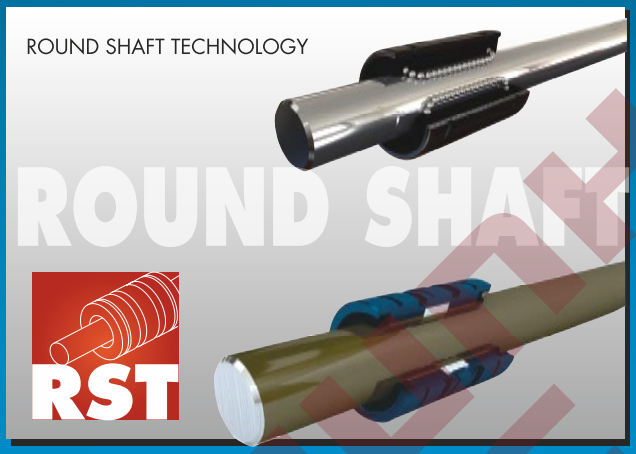
ENGLISH VERSION

PRODUCT CATALOG

CAM ROLLER TECHNOLOGY

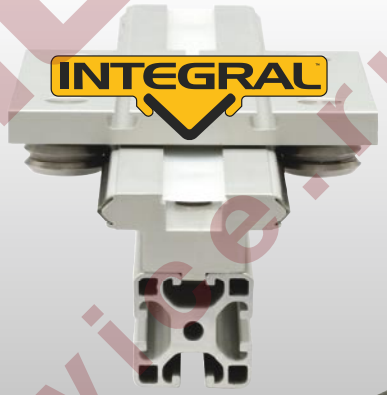
CRT

ROUND SHAFT TECHNOLOGY



RST

INTEGRAL V TECHNOLOGY



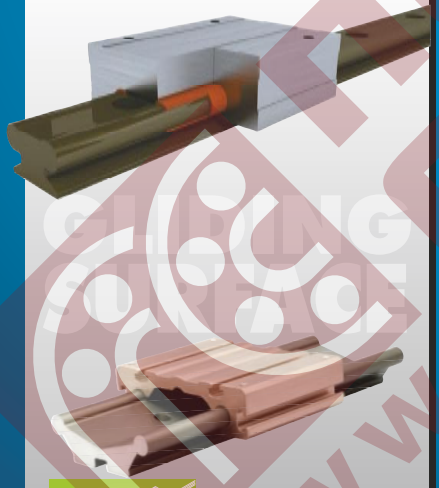
IVT

PATENT ANGEMELDET
PATENT PENDING

PBC

Lineartechnik GmbH™

GLIDING SURFACE TECHNOLOGY

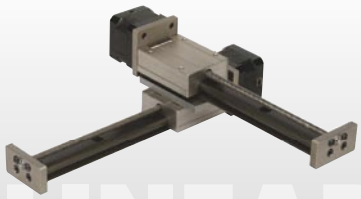


GST

LINEAR ACTUATOR TECHNOLOGY

LAT

LINEAR SLIDE TECHNOLOGY



LST

TELEFON +49 (0) 211 2503 422 • www.pbclinear.de

Simplicity® Self-lubricating Bearings
Ordering Information

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: 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)

CAUTION: The catalog is designed to represent all posssiblities, however may not all be standard parts.

*These are options only - combination could lead to unavailable options.

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 MetricDouble 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 shafting and Feather Shafting®
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

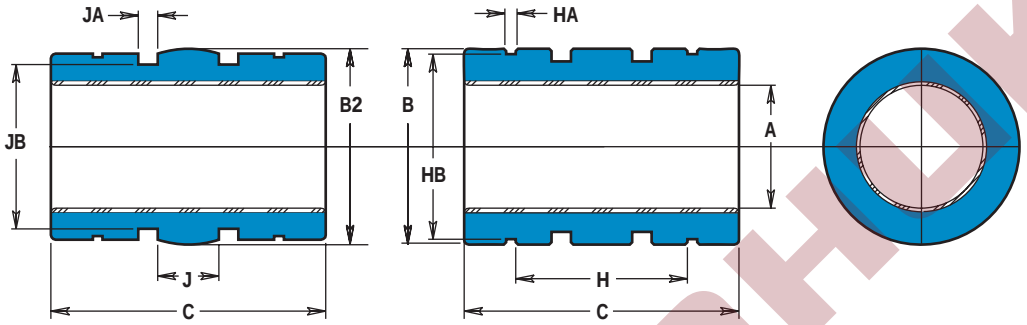
NOTE: Consult Factory
No Entry - Standard Options
Q - Shipped Oil Free (Consult Factory)

CAUTION: The catalog is designed to represent all posssiblities, however may not all be standard parts.

*These are options only - combination could lead to unavailable options.

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

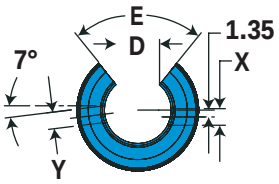
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing						FMA					
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		B O.D. (h7)		B2 O.D.		C LENGTH		CONCENTRIC	BEARING WEIGHT
CLOSED	OPEN	(mm)	MIN.	MAX.	CLOSED	OPEN	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MAX. (mm)	(kg.)
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

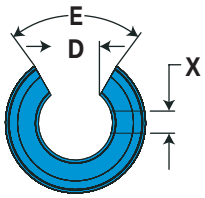
PART NO.		NOMINAL SIZE (mm)	H	HA	HB	RET. RING PART NO. (DIN 471)	J	JA	JB	METRIC O'RING PART NO.
CLOSED	OPEN		BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.		BETWEEN O'RING GRVS.	O'RING GRV. WIDTH	O'RING GRV. DIA.	
FM 05	FMN 05	5	12	1.14	11.5	12	5	2	9.86	9.7 x 1.3
FM 08	FMN 08	8	14	1.14	15.2	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

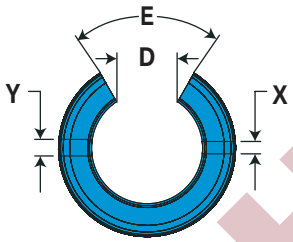
FMN 12 ONLY

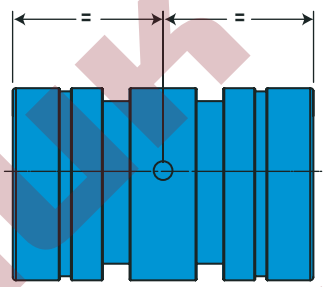


FMN 05 THRU FMN 10 & FMN 80

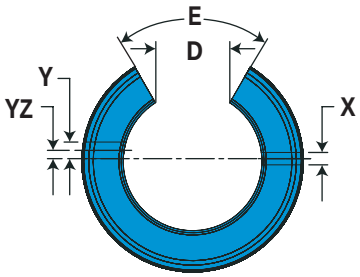


FMN 16 THRU FMN 20

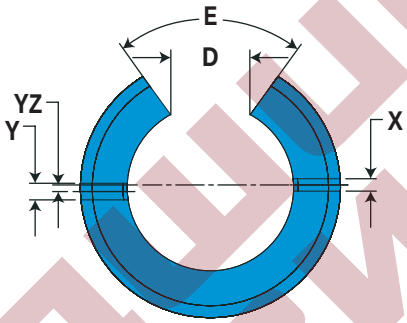




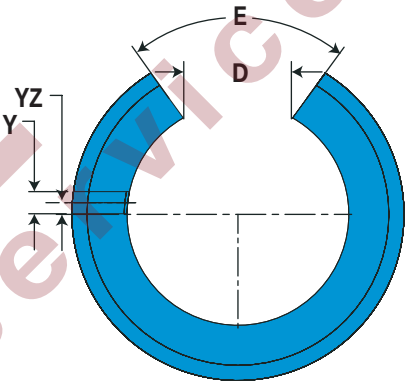
FMN 25 ONLY



FMN 30 THRU FMN 50



FMN 60 ONLY



OPEN DIMENSIONAL INFORMATION

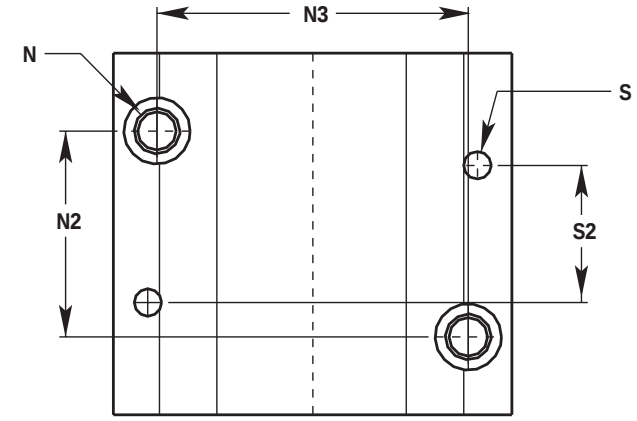
PART NO. CLOSED	NOMINAL SIZE (mm)	D SLOT WIDE MIN.	E SLOT ANGLE	X RET. HOLE DIA.	Y RET. HOLE DIA.	YZ RET. HOLE LOCATE	BEARING WT. (kg.)
FMN 05	5	3.2	60	2.2	N / A	N / A	0.0034
FMN 08	8	5.1	60	3.0	N / A	N / A	0.0077
FMN 10	10	6.4	60	3.0	N / A	N / A	0.0119
FMN 12	12	7.6	78	3.0	3.0	7.0	0.0156
FMN 16	16	10.4	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

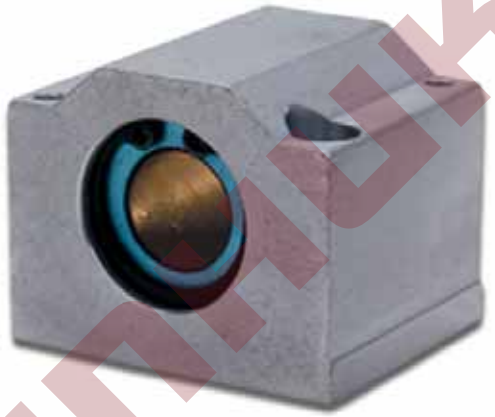
LOAD & SPEED DATA

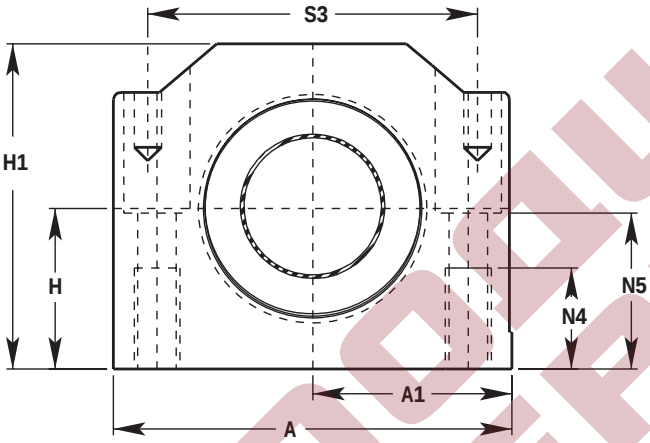
PART NO.	EFFECTIVE SURFACE AREA (sq. in.)	MAX. STATIC LOAD FRELON GOLD (lbs.)	MAX. STATIC LOAD FRELON J (lbs.)	EFFECTIVE SURFACE AREA (mm^2)	MAX. STATIC LOAD FRELON GOLD (N)	MAX. STATIC LOAD FRELON J (N)
FMN 05	1.1	232	116	110	2276	1138
FMN 08	2	420	210	200	4120	2060
FMN 10	2.9	610	305	290	5984	2992
FMN 12	3.8	806	403	380	7907	3953
FMN 16	5.8	1210	605	580	11870	5935
FMN 20	9	1890	945	900	18541	9270
FMN 25	14.5	3046	1523	1450	29881	14941
FMN 30	20.4	4284	2142	2040	42026	21013
FMN 40	32	6720	3360	3200	65923	32962
FMN 50	50	10500	5250	5000	103005	51503
FMN 60	75	15750	7875	7500	154508	77254
FMN 80	132	27720	13860	13200	271933	135967

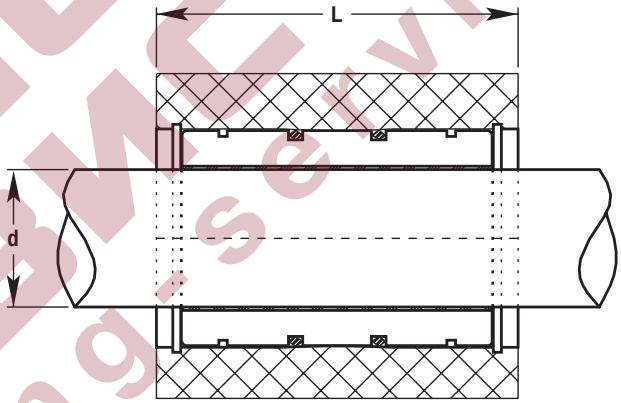
	MAX. PV (m/min. * kg/sq. cm) FrelonGold = 430 PV FrelonJ = 215 PV	**MAX. PV (m/s. * N/mm²)** FrelonGold = 0.70 PV FrelonJ = 0.35 PV
	MAX. Speed Running Dry (m/min.) FrelonGold = 91.4 FrelonJ = 42.6	**MAX. Speed Running Dry (m/s.)** FrelonGold = 1.52 FrelonJ = 0.71
	MAX. Speed Running with Lubrication (m/min.) FrelonGold = 251.5 FrelonJ = 122	**MAX. Speed Running with Lubrication (m/s.)** FrelonGold = 4.19 FrelonJ = 2.03

PM CLOSED PILLOW BLOCKS







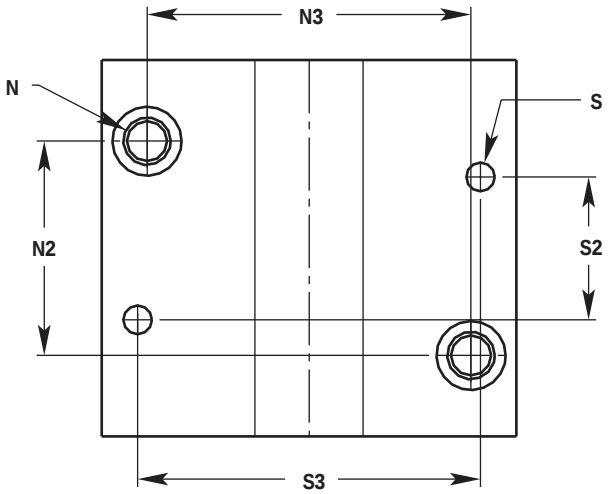


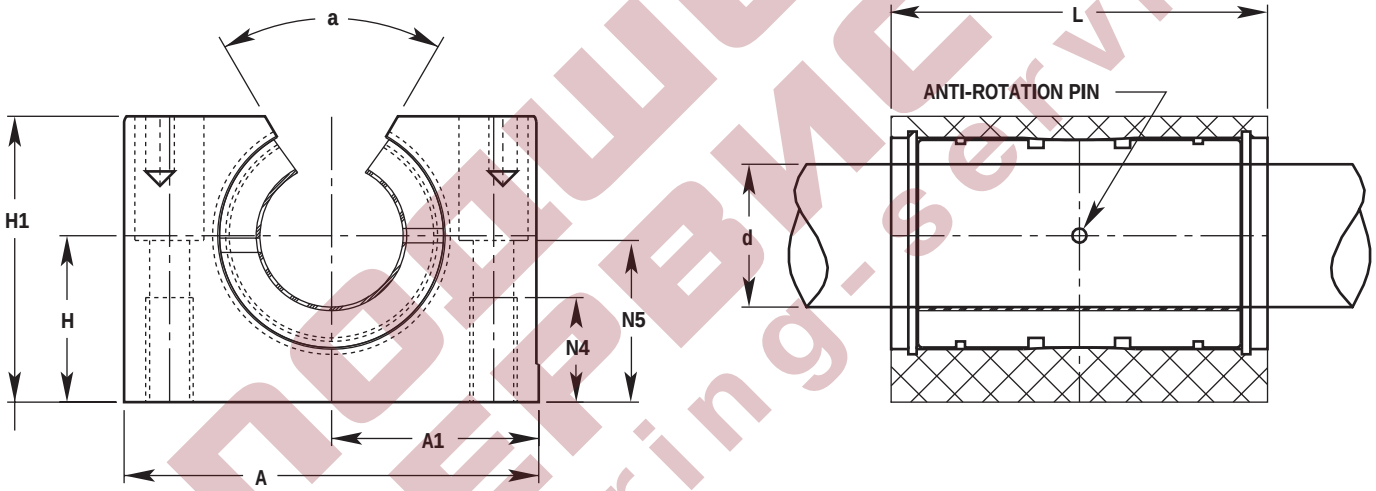
CLOSED PILLOW BLOCKS

PART NO. CLOSED		d NOM. I.D.	H CENTERLINE	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	MAX. STATIC LOAD (kg.) 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	420	210	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	610	305	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	806	403	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	1210	605	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	1890	945	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	3046	1523	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	4284	2142	42026	21013	1.020
PM 40	PM 40 C	40	45	91	108	54	91	M12 x1.75	58.15	86.15	26	44	8	35	90	6720	3360	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	10500	5250	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



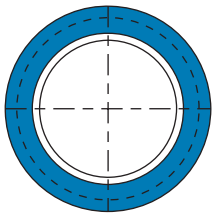


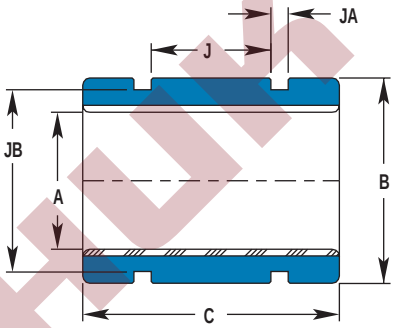
OPEN PILLOW BLOCKS

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 (kg.) 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	806	403	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	1210	605	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	1890	945	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	3046	1523	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	4284	2142	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	6720	3360	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	10500	5250	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.

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			B O.D. (h7)		C LENGTH (h13)		CONCENTRIC	BEARING WEIGHT
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	FMTC 06	6	N / A	N / A	N / A	N / A
FMT 08	FMTC 08	8	10.0	2.000	12.200	12 x 1.7
FMT 10	FMTC 10	10	12.0	2.000	14.400	14 x 1.6
FMT 12	FMTC 12	12	14.0	2.000	16.600	16 x 1.5
FMT 14	FMTC 14	14	14.0	2.000	18.500	18 x 1.5
FMT 16	FMTC 16	16	14.0	2.000	21.300	21.1 x 1.6
FMT 20	FMTC 20	20	14.0	2.000	25.500	25 x 1.5
FMT 25	FMTC 25	25	22.0	3.200	30.900	30.5 x 2.5
FMT 30	FMTC 30	30	30.0	3.200	35.900	35.5 x 2.5
FMT 40	FMTC 40	40	40.0	4.100	46.200	46 x 3.5
FMT 50	FMTC 50	50	50.0	4.100	56.300	26 x 3.5

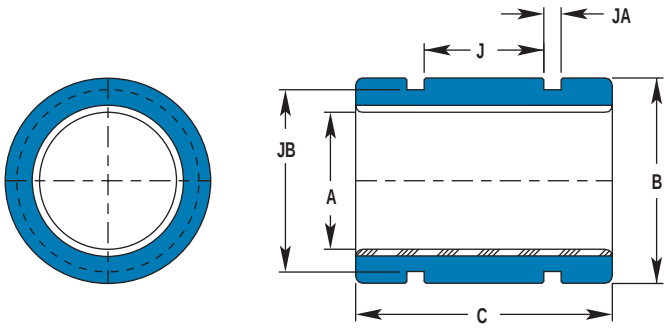
LOAD & SPEED DATA

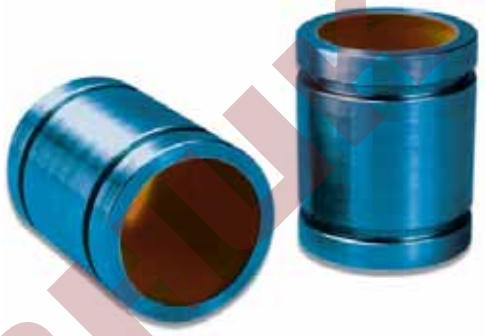
	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD FRELON	
		GOLD	J		GOLD	J
PART NO.	(sq. cm.)	(lbs.)	(lbs.)	(mm^2)	(N)	(N)
FMT 06	1.3	278	139	130	2727	1364
FMT 08	1.9	404	202	190	3963	1982
FMT 10	2.6	546	273	260	5356	2678
FMT 12	3.4	706	353	340	6926	3463
FMT 14	3.9	824	412	390	8083	4042
FMT 16	4.8	1008	504	480	9888	4944
FMT 20	6.0	1260	630	600	12361	6180
FMT 25	10.0	2100	1050	1000	20601	10301
FMT 30	15.0	3150	1575	1500	30902	15451
FMT 40	24.0	5040	2520	2400	49442	24721
FMT 50	35.0	7350	3675	3500	72104	36052

	MAX. PV (m/min. * kg/sq. cm) FrelonGold = 430 PV FrelonJ = 215 PV	**MAX. PV (m/s. * N/mm²)** FrelonGold = 0.70 PV FrelonJ = 0.35 PV
	MAX. Speed Running Dry (m/min.) FrelonGold = 91.4 FrelonJ = 42.6	**MAX. Speed Running Dry (m/s.)** FrelonGold = 1.52 FrelonJ = 0.71
	MAX. Speed Running with Lubrication (m/min.) FrelonGold = 251.5 FrelonJ = 122	**MAX. Speed Running with Lubrication (m/s.)** FrelonGold = 4.19 FrelonJ = 2.03

FrelonGOLD® and FrelonJ® are registered trademarks of Pacific Bearing.

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			B O.D. (h7)		C LENGTH (h13)		CONCENTRIC	BEARING WEIGHT
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.)
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 08	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

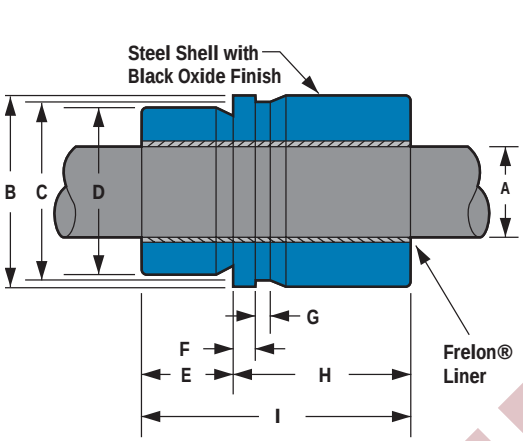
LOAD & SPEED DATA

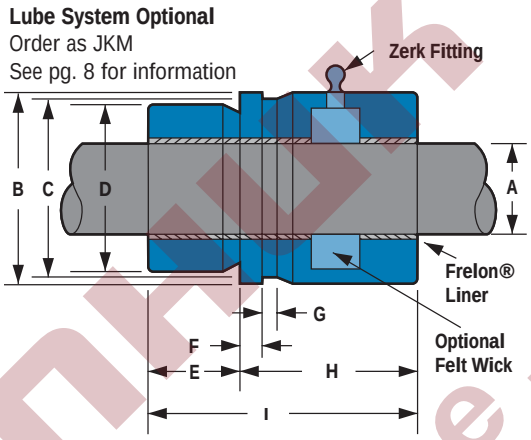
PART NO.	EFFECTIVE SURFACE AREA (sq. cm.)	MAX. STATIC LOAD FRELON GOLD (lbs.)	MAX. STATIC LOAD FRELON J (lbs.)	EFFECTIVE SURFACE AREA (mm^2)	MAX. STATIC LOAD FRELON GOLD (N)	MAX. STATIC LOAD FRELON J (N)
FG 06	1.1	226	113	110	2217	1109
FG 08	1.6	336	168	160	3296	1648
FG 10	2.2	462	231	220	4532	2266
FG 12	3.2	680	340	320	6671	3335
FG 15	4.2	882	441	420	8652	4326
FG 16	4.8	1008	504	480	9888	4944
FG 18	5.4	1134	567	540	11125	5562
FG 20	7.0	1470	735	700	14421	7210
FG 25	11.3	2362	1181	1130	23171	11586
FG 30	16.2	3402	1701	1620	33374	16687
FG 35	21.7	4558	2279	2170	44714	22357
FG 40	28.8	6048	3024	2880	59331	29665
FG 50	45.0	9450	4725	4500	92705	46352

	MAX. PV (m/min. * kg/sq. cm) FrelonGold = 430 PV FrelonJ = 215 PV	**MAX. PV (m/s. * N/mm²)** FrelonGold = 0.70 PV FrelonJ = 0.35 PV
	MAX. Speed Running Dry (m/min.) FrelonGold = 91.4 FrelonJ = 42.6	**MAX. Speed Running Dry (m/s.)** FrelonGold = 1.52 FrelonJ = 0.71
	MAX. Speed Running with Lubrication (m/min.) FrelonGold = 251.5 FrelonJ = 122	**MAX. Speed Running with Lubrication (m/s.)** FrelonGold = 4.19 FrelonJ = 2.03

FrelonGOLD® and FrelonJ® are registered trademarks of Pacific Bearing.

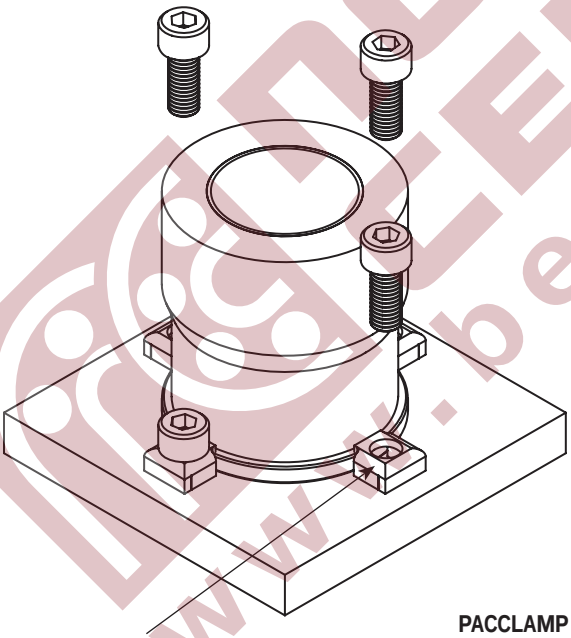
PACM DIE SET BUSHINGS





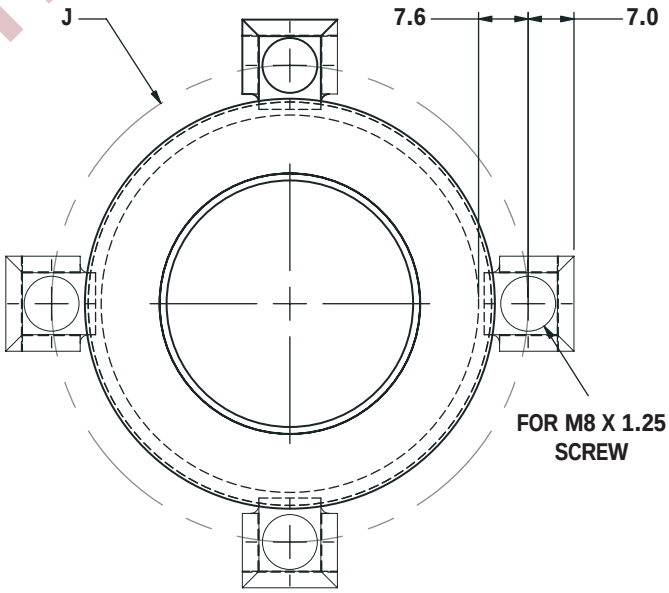
PART NO.	NOMINAL SIZE	A BEARING I.D.		PART NO.	A BEARING I.D.		B FLANGE & BARREL O.D. (H7)		C CLAMP DIA.	D PILOT O.D. (H7)		E PILOT LENGTH	F FLANGE LENGTH	G RECESS LENGTH	H HEAD LENGTH	I OVERALL LENGTH	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON		BEARING WEIGHT
PRECISION	(in.)	MIN.	MAX.	COMPENSATED	MIN.	MAX.	MIN.	MAX.	MIN.	MIN.	MAX.						(sq. cm)	GOLD	J	(kg.)
PACM 19	19	19.020	19.053	PACM 19 C	19.096	19.129	33.975	34	29	27.979	28	18		18	52	70	13.928	2925	1469	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	4398	2209	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	6333	3180	0.834
PACM 40	40	40.025	40.064	PACM 40 C	40.127	40.166	62.970	63	58	53.970	54	30	5		70	100	41.888	8796	4417	1.229
PACM 50	50	50.025	50.064	PACM 50 C	50.127	50.166	78.970	79	74	64.970	65	35		25	75	110	57.596	12095	6073	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	10811	9044	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	26389	13251	4.772

NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®



NOTE: DIMENSION FOR CALCULATING BOLT CIRCLE

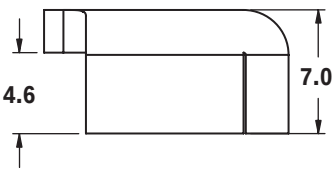
J = C + 15.8mm



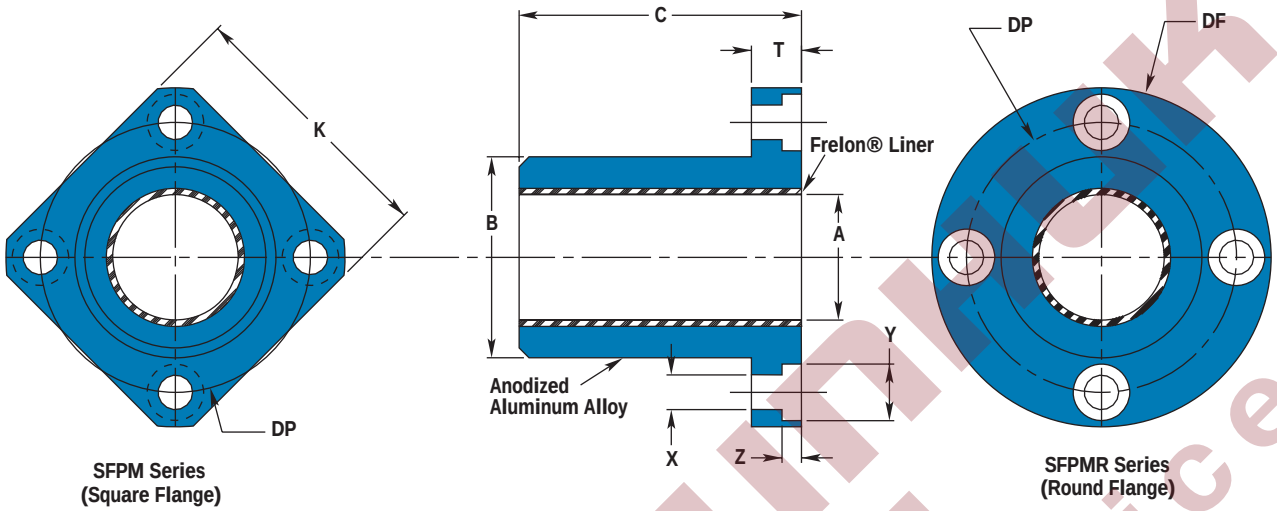
4 PAC CLAMPS ARE SHIPPED WITH EACH DIESET

EXTRAS CAN BE ORDERED USING PART #: PACCLAMP

PACCLAMP



SFPM FLANGE BEARINGS



SFPM Series
(Square Flange)

SFPMR Series
(Round Flange)

BASIC DIMENSIONAL INFORMATION

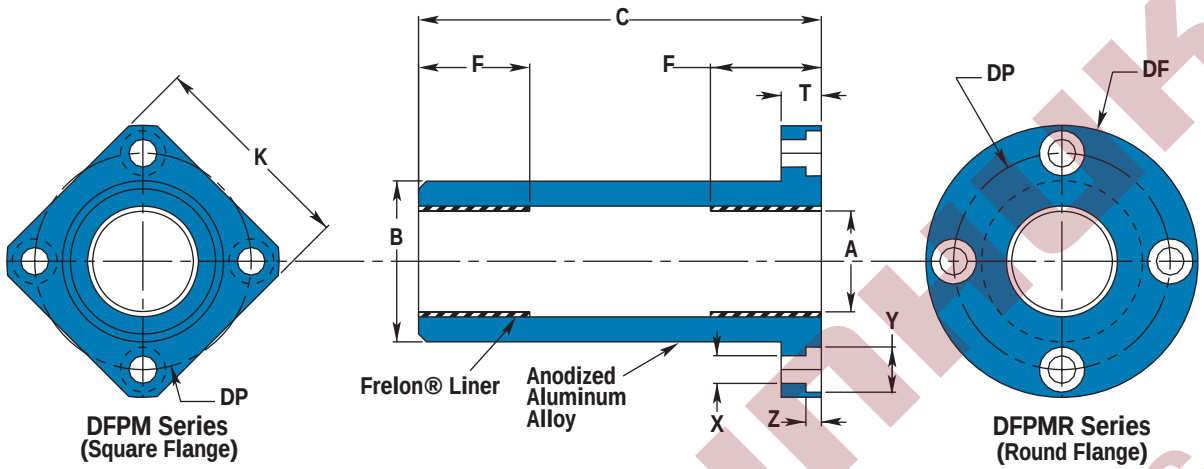
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing				B		C		EFFECTIVE	MAX. STATIC LOAD (kg.) FRELON	
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		BODY O.D. (h7)		LENGTH (h13)		SURFACE AREA		
SQUARE	ROUND	(mm)	MIN.	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	440	221
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	844	424
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	1267	636
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	1979	994
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	3189	1601
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	4486	2253
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	7037	3534
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	10996	5521
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	16493	8282
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	29028	14576

NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®

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	1.506	1.697
SFPM 80	SFPMR 80	136	164		142							3.308	3.483

DFPM FLANGE BEARINGS



BASIC DIMENSIONAL INFORMATION

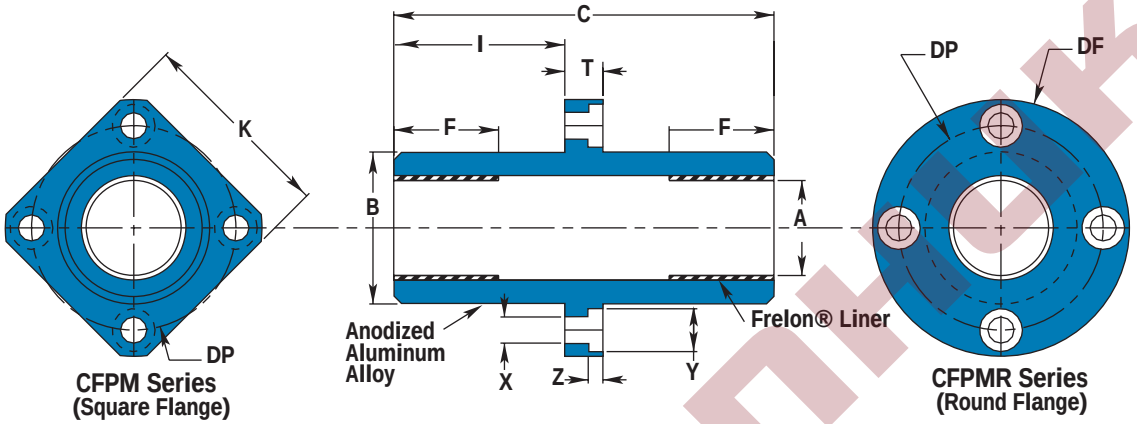
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing											
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		B BODY O.D. (h7)		C LENGTH		F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON	
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		(sq. cm)	GOLD	J
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	426	214
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	813	408
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	1436	721
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	1944	976
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	3640	1828
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	4618	2319
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	7741	3887
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	15284	7675
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	19264	9673

NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®
Frelon pads in each end (F dimension)

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	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	2.329	2.519

CFPM FLANGE 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.		B BODY O.D. (h7)		C LENGTH		I LENGTH TO FLNG.	F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON	
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	20.5	12.1	2.027	426	214
CFPM 12	CFPMR 12	12	12.016	12.043	CFPM 12C	CFPMR 12C	12.066	12.093	21.979	22	60.7	61.3	27.5	15.4	3.870	813	408
CFPM 16	CFPMR 16	16	16.016	16.043	CFPM 16C	CFPMR 16C	16.066	16.093	25.979	26	67.7	68.3	31	20.4	6.836	1436	721
CFPM 20	CFPMR 20	20	20.020	20.053	CFPM 20C	CFPMR 20C	20.096	20.129	31.975	32	79.7	80.3	36	22.1	9.257	1944	976
CFPM 25	CFPMR 25	25	25.020	25.053	CFPM 25C	CFPMR 25C	25.096	25.129	39.975	40	111.7	112.3	52	33.1	17.331	3640	1828
CFPM 30	CFPMR 30	30	30.020	30.053	CFPM 30C	CFPMR 30C	30.096	30.129	46.975	47	122.7	123.3	56.5	35	21.991	4618	2319
CFPM 40	CFPMR 40	40	40.025	40.064	CFPM 40C	CFPMR 40C	40.127	40.166	61.970	62	150.7	151.3	69	44	36.861	7741	3887
CFPM 50	CFPMR 50	50	50.025	50.064	CFPM 50C	CFPMR 50C	50.127	50.166	74.970	75	191.7	192.3	89.5	69.5	72.780	15284	7675
CFPM 60	CFPMR 60	60	60.030	60.076	CFPM 60C	CFPMR 60C	60.182	60.228	89.965	90	208.7	209.3	95.5	73	91.735	19264	9673

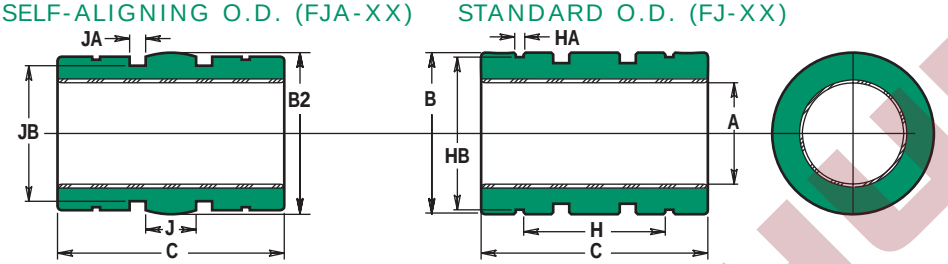
NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®
Frelon pads in each end (F dimension)

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	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	2.329	2.519

FJ LINEAR BEARINGS

*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.

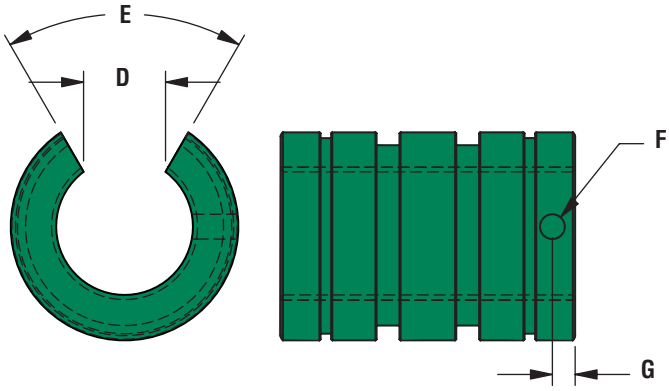
BASIC DIMENSIONAL INFORMATION

PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Allows additional running clearance				B O.D.		FJA B2 O.D.		C LENGTH		CONCENTRIC	BEARING WEIGHT
PART NO.		NOMINAL SIZE	A BEARING I.D.		PART NO.		A BEARING I.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	418	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.	J	JA	JB	METRIC O'RING PART NO.
CLOSED	OPEN	(mm)	BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.	(JIS B 2904)	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 BEARINGS



OPEN DIMENSIONAL INFORMATION

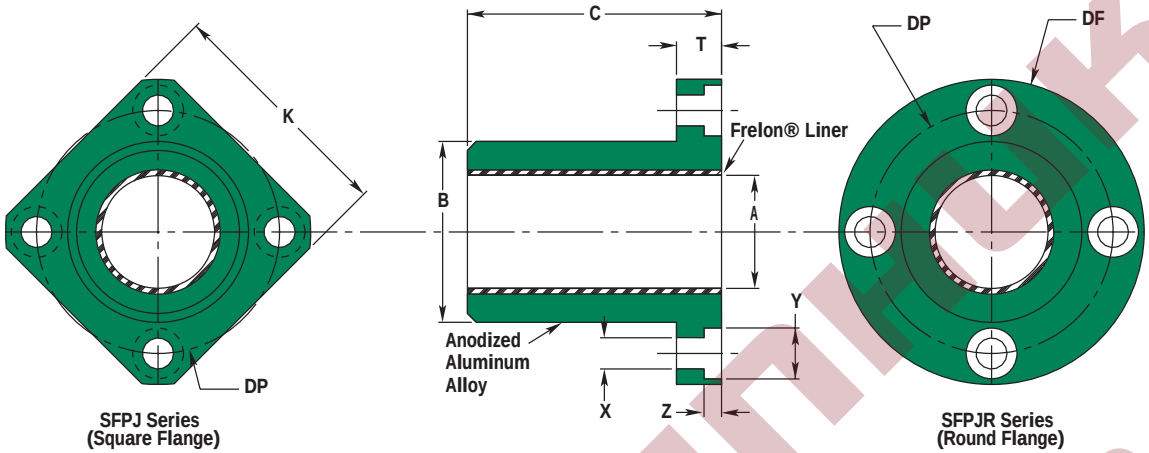
PART NO.		NOMINAL SIZE	D SLOT WIDTH MIN.	E SLOT ANGLE	F RET. HOLE DIA.	G RET. HOLE LOC.	BEARING WEIGHTS
CLOSED	OPEN	(mm)					(kg.)
FJHN 08	FJHCN 08	8	5.1	60	2.200	8.460	0.004
FJN 08	FJCN 08					11.940	0.006
FJN 10	FJCN 10	10	7.0	80	3.454	1.941	0.012
FJN 12	FJCN 12	12	8.0				0.014
FJN 13	FJCN 13	13	9.0			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				0.286
FJN 50	FJCN 50	50	25.0		6.731	7.938	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	80		16.103	5.994
FJN 150	FJCN 150	150	105.0			17.350	8.637

LOAD & SPEED DATA

	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD FRELON		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD FRELON	
		GOLD	J		GOLD	J
PART NO.	(sq.cm.)	(kg.)	(kg.)	(mm^2)	(N)	(N)
FJ 06	1.1	239	119.7	114	2348	1174
FJH 08	1.4	286	143	140	2805	1402
FJ 08	1.9	404	202	190	3962	1981
FJ 10	2.9	610	305	290	5982	2991
FJ 12	3.6	756	378	360	7413	3707
FJ 13	4.0	874	437	400	8570	4285
FJ 16	5.9	1244	622	590	12199	6099
FJ 20	8.4	1764	882	840	17298	8649
FJ 25	15.0	3098	1549	1500	30379	15189
FJ 30	19.0	4032	2016	1900	39538	19769
FJ 35	25.0	5146	2573	2500	50462	25231
FJ 38	29.0	6064	3032	2900	59464	29732
FJ 40	32.0	6720	3360	3200	65896	32948
FJ 50	50.0	10500	5250	5000	102963	51482
FJ 60	66.0	13860	6930	6600	135911	67956
FJ 80	112.0	23520	11760	11200	230637	115319
FJ 100	175.0	36750	18375	17500	360371	180185
FJ 120	240.0	50400	25200	24000	494222	247111
FJ 150	360.0	75600	37800	36000	741334	370667
	MAX. PV (m/min. * kg/sq. cm) FrelonGold = 430 PV FrelonJ = 215 PV			**MAX. PV (m/s. * N/mm^2)** FrelonGold = 0.70 PV FrelonJ = 0.35 PV		
	MAX. Speed Running Dry (m/min.) FrelonGold = 91.4 FrelonJ = 42.6			**MAX. Speed Running Dry (m/s.)** FrelonGold = 1.52 FrelonJ = 0.71		
	MAX. Speed Running with Lubrication (m/min.) FrelonGold = 251.5 FrelonJ = 122			**MAX. Speed Running with Lubrication (m/s.)** FrelonGold = 4.19 FrelonJ = 2.03		

Flange Mounted Bearings 30-32
Retaining Ring Groove Dimension.....28

SFPJ FLANGE BEARINGS



BASIC DIMENSIONAL INFORMATION

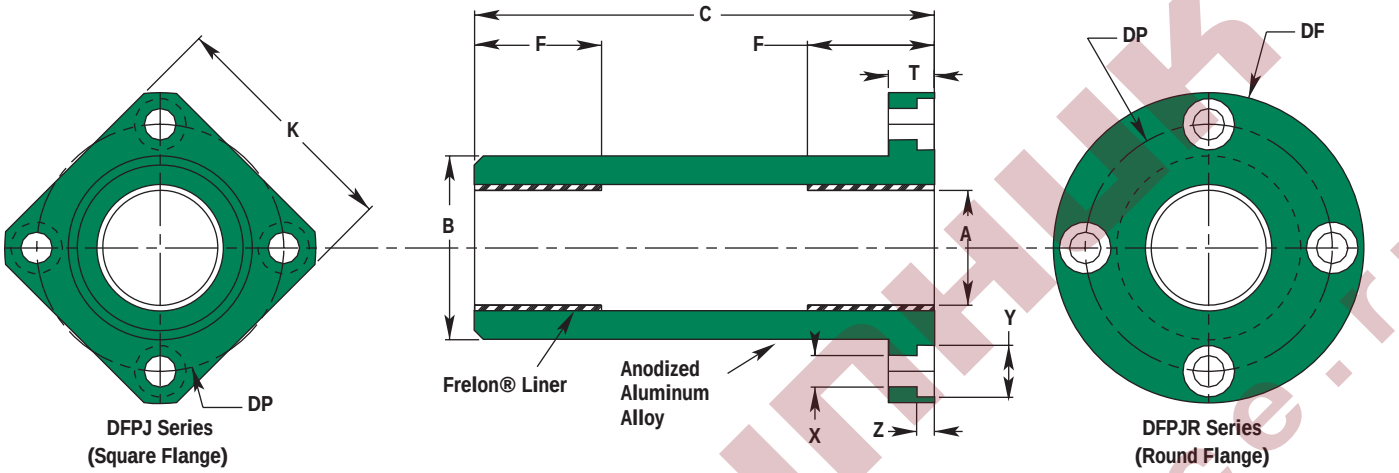
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing										
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		B BODY O.D. (h7)		C LENGTH (h13)		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON	
SQUARE	ROUND	(mm)	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	251	126
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	422	212
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	638	320
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	792	398
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	915	459
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	1302	654
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	1847	928
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	3244	1629
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	4222	2120
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	5388	2705
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	7037	3534
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	10996	5521
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	14514	7288
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	24630	12368

NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K	Df	T	Dp	X	Y	Z				SFPJ	SFPJR
SQUARE	ROUND	SQUARE MAX.	O.D. MAX.	LENGTH MAX.	BOLT CIRCLE	HOLE	C'BORE DIA.	C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	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 BEARINGS



DFPJ Series
(Square Flange)

DFPJR Series
(Round Flange)

BASIC DIMENSIONAL INFORMATION

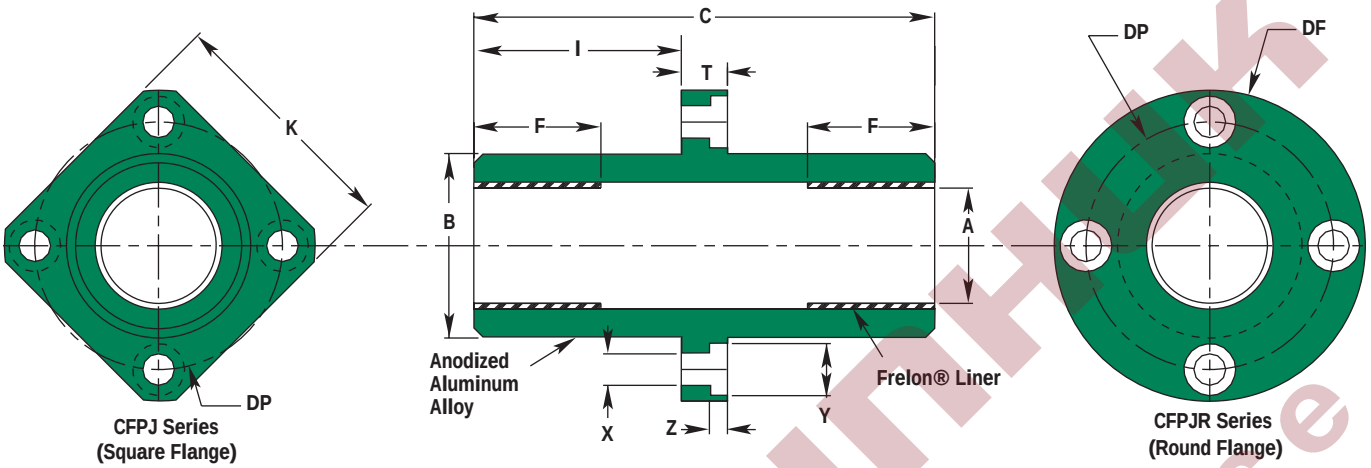
PRECISION I.D. SERIES Similar to preloaded ball bearing					COMPENSATED I.D. SERIES Similar to standard ball bearing										
PART NO.		NOMINAL SIZE	A BEARING I.D. (F8)		PART NO.		A BEARING I.D.		B BODY O.D. (h7)		C LENGTH		F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON	
SQUARE	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	317	159
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	422	212
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	616	309
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	792	398
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	915	459
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	1407	707
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	1935	972
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	3629	1822
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	4618	2319
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	6158	3092
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	7741	3887
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	15394	7730
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	19264	9673

NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®
Frelon pads in each end (F dimension)

MOUNTING DIMENSIONAL INFORMATION

PART NO.		K SQUARE	Df 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					0.020	0.020	0.501	0.547
DFPJ 40	DFPJR 40	75	96	18	78	9.0	14	8.1	M 8			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	17	11.1	M 10	0.025	0.025	2.329	2.519

CFPJ FLANGE 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.		B BODY O.D. (h7)		C LENGTH		I LENGTH TO FLNG.	F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD (kg.) FRELON	
SQUARE	ROUND	(mm)	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.			(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	15	12	1.508	317	159
CFPJ 08	CFPJR 08	8	8.013	8.035	CFPJ 08C	CFPJR 08C	8.063	8.085	14.982	15	44.7	45.3	20	12	2.011	422	212
CFPJ 10	CFPJR 10	10	10.013	10.035	CFPJ 10C	CFPJR 10C	10.063	10.085	18.979	19	54.7	55.3	24.5	14	2.932	616	309
CFPJ 12	CFPJR 12	12	12.016	12.043	CFPJ 12C	CFPJR 12C	12.066	12.093	20.979	21	56.7	57.3	25.5	15	3.770	792	398
CFPJ 13	CFPJR 13	13	13.016	13.043	CFPJ 13C	CFPJR 13C	13.066	13.093	22.979	23	60.7	61.3	27.5	16	4.356	915	459
CFPJ 16	CFPJR 16	16	16.016	16.043	CFPJ 16C	CFPJR 16C	16.066	16.093	27.979	28	69.7	70.3	32	20	6.702	1407	707
CFPJ 20	CFPJR 20	20	20.020	20.053	CFPJ 20C	CFPJR 20C	20.096	20.129	31.975	32	79.7	80.3	36	22	9.215	1935	972
CFPJ 25	CFPJR 25	25	25.020	25.053	CFPJ 25C	CFPJR 25C	25.096	25.129	39.975	40	111.7	112.3	52	33	17.279	3629	1822
CFPJ 30	CFPJR 30	30	30.020	30.053	CFPJ 30C	CFPJR 30C	30.096	30.129	44.975	45	122.7	123.3	56.5	35	21.991	4618	2319
CFPJ 35	CFPJR 35	35	35.020	35.053	CFPJ 35C	CFPJR 35C	35.096	35.129	51.970	52	134.7	135.3	62.5	40	29.322	6158	3092
CFPJ 40	CFPJR 40	40	40.025	40.064	CFPJ 40C	CFPJR 40C	40.127	40.166	59.970	60	150.7	151.3	69	44	36.861	7741	3887
CFPJ 50	CFPJR 50	50	50.025	50.064	CFPJ 50C	CFPJR 50C	50.127	50.166	79.965	80	191.7	192.3	89.5	70	73.304	15394	7730
CFPJ 60	CFPJR 60	60	60.030	60.076	CFPJ 60C	CFPJR 60C	60.182	60.228	89.965	90	208.7	209.3	95.5	73	91.735	19264	9673

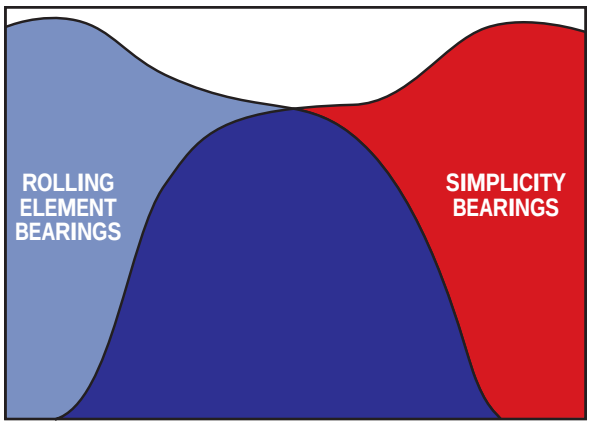
NOTES: Formula used for effective surface area is (pi * ID * L)/3
Max static load is effective surface area times max load for FrelonGOLD®
- 210 kgf/cm^2 is the rating for FrelonGOLD®
- 105.45 kgf/cm^2 is the rating for FrelonJ®
Frelon pads in each end (F dimension)

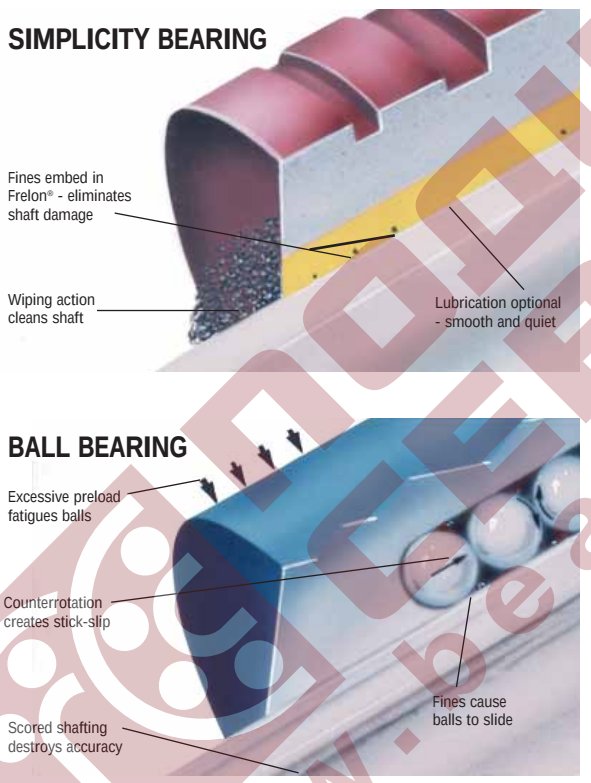
MOUNTING DIMENSIONAL INFORMATION

PART NO.		K SQUARE	Df 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					0.020	0.020	0.501	0.547
CFPJ 40	CFPJR 40	75	96	18	78	9.0	14	8.1	M 8			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

Simplicity® Self-lubricating Bearings

What Makes Simplicity the Right Choice?





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 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 – FrelonGOLD®. 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

- FrelonGOLD® 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 rolling element linear bearings
- Operates maintenance free
- Reliable, predictable life
- WILL NOT CATASTROPHICALLY FAIL!!

THE FRELON® BEARING LINER MATERIALS

FrelonGOLD® and FrelonJ® 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/+240°C)
- Chemically inert
- Vibration dampening (NO metal-to-metal contact)

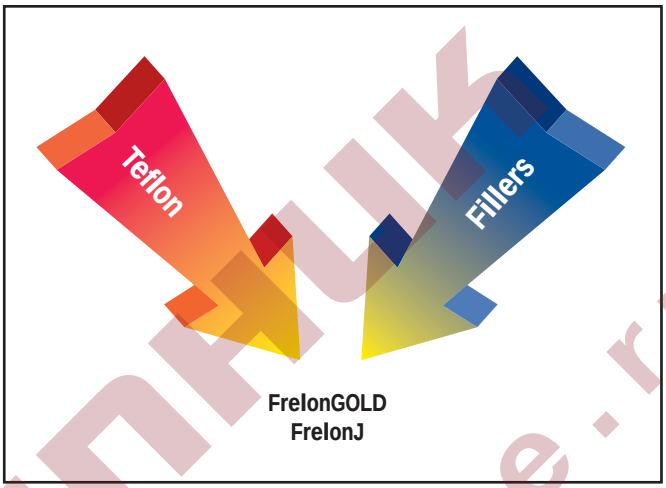
FILLER BENEFITS:

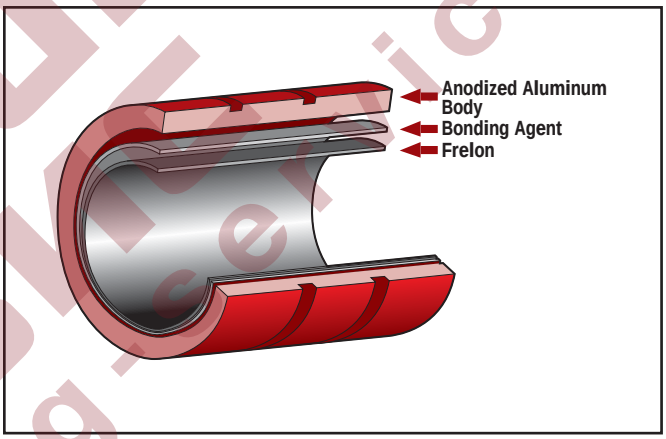
- High load capacity
- High strength
- Low wear rate vs. other materials

PACIFIC BEARING HAS 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!

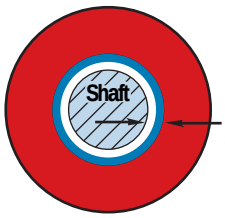
Teflon® is a registered trademark of Dupont Corporation





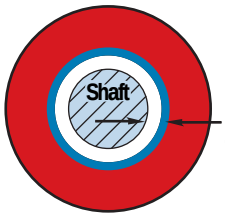
Bearing Plug Shown - See Page 33.

RUNNING CLEARANCE



Standard "FL"
Performs like a preloaded linear ball bearing

.0005" per side clearance average (.0127 mm)



Compensated "FLC"
Performs like a standard linear ball bearing

.0015" + per side clearance average (.0381 + mm)

STANDARD

Inch Series | ISO Metric Series | JIS Metric Series

OPTIONAL

316 Stainless Steel

BEARING LINER MATERIAL

Simplicity bearings are available with three liner materials.

FrelonGOLD is a dark gold colored high performance material with gold-colored fillers and is compatible with standard RC60 hardened steel shafting, RC70 ceramic coated Feather Shafting™ 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.

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)

BEARING SHELL (cont.)

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.

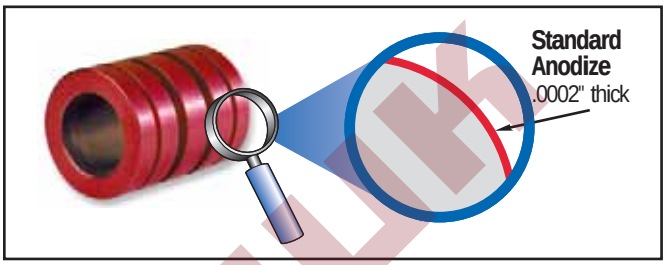
FINISHES:

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

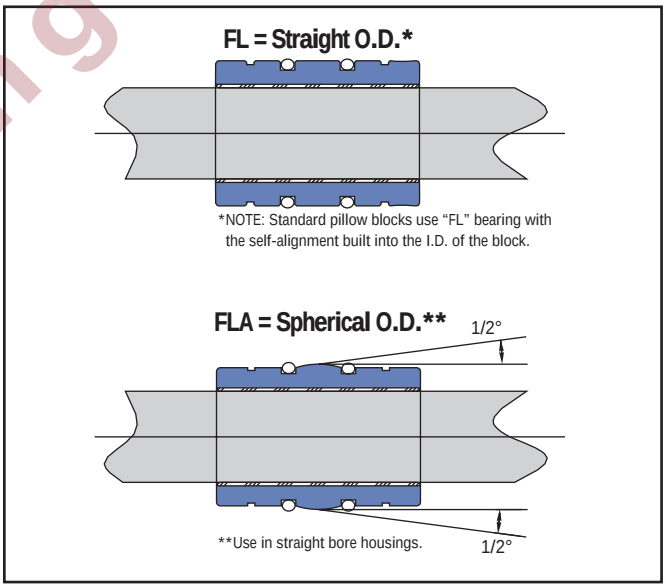
Simplicity bearings are available with a standard straight O.D. or a crowned self-aligning O.D.

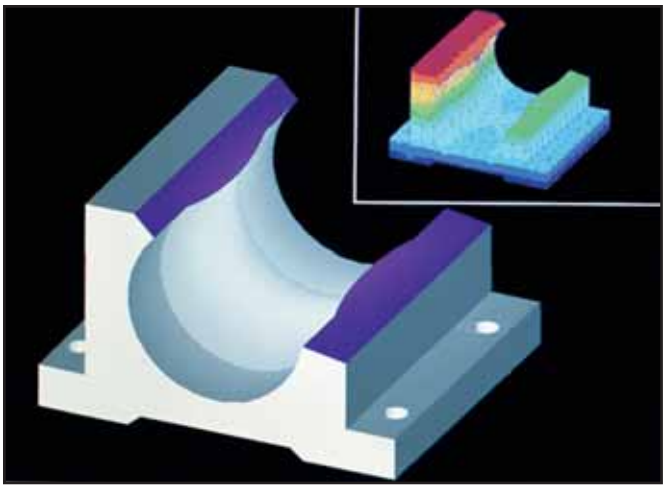
"FL" – (Standard):

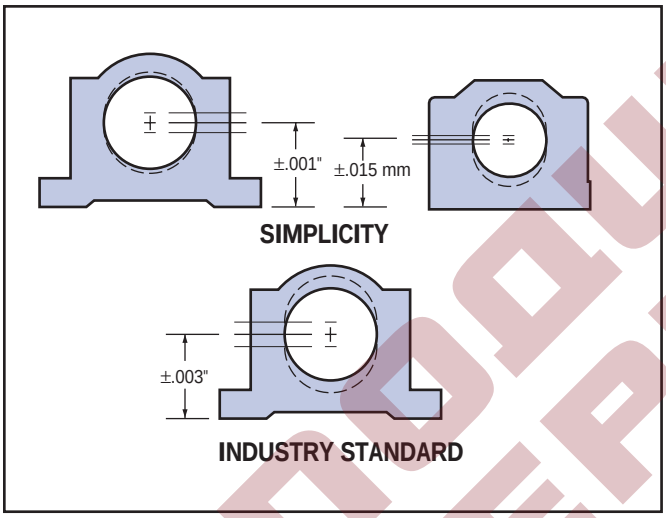
- Straight O.D.
- Pacific Bearing standard pillow blocks have the self-aligning capability designed into the block using standard "FL" bearings for the final assembly

"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° 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

- Made of aluminum alloy
- Pillow blocks are interchangeable with industry standard ball bearing pillow blocks
- Critical centerline dimensions hold accuracy within ±.001" on inch sizes and ±.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° 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.

ADDITIONAL FEATURES

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).

PILLOW BLOCKS - ADDITIONAL FEATURES (cont.)

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.

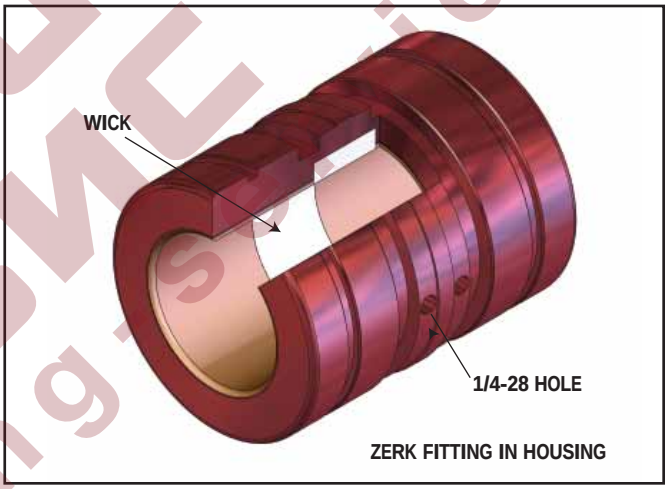
LUBRICATION SYSTEM: Order with "JKM" modifier

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

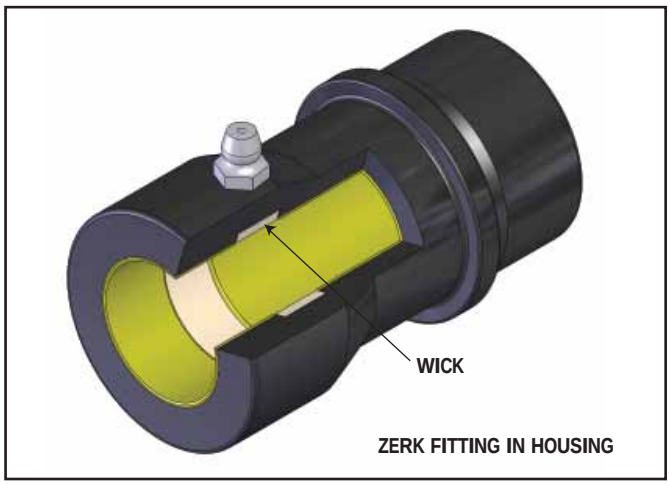
Lubrication System consists of:

Felt wick – Retains oil lubricants (remove when using grease lubrication)

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

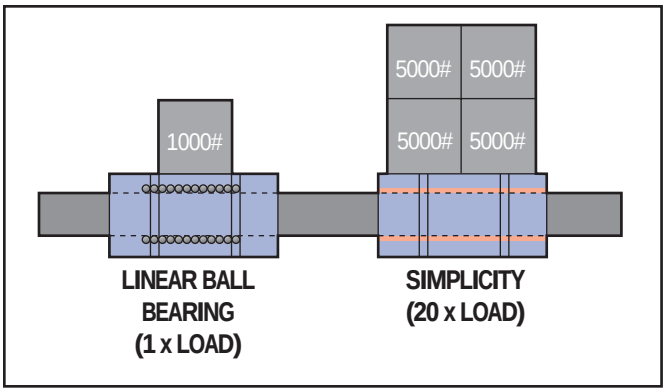


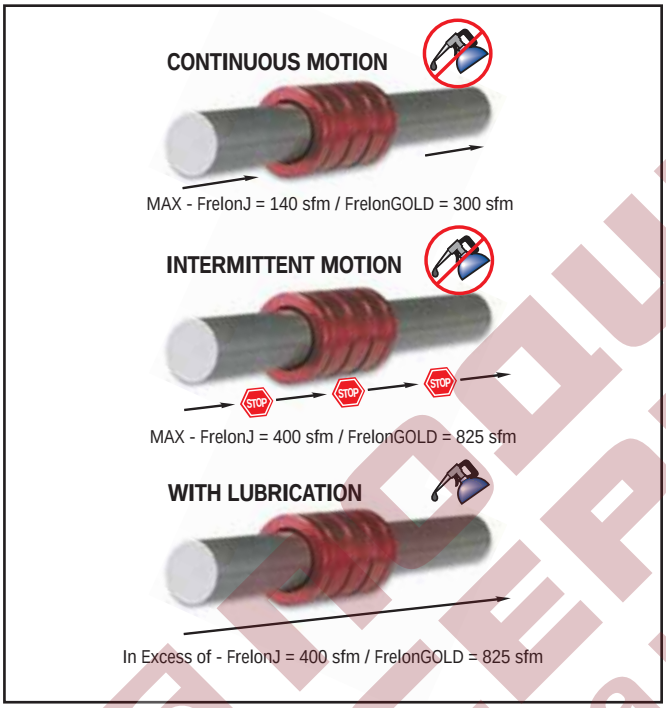
ZERK FITTING IN HOUSING

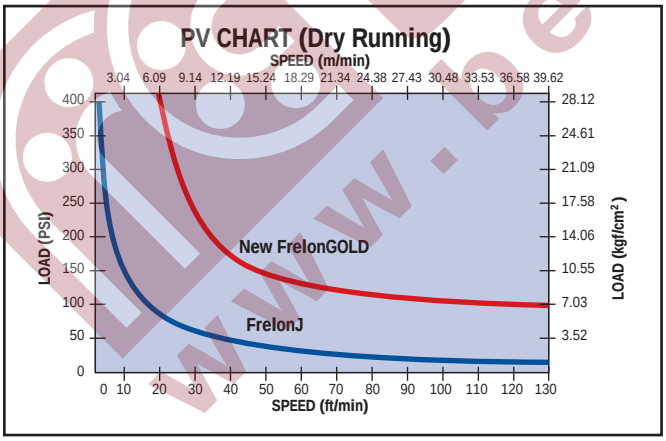


ZERK FITTING IN HOUSING

Simplicity® Self-lubricating Bearings
Technical Information - Inch & Metric







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
FrelonGOLD®	20.68 N/mm²
FrelonJ®	10.34 N/mm²

- 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 CONTINUOUSE MOTION	NO LUBE INTERMITTENT MOTION	WITH LUBRICATION*
FrelonGOLD	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.
FrelonJ	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)
FrelonGOLD	20,000 (psi) x ft./min.) or 430 (kgf/cm² x m/min.)	3000 psi or 210.9 kgf/cm²	300 sfm or 91.44 m/min.
FrelonJ	10,000 (psi x ft./min.) or 215 (kgf/cm² x m/min.)	1500 psi or 105.45 kgf/cm²	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.

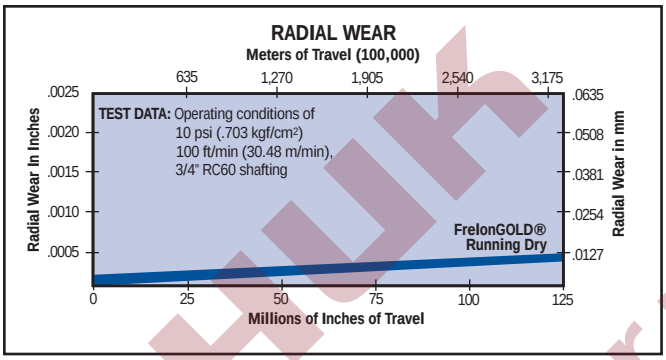
WEAR RATE / LIFE EXPECTANCY

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
- And many, many other factors

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.

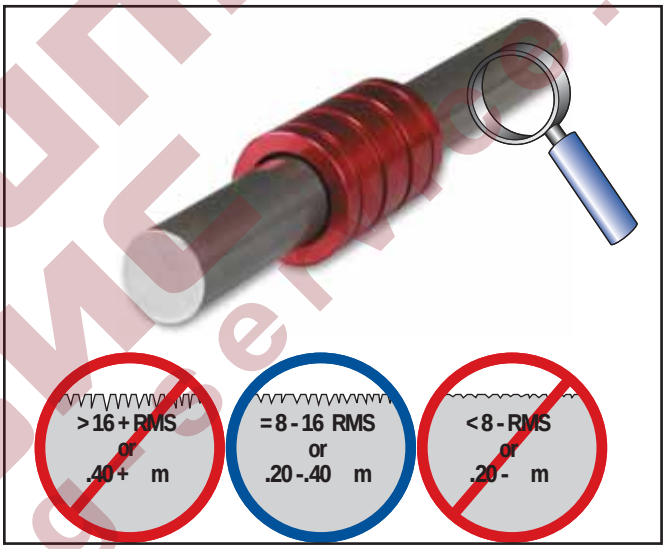
BEST PERFORMANCE:

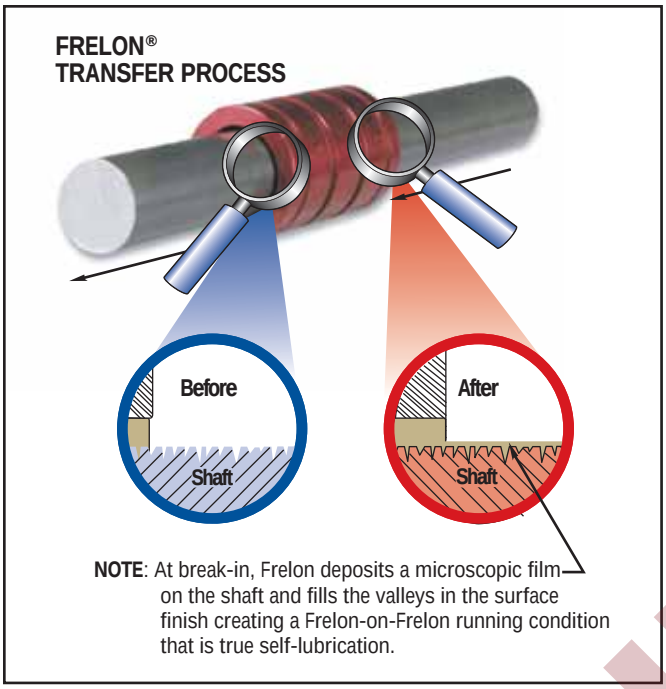
- Finish of 8 - 12 RMS
- Hardness of RC60

ACCEPTABLE PERFORMANCE:

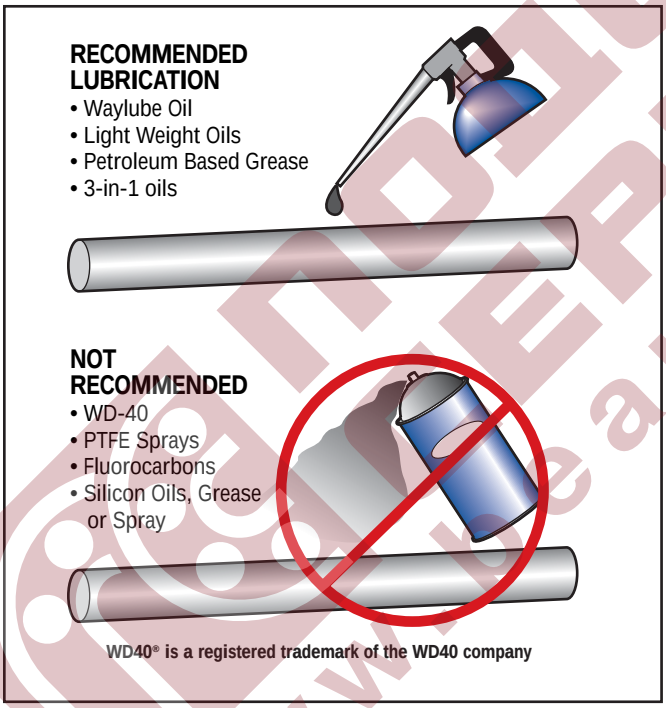
- Finish of 8 - 16 RMS
- Hardness of RC35
- Surface finish requirements apply to all three Frelon bearing materials.
- Rougher shafting can be used, but both bearing and shafting will wear at accelerated rates and binding may occur.

NOTE: Consult factory if using chrome plated shafting.





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.



WD40® is a registered trademark of the WD40 company

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.

LUBRICATION

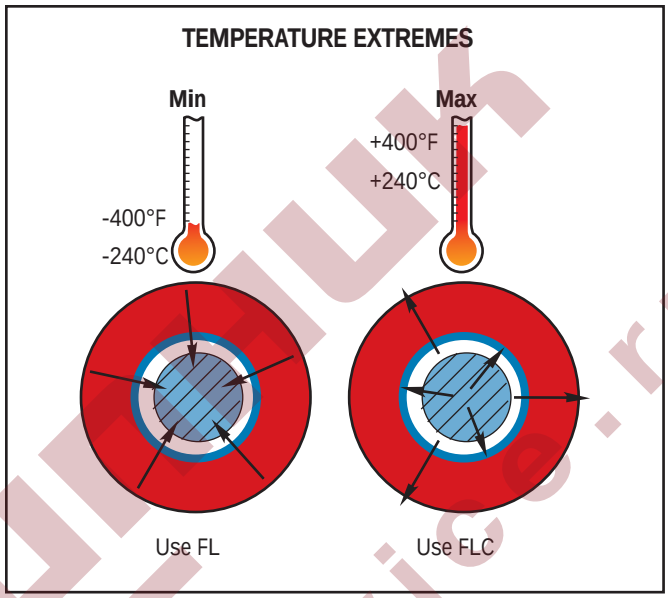
Lubrication can…

- 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 /+240°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



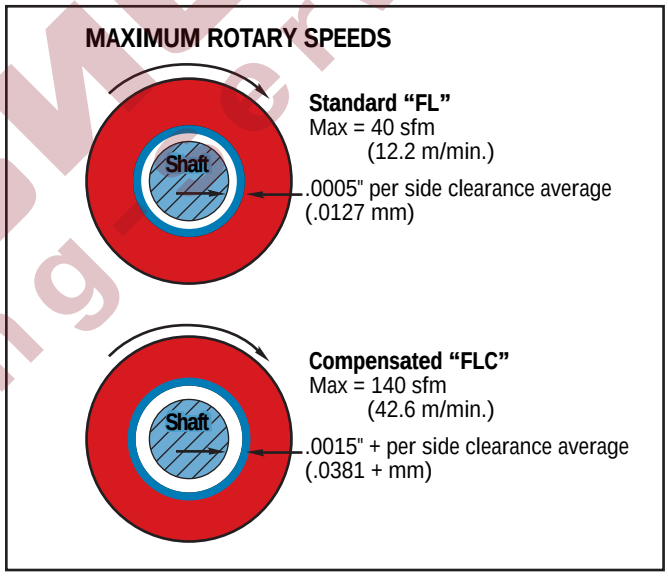
THERMAL EXPANSION

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

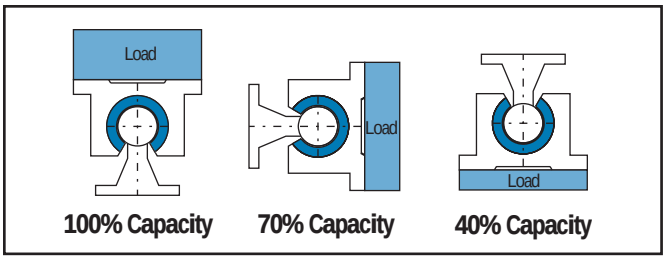
$V_{(sfm)} = .262 \times d \times RPM$

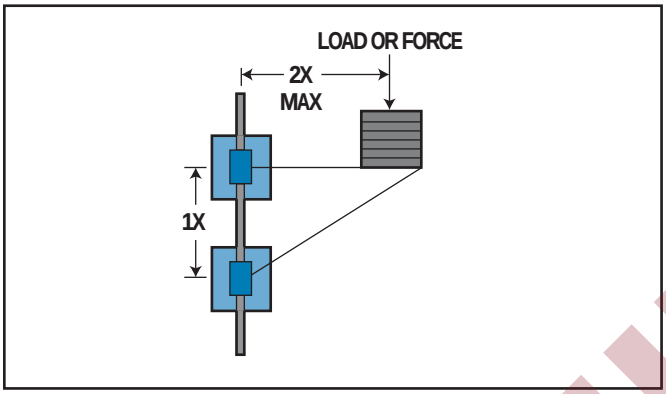
d = shaft diameter (inches)

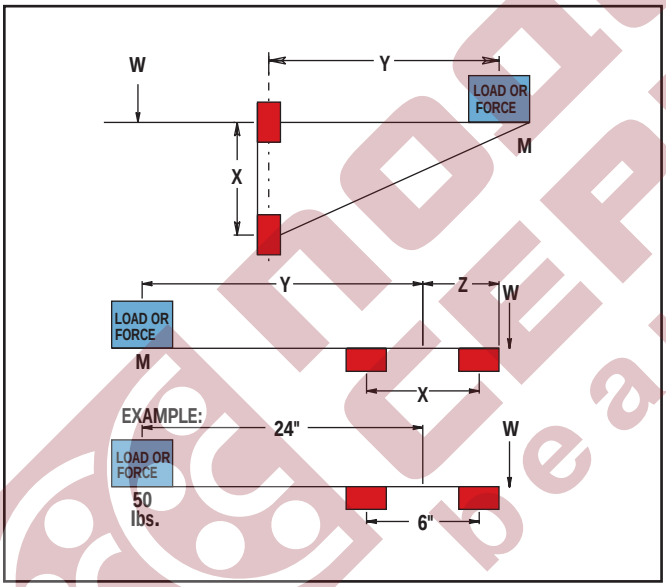
RPM = revolutions per minute

- 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.







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 also NOT dependent on the driving force used! The bearings will bind whether hand or mechanically driven.

This principle is a product of friction.

What if more than 2:1 is required?

Often times holding the 2:1 ratio is not possible. One method of preventing binding problems in these cases is to use a counter balance.

For efficient counter balances, use this formula:

$$M * Y = W * Z$$

NOTES: To avoid problems when running without mass (M) Z = 1.5X

W can be calculated; load on bearing will be:

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

EXAMPLE: $50 * 24 = W * Z \quad (Z = 1.5 * 6 = 9)$

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

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

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° from centerline.

POSSIBLE SOLUTIONS for use with Standard "FL":

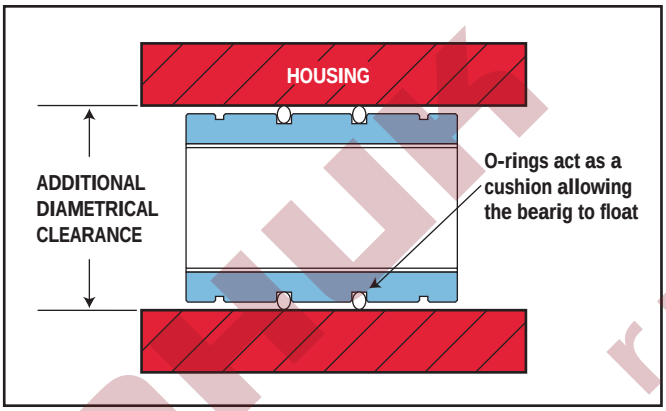
Undersize the bearing O.D. (see chart) and install o-rings. See product pages for o-ring numbers.

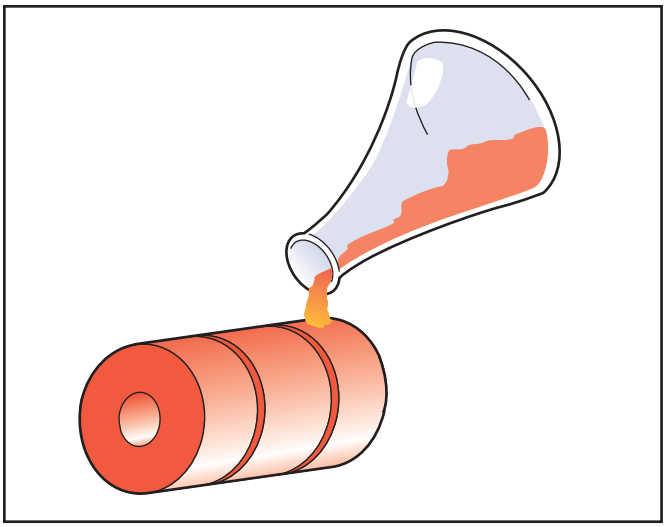
Oversize the housing I.D. (see chart) and install the standard bearing with o-rings. See product pages for o-ring part numbers.

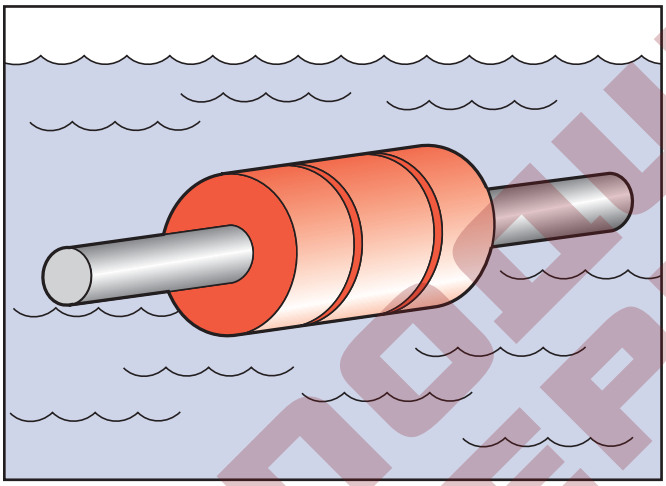
The additional clearance created by either method will allow the bearing to float in the housing and match the non-parallelism of the shafting.

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.

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

FrelonGOLD® – 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.

Do not use FrelonGOLD® in submerged applications, however FrelonGOLD® is suitable for washdowns.

VACUUMS/OUTGASSING/CLEAN ROOMS

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
FrelonJ	0.18	0.01

TML = Total Mass Loss
CVCM = Collected Volatile Condensible 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).

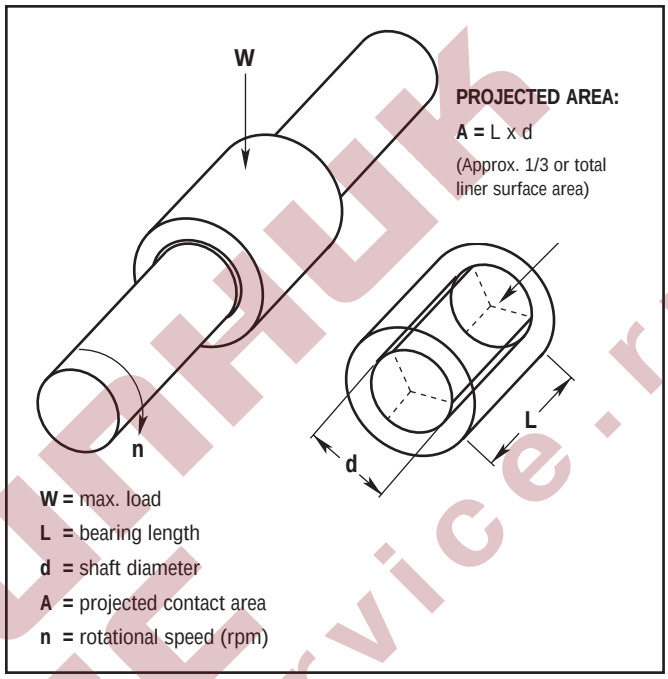
V - velocity or surface speed in feet per minute (fpm or sfm) or meters per minute (m/min.).

PV - pressure velocity value.

SIMPLICITY MAXIMUM PERIMETER

MAXIMUM PARAMETERS	P	V (RUNNING DRY)	PV
FrelonJ®	1500 psi or 105.45 kgf/cm²	140 sfm or 42.67 m/min.	10,000 psi x ft./min. or 215 kgf/cm² x m/min.
FrelonGOLD®	3000 psi or 210.9 kgf/cm²	300 sfm or 91.44 m/min.	20,000 psi x ft./min. or 430 kgf/cm² 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:

$A = L \times d$

$P = \frac{W}{A}$ psi (or kg/cm²)

VELOCITY:

Linear = total distance traveled in one minute

ROTATIONAL VELOCITY:

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

PRESSURE VELOCITY VALUE (PV):

PV = P x V psi x fpm (or kg/cm² x m/min.)

PV EQUIVALENTS

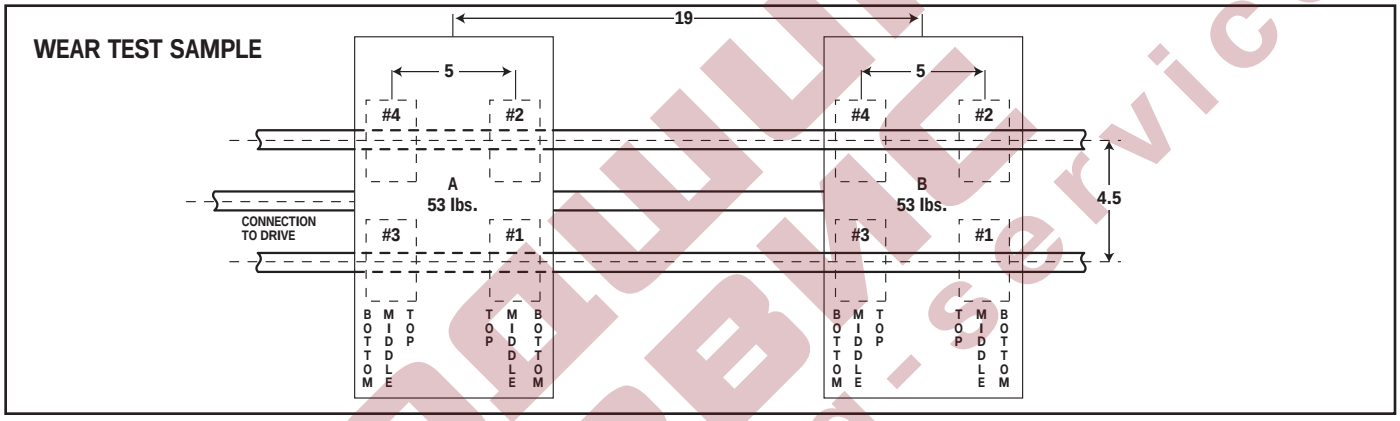
	INCH	TECHNICAL METRIC	INT'L METRIC (SI)
LOAD	1 psi	.0703 kgf/cm²	.0069 N/mm²
VELOCITY	1 ft./min.	.3048 m/min.	.00508 m/sec.
PV	1 PV	.0214 PV	.000036 PV
FrelonJ® MAX PV	10,000	215	.36
FrelonGOLD® MAX PV	20,000	430	.72

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: FrelonGOLD®

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"

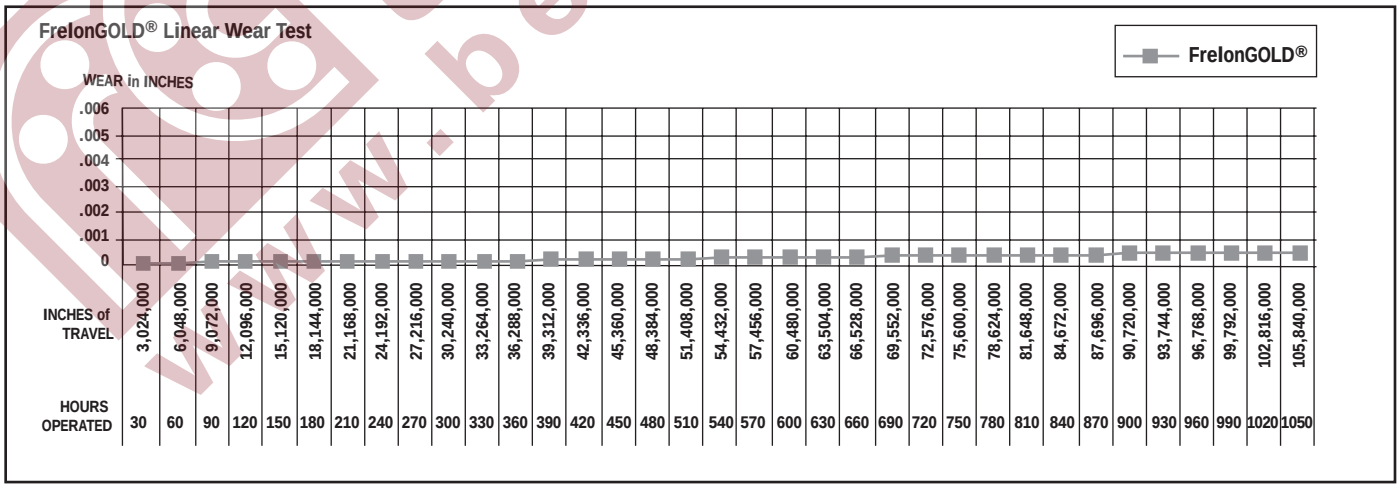
LOAD: 10.87 psi (53 lbs.)

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

LUBRICATION: None

TOTAL WEAR TO BEARING MATERIAL:
FrelonGOLD® = .00042"

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

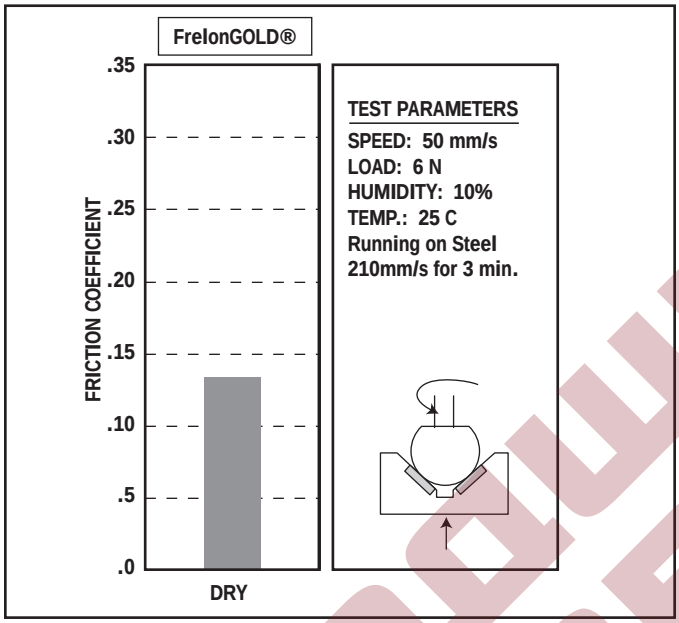


COEFFICIENT OF FRICTION

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: FrelonGOLD®

SHAFT MATERIAL: Standard RC60 steel shafting

SURFACE FINISH: 8-12 RMS

SPEED: 50 mm/sec

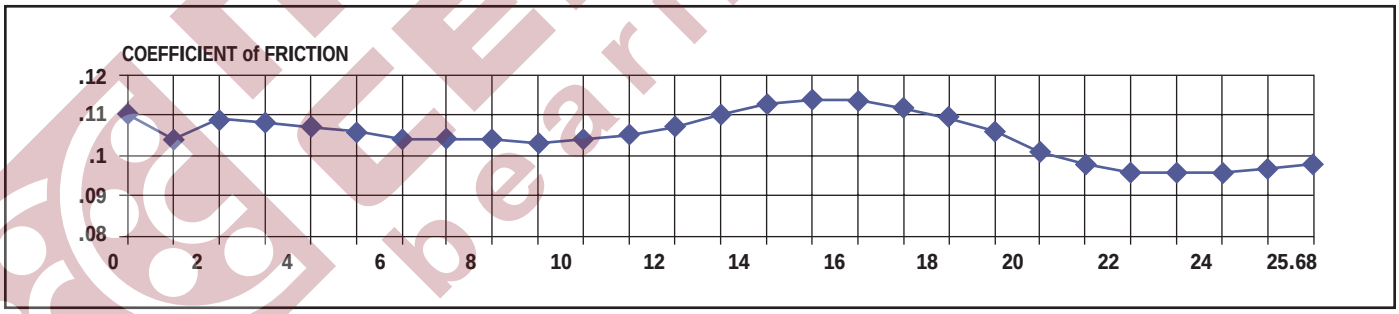
LOAD: 6 N

TEMP.: 25° C

LUBRICATION: None

AVG. COEFFICIENT OF FRICTION: FrelonGOLD® = .125

FRICTION TEST SAMPLE #2



CONDUCTED BY: FrelonGOLD® material processor

BEARING MATERIAL: FrelonGOLD®

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 (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 is proportional to (load)^3, so 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, 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.

RECOMMMENDED 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.

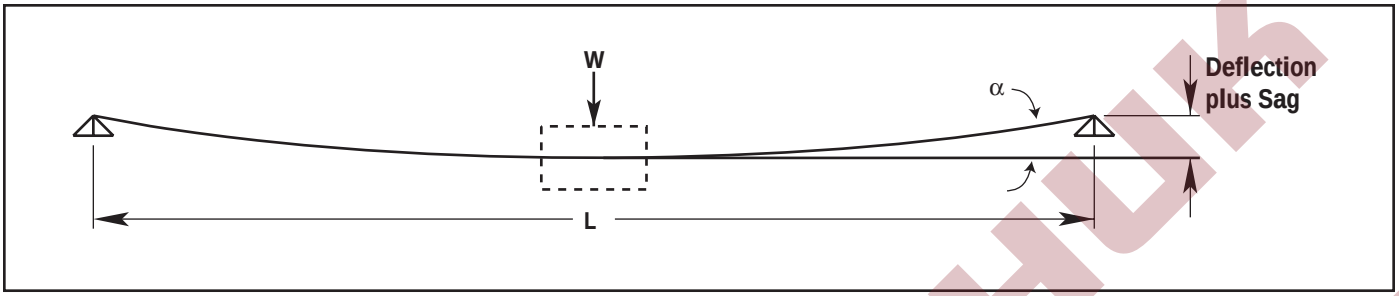
If grease is used and does not work in the application, it is possible to salvage the bearing with minimal work and to continue to operate. Follow the steps below:

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



INCH

SHAFT DIAMETER	HARDENED STEEL		STAINLESS STEEL		FEATHER® SHAFT	
	D	S	D	S	D	S
3/16"	8.4 x 10^4	1.7 x 10^7	8.0 x 10^4	1.6 x 10^7	2.9 x 10^4	1.65E+05
1/4"	2.67 x 10^5	3.1 x 10^7	2.54 x 10^5	2.9 x 10^7	9.2 x 10^4	2.93E+05
3/8"	1.35 x 10^6	6.9 x 10^7	1.29 x 10^6	6.5 x 10^7	4.7 x 10^5	6.58E+05
1/2"	4.27 x 10^6	1.23 x 10^8	4.06 x 10^6	1.16 x 10^8	1.5 x 10^6	1.17E+06
5/8"	1.04 x 10^7	1.92 x 10^8	9.92 x 10^6	1.81 x 10^8	3.6 x 10^6	1.83E+O6
3/4"	2.16 x 10^7	2.77 x 10^8	2.06 x 10^7	2.61 x 10^8	7.5 x 10^6	2.63E+06
1"	6.83 x 10^7	4.92 x 10^8	6.5 x 10^7	4.63 x 10^8	2.4 x10^7	4.68E+06
1-1/4"	1.67 x 10^8	7.69 x 10^8	1.59 x 10^8	7.24 x 10^8	5.8 x 10^7	7.31E+06
1-1/2"	3.46 x 10^8	1.11 x 10^9	3.29 x 10^8	1.04 x 10^9	1.22 x 10^8	1.05E+07
2"	1.09 x 10^8	1.97 x 10^9	1.04 x 10^9	1.85 x 10^9	3.8 x 10^8	1.87E+07
2-1/2"	2.67 x 10^8	3.07 x 10^9	2.54 x 10^9	2.9 x 10^9	N/A	N/A
3"	5.53 x 10^9	4.43 x 10^9	5.27 x 10^9	4.17 x 10^9	N/A	N/A
4"	1.75 x 10^{10}	7.87 x 10^9	1.66 x 10^{10}	7.41 x 10^9	N/A	N/A

METRIC

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

Tot. Def = Def + Sag

Def = $w \times L^3 / D$

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: $I = \pi \times diam^4 / 64$

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

E = Modulus of Elasticity (Young's modulus)

TOTAL DEFLECTION

ø1 in. Shaft

24 in. Length (L)

250 lbs. load (W)

$$\text{Deflection} = \frac{W \times L^3}{D \text{ (from table)}}$$

$$= \frac{250 \text{ lbs.} \times (24 \text{ in.})^3}{6.83 \times 10^7}$$

$$= \frac{3{,}456{,}000 \text{ in.}^3 \text{ lbs.}}{68{,}300{,}000 \text{ in.}^2 \text{ lbs.}}$$

Deflection = 0.0506 in.

$$\text{SAG} = \frac{L^4}{S \text{ (from table)}}$$

$$= \frac{(24)^4}{4.92 \times 10^8}$$

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

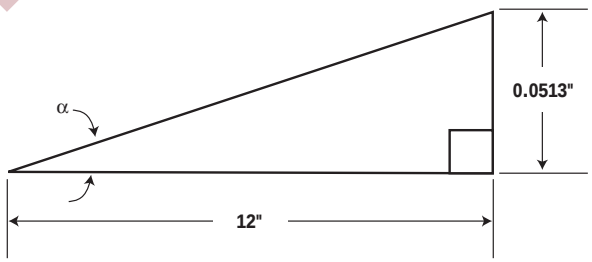
SAG = .000674 in.

Total Deflection = Deflection + SAG

= 0.0506 in. + .000674 in.

Total Deflection = 0.0513 in.

DISPLACEMENT ANGLE



$$\pm = \tan^{-1} \frac{0}{A}$$

$$\pm = \tan^{-1} \frac{0.0153 \text{ in.}}{12 \text{ in.}}$$

± = 0.2449° Displacement Angle

0.2449° < 1/2° Allowable = Good Design

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.

INSTALLING SIMPLICITY® 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. (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)
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

INSTALLING SIMPLICITY® BEARINGS

STRAIGHT BORE HOUSING - SLIP FIT BEARING (cont.)

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			FG06			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	N / A	N / A	FG16			FJA13	23.020	23.053
FLA16	1.5635	1.5650	FMA25	40.025	40.064	FMT20			FG18	N / A	N / A	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

INSTALLING SIMPLICITY® BEARINGS

STRAIGHT BORE HOUSING - SLIP FIT BEARING (cont.)

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		FG15	0.254	FJ12	
FL12		FM20		FMT16	0.254	FG16		FJ13	
FL16	0.0120	FM25	0.305	FMT20		FG18		FJ16	0.254
FL20		FM30		FMT25		FG20		FJ20	
FL24		FM40		FMT30	0.305	FG25	0.305	FJ25	0.305
FL32		FM50		FMT40		FG30		FJ30	
FL40	0.0160	FM60	0.406	FMT50		FG35		FJ35	
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

The original FrelonJ® 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, N_2O_2 hydrazine, UDMH, hydrocarbon fuels, high strength hydrogen peroxide, etc.

The FrelonGOLD® 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	FRELONGOLD®	BARE ALUMINUM	STANDARD & HARD COAT ANODIZED ALUMINUM	316 STAINLESS STEEL	CHEMICAL	FRELONGOLD®	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	Lacitic 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

COMPLETE PRODUCT OFFERING

- RC60 Steel
- 440 Stainless Steel
- Custom Options
- Cut-to-Length
- Random Lengths
- Pre-drilled and Tapped Shafting
- Joinable for even longer lengths

RC60 STEEL SHAFTING

- RC60 case hardened steel
- Polished for optimum surface finish
- Suitable for Simplicity® bearings and linear ball bearings
- Available cut-to-length or in full random lengths

SMALL DIAMETER RC60 STEEL SHAFTING*

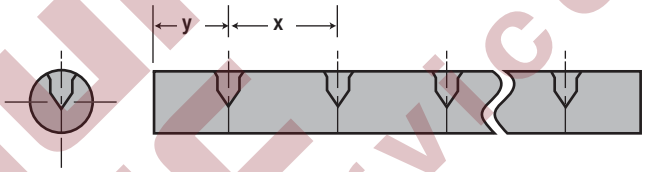
PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" MIN.	DIAMETER TOLERANCE CLASS "M" MAX.	LENGTH in m* MAX.	HARDNESS DEPTH MIN. (mm)	WEIGHT (kg/m)
NIM03-xx	3	2.991	3	6.4	1.0	0.06
NIM04-xx	4	3.991	4	6.4	1.0	0.1
NIM05-xx	5	4.991	5	6.4	1.0	0.15
NIM06-xx	6	5.991	6	6.4	1.0	0.23
NIM08-xx	8	7.991	8	6.4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

RC60 STEEL SHAFTING*

PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" MIN.	DIAMETER TOLERANCE CLASS "M" MAX.	LENGTH in m* MAX.	HARDNESS DEPTH MIN. (mm)	WEIGHT (kg/m)
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

PRE-DRILLED & TAPPED RC60 STEEL SHAFTING*



PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" (µm)	HOLE SPACING X	HOLE SPACING y	THREAD	MAX. LENGTH (m)	WEIGHT (kg/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.

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

440 STAINLESS STEEL SHAFTING

- 440 Stainless Steel
- Suitable for linear ball bearings
- Available cut-to-length or in full random lengths
- Tolerance of +/-.79375

PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" (µm)	MAX. LENGTH (m)	HARDNESS DEPTH MAX.	WEIGHT (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

CERAMIC COATED ALUMINUM SOLID SHAFTING

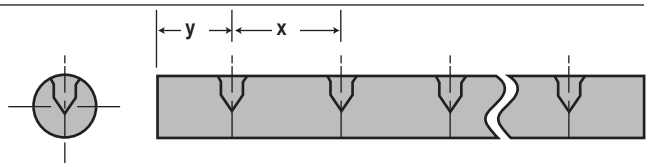
- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity FrelonGOLD® lined bearings
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" (µm)	MAX. LENGTH (m)	WEIGHT (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.

PRE-DRILLED & TAPPED CERAMIC COATED ALUMINUM SHAFTING

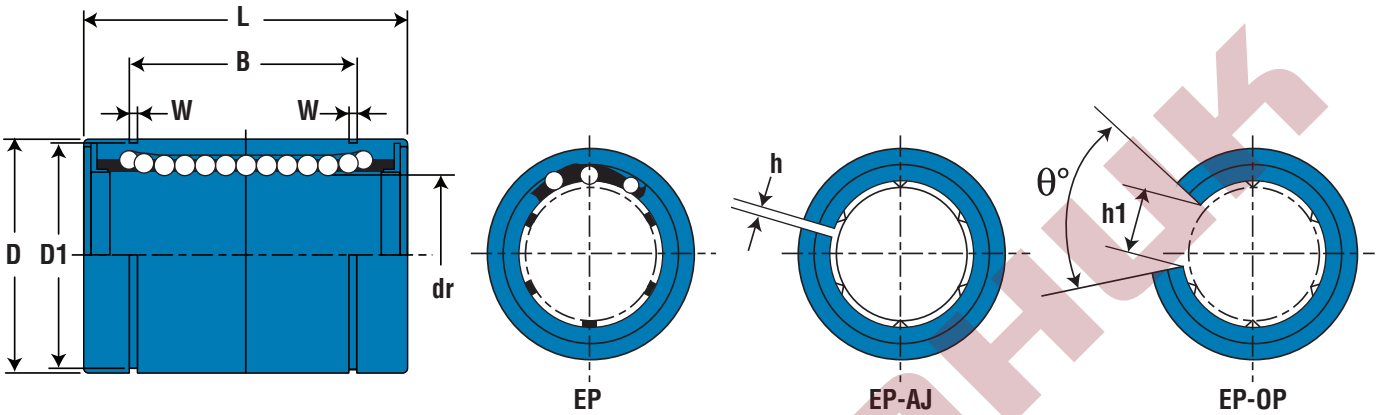
- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity FrelonGOLD® lined bearings
- Interchanges with standard pre-drilled shafting
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick



PART NO.	NOMINAL SIZE (mm)	DIAMETER TOLERANCE CLASS "M" (µm)	HOLE SPACING X	HOLE SPACING y	THREAD	MAX. LENGTH (m)	WEIGHT (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	150	75	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

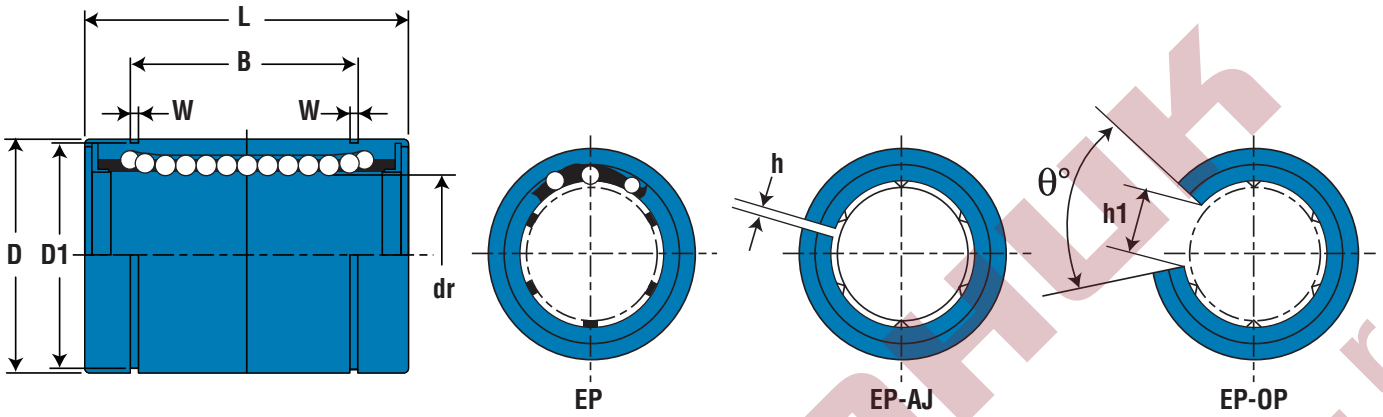
NOTES: Specify length in part number using mm.
Example: for 10mm shafting total length 97mm = CCMDL08-97.
Ends of cut-to-length shafting are not coated.
Fully coated shafting is available on special request.
Customer specifies "y" dimension.

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



EP SERIES - DIMENSIONAL INFORMATION

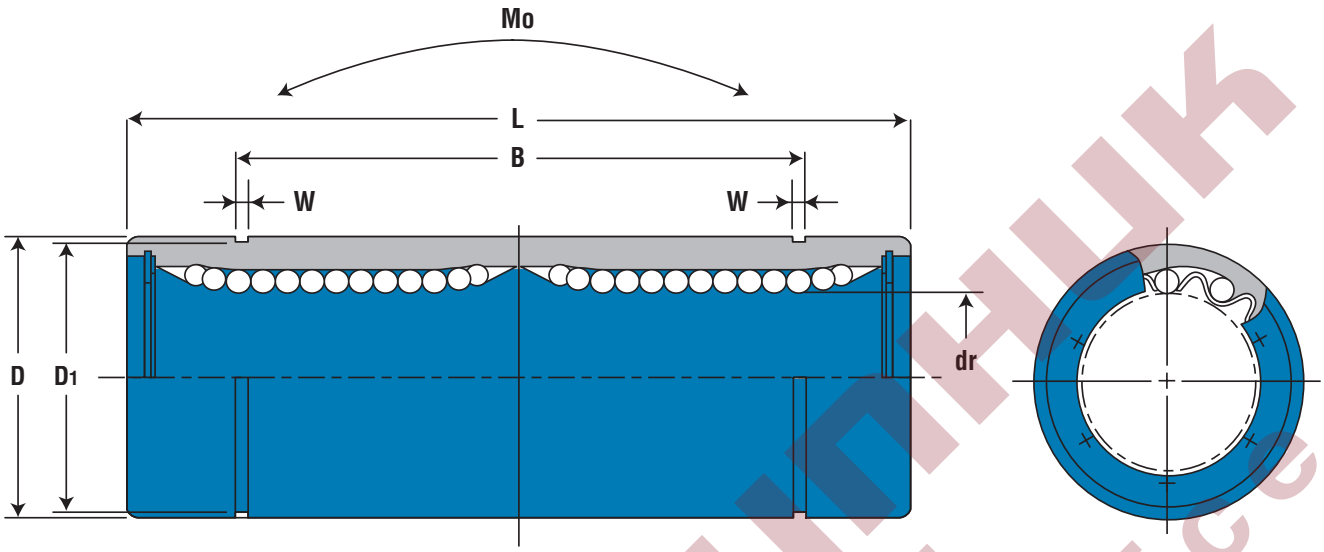
	PART NUMBER					MAJOR DIMENSIONS & TOLERANCES					
NOMINAL SHAFT DIAMETER (mm)	STANDARD CLOSE POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	STANDARD OPEN POLYMER CAGE	ADJUSTABLE POLYMER CAGE	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
5	EP5G	4	11	-	-	5	+8 0	12	0 -8	22	0 -0.2
8	EP8G		20	-	-	8		16		25	
10	EP10G		36	-	-	10		19		29	
12	EP12G		45	EP12G-OP	EP12G-AJ	12		22	0 -9	32	
16	EP16G	5	60	EP16G-OP	EP16G-AJ	16	+9 -1	26		36	
20	EP20G		102	EP20G-OP	EP20G-AJ	20		32	0 -11	45	
25	EP25G	6	235	EP25G-OP	EP25G-AJ	25	+11 - 1	40		58	0 -0.3
30	EP30G		360	EP30G-OP	EP30G-AJ	30		47		68	
40	EP40G		770	EP40G-OP	EP40G-AJ	40	+13 - 2	62	0 -13	80	
50	EP50G		1,250	EP50G-OP	EP50G-AJ	50		75		100	
60	EP60G		2,220	EP60G-OP	EP60G-AJ	60		90	0 -15	125	0 -0.4



EP SERIES - DIMENSIONAL INFORMATION (cont.)

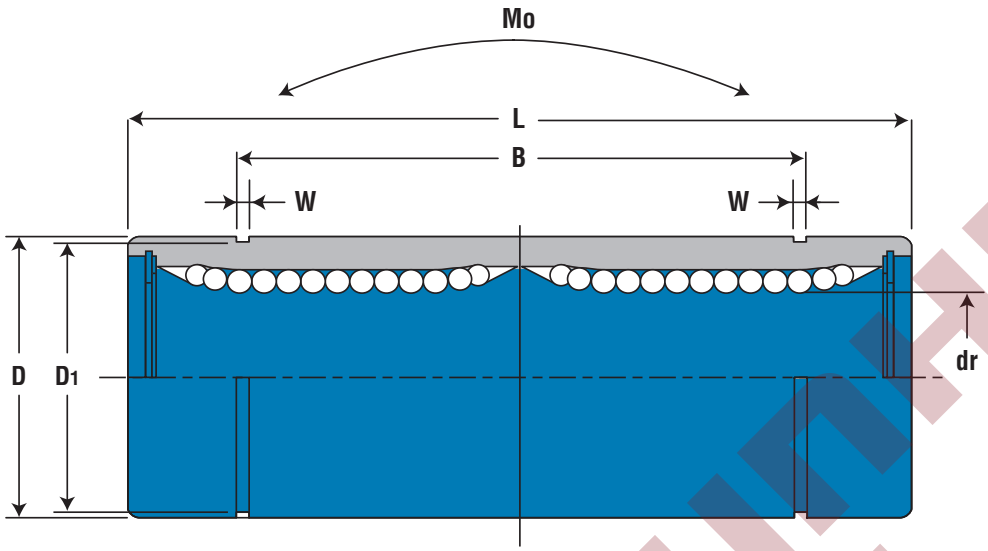
(Standard Steel Finish)

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	+.14 0	11.5	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 -.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 -.21		10	60	15	-9	882	1,370	20
44.1		1.85		37.5	0 -.25	2	12.5				980	1,570	25
52.1		1.85		44.5			12.5	50			1,570	2,740	30
60.6	0 -0.4	2.15		59	0 -.30	3	16.8		17	-13	2,160	4,020	40
77.6		2.65		72			21				3,820	7,940	50
101.7		3.15		86.5	0 -.35		27.2	54	20	-16	4,700	10,000	60



EP-W SERIES - DIMENSIONAL INFORMATION

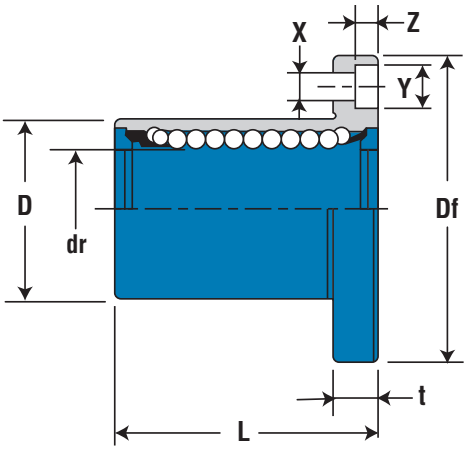
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	EP8GW	4	40	8	+9 -1	16	0 -9	45	0 -0.3
12	EP12GW		80	12		22	0 -11	57	
16	EP16GW	5	115	16	+11 - 1	26		68	
20	EP20GW		180	20		32	0 -13	80	
25	EP25GW	6	430	25	+13 - 2	40		112	0 -0.4
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	
60	EP60GW		3,920	60		90		209	

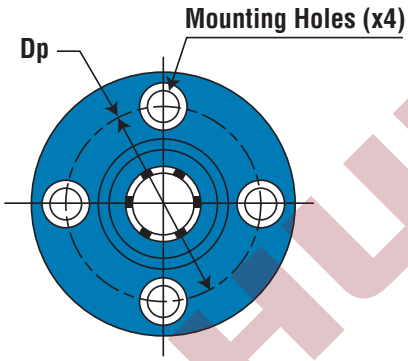


EP-W SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

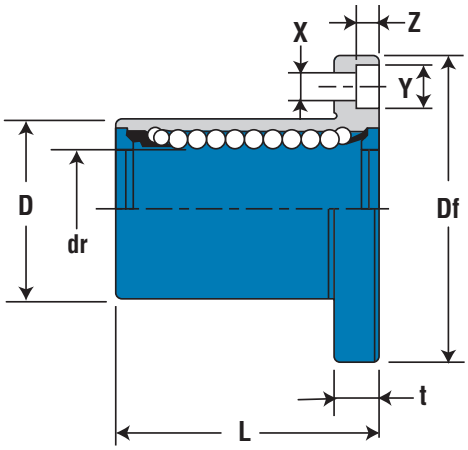
MAJOR DIMENSIONS & TOLERANCES							LOAD RATING			
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	ECCENTRICITY (µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
33	0 -0.3	1.1	+.14 0	15.2	0 -.11	15	421	804	4.3	8
45.8		1.3		21	0 -.13		813	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
170		3.15		86.5	0 -.35	25	7,550	20,000	487	60

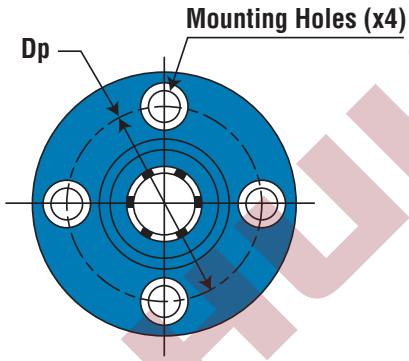




EPF SERIES - DIMENSIONAL INFORMATION

	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	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	
60	EPF60G		3,220	60		90	0 -25	125	

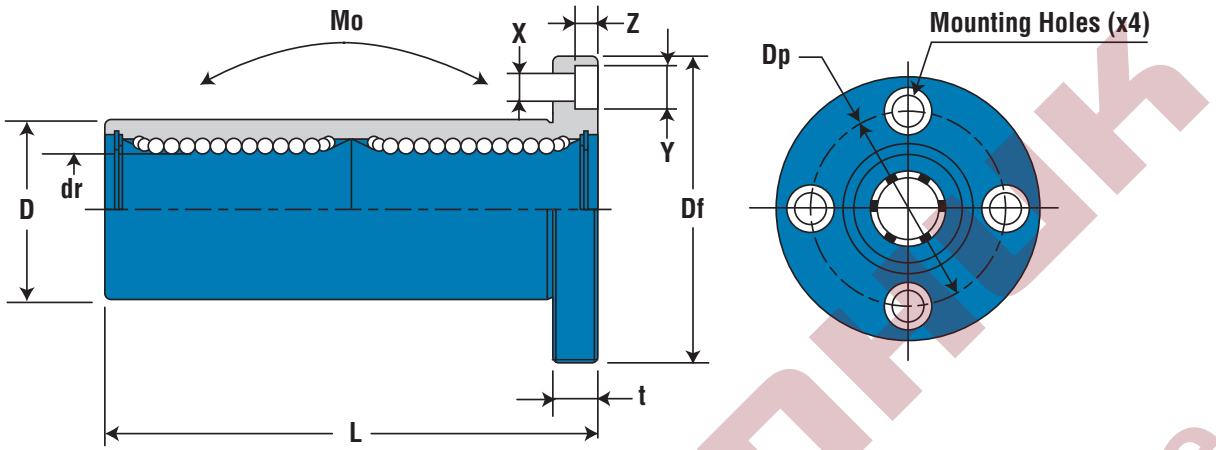




EPF SERIES - DIMENSIONAL INFORMATION (cont.)

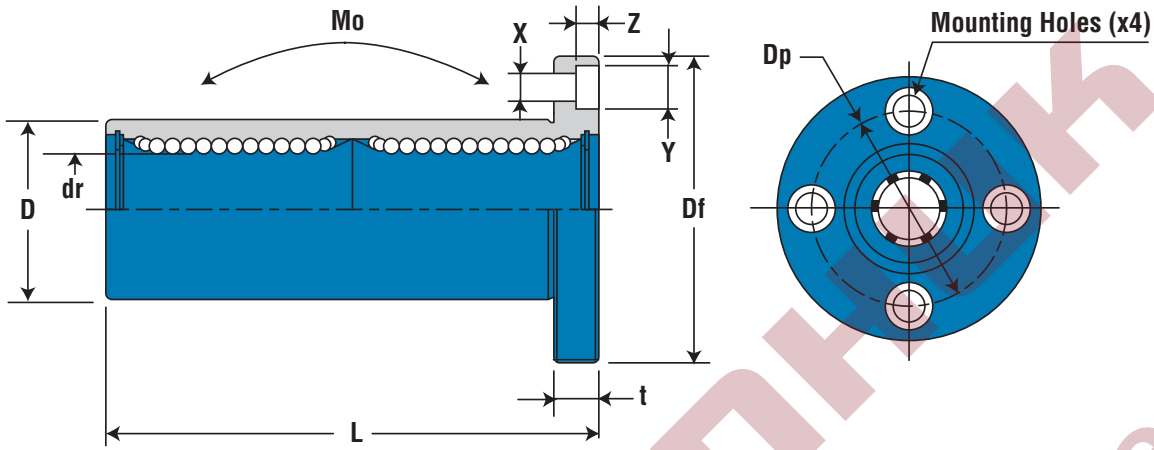
(Standard Steel Finish)

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 6.0 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
134	18	112	11.0 x 17.5 x 11.1	20	20	4,700	9,800	60



EPF-W SERIES - DIMENSIONAL INFORMATION

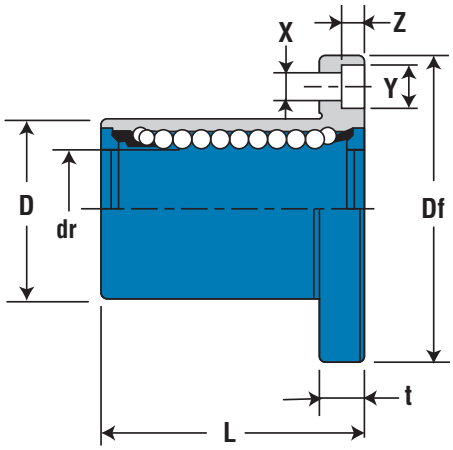
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	EPF8GW	4	59	8	+9 -1	16	0 -13	45	± 0.3
12	EPF12GW		110	12		22	0 -16	57	
16	EPF16GW	5	160	16	+11 - 1	26		68	
20	EPF20GW		260	20		32	0 -19	80	
25	EPF25GW	6	540	25	+13 - 2	40		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	
60	EPF60GW		4,920	60		90	0 -25	209	

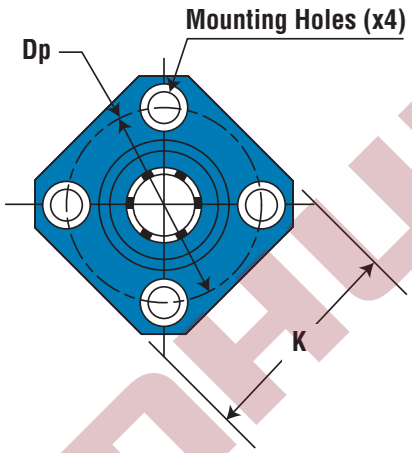


EPF-W SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

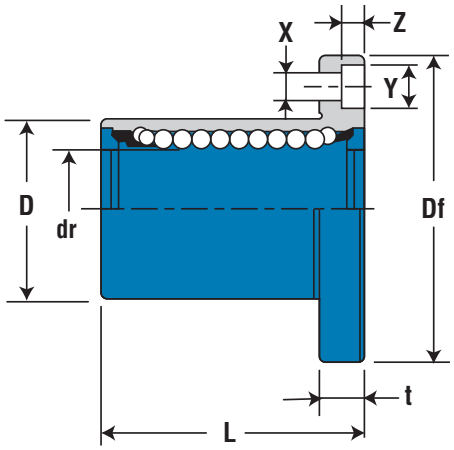
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6.5 x 3.1	15	15	421	804	4.3	8
42	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
134	18	112	11.0 x 17.5 x 11.1	25	25	7,550	20,000	487	60

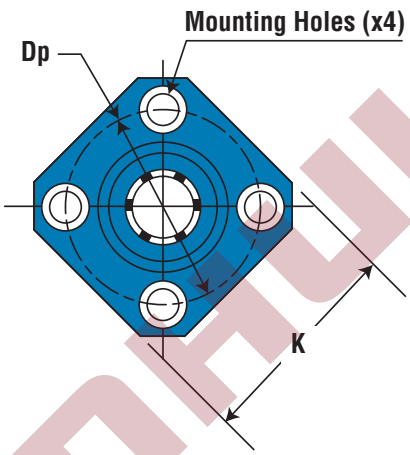




EPK SERIES - DIMENSIONAL INFORMATION

	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	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		36	
20	EPK20G		182	20		32	0 -19	45	
25	EPK25G	6	335	25	+11 -1	40		58	
30	EPK30G		560	30		47		68	
40	EPK40G		1,175	40	+13 -2	62	0 -22	80	
50	EPK50G		1,745	50		75		100	
60	EPK60G		3,220	60		90	0 -25	125	

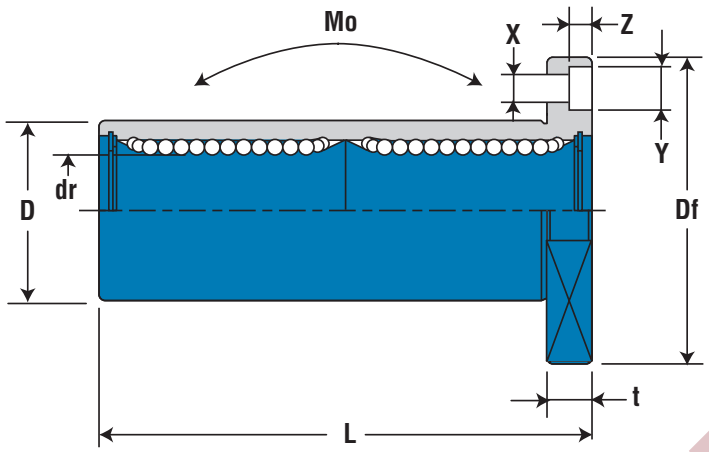


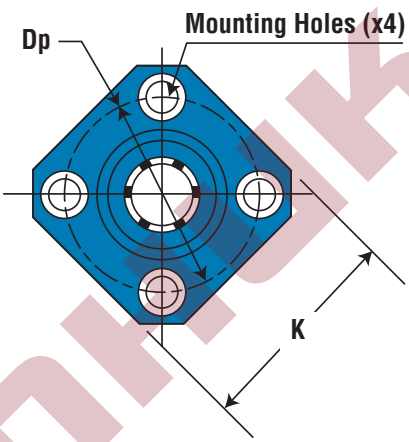


EPK SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

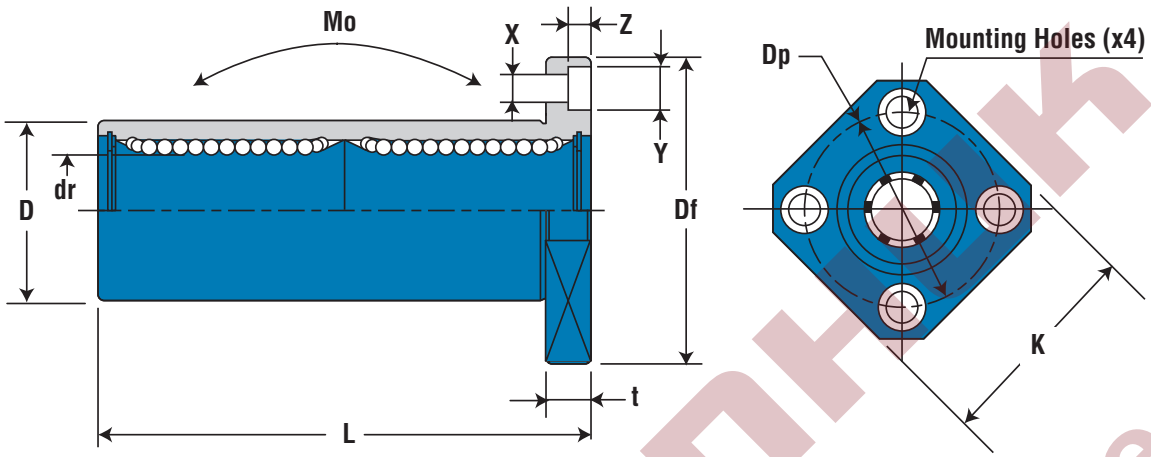
MAJOR DIMENSIONS & TOLERANCES							LOAD RATING		
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6.5 x 3.1	12	12	265	402	8
42	32	6	32	4.5 x 8.0 x 4.1			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
134	106	18	112	11.0 x 17.5 x 11.1	20	20	4,700	9,800	60





EPK-W SERIES - DIMENSIONAL INFORMATION

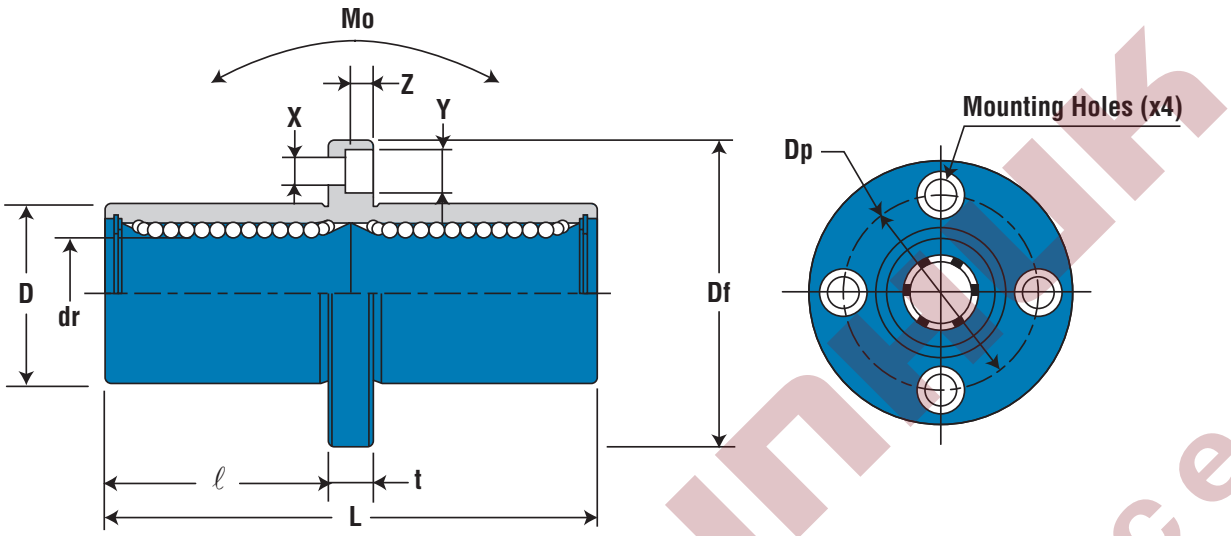
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	EPK8GW	4	51	8	+9 -1	16	0 -13	45	± 0.3
12	EPK12GW		90	12		22	0 -16	57	
16	EPK16GW	5	135	16	+11 -1	26		68	
20	EPK20GW		225	20		32	0 -19	80	
25	EPK25GW	6	500	25	+13 -2	40		112	
30	EPK30GW		720	30		47		123	
40	EPK40GW		1,600	40	+16 -4	62	0 -22	151	
50	EPK50GW		2,620	50		75		192	
60	EPK60GW		4,480	60		90	0 -25	209	



EPK-W SERIES - DIMENSIONAL INFORMATION (cont.)

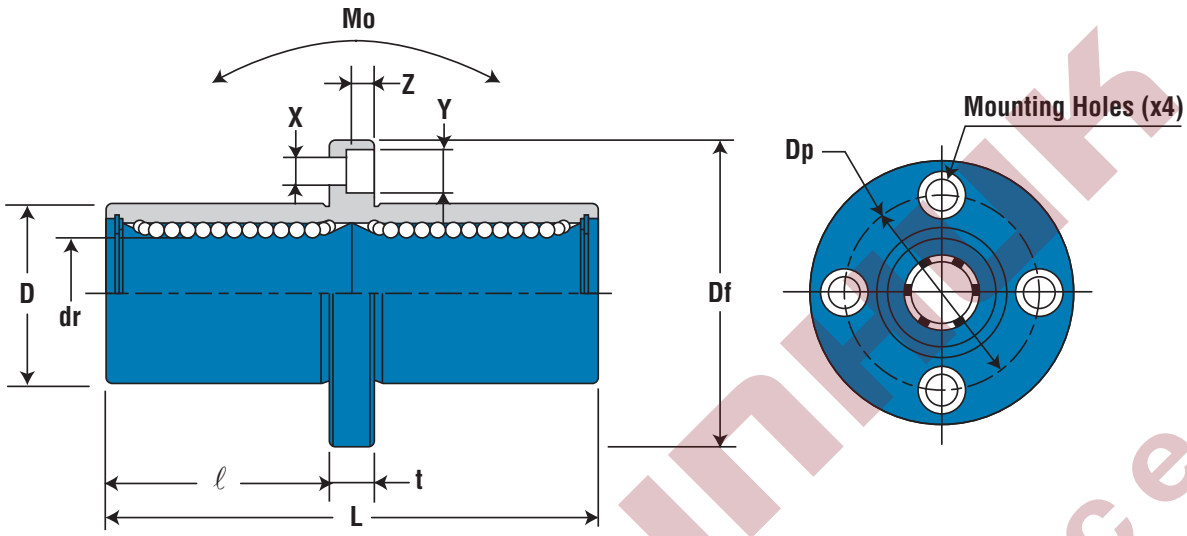
(Standard Steel Finish)

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
134	106	18	112	11.0 x 17.5 x 11.1	25	25	7,550	20,000	487	60



EPFC SERIES - DIMENSIONAL INFORMATION

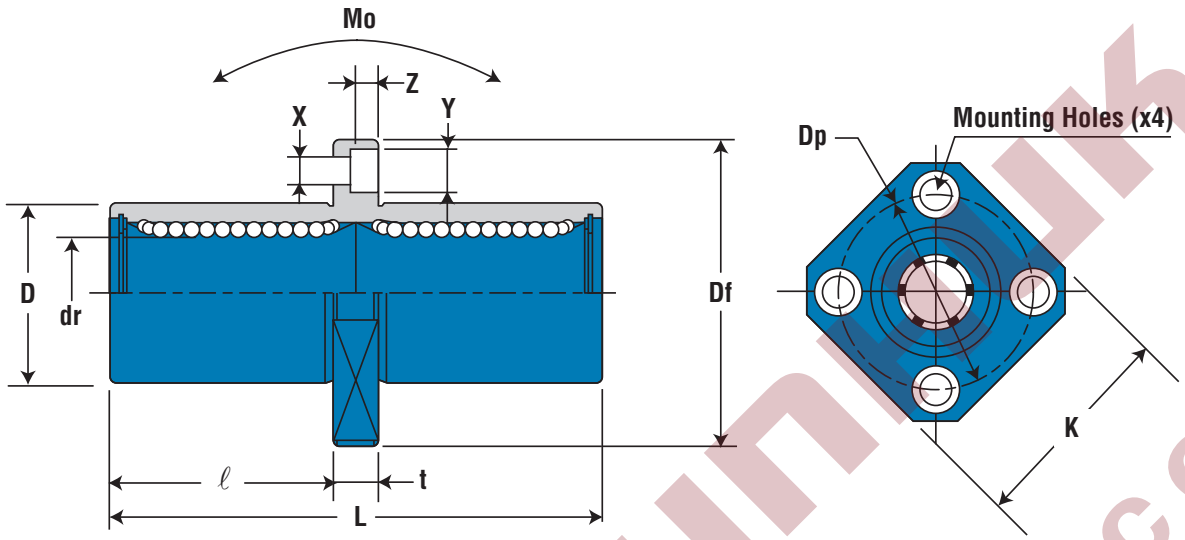
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES								
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)	ℓ (mm)
8	EPFC8G	4	59	8	+9 -1	16	0 -13	45	± 0.3	20
12	EPFC12G		110	12		22	0 -16	57		25.5
16	EPFC16G	5	160	16	+11 -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		123		56.5
40	EPFC40G		1,805	40	+16 -4	62	0 -22	151		69
50	EPFC50G		2,820	50		75		192		89.5
60	EPFC60G		4,920	60		90	0 -25	209		95.5



EPFC SERIES - DIMENSIONAL INFORMATION (cont.)

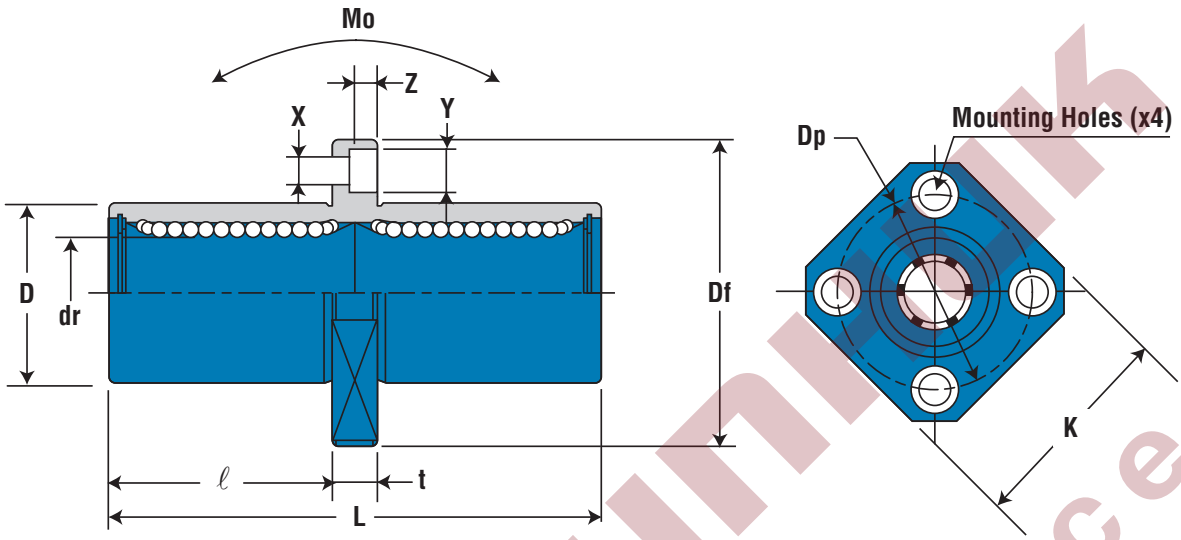
(Standard Steel Finish)

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 6.5x 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
134	18	112	11.0 x 17.5 x 11.1	25	25	7,550	20,000	487	60



EPKC SERIES - DIMENSIONAL INFORMATION

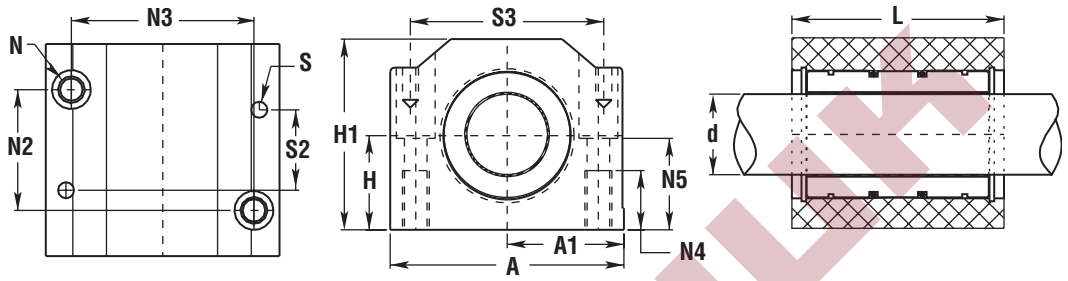
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	EPKC8G	4	51	8	+9 -1	16	0 -13	46	± 0.3
12	EPKC12G		90	12		22	0 -16	61	
16	EPKC16G	5	135	16	+11 -1	26		68	
20	EPKC20G		225	20		32	0 -19	80	
25	EPKC25G	6	500	25	+13 -2	40		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	
60	EPKC60G		4,480	60		90	0 -25	209	



EPKC SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

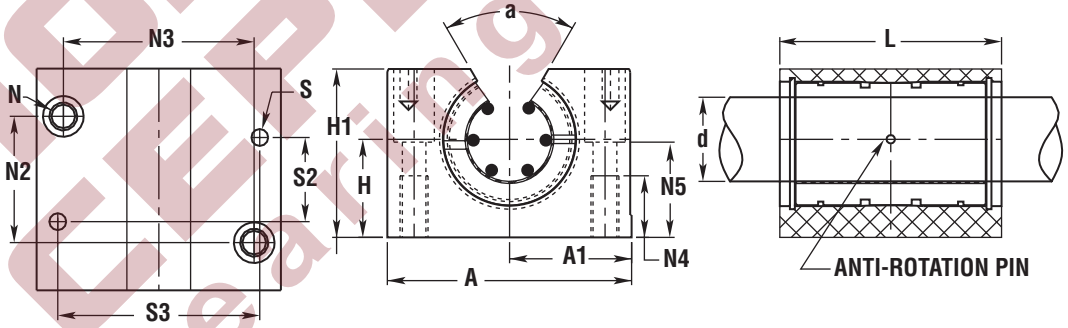
MAJOR DIMENSIONS & TOLERANCES								LOAD RATING			
ℓ (mm)	Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
20.5	32	25	5	24	3.5 x 6.5 x 3.1	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
95.5	134	106	18	112	11.0 x 17.5 x 11.1	25	25	7,550	20,000	487	60



CLOSED PILLOW BLOCKS

PART NO.	d NOM. I.D.	H	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	ASSEM. WT.
PRECISION	MIN.	CENTERLINE .015	HEIGHT	WIDTH	.013	LENGTH	BOLT								(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 and precision bearing.
(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.

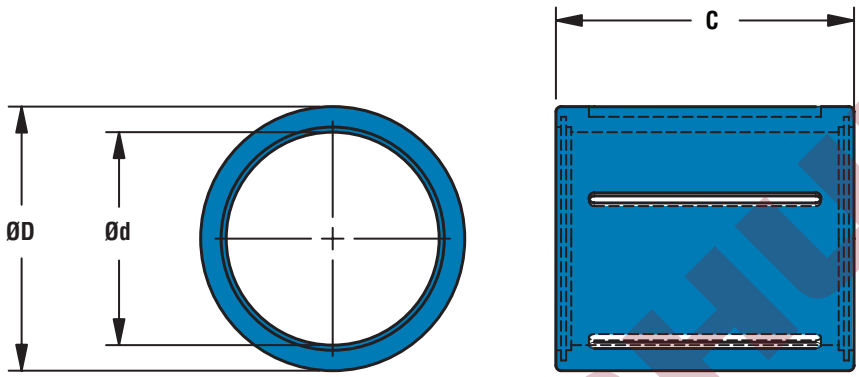


OPEN PILLOW BLOCKS

PART NO.	d NOM. I.D.	H	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	a	ASSEM. WT.
PRECISION	MIN.	CENTERLINE .015	HEIGHT	WIDTH	CENTERLINE .013	LENGTH	BOLT									(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 and precision bearing.
(2) All standard metric pillow blocks use standard "EP" series bearings found on page 88-89.

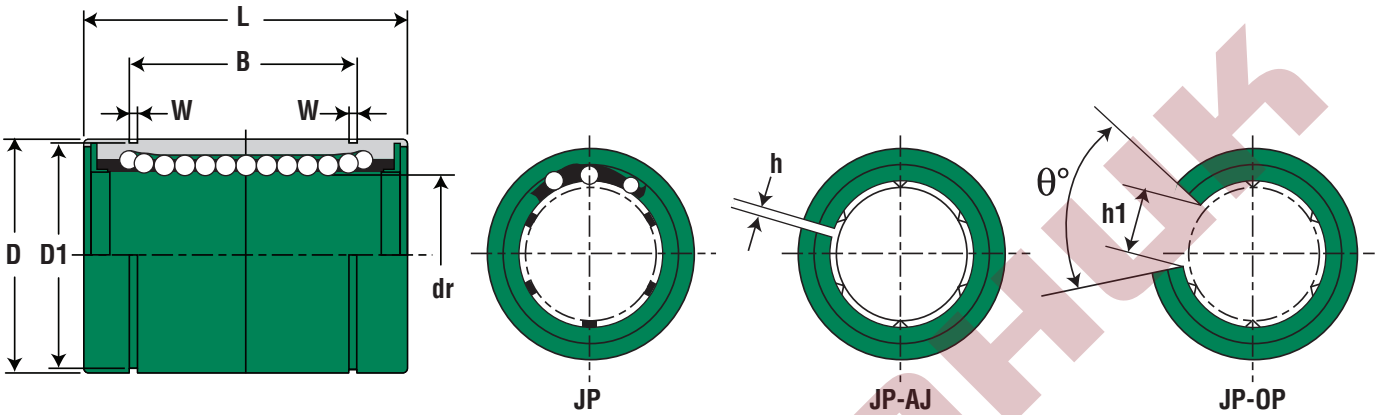
(For Empty Pillow Block with no bearings included add LBB after the part number.)



BASIC DIMENSIONAL INFORMATION

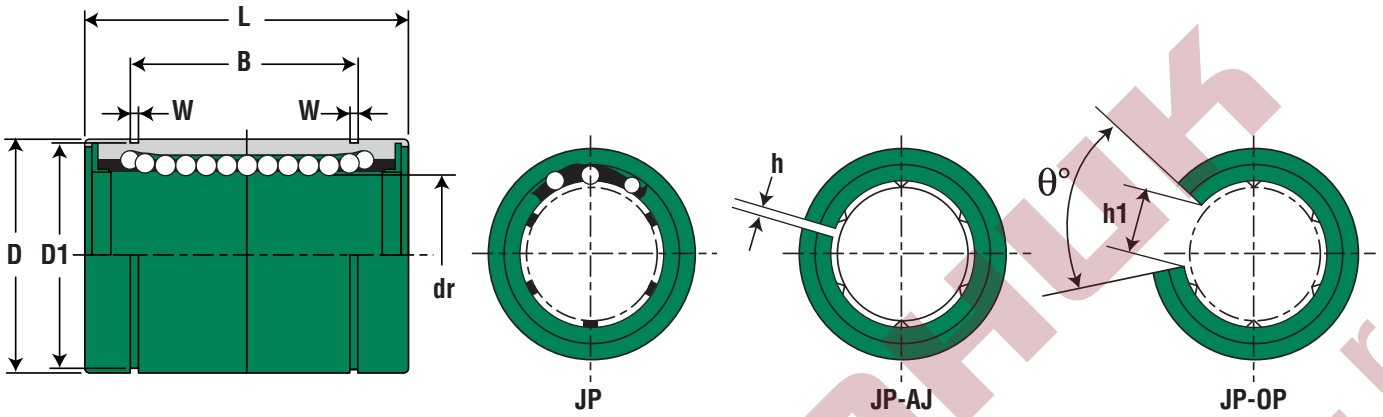
(Standard Steel Finish)

PART NO.	DIMENSIONS Ød	ØD	B	"WEIGHT (g)	LOAD RATING DYNAMIC C (N)	STATIC Co (N)
KHP6	6	12	22	7.0	400	239
KHP8	8	15	24	12.0	435	280
KHP10	10	17	26	14.5	500	370
KHP12	12	19	28	18.5	620	510
KHP14	14	21		20.5		520
KHP16	16	24	30	27.5	800	620
KHP20	20	28		32.5	950	790
KHP25	25	35	40	66.0	1,990	1,670
KHP30	30	40	50	95.0	2,880	2,700
KHP40	40	52	60	182.0	4,400	4,450
KHP50	50	62	70	252.0	5,500	6,300



JP SERIES - DIMENSIONAL INFORMATION

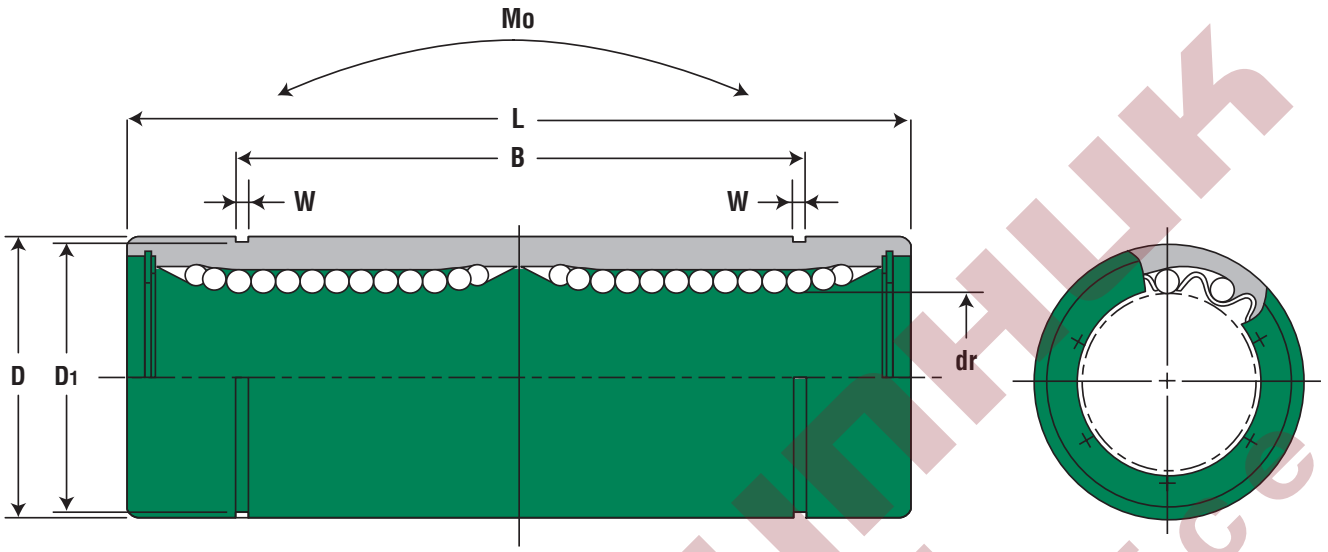
	PART NUMBER					MAJOR DIMENSIONS & TOLERANCES					
NOMINAL SHAFT DIAMETER (mm)	STANDARD CLOSE POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	STANDARD OPEN POLYMER CAGE	ADJUSTABLE POLYMER CAGE	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	JP8G	4	16	-	-	8	0 -9	15	0 -11	24	0 -0.2
10	JP10G		30	-	-	10		19	0 -13	29	
12	JP12G		32	JP12G-OP	JP12G-AJ	12		21		30	
13	JP13G		43	JP13G-OP	JP13G-AJ	13		23		32	
16	JP16G	5	69	JP16G-OP	JP16G-AJ	16		28		37	
20	JP20G		87	JP20G-OP	JP20G-AJ	20	0 -10	32	0 -16	42	
25	JP25G	6	220	JP25G-OP	JP25G-AJ	25		40		59	0 -0.3
30	JP30G		250	JP30G-OP	JP30G-AJ	30		45		64	
35	JP35G		390	JP35G-OP	JP35G-AJ	35	0 -12	52	0 -19	70	
40	JP40G		585	JP40G-OP	JP40G-AJ	40		60		80	
50	JP50G		1,580	JP50G-OP	JP50G-AJ	50		80		100	
60	JP60G		2,000	JP60G-OP	JP60G-AJ	60	0 -15	90	0 -22	110	



JP SERIES - DIMENSIONAL INFORMATION (cont.)

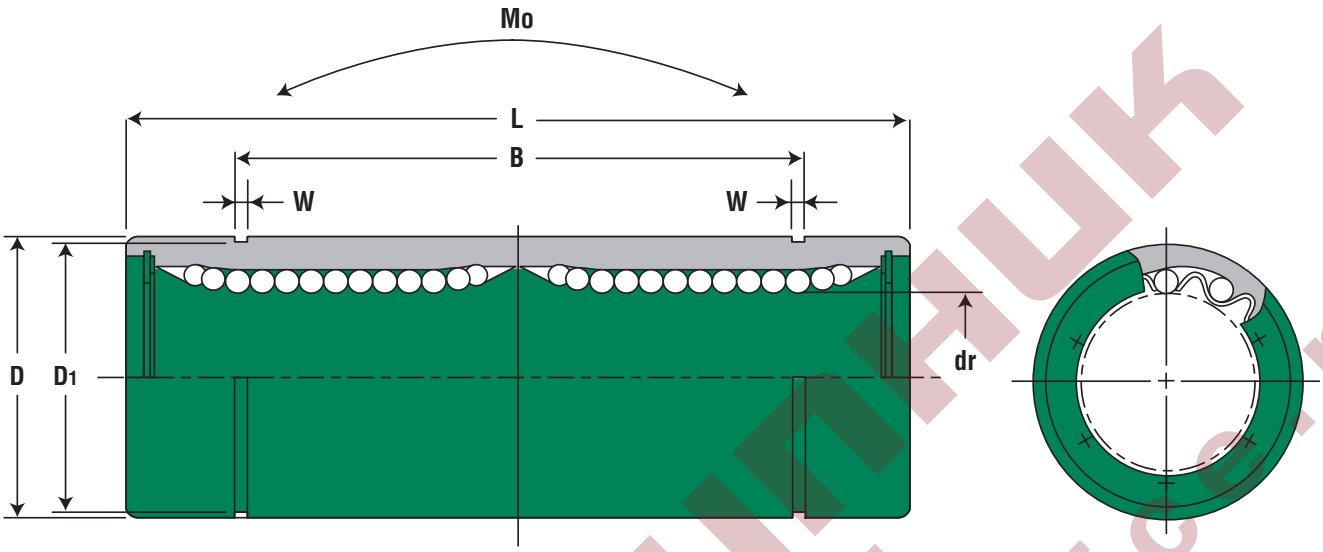
(Standard Steel Finish)

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	+.14 0	14.3	0 -.11	-	-	-	12	-3	260	400	8
22		1.3		18		-	-	-		-4	370	540	10
23		1.3		20	0 -.13	1.5	8	80			410	590	12
23		1.3		22			9				500	770	13
26.5		1.6		27	0 -.21		11				770	1,170	16
30.5		1.6		30.5			11	60	15	-6	860	1,370	20
41		1.85		38	0 -.25	2	12	50			980	1,560	25
44.5		1.85		43		2.5	15			-8	1,560	2,740	30
49.5	0 -0.3	2.1		49			17		20		1,660	3,130	35
60.5		2.1		57	0 -.30	3	20			-10	2,150	4,010	40
74		2.6		76.5			25			-13	3,820	7,930	50
85		3.15		86.5	0 -.35		30		25		4,700	9,990	60



JP-W SERIES - DIMENSIONAL INFORMATION

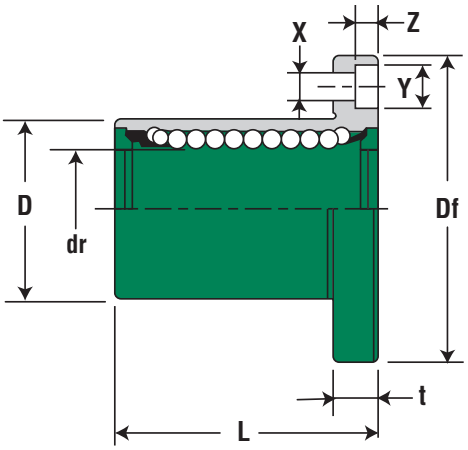
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	JP8GW	4	31	8	0 -10	15	0 -13	45	0 -0.3
12	JP12GW		80	12		21	0 -16	57	
16	JP16GW	5	145	16		28		70	
20	JP20GW		180	20		32		80	
25	JP25GW	6	440	25	0 -12	40	0 -19	112	0 -0.4
30	JP30GW		580	30		45		123	
40	JP40GW		1,170	40	0 -15	60	0 -22	151	
50	JP50GW		3,100	50		80		192	
60	JP60GW		3,500	60	0 -20	90	0 -25	209	

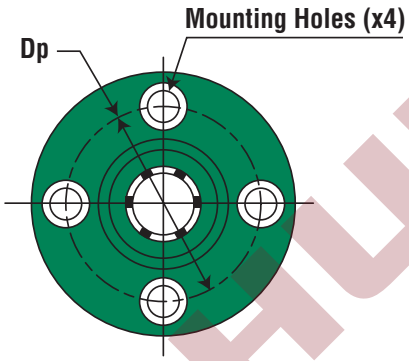


JP-W SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

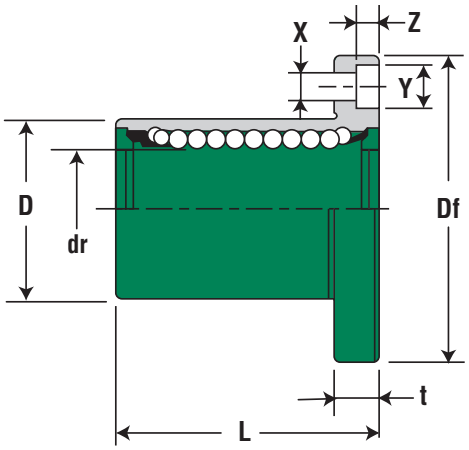
MAJOR DIMENSIONS & TOLERANCES							LOAD RATING			
B (mm)	TOLERANCE (mm)	W (mm)	TOLERANCE (mm)	D1 (mm)	TOLERANCE (mm)	ECCENTRICITY (µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
35	0 -0.3	1.1	+.14 0	14.3	0 -.11	15	431	784	4.3	8
46		1.3		20	0 -.13		657	1,200	10.9	12
53		1.6		27	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 -.25		1,560	3,140	43.4	25
89		1.85		43			2,490	5,490	82.8	30
121		2.1		57	0 -.30	25	3,430	8,040	147	40
148		2.6		76.5			6,080	15,900	397	50
170		3.15		86.5	0 -.35	30	7,650	20,000	530	60

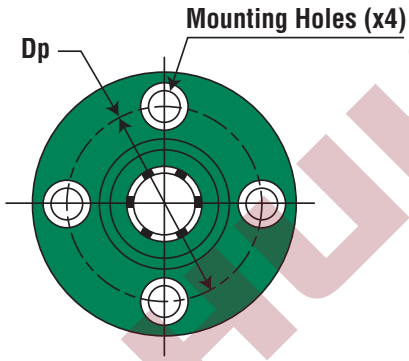




JPF SERIES - DIMENSIONAL INFORMATION

	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	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		28		37	
20	JPF20G		180	20	0 -10	32	0 -19	42	
25	JPF25G	6	340	25		40		59	
30	JPF30G		470	30		45		64	
40	JPF40G		1,060	40	0 -12	60	0 -22	80	
50	JPF50G		2,200	50		80		100	
60	JPF60G		3,000	60	0 -15	90	0 -25	110	

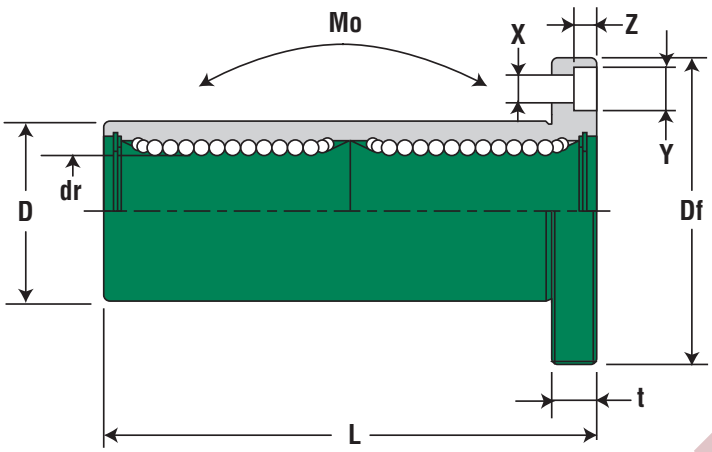


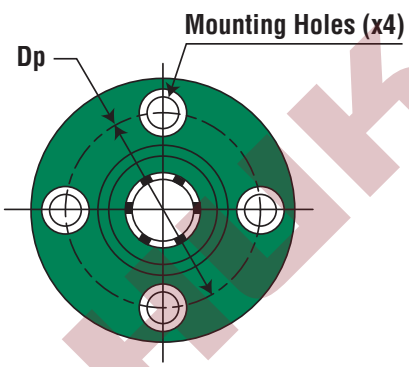


JPF SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

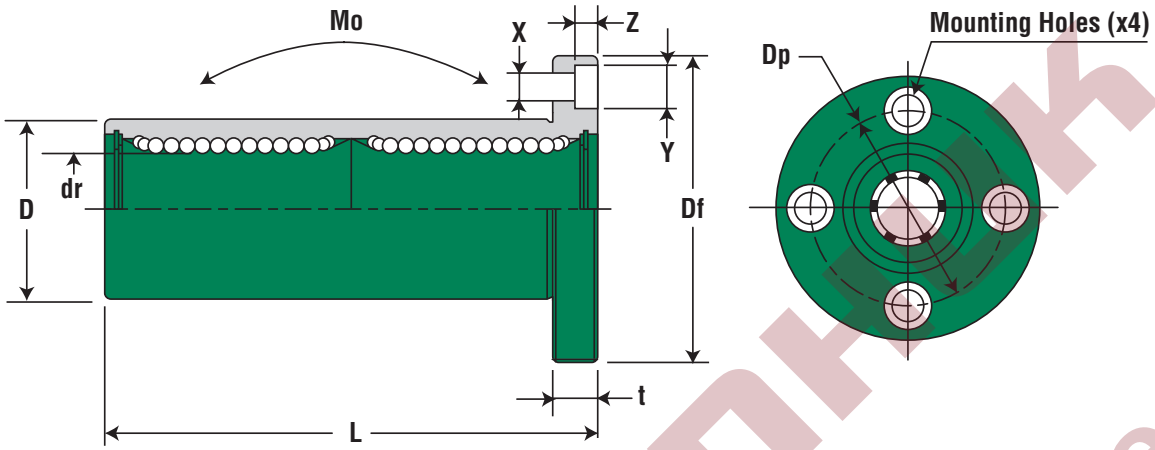
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING		
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	12	12	274	392	8
42	6	32	4.5 x 7.5 x 4.1			510	784	12
48		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
134	18	112	11 x 17 x 11.1	25	25	4,700	10,000	60





JPF-W SERIES - DIMENSIONAL INFORMATION

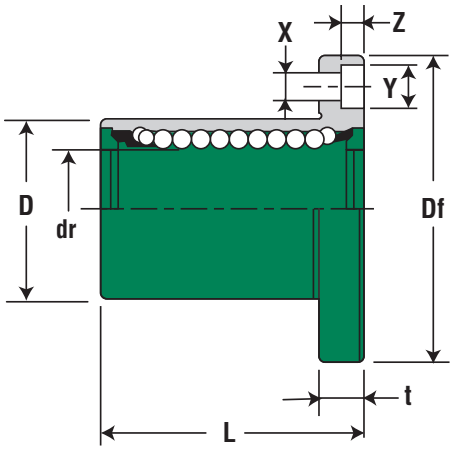
	PART NUMBER	MAJOR DIMENSIONS & TOLERANCES							
NOMINAL SHAFT DIAMETER (mm)	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT (g)	dr (mm)	TOLERANCE (µm)	D (mm)	TOLERANCE (µm)	L (mm)	TOLERANCE (mm)
8	JPF8GW	4	51	8	0 -10	15	0 -13	45	± 0.3
12	JPF12GW		110	12		21	0 -16	57	
16	JPF16GW	5	190	16		28		70	
20	JPF20GW		260	20	0 -12	32	0 -19	80	
25	JPF25GW		540	25		40		112	
30	JPF30GW		680	30		45		123	
40	JPF40GW	6	1,570	40	0 -15	60	0 -22	151	
50	JPF50GW		3,600	50		80		192	
60	JPF60GW		4,500	60	0 -20	90	0 -25	209	

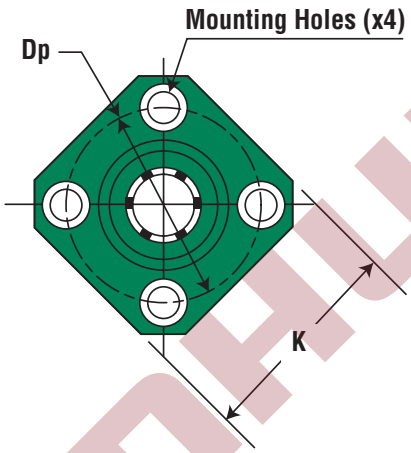


JPF-W SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

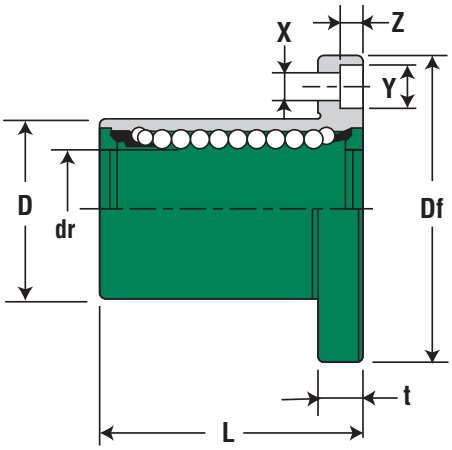
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	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
134	18	112	11 x 17 x 11.1	30	30	7,550	20,000	530	60

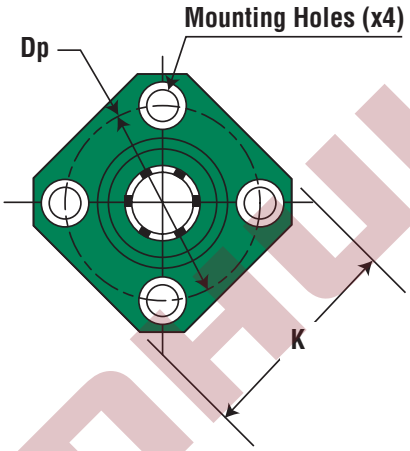




JPK SERIES - DIMENSIONAL INFORMATION

	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		340	25		40		59	
30	JPK30G		470	30		45		64	
40	JPK40G	6	1,060	40	0 -12	60	0 -22	80	
50	JPK50G		2,200	50		80		100	
60	JPK60G		3,000	60	0 -15	90	0 -25	110	

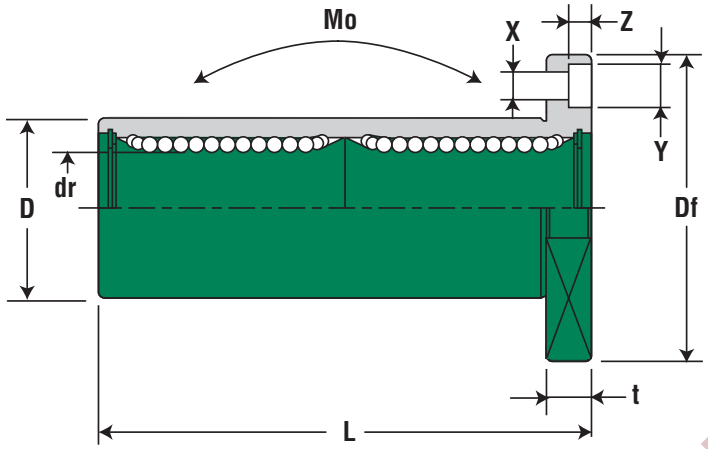


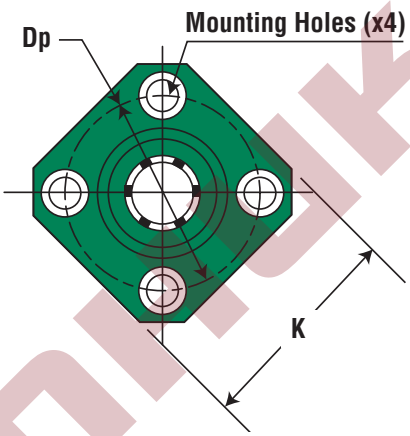


JPK SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

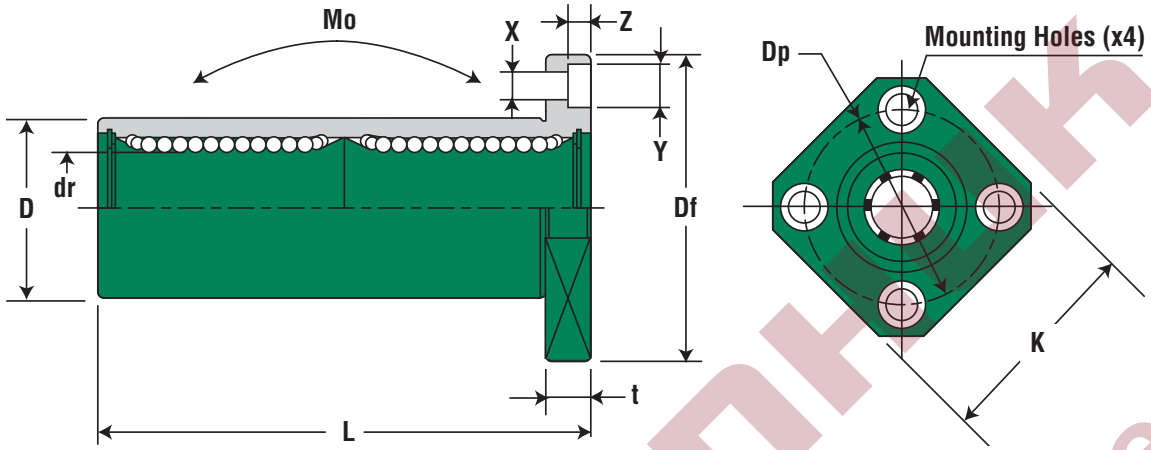
MAJOR DIMENSIONS & TOLERANCE							LOAD RATING		
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6 x 3.1	12	12	274	392	8
42	32	6	32	4.5 x 7.5 x 4.1			510	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
134	106	18	112	11 x 17 x 11.1	25	25	4,700	10,000	60





JPK-W 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	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	
60	JPK60GW		4,060	60	0 -20	90	0 -25	209	

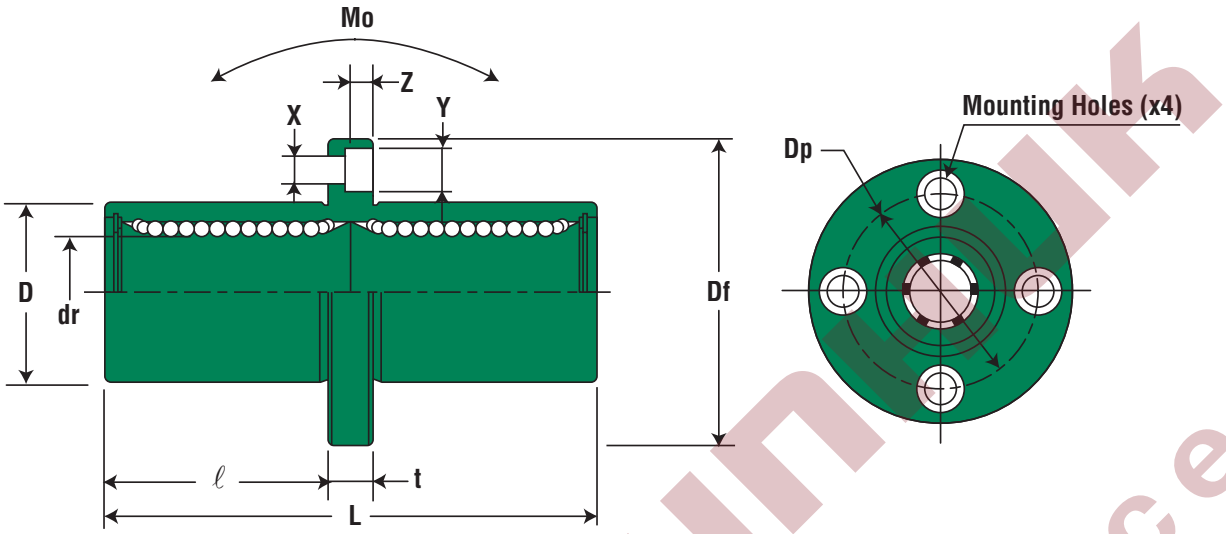


JPK-W SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

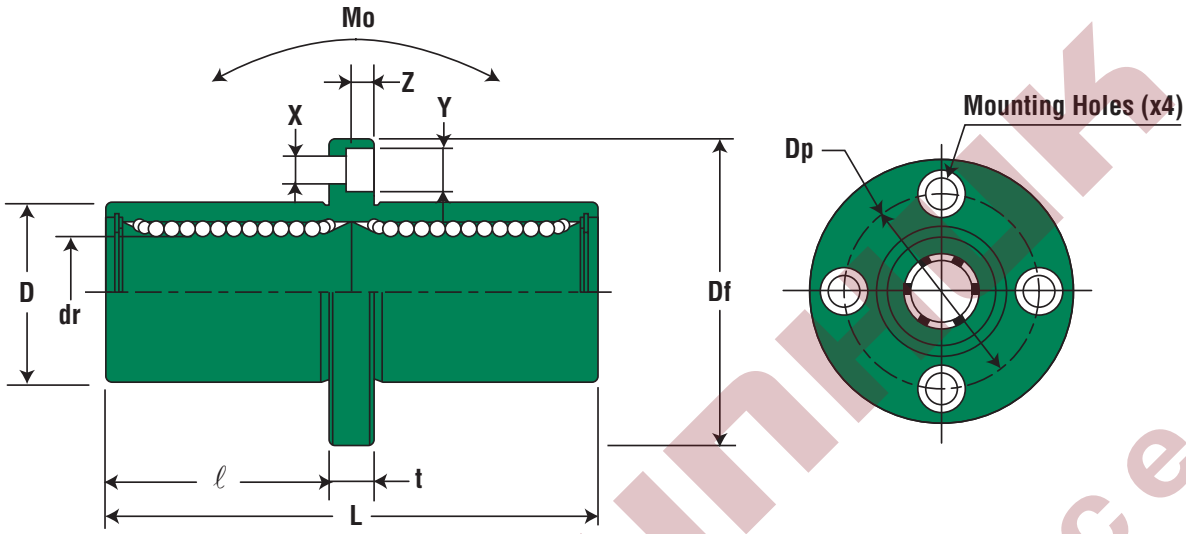
MAJOR DIMENSIONS & TOLERANCE							LOAD RATING			
Df (mm)	K (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	25	5	24	3.5 x 6 x 3.1	15	15	431	784	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
134	106	18	112	11 x 17 x 11.1	30	30	7,550	20,000	530	60

Flange Mount



JPFC 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)	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	0 -12	32	0 -19	80		36.0
25	JPFC25G	6	540	25		40		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
60	JPFC60G		4,500	60	0 -20	90	0 -25	209		95.5

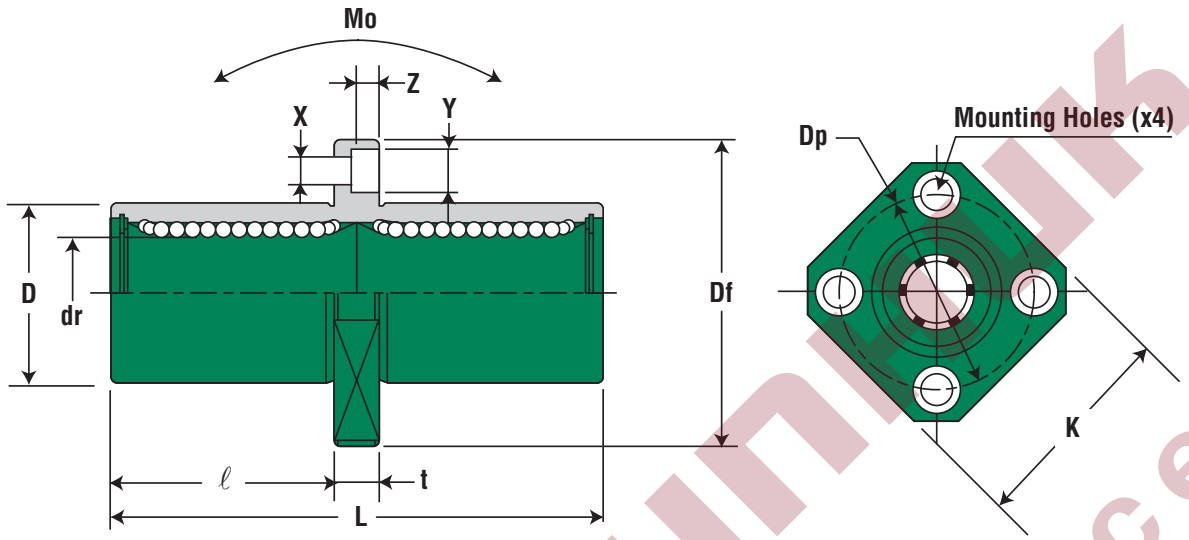


JPFC SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

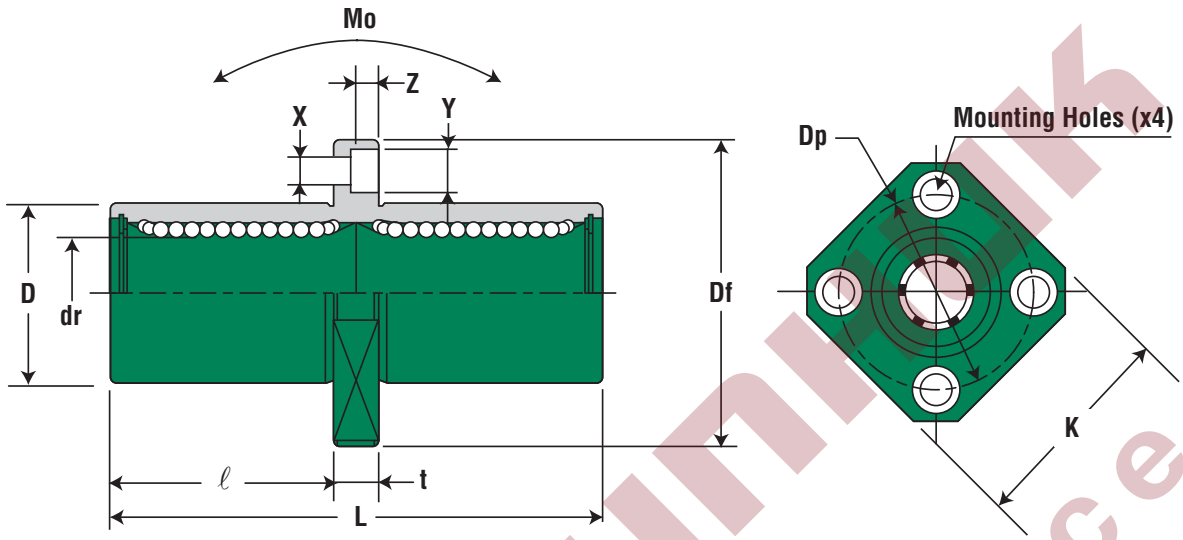
MAJOR DIMENSIONS & TOLERANCES						LOAD RATING			
Df (mm)	t (mm)	Dp (mm)	X x Y x Z (mm)	ECCENTRICITY ID to OD (inch/ µm)	PERPENDICULARITY FLANGE FACE to ID (inch/ µm)	DYNAMIC C (N)	STATIC Co (N)	ALLOWABLE STATIC MOMENT Mo (N-m)	NOMINAL SHAFT DIAMETER (mm)
32	5	24	3.5 x 6 x 3.1	15	15	431	784	4.3	8
42	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
134	18	112	11 x 17 x 11.1	30	30	7,550	20,000	530	60

Flange Mount



JPKC 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)	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	5	165	16		28		70		32
20	JPKC20G		225	20	0 -12	32	0 -19	80		36
25	JPKC25G		500	25		40		112		52
30	JPKC30G		590	30		45		123		56.5
40	JPKC40G	6	1,380	40	0 -15	60	0 -22	151		69
50	JPKC50G		3,400	50		80		192		89.5
60	JPKC60G		4,060	60	0 -20	90	0 -25	209		95.5



JPKC SERIES - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

MAJOR DIMENSIONS & TOLERANC							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
134	106	18	112	11 x 17 x 11.1	30	30	7,550	20,000	530	60

Flange Mount

PRODUCT OVERVIEW

- The Simplicity® ball bearing consists of an outer cylinder, ball retainer, balls 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 motion.

FEATURES

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.

ORDERING INFORMATION

IP	F	C	10	G	W	OP

Type
IP: Inch dimension series
EP: ISO metric dimension series
JP: JIS metric dimension series
KHP: ISO metric thin wall dimension series

Flange Type
F - Round flange
K - Square flange

Flange Type Center
FC - Round flange center mount
KC - Square flange center mount

Nominal Shaft Diameter

Retainer Material

Symbol	Specification
G	Polymer Cage

Symbol	Specification
W	Double wide

Modification

Symbol	Specification
No Entry	Standard Type
AJ	Adustable Type
OP	Open Type

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:

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

L : Rated life (km/in.)
C : Basic dynamic load rating (N/#)
P : Working load (N/#)
f_W : Load coefficient
f_H : Hardness factor (see page ???)
f_T : Temperature coefficient (see page ???)
f_C : Contact coefficient (see page ???)

The lifespan (Lh) 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:

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

L_h : Lifespan (hr)
L : Rated life (km/in.)
s : Stroke length (m/in.)
n_1 : Number of strokes per minute (cpm)

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 (Co).

Static Safety Factor (fs) -
This factor is used based on the application condition as shown in Table 1.

TABLE 1 - STATIC SAFETY FACTORS

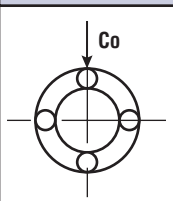
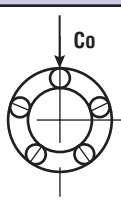
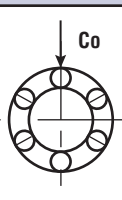
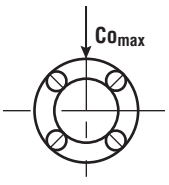
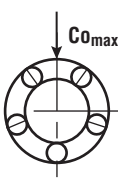
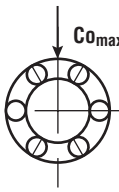
CONDITION OF USE	LOW LIMIT OF fs
When the shaft has less deflection and shock	1 to 2
When elastic deformation should be considered with respect to cantilever load	2 to 4
When the equipment is subject to vibration and impacts	3 to 5

Basic Static Load Rating (Co) -
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 time of the diameter of the rolling elements.

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:

Number of Rows	4	5	6
Co Load Rating Specified on the Tables			
Co_{max} Maximum Load Rating			
Load Ratio Co_{max}/Co	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 & 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
EP	High Precision	g6	h6	H7	J7
IP	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 decreases 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 that 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. Pacific Bearing 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.

FIG. 1

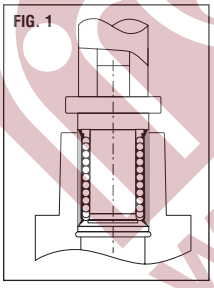


FIG. 2

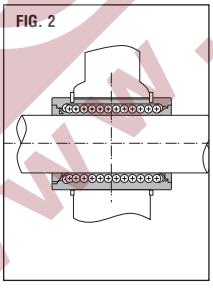


FIG. 3

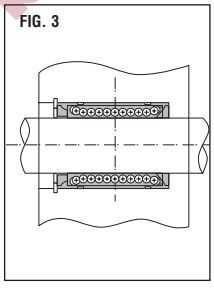


FIG. 4

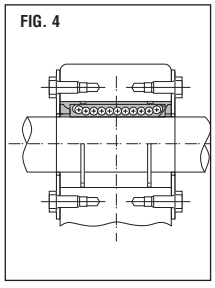


FIG. 5

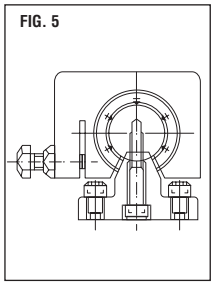
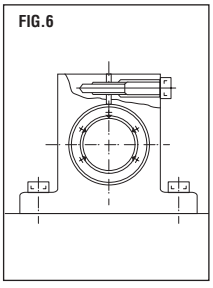


FIG.6



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 bellow 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:

For ball type: $L = \left(\frac{C}{p}\right)^3 \cdot 50$ ———— (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:

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

L : Rating life (km)

fh : Hardness factor (See Fig.1)

C : Basic dynamic load rating (N)

fr : Temperature coefficient (See Fig.2)

P : Load (N)

fc : Contact coefficient (See Table 2)

fw : 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

1. Obtaining the rated life L and lifespan Lh 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:

$$L = \left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{p}\right)^3 \cdot 50 \quad F_H=F_T=F_C=F_W=1.0$$

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

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

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

2. 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.....5spm
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: $f_C = 0.81$ $f_W = f_T = f_H = 1$

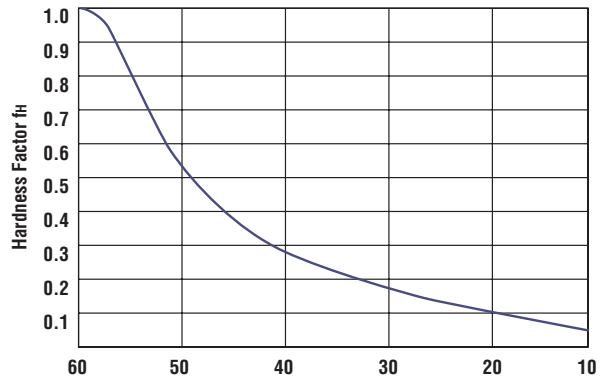
As a result, EP20G is selected from the dimension table as the Simplicity® linear ball bearing type satisfying the value of C.

RATING LIFE (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.

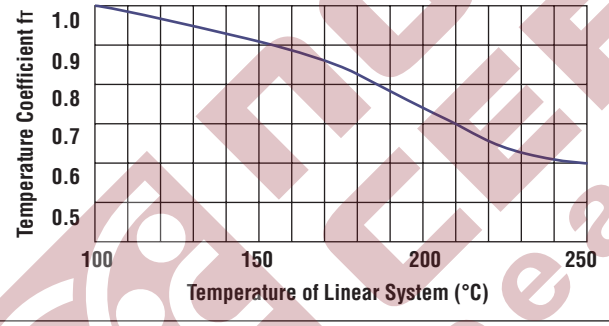
FIG. 1 - HARDNESS FACTOR



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.

FIG. 2 - TEMPERATURE COEFFICIENT



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

Contact Coeffcient (fc) -

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 fc
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

Load Coefficient (fw) -

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	fw
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:

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

TABLE 6 - AMBIENT WORKING TEMPERATURE

LINEAR SYSTEM TYPE	MODELS	AMBIENT WORKING TEMPERATURE
Linear Bushing	JP, EP, IP	-20 to 80°C, 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.

PRODUCT OVERVIEW

Pacific Bearing is a worldwide supplier of innovative linear and rotary motion solutions. Since our founding in 1982, when Pacific Bearing pioneered the first two-piece bonded Simplicity® linear bearing, we have built a solid reputation for providing innovative application solutions solving the toughest linear and rotary problems. The success and continued demand for the Simplicity® self-lubricated linear and rotary bearings, has broadened our market opportunities and fostered new product introductions. The Simplicity® product family has expanded to include thrust and sleeve bearings, die set bushings, square bearings, pillow blocks, and a complete line of European and Japanese metric bearings.

Today, Pacific Bearing's design innovation extends beyond plane bearings. The introduction of FrelonGOLD® bearing liner material in 1998, created the opportunity to introduce Feather Shafting - a new lightweight ceramic coated roundway shaft that is approximately 1/3 the weight of steel shafting plus, providing the smoothest and quietest linear and rotary motion. Combining both Simplicity® and Feather Shaft® technologies, Pacific Bearing created Dolphin Guides® and Mini Rail® Linear Guides. They feature our simple, cost effective, two-piece linear guides that afford the design engineer, integration, flexibility, and direct compatibility with competitive Linear Guide technologies.

Redi-Rail® was created to meet the industry demand for faster, lighter and quieter linear motion applications. Combining lightweight structural components, precision steel inner raceways, and high-speed self lubricated roller bearings; Redi-Rail delivers high-speed performance (8 meters/second), with continuous rail lengths available up to 19 feet (6m). Redi-Rail® Linear guides are also configured in V-Guide Systems to provide high speed, in moderate load capacity in harsh environments.

Hevi-Rail®, heavy-duty Linear Bearing Systems provide high load capacity and simple installation. Hevi-Rail is a sealed, self-lubricated bearing that is capable of addressing both radial and axial loads up to 41 KN. Utilizing Hevi-Rail combination bearings, coupled with our complete line of accessories; eliminates components, reduces installation time, and subsequently lowers costs.

Pacific Bearing now offers its linear motion components completely assembled in pre-engineered Systems, Slides and Stages. We also offer ball screw, lead screw, and belt drives in addition to linear motors, and cylinders. Catalogue systems are available in a few days and custom systems are also quickly available.

Pacific Bearing is proud to introduce its light-weight polymer sleeve and flange bearings to their product family. Polymer bearings are used in a variety of applications with specially formulated compounds with the following advantages:

Main advantages of plane polymer bearings:

- Absorb vibrations
- Anti-corrosive
- Chemically resistant
- Lightweight
- Provide additional functions (integral seals, grease retention pockets etc.)
- Highly economic because of:
  - 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

MAIN ADVANTAGES

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

Pacific Bearing 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

You can select exact dimensions from the separate dimension table.

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.

The advantages:

- 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.

Simplicity® Plane Bearings
Product Overview - Polymer Series

HIGH PERFORMANCE PLANE BEARINGS

High performance plane bearings are a specialty of Pacific Bearing, 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.

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

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

SPECIAL 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 are, for example:

- 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
- Sliding elements
- Casters
- Calotte bearings
- Spindle nuts
- Wipers

Our compound plane bearings 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
- Furniture
- Industrial engineering
- Pharmaceutical industry
- Conveyor technology
- Galvanization equipment
- Office equipment
- Automation

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 dispense with the use of glass fibers, which considerably enhances sliding performance and increases service life. Nevertheless, with synthetic fiber reinforcement the press-fit in housing shows increased temperature dependence. Hence, continuous use temperature should as a rule not exceed 60% of the maximum sliding surface temperature if special fixation offered or safety in the mounting arrangement is relinquished.

Our technical staff not only offer you a wide choice of materials but we can provide additional more 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.

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, graphite, PTFE
color		black	brown	dark grey	olive	grey	white	light brown
density	g/cm3	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	65	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	+150	+280	+200	+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
short 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 physiologically safe, corresponds to appropriate BGA/FDA recommendations.	High loads Strong Press-fit High temperatures
		STOCKED		PRODUCED TO ORDER				

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)

On inquiry we will give you a detailed chemicals resistance list.

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.

Pacific Bearing® is always extending its standard mold family and adding proprietary features to custom molds as well.

COMPOUND A

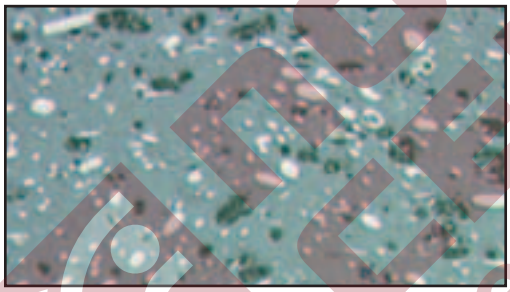
Characteristics:

- 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:

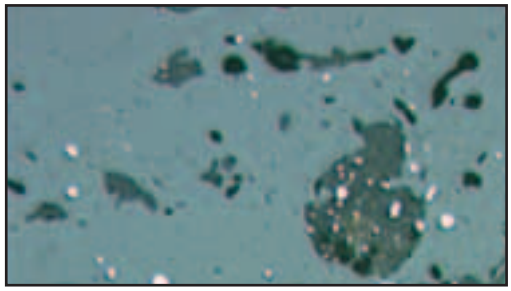
- Filled thermoplastic compound made of PBT polymer matrix and triboadditives
- Good sliding performance under moderate operational conditions
- The E standard program is interchangeable with bushings according to DIN1494/ISO3547
- Very cost-effective sliding material
- Recommended tolerance for press 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

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:

Dry	good
Oil lubricated	very good
Grease lubricated	good
Water lubricated	good
Medium	good

COMPOUND C

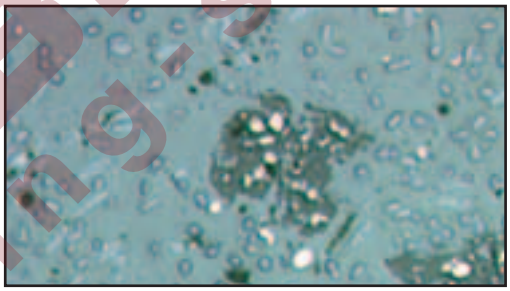
Characteristics:

- 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:

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

COMPOUND D

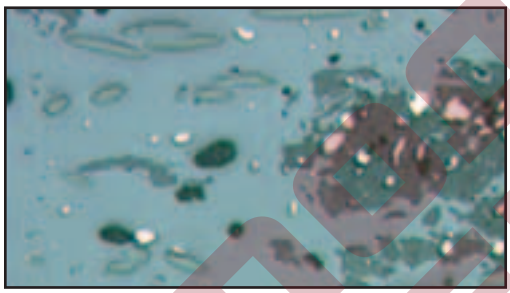
Characteristics:
- Thermoplastic compound made of PBT polymer matrix reinforced with long glass fibers and modified with triboadditives
- Good sliding performance under moderate operational conditions
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9
- Color: grey

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

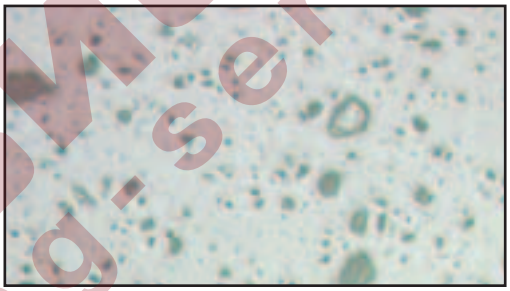
COMPOUND F

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 good.....good
Oil lubricated .....good
Grease lubricated.....good
Water lubricated .....less good
Medium lubricated .....less good

COMPOUND G

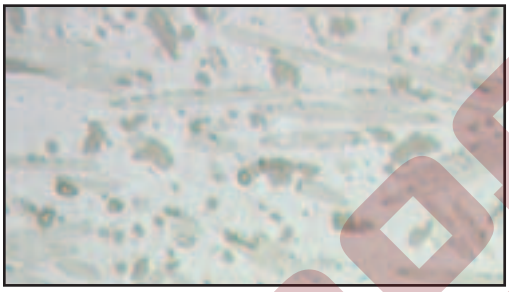
Characteristics:
- Thermoplastic compound made of PPS polymer matrix reinforced with glass fibers and triboadditives
- High hydrolysis and temperature resistance
- Good sliding performance under moderate operational conditions
- Recommended tolerance for press fit bushings: housing H7, shaft h7 - h9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

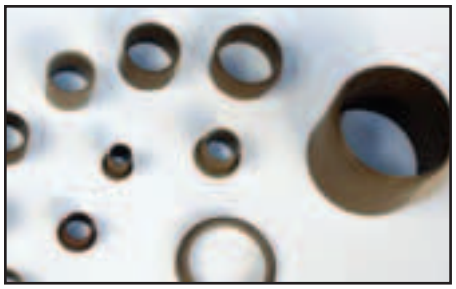
Material structure:
PPS + glass fibers + PTFE

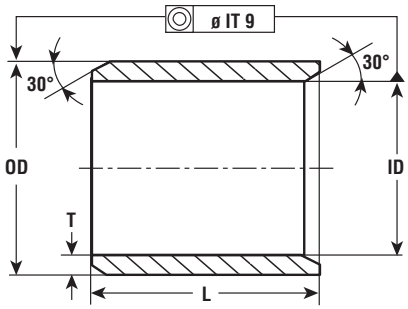


Grinding pattern G

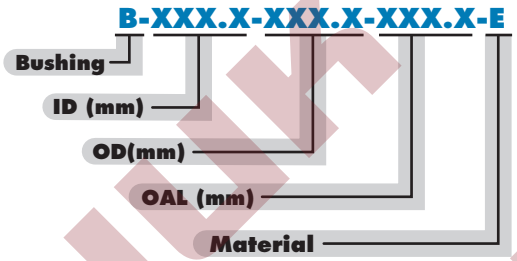
Operational conditions:

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

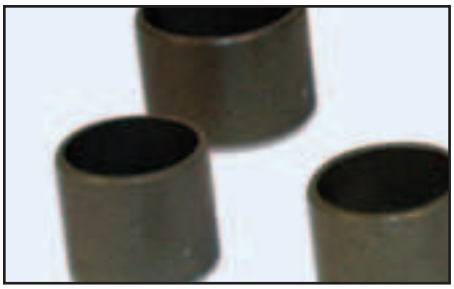


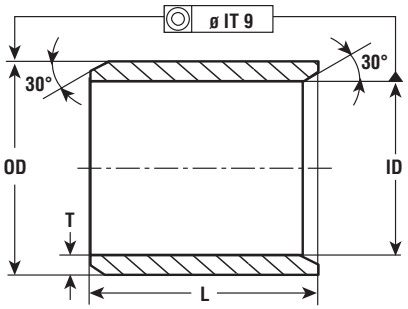


ORDERING INFORMATION

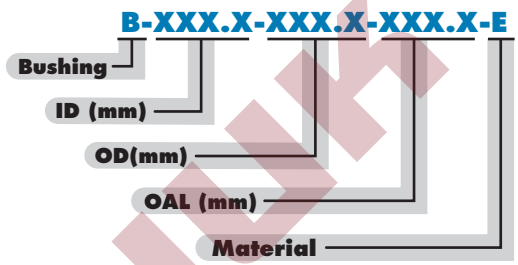


PART NUMBER	DIMENSIONS			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-002.0-003.5-003.0-E	2.0	3.5	3.0	0.03	+0.012 0	+0.046 +0.006
B-003.0-004.5-004.0-E	3.0	4.5	4.0	0.06		
B-003.0-004.5-006.0-E	3.0	4.5	6.0	0.09		
B-003.5-007.8-005.0-E	3.5	7.8	5.0	0.31	+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		+0.071 +0.013
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		

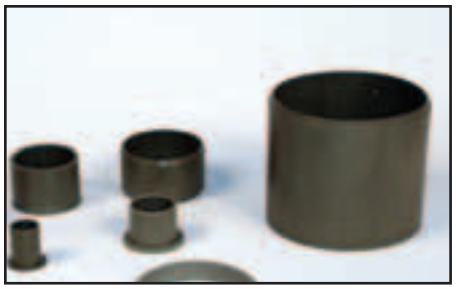


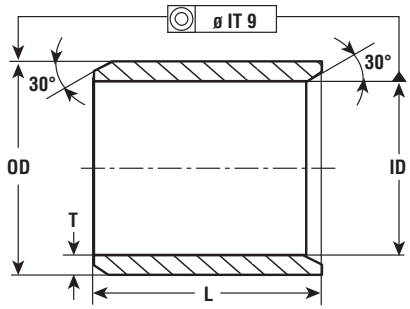


ORDERING INFORMATION

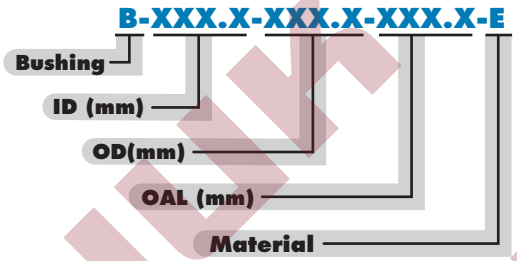


PART NUMBER	DIMENSIONS			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-012.0-016.0-012.0-E	12.0	16.0	12.0	1.74	+0.018 0	+0.086 +0.016
B-012.0-016.0-020.0-E	12.0	16.0	20.0	2.90		
B-012.0-017.0-020.0-E	12.0	17.0	20.0	3.76		
B-012.0-018.0-010.0-E	12.0	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		





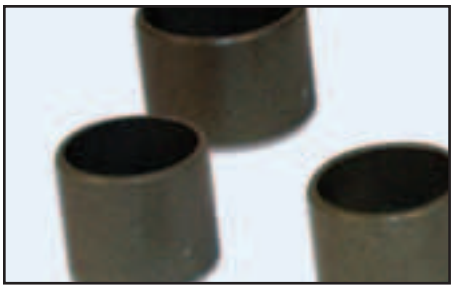
ORDERING INFORMATION

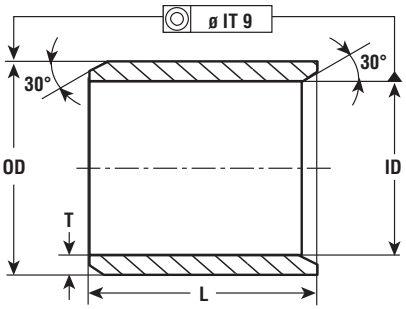


E

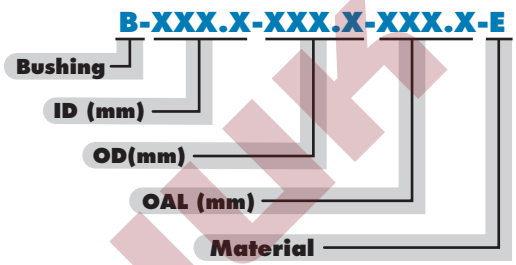
PART NUMBER	DIMENSIONS			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-022.0-025.0-015.0-E	22.0	25.0	15.0	2.74	+0.021 0	+0.104 +0.020
B-022.0-025.0-020.0-E	22.0	25.0	20.0	3.65		
B-022.0-025.0-025.0-E	22.0	25.0	25.0	4.57		
B-022.0-025.0-030.0-E	22.0	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	
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		+0.125 +0.025
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		

E

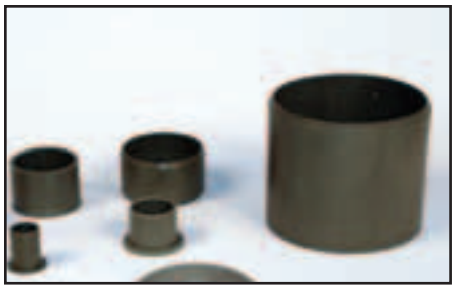


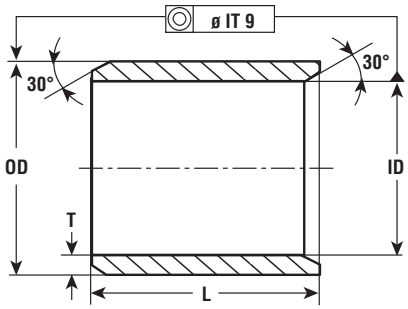


ORDERING INFORMATION

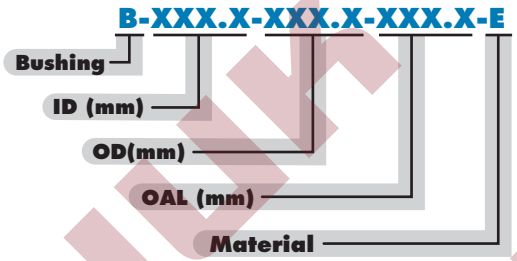


PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
B-032.0-036.0-050.0-E	32.0	36.0	50.0	17.62		
B-032.0-036.0-054.0-E	32.0	36.0	54.0	19.03		
B-032.0-038.0-042.0-E	32.0	38.0	42.0	22.86		
B-032.0-040.0-025.0-E	32.0	40.0	25.0	18.66		
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	+0.025 0	
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		+0.125 +0.025
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		
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	+0.030 0	
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		+0.150 +0.030
B-055.0-060.0-060.0-E	55.0	60.0	60.0	44.71		

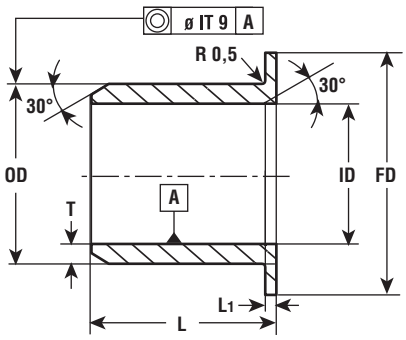




ORDERING INFORMATION



PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	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		
B-080.0-085.0-040.0-E	80.0	85.0	40.0	42.76	+0.035 0	
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		+0.176 +0.036
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		
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	+0.040 0	
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		+0.203 +0.043
B-125.0-130.0-060.0-E	125.0	130.0	60.0	99.14		
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		
B-195.0-200.0-014.0-E	195.0	200.0	14.0	35.83	+0.046 0	+0.235 +0.050

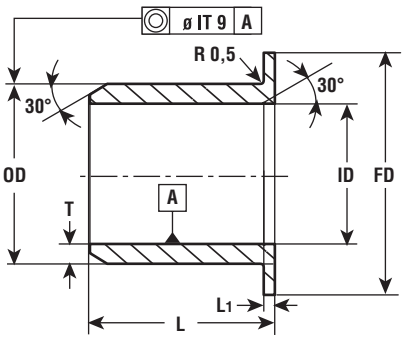


ORDERING INFORMATION

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

- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

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		+0.058 +0.010
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	
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		



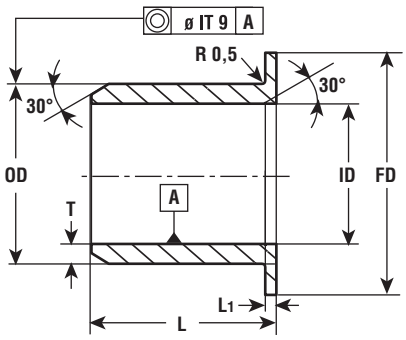
ORDERING INFORMATION

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

- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

Flanged E

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-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		
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	+0.021 0	
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		+0.104 +0.020
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		

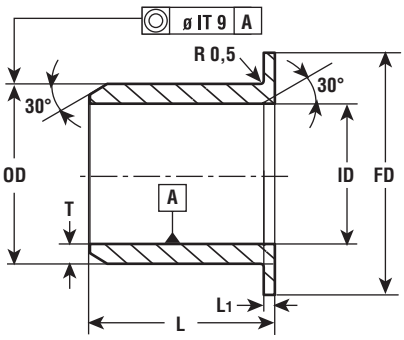


ORDERING INFORMATION

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

- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

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	
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		+0.125 +0.025
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

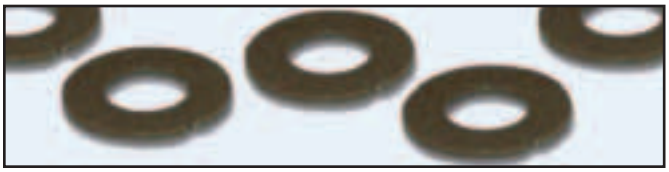
F-XXX-XXX.X-XXX.X-X.XX-XXX.X-E

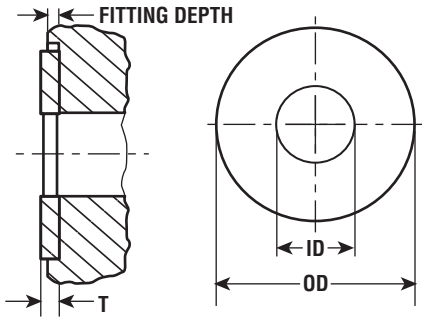
- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

Flanged E

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-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	
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		+0.150 +0.030
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		
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	+0.035 0	+0.176 +0.036
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		
F-140-145.0-160.0-2.50-040.0-E	140.0	145.0	160.0	2.50	40.0	88.69	+0.040 0	+0.203 +0.043
F-140-145.0-165.0-2.50-060.0-E	140.0	145.0	165.0	2.50	60.0	130.89		

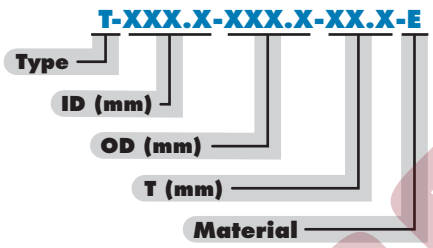
THRUST WASHERS WITHOUT MOUNTING HOLE



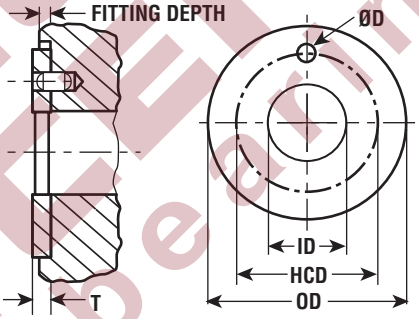


PART NUMBER	ID [mm]	OD [mm]	T [mm]	FITTING DEPTH [mm]	WEIGHT [g]
T-010.0-020.0-01.5-E	10.0	20.0	1.5	0.95 - 1.20	0.58
T-010.0-022.0-01.5-E	10.0	22.0	1.5	0.95 - 1.20	0.75
T-011.2-015.0-01.5-E	11.2	15.0	1.5	0.95 - 1.20	0.19
T-012.0-020.0-02.0-E	12.0	20.0	2.0	1.25 - 1.60	0.66
T-015.0-030.0-02.0-E	15.0	30.0	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

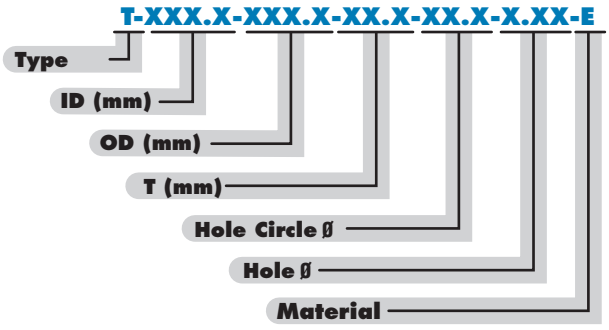
ORDERING INFORMATION



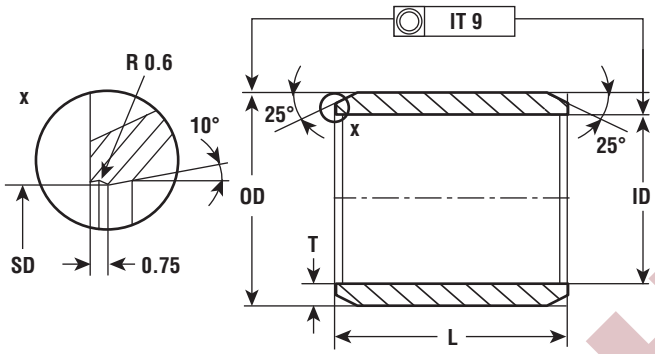
THRUST WASHERS WITH MOUNTING HOLE



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



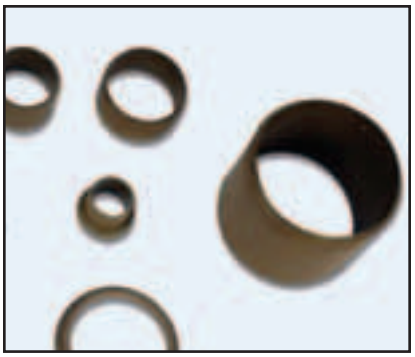
ORDERING INFORMATION

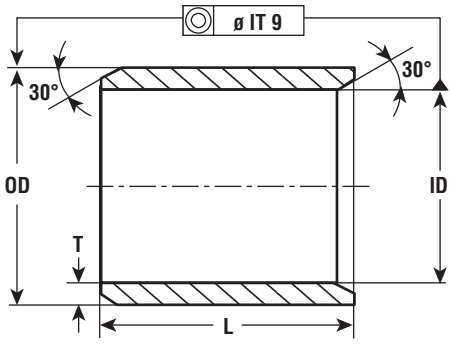
S-XXX.X-XXX.X-XX.X-E

- Type
- ID (mm)
- OD (mm)
- Length (mm)
- Material

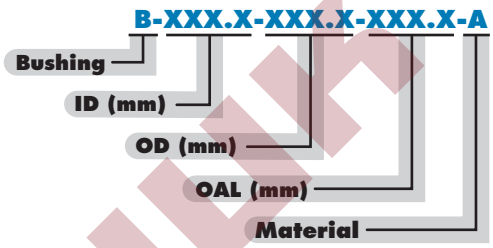
PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	HOUSING H7 [mm]	ID AFTER FITTING: F10 [mm]
S-040.0-044.0-025.0-E	40.0	44.0	25.0	10.9	+0.025 0	+0.125 +0.025
S-040.0-044.0-040.0-E	40.0	44.0	40.0	17.4		
S-045.0-050.0-030.0-E	45.0	50.0	30.0	18.5		
S-045.0-050.0-050.0-E	45.0	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	
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		+0.150 +0.030
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		
S-080.0-085.0-060.0-E	80.0	85.0	60.0	64.1	+0.035 0	
S-080.0-085.0-095.0-E	80.0	85.0	95.0	101.6		

Simplicity® Plane Bearings
Ultra High Temperature Resistant A - Polymer Series

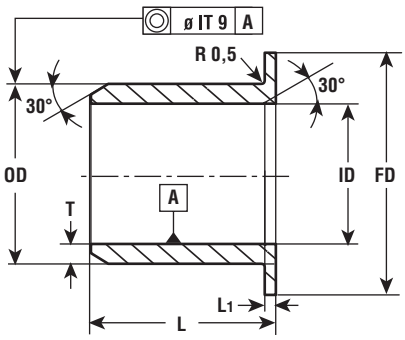




ORDERING INFORMATION



PART NUMBER	DIMENSION			WEIGHT	FITTING TOLERANCE	
	ID [mm]	OD [mm]	L [mm]	[g]	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		
B-005.0-007.0-015.0-A	5.0	7.0	15.0	0.42	+0.015 0	+0.058 +0.010
B-006.0-008.0-020.0-A	6.0	8.0	20.0	0.65		
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		
B-010.0-012.0-012.0-A	10.0	12.0	12.0	0.61		+0.071 +0.013
B-010.0-012.0-020.0-A	10.0	12.0	20.0	1.02		
B-012.0-014.0-020.0-A	12.0	14.0	20.0	1.21	+0.018 0	
B-014.0-016.0-012.0-A	14.0	16.0	12.0	0.84		
B-014.0-016.0-025.0-A	14.0	16.0	25.0	1.74		+0.086 +0.016
B-015.0-017.0-025.0-A	15.0	17.0	25.0	1.86		
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		
B-020.0-023.0-015.0-A	20.0	23.0	15.0	2.25	+0.021 0	
B-020.0-023.0-020.0-A	20.0	23.0	20.0	3.00		+0.104 +0.020
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		
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		
B-035.0-039.0-050.0-A	35.0	39.0	50.0	17.20	+0.025 0	
B-040.0-044.0-050.0-A	40.0	44.0	50.0	19.53		+0.125
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		
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	+0.030 0	
B-070.0-075.0-080.0-A	70.0	75.0	80.0	67.42		+0.150 +0.030
B-075.0-080.0-060.0-A	75.0	80.0	60.0	54.05		
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	+0.176 +0.036
B-100.0-105.0-090.0-A	100.0	105.0	90.0	107.23		

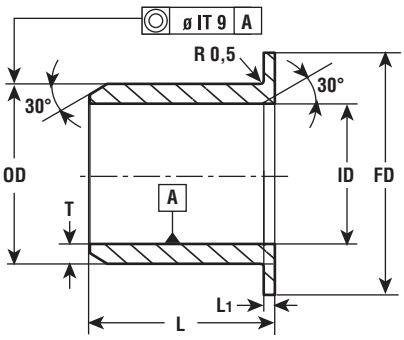


ORDERING INFORMATION

F-XXX-XXX.X-XXX.X-X.XX-XXX.X-A

- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

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		
F-005-007.0-011.0-1.00-005.0-A	5.0	7.0	11.0	1.00	5.0	0.22		+0.058 +0.010
F-006-008.0-012.0-1.00-010.0-A	6.0	8.0	12.0	1.00	10.0	0.42	+0.015 0	
F-008-010.0-015.0-1.00-009.5-A	8.0	10.0	15.0	1.00	9.5	0.54		
F-010-012.0-018.0-1.00-012.0-A	10.0	12.0	18.0	1.00	12.0	0.82		+0.071 +0.013
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	+0.018 0	
F-014-016.0-022.0-1.00-017.0-A	14.0	16.0	22.0	1.00	17.0	1.45		
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		+0.086 +0.016
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		
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	+0.021 0	
F-020-023.0-030.0-2.00-020.0-A	20.0	23.0	30.0	2.00	20.0	3.86		+0.104 +0.020
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		



ORDERING INFORMATION

F-XXX-XXX.X-XXX.X-X.XX-XXX.X-A

- Bushing
- ID (mm)
- OD (mm)
- FLG OD (mm)
- FLG (mm)
- Length (mm)
- Material

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-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		
F-035-039.0-050.0-2.00-040.0-A	35.0	39.0	50.0	2.00	40.0	16.04		+0.125 +0.025
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		
F-050-055.0-065.0-2.50-050.0-A	50.0	55.0	65.0	2.50	50.0	34.00	+0.030 0	
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		+0.150 +0.030
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		
F-080-085.0-095.0-2.50-080.0-A	80.0	85.0	95.0	2.50	80.0	81.95	+0.035 0	
F-090-095.0-110.0-2.50-090.0-A	90.0	95.0	110.0	2.50	90.0	105.70		+0.176 +0.036
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 suitible 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 in 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 m) and a minumum 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.

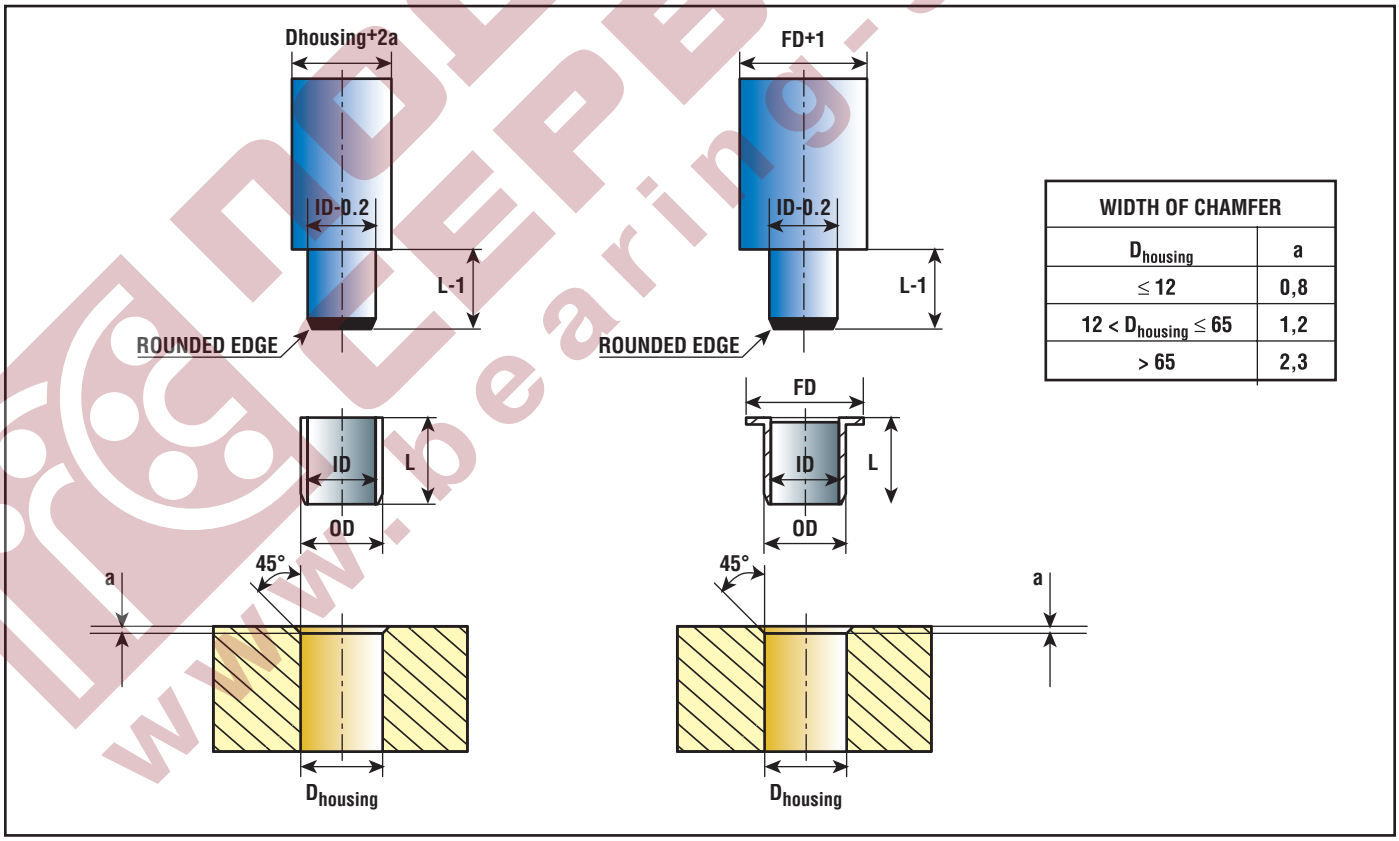
Milling, turning on a lathe, sawing or cutting can be done, however, please do not alter I.D.

LUBRICATION

Compound plane bearings are self-lubricating and therefor 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 < $D_{housing}$ ≤ 65	1,2
> 65	2,3

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	ϑ_{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:

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

SLIDING SPEED

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

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

or with oscillator movements result in:

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

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:

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

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.

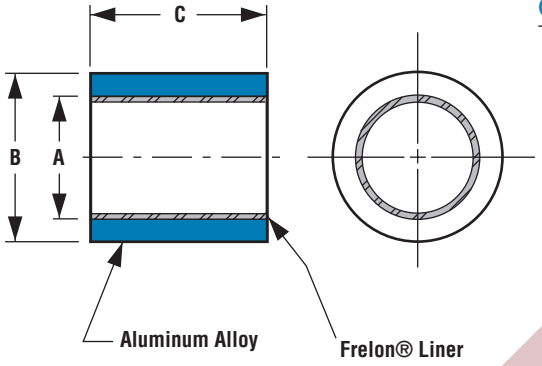
The following correction factors apply:

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

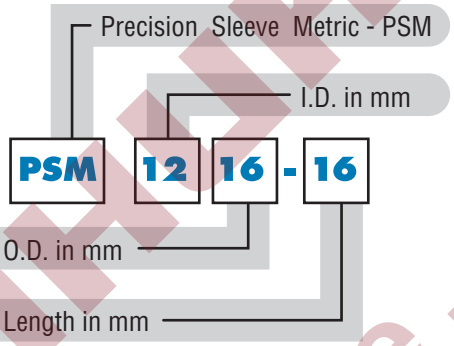
The following thermal conductivities have to be applied to the shaft material:

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

PSM SLEEVE BEARINGS



ORDERING INFORMATION

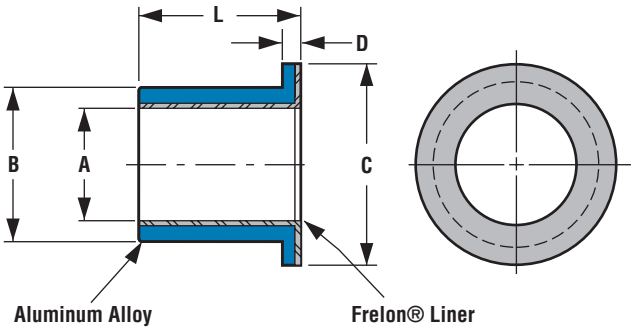


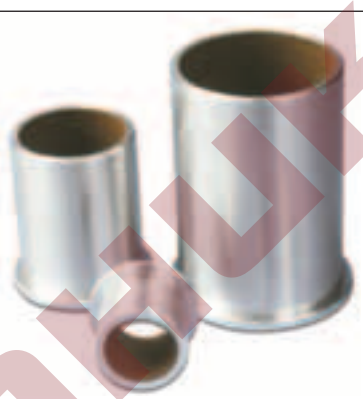
BASIC DIMENSIONAL INFORMATION

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 (kg.) FRELON		MAX. STATIC LOAD (N) FRELON		BEARING WEIGHT	RECOMMENED 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.
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





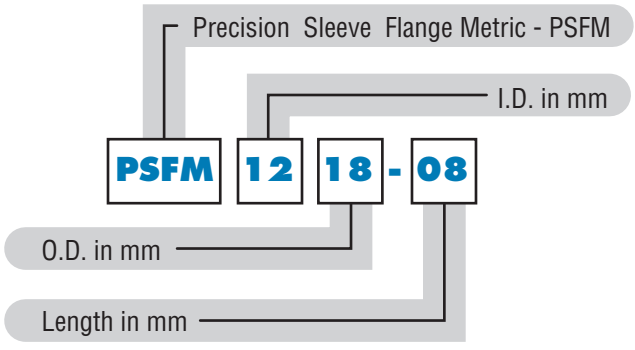
BASIC DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D. (S7)		C FLANGE O.D.	D FLANGE WIDTH	L LENGTH		MAX. STATIC LOAD (kg.) FRELON		MAX. STATIC LOAD (N) FRELON		BEARING WEIGHT	RECOMMENED HOUSING BORE			
																	SLIP FIT & EPOXY		PRESS FIT	
	I.D.	O.D.	LENGTH	MIN.	MAX.	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

1. 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.
2. 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.

FrelonGOLD® and FrelonJ® are registered trademarks of Pacific Bearing.

SIMPLICITY LINEAR SLIDES WILL EXCEL IN HARSH, CONTAMINATED ENVIRONMENTS

Simplicity slides are working 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

THREE BASIC DESIGNS FOR SIMPLICITY® LINEAR SLIDES

NOTE: All slides come standard with mounting plate, four pillow block assemblies, two steel shafts with corrosion resistant finish, two aluminum support rails.

HIGH PROFILE:

RS - comes with standard components

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

2RPS - same as "RPS" with ball screw and two ends supported 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

MODULAR COMPONENTS:

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

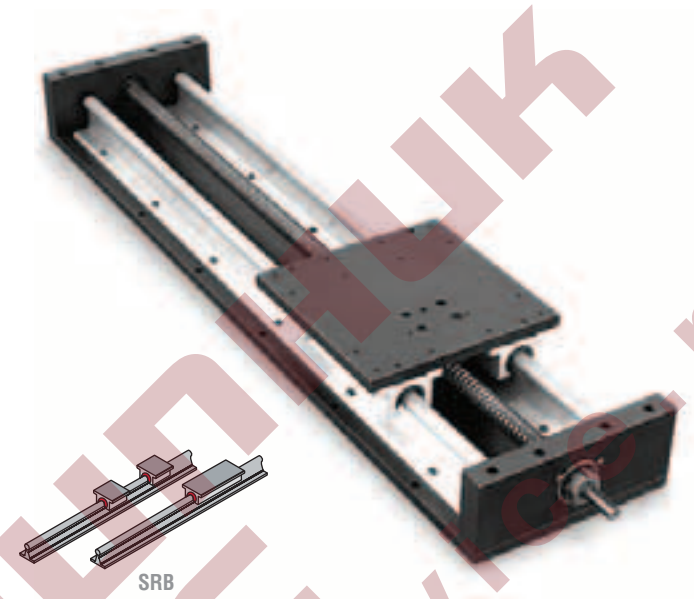
SRBT - support rail, guide bar, and one standard Simplicity pillow block

ACCESSORIES AVAILABLE:

Hand crank with ball screw lock, direct drive NEMA 23 & 34 motor bracket with constant velocity coupling, etc.

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.

Full product specifications are available at www.pacific-bearing.com

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

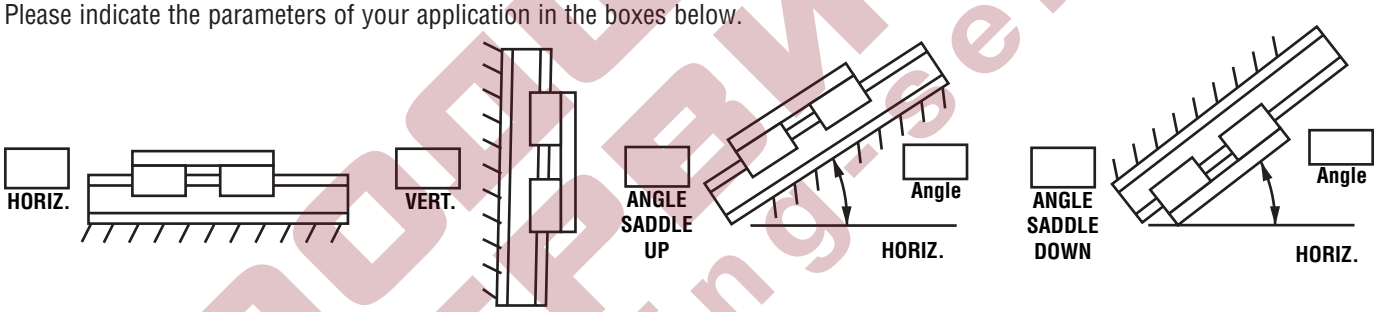
MODEL NUMBER

_____ – _____ – _____ – _____

Series Code | Size Code | Length Code | Ball Screw Lead Code

MOUNTING ORIENTATION

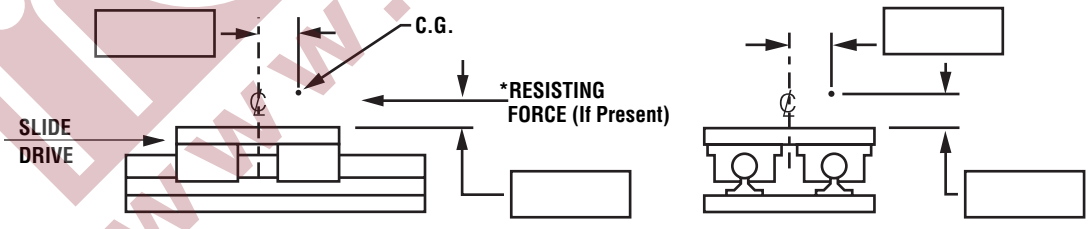
Please indicate the parameters of your application in the boxes below.



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.

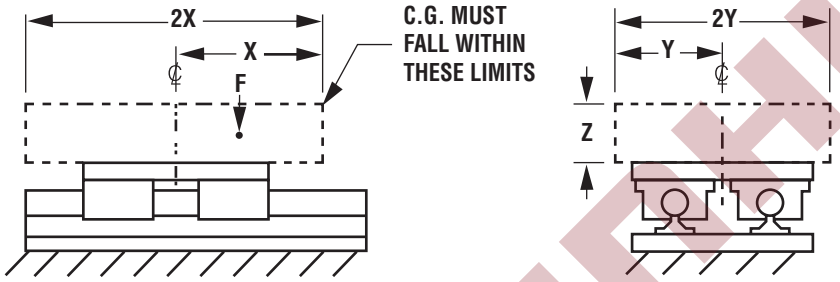
Life Requirement: _____ Strokes _____ Hours

LOAD CAPACITIES

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.

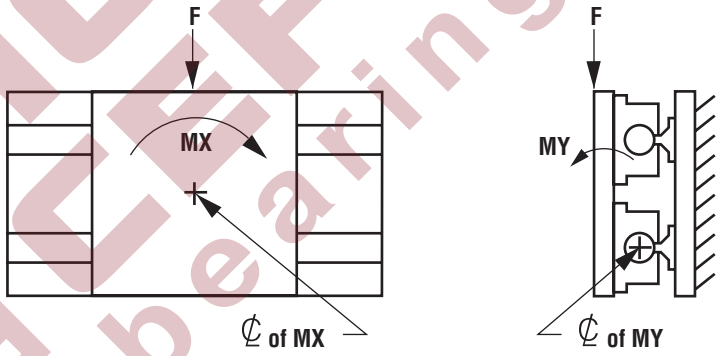
STANDARD MOUNTING



Recommended Safe Loading

SIZE	F MAX. (lbs.)	F MAX. (N)	X (in.)	Y (in.)	Z (in.)
08	1450	2402	4.00	2.37	3.00
10	2200	3381	4.75	2.76	3.50
12	2850	3737	5.00	2.85	4.00
16	5275	4671	5.50	3.37	4.50
20	7750	7784	6.75	4.05	5.50
24	10600	9341	7.86	4.90	6.50
32	18750	14679	10.75	6.00	9.00

SIDE MOUNTING

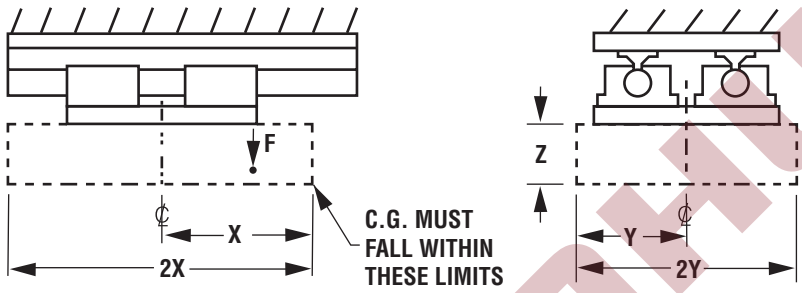


Recommended Safe Loading

SIZE	F MAX. (lbs.)	Mx (in.-lbs.)	My (in.-lbs.)	F MAX. (N)	Mx (Nm)	My (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 CAPACITIES (cont.)

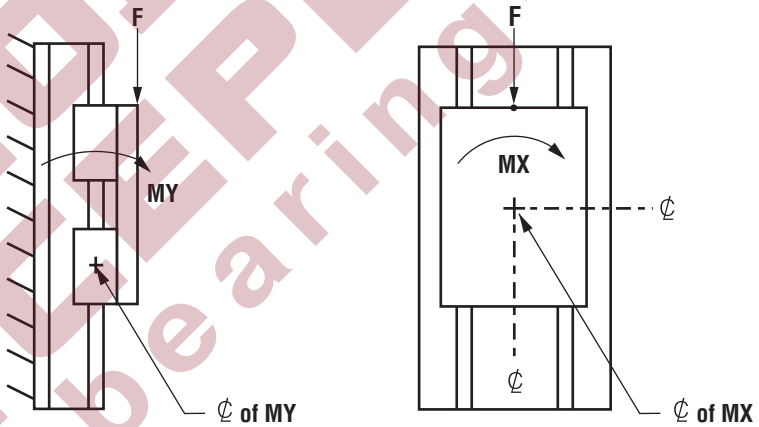
INVERTED MOUNTING



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

VERTICAL MOUNTING



Recommended Safe Loading

SIZE	F MAX. (lbs.)[1,2]	Mx (in.-lbs.)	My (in.-lbs.)	F MAX. (N)	Mx (Nm)	My (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

[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.

SRB – Preassembled Shaft, Rail, & Bearing

PART NUMBER

SERIES		SIZE				L
SRBXY	X	08	-	XX	-	XXX
SRBXY	X	10	-	XX	-	XXX
SRBXY	X	12	-	XX	-	XXX
SRBXY	X	16	-	XX	-	XXX
SRBXY	X	20	-	XX	-	XXX
SRBXY	X	24	-	XX	-	XXX
SRBXY	X	32	-	XX	-	XXX

Substitute "L" from standard length table for "XXX"
*Substitute "00"- Alloy Steel, "SS" - 440 Stainless Steel, or "CR" - Chrome Plated 303 SST for "XX"
Shaft diameter dimension in 1/16" increments
Enter "S" for single seals or "D" for double seals or leave blank for no seals
Substitute "B" for "X" - Ball Bearing
Pillow block style - substitute "2" for two single PN bearings, "C" for compensated
substitute "3" for three single PN bearings "T" for one twin PWN bearing for "Y"
"T2" for two twin PWN bearings for "Y"

DIMENSIONS

SHAFT DIA.	A	B	C	D	E_T	F_T	E_2	F_2	G	H	J	K	M	N	P	R	S
.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
.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
.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
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
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
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
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

All tabulated dimensions are in inches.

MATERIAL:

T-Rail supports - aluminum alloy
***Shafting -** Hardened steel alloy, SS 440 stainless steel and CR 303 SST
Simplicity Bearings - composite teflon and aluminum alloy
Simplicity Pillow Blocks - aluminum alloy
Screws, retaining rings, spring pins - steel alloy
NOTE: For lengths over 48", guide bars will be continuous, but rail supports will have a minimum of one break every 48".

ORDERING EXAMPLE:

To order an assembly with a .750 diameter shaft, support rail and one twin double sealed Simplicity bearing, with a length overall of 96.00", specify part number SRBTD-12-096.

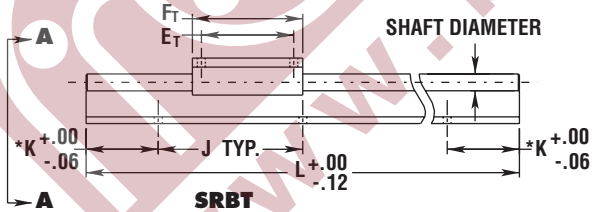
To order an assembly with a .625 diameter shaft, support rail and two single open Simplicity bearings without seals, with a length overall of 73.25", specify part number SRB2-10-073.25.

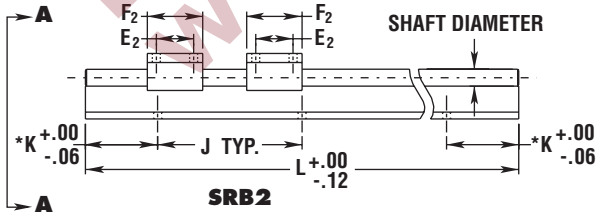
NOTE: Carry out all fractional lengths to two decimal places.

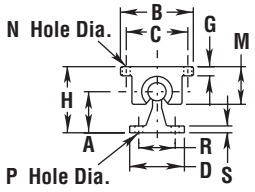
STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE 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

*Non-standard lengths are also available - see non-standard lengths ordering example.







VIEW A-A

*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(non-std) = (K(from chart) - (ΔL/2)).

Where ΔL = next longer standard length - desired length.

NOTES: Longer lengths are available - Consult Factory.
For Full Slide Assemblies, refer to www.pacific-bearing.com

RS – Rail Mounted Slide Assembly

PART NUMBER

SERIES			SIZE				L
RS	X	-	08	-	XX	-	XXX
RS	X	-	10	-	XX	-	XXX
RS	X	-	12	-	XX	-	XXX
RS	X	-	16	-	XX	-	XXX
RS	X	-	20	-	XX	-	XXX
RS	X	-	24	-	XX	-	XXX
RS	X	-	32	-	XX	-	XXX

Substitute “L” from standard length table for “XXX”
*Substitute “00”- Alloy Steel, “SS” - 440 Stainless Steel, or “CR” - Chrome Plated 303 SST for “XX”
Shaft diameter dimension in 1/16" in increments
Substitute “X” for “B” - Ball Bearing

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E	G	J	R	TAP	HOLE DIA.
.500	6.000	2.188	1.125	2.00	3.500	1.500	.375	5.500	4.000	1.000	10-24	.17
.625	7.000	2.375	1.125	2.50	4.000	1.625	.375	6.312	4.000	1.125	1/4-20	.19
.750	8.000	2.938	1.500	2.75	4.500	1.750	.500	7.125	6.000	1.250	1/4-20	.22
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
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
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
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

Lengths and mounting provisions to your specifications are available - consult factory.

All tabulated dimensions are in inches.

MATERIAL:

Aluminum Alloy - Top Plate, Rail Supports, Pillow Blocks

***Shafting -** Hardened steel alloy, SS 440 stainless steel and CR 303 SST

NOTE: For lengths over 48", guide bars will be continuous, but rail supports will have a minimum of one break every 48".

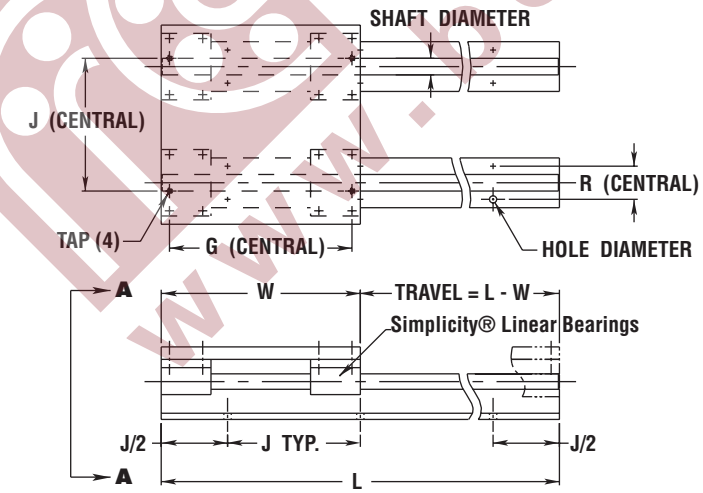
ORDERING EXAMPLE:

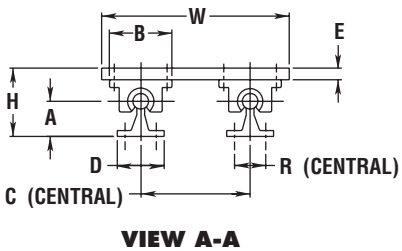
To order a slide with a .625 diameter shaft, and 28" travel, specify part number RS-10-028.

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE 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:** Longer lengths are available - consult factory.





VIEW A-A

RPS – Rail Mounted & Plate Supported Slide Assembly

PART NUMBER

SERIES			SIZE				L
RPS	X	-	08	-	XX	-	XXX
RPS	X	-	10	-	XX	-	XXX
RPS	X	-	12	-	XX	-	XXX
RPS	X	-	16	-	XX	-	XXX
RPS	X	-	20	-	XX	-	XXX
RPS	X	-	24	-	XX	-	XXX
RPS	X	-	32	-	XX	-	XXX

Substitute “L” from standard length table for “XXX”
Substitute “00”- Alloy Steel, “SS” - 440 Stainless Steel, or “CR” - Chrome Plated 303 SST for “XX”
Shaft diameter dimension in 1/16" increments
Substitute “X” for “B” - Ball Bearing

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	TAP	HOLE
.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	10-24	.22
.625	7.000	2.750	1.125	2.50	4.000	1.625	.375	1.00	6.312	4.000	1/4-20	.28
.750	8.000	3.438	1.500	2.75	4.500	1.750	.500	1.25	7.125	6.000	1/4-20	.28
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
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
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
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

Lengths and mounting provisions to your specifications are available - consult factory.

All tabulated dimensions are in inches.

MATERIAL:

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

Steel Alloy - Shafts with proprietary low friction corrosion resistant surface treatment.

ORDERING EXAMPLE:

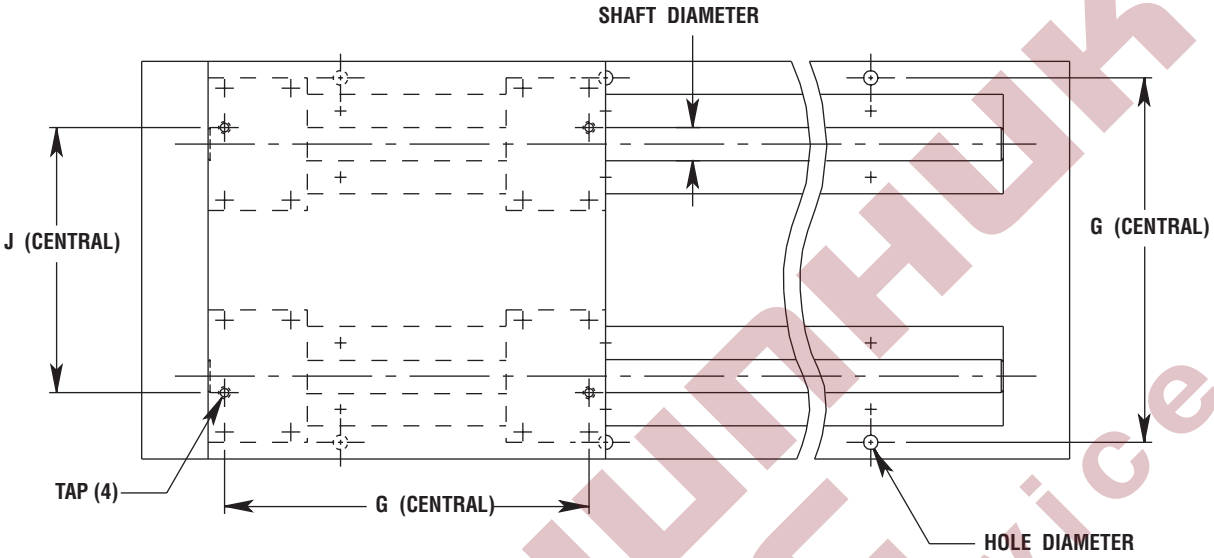
To order a slide with a .625 diameter shaft, and 28" travel, specify part number RPS-10-028.

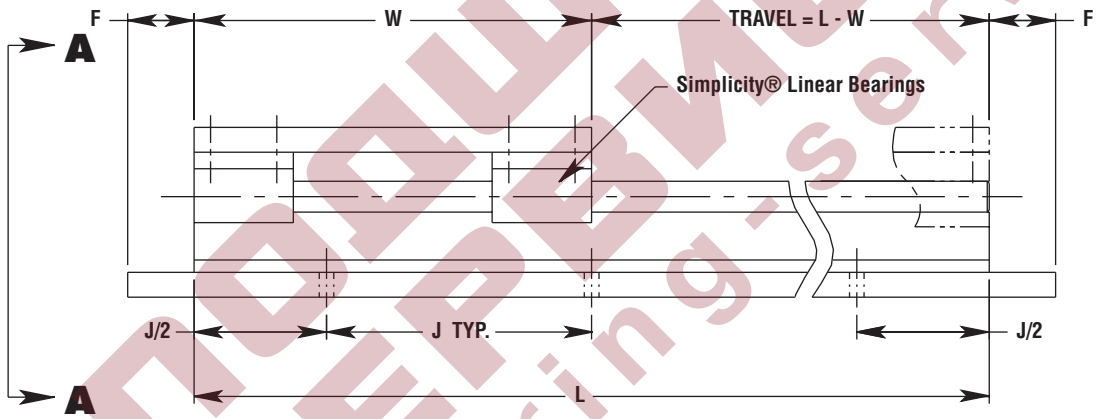
STANDARD LENGTH TABLE (Inches)

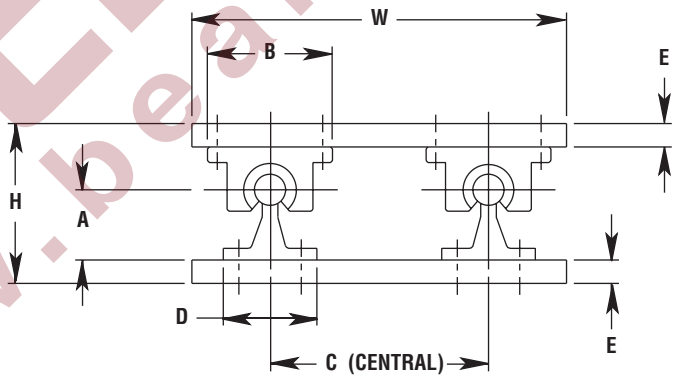
SIZE	AVAILABLE LENGTHS - L* (in inches)																														
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		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:** Longer lengths are available - consult factory.

RPS – Rail Mounted & Plate Supported Slide Assembly







VIEW A-A

RPS

1RPS – Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly
(Supported on one end)

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

PART NUMBER

SERIES			SIZE		L		LEAD
1RPS	X	-	08	-	XXX	-	YYY
1RPS	X	-	10	-	XXX	-	YYY
1RPS	X	-	12	-	XXX	-	YYY
1RPS	X	-	16	-	XXX	-	YYY
1RPS	X	-	20	-	XXX	-	YYY
1RPS	X	-	24	-	XXX	-	YYY
1RPS	X	-	32	-	XXX	-	YYY

Substitute standard or select lead code from table for “YYY”
Substitute “L” from standard length table for “XXX”
Shaft diameter dimension in 1/16" increments
Substitute “X” for “B” - Ball Bearing

MATERIAL:

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

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment.

ORDERING EXAMPLE:

To order a slide with a Ø.625 diameter shaft, 21.00" travel, .200" right hand select ball screw, specify part number 1RPS-10-028-AR1.

STANDARD LEAD TABLE

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	ERO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	ERO	DLO = 1.000 Left Hand
									ERO = 1.875 Right Hand

NOTE: Standard leads are accurate to less than .007" per foot accumulative.

SELECT LEAD TABLE

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	ER1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	ER1	DL1 = 1.000 Left Hand
									ER1 = 1.875 Right Hand

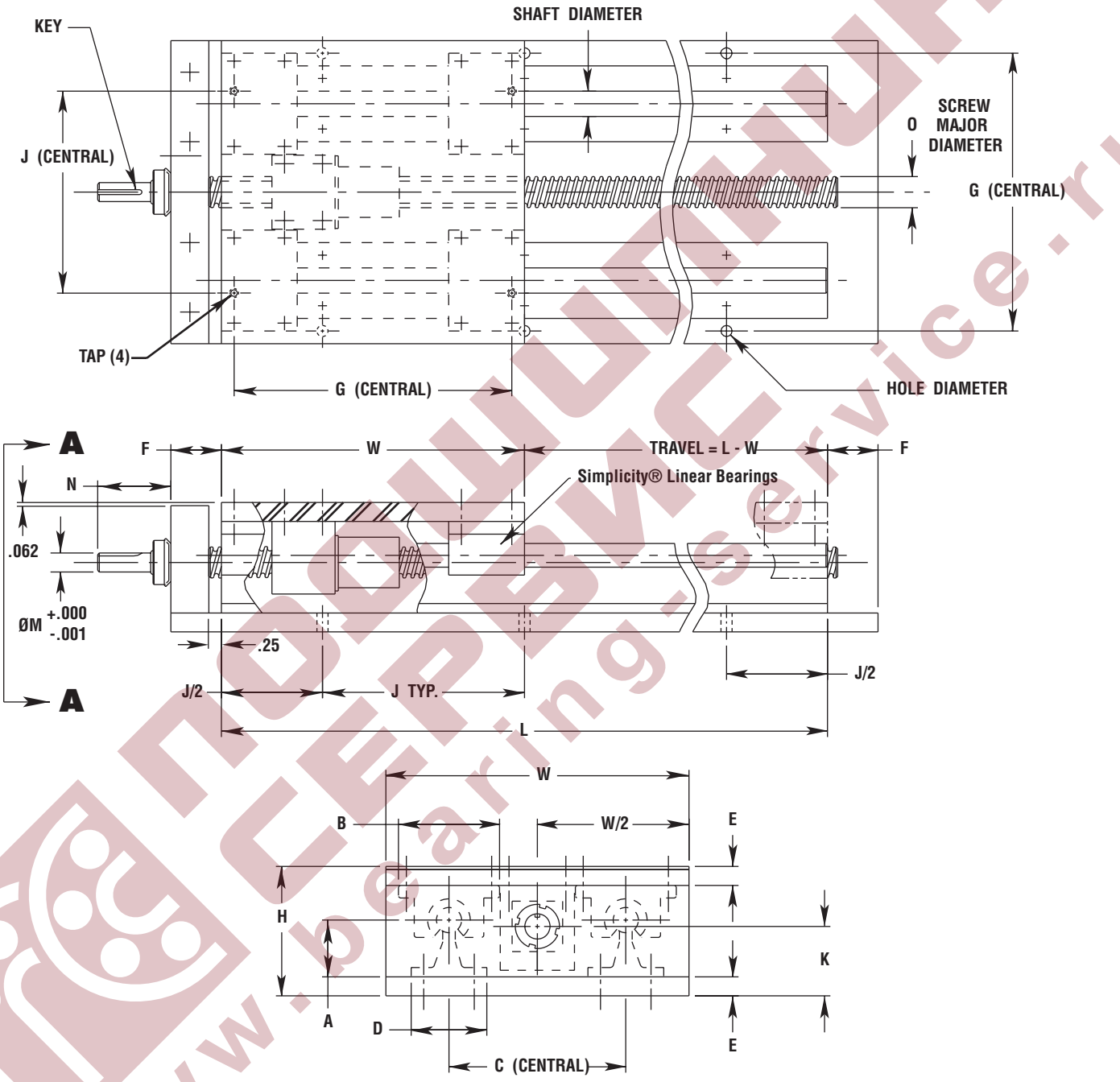
NOTE: Select leads are accurate to less than .003" per foot accumulative.

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE 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		048																	
24			016			024			032		040			048																	
32						024			032		040			048																	

***NOTE:** Longer lengths are available - consult factory.

1RPS – Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly
(Supported on one end)



VIEW A-A

2RPS – Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly
(Supported on both ends)

DIMENSIONAL INFORMATION

SHAFT DIA.	HOLE 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

PART NUMBER

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

Substitute standard or select lead code from table for “YYY”

Substitute “L” from standard length table for “XXX”

Substitute “00”- Alloy Steel, “SS”- 440 Stainless Steel, “CR”- Chrome Plated 303 SST for “XX”

Shaft diameter dimension in 1/16" increments

Substitute “X” for “B” - Ball Bearing

MATERIAL:

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

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment.

ORDERING EXAMPLE:

To order a slide with a Ø.625 diameter shaft, 21.00" travel, .200" right hand select ball screw - specify part number, 2RPS-10-028-AR1.

STANDARD LEAD TABLE

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	ERO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	ERO	DLO = 1.000 Left Hand
									ERO = 1.875 Right Hand

NOTE: Standard leads are accurate to less than .007" per foot accumulative.

SELECT LEAD TABLE

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	ER1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	ER1	DL1 = 1.000 Left Hand
									ER1 = 1.875 Right Hand

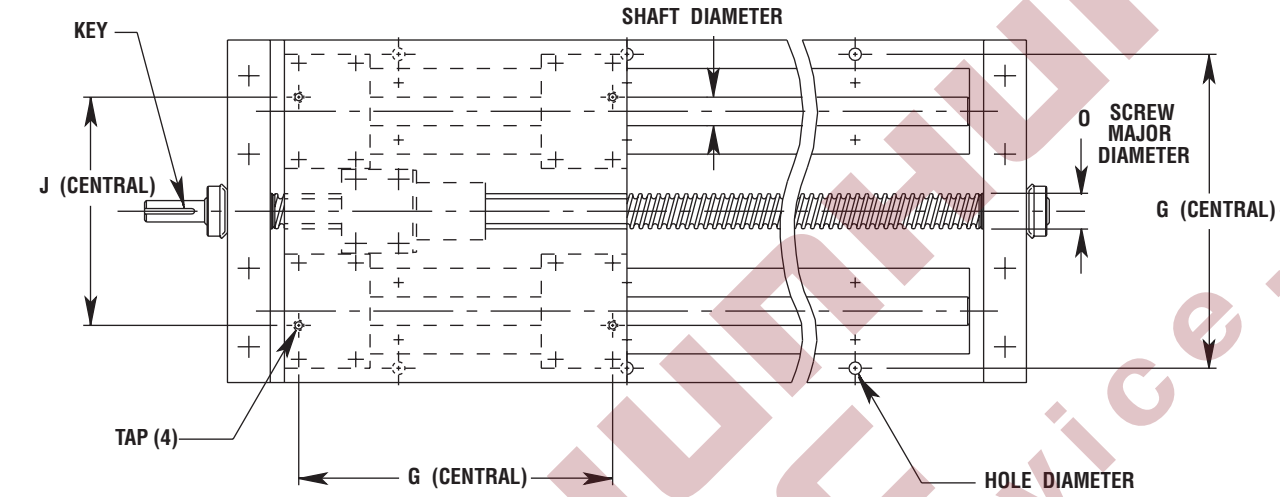
NOTE: Select leads are accurate to less than .003" per foot accumulative.

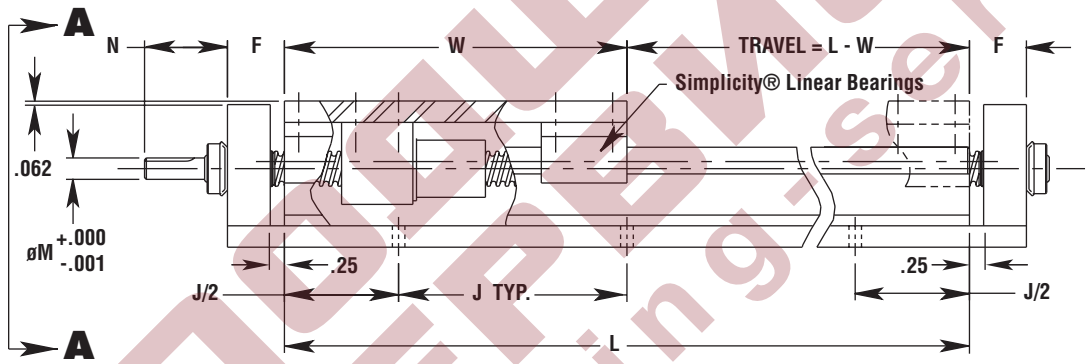
STANDARD LENGTH TABLE (Inches)

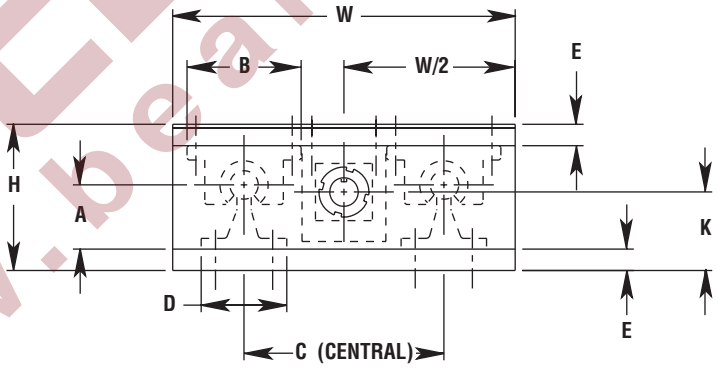
SIZE	AVAILABLE LENGTHS - L* (in inches)																												
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036		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:** Longer lengths are available - consult factory.

2RPS – Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly
(Supported on one end)







VIEW A-A

LRPS – Low Profile Rail Mounted & Plate Supported Slide Assembly

PART NUMBER

SERIES			SIZE				L
LRPS	X	-	08	-	XX	-	XXX
LRPS	X	-	10	-	XX	-	XXX
LRPS	X	-	12	-	XX	-	XXX
LRPS	X	-	16	-	XX	-	XXX
LRPS	X	-	20	-	XX	-	XXX
LRPS	X	-	24	-	XX	-	XXX
LRPS	X	-	32	-	XX	-	XXX

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J	TAP	HOLE DIA.
.500	6.000	2.000	.563	2.00	3.500	.37	.375	1.00	5.500	4.000	10-24	.22
.625	7.000	2.313	.688	2.50	4.000	.45	.375	1.00	6.312	4.000	1/4-20	.28
.750	8.000	2.688	.750	2.75	4.500	.51	.500	1.25	7.125	6.000	1/4-20	.28
1.000	9.000	3.188	1.000	3.25	5.500	.69	.500	1.25	8.312	6.000	1/4-20	.28
1.250	11.000	4.188	1.188	4.00	6.500	.78	.750	1.50	10.000	6.000	5/16-18	.34
1.500	13.000	4.625	1.375	4.75	8.000	.93	.750	1.50	12.000	8.000	5/16-18	.34
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

Substitute “L” from standard length table for “XXX”
Substitute “00”- Alloy Steel, “SS” - 440 Stainless Steel, or “CR”- Chrome Plated 303 SST for “XX”
Shaft diameter dimension in 1/16" increments
Substitute “X” for “B” - Ball Bearing

Lengths and mounting provisions to your specifications are available - consult factory.

All tabulated dimensions are in inches.

MATERIAL:

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

Steel Alloy - Shafting with proprietary low friction corrosion resistant surface treatment.

ORDERING EXAMPLE:

To order a slide with a .625 diameter shaft, and 28" travel, specify part number LRPS-10-028.

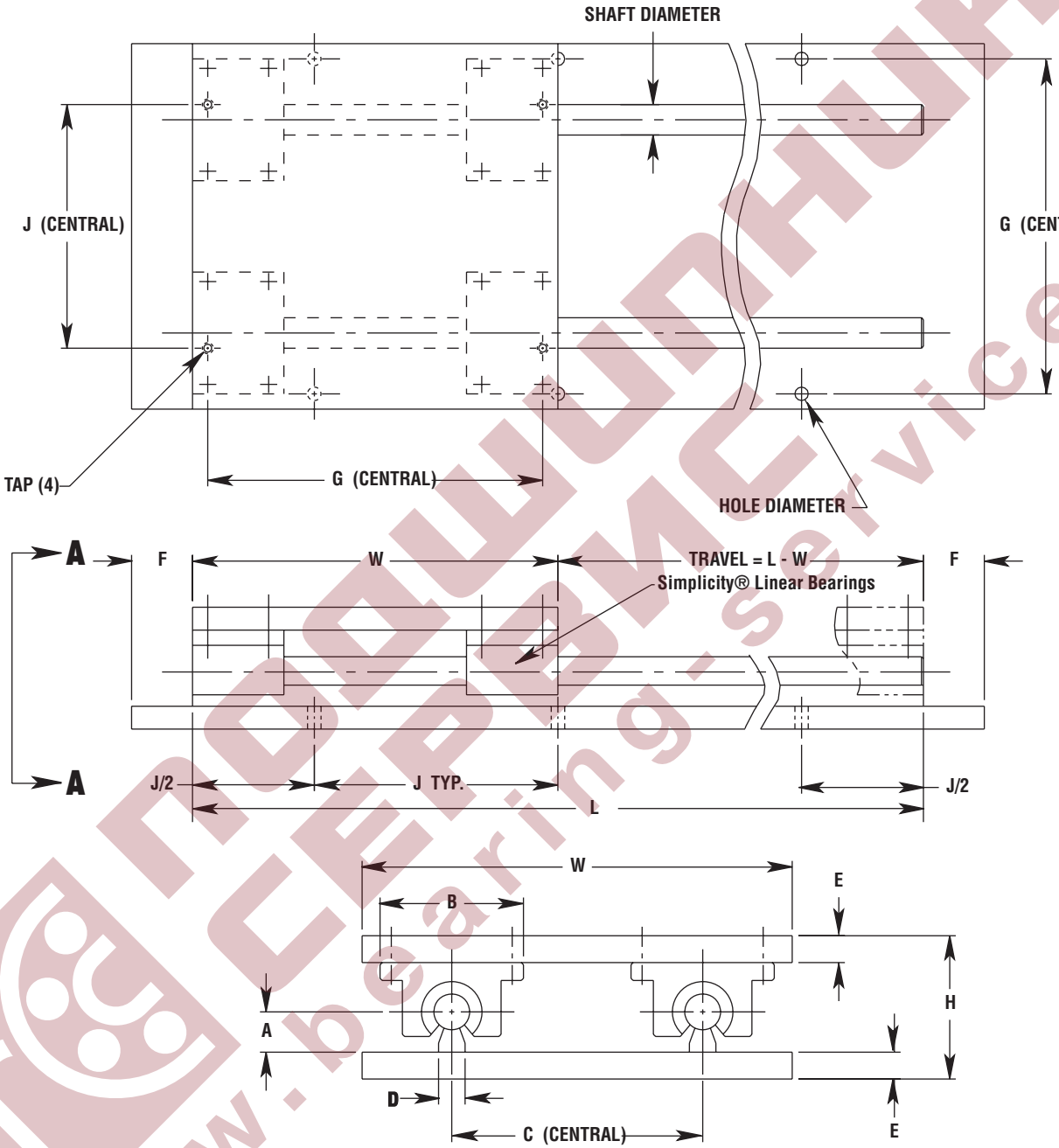
STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE 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:** Longer lengths are available - consult factory.

LRPS

LRPS – Low Profile Rail Mounted & Plate Supported Slide Assembly



VIEW A-A

2LRPS – Low Profile Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly (Supported on Both Ends)

DIMENSIONAL INFORMATION

SHAFT DIA.	HOLE W	H	A	B	C	D	E	F	G	J	K	M	N	O	P	TAP	DIA.	KEY
0.500	6.0	2.000	0.563	2.00	3.5	0.37	0.375	1.00	5.50	4.0	1.000	0.38	1.45	0.63	0.031	10-24	.22	3/32 sq X 5/8 lg
0.625	7.0	2.313	0.688	2.50	4.0	0.45	0.375	1.00	6.31	4.0	1.156	0.38	1.45	0.63	0.031	1/4-20	.28	3/32 sq X 5/8 lg
0.750	8.0	2.688	0.750	2.75	4.5	0.51	0.500	1.25	7.13	6.0	1.344	0.38	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	0.63	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	0.63	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	1.00	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	1.00	2.31	1.50	0.062	3/8-16	.41	1/4 sq X 1.62 lg

PART NUMBER

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

Substitute standard or select lead code from table for “YYY”

Substitute “L” from standard length table for “XXX”

Substitute “00”- Alloy Steel, “SS” - 440 Stainless Steel, or “CR”- Chrome Plated 303 SST for “XX”

Shaft diameter dimension in 1/16" increments

Substitute “X” for “B” - Ball Bearing

MATERIAL:

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

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment.

ORDERING EXAMPLE:

To order a slide with a Ø.625 diameter shaft, 28" travel, .200" right hand select ball screw - specify part number, 2LRPS-10-028-AR1.

STANDARD LEAD TABLE

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	ERO	DRO = 1.000 Right Hand
32			BRO	BLO	CRO	DRO	DLO	ERO	DLO = 1.000 Left Hand
									ERO = 1.875 Right Hand

NOTE: Standard leads are accurate to less than .007" per foot accumulative.

SELECT LEAD TABLE

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	ER1	DR1 = 1.000 Right Hand
32			BR1	BL1	CR1	DR1	DL1	ER1	DL1 = 1.000 Left Hand
									ER1 = 1.875 Right Hand

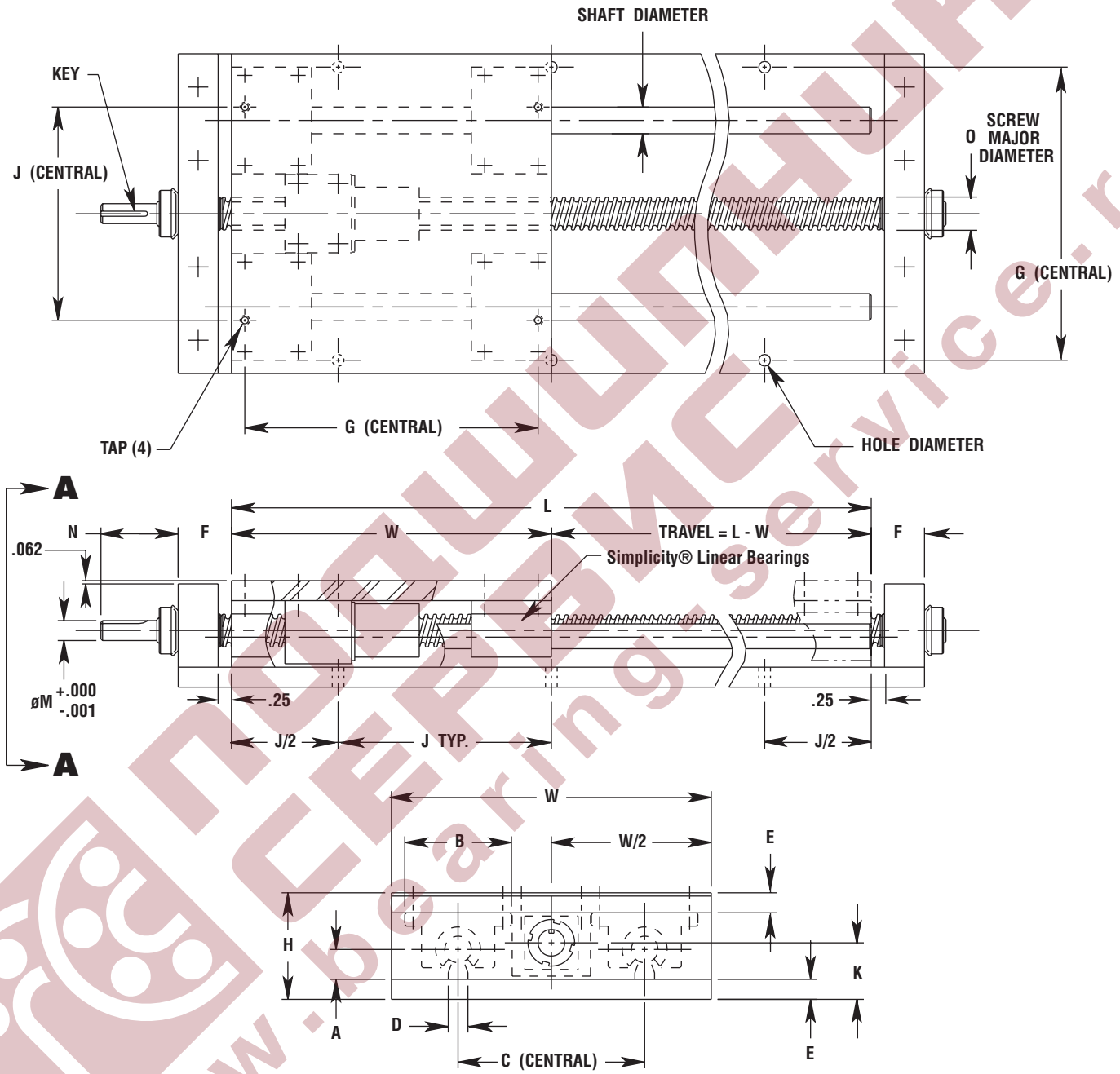
NOTE: Select leads are accurate to less than .003" per foot accumulative.

STANDARD LENGTH TABLE (Inches)

SIZE	AVAILABLE 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

* Longer lengths are available - consult factory.

2LRPS – Low Profile Rail Mounted & Plate Supported Ball Screw Driven Slide Assembly (Supported on Both Ends)



VIEW A-A

SC2RPS – Self-Centering Slide Assembly

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

PART NUMBER

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

Substitute "X" for "B" - Ball Bearing

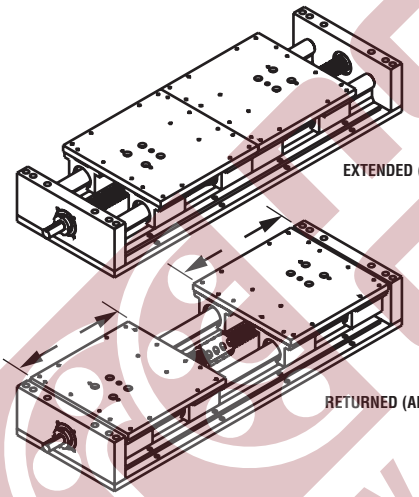
MATERIAL:

Aluminum Alloy - Top and bottom plates, rail supports, and pillow blocks.

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment. Rolled ball screw, ball nut assembly, and rigid coupling.

Substitute "00"- Alloy Steel, "SS" - 440 Stainless Steel, or "CR"- Chrome Plated 303 SST for "XX"

ORDERING EXAMPLE: SC2RPS-10-056-ALR1



Shaft diameter in 1/16" increments (10/16 = .625")

STANDARD & SELECT - BALL SCREW LEAD CODE TABLE

SIZE	AVAILABLE LEAD CODE		
08	ALR?		
10	ALR?		
12	ALR?		
16		BLR?	
20		BLR?	
24		BLR?	DLR?
32		BLR?	DLR?

Replace ? with 0 for standard lead accurate to less than .007" per foot accumulative

Replace ? with 1 for standard lead accurate to less than .003" per foot accumulative

LEAD CODES

ALR? = .200 Leads
BLR? = .250 Leads
DLR? = 1.000 Leads

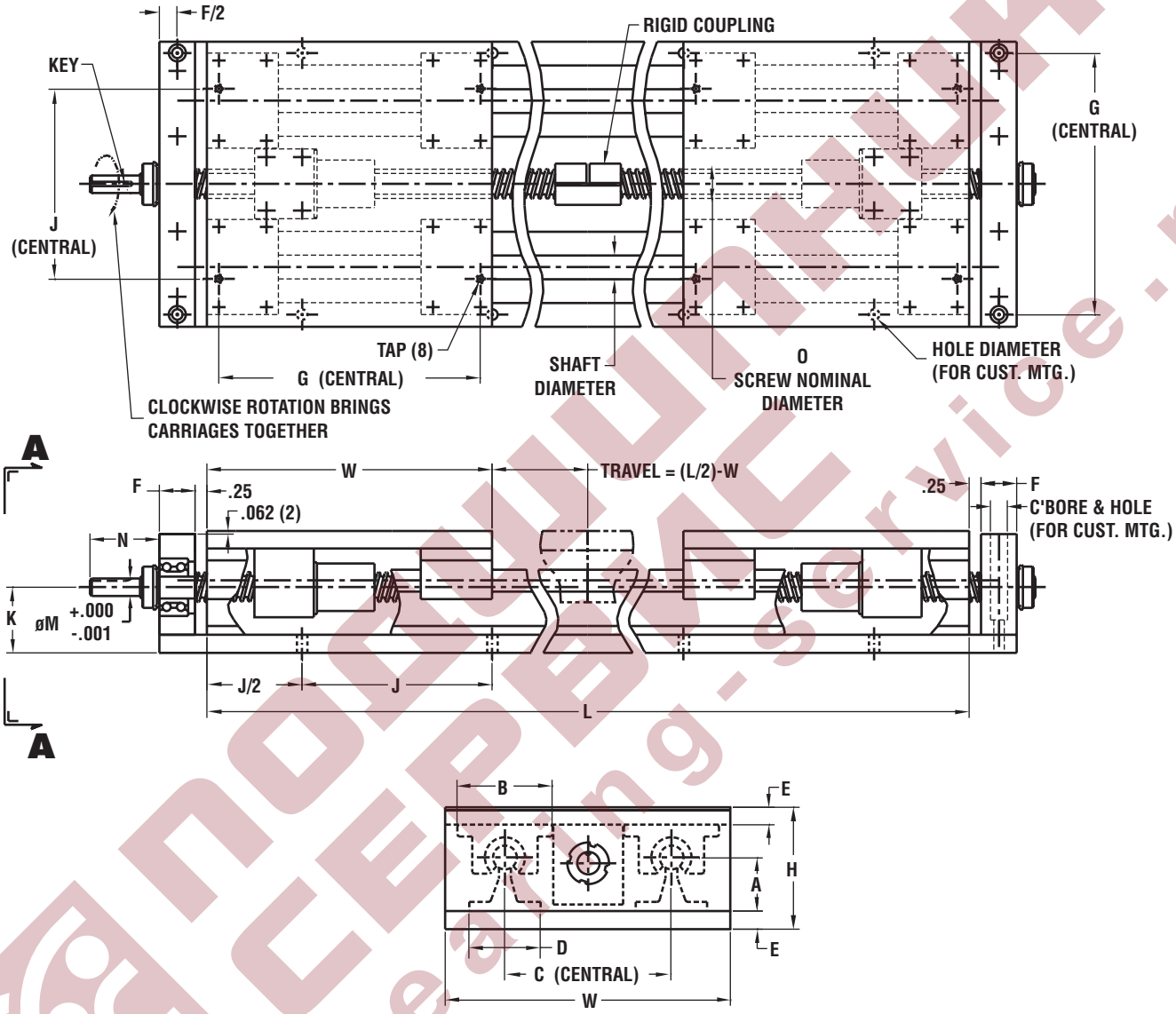
One left and one right hand lead ballscrew on each self-centering slide assembly.

STANDARD LENGTH TABLE (Inches)

SIZES	AVALIABLE 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:** Longer lengths are available - consult factory.

SC2RPS – Self-Centering Slide Assembly



VIEW A-A

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

PART NUMBER

SERIES		SIZE		L		LEAD
2HXXX	-	08	-	XXX	-	YYY
2HXXX	-	10	-	XXX	-	YYY
2HXXX	-	12	-	XXX	-	YYY
2HXXX	-	16	-	XXX	-	YYY
2HXXX	-	20	-	XXX	-	YYY
2HXXX	-	24	-	XXX	-	YYY
2HXXX	-	32	-	XXX	-	YYY

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E	F	G	J
.500	6.000	2.562	1.125	2.00	3.500	1.50	.375	.75	5.500	4.000
.625	7.000	2.750	1.125	2.50	4.000	1.62	.375	.75	6.312	4.000
.750	8.000	3.438	1.500	2.75	4.500	1.75	.500	1.00	7.125	6.000
1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500	1.00	8.312	6.000
1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750	1.25	10.000	6.000
1.500	13.000	5.750	2.500	4.75	8.000	3.00	.750	1.25	12.000	8.000
2.000	18.000	7.375	3.250	6.00	10.000	3.75	1.000	1.50	15.875	8.000

Substitute "X" for "B" - Ball Bearing

MATERIAL:
Aluminum Alloy -Top and bottom plates, rail supports, and pillow blocks.
Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment. Rolled ball screw and ball nut assembly.

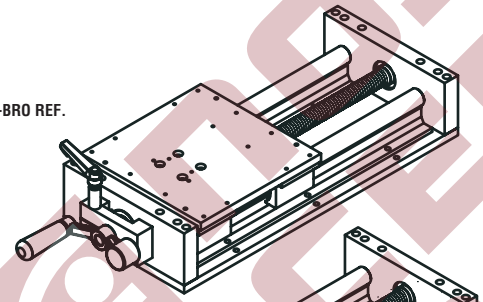
ORDERING EXAMPLE: 2HWL-10-056-AR1

Shaft diameter in 1/16" increments (10/16 = .625")

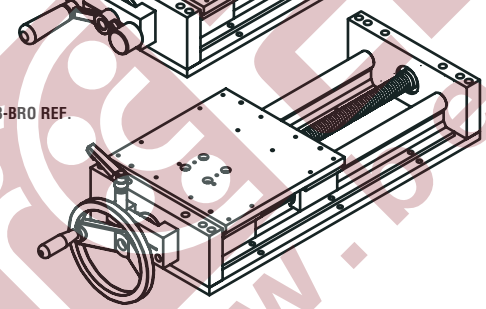
SERIES / HANDLE DISCRIPTION

SERIES	HANDLE DISCRIPTION
CR	Standard Model Cast Aluminum Counterbalanced Hand Crank 24 and 32 (ONLY) Spoked Cast Iron Handwheel with Rigid, Revolving Crank Handle
WL	Deluxe Model Aluminum Handwheel with Fold-Away Composite Handle

2HCR-16-018-BRO REF.



2HWL-16-018-BRO REF.



STANDARD & SELECT - BALL SCREW LEAD CODE TABLE

SIZE	AVAILABLE LEAD CODE							
08	ARX	ALX						
10	ARX	ALX						
12	ARX	ALX						
16			BRX	BLX	CRX	DRX		
20			BRX	BLX	CRX	DRX		
24			BRX	BLX	CRX	DRX	DLX	ERX
32			BRX	BLX	CRX	DRX	DLX	ERX

Replace X with 0 for standard lead accurate to less than .007" per foot accumulative

Replace X with 1 for standard lead accurate to less than .003" per foot accumulative

LEAD CODES
ARX = .200 Right Hand
ALX = .200 Left Hand
BRX = .250 Right Hand
BLX = .250 Left Hand
CRX = .500 Right Hand
DRX = 1.000 Right Hand
DLX = 1.000 Left Hand
ERX = 1.875 Right Hand

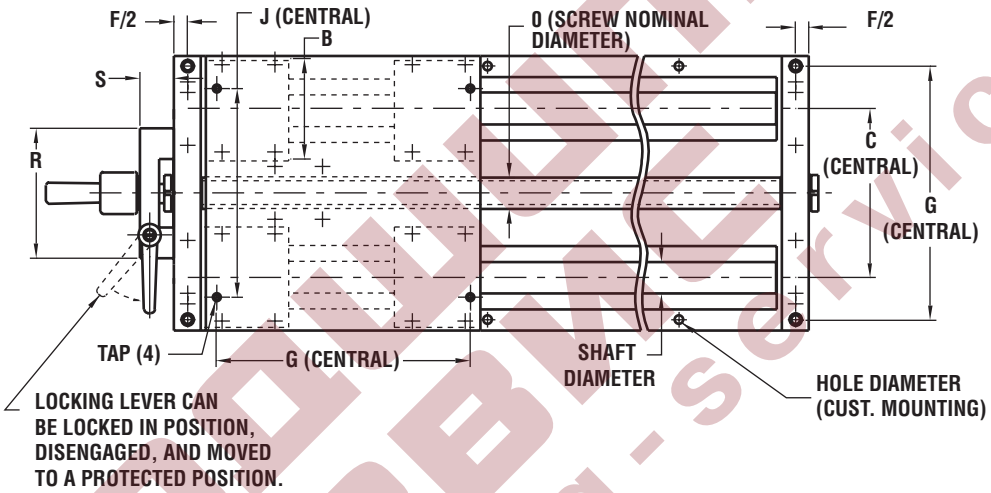
STANDARD LENGTH TABLE (Inches)

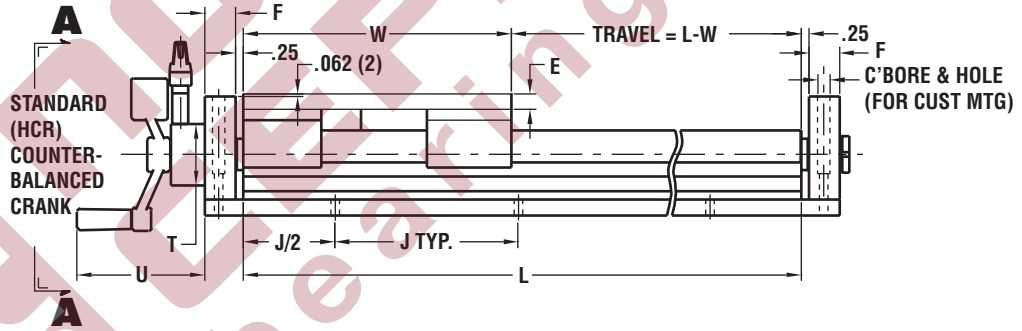
SIZE	AVAILABLE LENGTHS - L* (in inches)																													
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096
12		012		018		024		030		036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

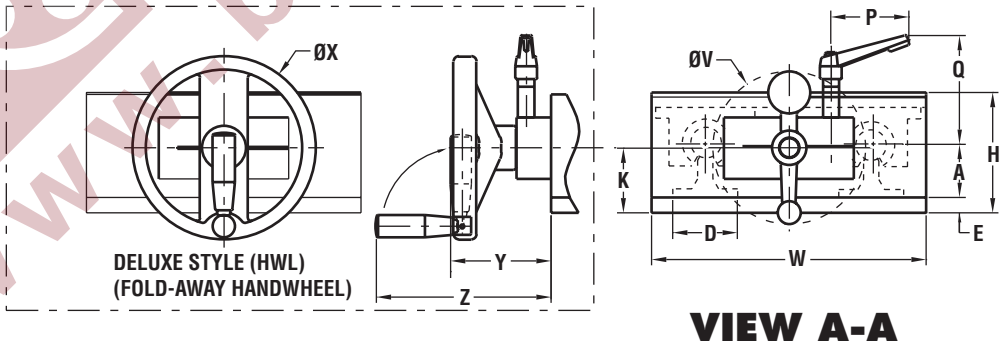
2HCR/2HWL – Slide Assembly with Handcrank & Ball Screw Rotational Lock

DIMENSIONS (Continued)

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







VIEW A-A

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

PART NUMBER

SERIES		SIZE		L		LEAD
2NXXX	-	16	-	XXX	-	XXX
2NXXX	-	20	-	XXX	-	XXX
2NXXX	-	24	-	XXX	-	XXX
2NXXX	-	32	-	XXX	-	XXX

Substitute "X" for "B" - Ball Bearing

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E
1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500
1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750
1.500	13.000	5.750	2.500	4.75	8.000	3.00	.750
2.000	18.000	7.375	3.250	6.00	10.000	3.75	1.000

MATERIAL:
Aluminum Alloy - Top and bottom plates, rail supports, pillow blocks, and coupling.

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment. Rolled ball screw and ball nut assembly.

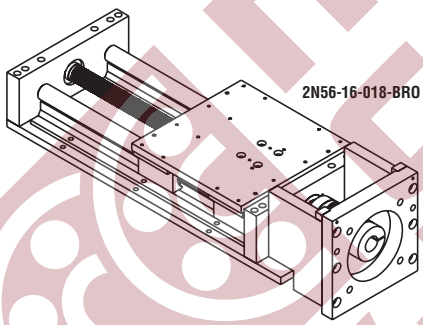
ORDERING EXAMPLE: 2N56-16-054-BR1

Shaft diameter in 1/16" increments (12/16 = .750")

MOTOR MOUNTING DIMENSIONS

SERIES	DRIVE	R	S	V	X	Y	Z	COUPLING[2] MAX DYNAMIC TORQUE CAPACITY
42A	NEMA 42	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	200 in-lbs
56	NEMA 56	4.500	.625	7.000	.41	5.875	4.154	200 in-lbs
143	NEMA 143 or 145	4.500	.875	7.000	.41	5.875	4.154	200 in-lbs

NOTE: International drives and low profile slide assemblies are available - consult factory.
[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 factory.



STANDARD & SELECT - BALL SCREW LEAD CODE TABLE

SIZE	AVAILABLE LEAD CODE								LEAD CODES
16			BR?	BL?	CR?	DR?			BR? = .250 Right Hand
20			BR?	BL?	CR?	DR?			BL? = .250 Left Hand
24			BR?	BL?	CR?	DR?	DL?	ER?	CR? = .500 Right Hand
32			BR?	BL?	CR?	DR?	DL?	ER?	DR? = 1.000 Right Hand
Replace ? with 0 for standard lead accurate to less than .007" per foot accumulative									DL? = 1.000 Left Hand
Replace ? with 1 for standard lead accurate to less than .003" per foot accumulative									ER? = 1.875 Right Hand

STANDARD LENGTH TABLE (Inches)

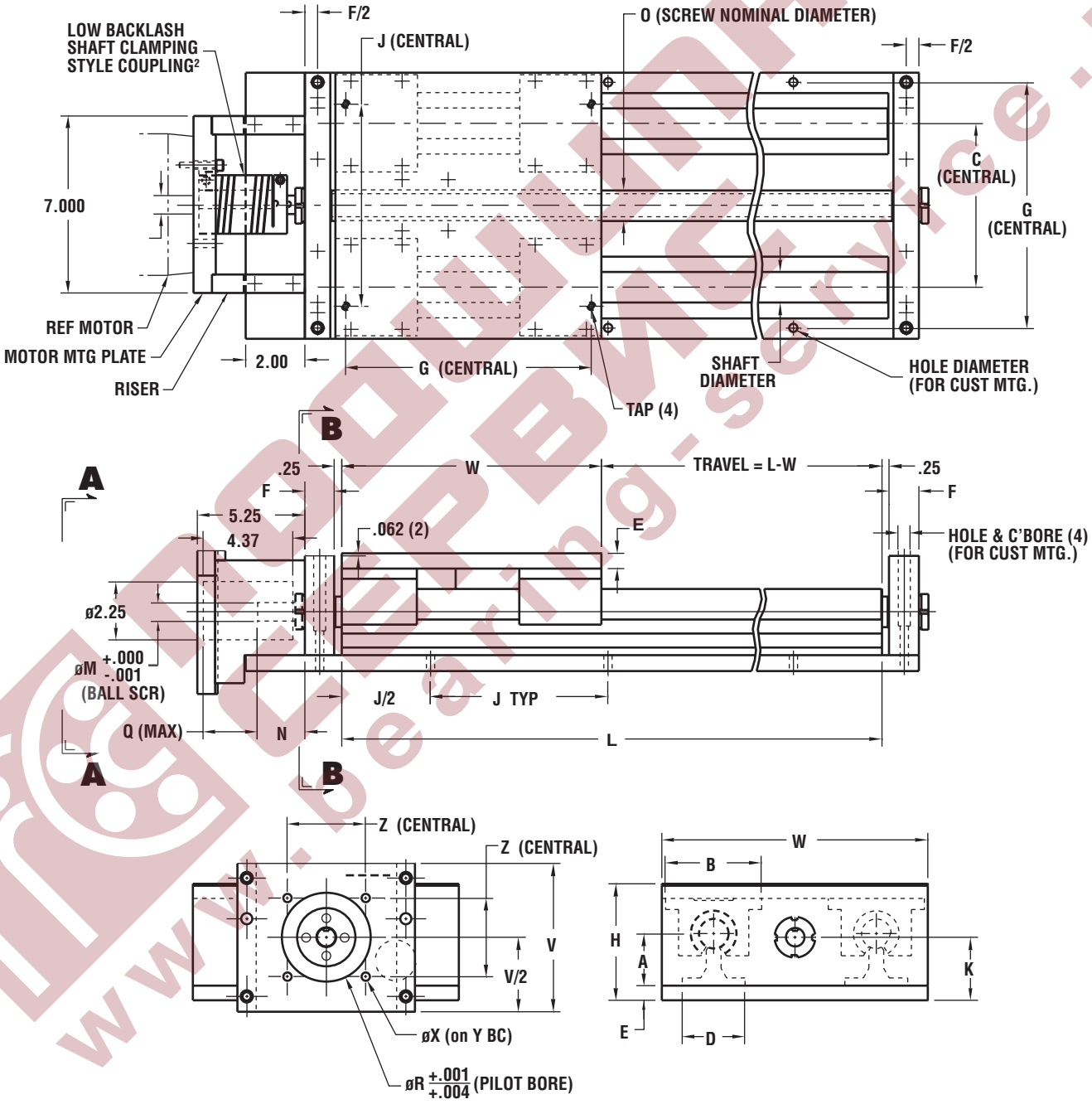
SIZE	AVAILABLE LENGTHS - L* (in inches)																													
16		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
20		012		018		024		030		036		042		048		054		060		066		072		078		084		090		096
24			016			024			032		040			048			056		064			072			080		088			096
32						024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

***NOTE:** Longer lengths are available - consult factory.

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

DIMENSIONS (Continued)

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	1.000	2.31	1.500	2.62	5/16-18	.34	24
1.50	15.875	8.000	3.875	1.000	2.31	1.500	2.62	3/8-16	.41	32



VIEW A-A **VIEW B-B**

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

PART NUMBER

SERIES		SIZE		L		LEAD
2NXXX	-	08	-	XXX	-	XXX
2NXXX	-	10	-	XXX	-	XXX
2NXXX	-	12	-	XXX	-	XXX
2NXXX	-	16	-	XXX	-	XXX
2NXXX	-	20	-	XXX	-	XXX

Substitute "X" for "B" - Ball Bearing

DIMENSIONS

SHAFT DIA.	W	H	A	B	C	D	E
.500	6.000	2.562	1.125	2.00	3.500	1.50	.375
.625	7.000	2.750	1.125	2.50	4.000	1.62	.375
.750	8.000	3.438	1.500	2.75	4.500	1.75	.500
1.000	9.000	3.938	1.750	3.25	5.500	2.12	.500
1.250	11.000	5.125	2.125	4.00	6.500	2.50	.750

MATERIAL:
Aluminum Alloy - Top & bottom plates, rail supports, and pillow blocks, coupling, and motor mounts.

Alloy Steel - Shafting with proprietary low friction corrosion resistant surface treatment. Rolled ball screw & ball nut assembly.

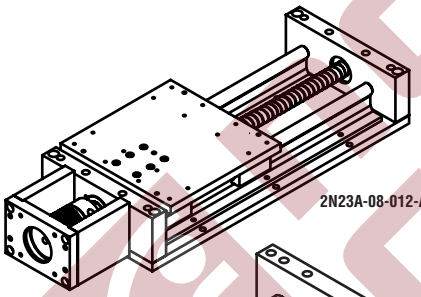
ORDERING EXAMPLE: 2N23A-10-056-AR1

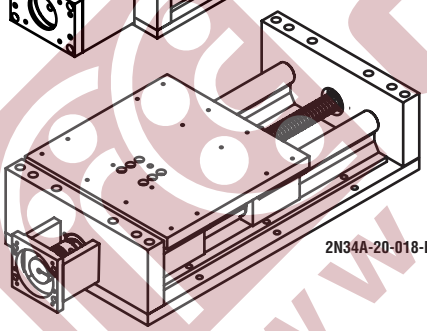
Shaft diameter in 1/16" increments (10/16 = .625")

MOTOR MOUNTING DIMENSIONS

SERIES	DRIVE	R	S	V	X	Y	Z	COUPLING[2] MAX DYNAMIC TORQUE 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	50 in-lbs
34A	NEMA 34	1.880	.375	3.500	10-32	3.875	2.740	50 in-lbs
34B	NEMA 34	1.880	.500	3.500	10-32	3.875	2.740	50 in-lbs

NOTE: International drive configurations and low profile slide assemblies are available - consult factory
[2]Due to ball screw & nut life/torque capacities for sizes 08, 10, or 12 do not exceed 30 in-lbs. of input torque.


2N23A-08-012-ARO REF.


2N34A-20-018-BRO REF.

STANDARD & SELECT - BALL SCREW LEAD CODE TABLE

SIZE	AVAILABLE LEAD CODE					
08	AR?	AL?				
10	AR?	AL?				
12	AR?	AL?				
16			BR?	BL?	CR?	DR?
20			BR?	BL?	CR?	DR?

Replace ? with 0 for standard lead accurate to less than .007" per foot accumulative

Replace ? with 1 for standard lead accurate to less than .003" per foot accumulative

LEAD CODES
AR? = .200 Right Hand
AL? = .200 Left Hand
BR? = .250 Right Hand
BL? = .250 Left Hand
CR? = .500 Right Hand
DR? = 1.000 Right Hand

STANDARD LENGTH TABLE (Inches)

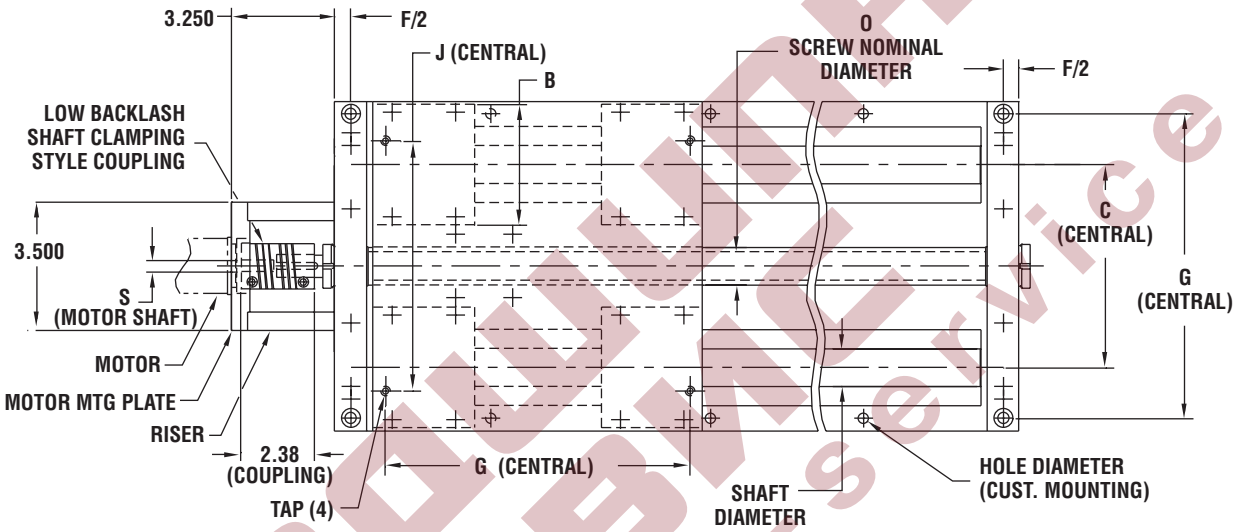
SIZE	AVAILABLE LENGTHS - L* (in inches)																														
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096	
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084	088		092	096	
12		012		018		024		030		036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

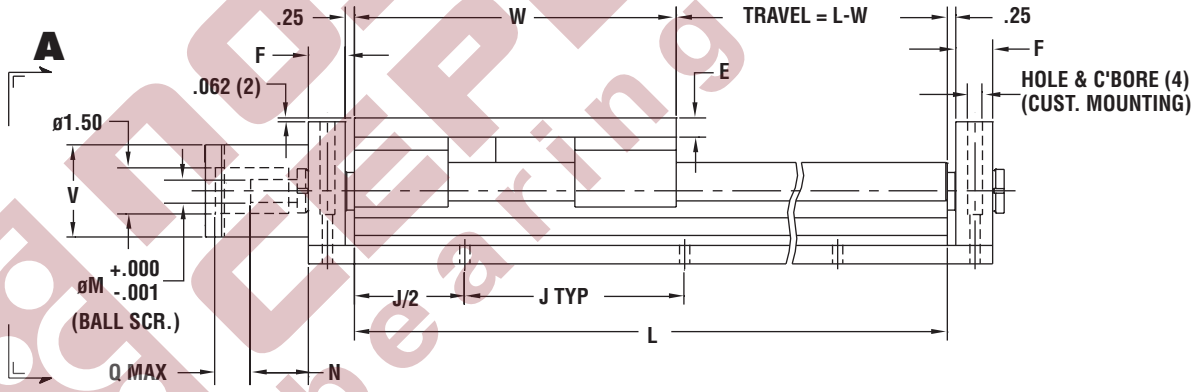
***NOTE:** Longer lengths are available - consult factory

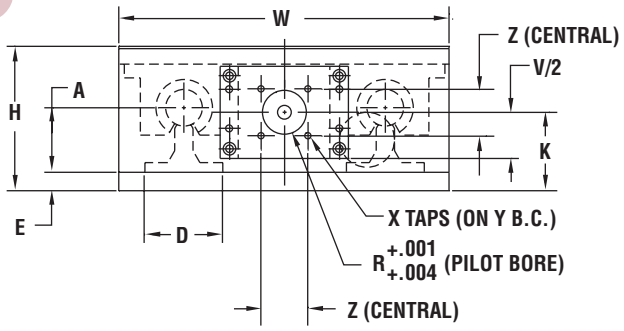
2N23 & 2N34 - Slide Assembly/NEMA Drive Kit

DIMENSIONS (Continued)

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



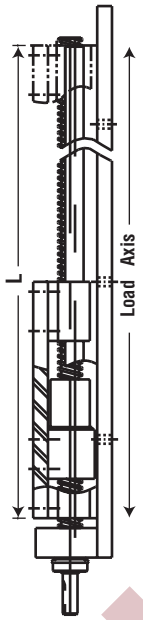




VIEW A-A

COLUMN LOAD CHART (Ball Screw)

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

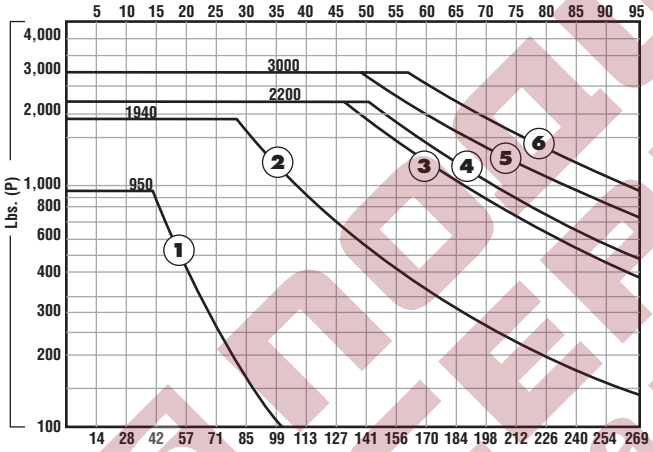


HOW TO USE CHART:

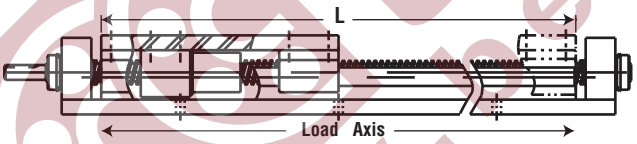
1. Determine maximum compression load (lbs.)
2. Determine slide length. ("L" dimension)
3. Determine end fixity and slide designation (2RPS & 2LRPS).
4. Find the point at which load and length intersect.
5. Select a slide above or to the right of the intersecting point.

Applies Primarily to Vertical Applicaton

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



2RPS & 2LRPS (See Chart on pages 168, 169, 172 and 173)-(L)



CURVE NUMBER	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*:

$$P = C_c \bullet 14.03 \times 10^6 \bullet \left(\frac{D^4}{L^2}\right)$$

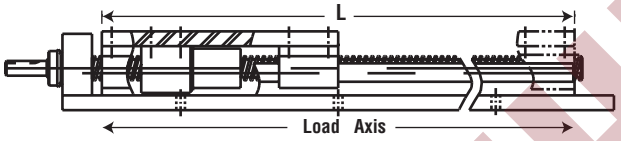
P = Critical column load (lbs.)
D = Root diameter of screw (in.) (See chart)
L = Slide length (in.)
C_c = End fixity factor
C_c = 2.0 2RPS & 2LRPS

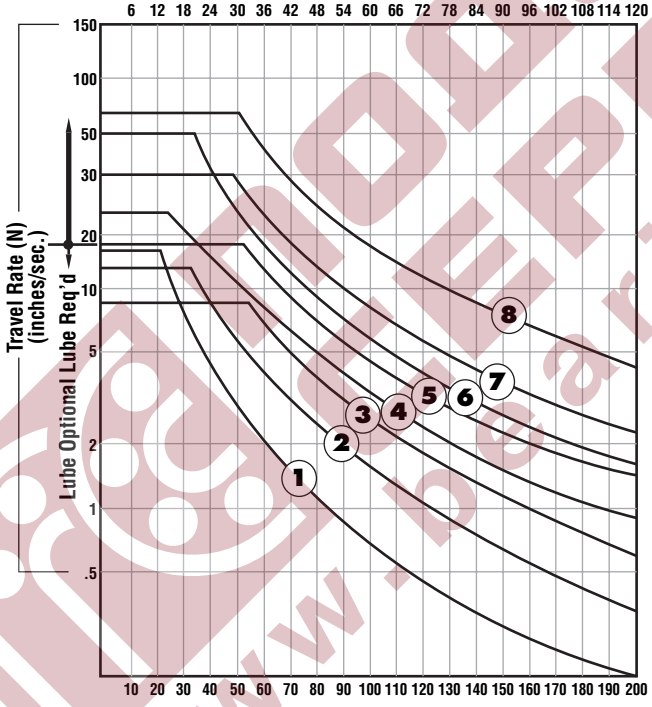
CRITICAL SPEED CHART (Ball Screw)

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.

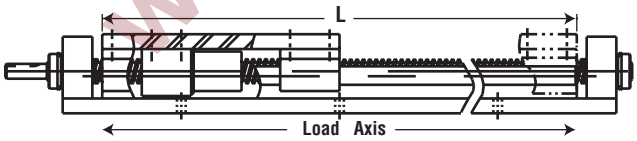
HOW TO USE CHART:

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 Pacific Bearing)





2RPS & 2LRPS (See Chart on pages 168, 169, 172 and 173)-(L)



CURVE NUMBER	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 = Critical speed (Maximum) (expressed in inches/sec.)

D = Root diameter of screw (in./Rev.) (See chart)

H = Lead of screw (in.) (See chart)

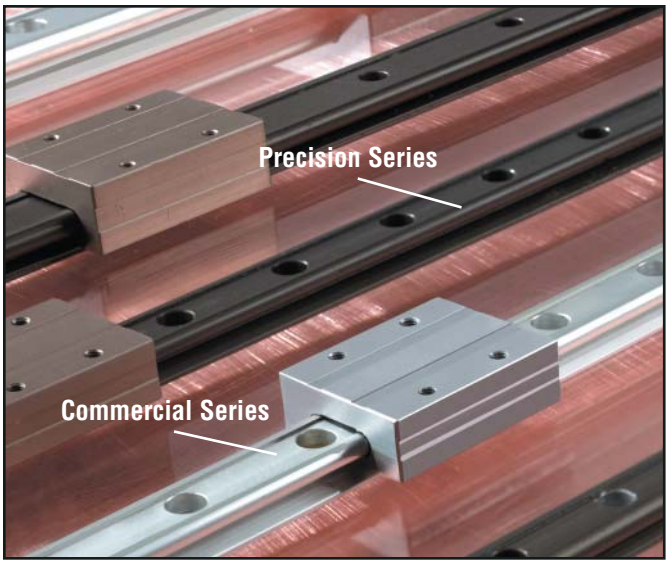
$$N = C_s \bullet 14.03 \times 10^6 \bullet \left(\frac{D^4}{L^2}\right)$$

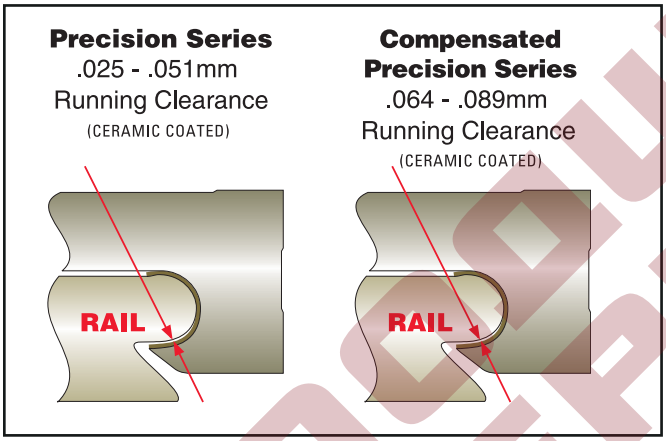
L = Slide length (in.)

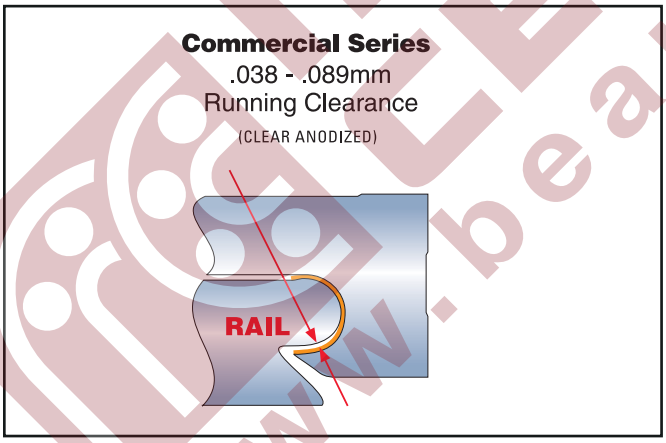
C_s = End fixity factor

C_s = 1.47 2RPS & 2LRPS

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







PRODUCT OVERVIEW

Based on Pacific Bearing Company's proven Simplicity technology, Mini-Rail miniature linear guides provide smooth and quiet linear motion. The self-lubricating design requires no sealing, emits virtually no particulates, tolerates high temperature extremes and has no rolling elements that can cause catastrophic failure.

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.

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.

TECHNICAL DATA

Mini-Rail is offered in three design configurations:

Precision Series: Ceramic coated rails and carriages are corrosion resistant. FrelonGold® 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.

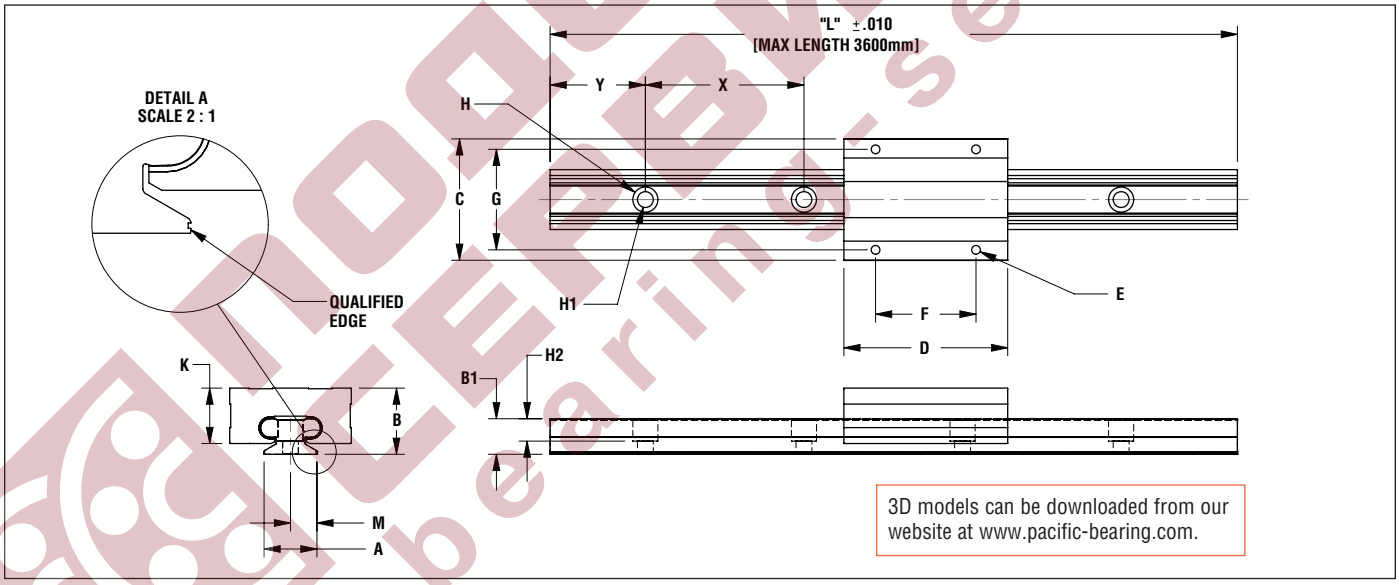
Compensated Precision Series: Same as Precision Series (above) except with additional clearance provided to tolerate misalignment.

Commercial Series: Best value for less demanding applications. Clear anodized coating provides a measure of corrosion resistance. FrelonJ® self-lubricating liner is great for washdown applications.

(Maximum Length 3600mm)

PART NUMBER	RUNNING CLEARANCE	A BASE WIDTH (mm)	B OVERALL HEIGHT	B1 RAIL HEIGHT	C CARRIAGE WIDTH	D CARRIAGE LENGTH	E CARRIAGE MTG. HOLE SIZE	E CARRIAGE MTG. HOLE DEPTH	F CARRIAGE MTG. HOLE CTR. TO CTR.	G CARRIAGE MTG. HOLE CTR. TO CTR.	H RAIL HOLE SIZE	H_1 RAIL HOLE SIZE	H_2 RAIL HOLE SIZE	K CARRIGE HEIGHT	M RAIL MTG. HOLE TO QUALIFIED EDGE	Y RAIL HOLE TO END	X RAIL HOLE CTR. TO CTR	RAIL WT. (gram/mm)	CARRIAGE WT. (gram)
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																		
MRE7-XXX	.038 - .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																		
MRE9-XXX	.038 - .089																		
MR12-XXX	.025 - .051	12	13	8.0	27	34			15	20	6	3.5	3.5	10.7	6	10	25	0.22	20.0
MRC12-XXX	.064 - .089																		
MRE12-XXX	.038 - .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																		
MRE15-XXX	.038 - .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																		
MRE20-XXX	.038 - .089																		

NOTES: Add the overall length of the rail to the part number, EXAMPLE "MR12-220" for a Precision Series assembly with a 220mm long rail.
Cut-to-length rails are available up to 3600mm.
The "S" dimension will remain constant at one end unless requested otherwise.
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.



3D models can be downloaded from our website at www.pacific-bearing.com.

ORDERING INFORMATION

MR **X** **XX** – **XXXX** – **XX**

Standard Mini-Rail
Interchangeable with miniature rolling element profile rails

No Entry
Precision Series running clearance (.025 - .051mm)
FrelonGOLD® bearing material on RC70 ceramic-coated rail
C - Compensated Precision Series running clearance (.064 - .089mm)
FrelonGOLD® bearing material on RC70 ceramic-coated rail
E - Commercial Series running clearance (.038 - .089mm)
FrelonJ® bearing material on clear anodized rail

Nominal Sizes
(7, 9, 12, 15, 20mm)

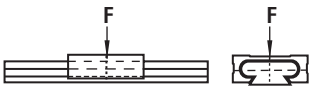
Length of Rail in mm

Number of Carriages

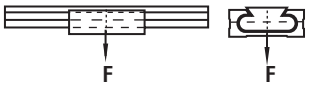
STATIC LOAD DATA

The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

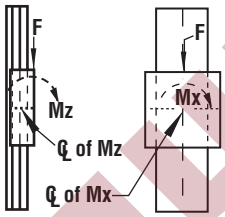
SIZE	F (N)	MSL (N)*
7	445	734
9	667	1557
12	1334	1957
15	2224	3114
20	3559	6005
*Max static load in Newtons.		



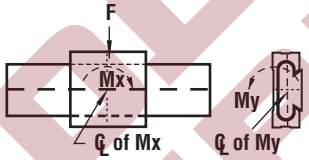
SIZE	F (N)
7	89
9	125
12	222
15	356
20	578



SIZE	Mx (N-m)	My (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)	Mx (N-m)	My (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)
FrelonGold®	20,000 (psi x ft./min.) or 0.7 N/m^2 x m/s	3000 psi or 20.68 N/mm^2	300 sfm or 1.524 m/s
FrelonJ®	10,000 (psi x ft./min.) or 0.35 N/m^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.

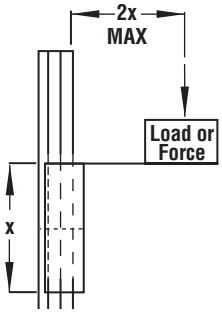
PV = P x V, where P = pressure (load) in psi (kgf/cm^2)

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.



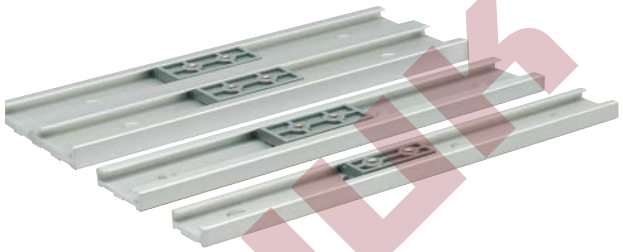
LOAD/MOMENT CONVERSION

N = 4.45 x (lbs.)

N-m = 0.113 x (in.-lbs.)

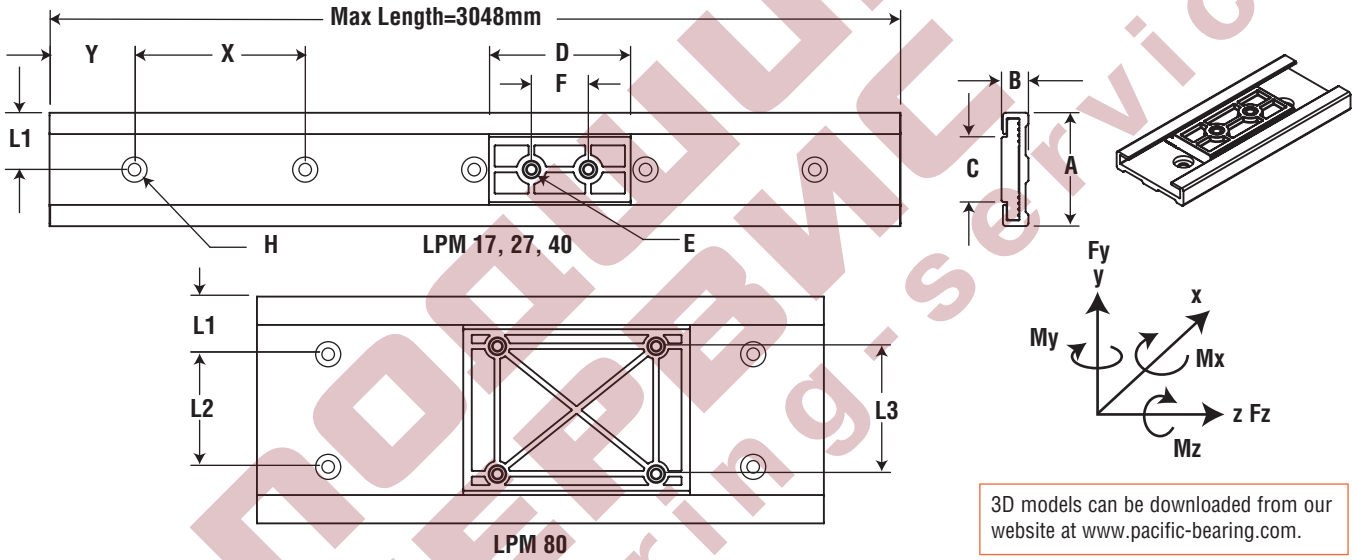
LPM SERIES

- Low profile for small spaces
- Low cost polymer slider
- Molded SS threaded Inserts
- Ideal in harsh environments
- 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

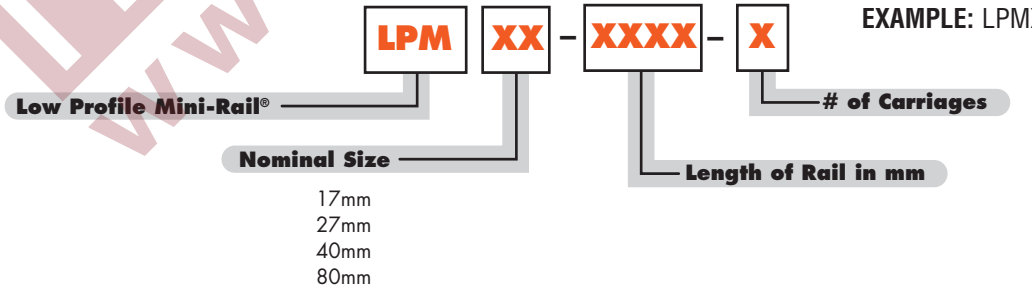


3D models can be downloaded from our website at www.pacific-bearing.com.

PART NUMBER	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (C'BORE) (mm)	L1 (mm)	L2 (mm)	L3 (mm)	Y (mm)	X (mm)	CARRIAGE WT. (G)	RAIL UNIT WT. (G/mm)	LOAD CAPACITY Fy (N)	Fy (lbs.)	Fz (N)	Fz (lbs.)	Mx (N-m)	Mx (lbs.-in.)	My (N-m)	My (lbs.-in.)	Mz (N-m)	Mz (lbs.-in.)
LPM17	17	6	9.6	20	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	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	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	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

MRR SERIES

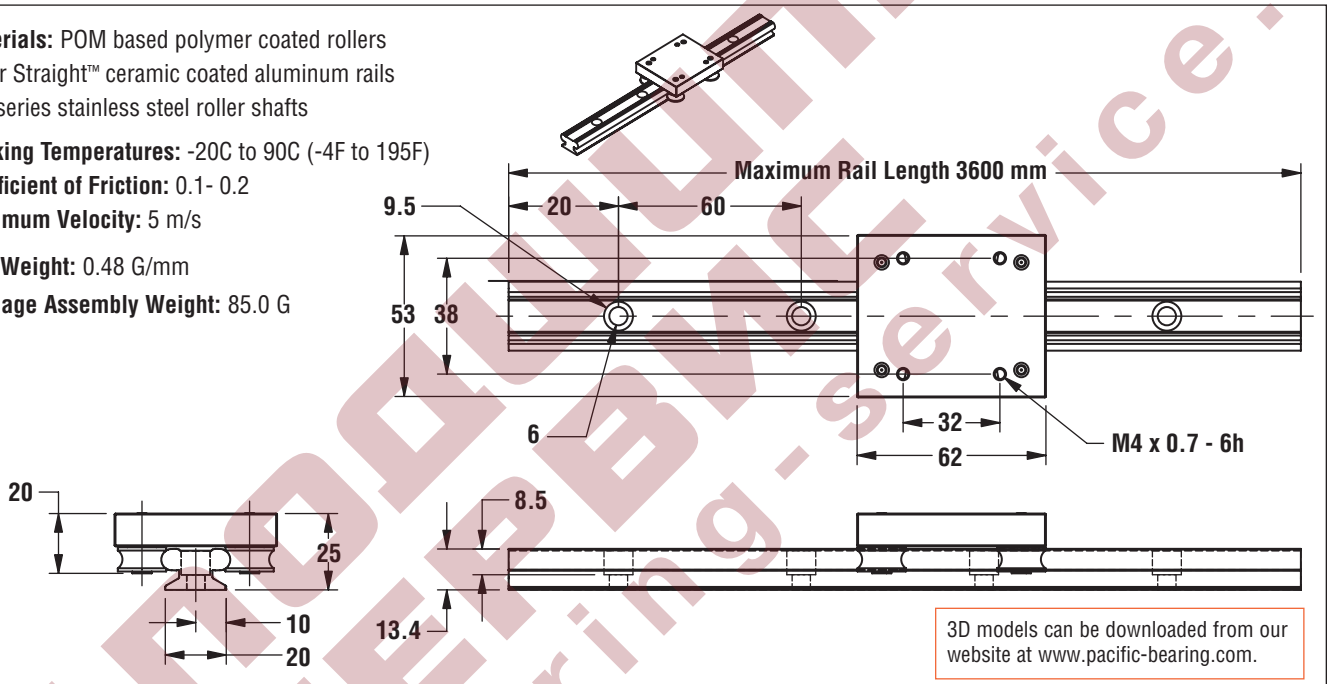
- Durable polymer rollers ensure quiet operation
- Factory adjusted
- Rails can be butt-jointed for unlimited travel
- Pre-lubricated for long life
- Low cost
- Smooth operation
- Corrosion resistant
- Light loads

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

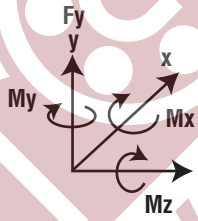


3D models can be downloaded from our website at www.pacific-bearing.com.

NOTES: Add the overall length of the rail "L" to the part number.
EXAMPLE "MRR20-220" for a 220mm long rail.

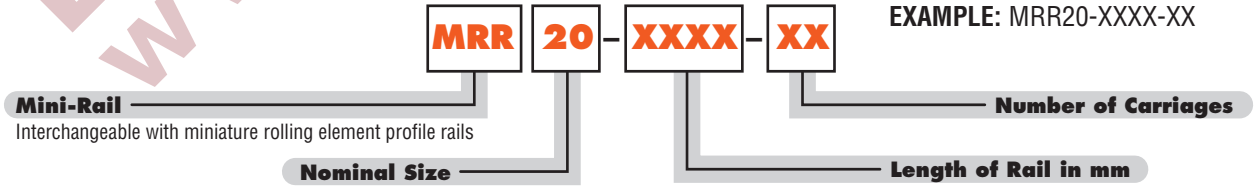
Cut-to-length rails are available up to 3600mm.
"Y" dimension will remain constant at one end unless requested otherwise.

LOAD CAPACITY



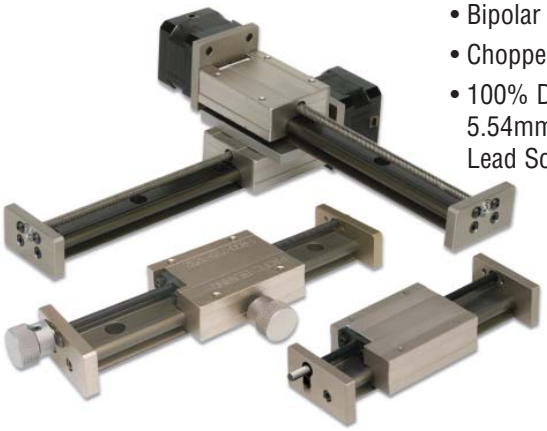
PART NUMBER	LOAD CAPACITY									
	Fy		Fz		Mx		My		Mz	
	(lbs.)	(N)	(lbs.)	(N)	(lbs.-in.)	(N-m)	(lbs.-in.)	(N-m)	(lbs.-in.)	(N-m)
MRR20	25	110	45	205	10	1.2	83	9.4	21	2.4

ORDERING INFORMATION

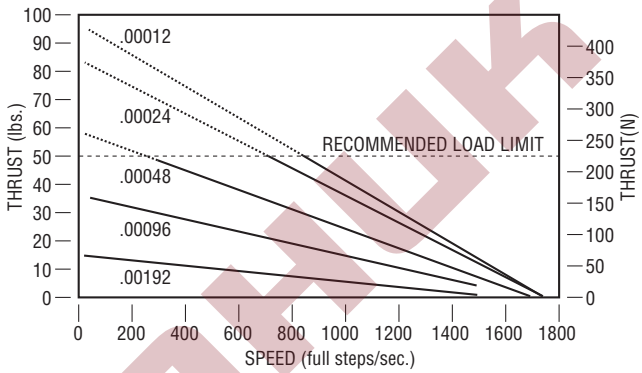


Mini-Rail® LS/MS Series
Miniature Lead Screw - Driven Slides

MINI RAIL® LS/MS SPECIFICATIONS



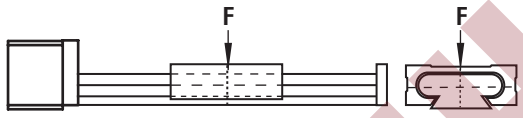
- Bipolar
- Chopper Drive
- 100% Duty Cycle 5.54mm (0.218") Lead Screw



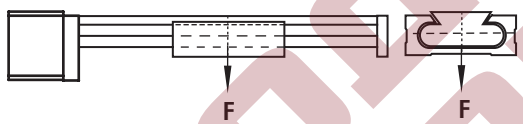
STATIC LOAD DATA

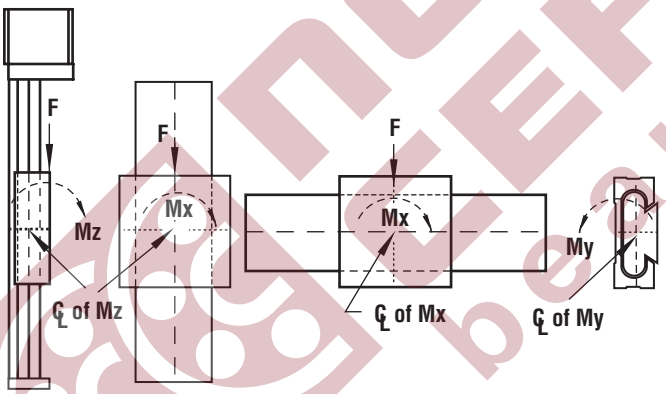
The numbers below are for rails in a static condition. Refer to the calculations below to establish dynamic parameters.

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)
FrelonGold®	20,000 (psi x ft./min.) or 0.7 N/m^2 x m/s	3000 psi or 20.68 N/mm^2	300 sfm or 1.524 m/s

PV = The performance measurement of plane bearings

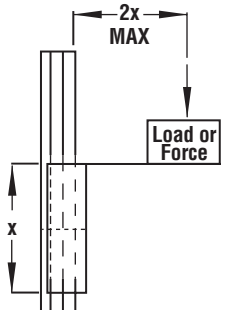
PV = P x V where P = pressure (load) in psi (kgf/cm^2)

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.



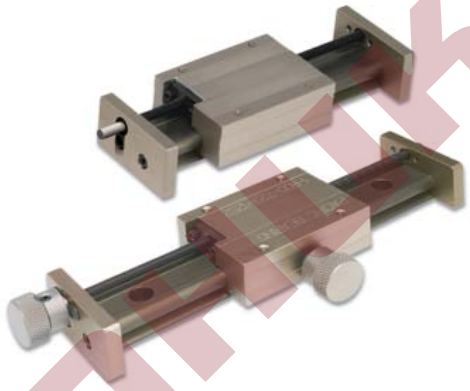
LOAD/MOMENT CONVERSION

N = 4.45 x (lbs.)

N-m = 0.113 x (in-lbs.)

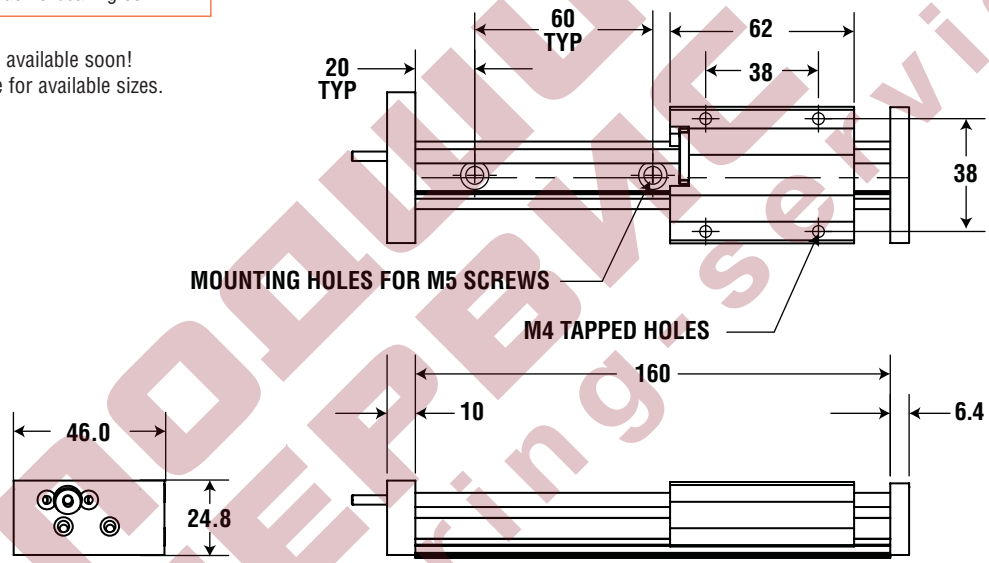
LS SERIES

- 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



3D models can be downloaded from our website at www.pacific-bearing.com.

NOTE: Other sizes available soon! Check our website for available sizes.



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

MR	2Ø	LS	XXX	XXX	XX	XX

Mini-Rail Product Series

Nomial Size of Base in mm

Mini-Rail with Lead Screw

Length of Rail in mm
Cut to length (Max. of 64Ø mm)

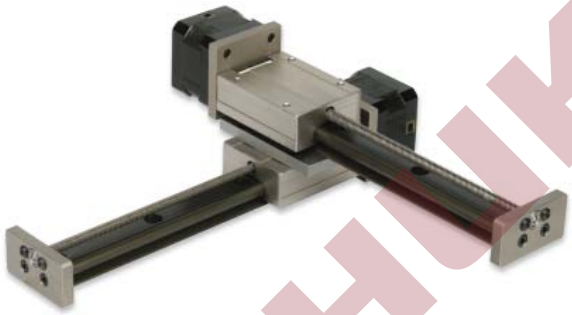
Screw Lead Option
127 = 1.27 mm (Ø.Ø5Ø in.)
475 = 4.75 mm (Ø.187 in.)
952 = 9.52 mm (Ø.375 in.)

Driving Mechanism
ØØ = No knob
SK = With screw knob

Mechanical Brake
ØØ = No brake
BL = With brake lever mounted on carriage

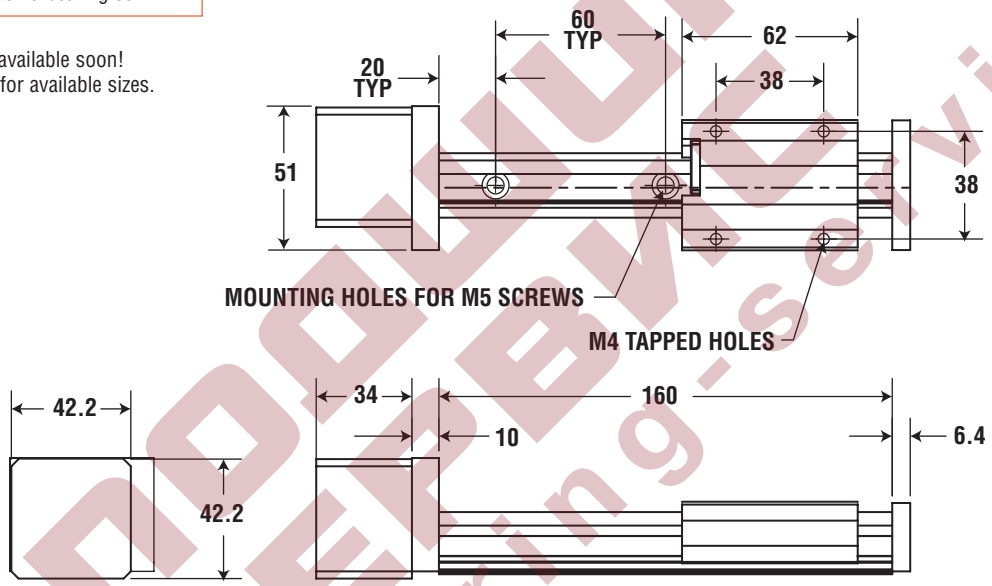
MS SERIES

- 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



3D models can be downloaded from our website at www.pacific-bearing.com.

NOTE: Other sizes available soon! Check our website for available sizes.



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

MR	2Ø	MS	XXX	XXX	N17

Mini-Rail Product Series

Nominal Size of Base in mm

Motorized Mini-Rail with Lead Screw

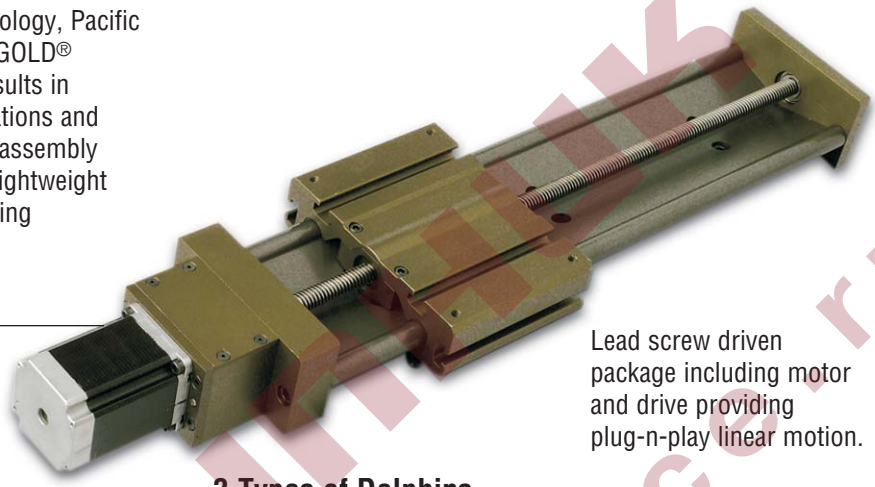
Length of Rail in mm
Cut to length (Max. of 64Ø mm)

Screw Lead Option
Ø61 = Ø.61 mm (Ø.Ø24 in.)
244 = 2.44 mm (Ø.Ø96 in.)
975 = 9.75 mm (Ø.384 in.)

Nominal Size of Stepper Motor
N17 = NEMA 17

PRODUCT OVERVIEW

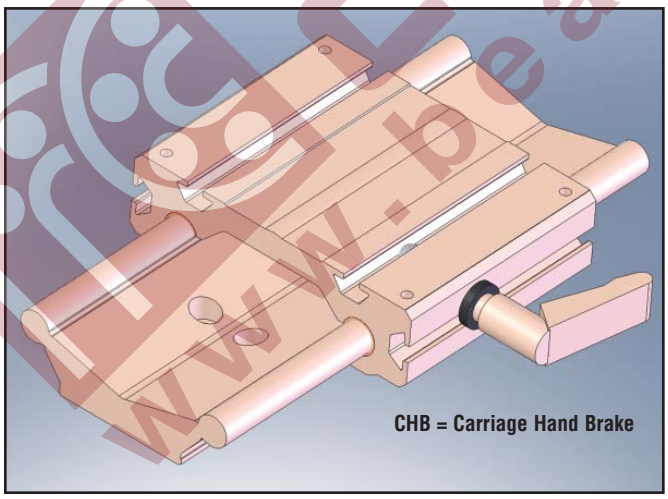
Based on proven Simplicity® linear bearing technology, Pacific Mechatronics™ Dolphin Guides® contains FrelonGOLD® self-lubricating bearing material. This material results in no metal to metal contact, while dampening vibrations and shock loads. Dolphin Guides® unique two-piece assembly eliminates tolerance stack up and the integrated lightweight packages can drop into existing applications making installation easy.



Lead screw driven package including motor and drive providing plug-n-play linear motion.

FEATURES & BENEFITS

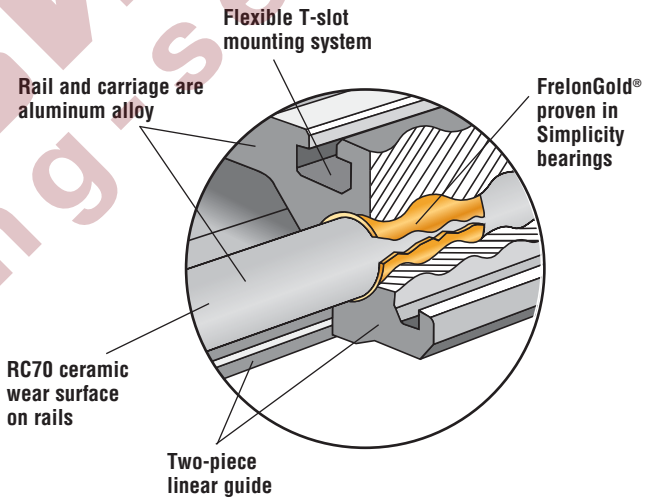
- Smooth & Quiet
- Standard lead screw specifications from D075, D100, and D125
- Plug and Play controls available
- Mounting Flexibility - Rails are pre-drilled for mounting ease. The carriage provides side or top mounting.
- Carriage has T-slots & mounting holes
- Drive Options - Choose from ball or lead screws, belt drives, etc. Integrate your own or consult the factory for assistance.
- FrelonGOLD® Liner - 60% less friction, 60% less wear, 100% increased load capacity, 110% increased speed limits, 100% increased PV limits
- Optional brake
- Optional Hand crank
- Clean room compatible
- Corrosion resistant
- Lightweight
- Pre-engineered, ready to use
- No bellows neccessary, but are an option
- Contaminated environments, not a problem



3 Types of Dolphins

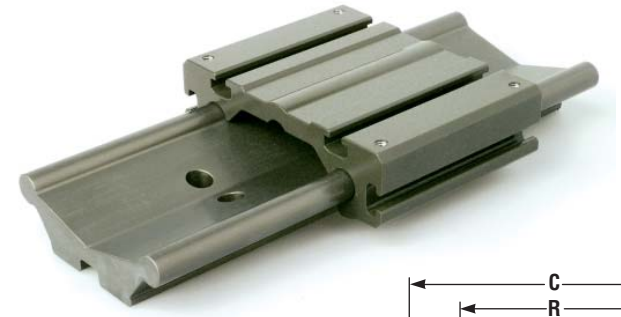
- **Lead Screw**
- **Ball Screw**
- **Pneumatic**

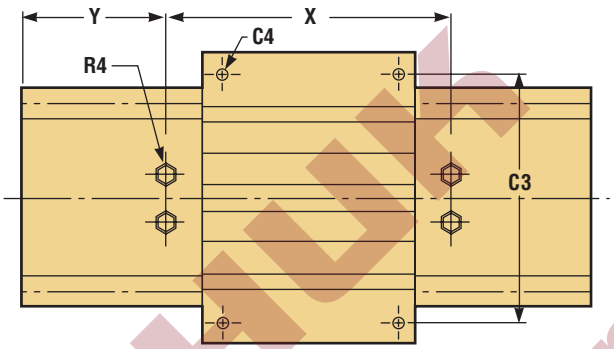
TECHNICAL DRAWING

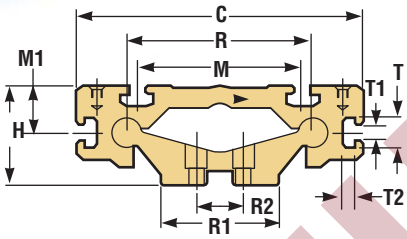


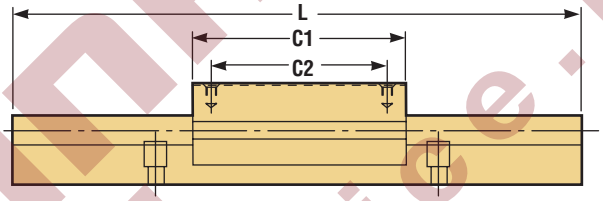
Optional configurations and special carriages are available.

Dolphin Guide®









STANDARD INCH SERIES DOLPHIN GUIDE WITH NO DRIVE MECHANISM (Dimensions in Inches)

PART NUMBER	R	R1	R2	X	R4 BOLT SIZE	Y	H	C	C1 STANDARD	C2 STANDARD	C1 EXTENDED	C2 EXTENDED	C3	C4 BOLT SIZE	M	M1	L MAX-FEET
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 DOLPHIN GUIDE WITH NO DRIVE MECHANISM (Dimensions in mm)

PART NUMBER	R	R1	R2	X	R4 BOLT SIZE	Y	H	C	C1 STANDARD	C2 STANDARD	C1 EXTENDED	C2 EXTENDED	C3	C4 BOLT SIZE	M	M1	L MAX-FEET
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	

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			

STANDARD LENGTHS CHART

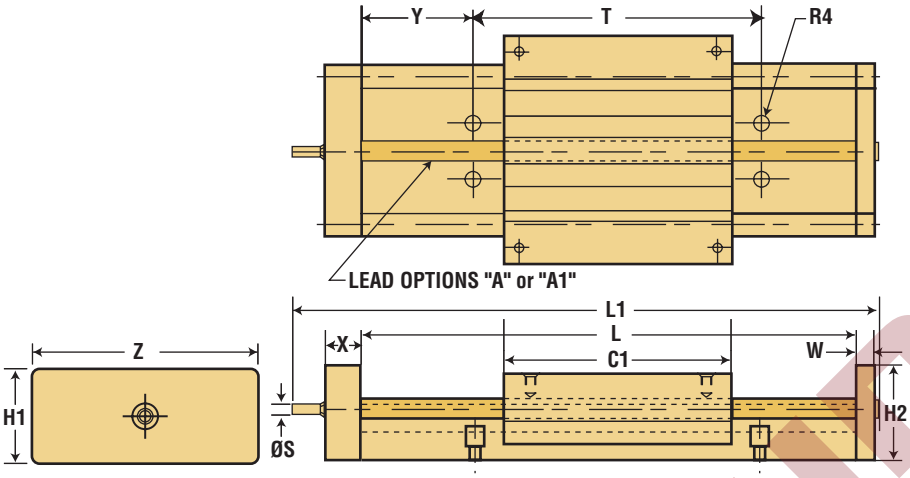
(Dimensions in Inches)

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	X
D125-xxx													

WEIGHTS

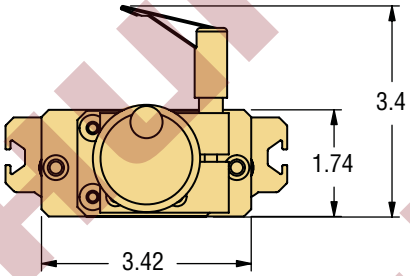
PART NO.	RAIL PER INCH (lbs.)	STANDARD CARRIAGE (lbs.)	EXTENEDED CARRIAGE (lbs.)
D075-xxx	0.19	0.98	1.26
D100-xxx	0.32	2.12	2.82
D125-xxx	0.48	4.56	5.7

D075



OPTIONAL HAND BRAKE

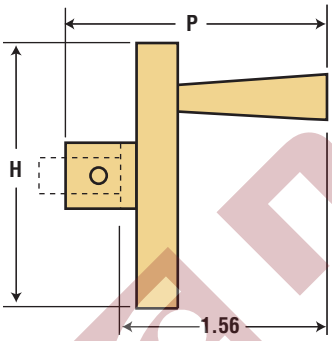
NOTE: available only with optional hand crank



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													

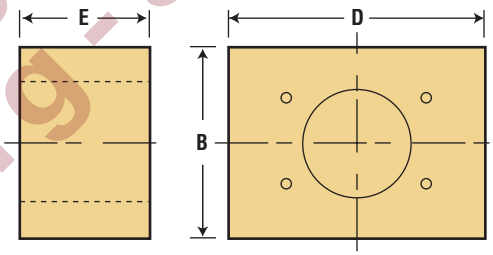
OPTIONAL HAND CRANK



PART NO.	P	H
75H	2.31	1.75

*See order codes on page 199 to integrate.

OPTIONAL MOTOR MOUNT ATTACHMENT

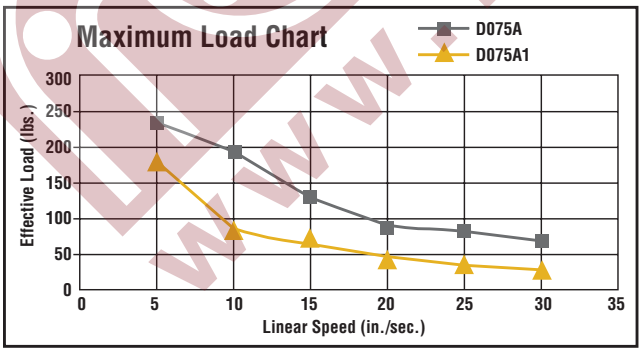


PART NO.	MOTOR MOUNT	B	E	D
75N	NEMA 17	2	1.81	3.25

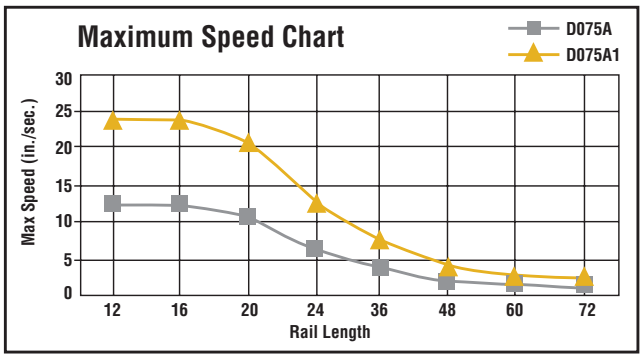
LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN DOLPHIN GUIDES

(HORIZONTAL ORIENTATION)

D075A-xxx

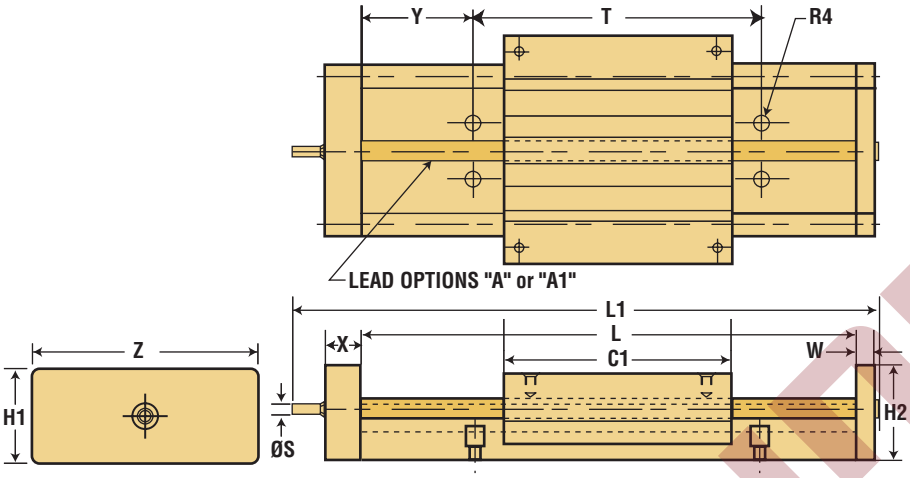


D075A-xxx



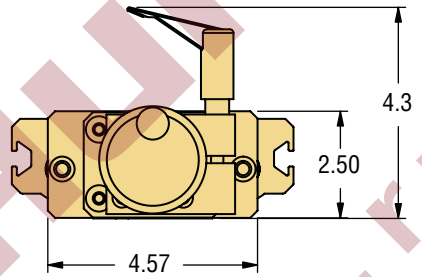
NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.

D100



OPTIONAL HAND BRAKE

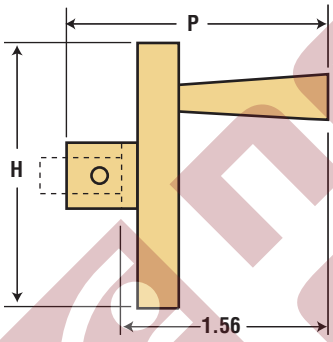
NOTE: available only with optional hand crank



PART NO.	P	H
DO100AHB	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													

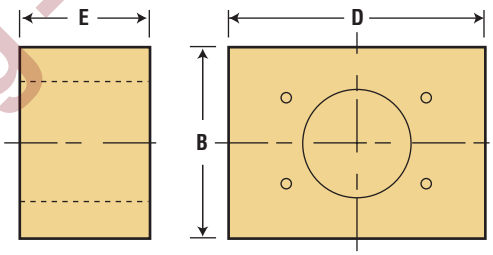
OPTIONAL HAND CRANK



PART NO.	P	H
100H	2.31	2.25

*See order codes on page 199 to integrate.

OPTIONAL MOTOR MOUNT ATTACHMENT

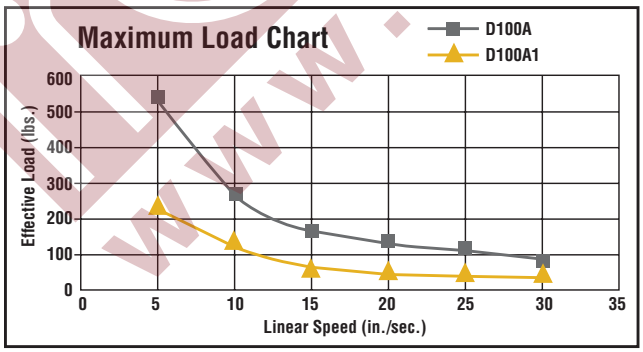


PART NO.	MOTOR MOUNT	B	E	D
100N	NEMA 23	2.5	1.81	3.25

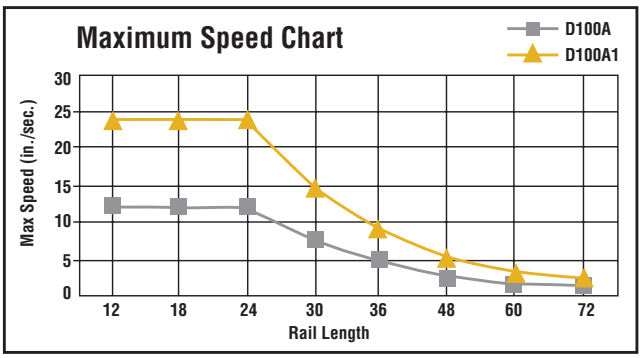
LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN DOLPHIN GUIDES

(HORIZONTAL ORIENTATION)

D100A-xxx

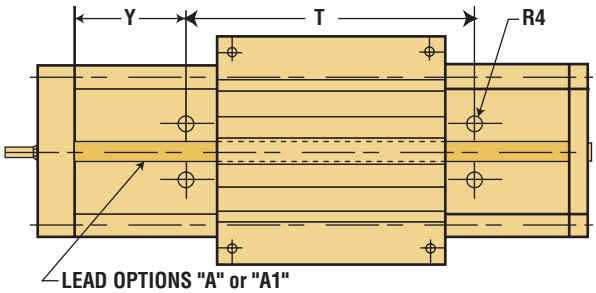


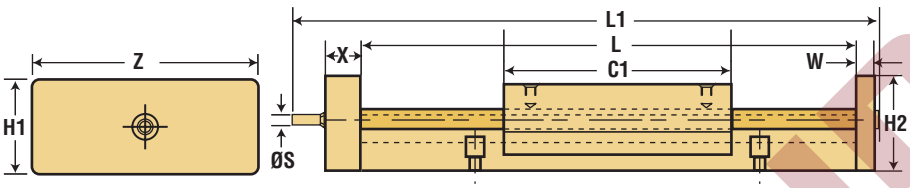
D100A-xxx



NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.

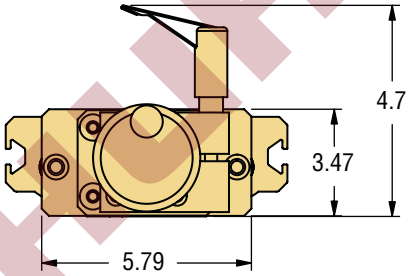
D125





OPTIONAL HAND BRAKE

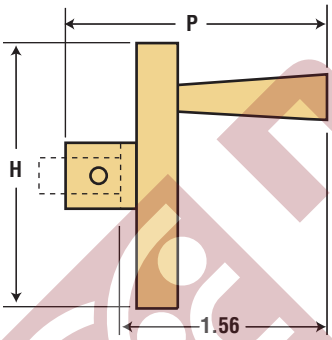
NOTE: available only with optional hand crank



PART NO.	P	H
DO125AHB	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													
D125xx-18	12	18	20.85													
D125xx-24	18	24	26.85													
D125xx-30	24	30	32.85	6	5/8	0.200	0.500	0.314	3	6	3/8	0.5	1	5.78	3.5	2.500
D125xx-36	30	36	38.85													
D125xx-48	30	48	38.85													
D125xx-60	30	60	38.85													

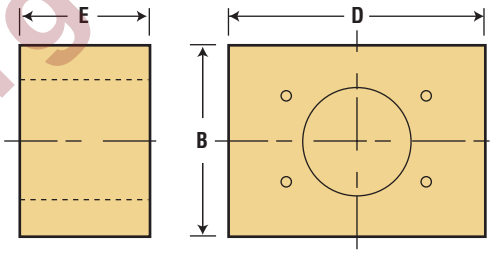
OPTIONAL HAND CRANK



PART NO.	P	H
125H	2.31	3.25

*See order codes on page 199 to integrate.

OPTIONAL MOTOR MOUNT ATTACHMENT

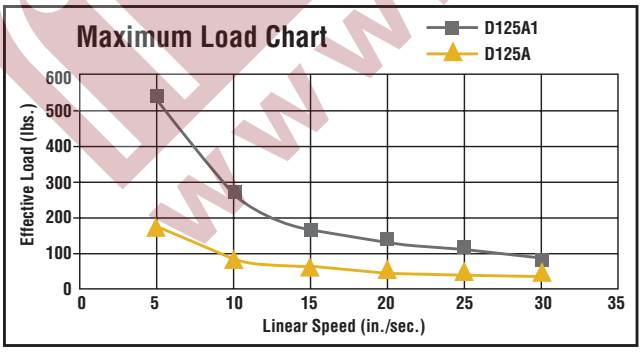


PART NO.	MOTOR MOUNT	B	E	D
125N	NEMA 34	3.5	2.3	4.25

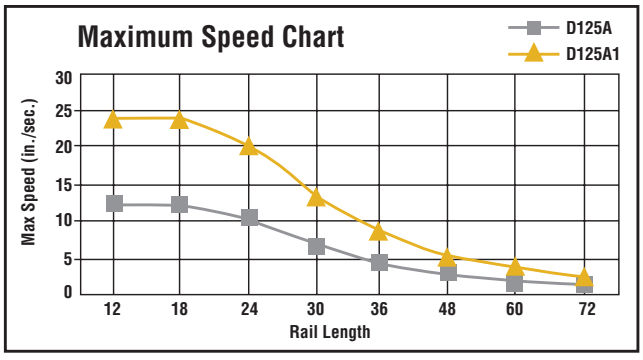
LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN DOLPHIN GUIDES

(HORIZONTAL ORIENTATION)

D125A-xxx



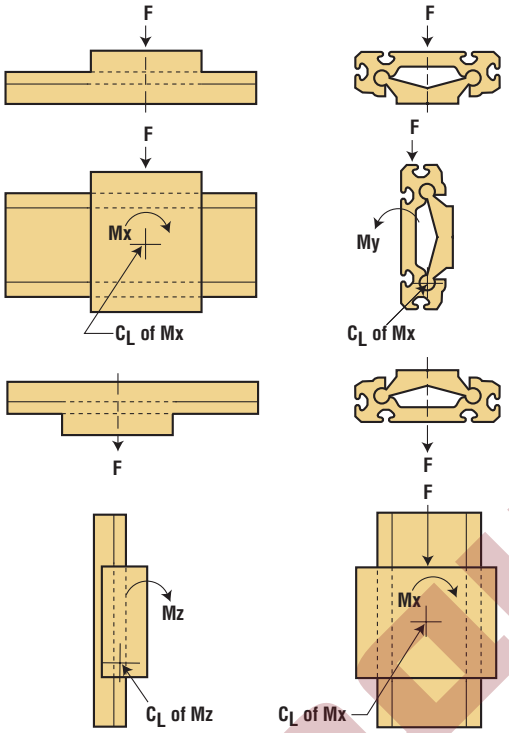
D125A-xxx



NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.

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.)	My (in./lbs.)	F MAX LOAD (N)	Mx (Nm)	My (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

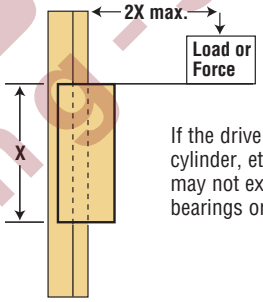
SIZE	F MAX LOAD (lbs.)	F MAX LOAD (N)
D075	125	556
D100	190	845
D125	250	1,112

SIZE	Mz (in./lbs.)	Mx (in./lbs.)	Mz (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/mm^2 x m/s)
- PV Example: Load = 85 psi
  Speed = 180 ft./min.
  PV = 85 x 180 = 15,300 PV

NOTE: FrelonGold® 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

Series
D - Standard Dolphin Guides

Carriage Options
No Entry - Standard Dolphin 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, 197 & 198 for specifications.)
Notes: Screw options require attaching collar.
Call the factory for other optional drive mechanisms.

Drive Mounting Options
No Entry - No Drive Mounting Options
H - Hand Crank
N - NEMA Standard Motor Mount (See pages 196, 197 & 198 for specifications.)
HB - Handbrake (requires handcrank and screw)
CHB - Carriage Handbrake (not offered with screw driven options)

Overall Rail Length
"D" Series - Enter Length of Rail in Inches
"DM" Series - Enter Length of Rail in mm

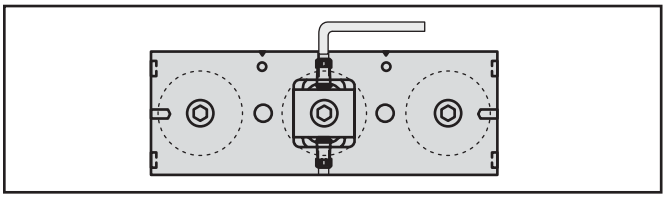
Power and Control Options
No Entry - No Power Options
P - Standard Motor with Motor Mount, Programmable Drive, Cables and Software (must have "N" in Drive Mounting Option)
Note: Kits available for NEMA motor

Data Entry Option
No Entry - No Options
M - Optional MMI Keypad (Man-to-Machine Interface)

Number of Carriages

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.

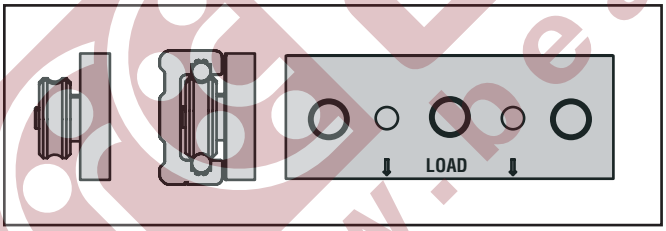


Metric Series

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.



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.

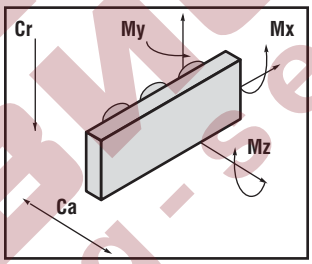
MOUNTING SLIDER BODY & MAX CAPACITY

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 TORQUES

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 SERIES

PART NUMBER	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 SERIES

PART NUMBER	Cr (N)	Ca (N)	M (Nm)	My (Nm)	Mz (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

LIFE CALCULATIONS (cont.)

To calculate an approximate life for redi-rail sliders, use the following equation.

Inch Series

The value of L_{RR} is in meters

$$L_{RR} = 10^7 \bullet (Cd/(Load_{Equiv} \bullet RF))^{3.0} \text{ (inches)}$$

LC_{RRS} = Slider Life Capacity which is found in the table

$Load_{Equiv}$ = Equivalent Radial Load found from the following equation:

$$Load_{Equiv} = Cr \bullet \left(\frac{Load_{Axial}}{Ca} + \frac{M_x}{M_{x\,Max}} + \frac{M_y}{M_{y\,Max}} + \frac{M_z}{M_{z\,Max}} \right) + Load_{Radial}$$

INCH SERIES

PART NUMBER	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

$$L_{RR} = (Cd/Load_{Equiv} \bullet RF)^{3.0} \times 100{,}000 \text{ meters}$$

Cd = Slider Life Capacity which is found in the table

$Load_{Equiv}$ = Equivalent Radial Load found from the following equation:

$$Load_{Equiv} = Cr \bullet \left(\frac{Load_{Axial}}{Ca} + \frac{M_x}{M_{x\,Max}} + \frac{M_y}{M_{y\,Max}} + \frac{M_z}{M_{z\,Max}} \right) + Load_{Radial}$$

METRIC SERIES

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

REDUCTION FACTOR

NOTE: Reduction factors apply to both inch and metric series

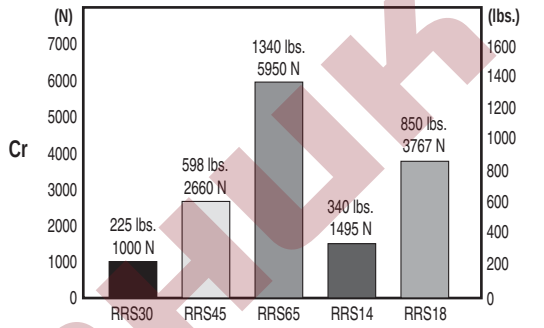
RF = Reduction Factor of the Application or Environment

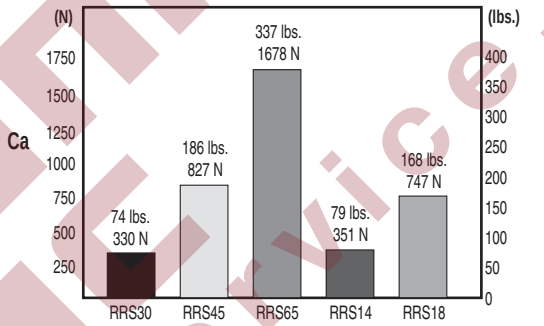
= 1.0 to 1.5 for very clean, low speed (<30% Max), low shocks

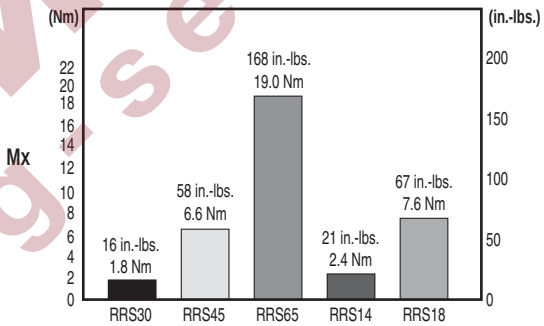
= 1.5 to 2.0 for some dirtiness, moderate speed (30% Max to 75% Max), medium shocks and vibration

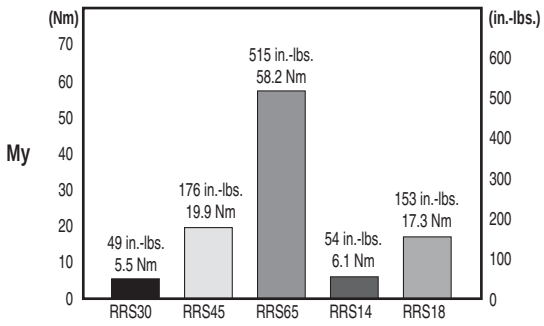
= 2.0 to 3.0 for heavy dirt & dust, high speeds (>75% Max) and heavy shocks & vibrations

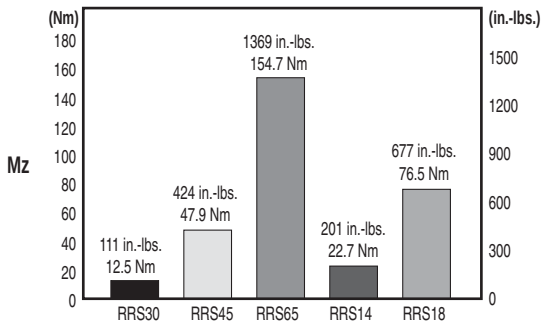
LOAD COMPARISON GRAPHS









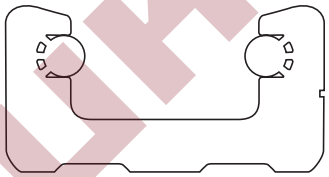


Technical Information

RRS30

- Integral Seals
- Easy Adjusting

CHARACTERISTICS

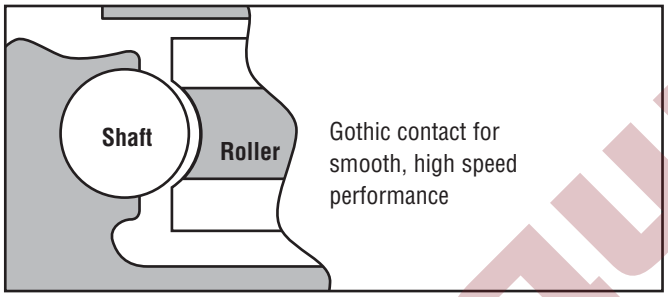


- 5.79 Meter Lengths
- Sealed Bearings
- Off Shelf Delivery
- Gothic Arch Rollers
- Solid Roller Mounting

APPLICATIONS

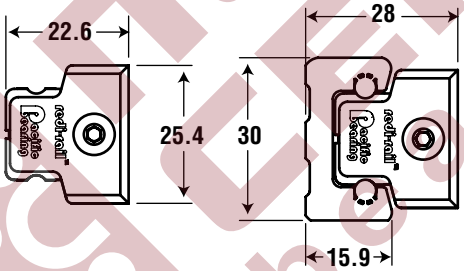
- Automation
- Assembly
- Material Handling
- Packaging

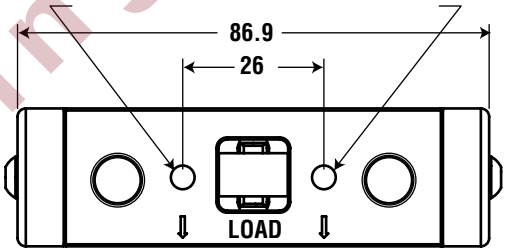
ROLLER/SHAFT INTERFACE



FEATURES

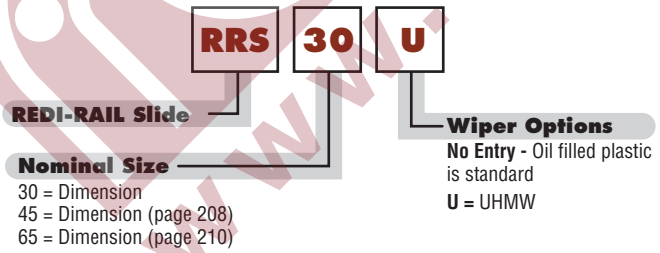
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.
- **NEW coated Redi-Rail FDA compliant, call 800-962-8979 for details.**





NOTE: Slide weight .09 Kg

ORDER INFORMATION



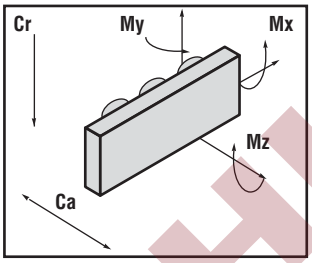
EXAMPLE: RRS30U
Redi-Rail Slider size 30 with UHMW seals

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 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

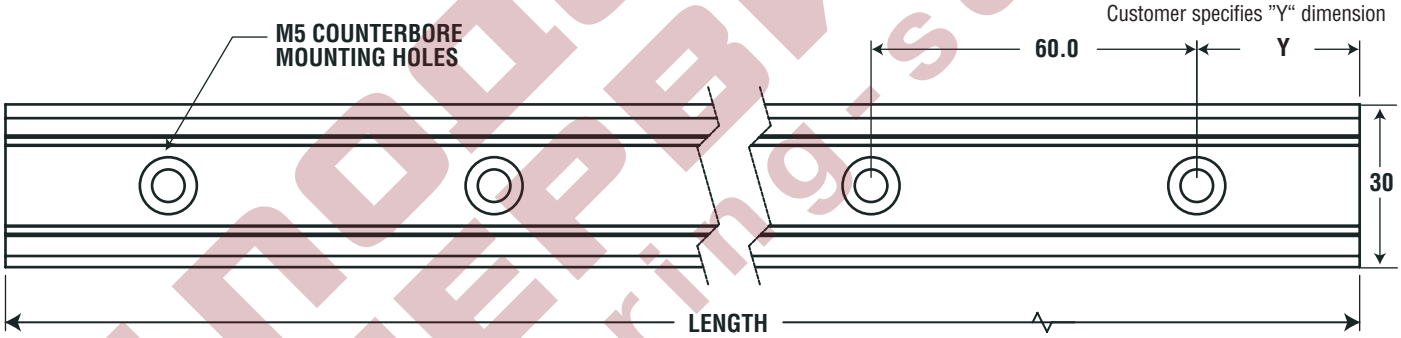
LIFE CALCULATIONS



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



NOTE: Rail weight 0.26 Kg

ORDER INFORMATION

RR 30 – XXXX CR

REDI-RAIL

Nominal Size
30 = Dimension
45 = Dimension (page 209)
65 = Dimension (page 211)

Lengths (mm)
Note: Specify Rail Length & Carriage

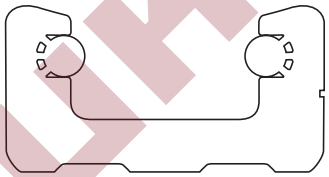
Corrision Resistance
Rail type with 440 SST rods

EXAMPLE: RR30-1200
Redi-Rail size 30 cut to 1200mm long

RRS45

- Integral Seals
- Easy Adjusting

CHARACTERISTICS

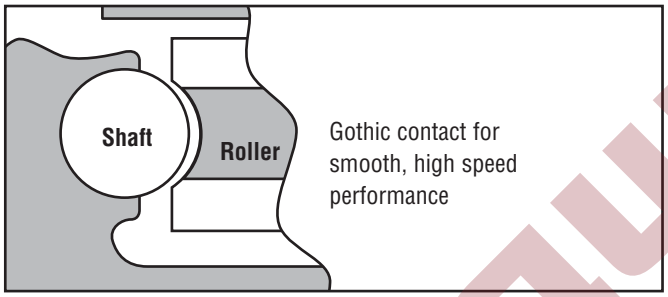


- 5.79 Meter Lengths
- Sealed Bearings
- Off Shelf Delivery
- Gothic Arch Rollers
- Solid Roller Mounting

APPLICATIONS

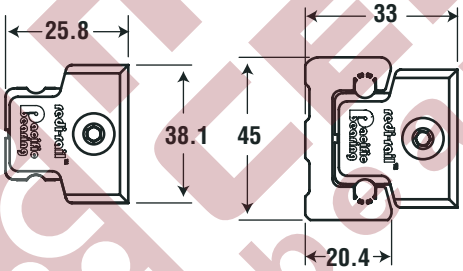
- Automation
- Assembly
- Material Handling
- Packaging

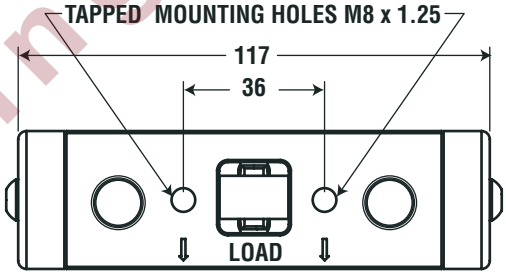
ROLLER/SHAFT INTERFACE



FEATURES

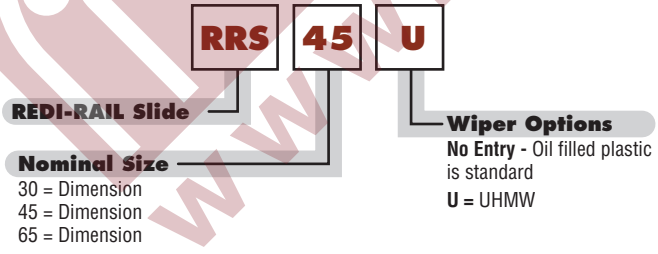
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.
- **NEW coated Redi-Rail FDA compliant, call 800-962-8979 for details.**





NOTE: Slide weight .23 Kg

ORDER INFORMATION



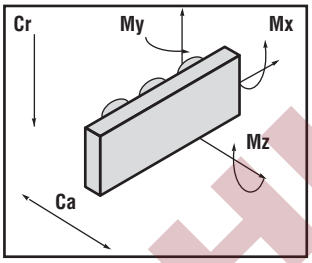
EXAMPLE: RRS45U
Redi-Rail Slider size 45 with UHMW seals

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 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

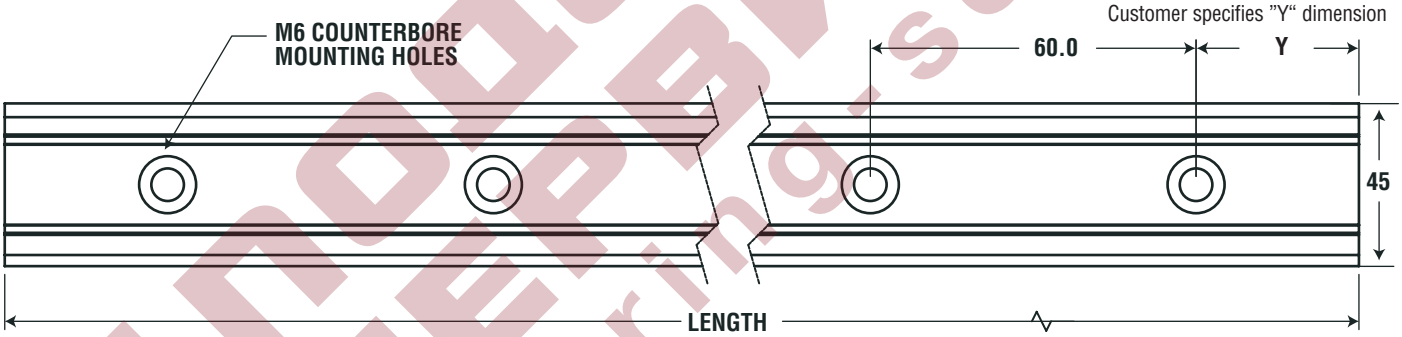
LIFE CALCULATIONS



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



NOTE: Rail weight 0.52 Kg

ORDER INFORMATION

RR 45 – XXXX CR

EXAMPLE: RR45-1200
Redi-Rail size 45 cut to 1200mm long

REDI-RAIL

Nominal Size
30 = Dimension
45 = Dimension
65 = Dimension

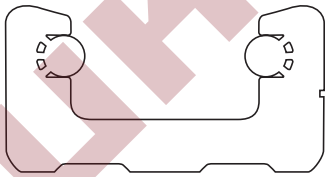
Corrision Resistance
Rail type with 440 SST rods

Lengths (mm)
Note: Specify Rail Length & Carriage

RRS65

- Integral Seals
- Easy Adjusting

CHARACTERISTICS

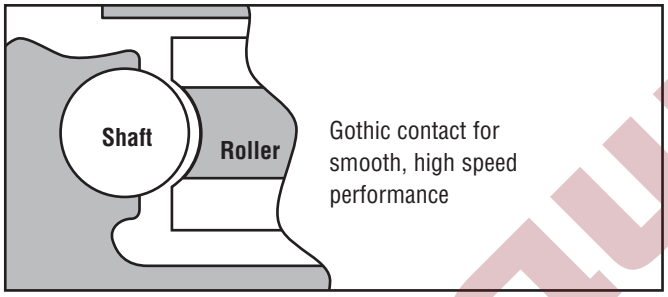


- 5.79 Meter Lengths
- Sealed Bearings
- Off Shelf Delivery
- Gothic Arch Rollers
- Solid Roller Mounting

APPLICATIONS

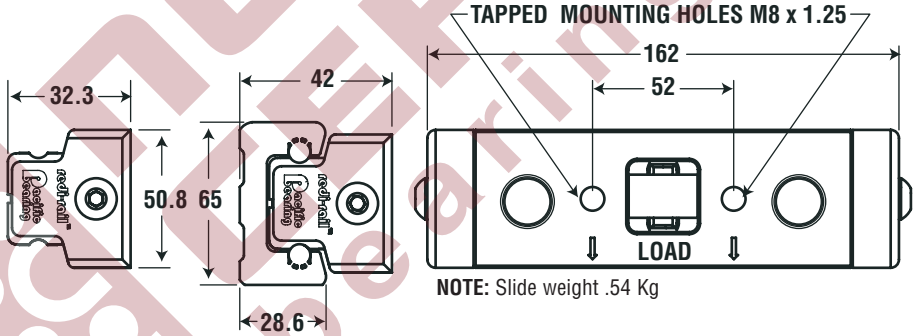
- Automation
- Assembly
- Material Handling
- Packaging

ROLLER/SHAFT INTERFACE



FEATURES

- 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.
- **NEW coated Redi-Rail FDA compliant, call 800-962-8979 for details.**



NOTE: Slide weight .54 Kg

ORDER INFORMATION

RRS **65** **U**

REDI-RAIL Slide

Nominal Size
30 = Dimension
45 = Dimension
65 = Dimension

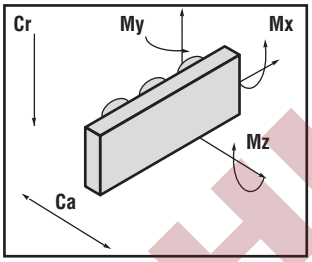
Wiper Options
No Entry - Oil filled plastic is standard
U = UHMW

EXAMPLE: RRS65U
Redi-Rail 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

LIFE CALCULATIONS

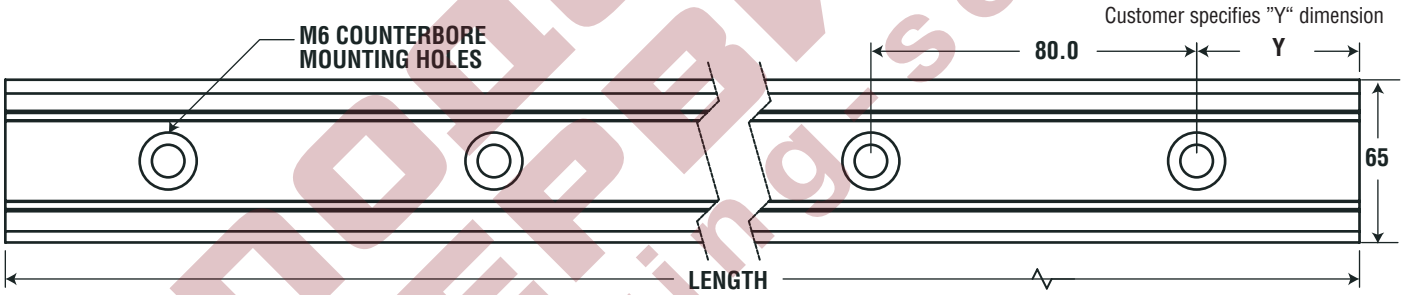


Cd = Dynamic capacity (LC)
Cr = Radial capacity
Ca = Axial capacity
Mx, My, Mz = Moment capacities

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

- 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



NOTE: Rail weight 1.14 Kg

ORDER INFORMATION

RR | 65 | – XXXX | CR

EXAMPLE: RR65-1200
Redi-Rail size 65 cut to 1200mm long

REDI-RAIL

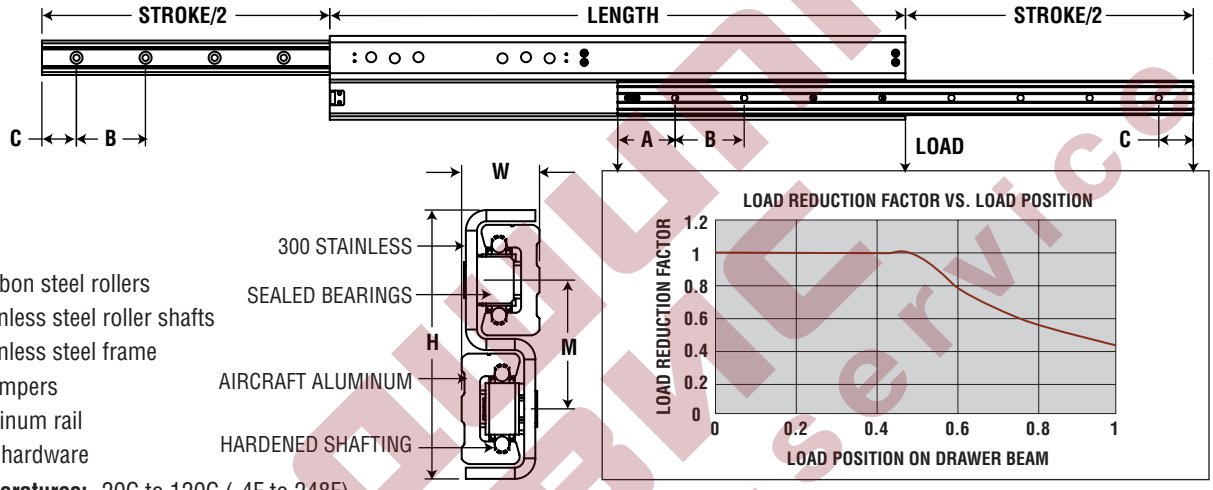
Nominal Size
30 = Dimension
45 = Dimension
65 = Dimension

Lengths (mm)
Note: Specify Rail Length & Carriage

Corrision Resistance
Rail type with 440 SST rods

PRODUCT OVERVIEW & APPLICATION

- Strokes range from 16" to 48"
- 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
300 series stainless steel roller shafts
300 series stainless steel frame
Santoprene bumpers
Anodized 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.

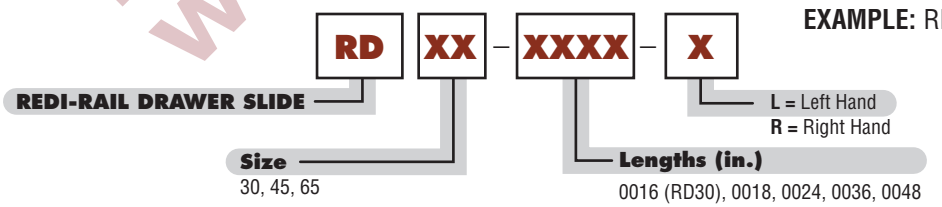
3D models can be downloaded from our website at www.pacific-bearing.com.

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 (in.)	STROKE (in.)	CAPACITY PER PAIR (N)	CAPACITY PER PAIR (lbs.)	MOUNTING DATA A (in.)	MOUNTING DATA B (in.)	MOUNTING DATA C (in.)	MOUNTING DATA INTEGERS	SCREW SIZE FOR MOUNTING	H (in.)	W (in.)	M (in.)	WEIGHT (lbs.)
RD30-0016	16.00	16.00	1,150	259	1.25	2.36	0.58	7.00	(#10) M5	3.1	.83	1.39	4.85
RD30-0018	18.00	18.00	1,265	285	1.10	2.36	0.37	8.00	(#10) M5	3.1	.83	1.39	5.32
RD30-0024	24.00	24.00	1,391	313	1.25	2.36	1.49	12.00	(#10) M5	3.1	.83	1.39	7.27
RD30-0036	36.00	36.00	1,489	335	1.25	2.36	1.68	17.00	(#10) M5	3.1	.83	1.39	9.70
RD30-0048	48.00	48.00	1,542	347	1.25	2.36	1.87	21.00	(#10) M5	3.1	.83	1.39	12.13
RD45-0018	18.00	18.00	3,158	710	1.75	2.36	2.08	7.00	(1/4") M6	4.3	1.12	2.05	9.68
RD45-0024	24.00	24.00	3,673	826	1.38	2.36	1.36	12.00	(1/4") M6	4.3	1.12	2.05	13.23
RD45-0036	36.00	36.00	3,919	881	1.38	2.36	1.55	17.00	(1/4") M6	4.3	1.12	2.05	17.64
RD45-0048	48.00	48.00	4,061	913	1.38	2.36	1.74	21.00	(1/4") M6	4.3	1.12	2.05	22.05

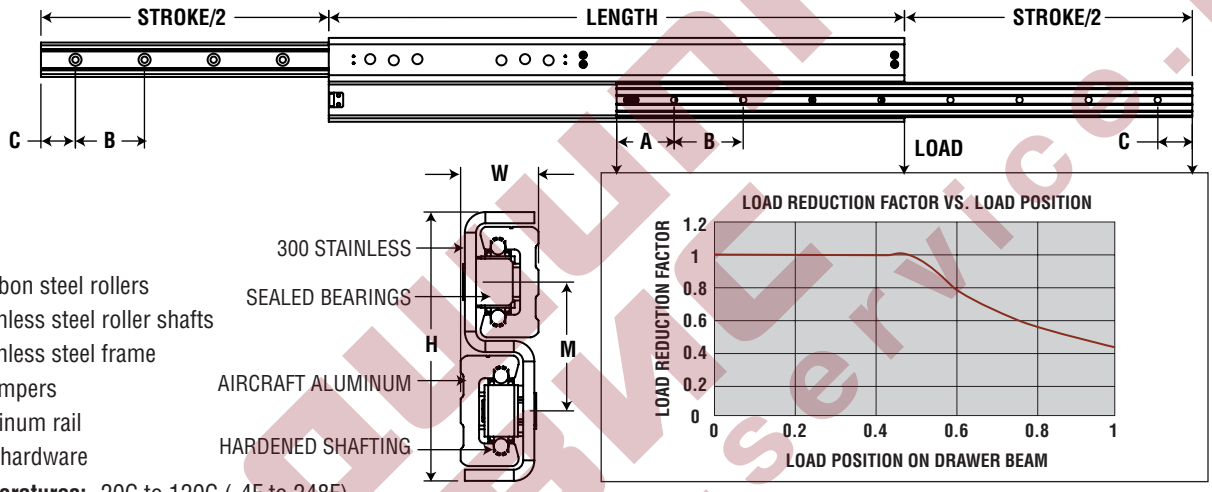
ORDER INFORMATION

EXAMPLE: RDXX-XXXX-X



PRODUCT OVERVIEW & APPLICATION

- 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
300 series stainless steel roller shafts
300 series stainless steel frame
Santoprene bumpers
Anodized aluminum rail
Stainless steel hardware

Working Temperatures: -20C to 120C (-4F to 248F)

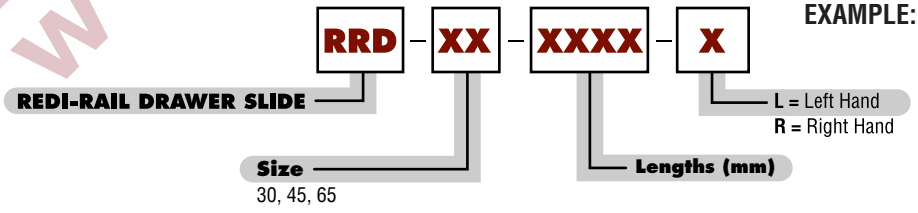
- Oil impregnated wipers not only prevents the system from dust and particle intrusion, but also provide lubrication and extend life cycles.
- Elastomer end stops are not intended as stroke terminus; hard stops must be provided to limit the stroke
- Load rated for a pair of slides when the load is applied on the middle of drawer beams. A load reduction factor shall be used if the load is applied toward the front of drawers.

3D models can be downloaded from our website at www.pacific-bearing.com.

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 (mm)	STROKE (mm)	CAPACITY PER PAIR (N)	CAPACITY PER PAIR (lbs.)	MOUNTING DATA A (mm)	B (mm)	C (mm)	QTY.	SCREW SIZE FOR MOUNTING	H (mm)	W (mm)	M (mm)	.WEIGHT (kg)
RRD30-0500	500	500	1,150	259	50	60	30	8	M5	79	21.1	35.3	2.2
RRD30-0750	750	750	1,391	313	40	60	50	12	M5	79	21.1	35.3	3.3
RRD30-1000	1000	1000	1,489	335	30	60	10	17	M5	79	21.1	35.3	4.4
RRD30-1250	1,250	1,250	1,542	347	30	60	20	21	M5	79	21.1	35.3	5.5
RRD45-0500	500	500	2,871	645	50	60	30	8	M6	109	28.4	52.1	4.0
RRD45-0750	750	750	3,673	826	40	60	50	12	M6	109	28.4	52.1	6.0
RRD45-1000	1000	1000	3,919	881	30	60	10	17	M6	109	28.4	52.1	8.0
RRD45-1250	1,250	1,250	4,061	913	30	60	20	21	M6	109	28.4	52.1	10.0

ORDER INFORMATION



EXAMPLE: RRDXX-XXXX-X

PRODUCT OVERVIEW

Redi-Rail® 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

Redi-Rail 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 System:
- Excellent for harsh environments
- High speed capabilities
- Low noise operation

V-Guide Rail:
- Has shoulder for simple mounting and alignment
- Available in long lengths
- Induction hardened way surface

V-Guide Wheels:
- Permanently lubricated
- Precision dual row bearing construction
- Available in 52100 Bearing Steel or 440 Stainless Steel construction

Wheel Bushings:
- 303 Stainless Steel
- Available for English or metric hardware

APPLICATIONS

- Machine tool doors
- Vending machines
- Woodworking machinery
- Carpet and textile machinery
- Laboratory automation
- Paper converting equipment
- Packaging machinery

TECHNICAL SPECIFICATIONS

Linear Bearing for Axial & Radial Loads

Wheels:
Redi-Rail 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.

- Available in four sizes
- 52100 Bearing Steel or 440 Stainless Steel construction
- Permanently grease lubricated
- Available with 304 Stainless Steel shields, or nitrile rubber seals

Rails:
Redi-Rail V-Rails are available in four sizes, which are designed for the corresponding size wheels. The V-Ways are induction hardened and polished, while the track body is left soft for easy drilling of mounting holes.

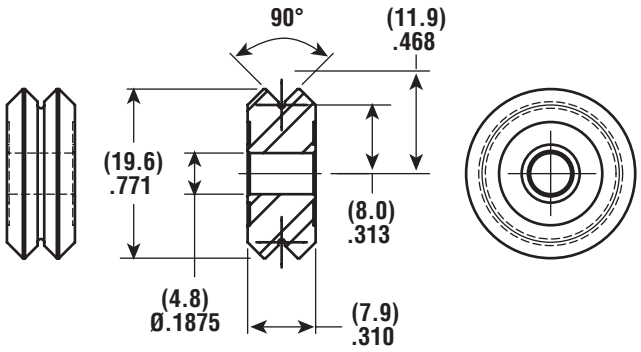
- Available in 1045 Carbon Steel or 400 Stainless Steel
- Optional black oxide finish
- Choose predrilled rail from stock, or custom cut and drilled to your specification

Bushings:
Bushings allow for the wheels to be mounted with the appropriate fastener for the specific application.

- Fixed bushings are used in the primary radial load direction
- Adjustable bushings allow adjustable fit and preload
- Stainless Steel construction

V-GUIDE WHEELS

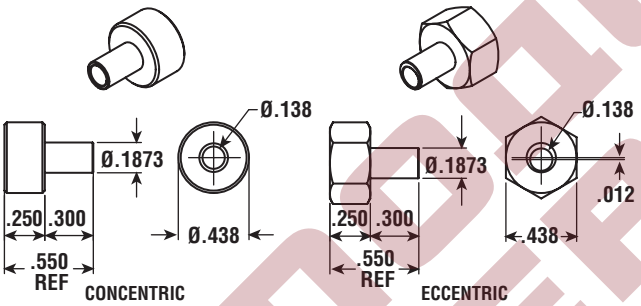
VW1	Shielded Bearing
VWS1	Sealed Bearing
VWSS1	Sealed Stainless Bearing



WEIGHT: .42 oz. (12 g)

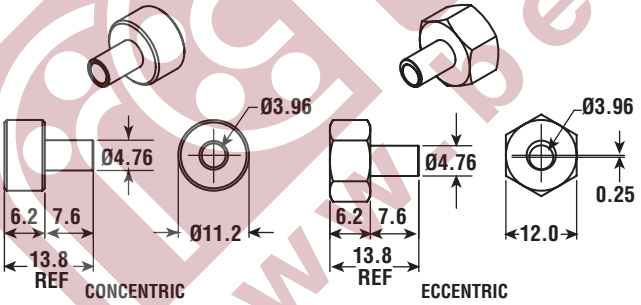
WHEEL BUSHINGS

VB1	Fixed Bushing
VBA1	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB1	Metric Fixed Bushing
MVBA1	Metric Adjustable Bushing

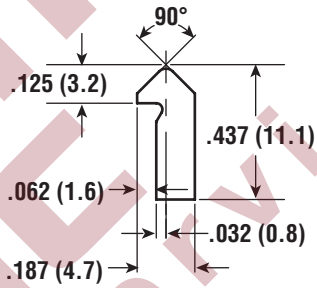


Rated for:
Radial loads to 283 lbs. (1,260 N) per wheel
Axial loads to 67 lbs. (297 N) per wheel

V-GUIDE RAIL

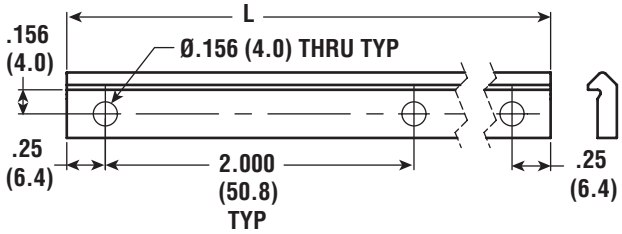
Carbon Steel	
VR1-xxx	undrilled rail max. length 21' (6400 mm)
VRD1-xxx	drilled rail, see table
Stainless Steel	
VRS1-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD1-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all all sizes, contact factory.



STANDARD DRILLED RAILS

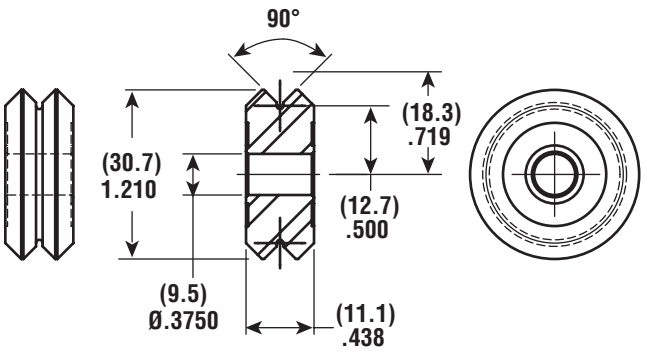
PART NUMBER	LENGTH	NO. OF HOLES
CARBON STEEL		
VRD1-1250	12.5" (317.5 mm)	7
VRD1-2450	24.5" (622.3 mm)	13
VRD1-3650	36.5" (927.1 mm)	19
VRD1-4850	48.5" (1231.9 mm)	25
VRD1-6050	60.5" (1536.7 mm)	31
VRD1-7250	72.5" (1841.5 mm)	37
STAINLESS STEEL		
VRSD1-1250	12.5" (317.5 mm)	7
VRSD1-2450	24.5" (622.3 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



20 mm (3/4")

V-GUIDE WHEELS

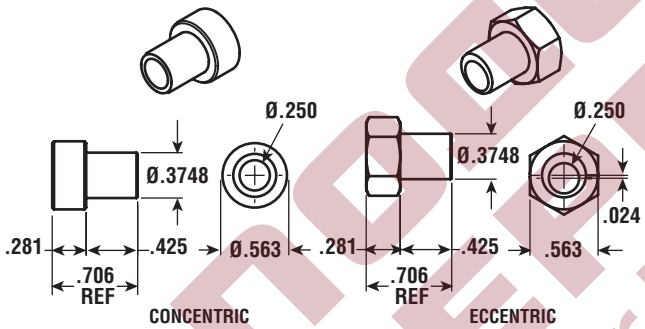
VW2	Shielded Bearing
VWS2	Sealed Bearing
VWSS2	Sealed Stainless Bearing



WEIGHT: 1.41 oz. (40 g)

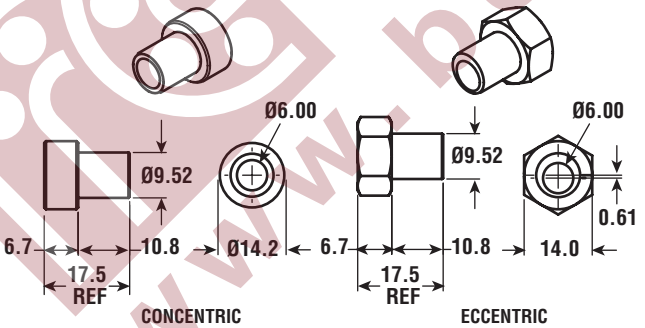
WHEEL BUSHINGS

VB2	Fixed Bushing
VBA2	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB2	Metric Fixed Bushing
MVBA2	Metric Adjustable Bushing

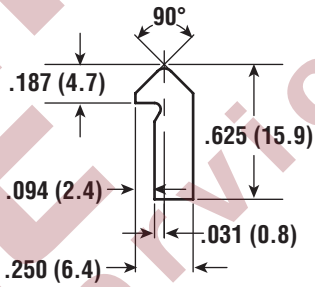


Rated for:
Radial loads to 614 lbs. (2,730 N) per wheel
Axial loads to 142 lbs. (632 N) per wheel

V-GUIDE RAIL

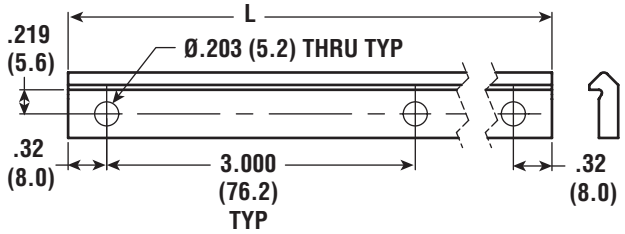
Carbon Steel	
VR2-xxx	undrilled rail max. length 21' (6400 mm)
VRD2-xxx	drilled rail, see table
Stainless Steel	
VRS2-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD2-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all all sizes, contact factory.



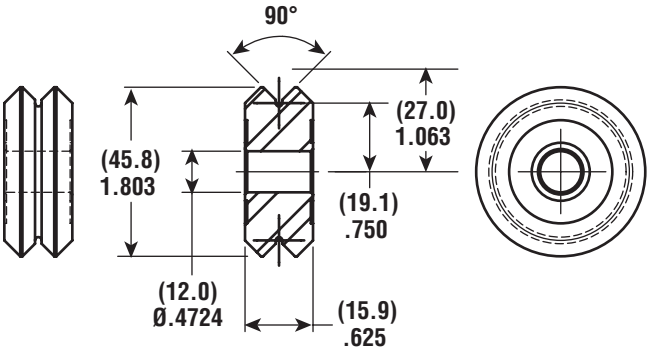
STANDARD DRILLED RAILS

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 WHEELS

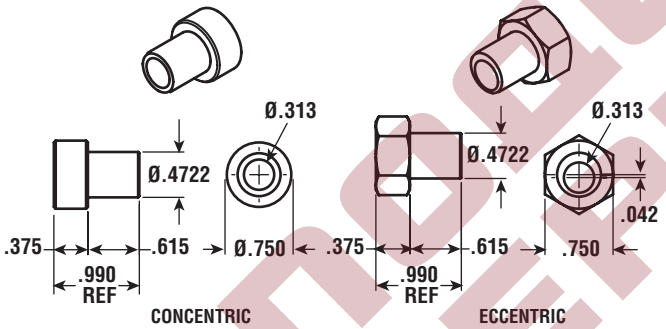
VW3	Shielded Bearing
VWS3	Sealed Bearing
VWSS3	Sealed Stainless Bearing



WEIGHT: 4.79 oz. (136 g)

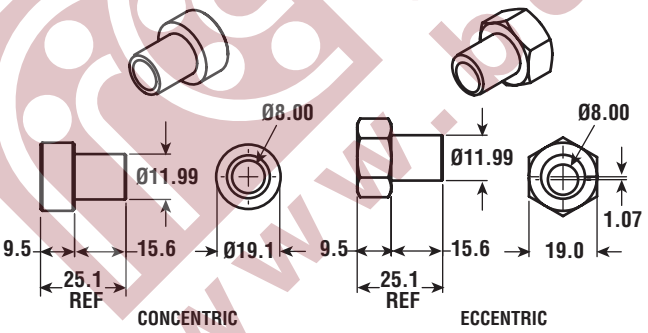
WHEEL BUSHINGS

VB3	Fixed Bushing
VBA3	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB3	Metric Fixed Bushing
MVBA3	Metric Adjustable Bushing

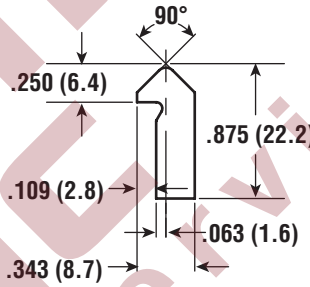


Rated for:
Radial loads to 1,386 lbs. (6,166 N) per wheel
Axial loads to 326 lbs. (1,448 N) per wheel

V-GUIDE RAIL

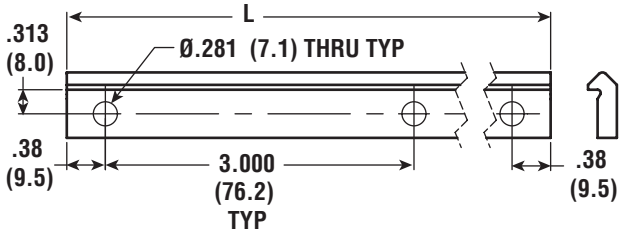
Carbon Steel	
VR3-xxx	undrilled rail max. length 21' (6400 mm)
VRD3-xxx	drilled rail, see table
Stainless Steel	
VRS3-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD3-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all all sizes, contact factory.



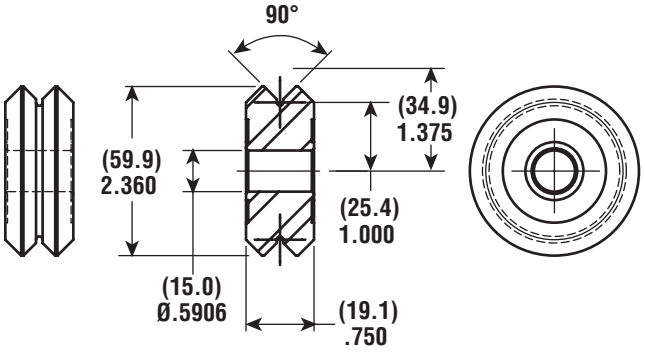
STANDARD DRILLED RAILS

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 WHEELS

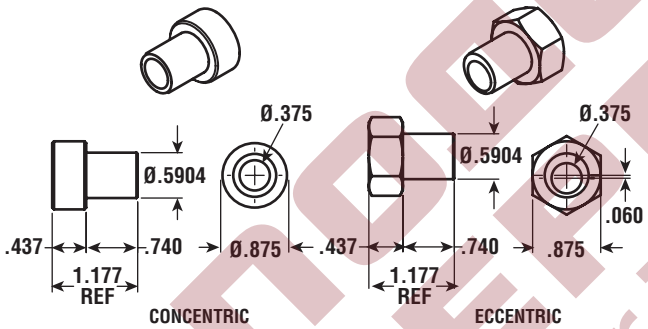
VW4	Shielded Bearing
VWS4	Sealed Bearing
VWSS4	Sealed Stainless Bearing



WEIGHT: 10 oz. (285 g)

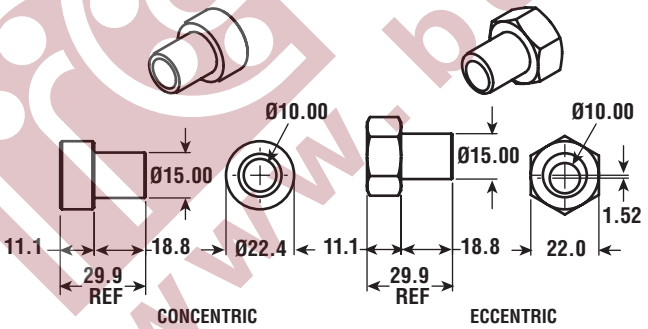
WHEEL BUSHINGS

VB4	Fixed Bushing
VBA4	Adjustable Bushing



METRIC WHEEL BUSHINGS

MVB4	Metric Fixed Bushing
MVBA4	Metric Adjustable Bushing

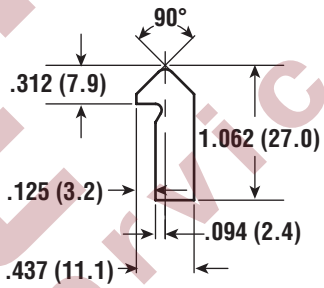


Rated for:
Radial loads to 2,246 lbs. (9,991 N) per wheel
Axial loads to 520 lbs. (2,313 N) per wheel

V-GUIDE RAIL

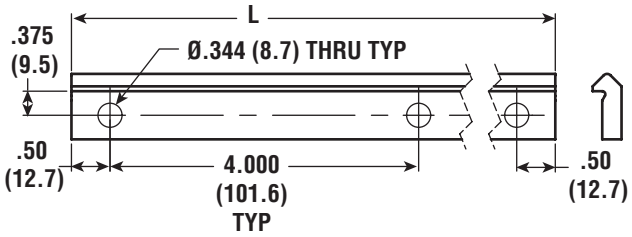
Carbon Steel	
VR4-xxx	undrilled rail max. length 21' (6400 mm)
VRD4-xxx	drilled rail, see table
Stainless Steel	
VRS4-xxx	undrilled rail, max. length 21' (6400 mm)
VRSD4-xxx	drilled rail, see table

NOTE: Non-heat treated rails available in all 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



60 mm (2-1/4")

LOAD CALCULATIONS

L = applied load / number of wheel pairs

L_R = wheel radial load

L_O = wheel load from moment

A = load offset dimension

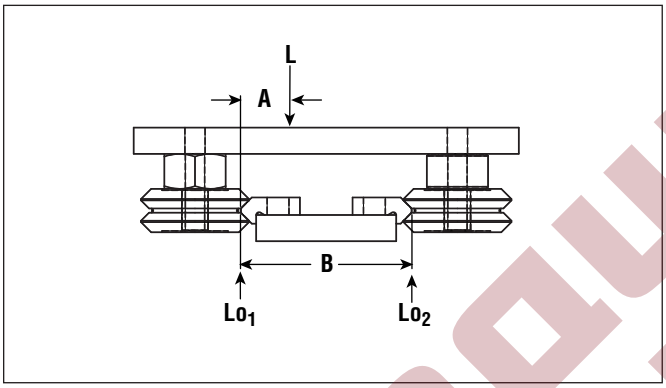
B = track width dimension

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



$$Lo_1 = \frac{L \times (B - A)}{B} \times F_A$$

$$Lo_2 = (L \times F_A) - Lo_1$$

Compare the greater of these loads to the rated moment and radial load capacities.

Example:

Load is 100 lbs on 4 wheel carriage,

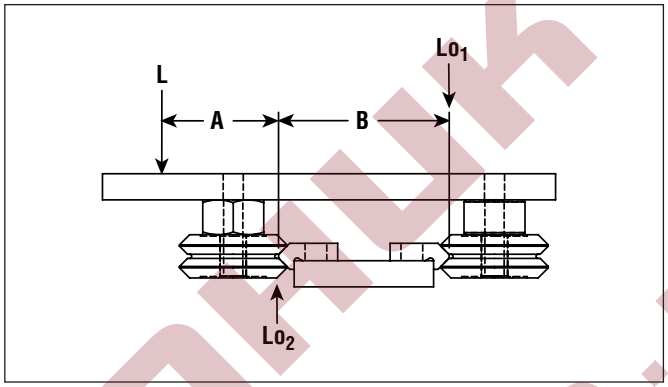
L = 100 / 2 pair wheels = 50 lbs.

A = 4", B = 10", F_A = 1

$$Lo_1 = \frac{50 \times (10 - 4) \times 1}{10} = 30 \text{ lbs.}$$

Lo_2 = 50 - 30 = 20 lbs.

LOAD CONDITION B



$$Lo_1 = \frac{L \times A}{B} \times F_A$$

$$Lo_2 = (L \times F_A) + Lo_1$$

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

$$Lo_1 = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

Lo_2 = 50 + 33 = 83 lbs.

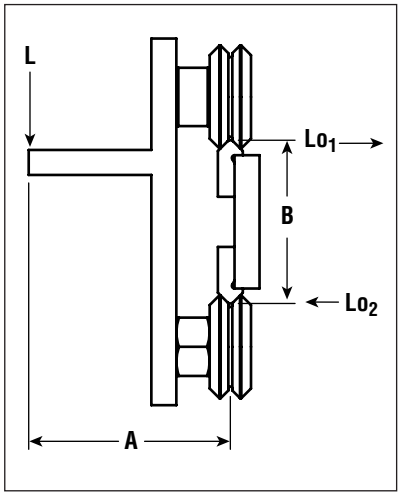
LOAD CONDITION C

$$Lo_1 = \frac{L \times A}{B} \times F_A$$

$$L_R = (L \times F_A) + Lo_1$$

$$Lo_1 = Lo_2$$

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

$$Lo_1 = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

L_R = (50 x 1) + 33 = 83 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.

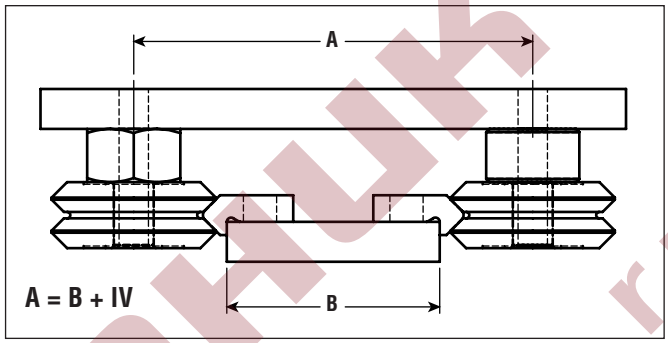
LUBRICATION

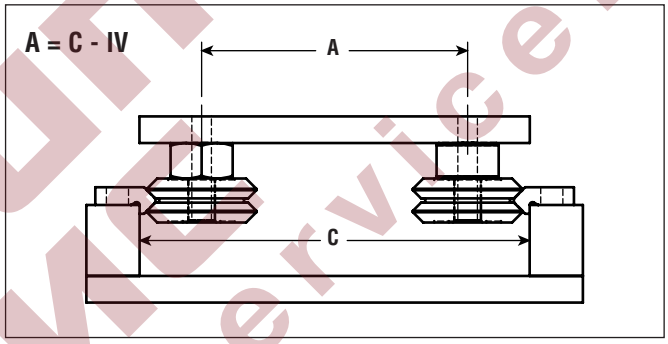
The V-Guide wheels are grease lubricated, and will not require any additional lube. The track should be lubricated for optimum performance and service life. Suggested lubricants are Mobil Vactra #2 Way Oil, or Mobil Polyrex EP 2 Extreme Pressure Grease.

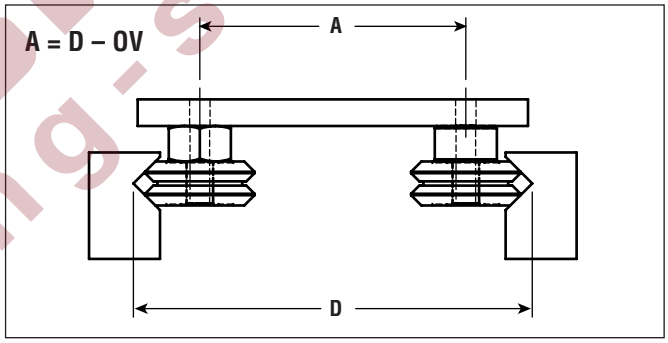
SUGGESTED FASTENERS

BUSHINGS			
ENGLISH		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

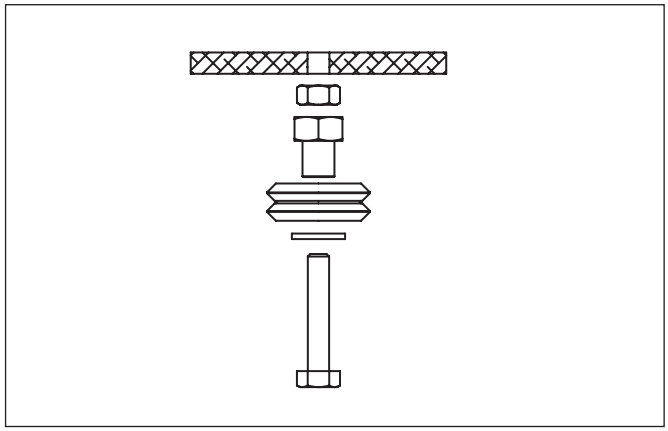






WHEEL / BUSHING ASSEMBLY

Use SAE series N flat washers and lock washers to secure the wheel bushing assemblies.



PRODUCT OVERVIEW

The Redi-Rail® Commercial Rail is a simple and cost effective linear motion solution with high load capacity and corrosion resistance. The Commercial Rail is used in various applications such as: Automation, packaging, material handling, environmental, energy, HVAC, medical, office equipment and many others.

FEATURES

- 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

APPLICATIONS

- Automation
- Packaging, material handling, etc
- Environmental, energy, HVAC, etc.
- Medical
- Office equipment

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

	CR20/CRSS20	CR30/CRSS30	CR45/CRSS45
Wrench flat sq. (mm)	6	10	14

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

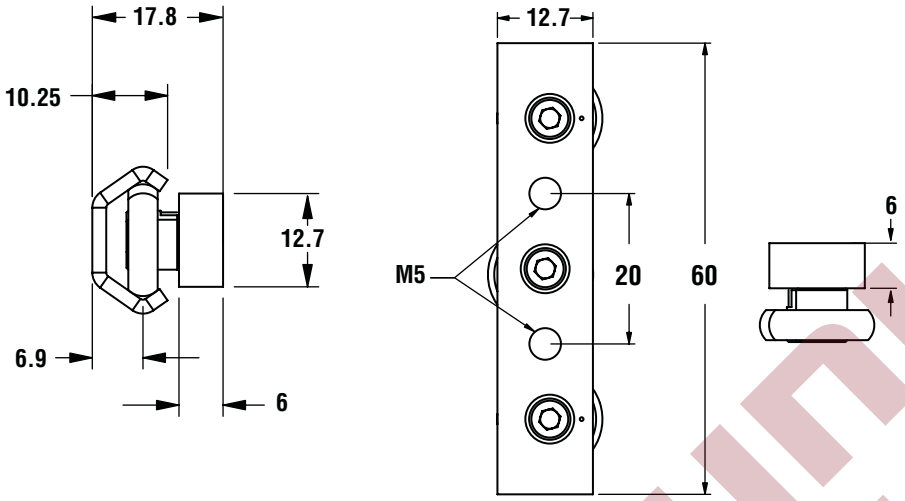
Rail Mount

	CR20/SS20	CR30/SS30	CR45/SS45
Rail mount screw (Button head cap)	M4	M5	M8

Slide 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

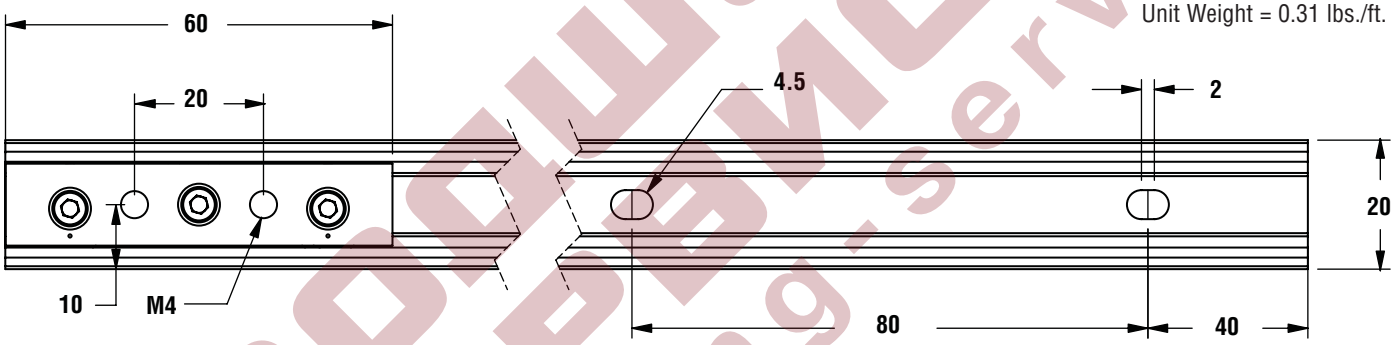
SLIDE CR20



DIMS	LOAD RATINGS		
	STATIC RADIAL C_{or}. (N)	STATIC RADIAL C_{oa}. (N)	DYNAMIC RADIAL Cr (N)
CR20 CRSS20	210	160	280
CRP20	30	20	40

RAIL CR20

Unit Weight = 0.31 lbs./ft.



ORDER INFORMATION (SLIDE)

EXAMPLE: CR20MCA

CR | | 20 | MCA

Commercial Guide Slide

Material
Blank = Steel
SS = Stainless Steel
P = Polymer

Rail Size
20 = 20mm
30 = 30mm (page 240)
45 = 45mm (page 241)

Type of Body
MCA = Machined Body
SCA = Stamped

ORDER INFORMATION (RAIL)

EXAMPLE: CR20R-XXXX

CR | | 20 | R – XXXX

Commercial Rail

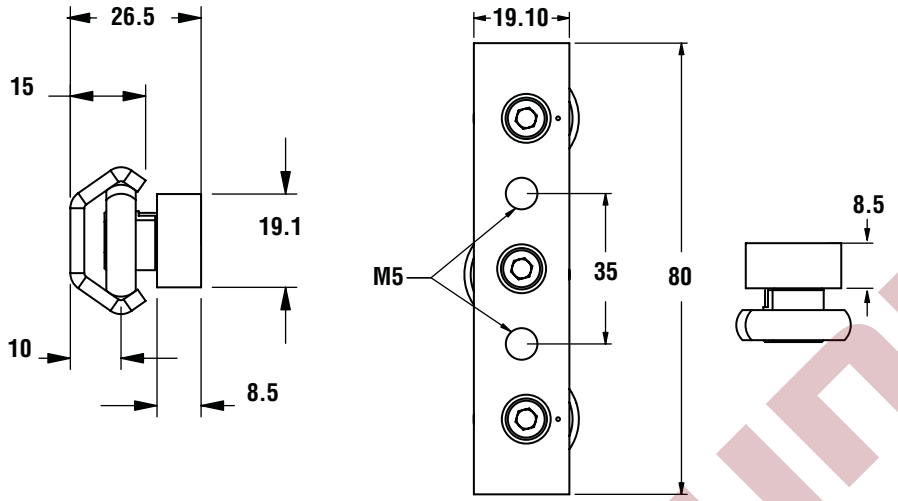
Material
Blank = Steel
SS = Stainless

Rail Size
20 = 20mm
30 = 30mm (page 240)
45 = 45mm (page 241)

Rail

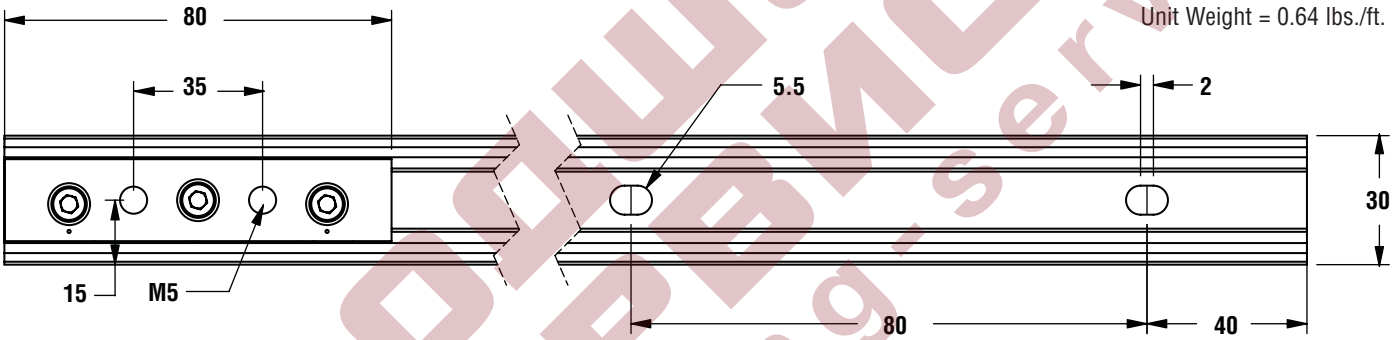
Rail Length
160 - 6000mm

SLIDE CR30



DIMS	LOAD RATINGS		
	STATIC RADIAL C_{or}. (N)	STATIC RADIAL C_{oa}. (N)	DYNAMIC RADIAL Cr (N)
CR30 CRSS30	610	420	800
CRP30	90	60	120

RAIL CR30



Unit Weight = 0.64 lbs./ft.

ORDER INFORMATION (SLIDE)

EXAMPLE: CR30MCA

CR | | **30** | **MCA**

Commercial Guide Slide

Material
Blank = Steel
SS = Stainless Steel
P = Polymer

Rail Size
20 = 20mm (page 239)
30 = 30mm
45 = 45mm (page 241)

Type of Body
MCA = Machined Body
SCA = Stamped

ORDER INFORMATION (RAIL)

EXAMPLE: CR30R-XXXX

CR | | **30** | **R** – **XXXX**

Commercial Rail

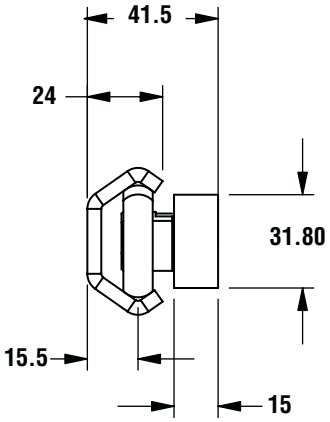
Material
Blank = Steel
SS = Stainless

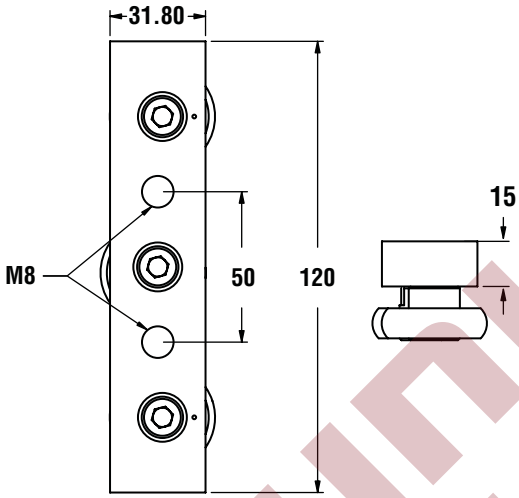
Rail Size
20 = 20mm (page 239)
30 = 30mm
45 = 45mm (page 241)

Rail

Rail Length
160 - 6000mm

SLIDE CR45

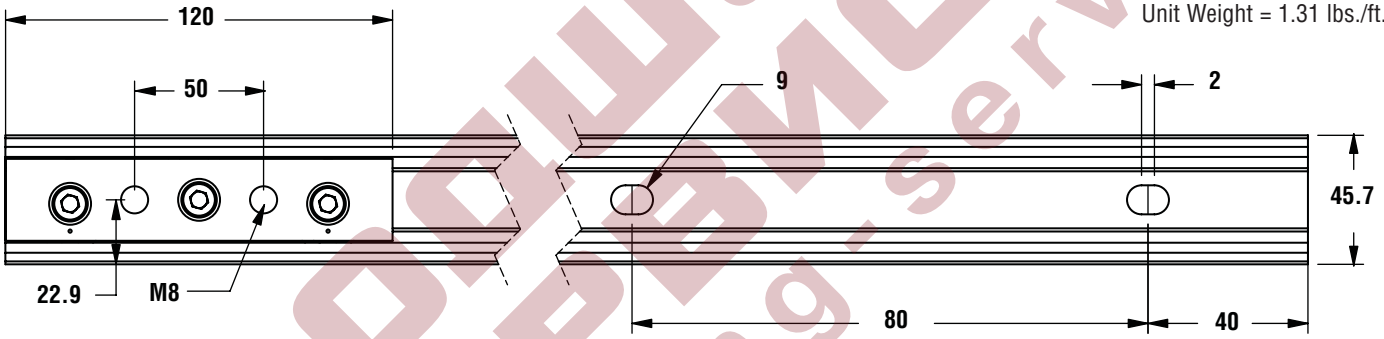




DIMS	LOAD RATINGS		
	STATIC RADIAL $C_{or.}$ (N)	STATIC RADIAL $C_{oa.}$ (N)	DYNAMIC RADIAL Cr (N)
CR45 CRSS45	1330	930	1740
CRP45	190	150	260

RAIL CR45

Unit Weight = 1.31 lbs./ft.



ORDER INFORMATION (SLIDE)

EXAMPLE: CR45MCA

CR		45	MCA

Commercial Guide Slide

Material
Blank = Steel
SS = Stainless Steel
P = Polymer

Rail Size
20 = 20mm (page 239)
30 = 30mm (page 240)
45 = 45mm

Type of Body
MCA = Machined Body
SCA = Stamped

ORDER INFORMATION (RAIL)

EXAMPLE: CR45R-XXXX

CR		45	R	–	XXXX

Commercial Rail

Material
Blank = Steel
SS = Stainless

Rail Size
20 = 20mm (page 239)
30 = 30mm (page 240)
45 = 45mm

Rail

Rail Length
160 - 6000mm

- 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
- Hardened crown provides self-alignment, good strength, and long life
- MAX. bearing load - 300 lbs.
- MAX. bearing speed - 150 ft./ min. (30 in./sec.)
- Rails available in lengths up to 10'

RAILS AVAILABLE WITH TWO FINISHES:

- Bare steel
- Powder coated

ACCESSORIES AVAILABLE:

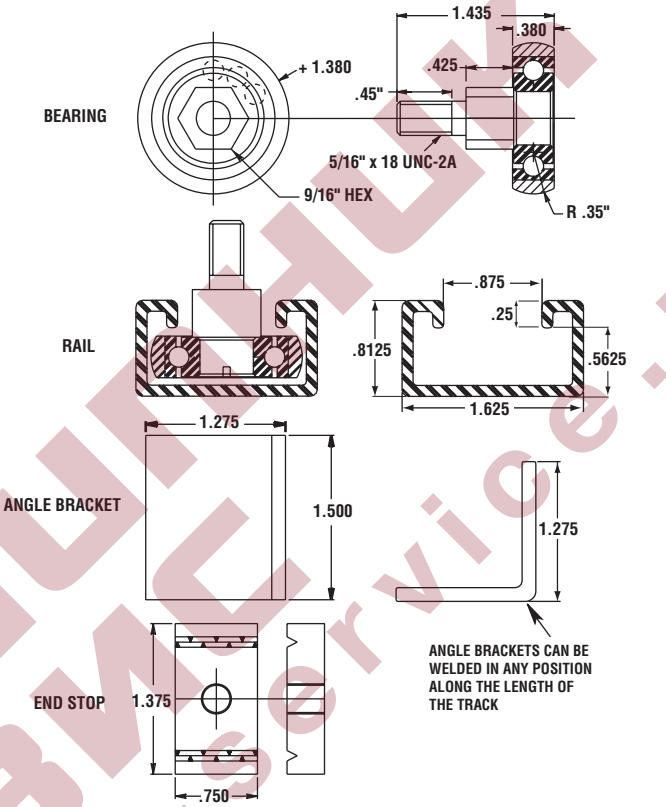
- Angle brackets (for welding to mounting rail)
- End stops

™ Unistrut is a trademark of Unistrut, Inc.

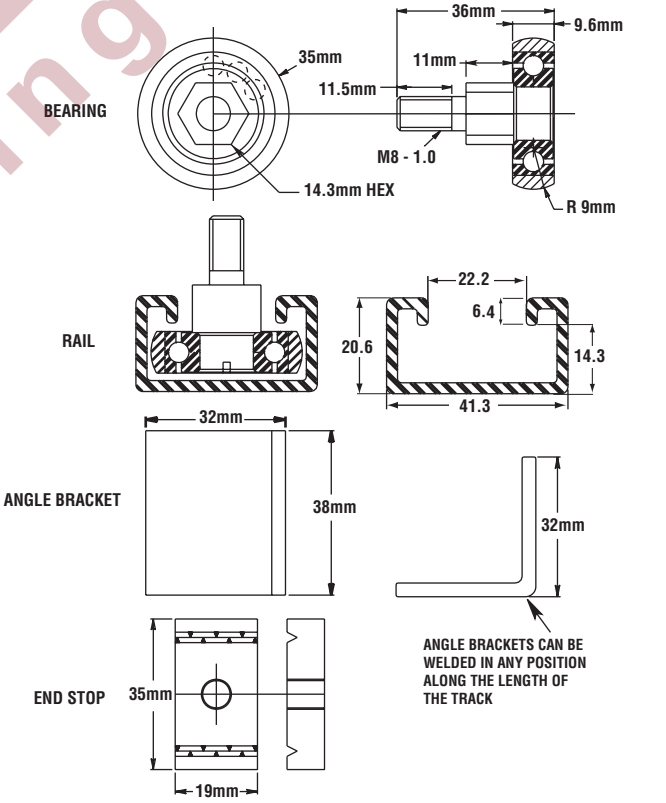
ORDERING INFORMATION

PART NO.	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.

Hevi-Rail® Linear Bearing Systems
Product Overview

The Hevi-Rail® high load capacity linear bearing guide systems from Pacific Bearing provide high axial and radial load capacity for material handling, packaging, automotive, aerospace, steel, paper processing and many more industries and applications with medium to low precision requirements.

FEATURES & BENEFITS

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
- Available sand blasted and lightly oiled
- U-channel and I-channel available

Flange Plates:
- Simple mounting for bearings
- Can be ordered pre-welded to bearing
  Ordering example: HVB-054/HVPO-1

Clamp Flanges:
- Adjustable
- Eliminates need for welding and straightening
- Easily adjustable parallelism

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

Welding bolts - Low carbon steel
Bolt tolerance = 0.05 mm

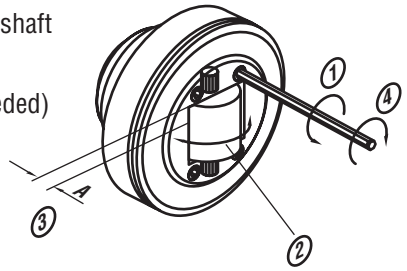
Seals:
Bearings with fixed axial bearing (HVB-053 to HVB-063) - radial bearing has steel labyrinth and side guide roller with rubber seals

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-055 to HVB-063 can be relubricated with grease zerk. Adjustable bearings are not available with zerk.

Temperature: Resistant from -10°C to 80°C (14°F to 176°F)

Adjusting Axial Bearing (HVBEA-454 to HVBEA-463)
1. Remove front screws. Heat or tap sharply to break Loctite®.
2. Rotate axial bearing shaft
3. Check dimension A (repeat step 2, if needed)
4. Re-install front screws with Loctite®



APPLICATIONS

Some application examples:
- 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

TECHNICAL SPECIFIATIONS (cont.)

PROFILE RAILS

Materials: High quality steel, UNI FE 510.C. Standard length (1024/1524 steel) of 6 m (19.7 ft.). 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

Material: Low carbon steel, Adjustable clamp

FLANGE PLATE

Materials: Low carbon steel
Special designs available, call factory.
Optional: Bearings pre-welded to flange plates.
Ordering example: HVB-054/HVPO-1

BEARING LIFE CALCULATION

Life (hrs) = $0.7 \cdot (c/p)^{3.33}$
c = dynamic load factor (N)
p = actual radial load (N)

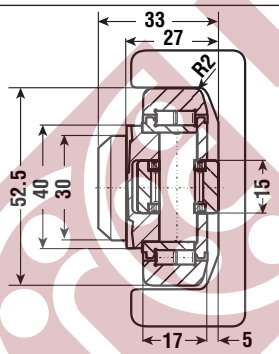
LINEAR BEARING SYSTEM SELECTION (when used with Profile Rails HVR-S to HVR-6)

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 page.

F (KN) MAX STAT RADIAL	F (KN) MAX STAT AXIAL	COMBINED BEARING AXIAL BEARING FIXED	COMBINED BEARNG AXIAL BEARING ADJUSTABLE	PROFILE RAILS	CLAP FLANGE	FLANGE PLATE	PAGE NO.
5.2	1.7	HVB-053	–	HVR-S	–	HVPS-1	244
7.2	2.4	HVB-054	HVBEA-454	HVR-0	HVC-0	HVP0-1	245
8.6	2.8	HVB-055	HVBEA-455	HVR-1, HVRI-07	HVC-1	HVP1-1	246
8.9	3.0	HVB-056	HVBEA-456	HVR-2	HVC-2	HVP2-1	247
8.9	3.0	HVB-057	HVBEA-457	HVRI-08	–	HVP2-1	248
15.6	5.2	HVB-058	HVBEA-458	HVR-3, HVRI-09	HVC-3	HVP3-1	249
15.5	5.1	HVB-059	HVBEA-459	HVRI-10	–	–	250
16.5	5.5	HVB-060	HVBEA-460	HVRI-11	–	–	250
16.5	5.5	HVB-061	HVBEA-461	HVR-4	HVC-4	HVP4-1	251
23.5	7.8	HVB-062	-	HVR-5	–	HVP4-1	252
41.1	13.7	HVB-063	HVBEA-463	HVR-6	–	HVP6-1	253

NOTE: For cantilevered loads, static verification calculations can be found on page 254.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-053

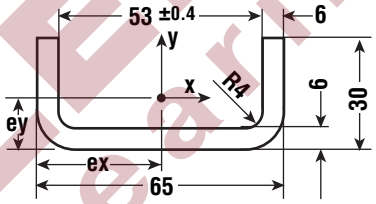


WEIGHT = 0.36 Kg

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

PROFILE RAIL U-CHANNEL
HVR-S



WEIGHT = 5.3 Kg/m

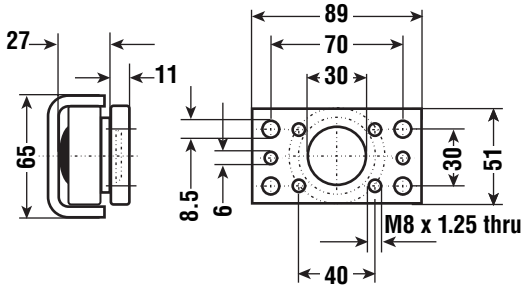
MOMENT OF INERTIA
Ix = 5.2 cm^4, Iy = 38.8 cm^4

MOMENT OF RESISTANCE
Wx = 2.50 cm^3, Wy = 11.90 cm^3

RADIUS OF INERTIA
ix = 0.80 cm, iy = 2.40 cm

DIST. TO CENTER OF GRAVITY
ey = 0.94 cm, ex = 32.50 cm

FLANGE PLATE
HVPS-1

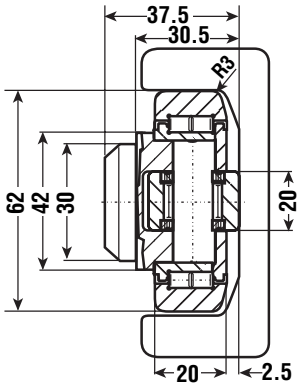


NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-054



WEIGHT = 0.53 Kg

BEARING RADIAL LOAD

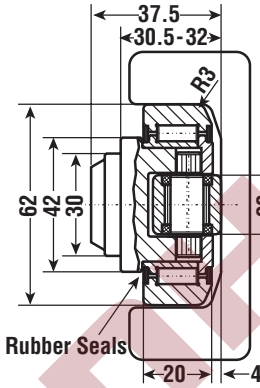
Max. dynamic load = 39 KN
Max. static load = 65 KN

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-454



WEIGHT = 0.53 Kg

BEARING RADIAL LOAD

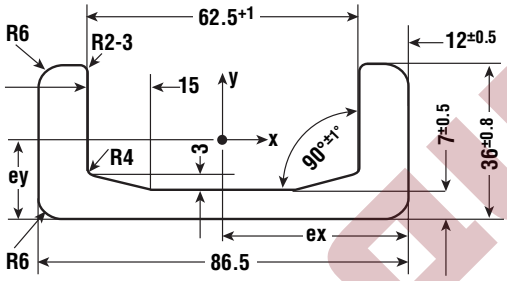
Max. dynamic load = 39 KN
Max. static load = 65 KN

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-0



WEIGHT = 10.5 Kg/m

MOMENT OF INERTIA

Ix = 15.35 cm^4, Iy = 137.05 cm^4

DIST. TO CENTER OF GRAVITY

ey = 1.29 cm, ex = 4.33 cm

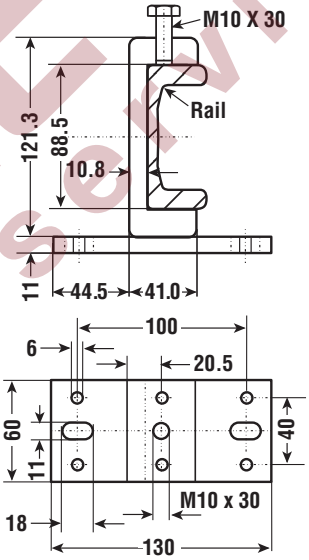
RADIUS OF INERTIA

ix = 1.07 cm, iy = 3.20 cm

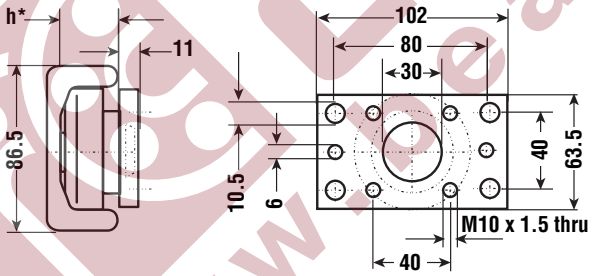
MOMENT OF RESISTANCE

Wx_{min} = 6.64 cm^3
Wx_{max} = 11.93 cm^3
Wy = 31.69 cm^3

CLAMP FLANGE
HVC-0



FLANGE PLATE
HVPO-1

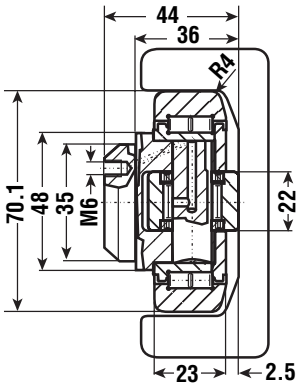


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-054 or HVBEA-454.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-055



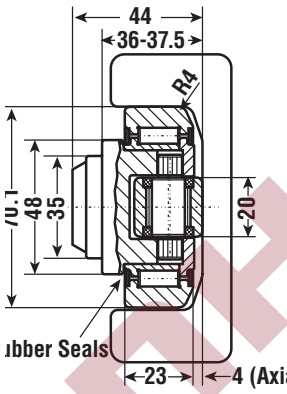
WEIGHT = 0.80 Kg

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-455



WEIGHT = 0.80 Kg

BEARING RADIAL LOAD

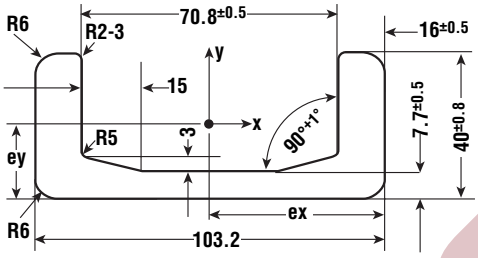
Max. dynamic load = 56 KN
Max. static load = 93 KN

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

Ix = 27.29 cm^4, Iy = 273.50 cm^4

DIST. TO CENTER OF GRAVITY

ey = 1.50 cm, ex = 5.16 cm

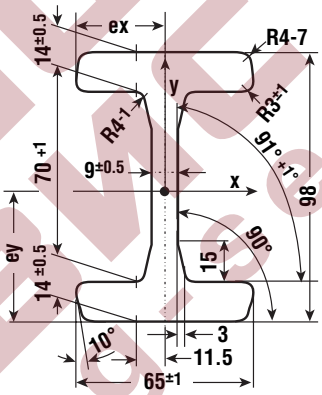
RADIUS OF INERTIA

ix = 1.20 cm, iy = 3.81 cm

MOMENT OF RESISTANCE

Wx_{min} = 10.91 cm^3
Wx_{max} = 18.20 cm^3
Wy = 53.00 cm^3

PROFILE RAIL I-CHANNEL
HVRI-07



WEIGHT = 19.4 Kg/m

MOMENT OF INERTIA

Ix = 344.29 cm^4, Iy = 57.63 cm^3

DIST. TO CENTER OF GRAVITY

ey = 4.90 cm. ex = 3.25 cm

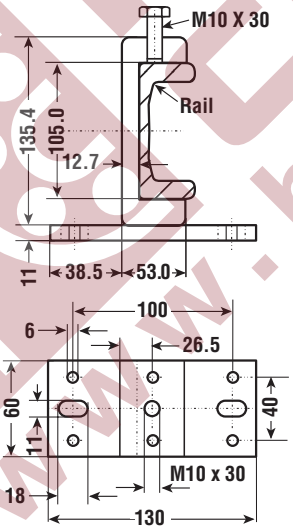
RADIUS OF INERTIA

ix = 3.73 cm, iy = 1.52 cm

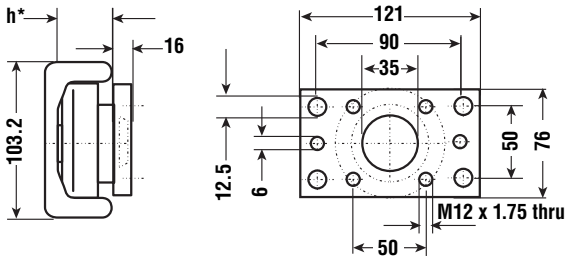
MOMENT OF RESISTANCE

Wx = 70.26 cm^3, Wy = 17.73 cm^3

CLAMP FLANGE
HVC-1



FLANGE PLATE
HVP1-1

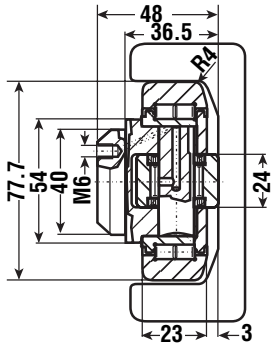


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-055 or HVBEA-455.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-056



WEIGHT = 1.00 Kg

BEARING RADIAL LOAD

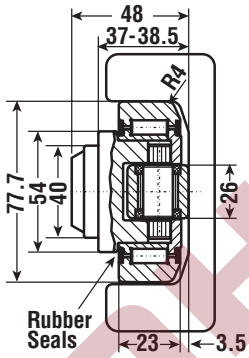
Max. dynamic load = 59 KN
Max. static load = 102 KN

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-456



WEIGHT = 1.00 Kg

BEARING RADIAL LOAD

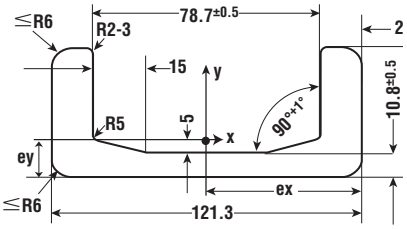
Max. dynamic load = 59 KN
Max. static load = 102 KN

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

Ix = 37.92 cm^4, Iy = 493.58 cm^4

DIST. TO CENTER OF GRAVITY

ey = 1.54 cm, ex = 6.07 cm

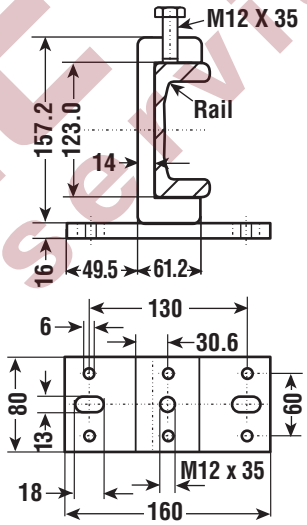
RADIUS OF INERTIA

ix = 1.19 cm, iy = 4.30 cm

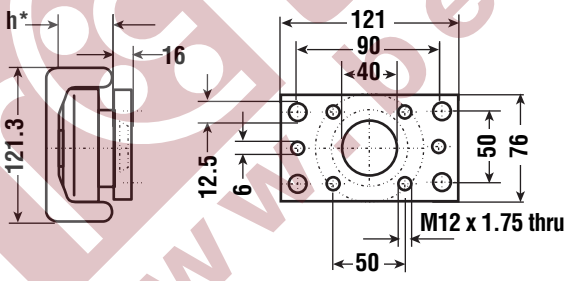
MOMENT OF RESISTANCE

Wx_{min} = 14.83 cm^3, Wx_{max} = 24.58 cm^3,
Wy = 81.38 cm^3

CLAMP FLANGE
HVC-2



FLANGE PLATE
HVP2-1

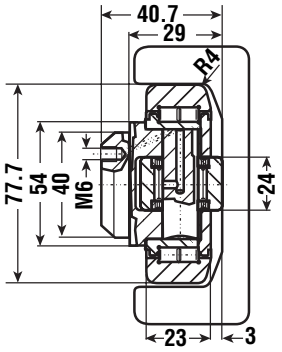


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-056 or HVBEA-456.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-057



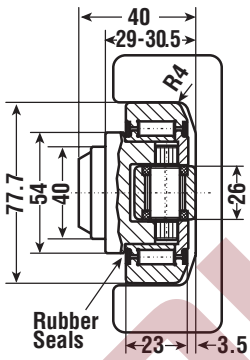
WEIGHT = 0.90 Kg

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-457



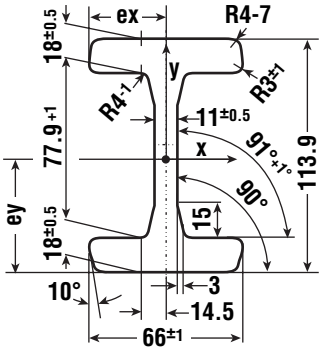
WEIGHT = 0.87 Kg

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

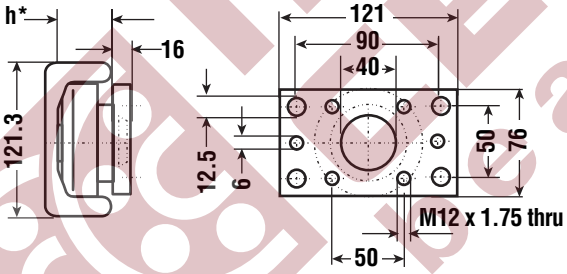
MOMENT OF INERTIA
Ix = 597.54 cm^4, Iy = 76.79 cm^4

DIST. TO CENTER OF GRAVITY
ey = 5.70 cm, ex = 3.30 cm

RADIUS OF INERTIA
ix = 4.24 cm, iy = 1.54 cm

MOMENT OF RESISTANCE
Wx = 104.92 cm^3,
Wy = 23.27 cm^3

FLANGE PLATE
HVP2-1

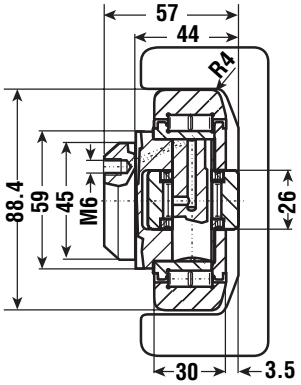


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-057 or HVBEA-457.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-058



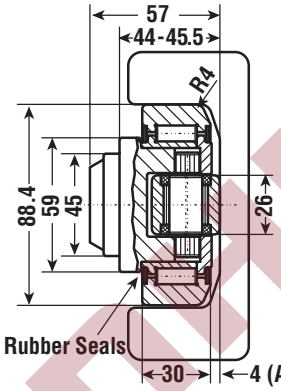
WEIGHT = 1.62 Kg

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-458



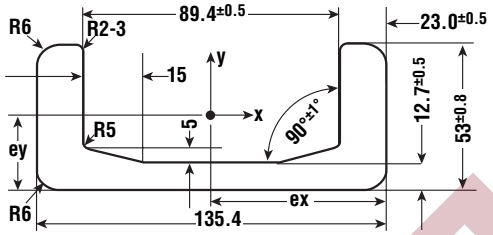
WEIGHT = 1.62 Kg

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

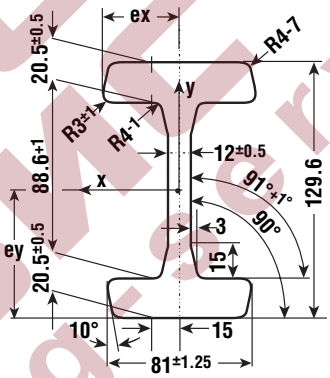
MOMENT OF INERTIA
Ix = 89.47 cm^4, Iy = 865.23 cm^4

DIST. TO CENTER OF GRAVITY
ey = 1.99 cm, ex = 6.77 cm

RADIUS OF INERTIA
ix = 1.57 cm, iy = 4.87 cm

MOMENT OF RESISTANCE
Wx_{min} = 27.03 cm^3
Wx_{max} = 44.96 cm^3
Wy = 127.80 cm^3

PROFILE RAIL I-CHANNEL
HVRI-09



WEIGHT = 34.1 Kg/m

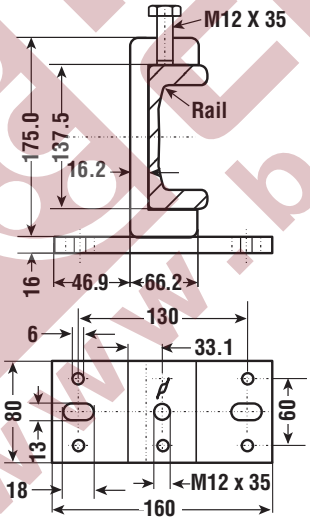
MOMENT OF INERTIA
Ix = 1037.22 cm^4, Iy = 161.89 cm^4

DIST. TO CENTER OF GRAVITY
ey = 6.48 cm, ex = 4.05 cm

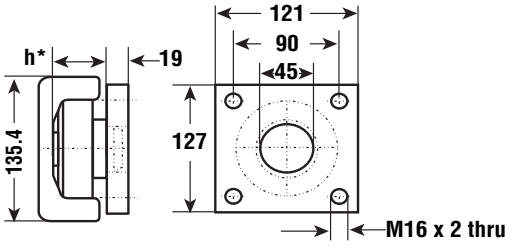
RADIUS OF INERTIA
ix = 4.89 cm, iy = 1.93 cm

MOMENT OF RESISTANCE
Wx = 160.07 cm^3,
Wy = 39.97 cm^3

CLAMP FLANGE
HVC-3



FLANGE PLATE
HVP3-1

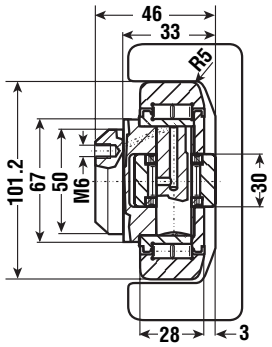


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-058 or HVBEA-458.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-059



WEIGHT = 1.80 Kg

BEARING RADIAL LOAD

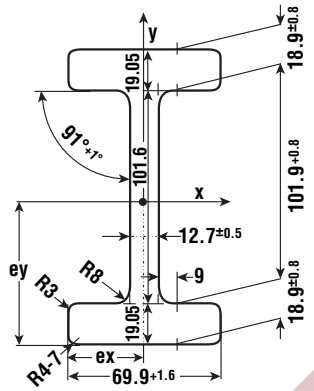
Max. dynamic load = 92 KN
Max. static load = 153 KN

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.

PROFILE RAIL I-CHANNEL
HVRI-10



WEIGHT = 30.9 Kg/m

MOMENT OF INERTIA

Ix = 1078.01 cm^4, Iy = 104.38 cm^4

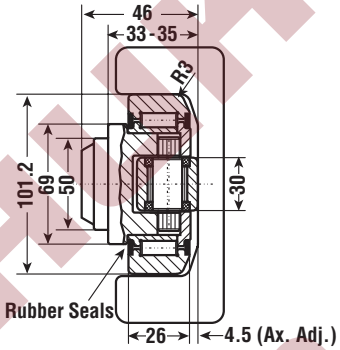
DIST. TO CENTER OF GRAVITY

ey = 6.99 cm, ex = 3.49 cm

MOMENT OF RESISTANCE

Wx = 154.33 cm^3, Wy = 29.89 cm^3

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-459



WEIGHT = 1.74 Kg

BEARING RADIAL LOAD

Max. dynamic load = 91 KN
Max. static load = 140 KN

BEARING AXIAL LOAD

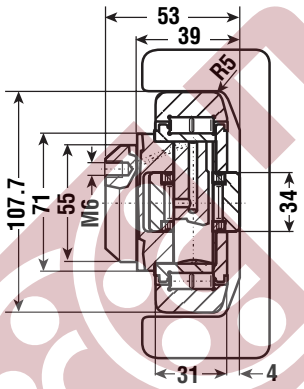
Max. dynamic load = 32 KN
Max. static load = 50 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-060



WEIGHT = 2.30 Kg

BEARING RADIAL LOAD

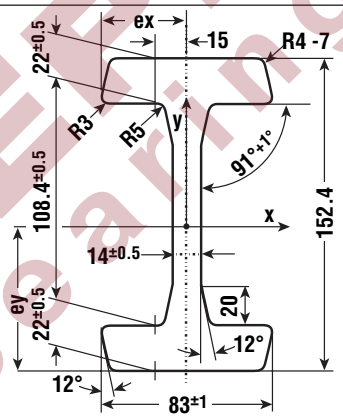
Max. dynamic load = 100 KN
Max. static load = 174 KN

BEARING AXIAL LOAD

Max. dynamic load = 39 KN
Max. static load = 66 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

PROFILE RAIL I-CHANNEL
HVRI-11



WEIGHT = 40.5 Kg/m

MOMENT OF INERTIA

Ix = 1670.08 cm^4, Iy = 184.52 cm^4

DIST. TO CENTER OF GRAVITY

ey = 7.62 cm, ex = 4.15 cm

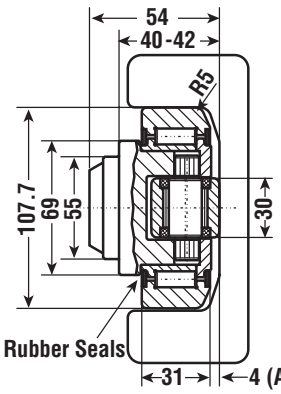
RADIUS OF INERTIA

ix = 5.69 cm, iy = 1.91 cm

MOMENT OF RESISTANCE

Wx = 219.17 cm^3, Wy = 44.46 cm^3

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-460



WEIGHT = 2.27 Kg

BEARING RADIAL LOAD

Max. dynamic load = 100 KN
Max. static load = 174 KN

BEARING AXIAL LOAD

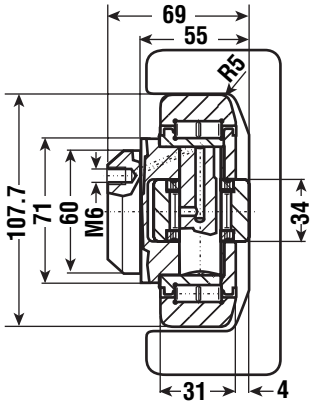
Max. dynamic load = 32 KN
Max. static load = 50 KN

NOTE: Above loads achievable when used with a hardened rail 55 RC minimum 2.54mm deep.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-061



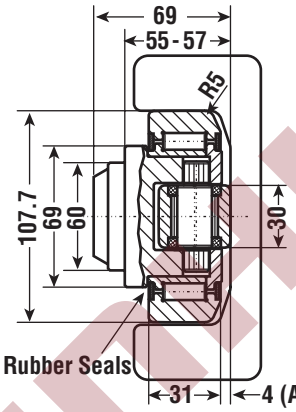
WEIGHT = 2.82 Kg

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-461



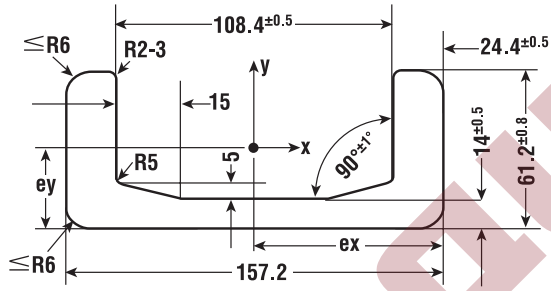
WEIGHT = 2.82 Kg

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

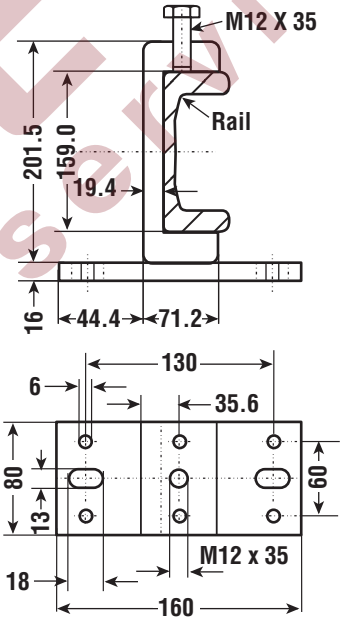
MOMENT OF INERTIA
Ix = 150.98 cm^4,
Iy = 1,494.32 cm^4

DIST. TO CENTER OF GRAVITY
ey = 2.25 cm, ex = 7.86 cm

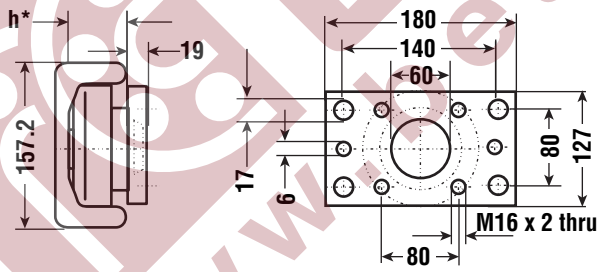
RADIUS OF INERTIA
ix = 1.82 cm, iy = 5.72 cm

MOMENT OF RESISTANCE
Wx_{min} = 39.00 cm^3
Wx_{max} = 67.13 cm^3
Wy = 190.12 cm^3

CLAMP FLANGE
HVC-4



FLANGE PLATE
HVP4-1

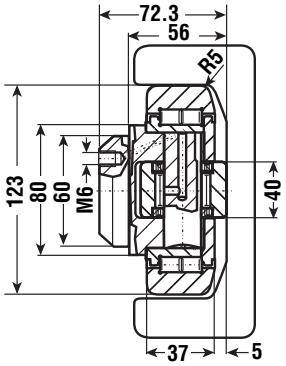


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-061 or HVBEA-461.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-062



WEIGHT = 4.50 Kg

BEARING RADIAL LOAD

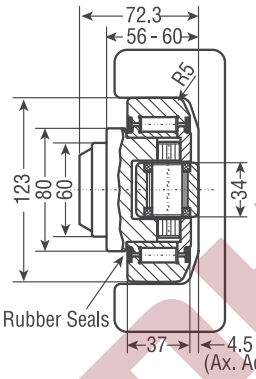
Max. dynamic load = 135 KN
Max. static load = 242 KN

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-462



WEIGHT = 3.90 Kg

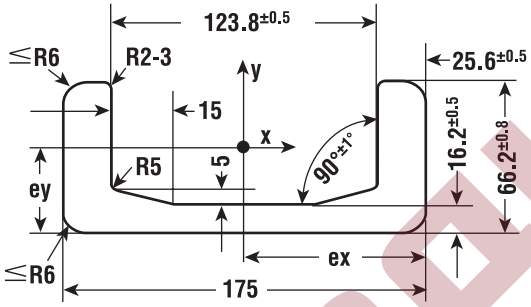
BEARING RADIAL LOAD

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
HVR-5



WEIGHT = 42.9 Kg/m

MOMENT OF INERTIA

Ix = 205.84 cm^4,
Iy = 2,185.32 cm^4

DIST. TO CENTER OF GRAVITY

ey = 2.37 cm, ex = 8.75 cm

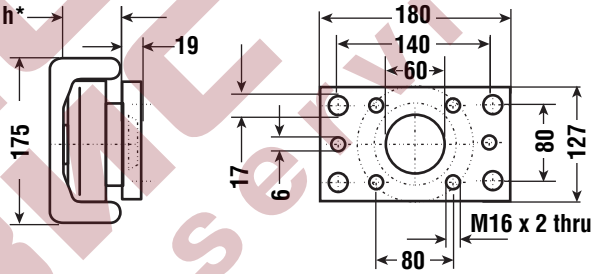
RADIUS OF INERTIA

ix = 1.94 cm, iy = 6.32 cm

MOMENT OF RESISTANCE

Wx_{min} = 48.42 cm^3
Wx_{max} = 86.89 cm^3
Wy = 249.75 cm^3

FLANGE PLATE
HVP4-1

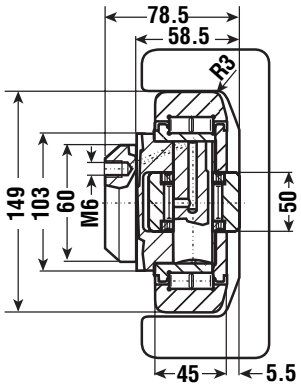


* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-062 or HVBEA-462.

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

*All dimensions in mm, unless otherwise specified.

LINEAR BEARING WITH FIXED AXIAL BEARING
HVB-063



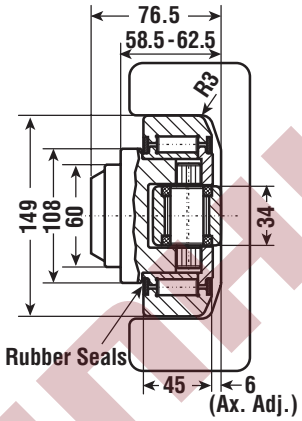
WEIGHT = 6.52 Kg

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.

LINEAR BEARING WITH ECCENTRIC ADJUSTABLE AXIAL BEARING
HVBEA-463



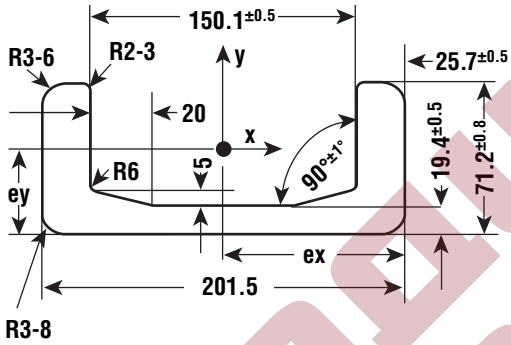
WEIGHT = 6.50 Kg

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

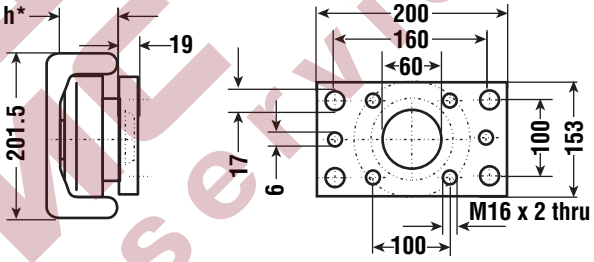
MOMENT OF INERTIA
Ix = 269.52 cm^4,
Iy = 3,423.08 cm^4

DIST. TO CENTER OF GRAVITY
ey = 2.40 cm, ex = 10.08 cm

RADIUS OF INERTIA
ix = 2.01 cm, iy = 7.17 cm

MOMENT OF RESISTANCE
Wx_{min} = 57.15 cm^3
Wx_{max} = 112.11 cm^3
Wy = 339.76 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

*All dimensions in mm, unless otherwise specified.

CALCULATION OF FMAX FOR CANTILEVERED LOADS

Q = Load capacity (N)

L = Load distance to suspension point (mm)

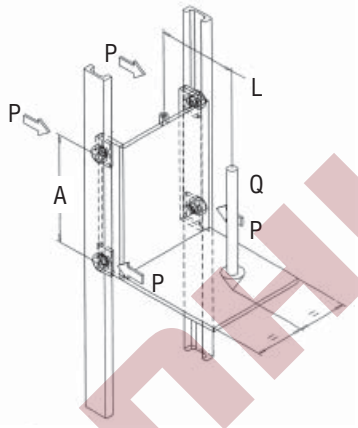
P = Suspension point

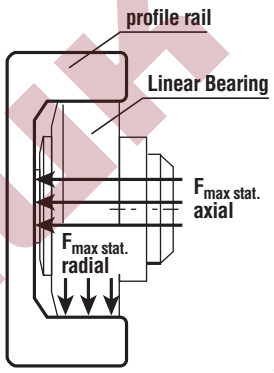
A = Bearing distance (mm) recommended 500–1000 mm

Formula: $F_{max}[N]_{stat\ radial} = \frac{Q \bullet L}{2 \bullet A}$

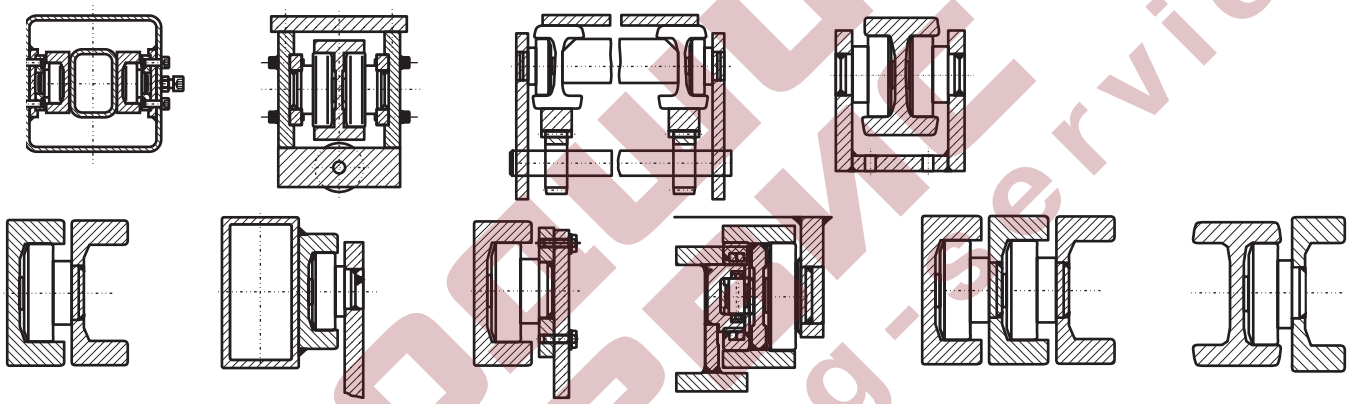
To avoid wearout in the rail, which is not hardened, the pressure between bearing and rail should be max.
P_{zul} = 860 N/mm² for Profile Rails HVB-0 to HVB-6.

P_{zul} = 750 N/mm² for all profile rails. Indicated here are F_{max} stat radial + axial for each bearing.

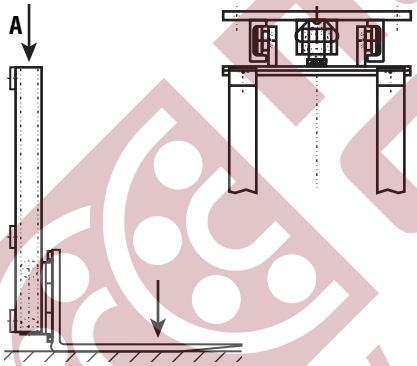




POSSIBLE MOUNTING CONFIGURATIONS

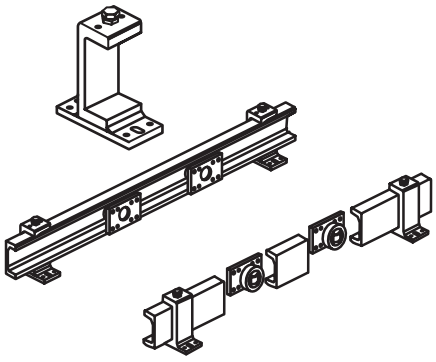


LIFTING UNITS

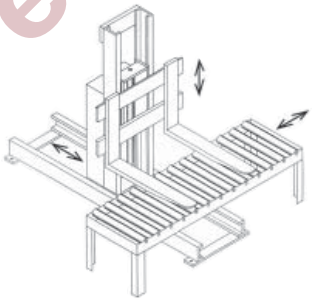


HORIZONTAL TELESCOPE

ADJUSTABLE CLAMP SYSTEM

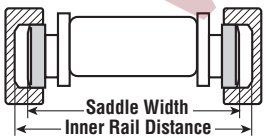


HANDLING UNITS



SYSTEM DESIGN SUGGESTIONS

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.