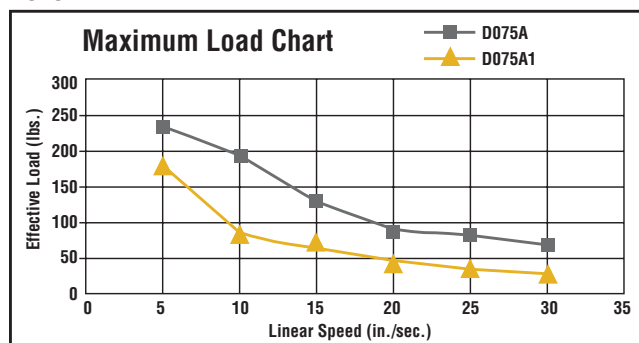
OPTIONAL MOTOR MOUNT ATTACHMENT



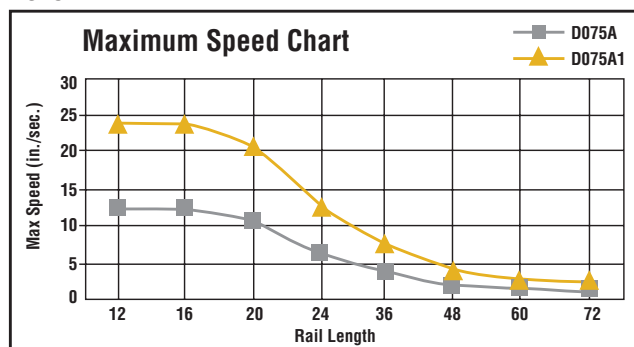
PART NO.	MOTOR MOUNT	B	E	D
75N	NEMA 17	2	1.81	3.25

LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN (HORIZONTAL ORIENTATION)

D075A-xxx



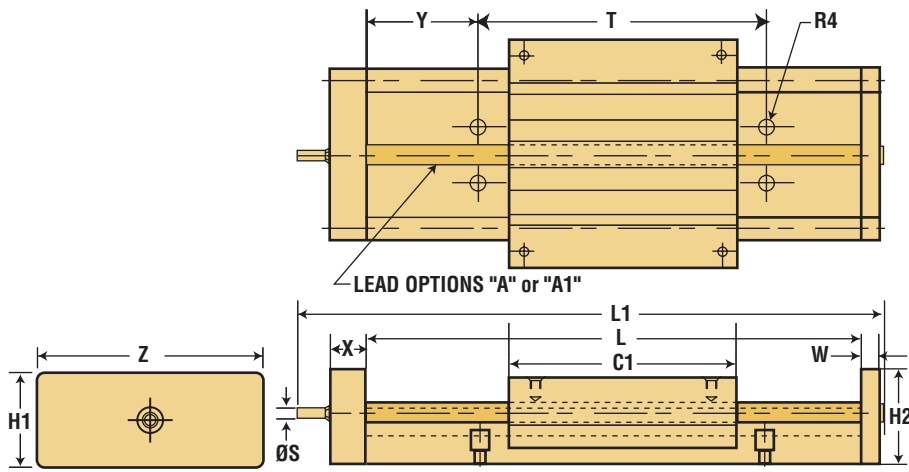
D075A-xxx



NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.

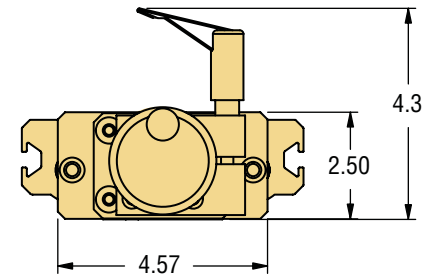


D100



OPTIONAL HAND BRAKE

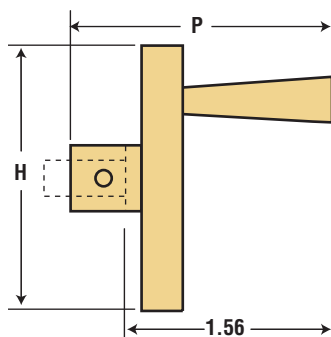
NOTE: available only with optional hand crank



PART NO.	P	H
D0100AHB	2.31	1.75

PART NO.	STROKE (L-C1)	L	L1	C1	NOMINAL SCREW DIA.	STANDARD LEAD A	OPTIONAL LEAD A1	S	Y	T	R4	W	X	Z	H1	H2
D100xx-12	7.5	12	14.61	4.5	1/2	0.250	0.500	0.314	3	6	5/16	0.5	1	4.56	2.5	2.500
D100xx-18	13.5	18	20.61													
D100xx-24	19.5	24	26.61													
D100xx-30	25.5	30	32.61													
D100xx-48	25.5	30	32.61													

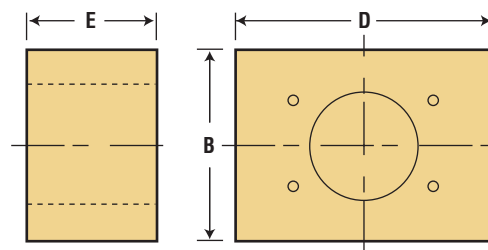
OPTIONAL HAND CRANK



PART NO.	P	H
100H	2.31	2.25

*See order codes on page 199 to integrate.

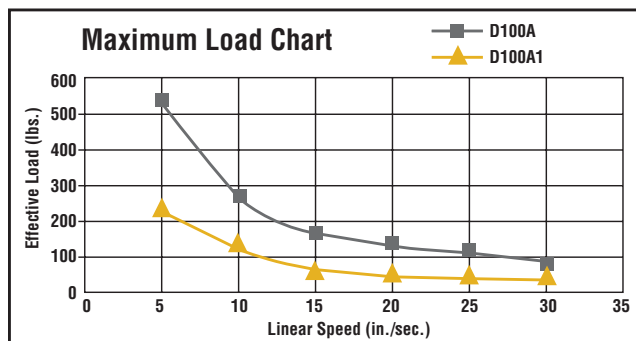
OPTIONAL MOTOR MOUNT ATTACHMENT



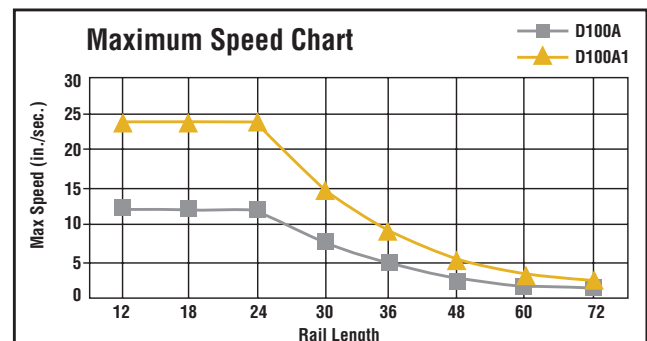
PART NO.	MOTOR MOUNT	B	E	D
100N	NEMA 23	2.5	1.81	3.25

LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN (HORIZONTAL ORIENTATION)

D100A-xxx



D100A-xxx



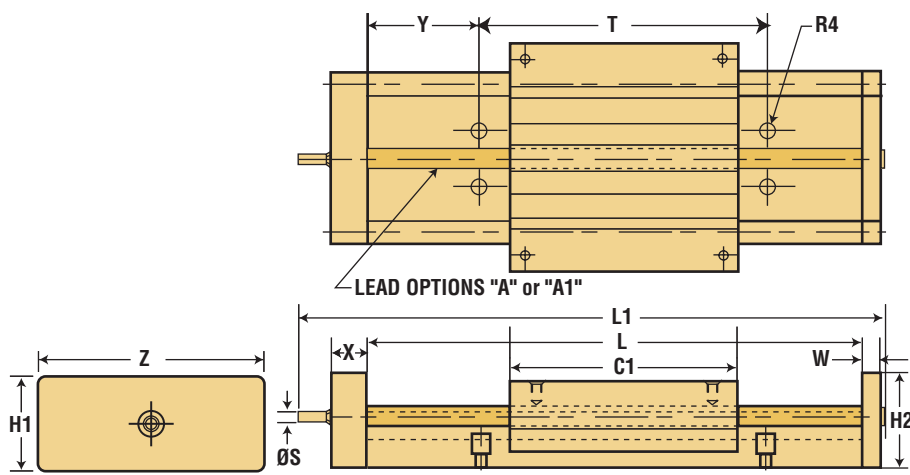
NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.



Uni-Guide - D125

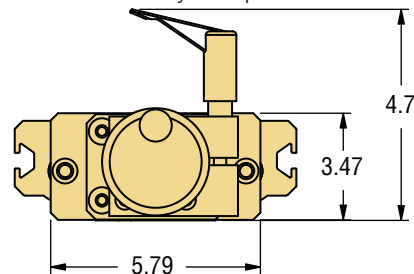
Slides, Tables & Stages

D125



OPTIONAL HAND BRAKE

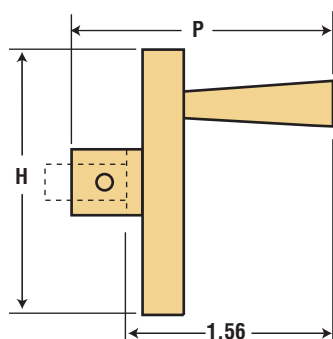
NOTE: available only with optional hand crank



PART NO.	P	H
D0125AHB	2.31	1.75

PART NO.	STROKE (L-C1)	L	L1	C1	NOMINAL SCREW DIA.	STANDARD LEAD A	OPTIONAL LEAD A1	S	Y	T	R4	W	X	Z	H1	H2
D125xx-12	6	12	14.85	6	5/8	0.200	0.500	0.314	3	6	3/8	0.5	1	5.78	3.5	2.500
D125xx-18	12	18	20.85													
D125xx-24	18	24	26.85													
D125xx-30	24	30	32.85													
D125xx-36	30	36	38.85													
D125xx-48	42	48	50.85													
D125xx-60	54	60	62.85													

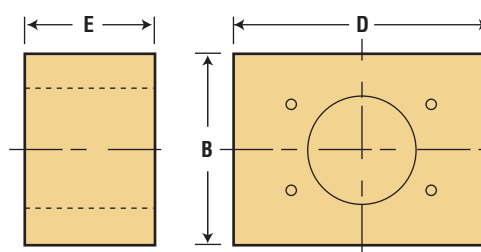
OPTIONAL HAND CRANK



PART NO.	P	H
125H	2.31	3.25

*See order codes on page 199 to integrate.

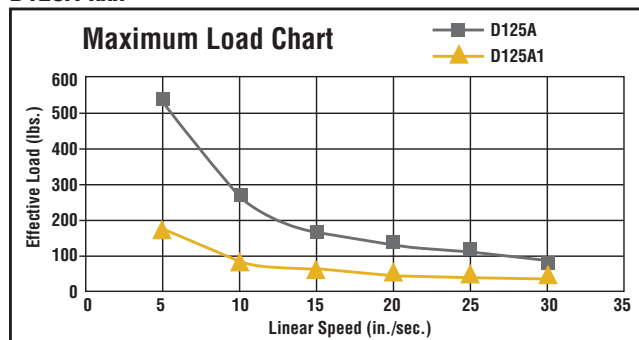
OPTIONAL MOTOR MOUNT ATTACHMENT



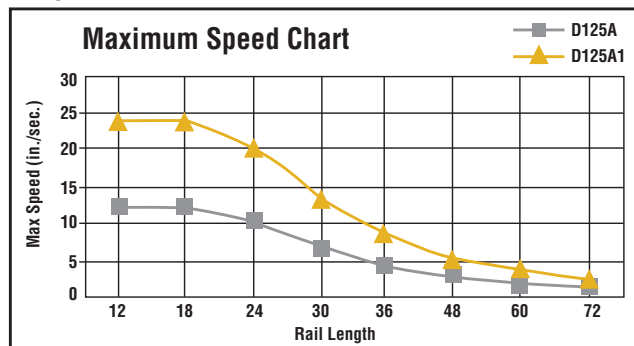
PART NO.	MOTOR MOUNT	B	E	D
125N	NEMA 34	3.5	2.3	4.25

LOAD & SPEED DATA FOR STANDARD LEAD SCREW (HORIZONTAL ORIENTATION)

D125A-xxx



D125A-xxx



NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.



DFG MODULAR GUIDE

- Self-lubricating- maintenance free
- Polymer inserts - smooth, replaceable, low cost
- Modular construction allow for multiple configurations
- Multiple carriage and rail sizes
- Industry standard interchangeable



**Not for resale or distribution inside the European Union.*

Materials:

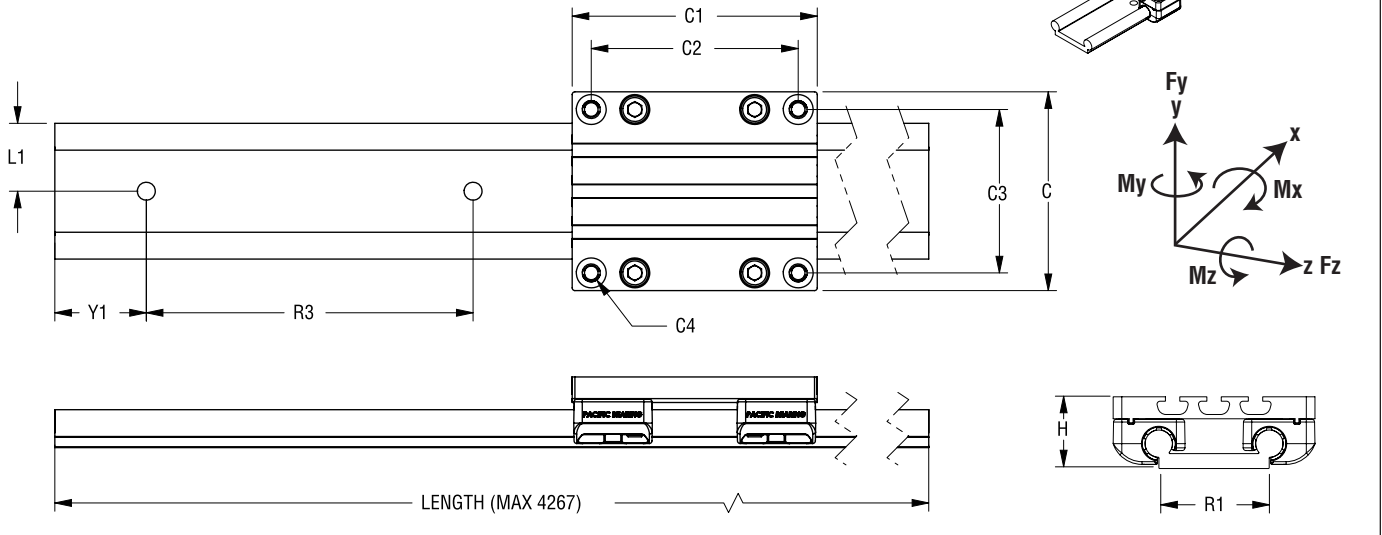
POM polymer insert
Anodized aluminum rails
Chromate plated die cast carriage
Anodized aluminum carriage plate

Working Temperatures: -40C to 90C (-40F to 195F)

Coefficient of Friction: 0.1- 0.2

Maximum Velocity: 10 m/s (2000 fpm) for intermediate application
and 8 m/s (1600 fpm) for continuous application

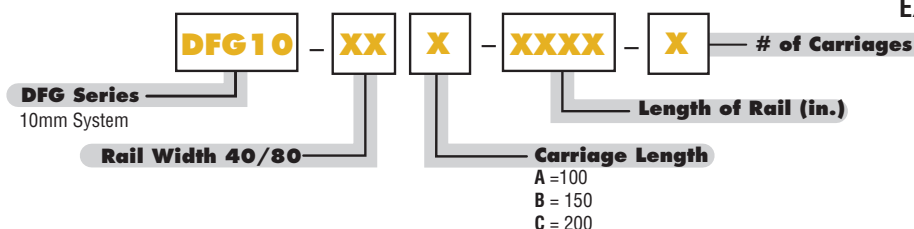
Maximum PV Value: 10,000 psi - fpm



PART NUMBER	DIMENSIONAL INFORMATION												RAIL WEIGHT (G/mm)	LOAD DATA									
	C	C1	C2	C3	C4	H	L1	R1	R3	R4	Y	CARRIAGE WEIGHT (G)		Fy	Fz	Mx	My	Mz					
DFG10CA-40A	73	100	87	60	M6	24	36.5	40	120	6.6	20	310	1.0	5039	1133	4031	1020	100	74	180	133	180	133
DFG10CA-40B	73	150	137	60	M6	24	36.5	40	120	6.6	20	370	1.0	5039	1133	4031	1020	100	74	305	225	305	225
DFG10CA-40C	107	200	187	60	M6	24	36.5	40	120	6.6	20	430	1.0	5039	1133	4031	1020	100	74	430	320	430	320
DFG10CA-80A	107	100	87	94	M6	24	53.5	80	120	6.6	20	360	1.4	5039	1133	4031	1020	184	136	180	132	180	132
DFG10CA-80B	107	150	137	94	M6	24	53.5	80	120	6.6	20	450	1.4	5039	1133	4031	1020	184	136	305	225	305	225
DFG10CA-80C	107	200	187	94	M6	24	53.5	80	120	6.6	20	530	1.4	5039	1133	4031	1020	184	136	430	320	430	320

NOTE: Apply a load reduction factor 0.25 on Fy rating if the system is used inverted.

ORDERING INFORMATION



EXAMPLE: DFG10-40A-0500-1



Redi-Rail® Linear Guides

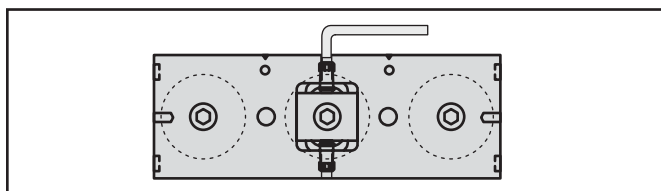
Product Overview

PRODUCT OVERVIEW

- Sealed double row bearings provide maintenance free, smooth linear guidance
- Side adjusted preload makes greatly simplifies assembly and installation
- Withstands temperatures up to 180°F
- Butt-joinable for longer length applications
- Available in Inch or ISO Metric

ADJUSTING SLIDE PRELOAD

The preload of a slide should be properly set from the factory, but if you must adjust it yourself, here are some simple steps to follow.



Metric Series

1. To loosen the eccentric (center) roller, use an Allen wrench to loosen the screw that is on the side of the mounting block. Be sure to loosen the screw that is on the side of the direction you want the roller to move.
2. When it is loose, tighten the set screw on the opposite side of the block. This will move the roller and mounting stud.
3. Make a very small change, retighten the first set screw, and try it out. If the preload is too loose, you will feel the slider rock and you will hear a slight "clunk." If it is too tight, the slider will roll rough, like riding a bicycle on a gravel road.
4. Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere. It may take you several times to get the proper adjustment.
5. Make sure the rollers are tightened with the proper adjustment prior to operation.

SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.



redi-rail®

LUBRICATION - RAILS & BEARINGS

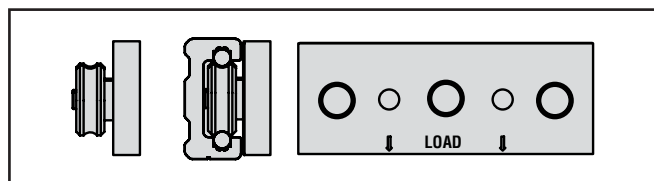
The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.

MOUNTING SLIDER BODY & MAX CAPACITY

Below are recommended bolt tightening torques for mounting to the slide body. Be sure to use bolts that are long enough to obtain full thread engagement.

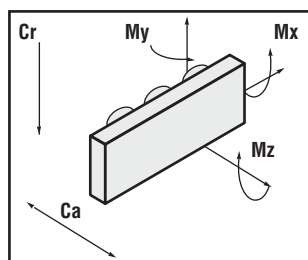


MOUNTING TORQUE

PART NUMBER	IN-LBS. TORQUE	NM TORQUE
RRS14 RRS30	25	3
RRS18 RRS45	70	8
RRS65	150	24



LIFE CALCULATIONS



Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

Conversions

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

INCH PART NO.	Cr (lbs.)	Ca (lbs.)	Mx (in.-lbs.)	My (in.-lbs.)	Mz (in.-lbs.)
RRS14	336	79	21	54	201
RRS18	847	168	67	153	677
METRIC	(N)	(N)	(Nm)	(Nm)	(Nm)
RRS30	1,002	330	1.8	5.5	12.5
RRS45	2,660	827	6.6	19.9	47.9
RRS65	5,950	1,678	19.0	58.2	154.7

To calculate an approximate life for redi-rail sliders, use the following equation.

Inch Series

The value of L_{RR} is in meters

$$L_{RR} = 10^7 \cdot (Cd / (Load_{Equiv} \cdot RF))^{3.0} \text{ (inches)}$$

LC_{RRS} = Slider Life Capacity which is found in the table

$Load_{Equiv}$ = Equivalent Radial Load found from the following equation:

$$Load_{Equiv} = Cr \cdot \left(\frac{Load_{Axial}}{Ca} + \frac{M_x}{M_x \text{ Max}} + \frac{M_y}{M_y \text{ Max}} + \frac{M_z}{M_z \text{ Max}} \right) + Load_{Radial}$$

PART NO.	MAX SPEED (fpm)	MAX SPEED (ipm)	Cd
RRS14	500	6000	421
RRS18	800	9,600	1,032

Metric Series

The value of L_{RR} is in meters

$$L_{RR} = (Cd / Load_{Equiv} \cdot RF)^{3.0} \times 100,000 \text{ meters}$$

Cd = Slider Life Capacity which is found in the table

$Load_{Equiv}$ = Equivalent Radial Load found from the following equation:

$$Load_{Equiv} = Cr \cdot \left(\frac{Load_{Axial}}{Ca} + \frac{M_x}{M_x \text{ Max}} + \frac{M_y}{M_y \text{ Max}} + \frac{M_z}{M_z \text{ Max}} \right) + Load_{Radial}$$

PART NUMBER	MAX SPEED (m/min)	MAX SPEED (m/s)	Cd (N)
RR30	300	5.0	1,440
RR45	420	7.0	4,404
RR65	480	8.0	10,200

NOTE: Reduction factors apply to both inch and metric series

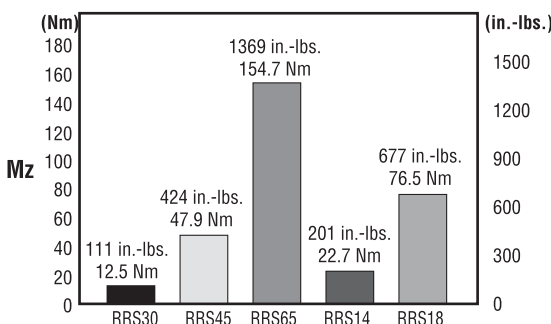
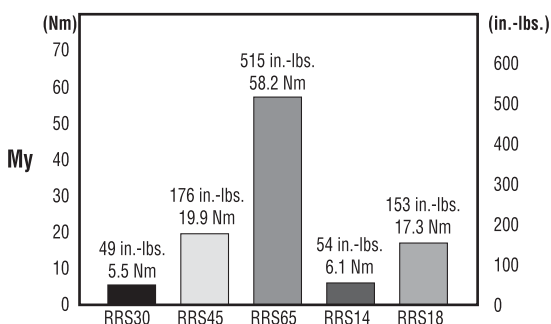
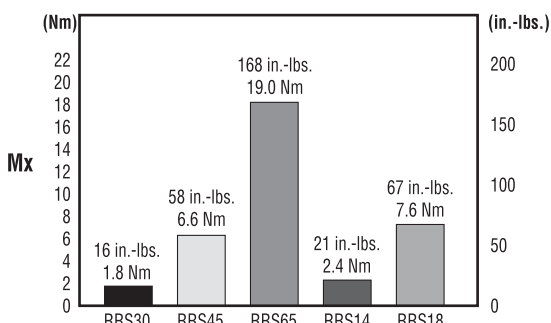
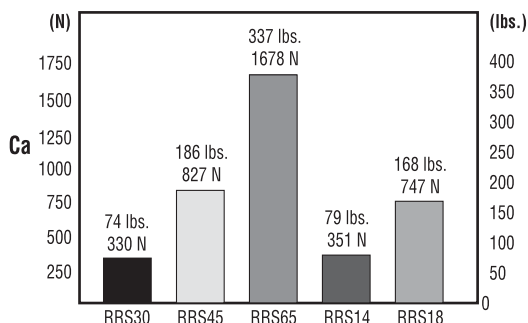
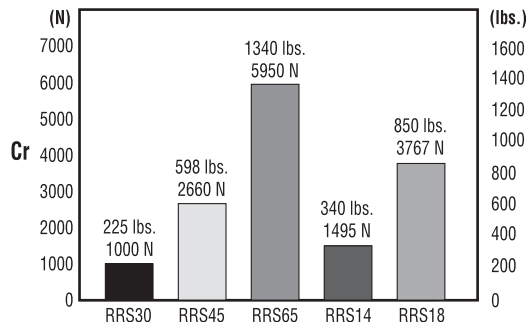
RF = Reduction Factor of the Application or Environment

= 1.0 to 1.5 for very clean, low speed (<30% Max), low shocks

= 1.5 to 2.0 for some dirtiness, moderate speed (30% Max to 75% Max), medium shocks and vibration

= 2.0 to 3.0 for heavy dirt & dust, high speeds (>75% Max) and heavy shocks & vibrations

LOAD COMPARISON GRAPHS



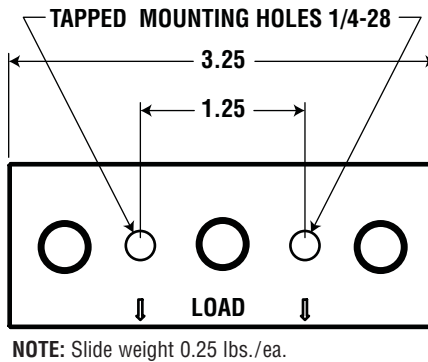
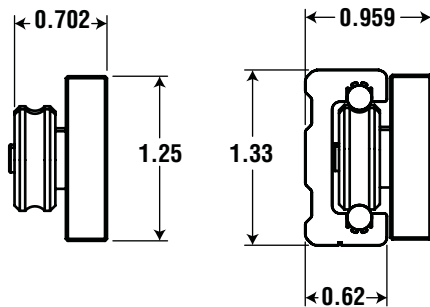
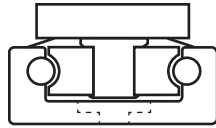


RRS14 Slide

Redi-Rail® Linear Guides - Inch Series

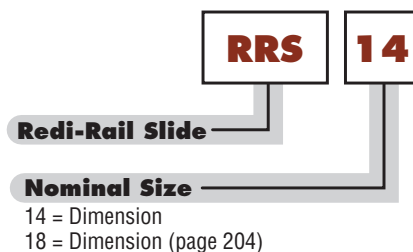
RRS14 SLIDE

- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 19' lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F



NOTE: Slide weight 0.25 lbs./ea.

ORDER INFORMATION



EXAMPLE:
Slider size 14



RR14 RAIL

SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)

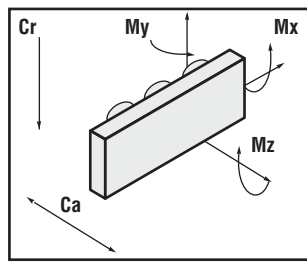
PART NUMBER	LENGTH	HOLES	Y	WT. (lbs./ft.)
RR14-12	12	4	0.75	0.56
RR14-24	24	7	1.50	
RR14-36	36	11	0.50	
RR14-48	48	14	1.25	
RR14-60	60	17	2.00	
RR14-72	72	21	1.00	
RR14-84	84	24	1.75	
RR14-96	96	28	0.75	

NOTE: Suggested lengths can be cut and are available up to 19' (6m).



Aluminum alloy with hardened steel raceways inserted.

LIFE CALCULATIONS

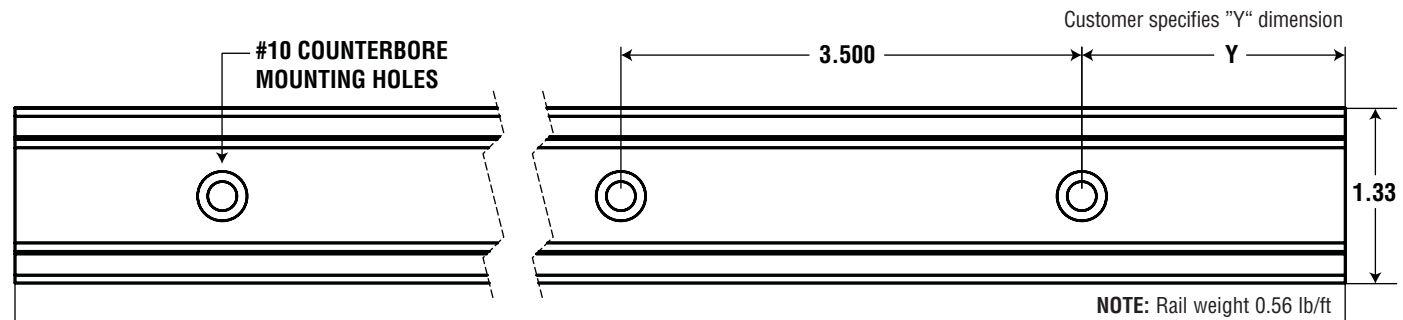


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

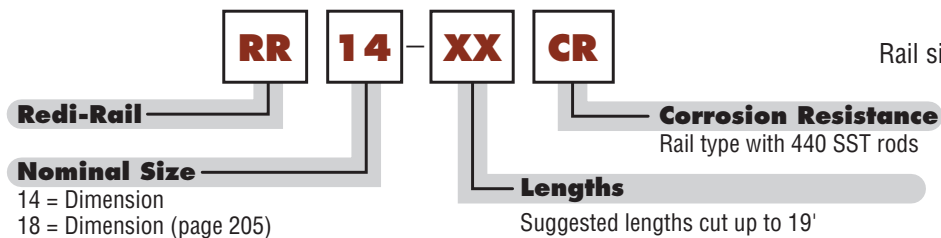
Conversions

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

PART NUMBER	Cd (lbs.)	Cr (lbs.)	Ca (lbs.)	Mx (in.-lbs.)	My (in.-lbs.)	Mz (in.-lbs.)
RRS14	421	340	79	21	54	201



ORDER INFORMATION



EXAMPLE: RR14-36
Rail size 14 cut to 36" long

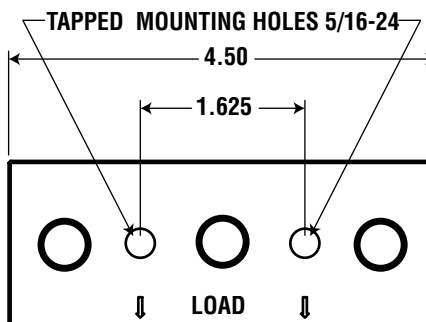
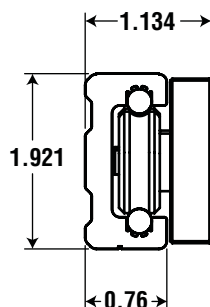
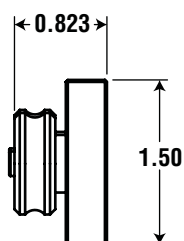
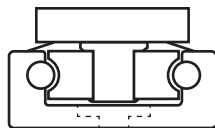


RRS18 Slide

Redi-Rail® Linear Guides

RRS18 SLIDE

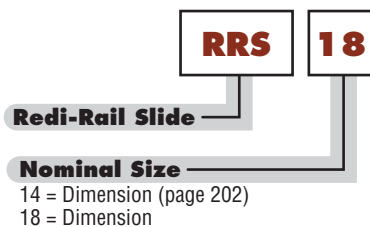
- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 5.79m lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F



NOTE: Slide weight 0.50 lbs./ea.

ORDER INFORMATION

EXAMPLE: RRS18





RR18 RAIL

SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)

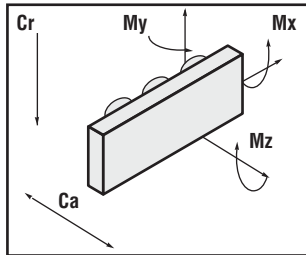
PART NUMBER	LENGTH	HOLES	Y	WT. (lbs./ft.)
RR18-12	12	4	0.75	0.85
RR18-24	24	7	1.50	
RR18-36	36	11	0.50	
RR18-48	48	14	1.25	
RR18-60	60	17	2.00	
RR18-72	72	21	1.00	
RR18-84	84	24	1.75	
RR18-96	96	28	0.75	

NOTE: Suggested lengths can be cut and are available up to 19' (6m).



Aluminum alloy with hardened steel raceways inserted.

LIFE CALCULATIONS

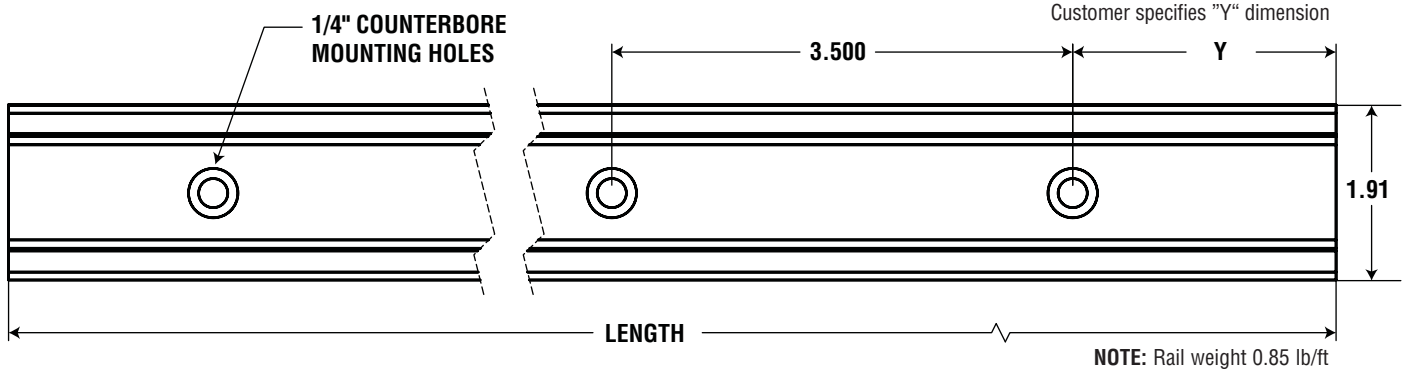


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

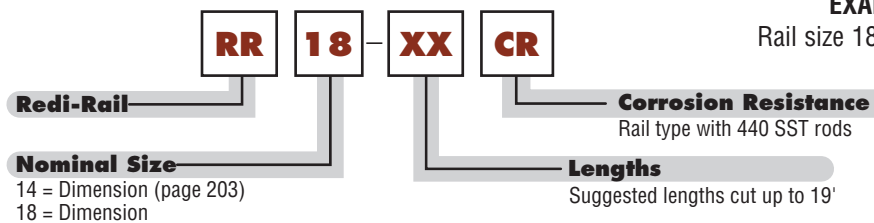
Conversions

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

PART NUMBER	Cd (lbs.)	Cr (lbs.)	Ca (lbs.)	Mx (in.-lbs.)	My (in.-lbs.)	Mz (in.-lbs.)
RRS18	1,032	850	168	67	153	677



ORDER INFORMATION



EXAMPLE: RR18-36
Rail size 18 cut to 36" long

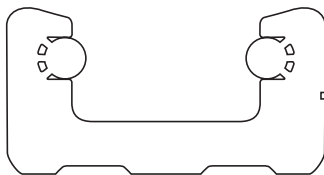


RRS30 Slide

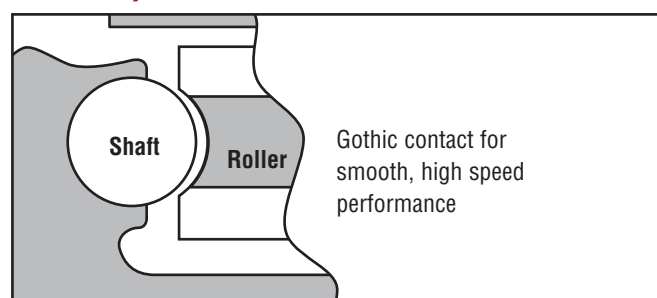
Redi-Rail® Linear Guides - ISO Metric

RRS30 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

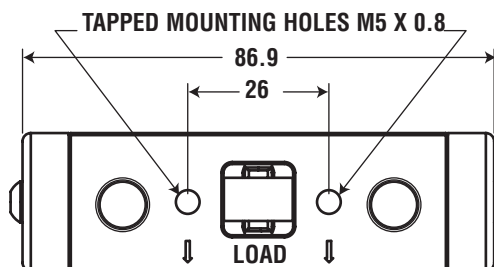
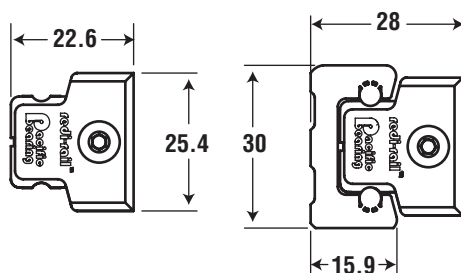


ROLLER/SHAFT INTERFACE



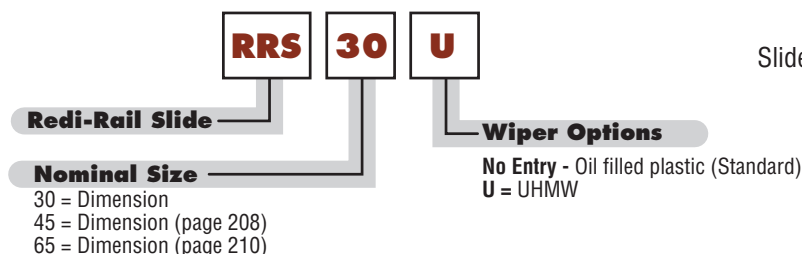
APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



NOTE: Slide weight .09 Kg

ORDER INFORMATION



EXAMPLE: RRS30U
 Slide size 30 with UHMW seals

NOTES: Felt wipers have been replaced by low friction oil impregnated plastic wipers.
 No entry in the part # results in use of oil impregnated wiper.

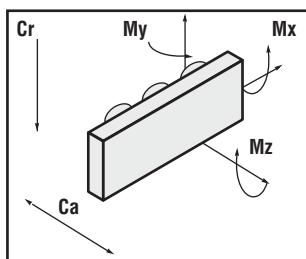


RR30 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



LIFE CALCULATIONS

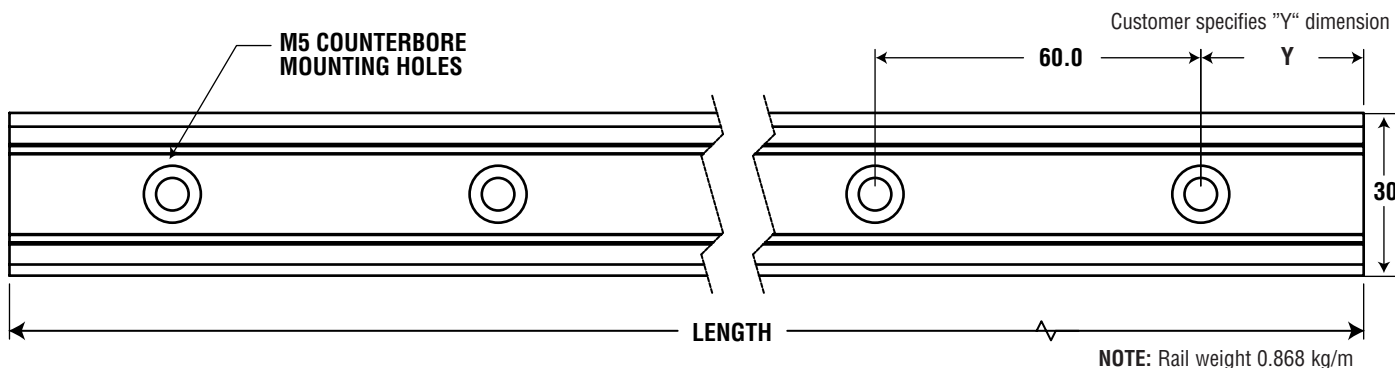


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

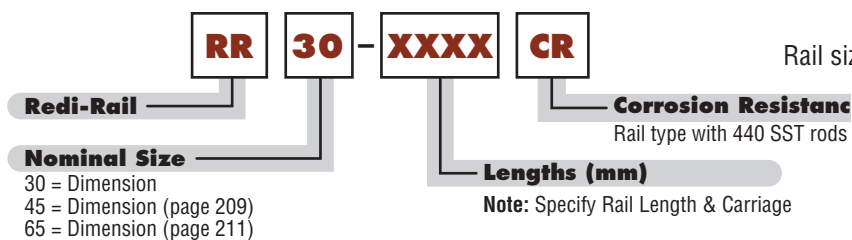
Conversions

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

PART NUMBER	Cd (N)	Cr (N)	Ca (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RRS30	1,440	1,000	330	1.8	5.5	12.5



ORDER INFORMATION



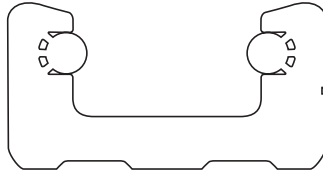


RRS45 Slide

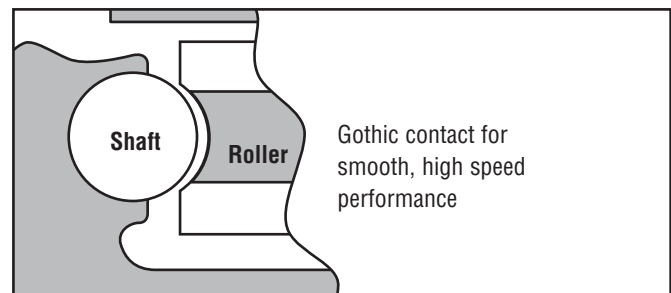
Redi-Rail® Linear Guides

RRS45 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

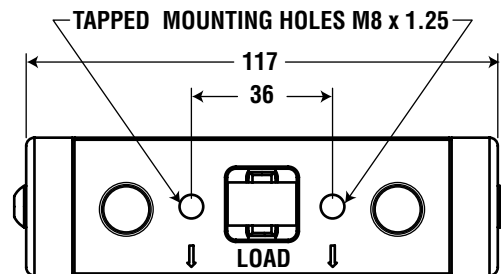
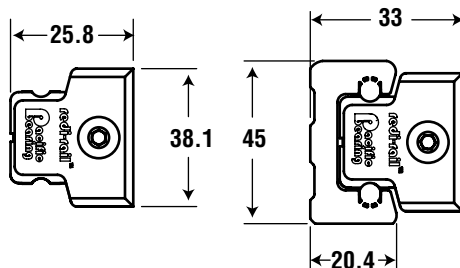


ROLLER/SHAFT INTERFACE



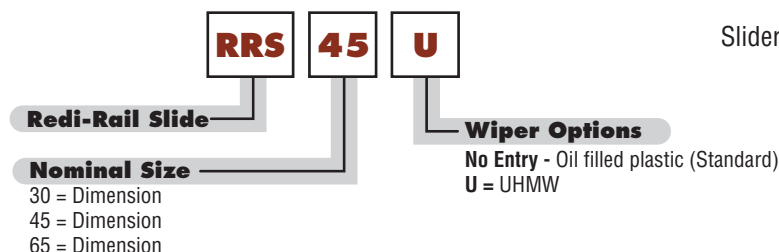
APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



NOTE: Slide weight .23 Kg

ORDER INFORMATION



EXAMPLE: RRS45U
 Slider size 45 with UHMW seals

NOTES: Felt wipers have been replaced by low friction oil impregnated plastic wipers.
 No entry in the part # results in use of oil impregnated wiper.

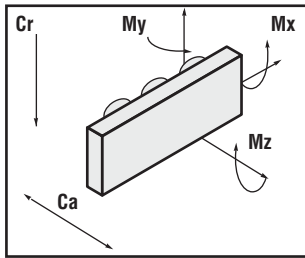


RR45 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



LIFE CALCULATIONS

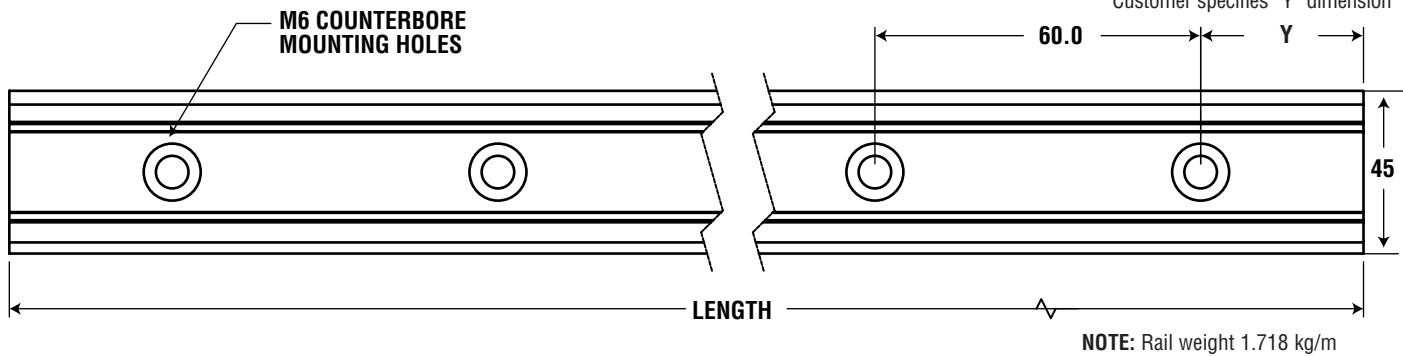


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

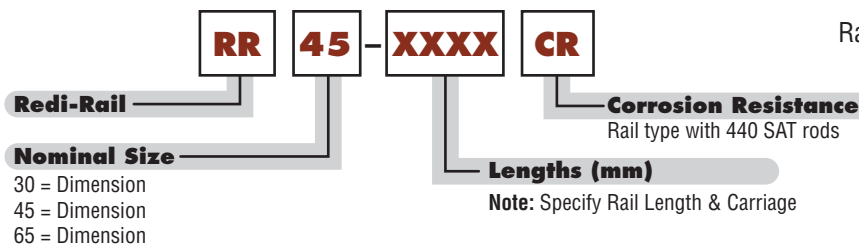
Conversions

newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

PART NUMBER	Cd (N)	Cr (N)	Ca (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RRS45	4404	2660	827	6.6	19.9	47.9



ORDER INFORMATION



EXAMPLE: RR45-1200
Rail size 45 cut to 1200mm long

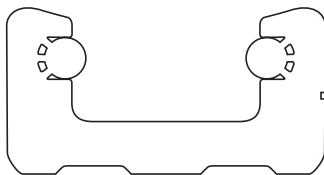


RRS65 Slide

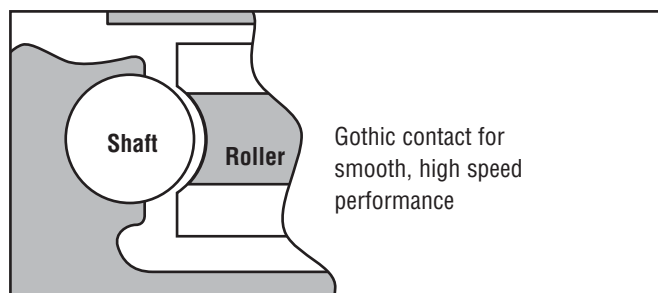
Redi-Rail® Linear Guides

RRS65 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

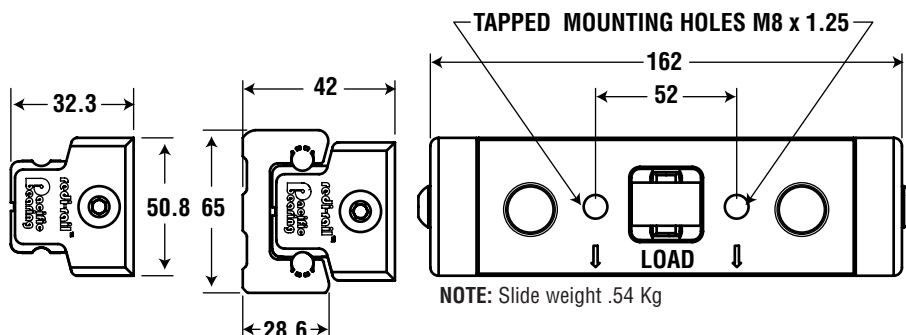


ROLLER/SHAFT INTERFACE

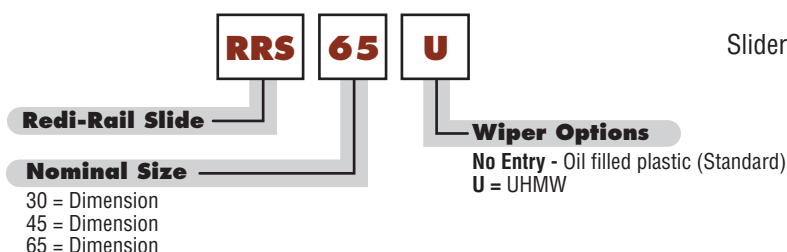


APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



ORDER INFORMATION



EXAMPLE: RRS65U
Slider size 65 with UHMW seals

NOTES: Felt wipers have been replaced by low friction oil impregnated plastic wipers.
No entry in the part # results in use of oil impregnated wiper.

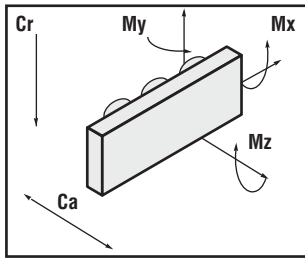


RR65 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



LIFE CALCULATIONS

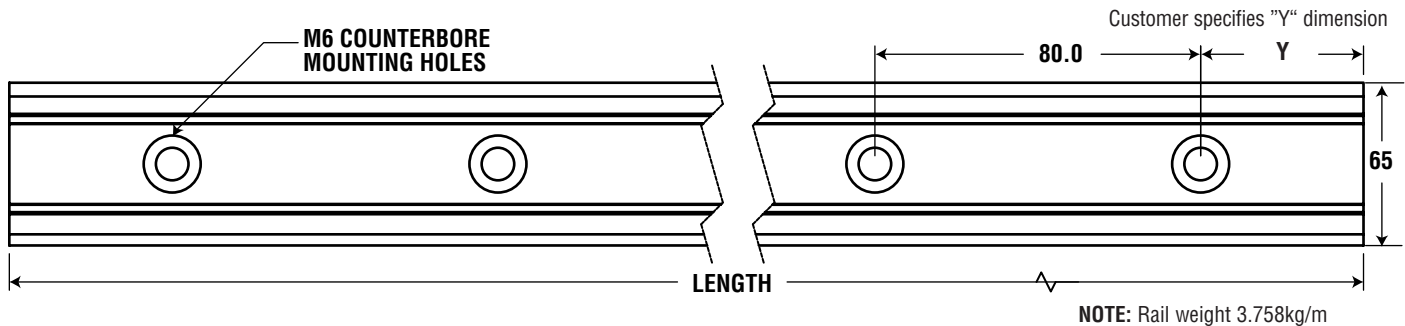


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

Conversions

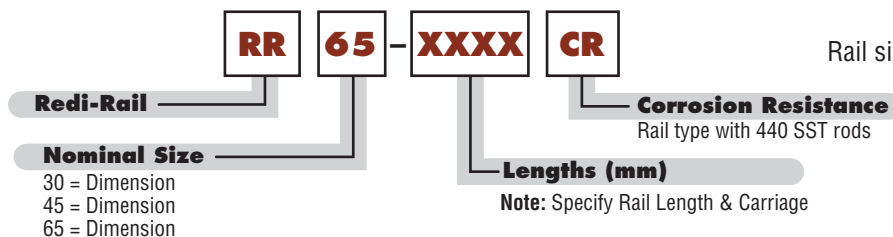
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (Nm) x 8.851 = in.-lbs.

PART NUMBER	Cd (N)	Cr (N)	Ca (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RRS65	10200	5950	1678	19.0	58.2	154.7



Redi-Rail® RR65

ORDER INFORMATION



EXAMPLE: RR65-1200
Rail size 65 cut to 1200mm long

Drawer Slides - RD

Inch Series

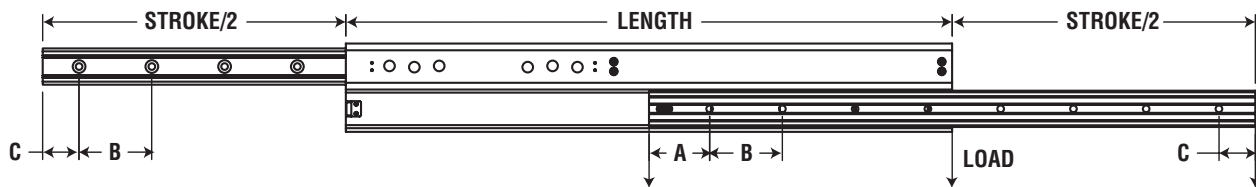
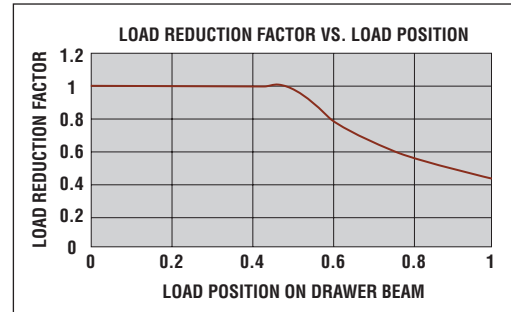
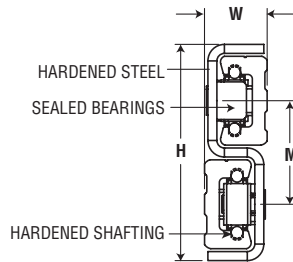
RD DRAWER SLIDES

- S-shape stainless steel frame
- Aluminum rail with embedded hardened steel raceway
- Sealed steel bearings
- Strokes range from 16" to 48"



Materials:

Carbon steel rollers
Hardened steel shafts & frame
Santoprene bumpers
Aluminum rail
Stainless steel hardware



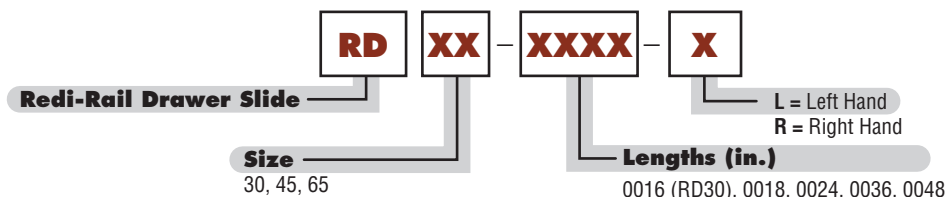
Working Temperatures: -20C to 120C (-4F to 248F)

- Oil impregnated wipers not only prevents the system from dust and particle intrusion, but also provide lubrication and extend life cycles.
- Elastomer end stops are not intended as stroke terminus; hard stops must be provided to limit the stroke
- Load rated for a pair of slides when the load is applied on the middle of drawer beams. A load reduction factor shall be used if the load is applied toward the front of drawers.

NOTE: Load rated for a pair of slides when the load is applied on the middle of drawer beams. A load reduction factor shall be used if the load is applied toward the front of drawers.

PART NUMBER	LENGTH	STROKE	CAPACITY PER PAIR		MOUNTING DATA				SCREW SIZE FOR MOUNTING	H	W	M	WEIGHT
	(in.)	(in.)	(N)	(lbs.)	A	B	C	# OF HOLES		(in.)	(in.)	(in.)	(lbs.)
RD30-0016	16.00	16.00	1,150	259	1.25	2.36	0.59	7	(#10) M5	3.1	.83	1.39	4.16
RD30-0018	18.00	18.00	1,265	285	1.10	2.36	0.38	8	(#10) M5	3.1	.83	1.39	5.32
RD30-0024	24.00	24.00	1,391	313	1.25	2.36	1.51	10	(#10) M5	3.1	.83	1.39	6.08
RD30-0036	36.00	36.00	1,489	335	1.25	2.36	1.71	15	(#10) M5	3.1	.83	1.39	8.95
RD30-0048	48.00	48.00	1,542	347	1.25	2.36	1.91	20	(#10) M5	3.1	.83	1.39	11.83
RD45-0018	18.00	18.00	3,158	710	1.75	2.36	2.08	7	(1/4") M6	4.3	1.12	2.05	7.7
RD45-0024	24.00	24.00	3,673	826	1.38	2.36	1.36	10	(1/4") M6	4.3	1.12	2.05	9.92
RD45-0036	36.00	36.00	3,919	881	1.38	2.36	1.55	15	(1/4") M6	4.3	1.12	2.05	14.36
RD45-0048	48.00	48.00	4,061	913	1.38	2.36	1.74	20	(1/4") M6	4.3	1.12	2.05	18.8
RD65-0024	24.00	24.00	6,585	1480	2.5	3.15	2.6	7	(1/4") M6	5.9	1.46	2.874	18.8
RD65-0036	36.00	36.00	8,145	1831	2.5	3.15	2	11	(1/4") M6	5.9	1.46	2.874	27.1
RD65-0048	48.00	48.00	8,765	1970	2.5	3.15	1.4	15	(1/4") M6	5.9	1.46	2.874	35.4

ORDER INFORMATION



EXAMPLE: RDX-XXXX-X



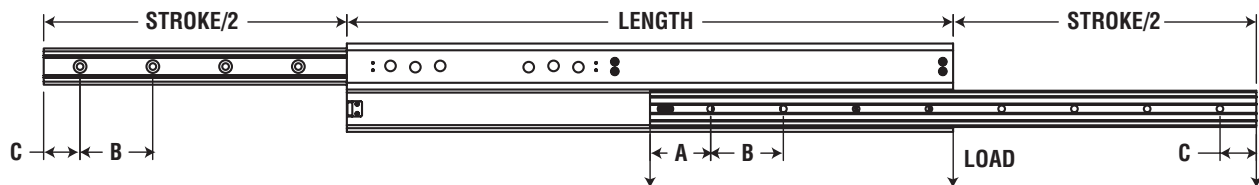
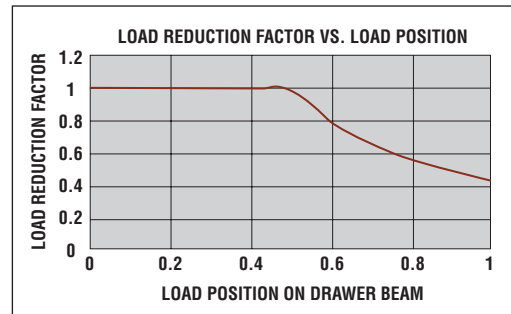
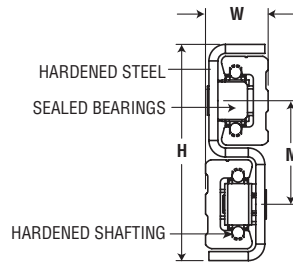
RRD - DRAWER SLIDES

- Strokes range from 500mm to 1250mm
- S shape stainless steel frame ensures heavy duty telescoping application
- Preloaded Redi-Rail assures precision movement
- Follow instructions on how to mount left-handed or right-handed section



Materials:

Carbon steel rollers
Hardened steel shafts & frame
Santoprene bumpers
Aluminum rail
Stainless steel hardware



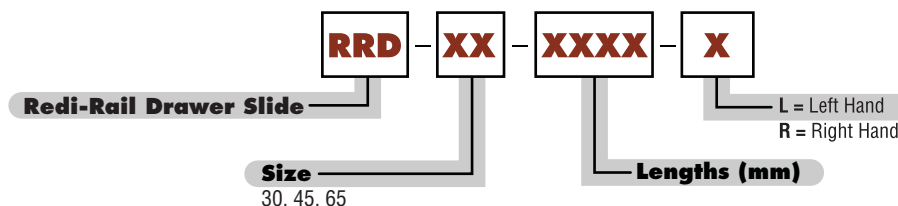
Working Temperatures: -20C to 120C (-4F to 248F)

- Oil impregnated wipers not only prevents the system from dust and particle intrusion, but also provide lubrication and extend life cycles.
- Elastomer end stops are not intended as stroke terminus; hard stops must be provided to limit the stroke
- Load rated for a pair of slides when the load is applied on the middle of drawer beams. A load reduction factor shall be used if the load is applied toward the front of drawers.

NOTE: Load rated for a pair of slides when the load is applied on the middle of drawer beams. A load reduction factor shall be used if the load is applied toward the front of drawers.

PART NUMBER	LENGTH	STROKE	CAPACITY PER PAIR		MOUNTING DATA				SCREW SIZE FOR MOUNTING	H	W	M	.WEIGHT
	(mm)	(mm)	(N)	(lbs.)	A	B	C	# OF HOLES		(mm)	(mm)	(mm)	(kg)
RRD30-0500	500	500	1,150	259	50	60	30	8	M5	78.7	21.1	35.3	2.2
RRD30-0750	750	750	1,391	313	40	60	50	12	M5	78.7	21.1	35.3	3.3
RRD30-1000	1,000	1,000	1,489	335	30	60	10	17	M5	78.7	21.1	35.3	4.4
RRD30-1250	1,250	1,250	1,542	347	30	60	20	21	M5	78.7	21.1	35.3	5.5
RRD45-0500	500	500	2,871	645	50	60	30	8	M6	109	28.4	52	4.0
RRD45-0750	750	750	3,673	826	40	60	50	12	M6	109	28.4	52	6.0
RRD45-1000	1,000	1,000	3,919	881	30	60	10	17	M6	109	28.4	52	8.0
RRD45-1250	1,250	1,250	4,061	913	30	60	20	21	M6	109	28.4	52	10.0
RRD65-0750	750	750	7,521	1,391	63.5	80	46.5	9	M6	149.9	37	73	10.3
RRD65-1000	1,000	1,000	8,368	1,881	63.5	80	56.5	12	M6	149.9	37	73	13.4
RRD65-1250	1,250	1,250	8,808	1,980	63.5	80	66.5	15	M6	149.9	37	73	16.5

ORDER INFORMATION



EXAMPLE: RRDXX-XXXX-X



Steel Linear Guides

Product Overview

IMPROVED LOAD CAPACITY

- Double row precision ball-bearing rollers
- High load capacity, both radial and axial
- Hardened and honed raceways

IMPROVED STIFFNESS

- Optimized rail design
- Roller bearings preloaded for stiffness

INCREASED SPEED AND LOWER NOISE

- High precision rollers
- Super finished raceways
- Low noise

EASY ASSEMBLY

- Self-aligning and self-adjusting components, compensating for assembly/structural errors

GREAT DESIGN

- Innovative and attractive look
- Unique black finish





IMPROVED LIFE TIME OF ALL COMPONENTS

- Innovative materials
- Innovative black surface hardening technology
- Innovative wear resistance

IMPROVED CORROSION-RESISTANCE

- Overall corrosion resistance, due to surface treatment, including raceways
- Improved corrosion resistance compared traditional zinc plating



IMPROVED PROTECTION

- Dust protection for the entire product range



LOW MAINTENANCE REQUIREMENTS

- Self-lubricating system on all sliders and telescopic rails
- Rollers lubricated for life





SYSTEM LIFE



The actual lifetime of the system (rails, slides, and rollers) depends on the applied load, but is also influenced by factors such as: correct lubrication, environmental conditions, assembly precision to avoid uncalculated component stress/wear and total cycle length.

In order to estimate the expected system lifetime in km of operation, the following equation must be solved:

$$L(Km) = 100 \times (Co/P)^3 \times fc/n \times fa$$

Where:

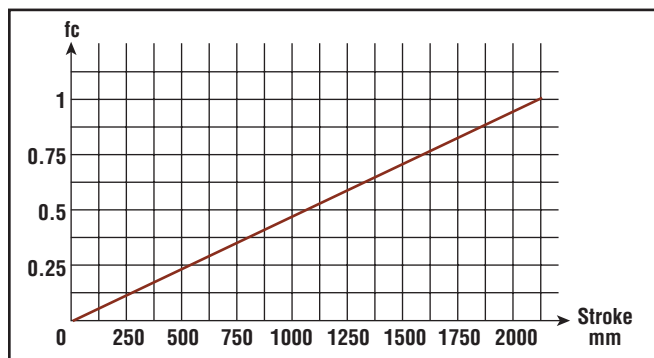
Co = dynamic load coefficient of roller or slide

P = is the equivalent load applied on the heaviest loaded roller or slide.

For each single roller: $P = P_{rad} + (P_{ax} / Co_{ax}) \times Co_{rad}$

For the slide: $P = P_{rad} + (P_{ax} / Co_{ax} + M_x / M_{ox} + M_y / M_{oy} + M_z / M_{oz}) \times Co_{rad}$

F_c = coefficient depending on the actual length of the stroke. This is an important factor in the case of applications with short stroke and high frequency. In these cases total lifetime in km is much shorter, than if application with long strokes. The factor is equal to 1 for stroke longer than 2 meter, while for shorter than 2 meter, the value is derived from the graph shown below:



n = number of slides running on the same rail

f_a = coefficient depending on lubrication and environmental conditions. Recommended values are shown in the table below:

f_a	APPLICATION CONDITIONS
0.7 - 1	Good lubrication, availability of self-lubricating rail wiper system, no dust accumulation and no pollutants, precise assembly
0.5 - 0.7	Random lubrication, environmental dust, thermal fluctuations, vibrations
0.5 - 0.1	Low lubrication, high environmental pollution, strong thermal fluctuations, high vibrations

LINEAR PRECISION

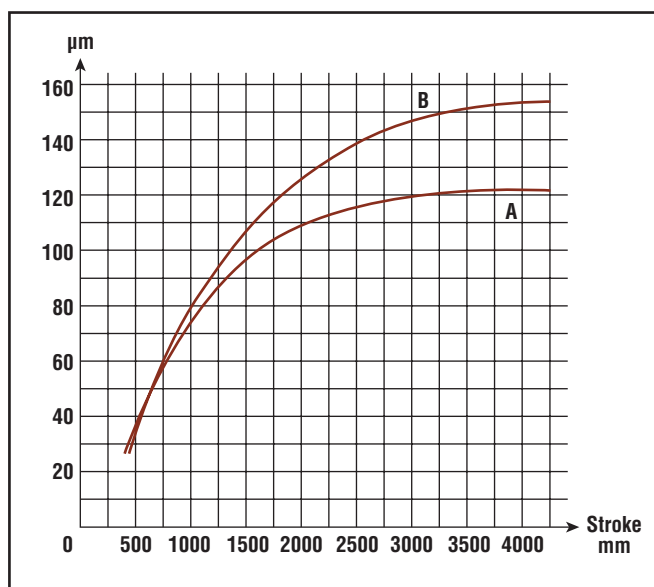
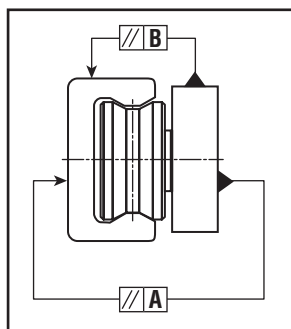
The linear precision of the running slide depends on the rail and, specifically, on the longitudinal parallelism between the raceways and precision of the surface to which they are mounted.

As a result, two slide precision values are determined, one referring to the surface the rails are fixed to (A) and the other (B) to the precision of supporting rail.

Precision is achieved when the surfaces are aligned.

When all screws are correctly tightened, the RRT rail aligns with the fixing surface, and this adds up to the construction linear precision of the same rail.

When the RRT rail is loose, it may result slightly curved. However, this does not give rise to any problem of alignment, once the rail is properly fixed.





SIZING CONTROL

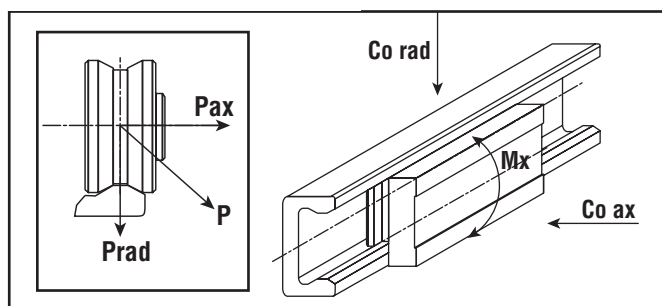
When the positioning and configuration of rails and slides or rollers is determined, it is necessary to verify the correct sizing of system components, for both static and dynamic function. With regard to the static verification, it is necessary to determine the load applied onto each single slide. When the heaviest loaded slide is identified, the safety coefficient must be calculated on that slide and the result must be compared with the maximum static load capacity.

When the load applied is the result of a sum of radial and axial loads as well as moments, it is necessary to calculate the value of each component and verify the following:

$$\frac{P_{ax}}{Co_{ax}} + \frac{P_{rad}}{Co_{rad}} + \frac{M_x}{Mox} + \frac{M_y}{Moy} + \frac{M_z}{Moz} < \frac{1}{Z}$$

For system sizing of Steel Linear Slides, only the axial (Pax) and radial (Prad) load components must be taken into consideration. As a result, it is sufficient to calculate the following:

$$\frac{P_{ax}}{Co_{ax}} + \frac{P_{rad}}{Co_{rad}} \leq \frac{1}{Z}$$



Where:

Pax = axial load component

Prad = radial load component

Mx, My, Mz = applied moments

Co ax = axial load capacity

Co rad = radial load capacity

Mox, Moy, Moz = resistance capacity to moments

Z = safety coefficient ≥ 1

It is recommended to apply the following values to safety coefficient Z:

Z	APPLICATION CONDITIONS
1 - 1.5	Accurate determination of static and dynamic loads. Precise assembly, tight structure.
1.5 - 2	Average conditions
2 - 3.5	Insufficient determination of applied loads. Vibrations, loose structure. Imprecise assembly. Unfavorable environmental conditions.

MAINTENANCE

The roller's internal elements are lubricated and protected by double lip seals (2RS). As a result, they are maintenance free. The sliders of the Steel Linear Guide systems are equipped with lateral seals and a system of strong rail wipers, which incorporate a lubrication system, assuring a release of lubricating oil on the raceways overtime. This gives a maintenance free system for the entire lifetime, under normal clean operational environment.

A similar rail wiper and lubrication system is also standard assembled on the entire system of Drawer Slides of the Precision/RDR series.

In case the wipers with integrated lubrication system is disassembled, it is necessary to provide a periodic manual lubrication of the raceways, to assure a sufficient lubrication on the contact areas. In addition, it is also necessary to regularly clean the raceways for impurities or other residues. For lubrication we recommend to apply standard lithium grease lubrication, specific for ball bearings.

CORROSION RESISTANCE

All Steel and Flexible rails have a surface treatment, which ensures the hardness and offers a high resistance to corrosion. As the surface treatment is carried out after working the raceways, the complete surface has a high corrosion protection also on the raceways. The treatment gives the rails an overall black finish.

In comparison to traditional electrolytic galvanization zinc plating, this surface treatment offer a much better corrosion resistance protection of the rails, which usually are more exposed to corrosion than the sliders.

All sliders and intermediate plate in RDR drawer slides have an electrolytic zinc plating surface treatment.



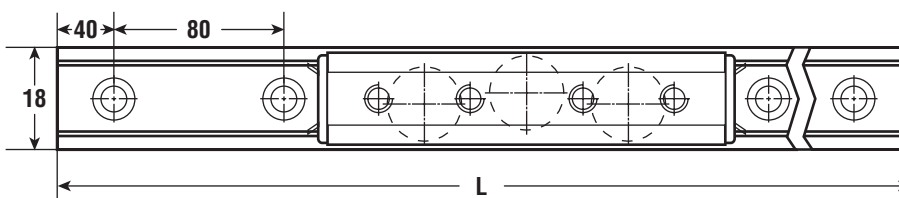
RSS Slide & RRT Rail - 18

Steel Linear Guides - ISO Metric

RSS18 & RRT18

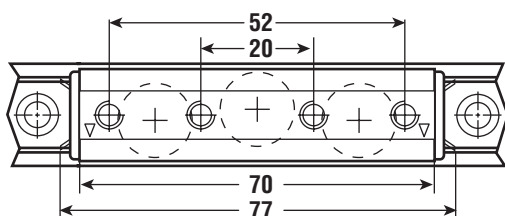


Rail RRT18

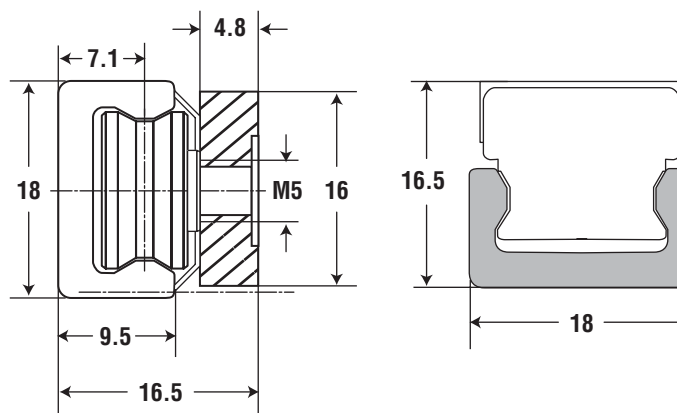
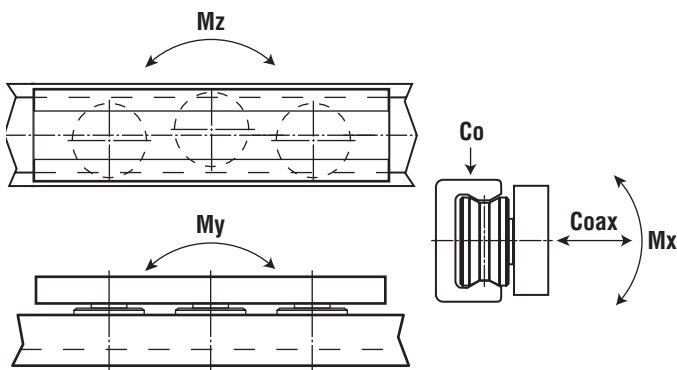
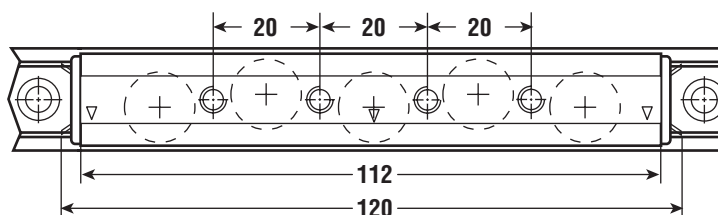


RAIL RRT18 LENGTHS															
160	240	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360
1440	1520	1600	1680	1760	1840	1920	2000	2080	2160	2240	2320	2400	2480	2560	2640
2720	2800	2880	2960												

Slides RSSV18-3



Slides RSSV18-5



SLIDE TYPE	C (N)	RADIAL Co (N)	AXIAL Co (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RSSX18-3	4,000	1,600	1,000	5.2	16.5	20
RSSX18-5	6,000	2,400	1,500	9.3	46.1	50.3

Screw Mounts

RAIL SIZE	TORX	DIAMETER	LENGTH (MM)
RRTX18	T20	M4 x 0.7	8

RRT(S) = Countersunk mounting holes - Standard
RRT(L) = Counterbored mounting holes - Optional

ORDER INFORMATION

CARRIAGE **RSS** **X** **18** - **3**

Slide ——— **Load Type** ——— **Rail Size (mm)** ——— **# of Cam Rollers**

V = Guiding
P = Floating
A = Rotating

3 = 3 Cam Rollers
5 = 5 Cam Rollers

RAIL **RRTX** **18** - **160**

Mounting Holes ——— **Rail Length**

RRTS = Countersunk holes (standard)
RRTL = Counterbored holes (optional)

160 = 2960mm

EXAMPLE: RSSV18-3
RRTX18-160

RSS Slide & RRT Rail - 28

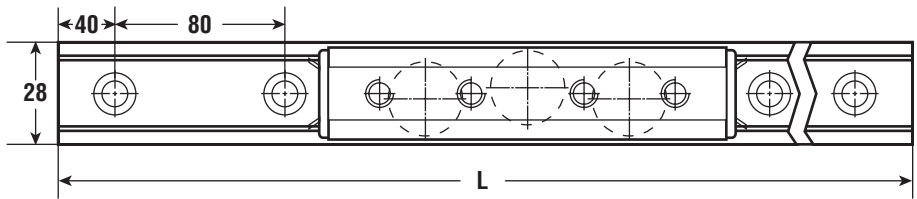
Steel Linear Guides



RSS28 & RRT28

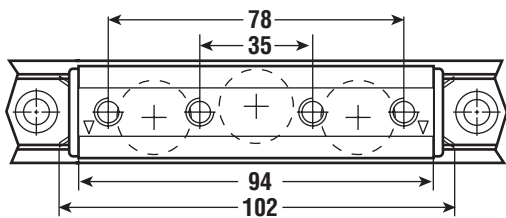


Rail RRT28

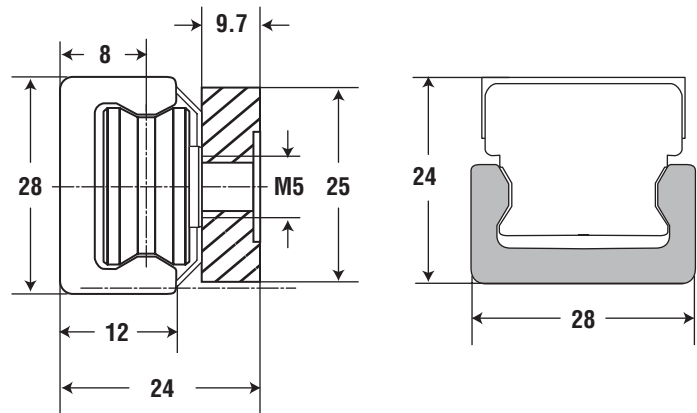
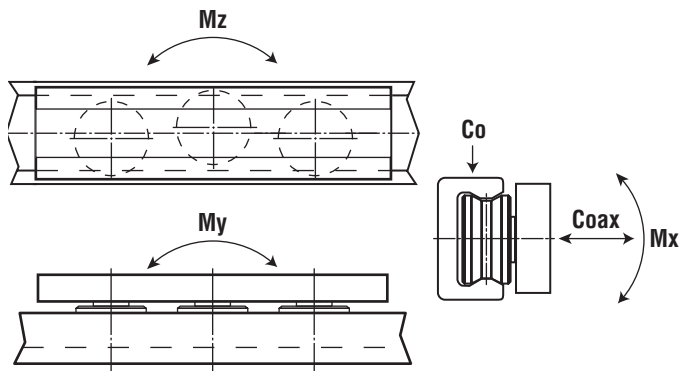
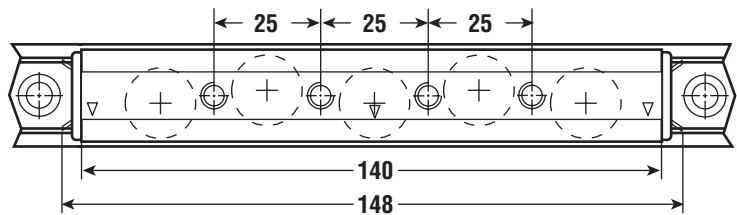


RAIL RRT28 LENGTHS															
240	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440
1520	1600	1680	1760	1840	1920	2000	2080	2160	2240	2320	2400	2480	2560	2640	2720
2800	2880	2960	3040	3120	3200	3280	3360	3440	3520	3600	3680	3760	3840	3920	4000

Slides RSSV28-3



Slides RSSV28-5



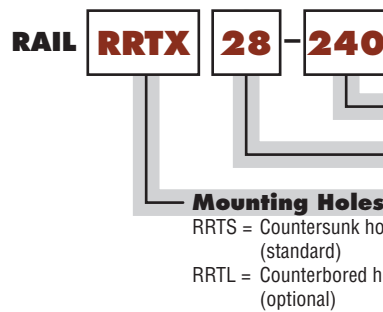
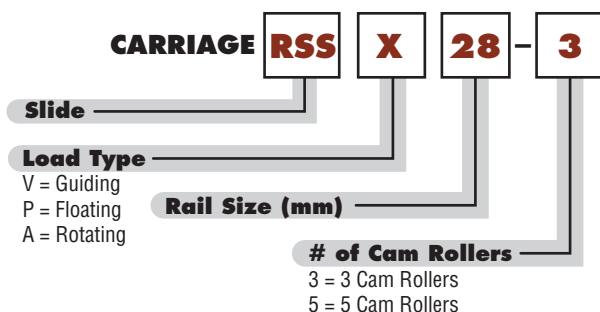
SLIDE TYPE	C (N)	RADIAL Co (N)	AXIAL Co (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RSSX28-3	6,600	3,200	2,000	15.3	43.5	48
RSSX28-5	9,900	4,800	3,000	31.1	115.2	120

Screw Mounts

RAIL SIZE	TORX	DIAMETER	LENGTH (MM)
RRTX28	T25	M5 x 0.8	10

RRT(S) = Countersunk mounting holes - Standard
RRT(L) = Counterbored mounting holes - Optional

ORDER INFORMATION



EXAMPLE: RSSV28-3
RRTX28-240



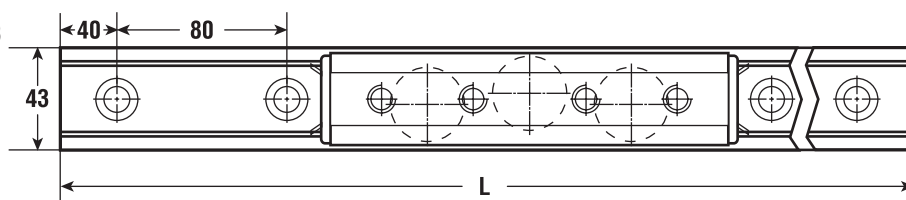
RSS Slide & RRT Rail - 43

Steel Linear Guides

RSS43 & RRT43

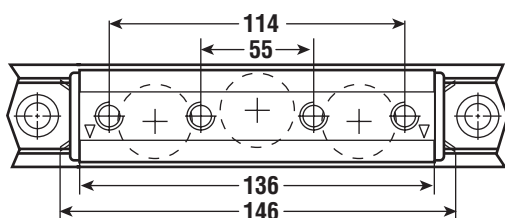


Rail RRT43

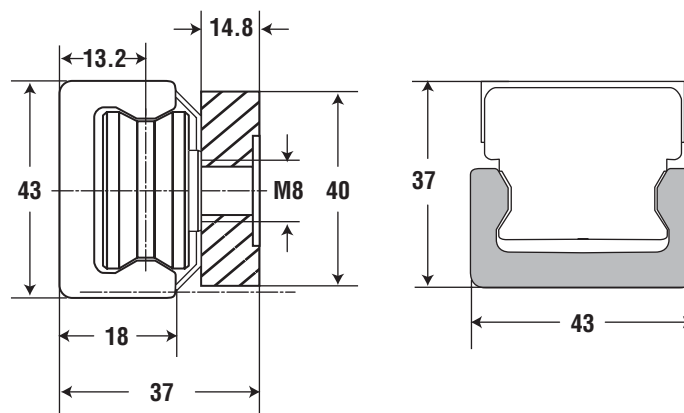
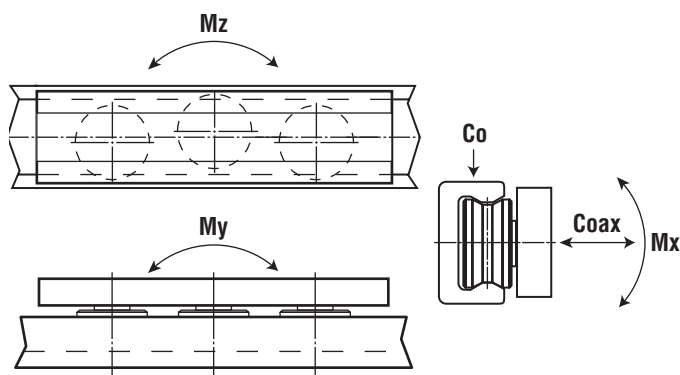
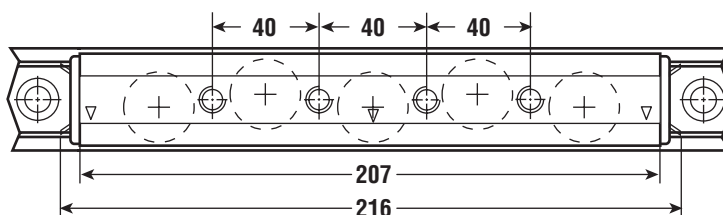


RAIL RRT43 LENGTHS															
400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600
1680	1760	1840	1920	2000	2080	2160	2240	2320	2400	2480	2560	2640	2720	2800	2880
2960	3040	3120	3200	3280	3360	3440	3520	3600	3680	3760	3840	3920	4000		

Slides RSSV43-3



Slides RSSV43-5



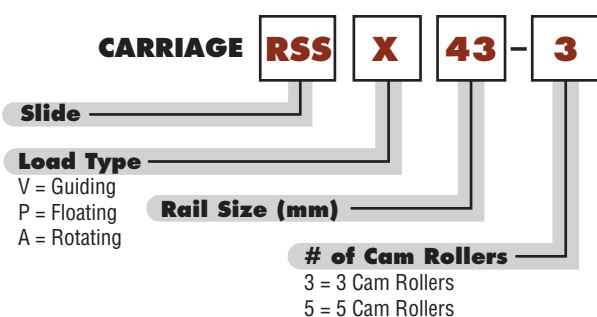
SLIDE TYPE	C (N)	RADIAL Co (N)	AXIAL Co (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RSSX43-3	18,000	7,200	4,500	50.1	157.3	165
RSSX43-5	27,000	10,800	6,700	107.2	394	410

Screw Mounts

RAIL SIZE	TORX	DIAMETER	LENGTH (MM)
RRTX43	T40	M8 x 1.25	16

RRT(S) = Countersunk mounting holes - Standard
RRT(L) = Counterbored mounting holes - Optional

ORDER INFORMATION



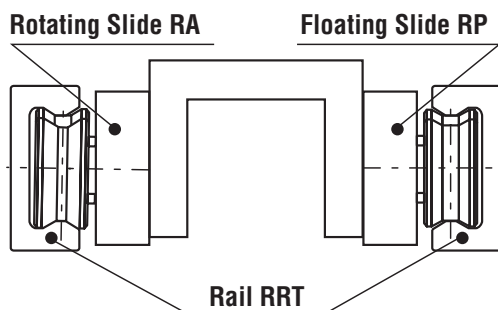
EXAMPLE: RSSV43-3
RRTX43-160

Mounting Holes
RRTS = Countersunk holes (standard)
RRTL = Counterbored holes (optional)

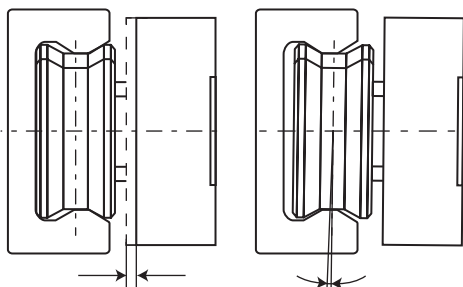
Rail Length
400 = 4000mm
Rail Size
18 = 18mm
28 = 28mm (page 218)
43 = 43mm (page 219)



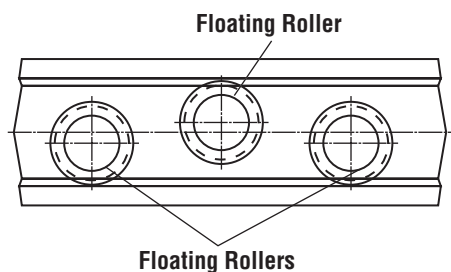
APPLICATIONS



RAIL WITH FLOATING SLIDE RP SERIES

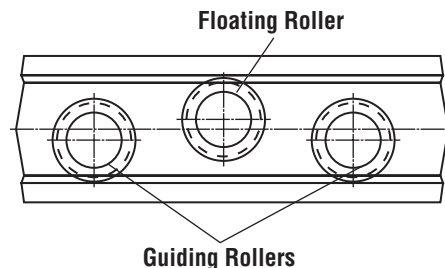


FLOATING SLIDE RP SERIES



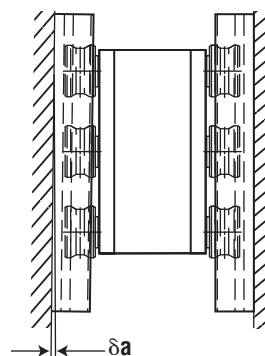
The "Floating" slides contain only floating rollers, three or five in total. The contact areas with the raceways only provide for radial load and M_z capacities, thus allowing for axial movement and a simultaneous slight rotation of the slide to offer axial and longitudinal compensation, while maintaining original preload and same precise and smooth straight-line movement.

ROTATING SLIDE RAIL SERIES



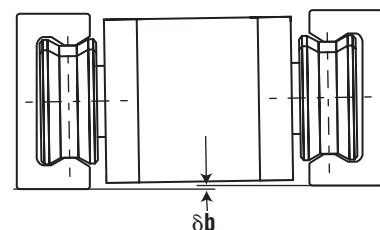
The "Rotating" slides are mounted with two or three guiding V-rollers (depending if slide has 3 or 5 rollers in total), which are aligned against the same lower raceway for max. radial load capacity. While one or two (depending if slide has three or five rollers in total) floating P rollers are mounted against the upper raceway. This configuration allows the A slide a minor rotation, around the contact points of the lower raceway. This compensates for axial misalignment, while maintaining its original preload and same straight, precision motion.

LONGITUDINAL PARALLELISM ERROR



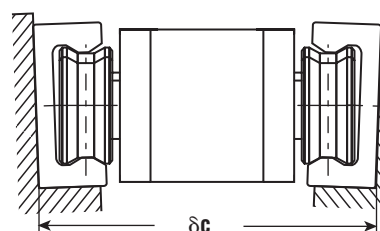
SIZE	δa
18	1mm
28	1.2mm
43	2mm

HORIZONTAL NON-ALIGNMENT ERROR



SIZE	δb
18	2°
28	2°
43	2°

HORIZONTAL PARALLELISM ERROR



SIZE	δc
18	3°
28	3°
43	3°



Drawer Slides - Precision - RDR

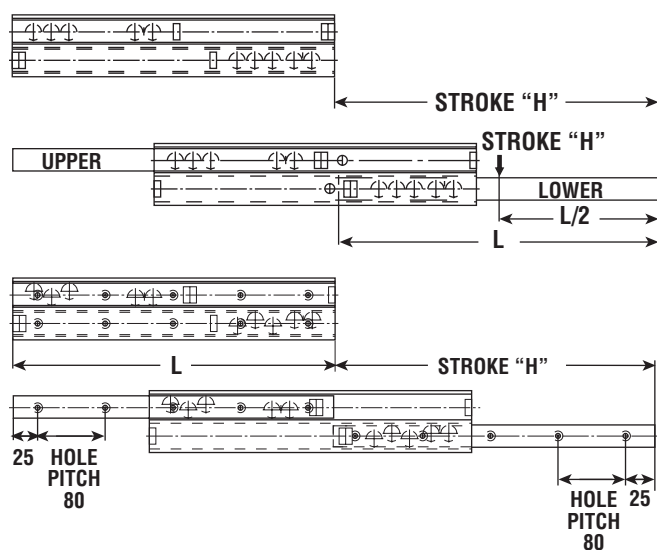
Product Overview

RDR - PRODUCT OVERVIEW

The RDR Precision Drawer Slides are designed for heavy duty high-tech telescopic applications, with precise motorized movement, requiring constant smooth sliding performance with no play.

The special smooth operating performance is due to double-row precision bearings strong rails with hardened and honed raceways, fixed to a rigid intermediate S-shaped steel plate, assuring high load capacities and low deflection at even fully extended position. When used in pairs, the RDRX drawer slides assure unique self-aligning capabilities.

The right drawer slide RDRD, allows the slides to rotate with no play, in the lower rail-element to compensate for surface misalignments, while the rigid left RDRS drawer slide, maintains a stable and precise extension. RDR Precision drawer slide system offers unique possibilities and benefits for all kind of automation applications with variable telescopic strokes, which until now have been troubled by common friction and breakdown problems, during the ball-cage re-phasing when using of old-type ball-cage drawer slides. To assure maximum load capacity the drawer slides must be be correctly positioned according to the rollers' positioning, which are non-symmetric and with different position in upper – lower rail element.

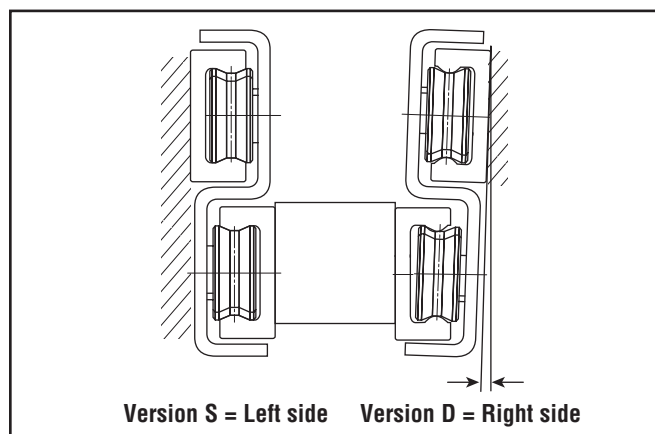


Therefore the extended part must always be fixed to the lower rail. All RDR Drawer Slides guarantee maintenance free operation, thanks to strong raceway wipers and longitudinal seals for dust and impurity protection, and an integrated lube for-life greasing system, assuring a constant thin layer of lubrication on the raceway surfaces.

All RDR Precision Drawer Slides are equipped with internal end-stops, only designed to drag the intermediate element. It is therefore highly recommended not to use these internal



Lubrication system for full life-time.



ends- of stroke travel limits as functional terminals; strong external end-stops must be added. Precision drawer slide load capacities are intended at half extension (L/2) as indicated in by letter "P" in below drawing. Unlike ball-cages drawer slides, RDR Drawer Slides maximum load capacities are based on continuously non-stop operation.

Therefore a straight load comparison with other drawer slides isn't possible, as these load capacities are merely a static load capacity, based on low daily frequency. To offer a wide range of load capacities and extensions, the Drawer Slides come in 2 dimensions. The RDR 80, based on 28mm rails with outer height of 80mm and RDR 116, based on 43mm rails, with outer height of 116mm. Both rails come with an overall black finish.

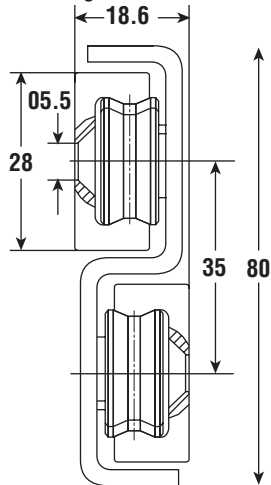
RDR 80 & RDR 116

Drawer Slides - Precision

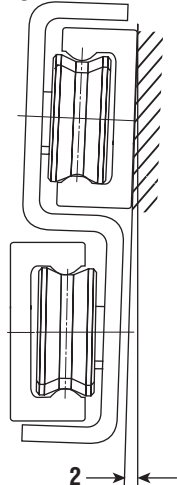


RDR 80

Guiding Version RDRS



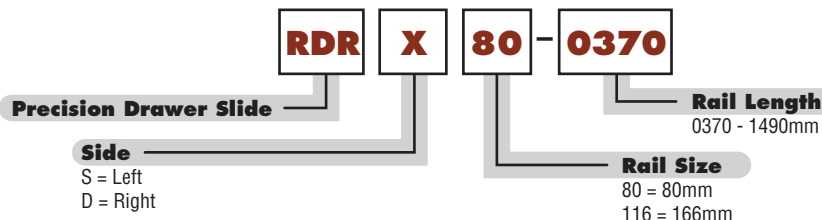
Loading Version RDRD



PART NO.	STROKE H	LENGTH L	CO RAD (N)	(kg.)
RDRX80-0370	380	0370	753	2.1
RDRX80-0450	460	0450	817	2.5
RDRX80-0530	540	0530	1207	2.9
RDRX80-0610	620	0610	1495	3.3
RDRX80-0690	700	0690	1673	3.7
RDRX80-0770	780	0770	1771	4.1
RDRX80-0850	860	0850	1755	4.5
RDRX80-0930	940	0930	1623	4.9
RDRX80-1010	1020	1010	1510	5.3
RDRX80-1170	1180	1170	1325	6.1
RDRX80-1330	1340	1330	1180	6.9
RDRX80-1490	1500	1490	1064	7.7

NOTE: S = Left Side
D = Right Side

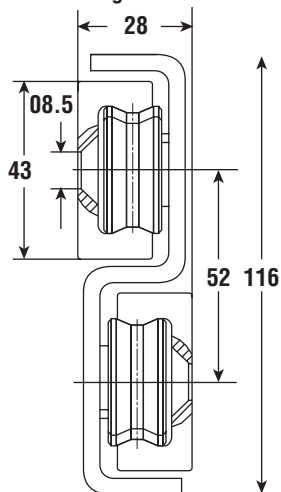
ORDER INFORMATION



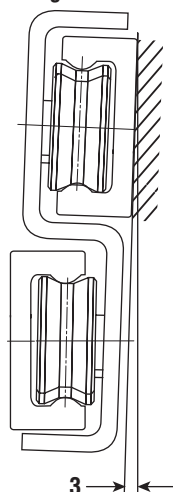
EXAMPLE: RDRX80-0370

RDR 116

Guiding Version RDRS



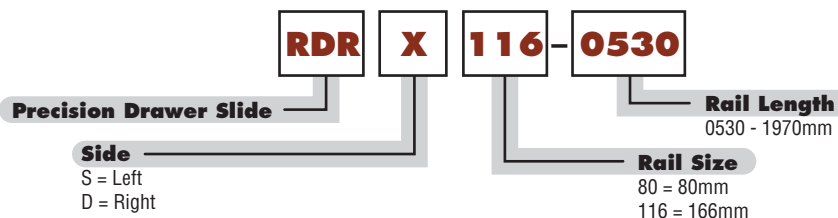
Loading Version RDRD



PART NO.	STROKE H	LENGTH L	CO RAD (N)	(kg.)
RDRX116-0530	540	0530	1829	6.4
RDRX116-0610	620	0610	2040	7.3
RDRX116-0690	700	0690	2870	8.2
RDRX116-0770	780	0770	3033	9.1
RDRX116-0850	860	0850	3780	10.1
RDRX116-0930	940	0930	3978	11
RDRX116-1010	1020	1010	4122	11.8
RDRX116-1170	1180	1170	4080	13.6
RDRX116-1330	1340	1330	3648	15.4
RDRX116-1490	1500	1490	3298	17.1
RDRX116-1650	1660	1650	3010	18.9
RDRX116-1810	1820	1810	2768	20.7
RDRX116-1970	1980	1970	2562	22.4

NOTE: S = Left Side
D = Right Side

ORDER INFORMATION



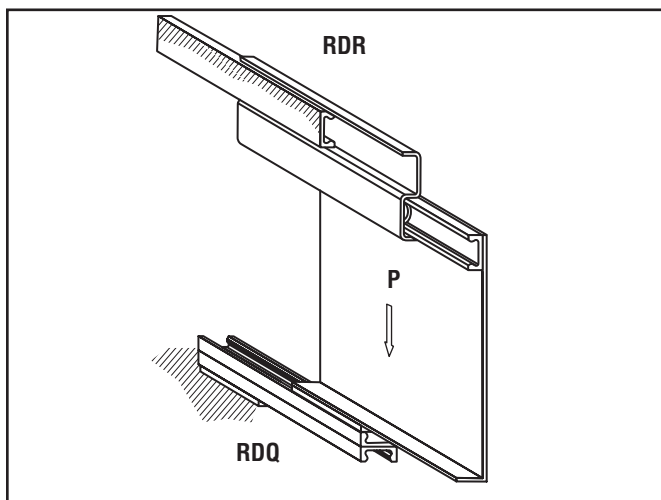
EXAMPLE: RDRX116-0530



Drawer Slides - RDR / RDQ

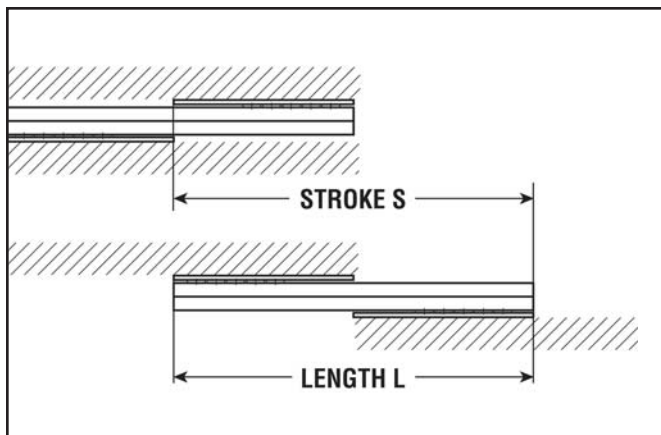
Technical Overview

RDR /RDQ DRAWER SLIDES



The RDR Precision Drawer Slides and RDQ Compact Precision Drawer Slides systems are the world's only telescopic rail system for complete extension, based on precision rollers and hardened raceways and with incorporate self-aligning feature (RDR series).

The system offers unique possibilities for all kinds of automation applications, where smooth and precise telescopic movement is required. Optimal movement with no play for High-Tech telescopic applications, or for even heavy load and high frequency applications.

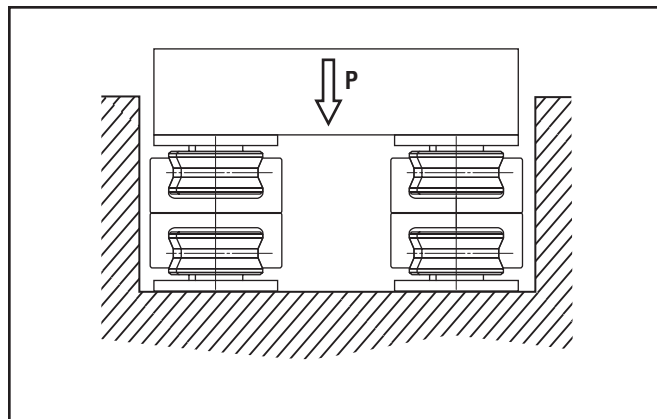


These systems are composed of exactly the same components as the Redi-Rail® Steel Rail system, except that the slider bodies are different, as longer and with more rollers. All drawer slides feature strong raceway wipers and greasing system for low maintenance.

The RDR drawer slides offer unique self-aligning capability, when used in pairs. As the right telescopic rail RDRD, allows the sliders to rotate in the lower rail-element it compensates assembling or surface misalignment errors, while maintaining the same precise, preloaded extension.

To guarantee high load capacities and low deflection, the RDR drawer slides are fixed to an intermediate S-shaped steel plate. The RDQ drawer slides have the RRT-rails functioning as the intermediate element, offering good radial and axial load capacities, with very compact overall dimensions.

RDR and RDQ rails are the only drawer slide system which incorporates a self-aligning feature to absorb parallelism errors of the mounting surfaces.





RDQ - PRODUCT OVERVIEW

RDQ Compact Precision Drawer Slides are designed for high-tech telescopic applications with precise motorized movement, requiring constant smooth sliding performance with no play.

The square design is obtained by using two RRT-rails with hardened honed raceways, as the rigid intermediate element, into which the slides are assembled. The RDQ drawer slides offer both high radial and axial load capacities.

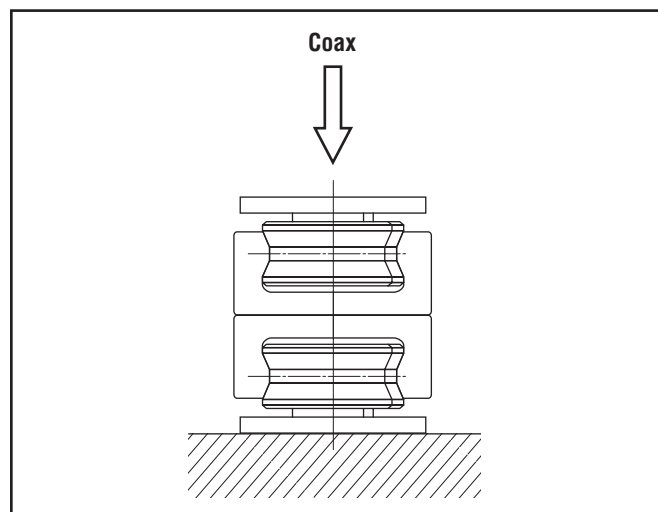
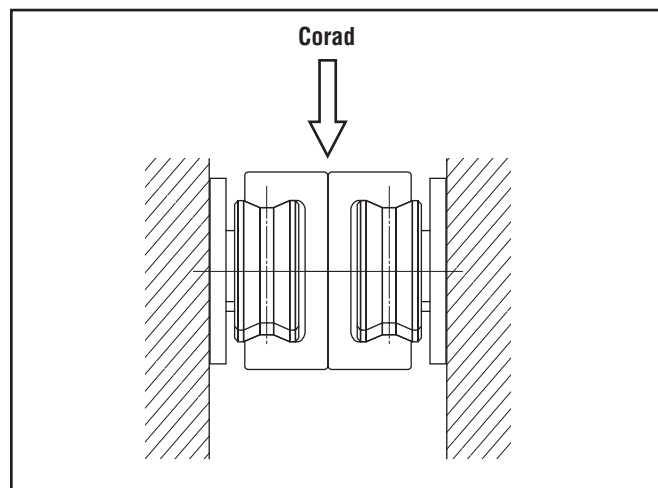
The rail/slide configuration allows the RDQ drawer slides to be mounted not only at the side, but also underneath the moving part, when there are space limitations at the sides, or to be used in typical vertical applications. See below tables and figures.

In the case of horizontal panel extension, we recommend the use of a pair of RDR and RDQ, as the RDR can absorb some lateral structural misalignments on the vertical axis.

RDQ system assures smooth extension for all kinds of automation applications with variable telescopic strokes, which until now have been troubled by common friction breakdown problems typical drawer slides during the ball-cage re-phasing. Same re-phase problem or even deformation of the ball-cages, occurs for all vertical applications, as the ball-cage in such drawer slides, constantly tend to move downwards, so extra friction is generated with each stroke during the repositioning of the ball-cages.

To assure maximum load capacity the drawer slides must be correctly orientation during assembly. The extended part must always be fixed to the shortest slide.

RDQ Compact Precision Drawer Slides are equipped with internal end-stops, only designed to drag the intermediate element. It is therefore highly recommended not to use these internal end of stroke travel limits as functional hardstops; strong external end-stops must be added. Similarly to the RDR series, the RDQ's stroke goes slightly beyond the overall length of the rail in closed position. The rails come with an overall black finish.





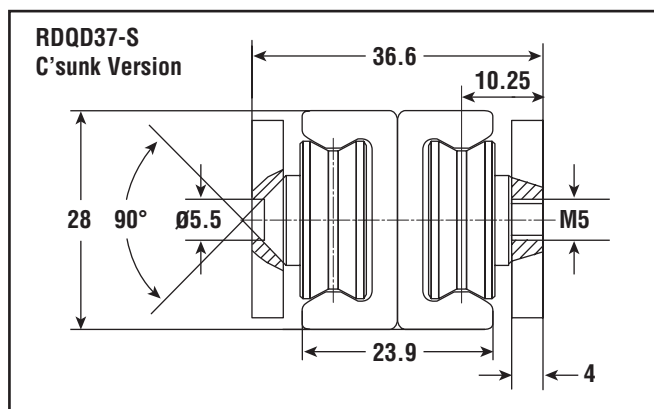
Drawer Slides - RDQX37

Compact Precision

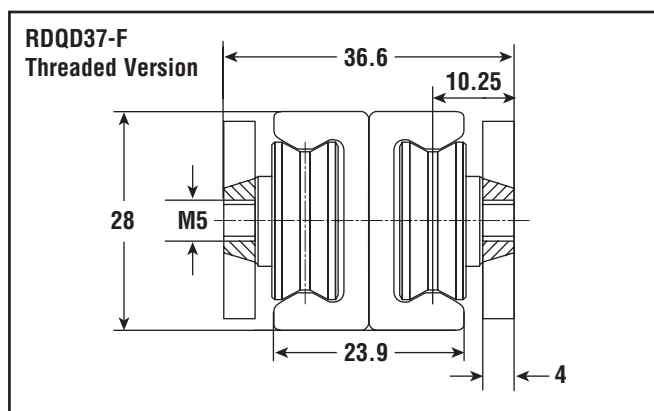
RDQX37

All RDQD Compact Precision rails guarantee maintenance free operation, thanks to strong raceway wipers and longitudinal seals for dust and impurity protection, and an integrated lubed for-life greasing system, assuring a constant thin layer of lubrication on the raceway surfaces.

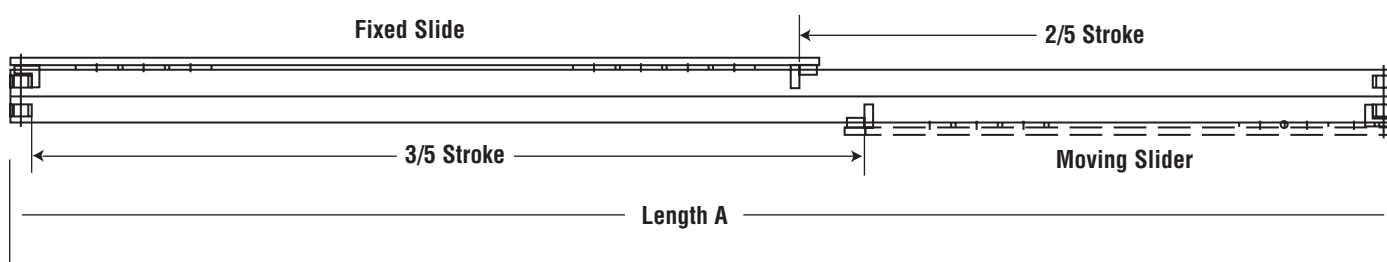
All Redi-Rail Compact Precision rails are equipped with internal end-stops, only designed to drag the intermediate element. It is therefore highly recommended not to use these internal end of stroke travel limits as functional terminals; strong external end-stops must be added. Similarly to the RDR series, the RDQ's stroke goes slightly beyond the overall length of the rail in closed position. The rails come with an overall black finish.



NOTE: To be used when fixing support (for fixed slide) is with threaded holes.



NOTE: To be used when fixing support (for fixed slide) is without threaded holes.

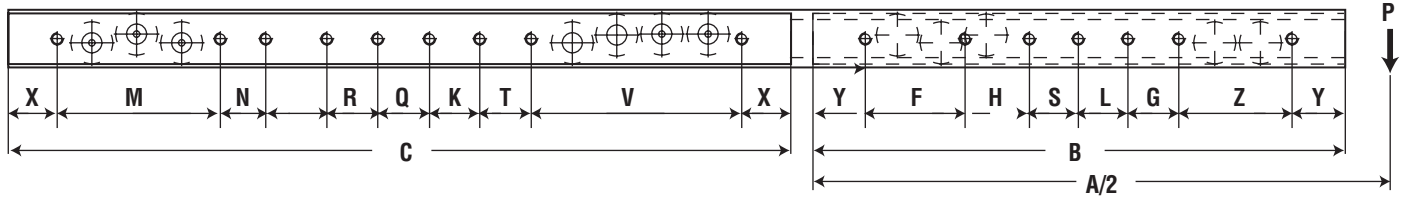


Drawer Slides - RDQX37

Compact Precision



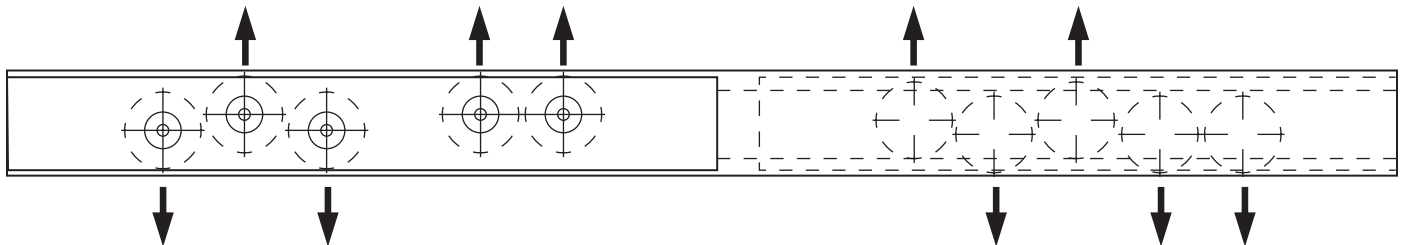
RDQX37



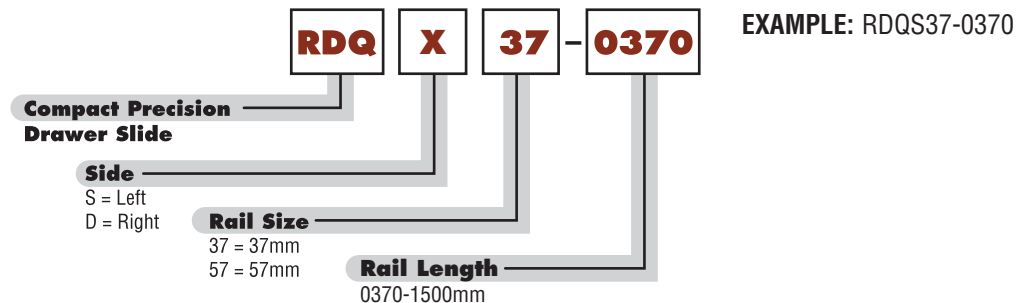
TYPE	STROKE	A	B	C	X	M	N	P	R	Q	K	T	Y	F	H	S	L	Z	CORAD (N)	COAX (N)	(kg.)
RDQX37-0370	380	370	170	201	53	70	70	x	x	x	x	x	25	70	50	x	x	50	707	441	1.5
RDQX37-0450	460	450	175	276		72	72	72					25	70	55			55	1003	655	1.7
RDQX37-0530	540	530	207	324		88	88	88					23.5	80	80			80	1128	721	2.0
RDQX37-0610	620	610	239	372		104	104	104					24.5	95	95			95	1116	689	2.3
RDQX37-0690	700	690	271	420		120	120	120					25.5	110	110			110	1012	623	2.6
RDQX37-0770	780	770	303	468		102	102	102	102			x	24	85	85	85		85	926	569	2.8
RDQX37-0850	860	850	335	516		90	90	90	90	96			25	95	95	95		95	853	523	3.1
RDQX37-0930	940	930	367	564		100	100	100	100	100			26	105	105	105		106	791	484	3.4
RDQX37-1010	1020	1010	399	612		110	110	110	110	110	x		25.5	87	87	87	87	87	738	451	3.6
RDQX37-1170	1180	1170	463	708		108	108	108	108	108	108		25.5	103	103	103	103	103	650	396	4.2
RDQX37-1330	1340	1330	527	804		124	124	124	124	124	124		23.5	120	120	120	120	120	580	353	4.7
RDQX37-1490	1500	1490	591	900		120	120	120	120	120	120	120	25.5	108	108	108	108	108	524	319	5.2

NOTE: S = Left Side
D = Right Side

Roller Positions: Ex. RDQX37 - 0370



ORDER INFORMATION





Drawer Slides - RDQX57

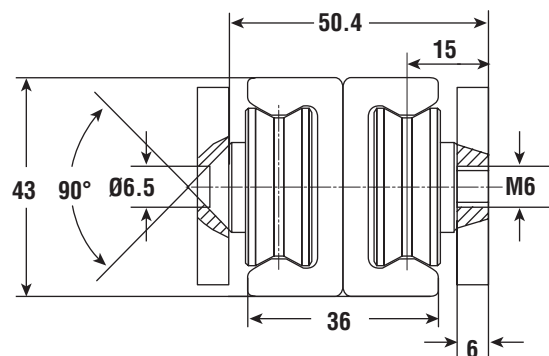
Compact Precision

RDQX57

All RDQS Compact Precision rails guarantee maintenance free operation, thanks to strong raceway wipers and longitudinal seals for dust and impurity protection, and an integrated lubed for-life greasing system, assuring a constant thin layer of lubrication on the raceway surfaces.

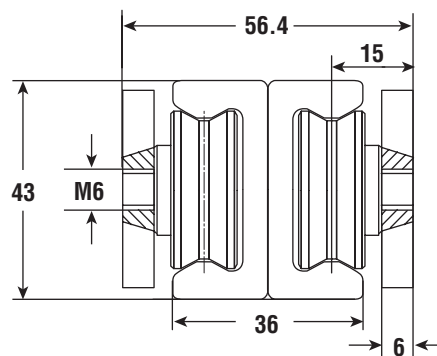
All RDQ Compact Precision rails are equipped with internal end-stops, only designed to drag the intermediate element. It is therefore highly recommended not to use these internal end of stroke travel limits as functional terminals; strong external end-stops must be added. Similarly to the RDR series, the RDQ's stroke goes slightly beyond the overall length of the rail in closed position. The rails come with an overall black finish.

RDQS57-S C'sunk Version

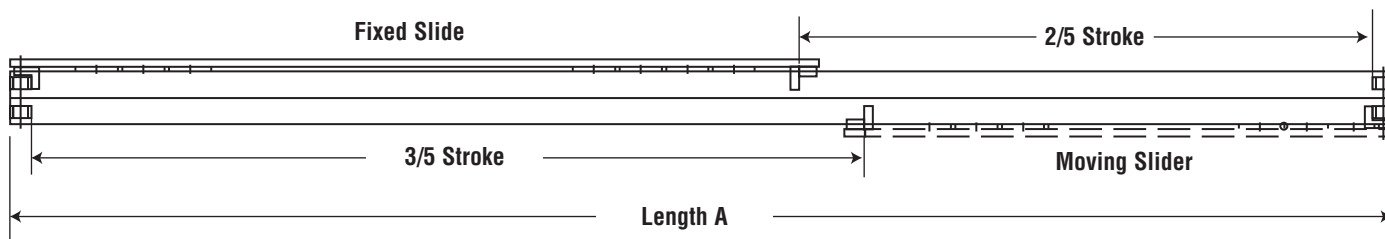


NOTE: To be used when fixing support (for fixed slide) is with threaded holes

RDQS57-F Threaded Version



NOTE: To be used when fixing support (for fixed slide) is without threaded holes

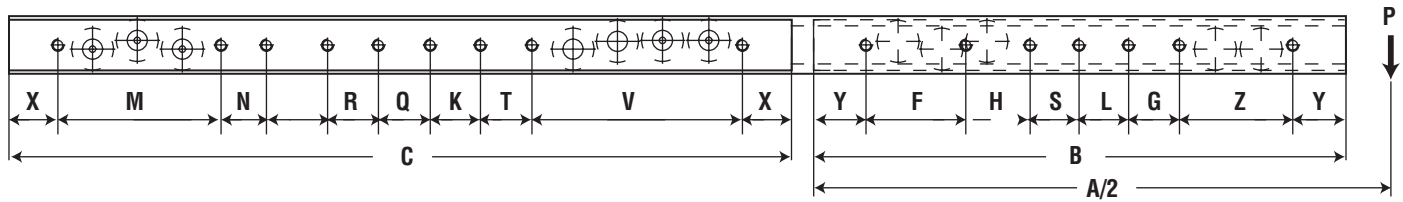


Drawer Slides - RDQX57

Compact Precision



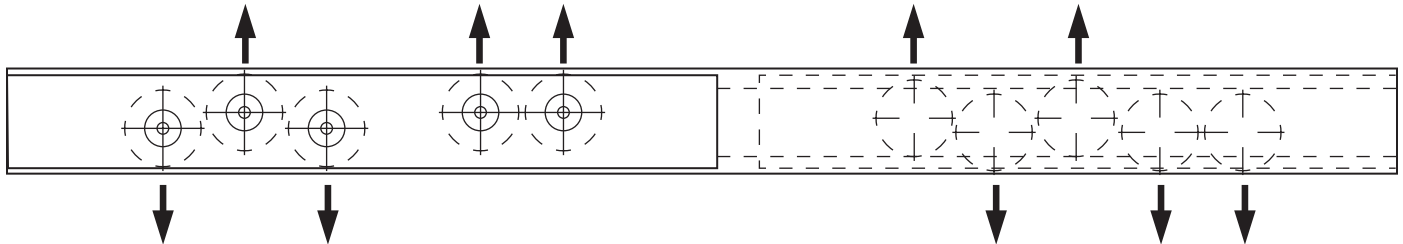
RDQX57



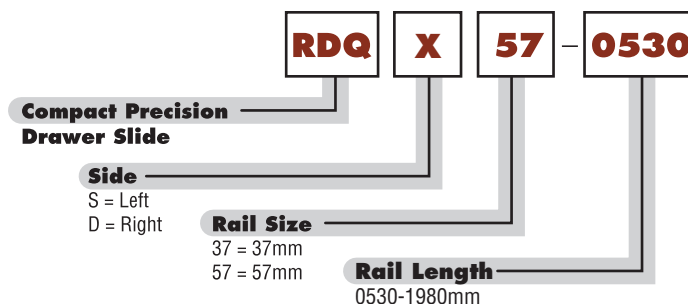
TYPE	STROKE	A	B	C	X	M	P	N	R	Q	K	T	Y	F	H	S	L	Z	CORAD (N)	COAX (N)	(kg.)
RDQX57-0530	540	530	227	306	61	118	x	118	x				28,5	100	70	x		70	2160	1728	4.8
RDQX57-0610	620	610	238	375		105	100	100					28	102	80			80	2610	2138	5.4
RDQX57-0690	700	690	270	423		118	118	118					28	107	107			107	2799	2280	6.0
RDQX57-0770	780	770	302	471		100	100	100	100	x	x		28	123	123		x	123	2943	2390	6.7
RDQX57-0850	860	850	334	519		116	116	116	102				28	102	88	88		88	2647	2173	7.4
RDQX57-0930	940	930	366	567		120	120	120	136			x	28,5	103	103	103		103	2460	2016	8.1
RDQX57-1010	1020	1010	398	615		102	102	102	136				28	114	114	114		114	2297	1912	8.7
RDQX57-1170	1180	1170	462	711		126	126	126	126	136	x		28	102	102	102	100	100	2028	1655	10.0
RDQX57-1330	1340	1330	526	807		120	120	120	120	120	136		28	120	120	120	110	110	1816	1478	11.3
RDQX57-1490	1500	1490	590	903		116	116	116	116	116	116	136	27,5	107	107	107	107	107	1644	1336	12.5
RDQX57-1650	1660	1650	654	999		132	132	132	132	132	132	136	27,5	120	120	120	120	119	1501	1219	13.8
RDQX57-1810	1820	1810	718	1095		137	125	125	125	125	125	125	28	112	110	110	110	110	1382	1120	15.0
RDQX57-1970	1980	1970	782	1191		140	140	140	140	140	140	140	28	121	121	121	121	121	1280	1036	16.4

NOTE: S = Left Side
D = Right Side

Roller Positions: Ex. RDQX57 - 0530



ORDER INFORMATION



EXAMPLE: RDQX57-0530



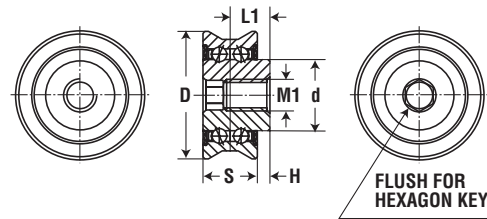
Flexible Guide System 43

Roller & Rail - Radial Loads to 3,600 N

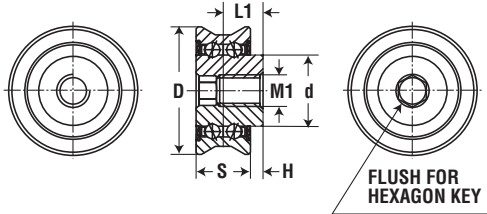
F - ROLLER



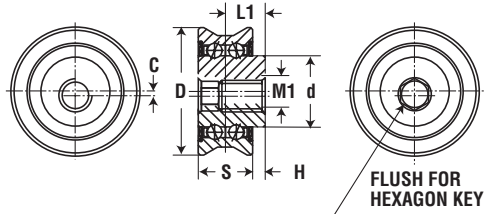
FLOATING ROLLER / CONCENTRIC PIVOT - FCP



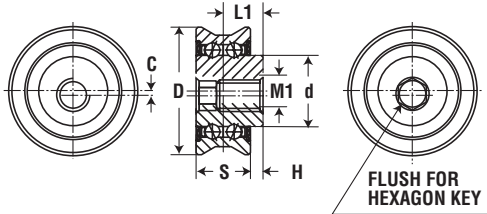
GUIDING ROLLER / CONCENTRIC PIVOT - FEV



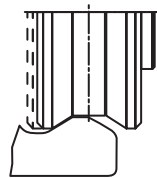
FLOATING ROLLER / ECCENTRIC PIVOT - FEP



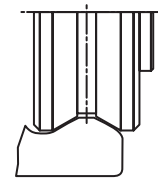
GUIDING ROLLER / ECCENTRIC PIVOT - FCV



FLOATING ROLLER FEP-FCP LATERAL DISPLACEMENT



GUIDING ROLLER FCV-FEV

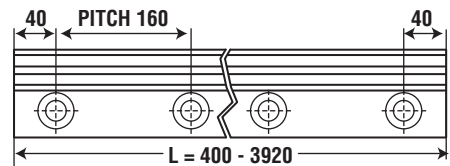
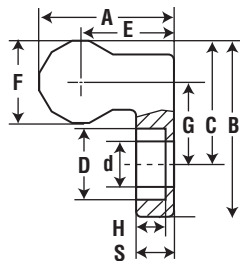


LATERAL DISPLACEMENT	ROLLER TYPE	D	S	H	L1	d	M1	Ch	C	C (N)	CORAD (N)	COAX (N)	WEIGHT (G)
2	FCV43	30.8	14	2	9	15	M8	6	0	9,000	3,600	2,160	50
	FEV43								0.8				
	FCP43	0											
	FEP43	0.8											
		30.4											

FR43 - RAILS

Flexible rails have a unique design as its rail offers three protruding raceways, angled at 90° intervals.

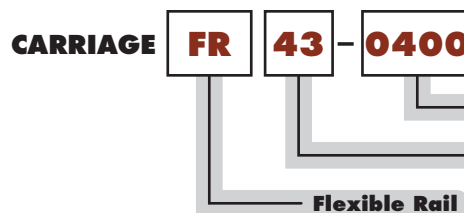
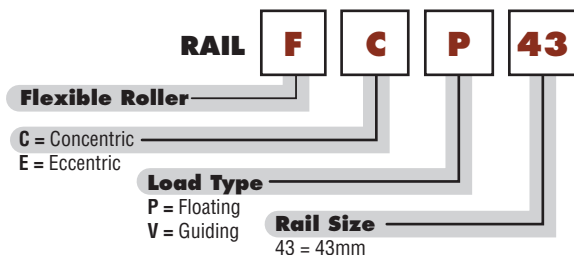
Providing an extremely versatile linear system. The stronger flexible rails have a 160mm hole pitch for easy assembling.



Note: Tolerance for first-last hole +/-0.5

RAIL TYPE	Kg/m	A	B	C	D	d	E	F	G	H	S	L	SCREW TYPE
FR43	2.09	19.36	25	18.3	10.5	6.5	13.2	12.3	12.2	4.4	5.6	400 - 3,920	M6 DIN 6912

ORDER INFORMATION



EXAMPLE: FCP43
FR43-XXXX



PRODUCT OVERVIEW

V-Guide System components provide an excellent alternative for linear motion applications in harsh environments with medium accuracy requirements, and high speed capabilities.

FEATURES & BENEFITS

V-Guide systems are an industry standard for linear motion, and offer features that make them an ideal solution for a wide range of motion control applications.

V-Guide Rail:

- Has shoulder for simple mounting and alignment
- Available in long lengths
- Induction hardened way surface
- 1045 Carbon Steel or 400 Series Stainless Steel
- Optional black oxide finish
- Choose predrilled rail from stock, or custom cut and drilled to your specification

V-Guide Wheels:

- Four (4) sizes
- Permanently lubricated
- Precision dual row bearing construction
- Available in 52100 Bearing Steel or 420 Stainless Steel construction
- 304 Stainless Steel shields, or nitrile rubber seals

Wheel Bushings:

- 303 Stainless Steel
- Inch or metric hardware
- Adjustable bushings allow adjustable fit and preload
- Fixed bushings are used in the primary radial load direction
- Stainless Steel construction

APPLICATIONS

- Machine tool doors
- Vending machines
- Woodworking machinery
- Carpet and textile machinery
- Laboratory automation
- Paper converting equipment
- Packaging machinery



TECHNICAL SPECIFICATIONS

V-Guide Wheels:

V-Guide Wheels are precision ground dual row angular contact ball bearings with hardened outer way surfaces that provide low friction guidance for linear motion applications. V-Guide wheels can be used with internal or external 90-degree ways, or used with round shafts.

V-Guide Rails:

The rail V-Ways are induction or flame hardened, ground and polished. The track body is left soft for easy drilling of mounting holes. Available in (4) four sizes, which are designed for the corresponding size wheels.

Wheel Bushings:

Bushings allow for the wheels to be mounted with the appropriate fastener for the specific application.

Working Temperature Rating: $\approx 180^{\circ}\text{F}$

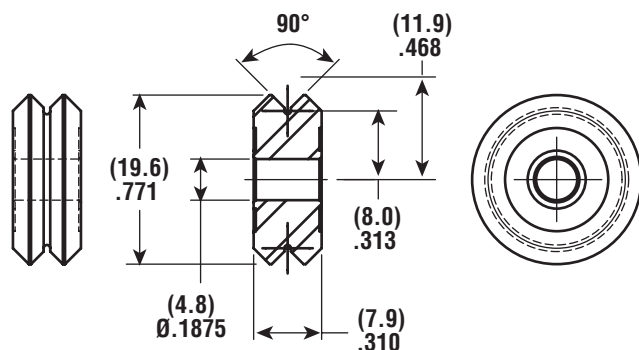


V-Guide System - 20 mm (3/4")

Radial Loads to 283 lbs. (1,260 N) per Wheel

V-GUIDE WHEELS

VW1	Shielded Bearing
VWS1	Sealed Bearing
VWSS1	Sealed Stainless Bearing



WEIGHT: .42 oz. (12 g)

Rated for:

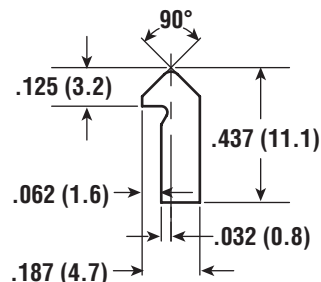
Radial loads to 283 lbs. (1,260 N) per wheel

Axial loads to 67 lbs. (297 N) per wheel

V-GUIDE RAIL

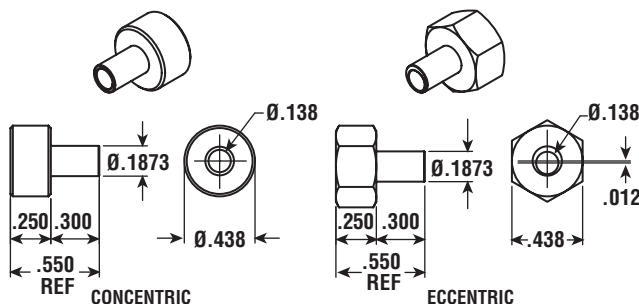
Carbon Steel	
VR1-xxx	undrilled rail max. length 21' (6400 mm)
VRD1-xxx	drilled rail, see table
Stainless Steel	
VRS1-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD1-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all sizes, contact factory.



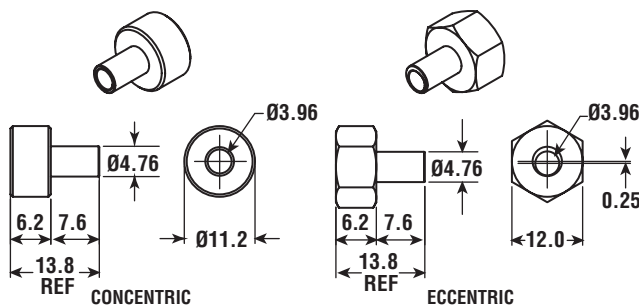
WHEEL BUSHINGS

VB1	Fixed Bushing
VBA1	Adjustable Bushing



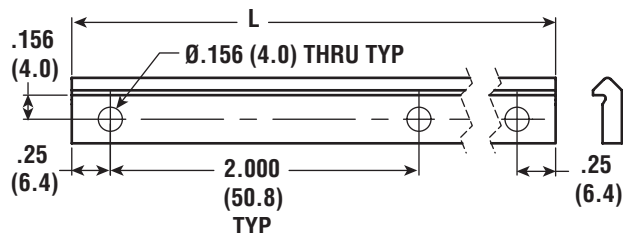
METRIC WHEEL BUSHINGS

MVB1	Metric Fixed Bushing
MVBA1	Metric Adjustable Bushing



STANDARD DRILLED RAILS

PART NUMBER	LENGTH	NO. OF HOLES
CARBON STEEL		
VRD1-1250	12.5" (317.5 mm)	7
VRD1-2450	24.5" (622.3 mm)	13
VRD1-3650	36.5" (927.1 mm)	19
VRD1-4850	48.5" (1231.9 mm)	25
VRD1-6050	60.5" (1536.7 mm)	31
VRD1-7250	72.5" (1841.5 mm)	37
STAINLESS STEEL		
VRSD1-1250	12.5" (317.5 mm)	7
VRSD1-2450	24.5" (622.3 mm)	13
VRSD1-3650	36.5" (927.1 mm)	19
VRSD1-4850	48.5" (1231.9 mm)	25
VRSD1-6050	60.5" (1536.7 mm)	31
VRSD1-7250	72.5" (1841.5 mm)	37



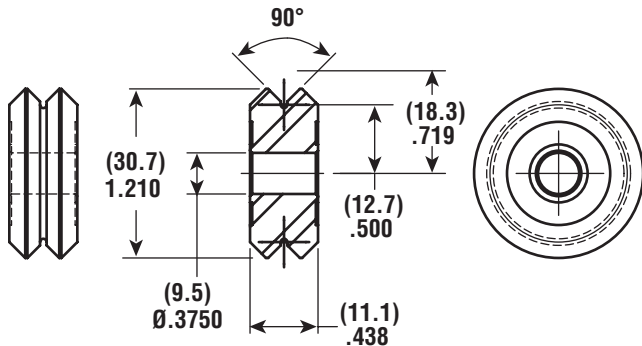
V-Guide System - 30 mm (1-1/4")

Radial Loads to 614 lbs. (2,730 N) per Wheel



V-GUIDE WHEELS

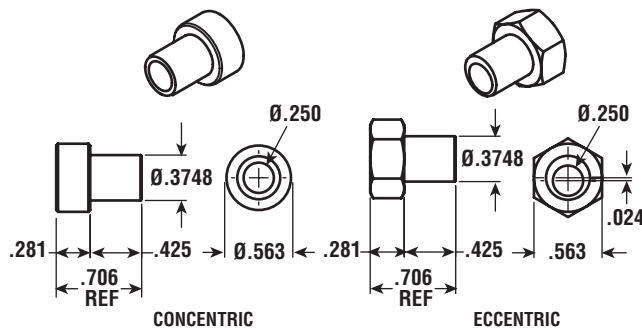
VW2	Shielded Bearing
VWS2	Sealed Bearing
VWSS2	Sealed Stainless Bearing



WEIGHT: 1.3 oz. (38 g)

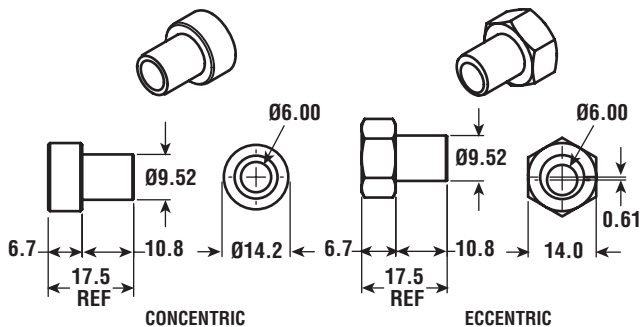
WHEEL BUSHINGS

VB2	Fixed Bushing
VBA2	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB2	Metric Fixed Bushing
MVBA2	Metric Adjustable Bushing



Rated for:

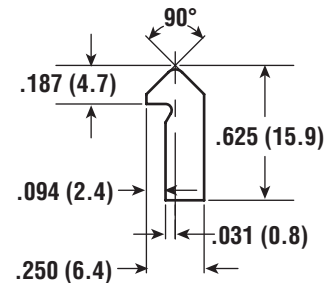
Radial loads to 614 lbs. (2,730 N) per wheel

Axial loads to 142 lbs. (632 N) per wheel

V-GUIDE RAIL

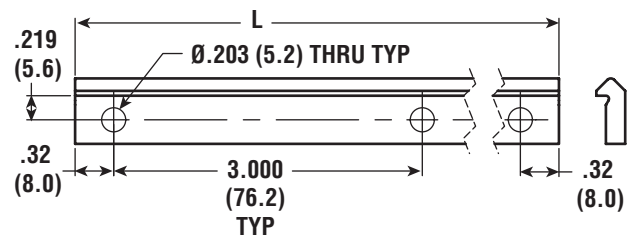
Carbon Steel	
VR2-xxx	undrilled rail max. length 21' (6400 mm)
VRD2-xxx	drilled rail, see table
Stainless Steel	
VRS2-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD2-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all sizes, contact factory.



STANDARD DRILLED RAILS

PART NUMBER	LENGTH	# OF HOLES
Carbon Steel		
VRD2-1263	12.63" (320.8 mm)	5
VRD2-2463	24.63" (625.6 mm)	9
VRD2-3663	36.63" (930.4 mm)	13
VRD2-4863	48.63" (1235.2 mm)	17
VRD2-6063	60.63" (1540 mm)	21
VRD2-7263	72.63" (1844.8 mm)	25
Stainless Steel		
VRSD2-1263	12.63" (320.8 mm)	5
VRSD2-2463	24.63" (625.6 mm)	9
VRSD2-3663	36.63" (930.4 mm)	13
VRSD2-4863	48.63" (1235.2 mm)	17
VRSD2-6063	60.63" (1540 mm)	21
VRSD2-7263	72.63" (1844.8 mm)	25



V-Guide - 30 mm (1-1/4")

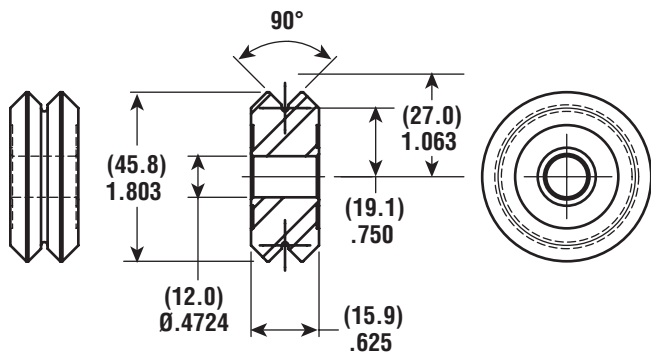


V-Guide System - 45 mm (1-3/4")

Radial Loads to 1,386 lbs. (6,166 N) per Wheel

V-GUIDE WHEELS

VW3	Shielded Bearing
VWS3	Sealed Bearing
VWSS3	Sealed Stainless Bearing



WEIGHT: 4.6 oz. (131 g)

Rated for:

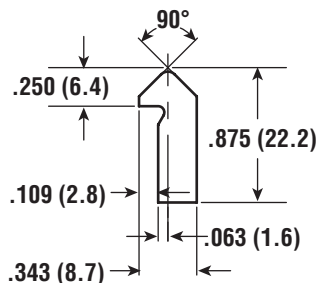
Radial loads to 1,386 lbs. (6,166 N) per wheel

Axial loads to 326 lbs. (1,448 N) per wheel

V-GUIDE RAIL

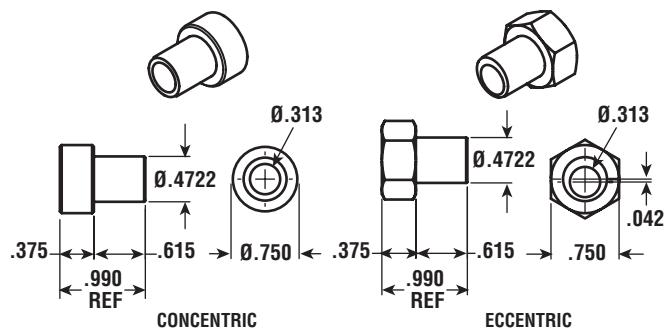
Carbon Steel	
VR3-xxx	undrilled rail max. length 21' (6400 mm)
VRD3-xxx	drilled rail, see table
Stainless Steel	
VRS3-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD3-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all all sizes, contact factory.



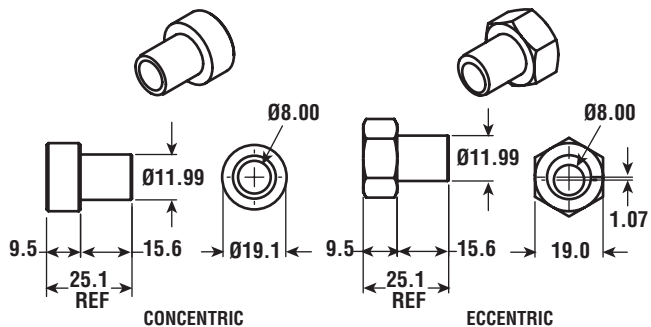
WHEEL BUSHINGS

VB3	Fixed Bushing
VBA3	Adjustable Bushing



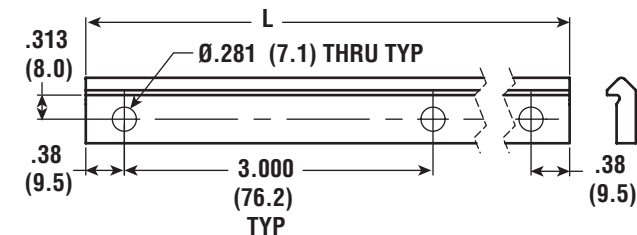
METRIC WHEEL BUSHINGS

MVB3	Metric Fixed Bushing
MVBA3	Metric Adjustable Bushing



STANDARD DRILLED RAILS

PART NUMBER	LENGTH	# OF HOLES
CARBON STEEL		
VRD3-1275	12.75" (323.9 mm)	5
VRD3-2475	24.75" (628.7 mm)	9
VRD3-3675	36.75" (933.5 mm)	13
VRD3-4875	48.75" (1238.3 mm)	17
VRD3-6075	60.75" (1543.1 mm)	21
VRD3-7275	72.75" (1847.9 mm)	25
STAINLESS STEEL		
VRSD3-1275	12.75" (323.9 mm)	5
VRSD3-2475	24.75" (628.7 mm)	9
VRSD3-3675	36.75" (933.5 mm)	13
VRSD3-4875	48.75" (1238.3 mm)	17
VRSD3-6075	60.75" (1543.1 mm)	21
VRSD3-7275	72.75" (1847.9 mm)	25



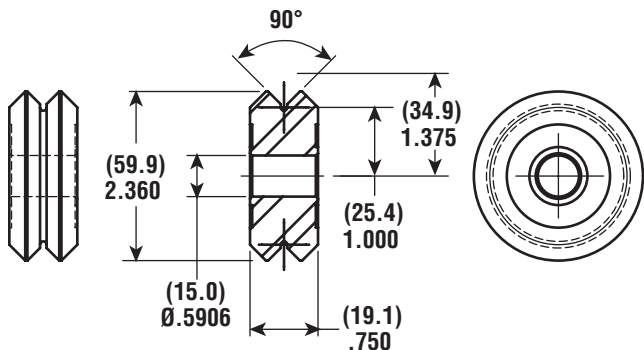
V-Guide System - 60 mm (2-1/4")

Radial Loads to 2,246 lbs. (9,991 N) per Wheel



V-GUIDE WHEELS

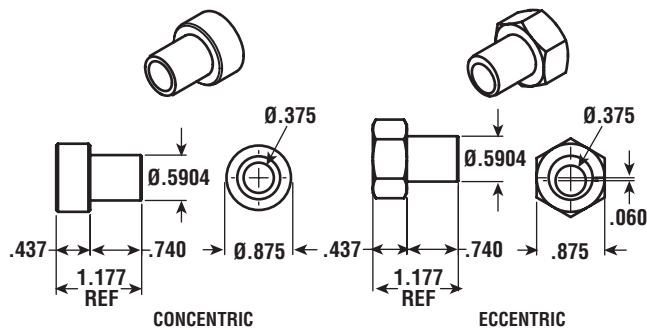
VW4	Shielded Bearing
VWS4	Sealed Bearing
VWSS4	Sealed Stainless Bearing



WEIGHT: 10 oz. (281 g)

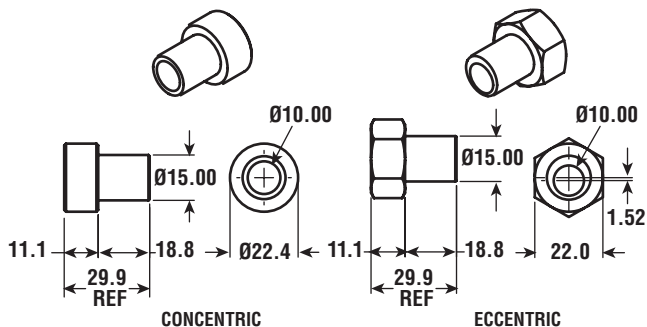
WHEEL BUSHINGS

VB4	Fixed Bushing
VBA4	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB4	Metric Fixed Bushing
MVBA4	Metric Adjustable Bushing



Rated for:

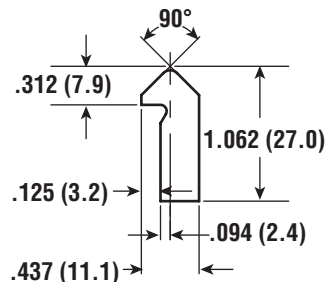
Radial loads to 2,246 lbs. (9,991 N) per wheel

Axial loads to 520 lbs. (2,313 N) per wheel

V-GUIDE RAIL

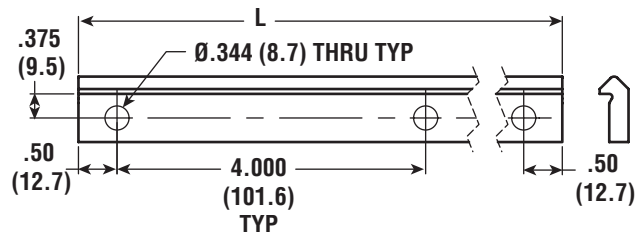
Carbon Steel	
VR4-xxx	undrilled rail max. length 21' (6400 mm)
VRD4-xxx	drilled rail, see table
Stainless Steel	
VRS4-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD4-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all sizes, contact factory.



STANDARD DRILLED RAILS

PART NUMBER	LENGTH	# OF HOLES
CARBON STEEL		
VRD4-1300	13.00" (330.2 mm)	4
VRD4-2500	25.00" (635 mm)	7
VRD4-3700	37.00" (939.8 mm)	10
VRD4-4900	49.00" (1244.6 mm)	13
VRD4-6100	61.00" (1549.4 mm)	16
Stainless Steel		
VRSD4-1300	13.00" (330.2 mm)	4
VRSD4-2500	25.00" (635 mm)	7
VRSD4-3700	37.00" (939.8 mm)	10
VRSD4-4900	49.00" (1244.6 mm)	13
VRSD4-6100	61.00" (1549.4 mm)	16



V-Guide - 60 mm (2-1/4")



V-Guide System

Technical Information

LOAD CALCULATIONS

L = applied load / number of wheel pairs

L_R = wheel radial load

L_0 = wheel load from moment

A = load offset dimension

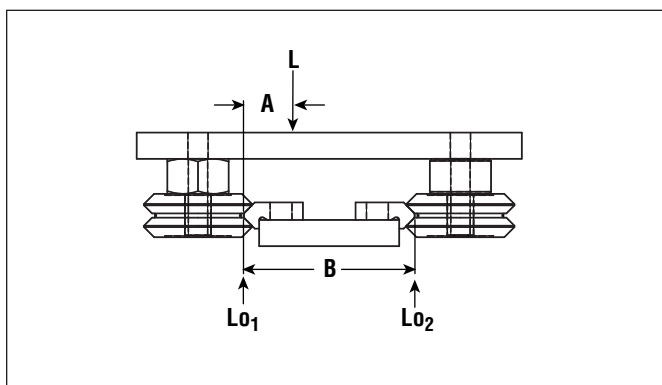
B = track width dimension

F_A = .5 for light duty, well lubricated use

F_A = 1 for normal lubricated use

F_A = 2 for dry, or harsh environments

LOAD CONDITION A



$$L_{01} = \frac{L \times (B - A) \times F_A}{B}$$

$$L_{02} = (L \times F_A) - L_{01}$$

Compare the greater of these loads to the rated moment and radial load capacities.

Example:

Load is 100 lbs on 4 wheel carriage,

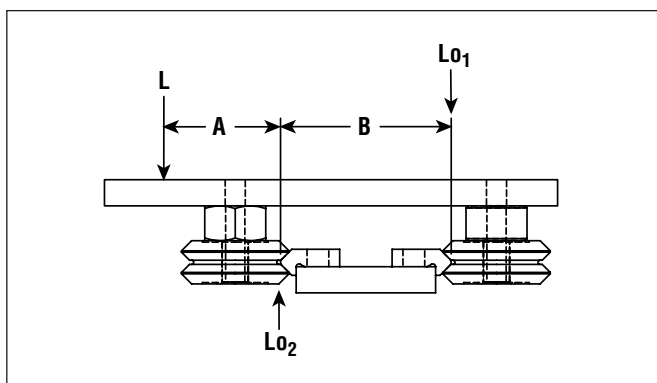
$L = 100 / 2$ pair wheels = 50 lbs.

$A = 4"$, $B = 10"$, $F_A = 1$

$$L_{01} = \frac{50 \times (10 - 4) \times 1}{10} = 30 \text{ lbs.}$$

$$L_{02} = 50 - 30 = 20 \text{ lbs.}$$

LOAD CONDITION B



$$L_{01} = \frac{L \times A}{B} \times F_A$$

$$L_{02} = (L \times F_A) + L_{01}$$

Compare the greater of these loads to the rated moment and radial load capacities.

Example:

Load is 100 lbs. on 4 wheel carriage,

$L = 100 / 2$ pair wheels = 50 lbs.

$A = 4"$, $B = 6"$, $F_A = 1$

$$L_{01} = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

$$L_{02} = 50 + 33 = 83 \text{ lbs.}$$

LOAD CONDITION C

$$L_{01} = \frac{L \times A \times F_A}{B}$$

$$L_R = (L \times F_A) + L_{01}$$

$$L_{01} = L_{02}$$

Compare the greater of these loads to the rated moment and radial load capacities.

Example:

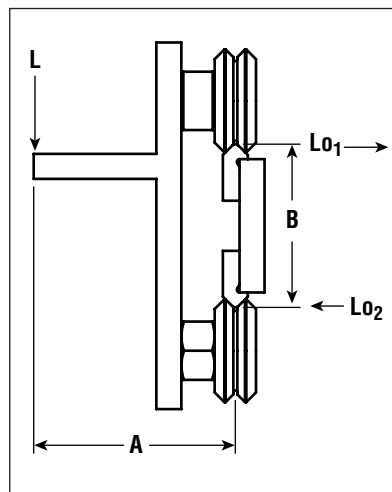
Load is 100 lbs. on 4 wheel carriage,

$L = 100 / 2$ pair wheels = 50 lbs.

$A = 4"$, $B = 6"$, $F_A = 1$

$$L_{01} = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

$$L_R = (50 \times 1) + 33 = 83 \text{ lbs.}$$





MOUNTING AND ADJUSTMENT

Use the recommended fasteners for the specified track and wheel bushings.

Use the following table, and the center distance formulas in the next column, to configure the appropriate wheel mounting dimensions.

V-RAIL SIZE	IV (in.)	OV (in.)	IV (mm)	OV (mm)
1	0.874	0.934	22.2	23.7
2	1.374	1.436	34.9	36.5
3	2	2.124	50.8	53.9
4	2.624	2.75	66.6	69.9

The fixed bushing should be used to carry the heaviest loading. Preload the adjustable bushing so that the wheel can just be turned by hand. Over-tightening the preload will cause premature wear of the components.

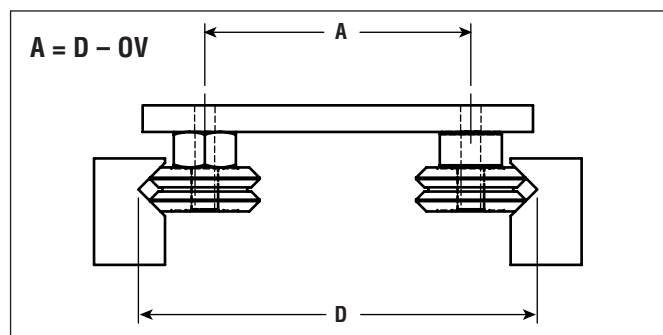
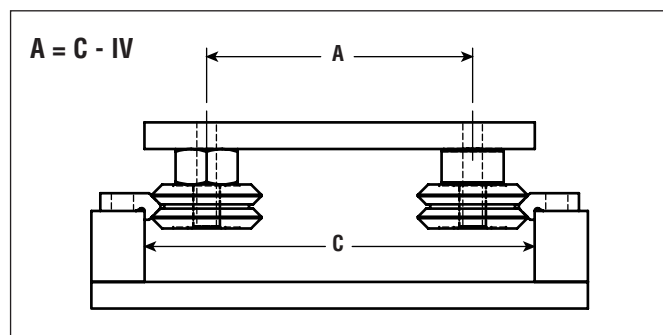
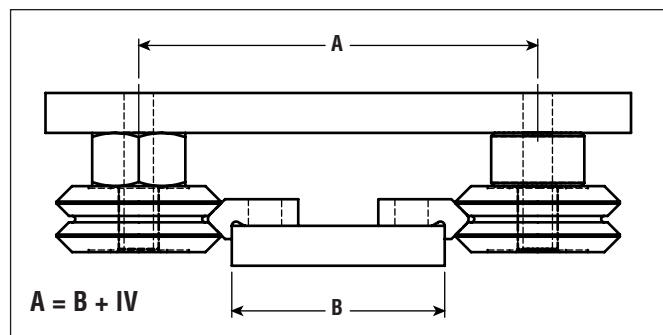
LUBRICATION

The V-Guide wheels are grease lubricated, and will not require any additional lube. The track should be lubricated for optimum performance and service life. Suggested lubricants are Mobil Vactra #2 Way Oil, or Mobil Polyrex EP 2 Extreme Pressure Grease.

SUGGESTED FASTENERS

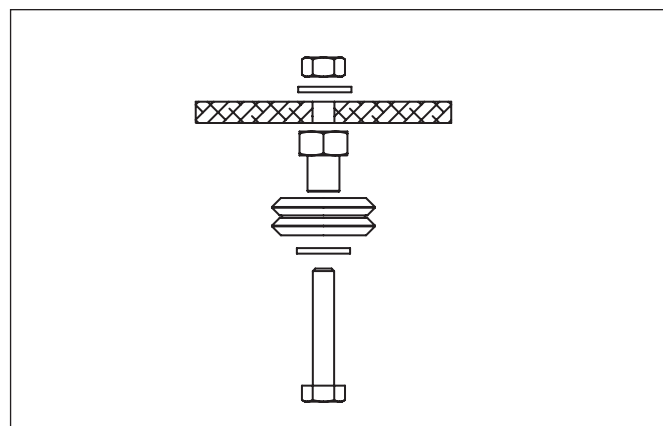
BUSHINGS			
INCH		METRIC	
VB1	#6	MVB1	M4
VB2	1/4"	MVB2	M6
VB3	5/16"	MVB3	M8
VB4	3/8"	MVB4	M10
V-RAIL			
VR1	#6, M3	VR3	1/4", M6
VR2	#10, M6	VR4	5/16", M8

CENTER DISTANCE FORMULA



WHEEL / BUSHING ASSEMBLY

Use SAE series N flat washers and lock washers to secure the wheel bushing assemblies.





Commercial Rail

Product Overview

PRODUCT OVERVIEW

Commercial Rail is a simple and cost effective linear motion solution with high load capacity and corrosion resistance.

- Roll formed rails made of steel/stainless steel sheet for low cost and corrosion resistance application
- Zinc plated rail length up to 6000mm
- Machined slider body made of aluminum alloy and anodized for corrosion resistance
- Steel rollers are made of 52100 chrome steel, hardened and ground, lubricated for life and sealed against contamination
- Stainless steel rollers made of 440C stainless steel for better corrosion resistance, lubricated for life and sealed against contamination
- Rollers made with thread integrated inner ring for ease of assembly and adjustment of pre-load
- Custom polymer wipers can be designed and manufactured to improve the smoothness of motion and service life
- Maximum operating temperature 100°C or 212°F
- Consult with factory for special hole spacing
- Speed up to 1.5 m/s
- Moment loads should be carried by two slides or two parallel rollers



SLIDE ORIENTATION

The 3-roller slide should be installed in the rail so that the load is shared among the two outside rollers. The orientation marks indicate how to align the slider with the load direction

LUBRICATION - RAILS & BEARINGS

The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

PRELOAD ADJUSTMENT

- To loosen the center roller, use an Allen wrench to un-tighten the screw while holding the roller still with an open-end wrench
- Turn the center roller to a position to achieve the desired pre-load
- Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere.
- Tighten the screw while holding the roller flat with an open-end wrench

PRELOAD ADJUSTMENT	CR20/CRSS20	CR30/CRSS30	CR45/CRSS45
Wrench flat sq. (mm)	6	10	14

APPLICATIONS

- Automation
- Packaging, material handling, etc
- Environmental, energy, HVAC, etc.
- Medical
- Office equipment

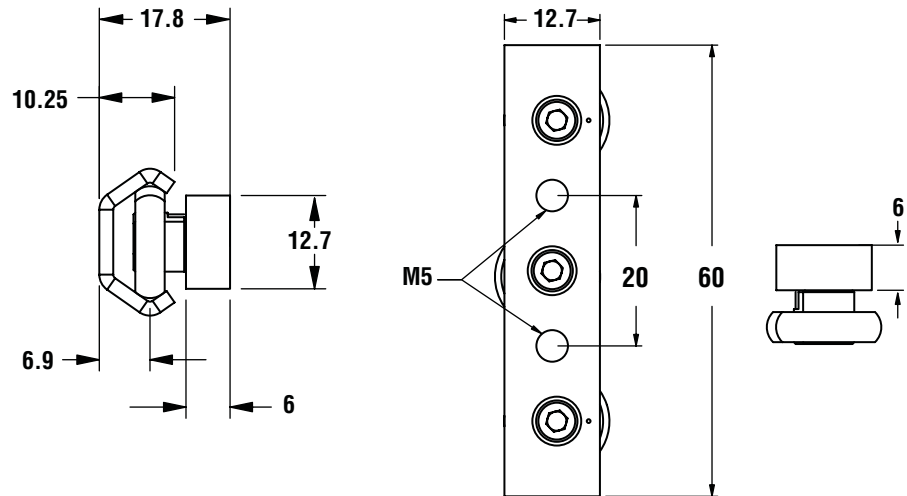
MATERIAL & FINISH SPECIFICATIONS

	CR SERIES	SS SERIES
Rail	Carbon steel sheet, Zinc plated	Stainless steel 304 sheet
Slide	Aluminum alloy anodized	Aluminum alloy anodized
Rollers	Chrome steel	Stainless steel
Hardware	Steel zinc plated	Stainless steel 18-8

RAIL MOUNT	CR20/CRSS20	CR30/CRSS30	CR45/CRSS45
Slide mount screws (Socket head cap)	M5	M6	M8
Tightening torque (lbs-in)	25	43	103
Tightening torque (N-m)	3	5	12
SLIDES	CR20/SS20	CR30/SS30	CR45/SS45
Rail mount screw (Button head cap)	M4	M5	M8

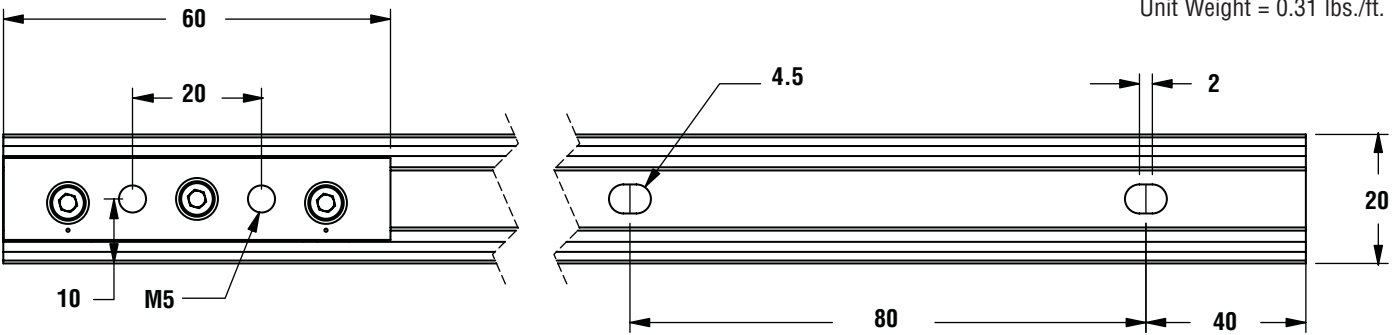


CR20 SLIDE



DIMS	LOAD RATINGS		
	STATIC RADIAL C _{0r} (N)	STATIC RADIAL C _{0a} (N)	DYNAMIC RADIAL Cr (N)
CR20 CRSS20	210	160	280
CRP20	30	20	40

CR20 RAIL

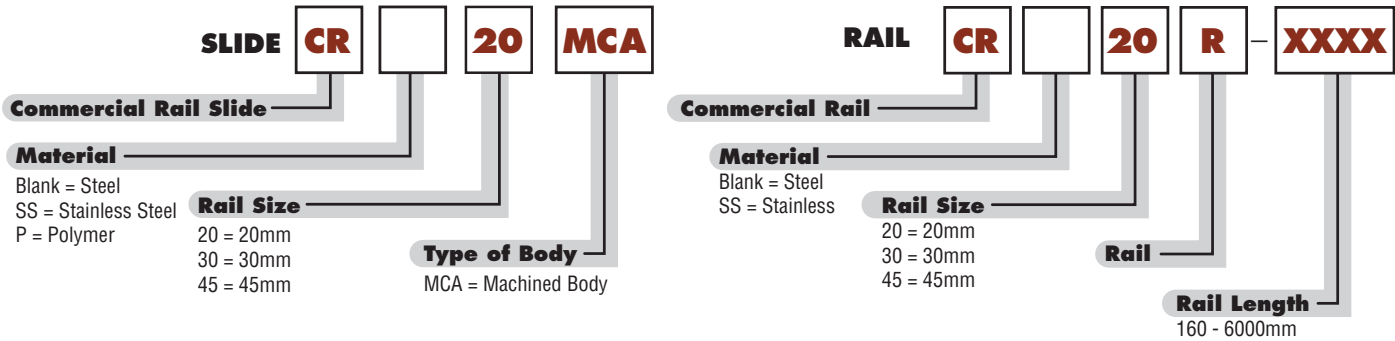


Unit Weight = 0.31 lbs./ft.

Commercial Rail - CR20

ORDER INFORMATION

EXAMPLE: CR20MCA / CR20R-XXXX

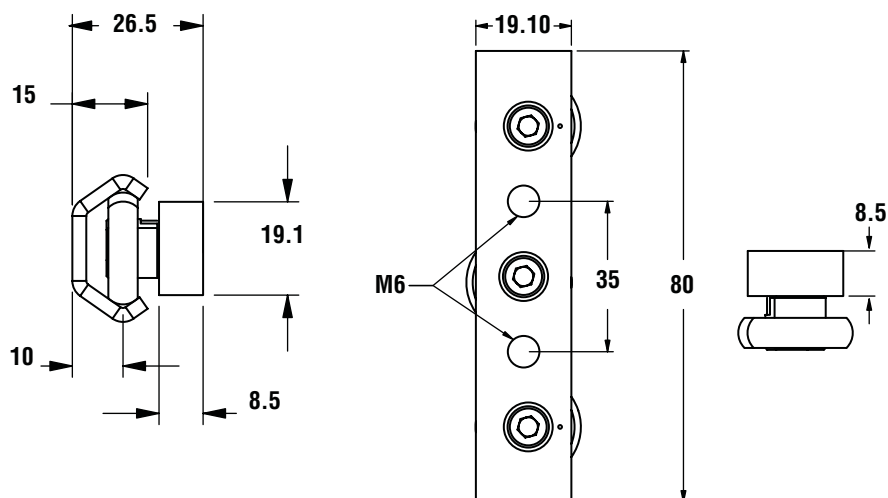




Commercial Rail - CR30

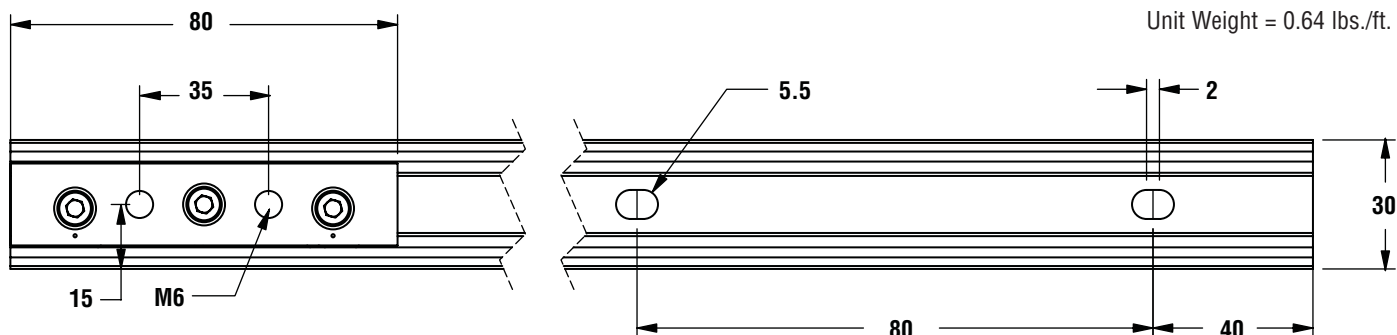
Dynamic Radial Cr = 800 N

CR30 SLIDE



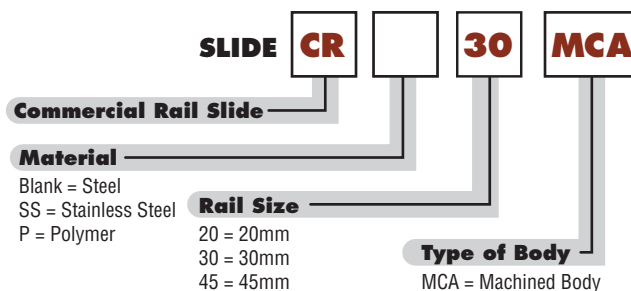
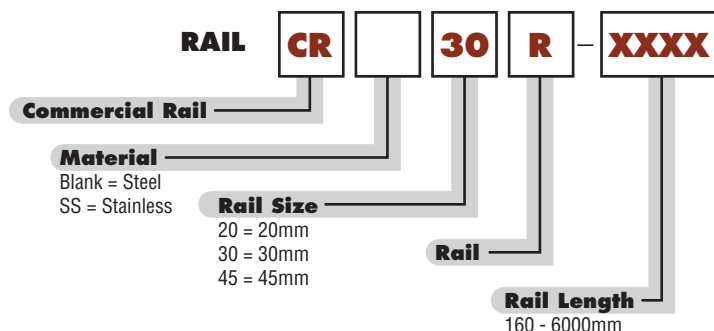
DIMS	LOAD RATINGS		
	STATIC RADIAL C _{0r} (N)	STATIC RADIAL C _{0a} (N)	DYNAMIC RADIAL Cr (N)
CR30	610	420	800
CRSS30	90	60	120

CR30 RAIL



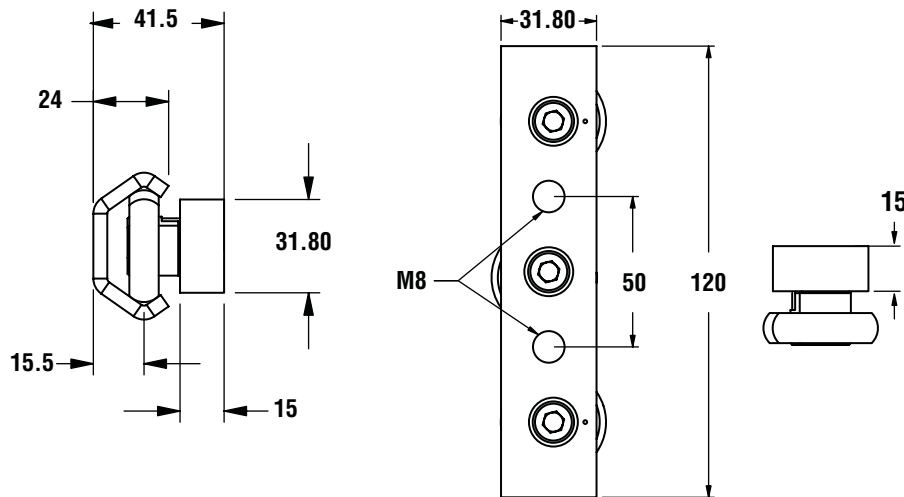
ORDER INFORMATION

EXAMPLE: CR30MCA / CR30R-XXXX



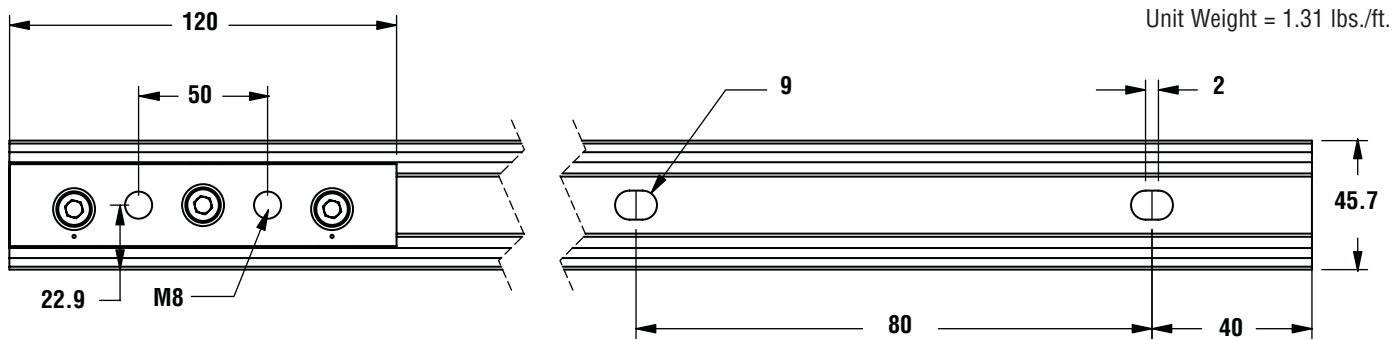


CR45 SLIDE



DIMS	LOAD RATINGS		
	STATIC RADIAL C _{0r} (N)	STATIC RADIAL C _{0a} (N)	DYNAMIC RADIAL Cr (N)
CR45	1330	930	1740
CRSS45			
CRP45	190	150	260

CR45 RAIL

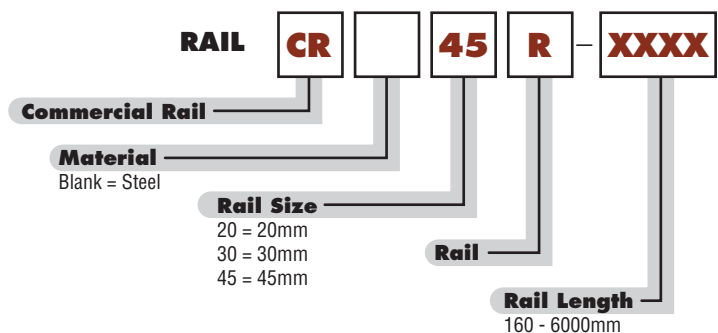
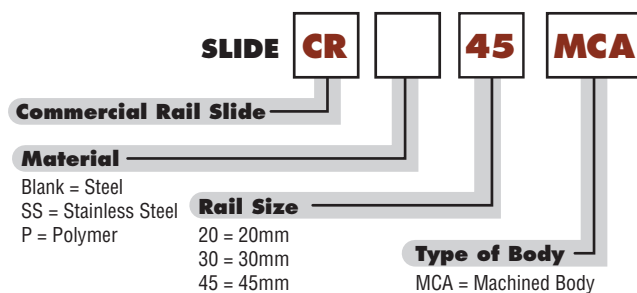


Unit Weight = 1.31 lbs./ft.

Commercial Rail - CR45

ORDER INFORMATION

EXAMPLE: CR45MCA / CR45R-XXXX





Hardened Crown Rollers

Inch & ISO Metric Series



FEATURES & BENEFITS

- Low cost linear motion solution
- Precision rolling element bearing riding in a *Unistrut™ type rail
- 9/16" Hex head for easier mounting
- Simple solution and setup for point-to-point applications
- Rollers provide self-alignment, durability and longevity
- MAX. bearing load - 300 lbs.
- MAX. bearing speed - 150 ft./ min. (30 in./sec.)
- Rails lengths available up to 10 ft.
Contact manufacturer for longer lengths.

RAILS FINISHES:

- Bare steel
- Powder coated

ACCESSORIES AVAILABLE:

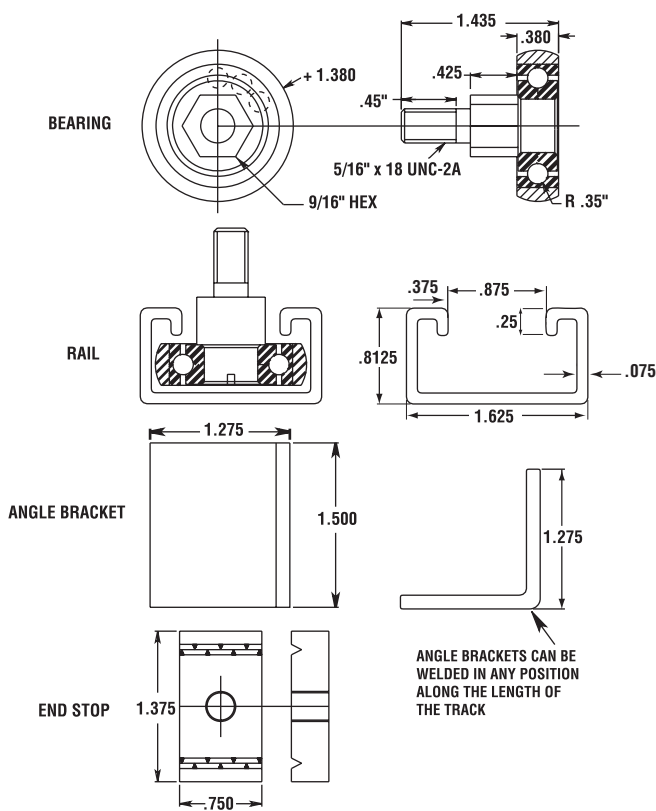
- Angle brackets (for welding to mounting rail)
- End stops

*Unistrut is a trademark of Unistrut, Inc.

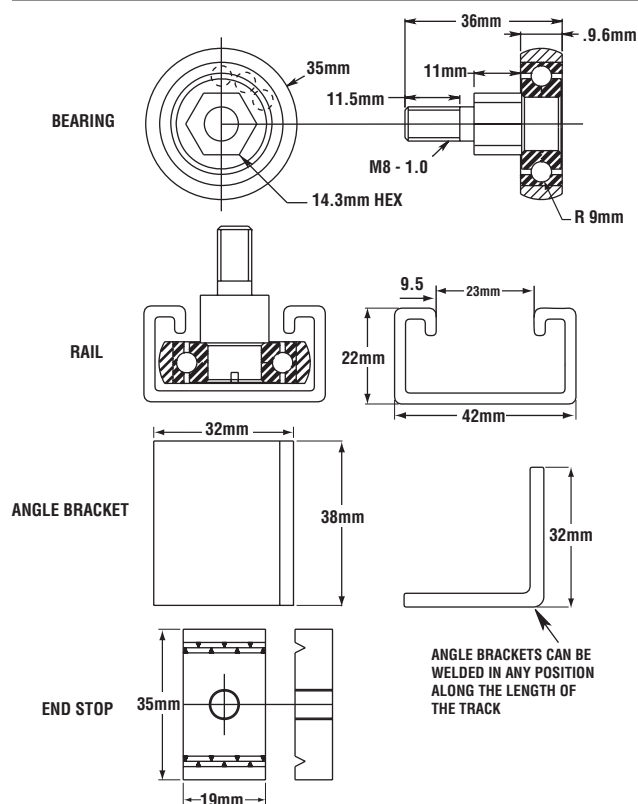
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
PAC3016	Hardened Crown Roller Bearing
PAC3016M	Hardened Crown Roller Bearing with metric thread
PAC2245	Rail System - unpainted (specify length - priced per foot)
PAC2247	Rail System - black powder coat finish (specify length- price per foot)
PAC2244	Angle Brackets - 1" Steel
PAC2246	End Stops for Rail System (bolt included)

INCH



METRIC



NOTE: All metric dimensions are conversions from inch dimensions all parts are manufactured to inch standards.



PRODUCT OVERVIEW

The economical Hevi-Rail® guide systems offer a lifetime of durability under continuous use. The easily interchangeable bearing components provide even dispersion of forces in the profile rails for longer system life and stability.

Linear Bearings:

- Outer ring made of case-hardened steel
- Handles very high axial and radial loads
- Easily interchangeable components for less down-time

Profile Rails:

- Standard length up to 6 meters
- Sand blasted or lightly oiled
- U-channel or I-channel available

Flange Plates:

- Simple mounting for bearings
- Can be ordered pre-welded to bearing

Ordering example: HVB-054/HVPO

Clamp Flanges:

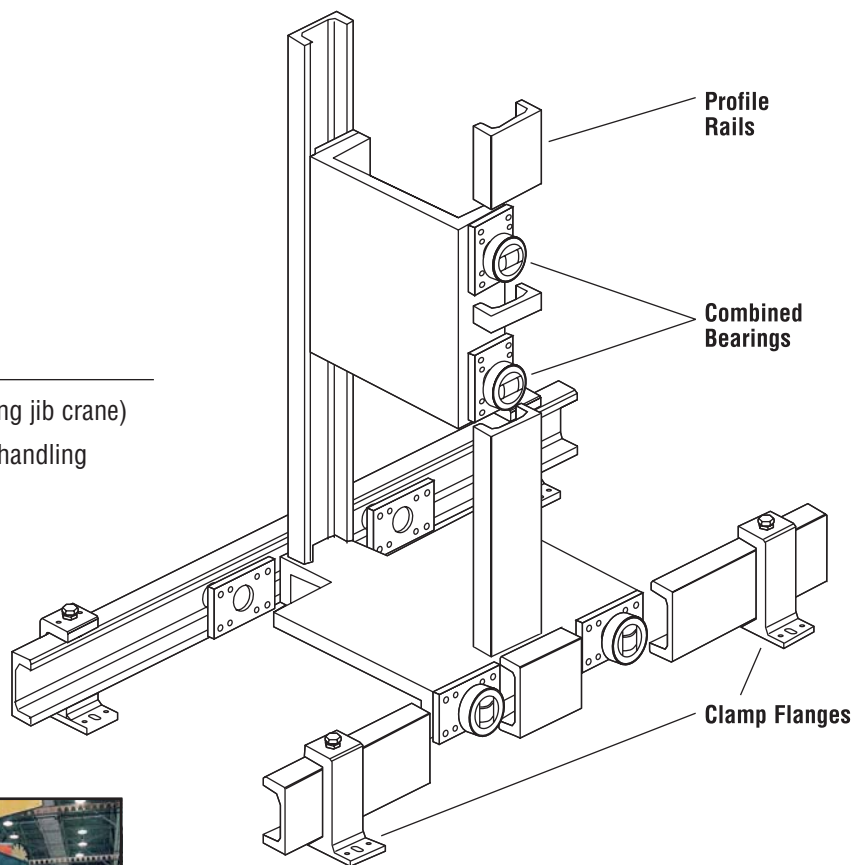
- Adjustable
- Eliminates need for welding and straightening
- Easily adjustable parallelism



Hevi-Rail®
Heavy Duty Bearing Systems

APPLICATIONS

- Telescoping applications (ex. overhead extending jib crane)
- Warehouse handling systems / other material handling
- Custom and standard lift units
- Large Shrink-wrap machinery
- Steel and coil handling
- Large variety of material handling





Hevi-Rail® Linear Bearing Systems

Technical Information & Selection Guide

TECHNICAL SPECIFICATIONS

Linear Bearing for Axial & Radial Loads

Prior to welding, disassemble bearing components. To avoid cracks in welded joints, please use welding electrodes and core weld for unalloyed steel.

Materials:

Outer ring - Case-hardened steel UNI 20 MnCr 5 hardened at 60+2 HRc

Inner ring - Hardened steel En 31 - SAE 52100 hardened at 62-2 HRc

Cylindrical rollers - Flat ground heads are hardened steel, En 31 - SAE 52100, hardened at 59-64 HRC

Bolt tolerance = 0.05 mm

Profile Rails: High quality steel, ASTM A 252 Gr.1, A 252 Gr.2, A 252 Gr.3, A 663 Gr.45-80, A 675 Gr. 45-90. Standard length (1024/1524 steel) of 6 m (19.7ft.). MnCr 5 with maximum contact pressure of 750 MPa (N/mm²). Optional sand blasted and/or lightly oiled. Rails are not hardened but have a Brinell hardness of 145-185. The guide ways in the rails should be lightly greased and not painted.

Clamp Flange: Low carbon steel, adjustable clamp

Flange Plate: Low carbon steel. Special designs available, contact manufacturer.

Seals: Bearings with fixed axial bearing (HVB-053 to HVB-063) - radial bearing has steel labyrinth and side guide roller with rubber seals

Bearings with eccentric adjustable axial bearing (HVBEA-454 to HVBEA-463) - Both radial and axial bearings utilize rubber seals (RS type)

Lubrication: Bearings are supplied lubricated with grease grade 3. Bearings from HVB-056 to HVB-063 can be re-lubricated with grease zerk. Adjustable bearings are not available with zerk.

Temperature: Resistant from -10°C to 80°C (14°F to 176°F)

Bearing Life Calculations:

$$L_{10} = \left(\frac{1666}{n} \right) \left(\frac{C}{P} \right)^{10/3} \text{ (Hours)}$$

C = Dynamic load rating (KN)

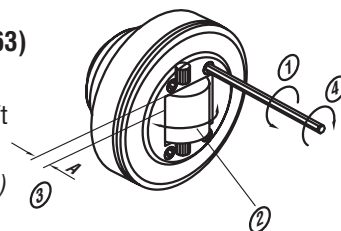
P = Automatic dynamic load (KN)

n = Revolutions per minute (rpm)

NOTE: Above calculation formula is for predicting life expectancy with 90% reliability level. Customers shall use their discretion to determine the reduction factor based on the actual operation needs and conditions such as reliability level, load, speed, impact and environments.

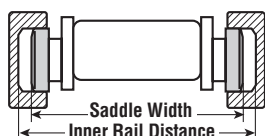
Adjusting Axial Bearing (HVBEA-454 to HVBEA-463)

1. Remove front screws.
2. Rotate axial bearing shaft
3. Check dimension A (repeat step 2, if needed)
4. Re-install front screws



SYSTEM DESIGN CLEARANCE

1. The overall system clearance should be 1.524 mm to 3.048 mm



Inner Rail Distance =
Saddle Width + (1.524
mm to 3.048 mm)

2. Verify that the Axial bearing is aligned parallel to the rail; especially in vertical operations.



CALCULATION OF FMAX FOR CANTILEVERED LOADS

Q = Load capacity (N)

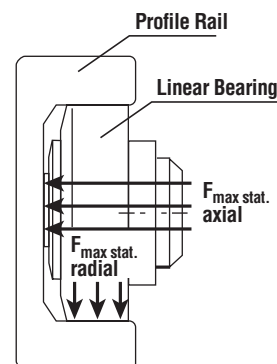
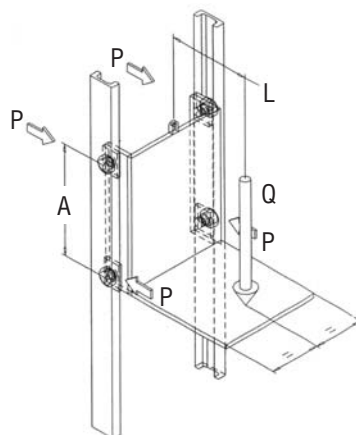
L = Load distance to suspension point (mm)

P = Suspension point

A = Bearing distance (mm) recommended 500-1000 mm

$$\text{Formula: } F_{\max}[\text{N}] = \frac{Q \cdot L}{2 \cdot A}$$

$P_{\text{zul}} = 750 \text{ N/mm}^2$ for all profile rails. Indicated here are $F_{\max}$ stat radial + axial for each bearing.





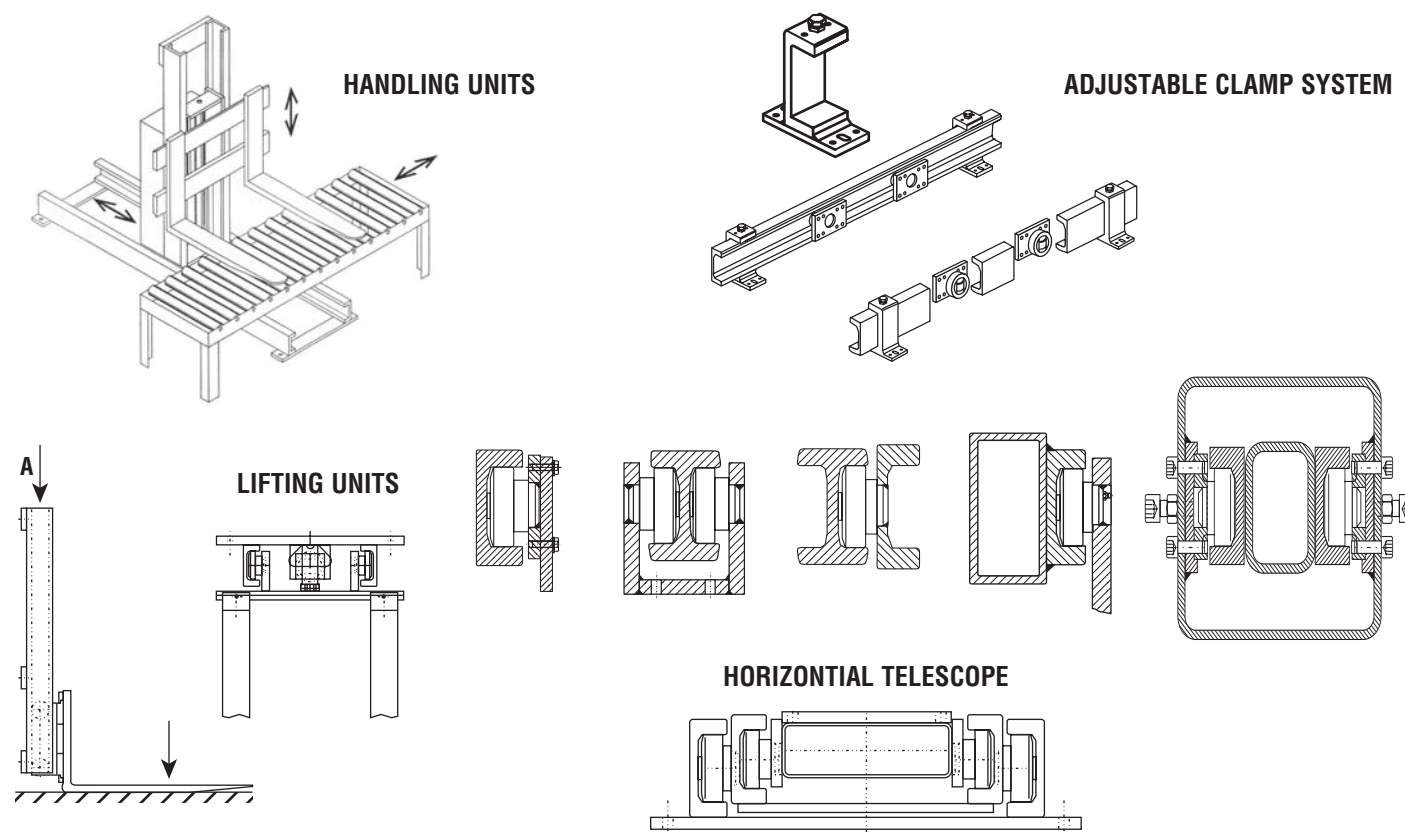
SELECTION GUIDE (when used with Profile Rails HVR-S to HVR-6)

Use the following chart to select the bearings (fixed or adjustable), rails, flange plates and clamp flanges according to your system's maximum static radial and axial loading. A "system" is defined as a bearing in the corresponding rail. For dimensional and detailed specifications for the system selected, simply refer to the corresponding pages.

F (KN) MAX STAT RADIAL	F (KN) MAX STAT AXIAL	COMBINED BEARING AXIAL BEARING FIXED	COMBINED BEARING AXIAL BEARING ADJUSTABLE	PROFILE RAILS	CLAMP FLANGE	FLANGE PLATE	PAGE NO.
5.2	1.7	HVB-053	—	HVR-S	—	HVPS-1	246
7.2	2.4	HVB-054	HVBEA-454	HVR-0	HVC-0	HVP0-1	244
8.6	2.8	HVB-055	HVBEA-455	HVR-1, HVRI-07	HVC-1	HVP1-1	248
8.9	3.0	HVB-056	HVBEA-456	HVR-2	HVC-2	HVP2-1	249
8.9	3.0	HVB-057	HVBEA-457	HVRI-08	—	HVP2-1	250
15.6	5.2	HVB-058	HVBEA-458	HVR-3, HVRI-09	HVC-3	HVP3-1	251
15.5	5.1	HVB-059	HVBEA-459	HVRI-10	—	—	252
16.5	5.5	HVB-060	HVBEA-460	HVRI-11	—	—	252
16.5	5.5	HVB-061	HVBEA-461	HVR-4	HVC-4	HVP4-1	253
23.5	7.8	HVB-062	—	HVR-5	—	HVP4-1	254
41.1	13.7	HVB-063	HVBEA-463	HVR-6	—	HVP6-1	255

NOTE: For cantilevered loads, static verification calculations can be found on page 244. *All dimensions in mm.

MOUNTING CONFIGURATIONS



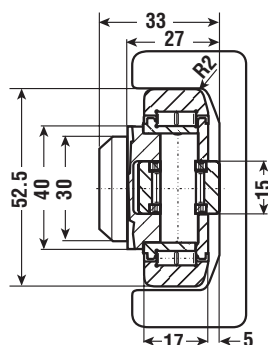


Hevi-Rail® Linear Bearing System

0.6 US Ton-Force

AXIAL BEARING - FIXED

HVB-053



WEIGHT = 0.36 Kg

BEARING RADIAL LOAD

Max. dynamic load = 24 KN

Max. static load = 33 KN

BEARING AXIAL LOAD

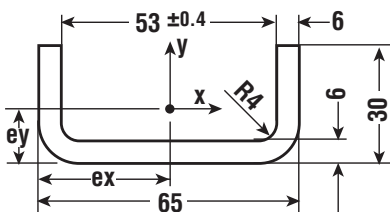
Max. dynamic load = 10 KN

Max. static load = 14 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-S



WEIGHT = 5.3 Kg/m

MOMENT OF INERTIA

$I_x = 5.2 \text{ cm}^4$, $I_y = 38.8 \text{ cm}^4$

MOMENT OF RESISTANCE

$W_x = 2.50 \text{ cm}^3$, $W_y = 11.90 \text{ cm}^3$

RADIUS OF INERTIA

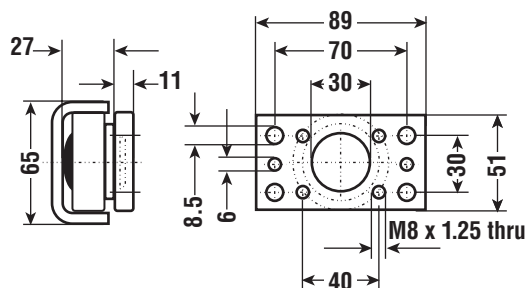
$i_x = 0.80 \text{ cm}$, $i_y = 2.40 \text{ cm}$

DIST. TO CENTER OF GRAVITY

$e_y = 0.94 \text{ cm}$, $e_x = 32.50 \text{ cm}$

FLANGE PLATE

HVPS-1



WHEN USED WITH SHOWN PROFILE RAILS

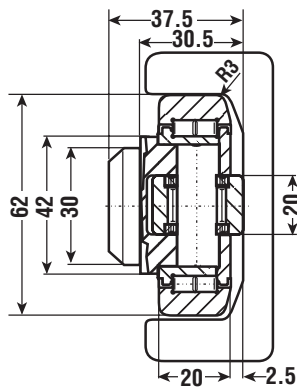
System Max. Static Radial Load = 5.2 KN / 0.6 US Ton-Force

System Max. Static Axial Load = 1.7 KN / 0.2 US Ton-Force



AXIAL BEARING - FIXED

HVB-054



WEIGHT = 0.53 Kg

BEARING RADIAL LOAD

Max. dynamic load = 39 KN

Max. static load = 65 KN

BEARING AXIAL LOAD

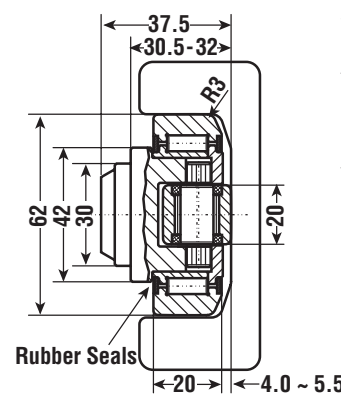
Max. dynamic load = 15 KN

Max. static load = 22 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-454



WEIGHT = 0.53 Kg

BEARING RADIAL LOAD

Max. dynamic load = 39 KN

Max. static load = 65 KN

BEARING AXIAL LOAD

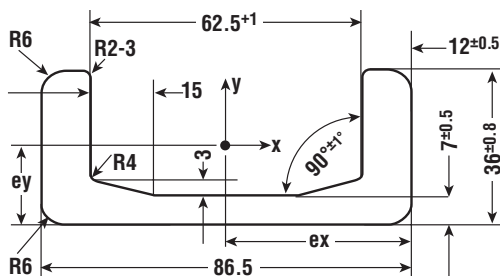
Max. dynamic load = 16 KN

Max. static load = 25 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-O



WEIGHT = 10.5 Kg/m

MOMENT OF INERTIA

$I_x = 15.35 \text{ cm}^4$, $I_y = 137.05 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 1.29 \text{ cm}$, $e_x = 4.33 \text{ cm}$

RADIUS OF INERTIA

$i_x = 1.07 \text{ cm}$, $i_y = 3.20 \text{ cm}$

MOMENT OF RESISTANCE

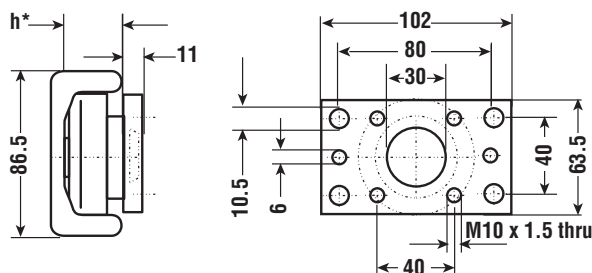
$W_{x_{min}} = 6.64 \text{ cm}^3$

$W_{x_{max}} = 11.93 \text{ cm}^3$

$W_y = 31.69 \text{ cm}^3$

FLANGE PLATE

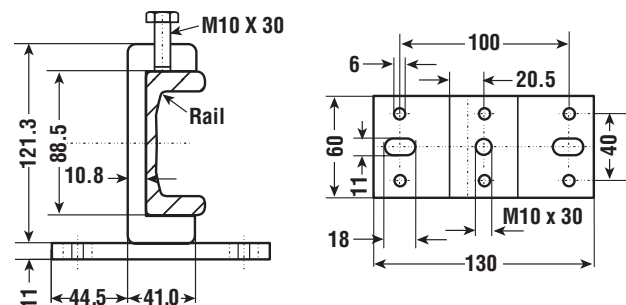
HVPO-1



* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-054 or HVBEA-454.

CLAMP FLANGE

HVC-O



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 7.2 KN / 0.8 US Ton-Force

System Max. Static Axial Load = 2.4 KN / 0.3 US Ton-Force

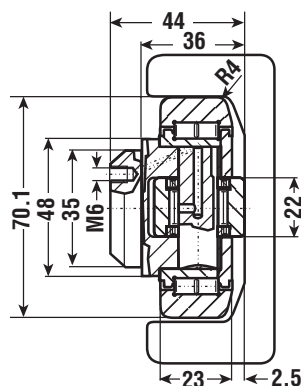


Hevi-Rail® Linear Bearing Systems

0.9 US Ton-Force

AXIAL BEARING - FIXED

HVB-055



WEIGHT = 0.80 Kg

BEARING AXIAL LOAD

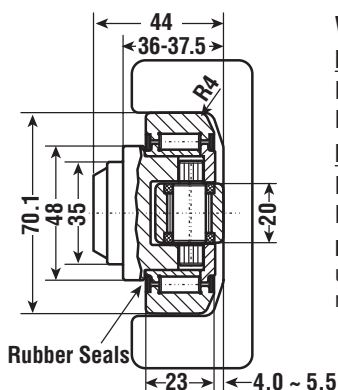
Max. dynamic load = 18 KN

Max. static load = 26 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-455



WEIGHT = 0.80 Kg

BEARING RADIAL LOAD

Max. dynamic load = 56 KN

Max. static load = 93 KN

BEARING AXIAL LOAD

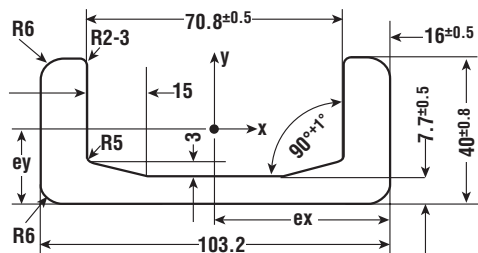
Max. dynamic load = 16 KN

Max. static load = 25 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-1



WEIGHT = 14.8 Kg/m

MOMENT OF INERTIA

$I_x = 27.29 \text{ cm}^4$, $I_y = 273.50 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 1.50 \text{ cm}$, $e_x = 5.16 \text{ cm}$

RADIUS OF INERTIA

$i_x = 1.20 \text{ cm}$, $i_y = 3.81 \text{ cm}$

MOMENT OF RESISTANCE

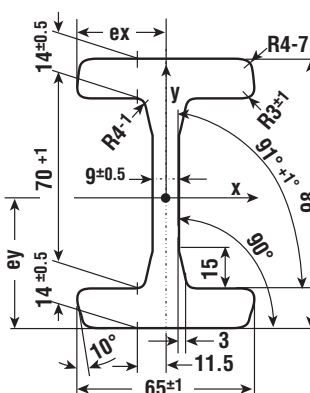
$W_{x_{min}} = 10.91 \text{ cm}^3$

$W_{x_{max}} = 18.20 \text{ cm}^3$

$W_y = 53.00 \text{ cm}^3$

PROFILE RAIL I-CHANNEL

HVRI-07



WEIGHT = 19.4 Kg/m

MOMENT OF INERTIA

$I_x = 344.29 \text{ cm}^4$, $I_y = 57.63 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 4.90 \text{ cm}$, $e_x = 3.25 \text{ cm}$

RADIUS OF INERTIA

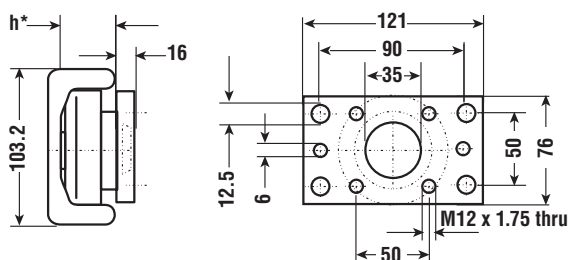
$i_x = 3.73 \text{ cm}$, $i_y = 1.52 \text{ cm}$

MOMENT OF RESISTANCE

$W_x = 70.26 \text{ cm}^3$, $W_y = 17.73 \text{ cm}^3$

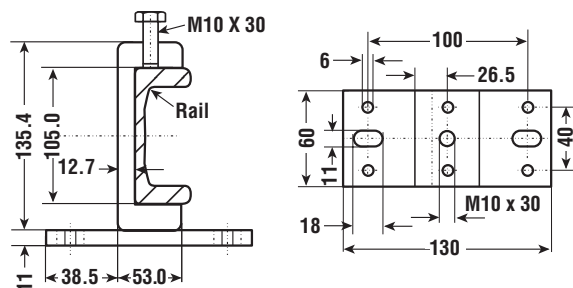
FLANGE PLATE

HVP1-1



CLAMP FLANGE

HVC-1



* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-055 or HVBEA-455.

WHEN USED WITH SHOWN PROFILE RAILS

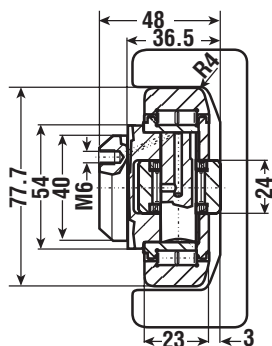
System Max. Static Radial Load = 8.6 KN / 0.9 US Ton-Force

System Max. Static Axial Load = 2.8 KN / 0.3 US Ton-Force



AXIAL BEARING - FIXED

HVB-056



WEIGHT = 1.00 Kg

BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

BEARING AXIAL LOAD

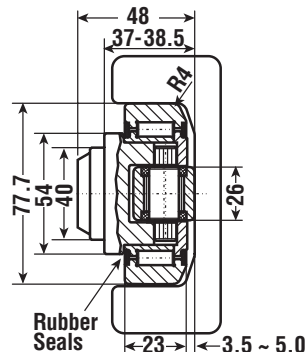
Max. dynamic load = 20 KN

Max. static load = 32 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-456



WEIGHT = 1.00 Kg

BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

BEARING AXIAL LOAD

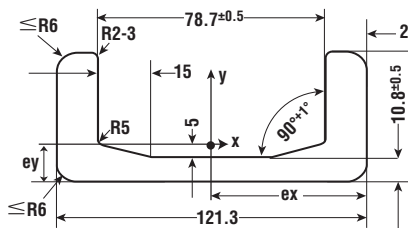
Max. dynamic load = 23 KN

Max. static load = 36 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-2



WEIGHT = 20.9 Kg/m

MOMENT OF INERTIA

$I_x = 37.92 \text{ cm}^4$, $I_y = 493.58 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 1.54 \text{ cm}$, $e_x = 6.07 \text{ cm}$

RADIUS OF INERTIA

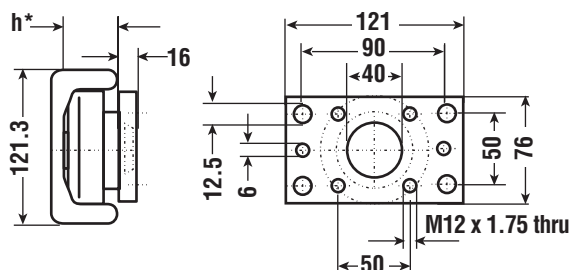
$i_x = 1.19 \text{ cm}$, $i_y = 4.30 \text{ cm}$

MOMENT OF RESISTANCE

$W_{x_{min}} = 14.83 \text{ cm}^3$, $W_{x_{max}} = 24.58 \text{ cm}^3$, $W_y = 81.38 \text{ cm}^3$

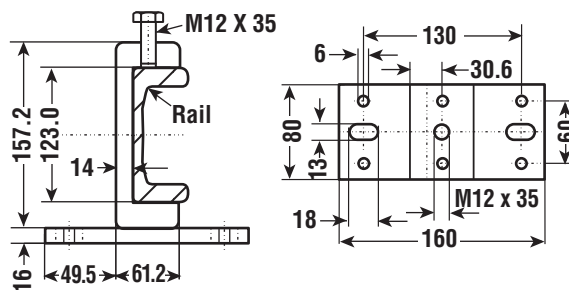
FLANGE PLATE

HVP2-1



CLAMP FLANGE

HVC-2



* "h" refers to the depth of the axial bearing,
so "h" depends on choice of HVB-056 or HVBEA-456.

WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force
System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force

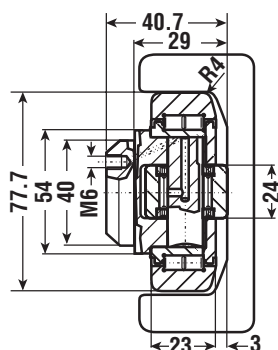


Hevi-Rail® Linear Bearing Systems

1.0 US Ton-Force

AXIAL BEARING - FIXED

HVB-057



WEIGHT = 0.90 Kg

BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

BEARING AXIAL LOAD

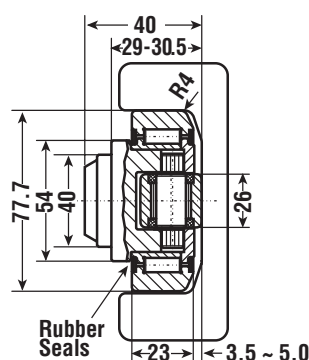
Max. dynamic load = 20 KN

Max. static load = 32 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-457



WEIGHT = 0.87 Kg

BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

BEARING AXIAL LOAD

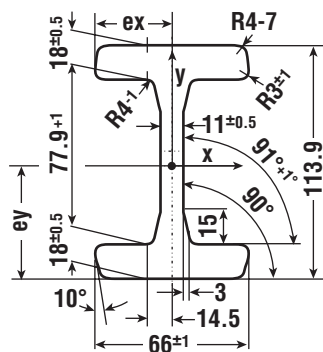
Max. dynamic load = 23 KN

Max. static load = 36 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL I-CHANNEL

HVRI-08



WEIGHT = 25.3 Kg/m

MOMENT OF INERTIA

$I_x = 597.54 \text{ cm}^4$, $I_y = 76.79 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 5.70 \text{ cm}$, $e_x = 3.30 \text{ cm}$

RADIUS OF INERTIA

$i_x = 4.24 \text{ cm}$, $i_y = 1.54 \text{ cm}$

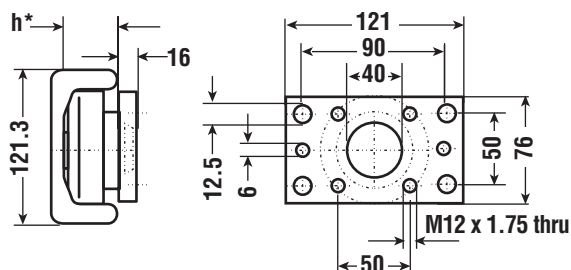
MOMENT OF RESISTANCE

$W_x = 104.92 \text{ cm}^3$,

$W_y = 23.27 \text{ cm}^3$

FLANGE PLATE

HVP2-1



* "h" refers to the depth of the axial bearing,
so "h" depends on choice of HVB-057 or HVBEA-457.

WHEN USED WITH SHOWN PROFILE RAILS

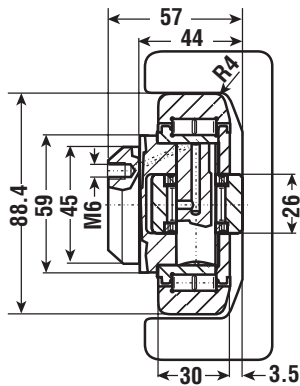
System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force

System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force



AXIAL BEARING - FIXED

HVB-058



WEIGHT = 1.62 Kg

BEARING RADIAL LOAD

Max. dynamic load = 85 KN

Max. static load = 134 KN

BEARING AXIAL LOAD

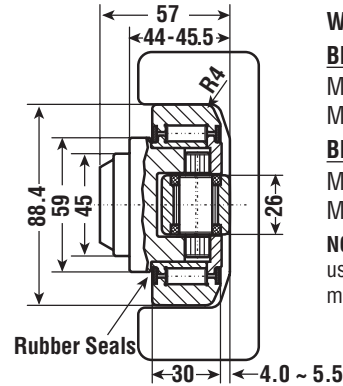
Max. dynamic load = 27 KN

Max. static load = 44 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-458



WEIGHT = 1.62 Kg

BEARING RADIAL LOAD

Max. dynamic load = 85 KN

Max. static load = 134 KN

BEARING AXIAL LOAD

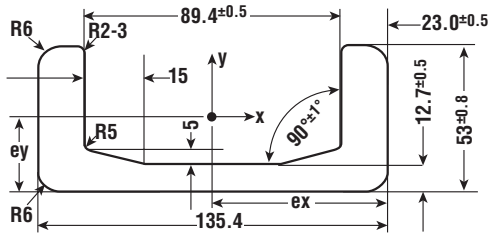
Max. dynamic load = 23 KN

Max. static load = 36 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-3



WEIGHT = 28.6 Kg/m

MOMENT OF INERTIA

$I_x = 89.47 \text{ cm}^4$, $I_y = 865.23 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 1.99 \text{ cm}$, $e_x = 6.77 \text{ cm}$

RADIUS OF INERTIA

$i_x = 1.57 \text{ cm}$, $i_y = 4.87 \text{ cm}$

MOMENT OF RESISTANCE

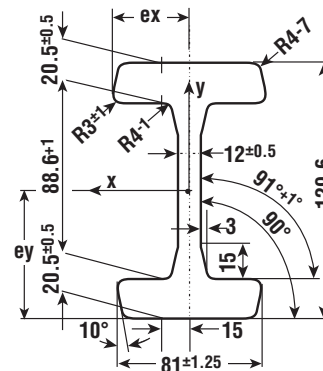
$W_{x_{min}} = 27.03 \text{ cm}^3$

$W_{x_{max}} = 44.96 \text{ cm}^3$

$W_y = 127.80 \text{ cm}^3$

PROFILE RAIL I-CHANNEL

HVRI-09



WEIGHT = 34.1 Kg/m

MOMENT OF INERTIA

$I_x = 1037.22 \text{ cm}^4$, $I_y = 161.89 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 6.48 \text{ cm}$, $e_x = 4.05 \text{ cm}$

RADIUS OF INERTIA

$i_x = 4.89 \text{ cm}$, $i_y = 1.93 \text{ cm}$

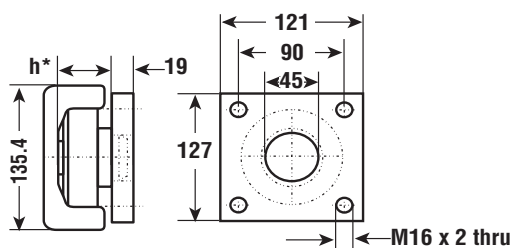
MOMENT OF RESISTANCE

$W_x = 160.07 \text{ cm}^3$

$W_y = 39.97 \text{ cm}^3$

FLANGE PLATE

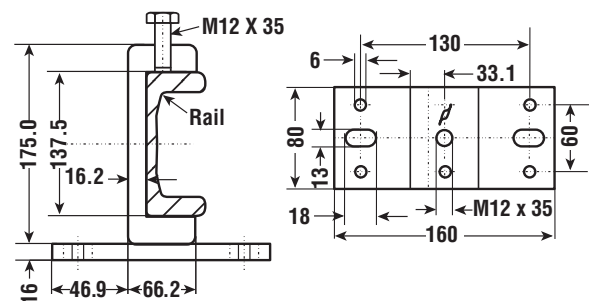
HVP3-1



* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-058 or HVBEA-458.

CLAMP FLANGE

HVC-3



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 15.6 KN / 1.7 US Ton-Force

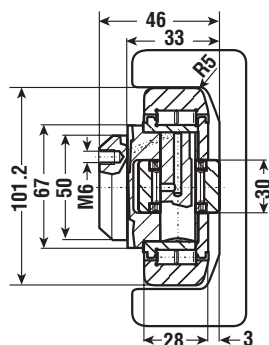
System Max. Static Axial Load = 5.2 KN / 0.6 US Ton-Force



Hevi-Rail® Linear Bearing Systems

1.8 US Ton-Force

AXIAL BEARING - FIXED HVB-059



WEIGHT = 1.80 Kg

BEARING RADIAL LOAD

Max. dynamic load = 92 KN

Max. static load = 153 KN

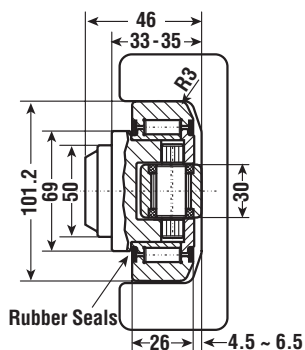
BEARING AXIAL LOAD

Max. dynamic load = 32 KN

Max. static load = 50 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE HVBEA-459



WEIGHT = 1.74 Kg

BEARING RADIAL LOAD

Max. dynamic load = 91 KN

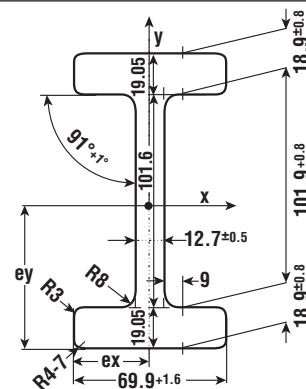
Max. static load = 140 KN

BEARING AXIAL LOAD

Max. dynamic load = 32 KN

Max. static load = 50 KN

PROFILE RAIL I-CHANNEL HVRI-10



WEIGHT = 30.9 Kg/m

MOMENT OF INERTIA

$I_x = 1078.01 \text{ cm}^4$, $I_y = 104.38 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 6.99 \text{ cm}$, $e_x = 3.49 \text{ cm}$

MOMENT OF RESISTANCE

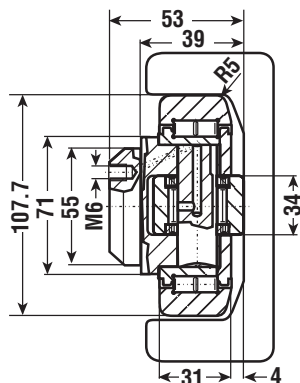
$W_x = 154.33 \text{ cm}^3$, $W_y = 29.89 \text{ cm}^3$

WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 15.5 KN / 1.7 US Ton-Force

System Max. Static Axial Load = 5.1 KN / 0.6 US Ton-Force

AXIAL BEARING - FIXED HVB-060



WEIGHT = 2.30 Kg

BEARING RADIAL LOAD

Max. dynamic load = 100 KN

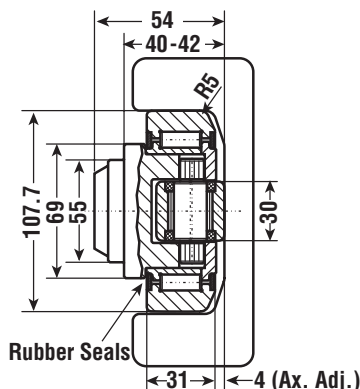
Max. static load = 174 KN

BEARING AXIAL LOAD

Max. dynamic load = 39 KN

Max. static load = 66 KN

ECCENTRIC ADJUSTABLE HVBEA-460



WEIGHT = 2.27 Kg

BEARING RADIAL LOAD

Max. dynamic load = 100 KN

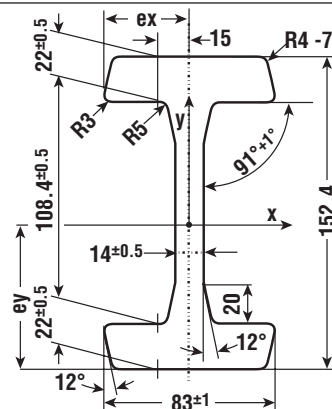
Max. static load = 174 KN

BEARING AXIAL LOAD

Max. dynamic load = 32 KN

Max. static load = 50 KN

PROFILE RAIL I-CHANNEL HVRI-11



WEIGHT = 40.5 Kg/m

MOMENT OF INERTIA

$I_x = 1670.08 \text{ cm}^4$, $I_y = 184.52 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 7.62 \text{ cm}$, $e_x = 4.15 \text{ cm}$

RADIUS OF INERTIA

$i_x = 5.69 \text{ cm}$, $i_y = 1.91 \text{ cm}$

MOMENT OF RESISTANCE

$W_x = 219.17 \text{ cm}^3$, $W_y = 44.46 \text{ cm}^3$

WHEN USED WITH SHOWN PROFILE RAILS

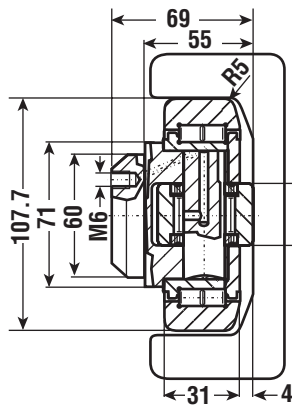
System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force

System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force



AXIAL BEARING - FIXED

HVB-061



WEIGHT = 2.82 Kg

BEARING RADIAL LOAD

Max. dynamic load = 100 KN

Max. static load = 174 KN

BEARING AXIAL LOAD

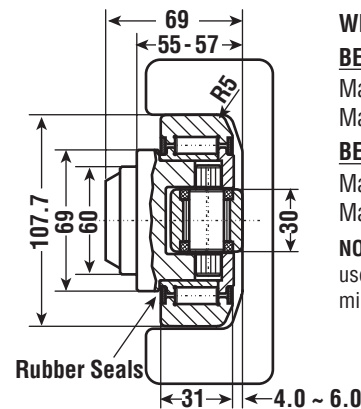
Max. dynamic load = 39 KN

Max. static load = 66 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-461



WEIGHT = 2.82 Kg

BEARING RADIAL LOAD

Max. dynamic load = 100 KN

Max. static load = 174 KN

BEARING AXIAL LOAD

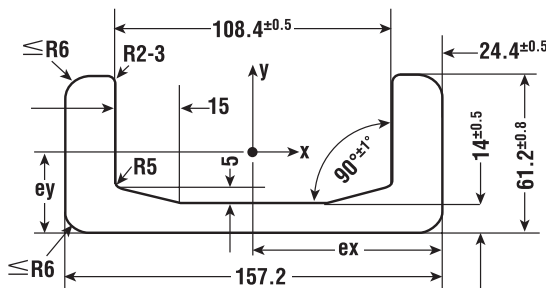
Max. dynamic load = 32 KN

Max. static load = 50 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL U-CHANNEL

HVR-4



WEIGHT = 35.9 Kg/m

MOMENT OF INERTIA

$I_x = 150.98 \text{ cm}^4$

$I_y = 1,494.32 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 2.25 \text{ cm}$, $e_x = 7.86 \text{ cm}$

RADIUS OF INERTIA

$i_x = 1.82 \text{ cm}$, $i_y = 5.72 \text{ cm}$

MOMENT OF RESISTANCE

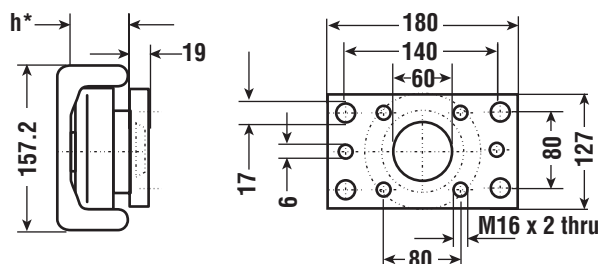
$W_{x_{min}} = 39.00 \text{ cm}^3$

$W_{x_{max}} = 67.13 \text{ cm}^3$

$W_y = 190.12 \text{ cm}^3$

FLANGE PLATE

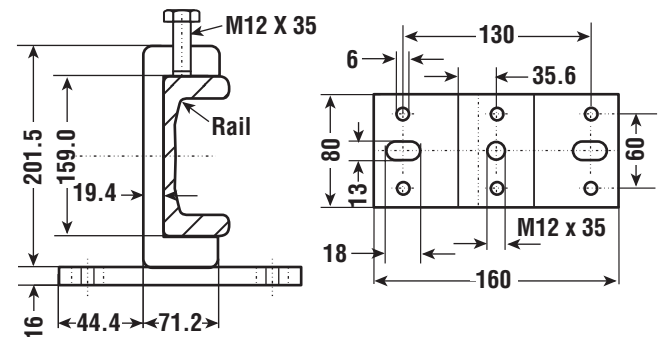
HVP4-1



* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-061 or HVBEA-461.

CLAMP FLANGE

HVC-4



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force

System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force

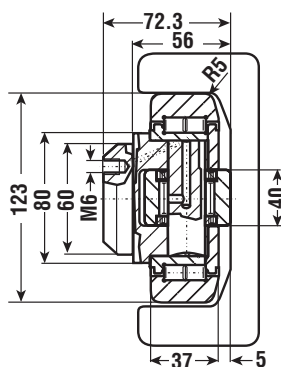


Hevi-Rail® Linear Bearing Systems

2.6 US Ton-Force

AXIAL BEARING - FIXED

HVB-062



WEIGHT = 4.50 Kg

BEARING RADIAL LOAD

Max. dynamic load = 135 KN

Max. static load = 242 KN

BEARING AXIAL LOAD

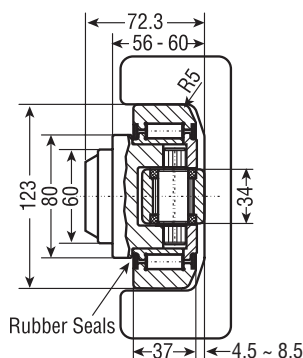
Max. dynamic load = 47 KN

Max. static load = 90 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-462



WEIGHT = 3.90 Kg

BEARING RADIAL LOAD

Max. dynamic load = 135 KN

Max. static load = 242 KN

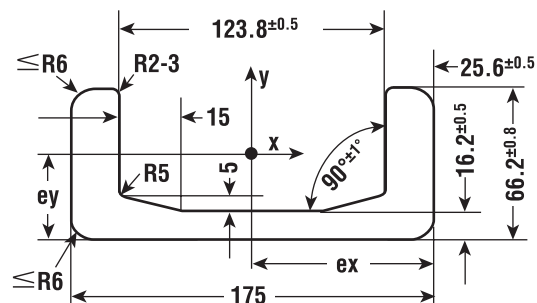
BEARING AXIAL LOAD

Max. dynamic load = 41 KN

Max. static load = 72 KN

PROFILE RAIL U-CHANNEL

HVR-5



WEIGHT = 42.9 Kg/m

MOMENT OF INERTIA

$I_x = 205.84 \text{ cm}^4$,

$I_y = 2,185.32 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 2.37 \text{ cm}$, $e_x = 8.75 \text{ cm}$

RADIUS OF INERTIA

$i_x = 1.94 \text{ cm}$, $i_y = 6.32 \text{ cm}$

MOMENT OF RESISTANCE

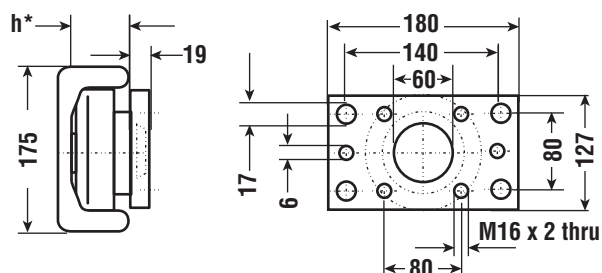
$W_{x_{min}} = 48.42 \text{ cm}^3$

$W_{x_{max}} = 86.89 \text{ cm}^3$

$W_y = 249.75 \text{ cm}^3$

FLANGE PLATE

HVP4-1



* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-062 or HVBEA-462.

WHEN USED WITH SHOWN PROFILE RAILS,

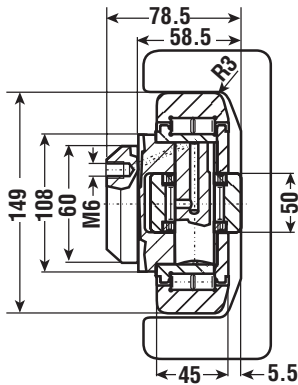
System Max. Static Radial Load = 23.5 KN / 2.6 US Ton-Force

System Max. Static Axial Load = 7.8 KN / 0.9 US Ton-Force



AXIAL BEARING - FIXED

HVB-063



WEIGHT = 6.52 Kg

BEARING RADIAL LOAD

Max. dynamic load = 183 KN

Max. static load = 353 KN

BEARING AXIAL LOAD

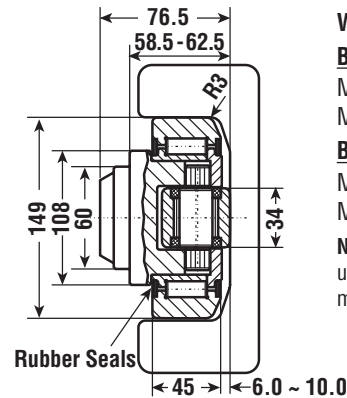
Max. dynamic load = 82 KN

Max. static load = 131 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

ECCENTRIC ADJUSTABLE

HVBEA-463



WEIGHT = 6.50 Kg

BEARING RADIAL LOAD

Max. dynamic load = 183 KN

Max. static load = 353 KN

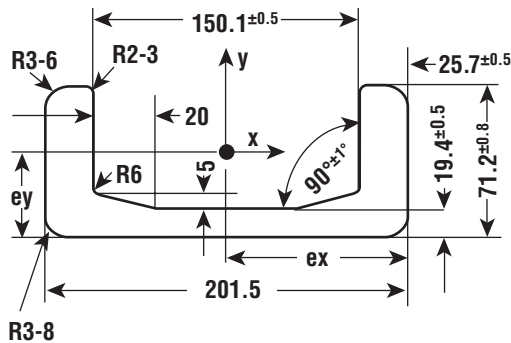
BEARING AXIAL LOAD

Max. dynamic load = 41 KN

Max. static load = 72 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL HVR-6



WEIGHT = 52.3 Kg/m

MOMENT OF INERTIA

$I_x = 269.52 \text{ cm}^4$,

$I_y = 3,423.08 \text{ cm}^4$

DIST. TO CENTER OF GRAVITY

$e_y = 2.40 \text{ cm}$, $e_x = 10.08 \text{ cm}$

RADIUS OF INERTIA

$i_x = 2.01 \text{ cm}$, $i_y = 7.17 \text{ cm}$

MOMENT OF RESISTANCE

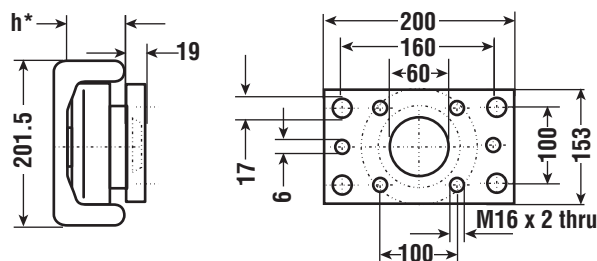
$W_{x_{min}} = 57.15 \text{ cm}^3$

$W_{x_{max}} = 112.11 \text{ cm}^3$

$W_y = 339.76 \text{ cm}^3$

FLANGE PLATE

HVP6-1

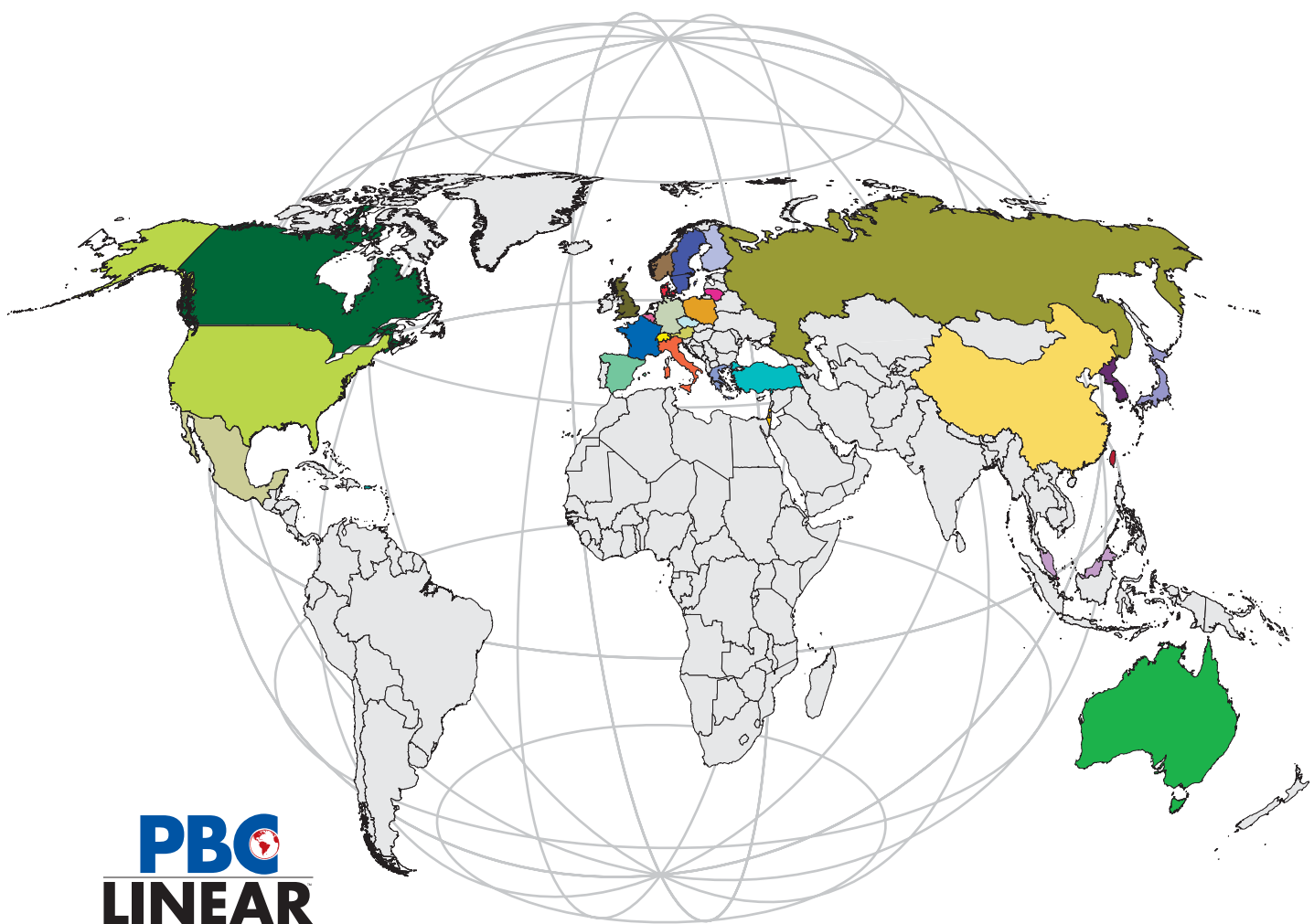


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-063 or HVBEA-463.

WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 41.1 KN / 4.6 US Ton-Force

System Max. Static Axial Load = 13.7 KN / 1.5 US Ton-Force



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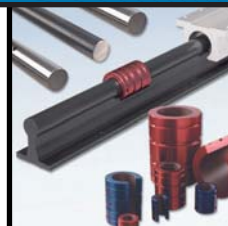
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