

# LINEAR MOTION SOLUTIONS

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



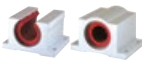
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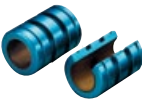
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The data and specifications in this publication have been carefully compiled and are believed to be accurate and correct. However, it is the responsibility of the user to determine and ensure the suitability of PBC Linear® products for a specific application.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

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## SIMPLICITY® PLANE BEARINGS - ISO METRIC



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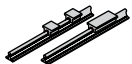
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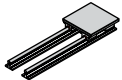
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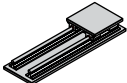
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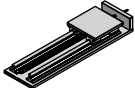
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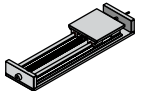
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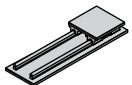
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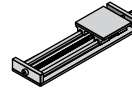
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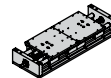
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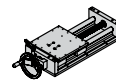
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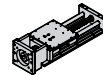
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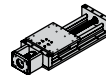
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# Simplicity® Self-Lubricating Bearings

## Ordering Information

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### SERIES

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

### O.D. Features

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

### I.D. Features

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

### Closed or Open Style

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

### Bearing Shell Material

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

### Nominal Shaft Diameter

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

**FL**

**A**

**C**

**N**

**S**

**16**

**- D**

**E**

**JKM**

**Q**

### Seal Options

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

### Bearing Liner Material

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

### Internal Lubrication

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

### Special Modifications

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

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### SERIES

**NOTE:** Standard Simplicity bearings are installed in housings

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

### Closed or Open Style

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

**No Entry** - Standard Closed Series

**N** - Open Series

### Housing I.D. Features

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

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

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

**No Entry** - Standard Square Flange

**R** - Available Round Flange

### Housings Only

**No Entry** - Housings with bearing included

**E** - Empty Housings with NO bearing included

### Nominal Shaft Diameter

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

**P**

**N**

**B**

**E**

**16**

**- C**

**D**

**E**

**JKM**

**Q**

### Bearing I.D. Features

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

**C** - Compensated running clearance on the I.D.

### Seal Options

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

**D** - Double seals of Standard Polymod® material

**DU** - Double seals of moly impregnated urethane material

**DV** - Double seals of viton - high temperature material

### Bearing Liner Material

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

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

### Internal Lubrication

**No Entry** - Standard pillowblock assembly with NO lubrication system

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

### Special Modifications

**NOTE:** Consult Factory

**No Entry** - Standard Options

**Q** - Shipped Oil Free (Consult Factory)

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

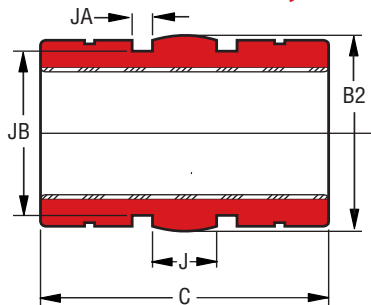


# Linear Plane Bearing - FL

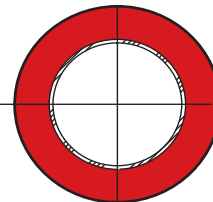
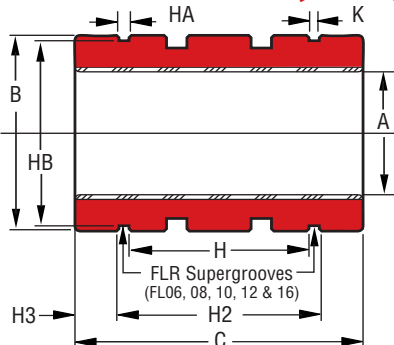
## Simplicity® Self-Lubricating - Inch Series

### FL LINEAR PLANE BEARINGS

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



#### STANDARD O.D. (FL-XX)



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

### BASIC DIMENSIONAL INFORMATION

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

### MOUNTING DIMENSIONAL INFORMATION

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

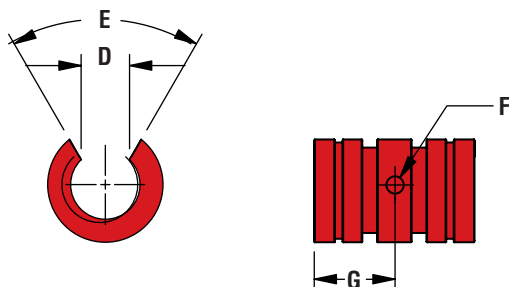
NOTES: FLR is not available on FL03 and FL04.

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

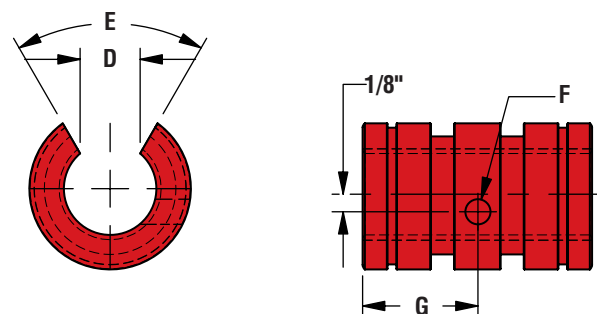


### FL & FLN LINEAR BEARINGS

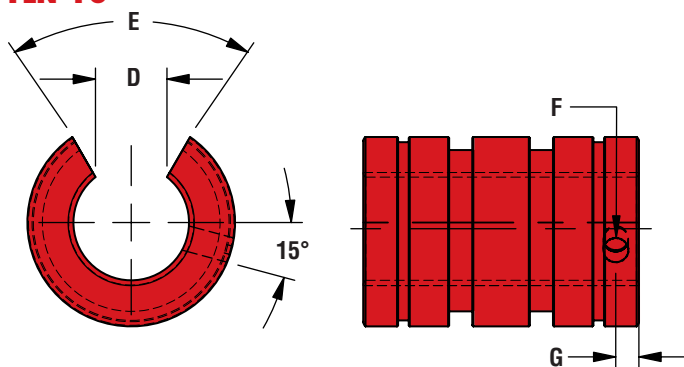
#### FLN 04 - FLN 06



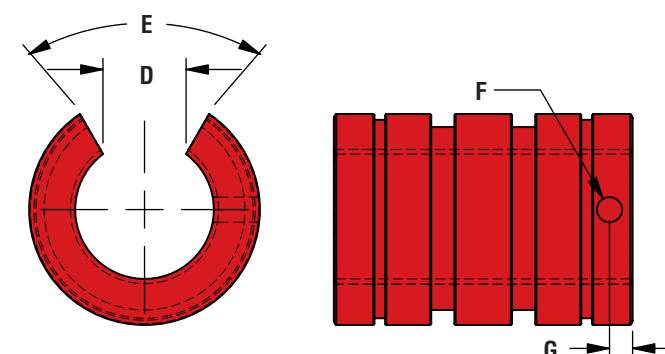
#### FLN 08



#### FLN 10



#### FLN 12 THRU FLN 64



### OPEN DIMENSIONAL INFORMATION

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

NOTE: All other dimensions same as closed bearing.

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

### ACCESSORIES

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

### LOAD & SPEED DATA

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

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

Frelon Gold = 20000 PV

Frelon J = 10000 PV

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

Frelon Gold = 300 sfm

Frelon J = 140 sfm

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

Frelon Gold = 825 sfm

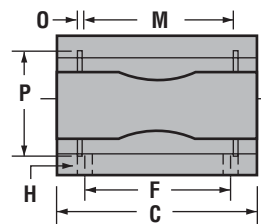
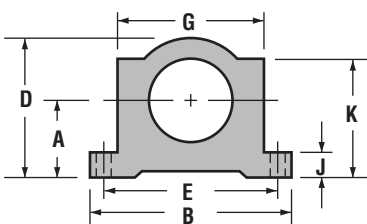
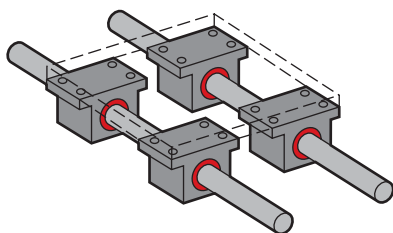
Frelon J = 400 sfm



# Pillow Blocks - P & PN

## Simplicity® Self-Lubricating

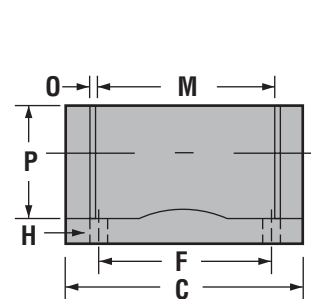
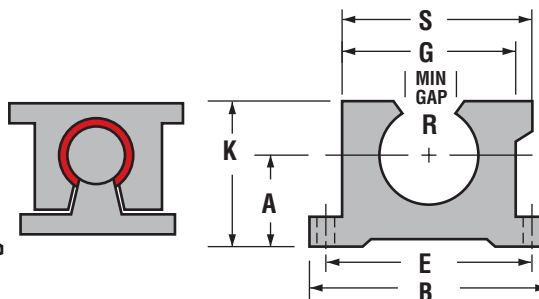
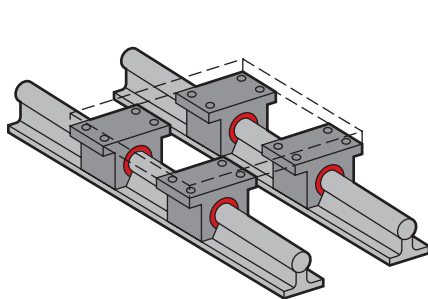
### P & PN PILLOW BLOCKS



### CLOSED PILLOW BLOCKS

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

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



### OPEN PILLOW BLOCKS

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

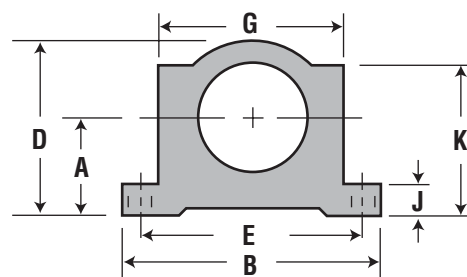
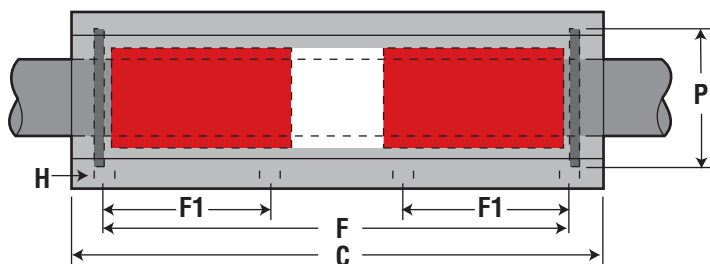
- NOTES: (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.  
 (2) All standard pillow blocks use standard "FL" series bearings found on page 10.  
 (3) All open pillow blocks have "notch".

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



### PW & PWN TWIN PILLOW BLOCKS

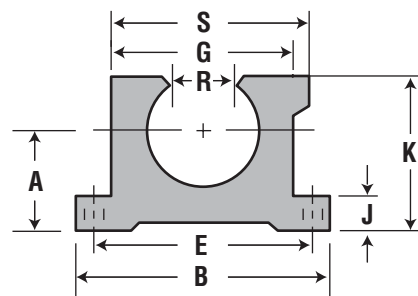
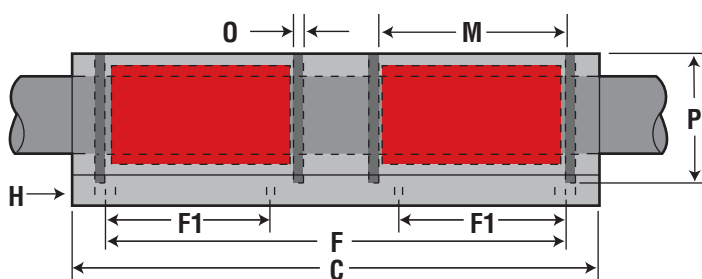


### CLOSED TWIN PILLOW BLOCKS

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

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

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



### OPEN TWIN PILLOW BLOCKS

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

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

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

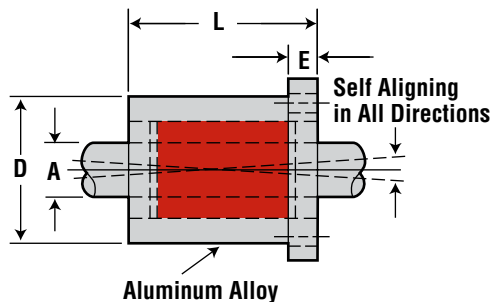
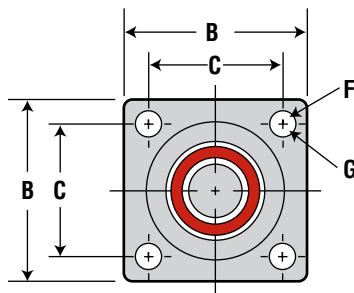
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# Flange Mount - SFP & DFP

## Simplicity® Self-Lubricating

### SFP FLANGE MOUNTS

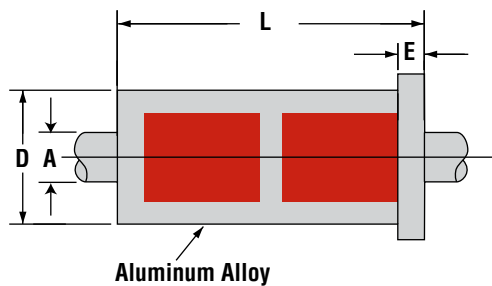
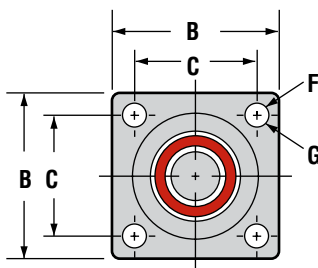


### BASIC DIMENSIONAL INFORMATION

| PART NO. |          | A<br>BEARING<br>NOMINAL<br>SIZE | B<br>FLANGE<br>SQUARE | C<br>HOLE SPACING | D<br>BARREL<br>DIA. | E<br>FLANGE<br>LENGTH | F<br>BOLT<br>SIZE | G<br>HOLE<br>SIZE | L<br>LENGTH<br>OVERALL | MAX. STATIC<br>LOAD (lbs.)<br>FRELON |      | ASSEMBLY<br>WEIGHT<br>(lbs.) |
|----------|----------|---------------------------------|-----------------------|-------------------|---------------------|-----------------------|-------------------|-------------------|------------------------|--------------------------------------|------|------------------------------|
|          |          |                                 |                       |                   |                     |                       |                   |                   |                        | GOLD                                 | J    |                              |
| SFP 08   | SFP 08 C | 1/2"                            | 1.63                  | 1.25              | 1.25                | 0.250                 | #8                | 0.187             | 1.687                  | 1950                                 | 975  | 0.175                        |
| SFP 12   | SFP 12 C | 3/4"                            | 2.38                  | 1.75              | 1.75                | 0.375                 | #10               | 0.219             | 2.067                  | 2940                                 | 1470 | 0.463                        |
| SFP 16   | SFP 16 C | 1"                              | 2.75                  | 2.125             | 2.25                | 0.500                 | 1/4"              | 0.281             | 2.812                  | 3810                                 | 1905 | 1.206                        |
| SFP 20   | SFP 20 C | 1 1/4"                          | 3.88                  | 3.00              | 2.62                | 0.625                 | 3/8"              | 0.386             | 3.625                  | 10830                                | 5415 | 1.830                        |

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

### DFP FLANGE MOUNTS



### BASIC DIMENSIONAL INFORMATION

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

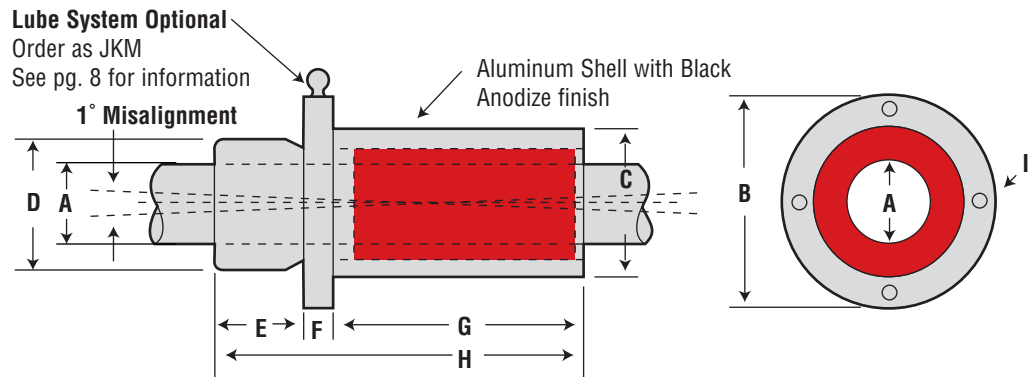
**NOTES:** All standard, pre-assembled "DFP" assemblies include a self-aligning housing and standard "FL" bearings found on page 10.  
Straight bore "DFPB" assemblies include a straight bore housing and standard "FL" bearings.

# Flange Mount Die Sets - SDS & DDS

## Simplicity® Self-Lubricating



### SDS FLANGE MOUNTS



Flange Mount Die Sets

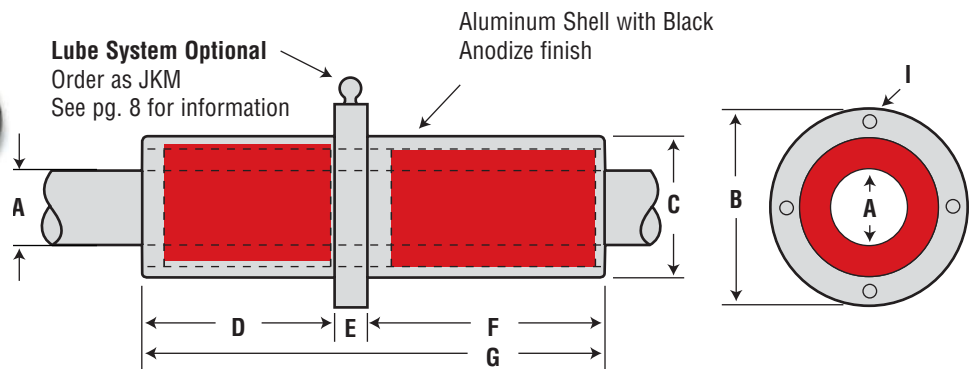
### BASIC DIMENSIONAL INFORMATION

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

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

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

### DDS FLANGE MOUNTS



### BASIC DIMENSIONAL INFORMATION

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

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

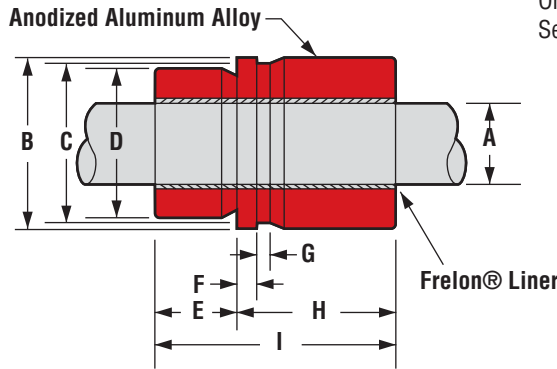
All straight bore, pre-assembled "DDSB" assemblies include a straight bore housing and standard "FL" bearings found on page 10.



# Flange Mount Die Sets - PAC

## Simplicity® Self-Lubricating

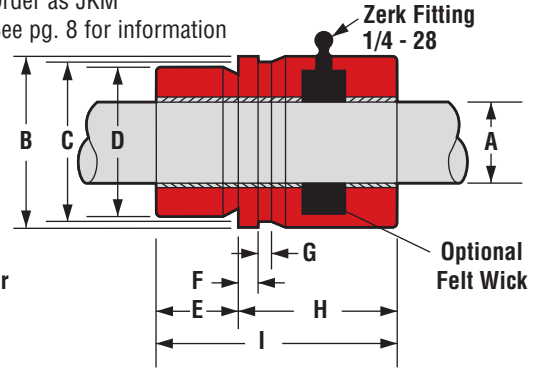
### PAC FLANGE MOUNT DIE SETS



#### Lube System Optional

Order as JKM

See pg. 8 for information



### BASIC DIMENSIONAL INFORMATION

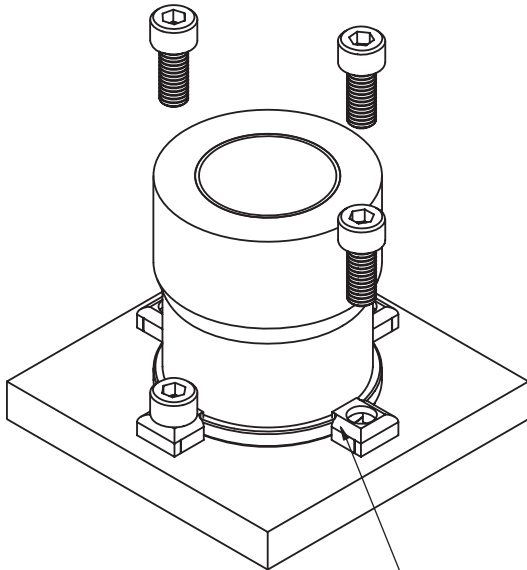
| PART NO. | NOMINAL SIZE | A BEARING I.D. |        | PART NO.  | A BEARING I.D. |        | B FLANGE & BARREL O.D. |       | C CLAMP DIA. | D PILOT O.D. |        | E PILOT LENGTH | F FLANGE LENGTH | G RECESS LENGTH | H HEAD LENGTH | I OVERALL LENGTH | EFFECTIVE SURFACE AREA | MAX STATIC LOAD (lbs.) FRELON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

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

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

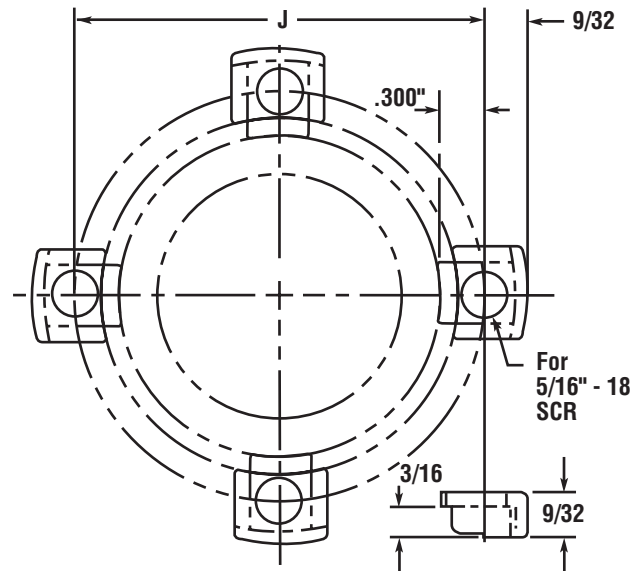
- 3000 psi is the rating for Frelon GOLD®

- 1500 psi is the rating for Frelon® J



4 PAC CLAMPS ARE SHIPPED WITH EACH DIESET

EXTRAS CAN BE ORDERED USING PART #: PACCLAMP



NOTE: DIMENSION FOR CALCULATING BOLT CIRCLE

$$J = C + .600"$$



## RETAINING RINGS (EXTERNAL)

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

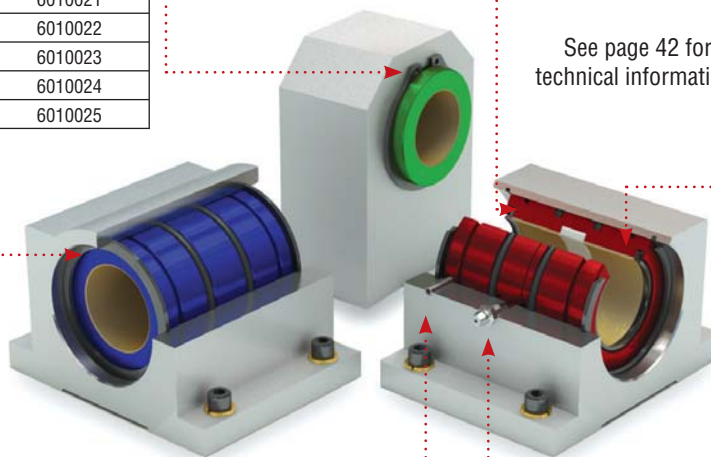
## SEALS

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

## O-RINGS

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

See page 42 for technical information.



## ZERK FITTINGS

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

## RETAINING RINGS (INTERNAL)

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

## ROLL PIN

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



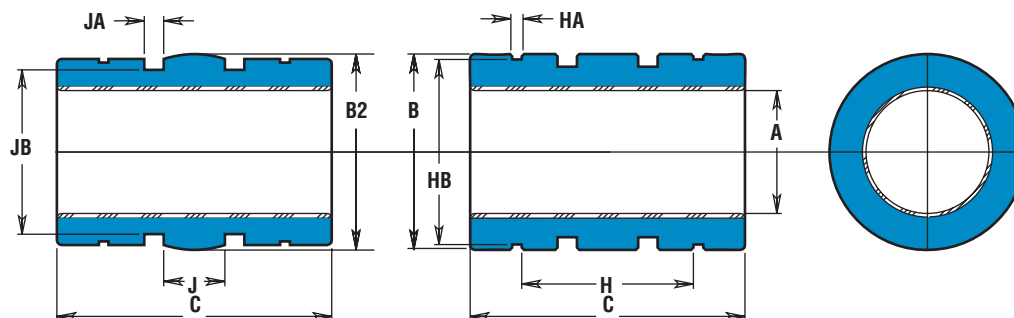
# Linear Plane Bearing - FM

## Simplicity® Self-Lubricating - ISO Metric

### FM LINEAR BEARINGS

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

#### STANDARD O.D. (FM-XX)



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

### BASIC DIMENSIONAL INFORMATION

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

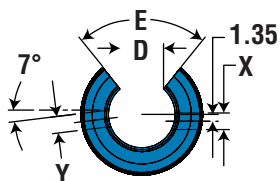
### MOUNTING DIMENSIONAL INFORMATION

| PART NO. |        | NOMINAL<br>SIZE<br>(mm) | H                     | HA                      | HB                     | RET. RING<br>PART NO.<br>(DIN 471) | J                       | JA                   | JB                  | METRIC<br>O'RING<br>PART NO. |
|----------|--------|-------------------------|-----------------------|-------------------------|------------------------|------------------------------------|-------------------------|----------------------|---------------------|------------------------------|
| CLOSED   | OPEN   |                         | BETWEEN<br>RET. RINGS | RET. RING<br>GRV. WIDTH | RET. RING<br>GRV. DIA. |                                    | BETWEEN<br>O'RING GRVS. | O'RING<br>GRV. WIDTH | O'RING<br>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                      |

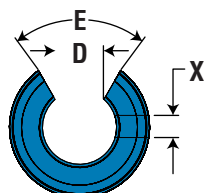


### FM & FMN LINEAR BEARINGS

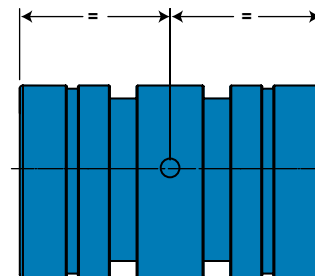
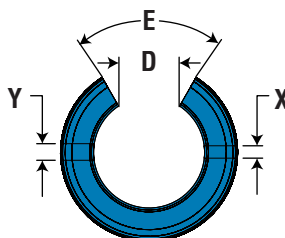
**FMN 12 ONLY**



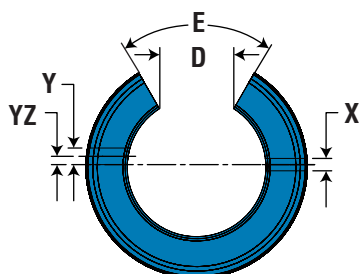
**FMN 05 THRU FMN 10 & FMN 80**



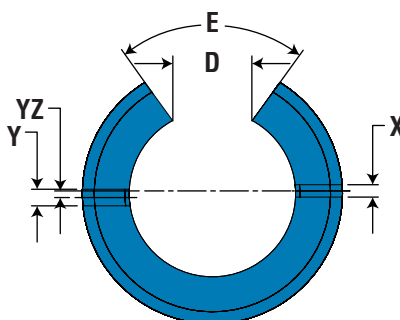
**FMN 16 THRU FMN 20**



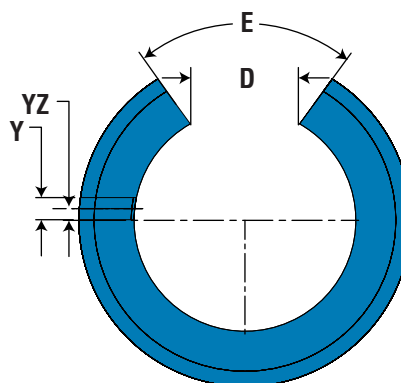
**FMN 25 ONLY**



**FMN 30 THRU FMN 50**



**FMN 60 ONLY**



Self-Lubricating Bearing

### OPEN DIMENSIONAL INFORMATION

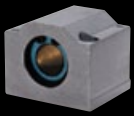
| PART NO. | NOMINAL SIZE | D SLOT WIDE MIN. | E SLOT ANGLE | X RET. HOLE DIA. | Y RET. HOLE DIA. | YZ RET. HOLE LOCATE | BEARING WT. (kg.) |
|----------|--------------|------------------|--------------|------------------|------------------|---------------------|-------------------|
| CLOSED   | (mm)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

### ACCESSORIES

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

### LOAD & SPEED DATA

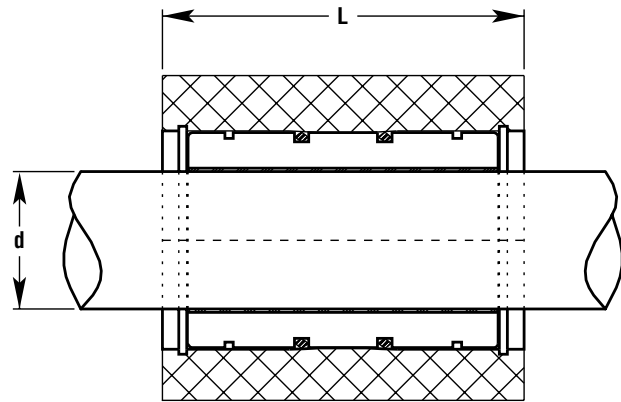
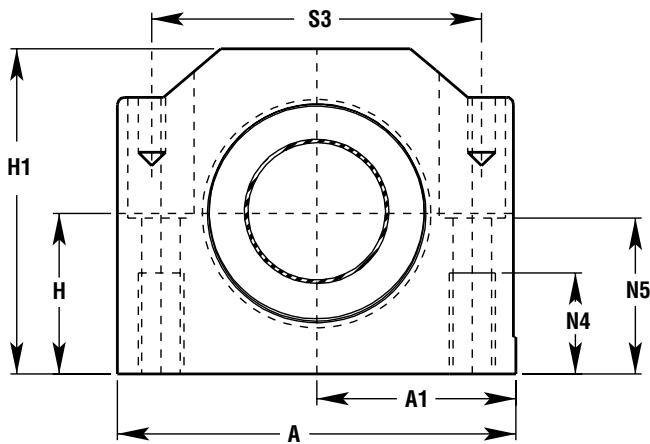
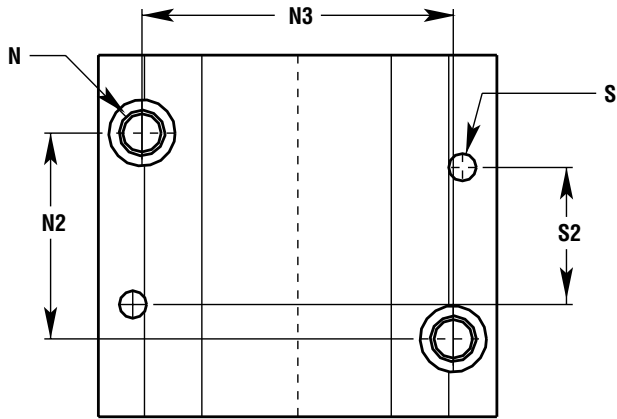
| PART NO.                                     | EFFECTIVE SURFACE AREA (sq. in.) | MAX. STATIC LOAD FRELON                    |        | EFFECTIVE SURFACE AREA (cm <sup>2</sup> ) | MAX. STATIC LOAD FRELON |        |
|----------------------------------------------|----------------------------------|--------------------------------------------|--------|----------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



# Pillow Blocks - PM

## Simplicity® Self-Lubricating

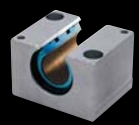
### PM CLOSED PILLOW BLOCKS



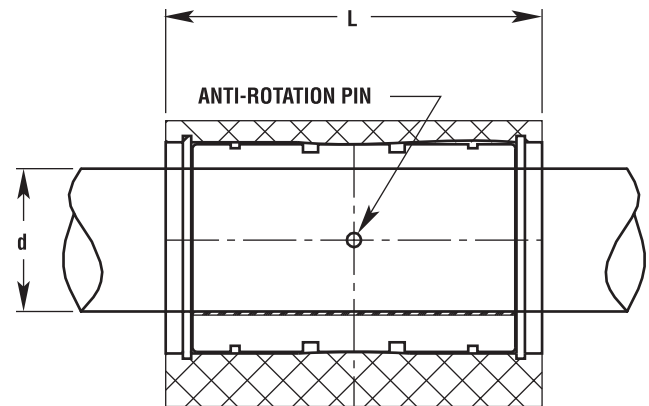
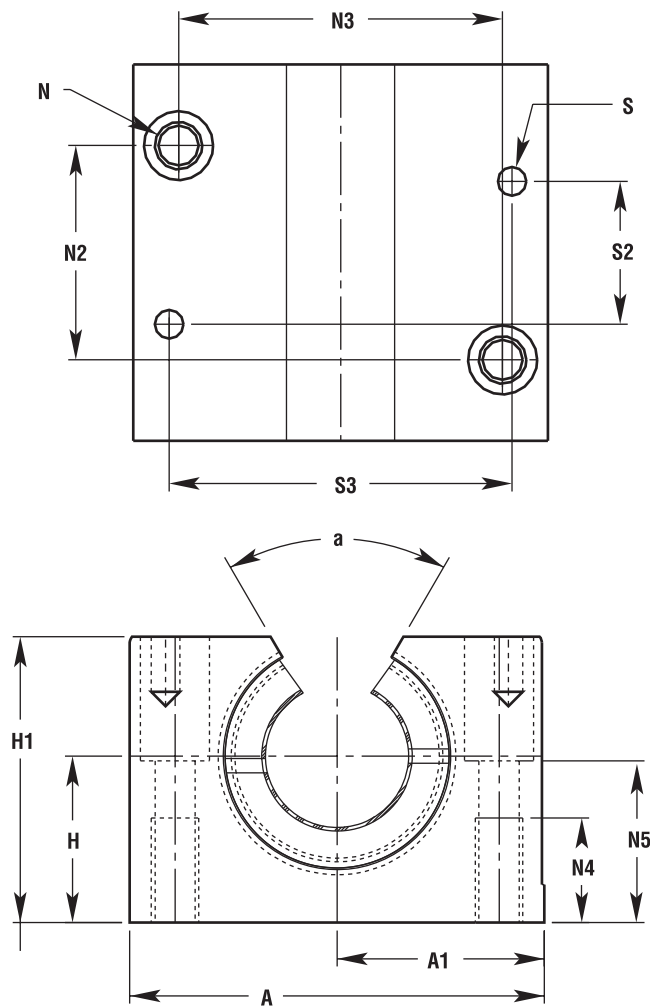
### BASIC DIMENSIONAL INFORMATION

| PART NO. CLOSED |         | d<br>NOM.<br>I.D. | H<br>CENTERLINE | H1     | A     | A1   | L      | N          | N2    | N3     | N4 | N5   | S     | S2    | S3    | MAX. STATIC<br>LOAD (lbs.)<br>FRELON |       | MAX. STATIC<br>LOAD (N)<br>FRELON |       | ASSEM.<br>WT. |
|-----------------|---------|-------------------|-----------------|--------|-------|------|--------|------------|-------|--------|----|------|-------|-------|-------|--------------------------------------|-------|-----------------------------------|-------|---------------|
| PRECISION       | COMPEN. | MIN.              | .015            | HEIGHT | WIDTH | .013 | LENGTH | BOLT       |       |        |    |      |       |       |       | GOLD                                 | J     | GOLD                              | J     | (kg.)         |
| PM 08           | PM 08 C | 8                 | 15              | 28     | 35    | 17.5 | 32     | M4 x 0.7   | 20.15 | 25.15  | 9  | 14.5 | N / A | N / A | N / A | 926                                  | 463   | 4120                              | 206   | 0.069         |
| PM 10           | PM 10 C | 10                | 16              | 31.5   | 40    | 20   | 36     | M5 x 0.8   | 20.15 | 29.15  | 11 | 15   | 4     | 29    | 31    | 1345                                 | 672   | 5984                              | 2992  | 0.095         |
| PM 12           | PM 12 C | 12                | 18              | 35     | 43    | 21.5 | 39     | M5 x 0.8   | 23.15 | 32.15  | 11 | 16.5 | 4     | 32    | 34    | 1777                                 | 888   | 7907                              | 3953  | 0.118         |
| PM 16           | PM 16 C | 16                | 22              | 42     | 53    | 26.5 | 43     | M6 x 1.0   | 26.15 | 40.15  | 13 | 21   | 4     | 35    | 42    | 2667                                 | 1334  | 11870                             | 5935  | 0.200         |
| PM 20           | PM 20 C | 20                | 25              | 50     | 59.3  | 30   | 54     | M8 x 1.25  | 32.15 | 45.15  | 18 | 24   | 5     | 45    | 50    | 4167                                 | 2083  | 18541                             | 9270  | 0.329         |
| PM 25           | PM 25 C | 25                | 30              | 60     | 78    | 39   | 67     | M10 x 1.5  | 40.15 | 60.15  | 22 | 29   | 6     | 20    | 64    | 6715                                 | 3358  | 29881                             | 14941 | 0.655         |
| PM 30           | PM 30 C | 30                | 35              | 71     | 87    | 43.5 | 79     | M10 x 1.5  | 45.15 | 68.15  | 22 | 34   | 6     | 30    | 72    | 9444                                 | 4722  | 42026                             | 21013 | 1.020         |
| PM 40           | PM 40 C | 40                | 45              | 91     | 108   | 54   | 91     | M12 x 1.75 | 58.15 | 86.15  | 26 | 44   | 8     | 35    | 90    | 14814                                | 7407  | 65923                             | 32962 | 1.846         |
| PM 50           | PM 50 C | 50                | 50              | 105    | 132   | 66   | 113    | M16 x 2.0  | 50.20 | 108.20 | 34 | 49   | 10    | 42    | 108   | 23147                                | 11574 | 103005                            | 51503 | 3.169         |

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



## PMN OPEN PILLOW BLOCKS



## BASIC DIMENSIONAL INFORMATION

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

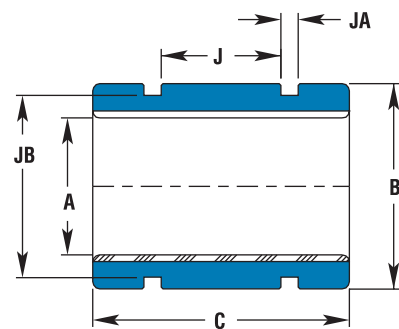
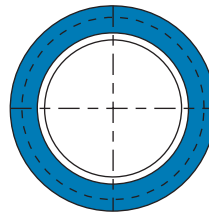
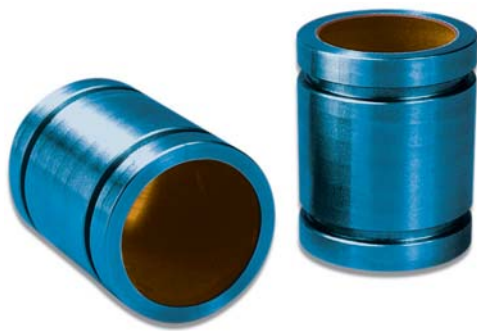
**NOTES:** (1) Standard pillow block assembly includes self-aligning housing and precision bearing.  
(2) All standard metric pillow blocks use standard "FM" series bearings found on page 18.



# Compact Thin Wall Bearing - FMT

## Simplicity® Self-Lubricating

### FMT COMPACT THIN WALL BEARINGS



### BASIC DIMENSIONAL INFORMATION

| PRECISION I.D. SERIES<br>Similar to preloaded ball bearing |              |                        |        | COMPENSATED I.D. SERIES<br>Similar to standard ball bearing |                   |        |        |      |        |      |           |        |
|------------------------------------------------------------|--------------|------------------------|--------|-------------------------------------------------------------|-------------------|--------|--------|------|--------|------|-----------|--------|
| PART NO.                                                   | NOMINAL SIZE | A<br>BEARING I.D. (F8) |        | PART NO.                                                    | A<br>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<br>SIZE | J<br>BETWEEN<br>O-RING<br>GRVS. | JA<br>O-RING<br>GRV.<br>WIDTH | JB<br>O-RING<br>GRV. DIA. | METRIC<br>O-RING<br>PART NO. |
|-----------|-------------|-----------------|---------------------------------|-------------------------------|---------------------------|------------------------------|
| PRECISION | COMPENSATED |                 |                                 |                               |                           |                              |
| FMT 06    | FMT 06      | 6               | N / A                           | N / A                         | N / A                     | N / A                        |
| FMT 08    | FMT 08      | 8               | 10.0                            | 2.000                         | 12.200                    | 12 x 1.7                     |
| FMT 10    | FMT 10      | 10              | 12.0                            | 2.000                         | 14.400                    | 14 x 1.6                     |
| FMT 12    | FMT 12      | 12              | 14.0                            | 2.000                         | 16.600                    | 16 x 1.5                     |
| FMT 14    | FMT 14      | 14              | 14.0                            | 2.000                         | 18.500                    | 18 x 1.5                     |
| FMT 16    | FMT 16      | 16              | 14.0                            | 2.000                         | 21.300                    | 21.1 x 1.6                   |
| FMT 20    | FMT 20      | 20              | 14.0                            | 2.000                         | 25.500                    | 25 x 1.5                     |
| FMT 25    | FMT 25      | 25              | 22.0                            | 3.200                         | 30.900                    | 30.5 x 2.5                   |
| FMT 30    | FMT 30      | 30              | 30.0                            | 3.200                         | 35.900                    | 35.5 x 2.5                   |
| FMT 40    | FMT 40      | 40              | 40.0                            | 4.100                         | 46.200                    | 46 x 3.5                     |
| FMT 50    | FMT 50      | 50              | 50.0                            | 4.100                         | 56.300                    | 26 x 3.5                     |

### ACCESSORIES

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

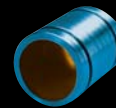
### LOAD & SPEED DATA

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

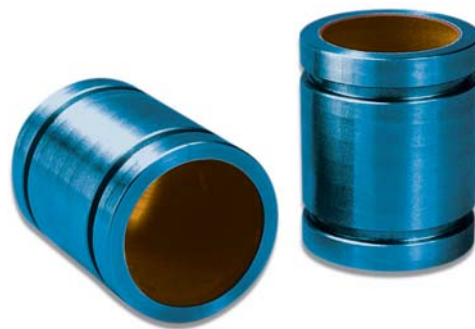
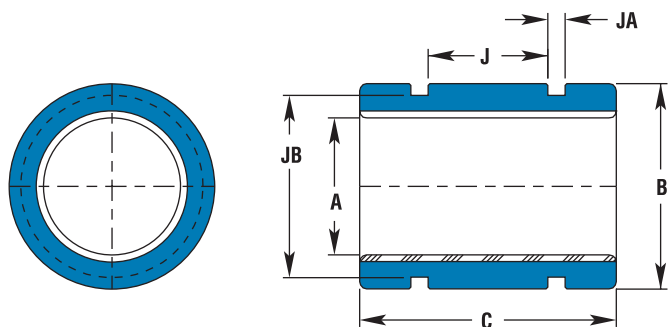
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# Compact Thin Wall Bearing - FG

## Simplicity® Self-Lubricating



### FG COMPACT THIN WALL BEARINGS



### BASIC DIMENSIONAL INFORMATION

| PRECISION I.D. SERIES<br>Similar to preloaded ball bearing |                 |                        |        | COMPENSATED I.D. SERIES<br>Similar to standard ball bearing |                   |        | B<br>O.D. (h7) |      | C<br>LENGTH (h13) |      | CONCENTRIC | BEARING<br>WEIGHT |
|------------------------------------------------------------|-----------------|------------------------|--------|-------------------------------------------------------------|-------------------|--------|----------------|------|-------------------|------|------------|-------------------|
| PART NO.                                                   | NOMINAL<br>SIZE | A<br>BEARING I.D. (F8) |        | PART NO.                                                    | A<br>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<br>BETWEEN<br>O-RING<br>GRVS. | JA<br>O-RING<br>GRV.<br>WIDTH | JB<br>O-RING<br>GRV.<br>DIA. | METRIC<br>O-RING<br>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                     |

### ACCESSORIES

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

### LOAD & SPEED DATA

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

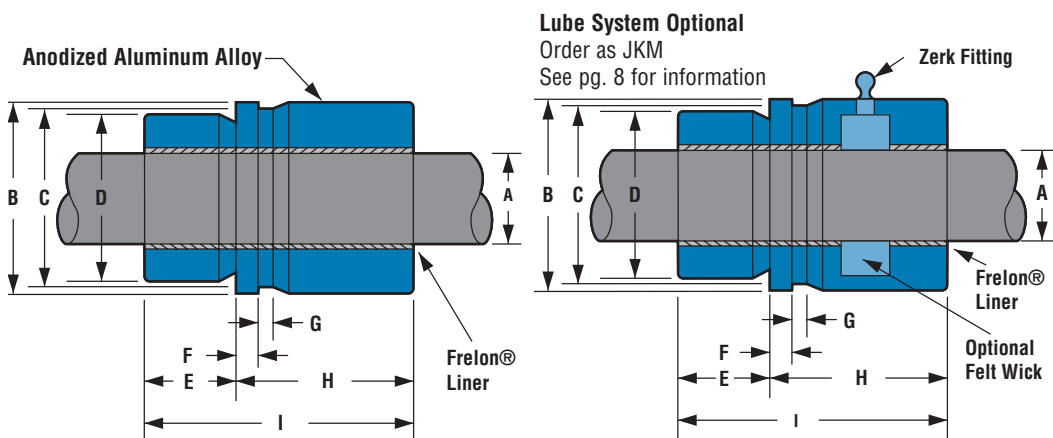
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# Die Set Bushing - PACM

## Simplicity® Self-Lubricating

### PACM DIE SET BUSHINGS



### BASIC DIMENSIONAL INFORMATION

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

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

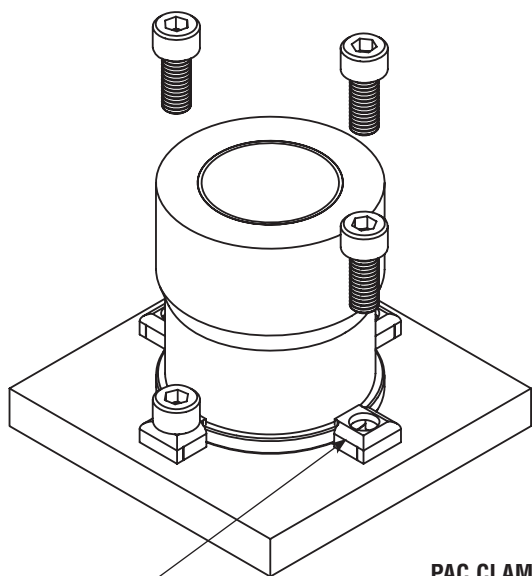
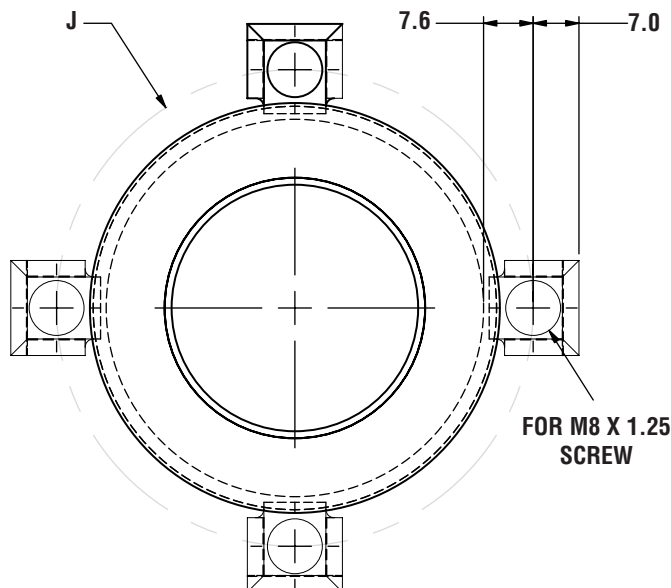
Max static load is effective surface area times max load for Frelon GOLD®

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

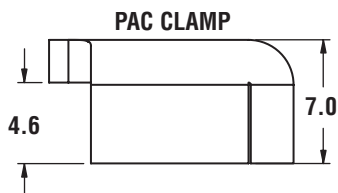
- 105.45 kgf/cm² is the rating for Frelon® J

NOTE: DIMENSION FOR CALCULATING BOLT CIRCLE

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

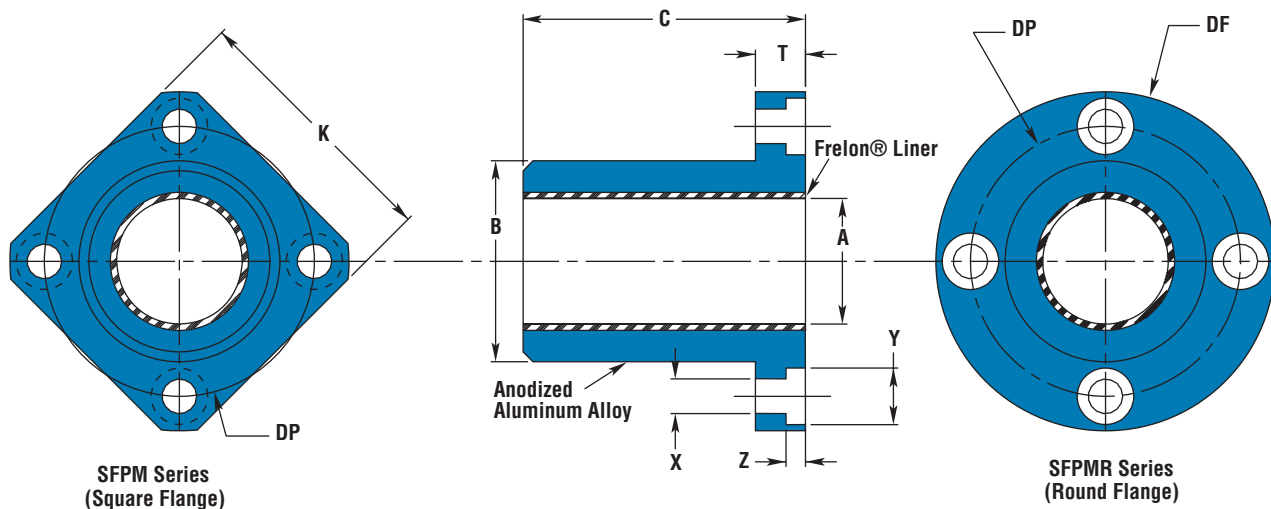


4 PAC CLAMPS ARE SHIPPED WITH EACH DIESET  
EXTRAS CAN BE ORDERED USING PART #: PACCLAMP





## SFPM FLANGE BEARINGS



## BASIC DIMENSIONAL INFORMATION

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

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

## MOUNTING DIMENSIONAL INFORMATION

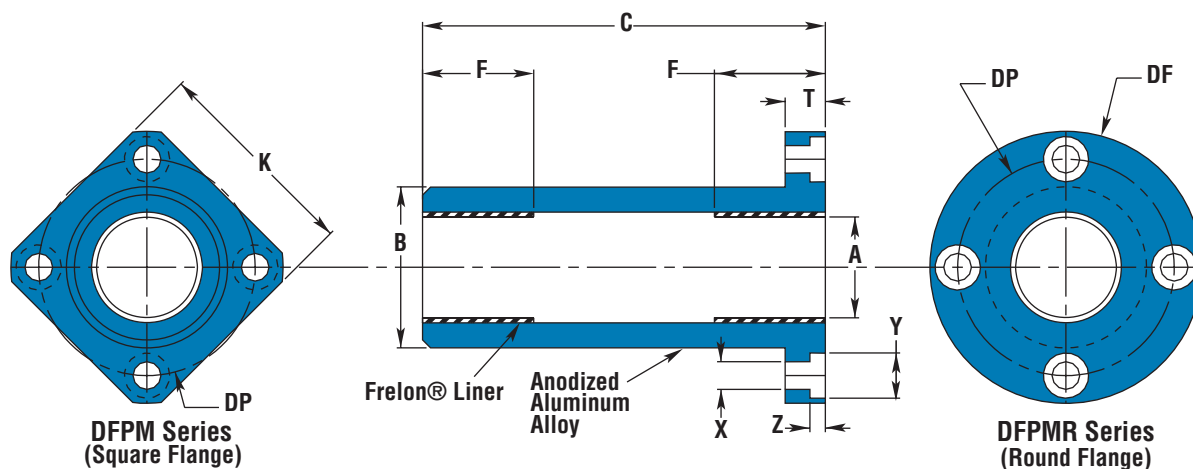
| PART NO. |          | K<br>SQUARE | Df<br>O.D. | T<br>LENGTH | Dp<br>BOLT<br>CIRCLE | X<br>HOLE | Y<br>C'BORE<br>DEPTH | Z<br>C'BORE<br>DEPTH | CLAMPING<br>BOLT | CONCENTRICITY | SQUARENESS | SFPM<br>WEIGHTS | SFPMR<br>WEIGHTS |
|----------|----------|-------------|------------|-------------|----------------------|-----------|----------------------|-----------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



# Flange Bearing - DFPM

## Simplicity® Self-Lubricating

### DFPM FLANGE BEARING



### BASIC DIMENSIONAL INFORMATION

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

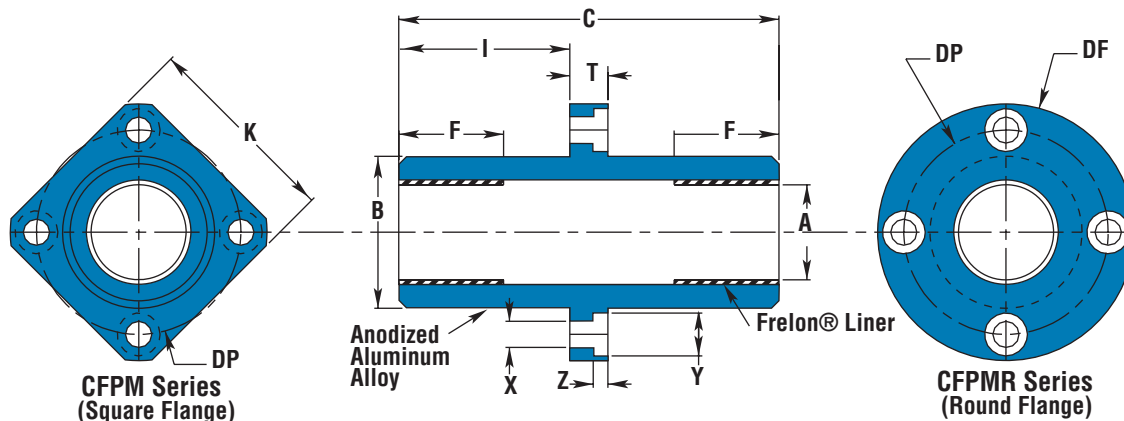
**NOTES:** Formula used for effective surface area is  $(\pi * ID * L)/3$   
 Max static load is effective surface area times max load for Frelon GOLD®  
 - 210 kgf/cm<sup>2</sup> is the rating for Frelon GOLD®  
 - 105.45 kgf/cm<sup>2</sup> is the rating for Frelon® J  
 Frelon pads in each end (F dimension)

### MOUNTING DIMENSIONAL INFORMATION

| PART NO. |          | K<br>SQUARE | DI<br>O.D. | T<br>LENGTH | Dp<br>BOLT<br>CIRCLE | X<br>HOLE | Y<br>C'BORE<br>DEPTH | Z<br>C'BORE<br>DEPTH | CLAMPING<br>BOLT | CONCENTRICITY | SQUARENESS | DFPM<br>WEIGHTS | DFPMR<br>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 BEARING



## BASIC DIMENSIONAL INFORMATION

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

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

## MOUNTING DIMENSIONAL INFORMATION

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

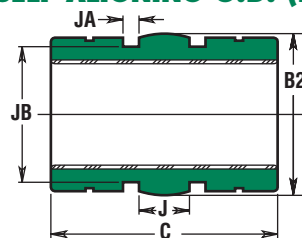


# Linear Plane Bearing - FJ

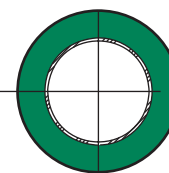
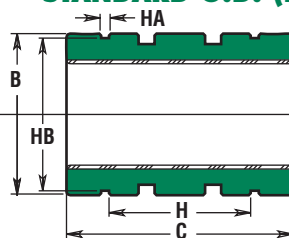
## Simplicity® Self-Lubricating - JIS Metric

### FJ LINEAR BEARING

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



#### STANDARD O.D. (FJ-XX)



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

### BASIC DIMENSIONAL INFORMATION

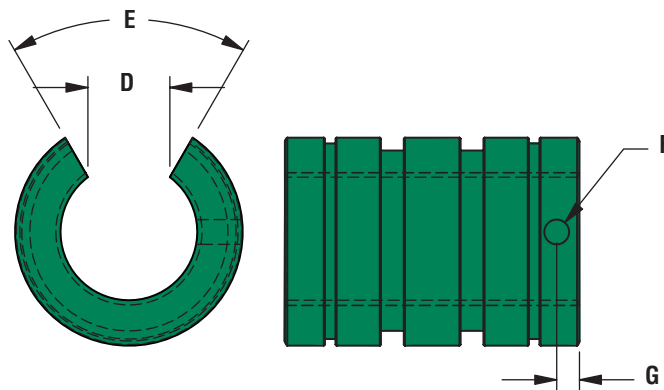
| PRECISION I.D. SERIES<br>Similar to preloaded ball bearing |         |                 |                   |         | COMPENSATED I.D. SERIES<br>Allows additional running clearance |          |                   |         | STANDARD O.D.     |      | SELF-ALIGNING O.D.<br>FJA |         | C<br>LENGTH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

### MOUNTING DIMENSIONAL INFORMATION

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



### FJ & FJN LINEAR BEARING



### OPEN DIMENSIONAL INFORMATION

| PART NO. |          | NOMINAL<br>SIZE | D<br>SLOT<br>WIDTH<br>MIN. | E<br>SLOT<br>ANGLE | F<br>RET.<br>HOLE<br>DIA. | G<br>RET.<br>HOLE<br>LOC. | BEARING<br>WEIGHTS |
|----------|----------|-----------------|----------------------------|--------------------|---------------------------|---------------------------|--------------------|
| CLOSED   | OPEN     |                 |                            |                    |                           |                           | (mm)               |
| 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                        |                    |                           | 0.018                     |                    |
| FJN 16   | FJCN 16  | 16              | 11.0                       |                    |                           | 0.030                     |                    |
| FJN 20   | FJCN 20  | 20              |                            |                    |                           | 60                        | 0.044              |
| FJN 25   | FJCN 25  | 25              | 12.0                       | 50                 | 5.105                     | 3.175                     | 0.102              |
| FJN 30   | FJCN 30  | 30              | 15.0                       |                    |                           | 4.763                     | 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                       | 80                 | 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                       |                    |                           | 16.103                    | 5.994              |
| FJN 150  | FJCN 150 | 150             | 105.0                      |                    | 17.350                    | 8.637                     |                    |

### ACCESSORIES

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

### LOAD & SPEED DATA

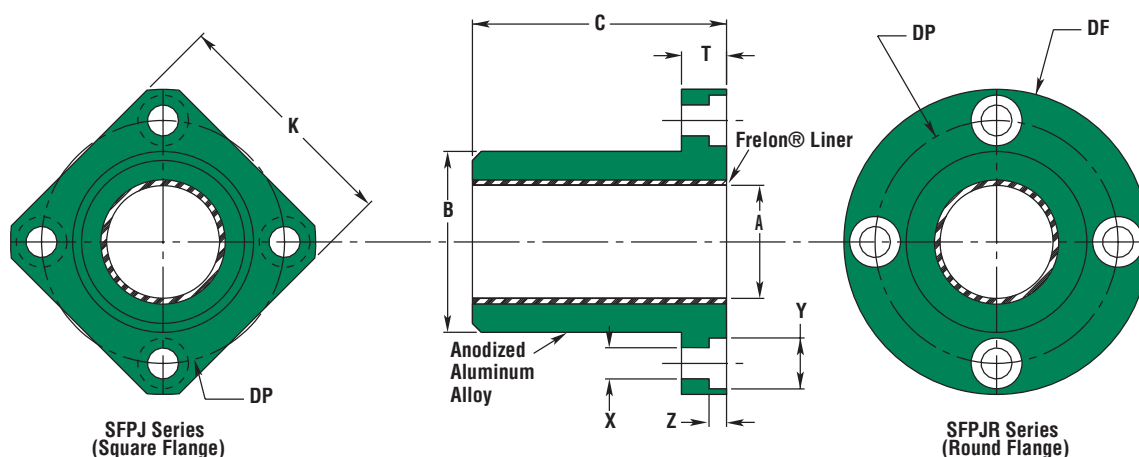
| PART NO.                                     | EFFECTIVE<br>SURFACE<br>AREA<br>(sq.cm.) | MAX.<br>STATIC LOAD<br>FRELON              |            | EFFECTIVE<br>SURFACE<br>AREA<br>(cm <sup>2</sup> ) | MAX.<br>STATIC LOAD<br>FRELON |          |
|----------------------------------------------|------------------------------------------|---------------------------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



# Flange Bearing - SFPJ

## Simplicity® Self-Lubricating

### SFPJ FLANGE BEARING



### BASIC DIMENSIONAL INFORMATION

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

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

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

- 210 kgf/cm<sup>2</sup> is the rating for Frelon GOLD®

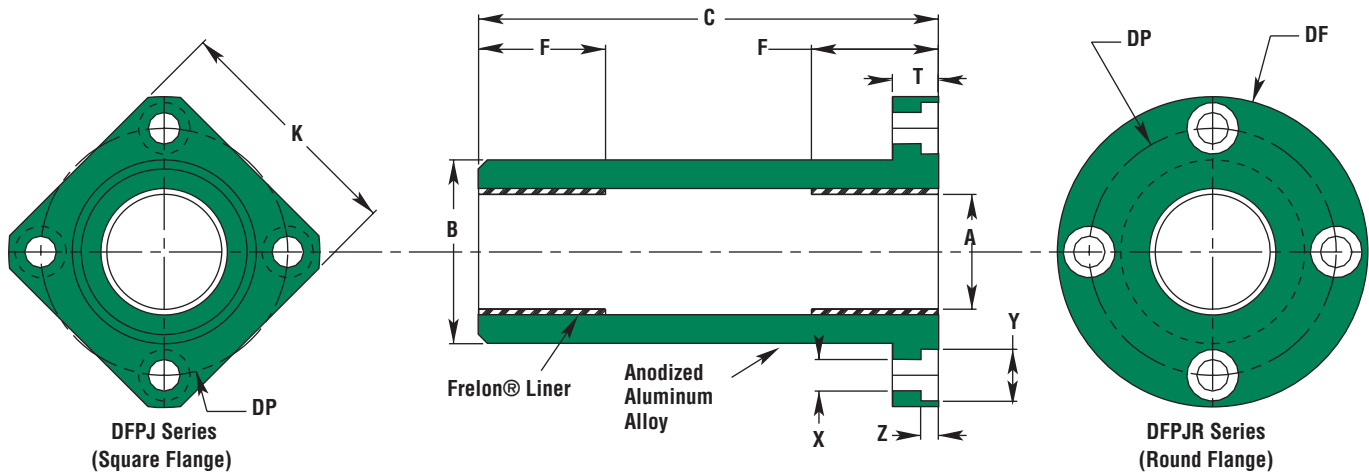
- 105.45 kgf/cm<sup>2</sup> is the rating for Frelon® J

### MOUNTING DIMENSIONAL INFORMATION

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



### DFPJ FLANGE BEARING



### BASIC DIMENSIONAL INFORMATION

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

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

### MOUNTING DIMENSIONAL INFORMATION

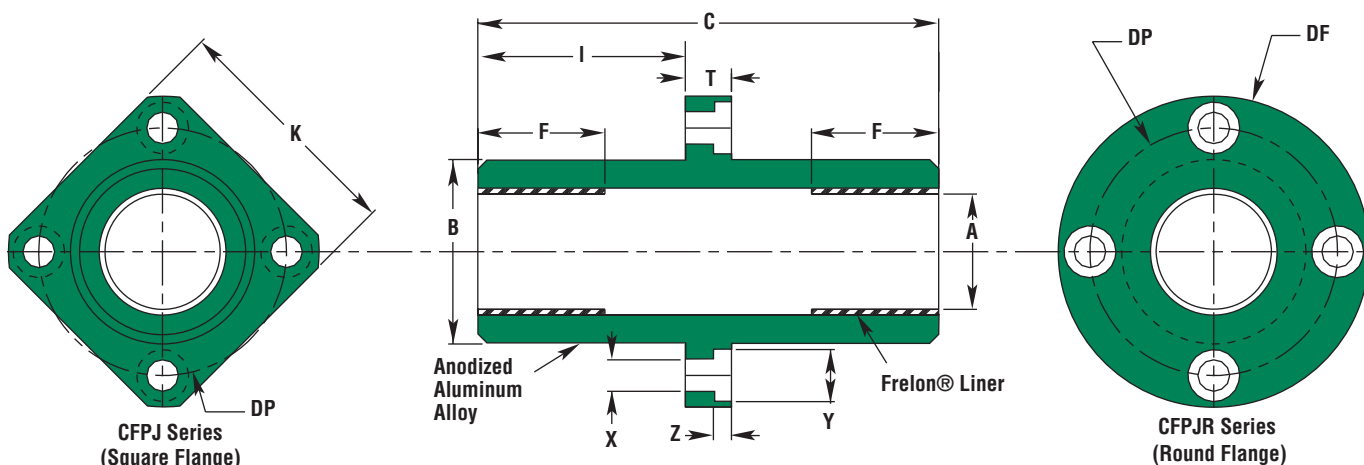
| PART NO. |          | K<br>SQUARE | DI<br>O.D. | T<br>LENGTH | Dp<br>BOLT<br>CIRCLE | X<br>HOLE | Y<br>C'BORE<br>DIA. | Z<br>C'BORE<br>DEPTH | CLAMPING<br>BOLT | CONCENTRICITY | SQUARENESS | DFPJ<br>WEIGHTS | DFPJR<br>WEIGHTS |
|----------|----------|-------------|------------|-------------|----------------------|-----------|---------------------|-------------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



# Flange Bearing - CFPJ

## Simplicity® Self-Lubricating

### CFPJ FLANGE BEARING



### BASIC DIMENSIONAL INFORMATION

| PRECISION I.D. SERIES<br>Similar to preloaded ball bearing |          |                 |                        |        | COMPENSATED I.D. SERIES<br>Similar to standard ball bearing |           |                   |        | B<br>BODY O.D. (h7) |      | C<br>LENGTH |       | I<br>LENGTH<br>TO<br>FLNG. | F<br>LENGTH<br>EACH<br>END | EFFECTIVE<br>SURFACE<br>AREA | MAX. STATIC<br>LOAD (N)<br>FRELON |       |
|------------------------------------------------------------|----------|-----------------|------------------------|--------|-------------------------------------------------------------|-----------|-------------------|--------|---------------------|------|-------------|-------|----------------------------|----------------------------|------------------------------|-----------------------------------|-------|
| PART NO.                                                   |          | NOMINAL<br>SIZE | A<br>BEARING I.D. (F8) |        | PART NO.                                                    |           | A<br>BEARING I.D. |        |                     |      |             |       |                            |                            |                              |                                   |       |
|                                                            |          |                 | MIN.                   | MAX.   |                                                             |           | MIN.              | MAX.   |                     |      |             |       |                            |                            |                              |                                   |       |
| 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  | 13.5                       | 12                         | 1.508                        | 3110                              | 1560  |
| CFPJ 08                                                    | CFPJR 08 | 8               | 8.013                  | 8.035  | CFPJ 08C                                                    | CFPJR 08C | 8.063             | 8.085  | 14.982              | 15   | 44.7        | 45.3  | 18.5                       | 12                         | 2.011                        | 4140                              | 2080  |
| CFPJ 10                                                    | CFPJR 10 | 10              | 10.013                 | 10.035 | CFPJ 10C                                                    | CFPJR 10C | 10.063            | 10.085 | 18.979              | 19   | 54.7        | 55.3  | 23.0                       | 14                         | 2.932                        | 6043                              | 3031  |
| CFPJ 12                                                    | CFPJR 12 | 12              | 12.016                 | 12.043 | CFPJ 12C                                                    | CFPJR 12C | 12.066            | 12.093 | 20.979              | 21   | 56.7        | 57.3  | 24.0                       | 15                         | 3.770                        | 7770                              | 3904  |
| CFPJ 13                                                    | CFPJR 13 | 13              | 13.016                 | 13.043 | CFPJ 13C                                                    | CFPJR 13C | 13.066            | 13.093 | 22.979              | 23   | 60.7        | 61.3  | 26.0                       | 16                         | 4.356                        | 8976                              | 4503  |
| CFPJ 16                                                    | CFPJR 16 | 16              | 16.016                 | 16.043 | CFPJ 16C                                                    | CFPJR 16C | 16.066            | 16.093 | 27.979              | 28   | 69.7        | 70.3  | 30.5                       | 20                         | 6.702                        | 13803                             | 6936  |
| CFPJ 20                                                    | CFPJR 20 | 20              | 20.020                 | 20.053 | CFPJ 20C                                                    | CFPJR 20C | 20.096            | 20.129 | 31.975              | 32   | 79.7        | 80.3  | 34.5                       | 22                         | 9.215                        | 18982                             | 9535  |
| CFPJ 25                                                    | CFPJR 25 | 25              | 25.020                 | 25.053 | CFPJ 25C                                                    | CFPJR 25C | 25.096            | 25.129 | 39.975              | 40   | 111.7       | 112.3 | 50.5                       | 33                         | 17.279                       | 35600                             | 17874 |
| CFPJ 30                                                    | CFPJR 30 | 30              | 30.020                 | 30.053 | CFPJ 30C                                                    | CFPJR 30C | 30.096            | 30.129 | 44.975              | 45   | 122.7       | 123.3 | 54.5                       | 35                         | 21.991                       | 45303                             | 22749 |
| CFPJ 35                                                    | CFPJR 35 | 35              | 35.020                 | 35.053 | CFPJ 35C                                                    | CFPJR 35C | 35.096            | 35.129 | 51.970              | 52   | 134.7       | 135.3 | 60.5                       | 40                         | 29.322                       | 60410                             | 30333 |
| CFPJ 40                                                    | CFPJR 40 | 40              | 40.025                 | 40.064 | CFPJ 40C                                                    | CFPJR 40C | 40.127            | 40.166 | 59.970              | 60   | 150.7       | 151.3 | 66.5                       | 44                         | 36.861                       | 75939                             | 38131 |
| CFPJ 50                                                    | CFPJR 50 | 50              | 50.025                 | 50.064 | CFPJ 50C                                                    | CFPJR 50C | 50.127            | 50.166 | 79.965              | 80   | 191.7       | 192.3 | 87.0                       | 70                         | 73.304                       | 151015                            | 75831 |
| CFPJ 60                                                    | CFPJR 60 | 60              | 60.030                 | 60.076 | CFPJ 60C                                                    | CFPJR 60C | 60.182            | 60.228 | 89.965              | 90   | 208.7       | 209.3 | 92.5                       | 73                         | 91.735                       | 188980                            | 94892 |

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

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

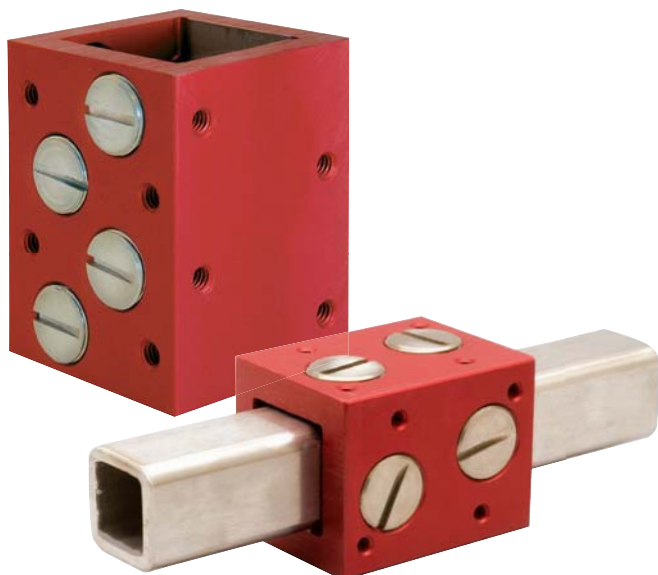
- 210 kgf/cm² is the rating for Frelon GOLD®

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

Frelon pads in each end (F dimension)

### MOUNTING DIMENSIONAL INFORMATION

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



**Frelon GOLD®**  
APN16E



**Frelon® J**  
APN16



### PRODUCT OVERVIEW

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

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

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

### ADJUSTABLE BEARING PLUGS

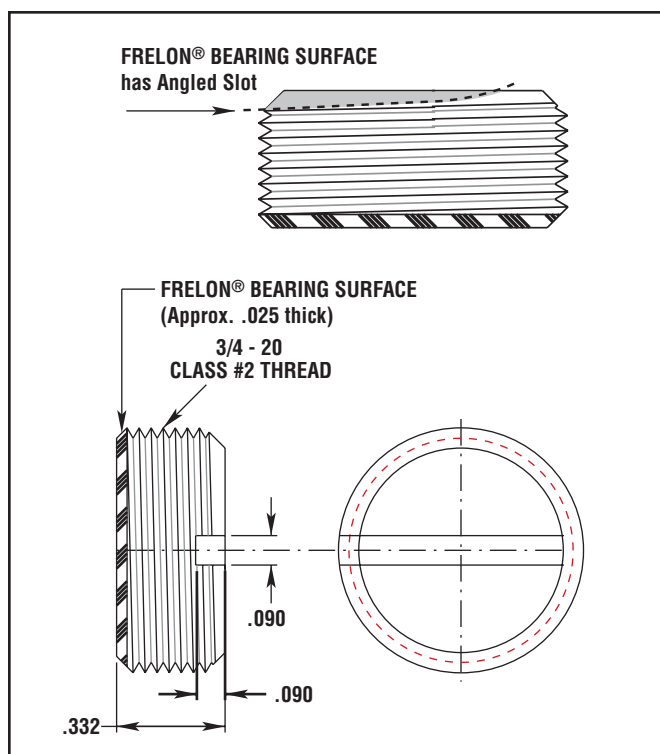
Plug material is 316 stainless steel.

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

- Bearing plugs can be purchased separately
- Ideal for use in many applications as a wear pad
- Bearing surface area = .300 in<sup>2</sup>
- MAX Static Load Capacity per plug = 450 lbs.
- The use of green Loctite is recommended to hold the adjustable bearing plugs in position

### ORDERING INFORMATION

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





# Square Bearings & Plugs

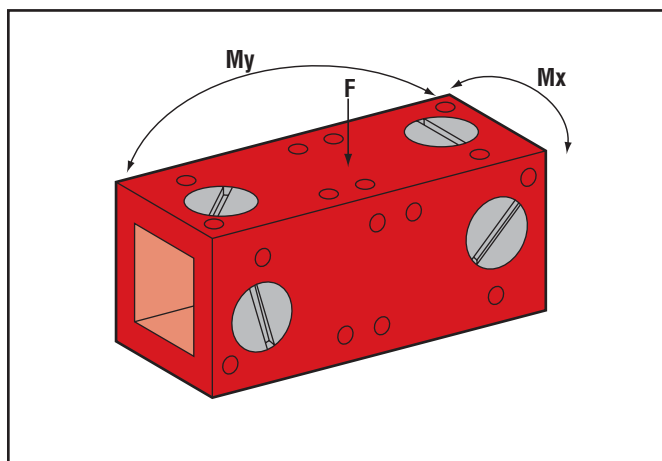
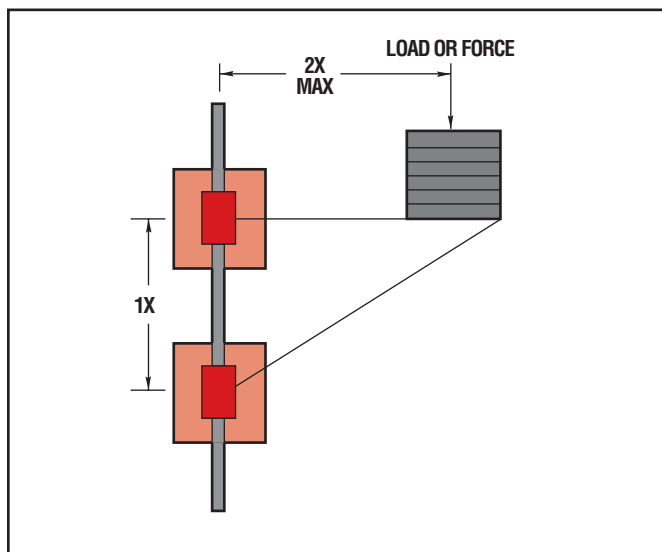
## Technical Information

### CUT-AWAY VIEW

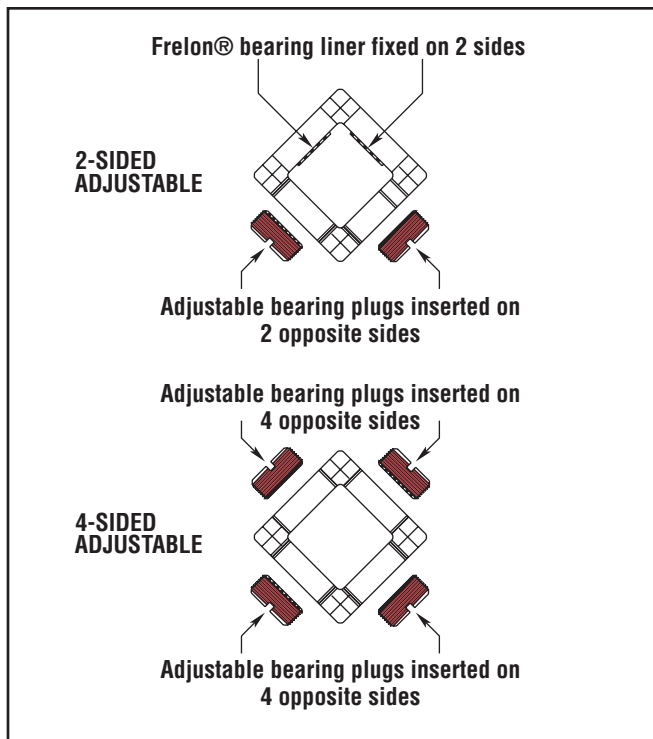


2-SIDED ADJUSTABLE

4-SIDED ADJUSTABLE



NOTE: Square shafting located on page 37.



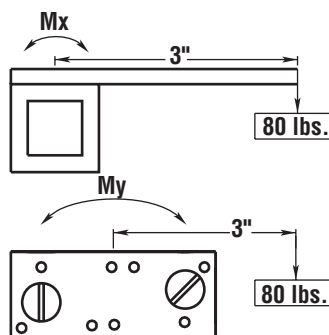
### APPLICATION NOTE

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

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

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

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



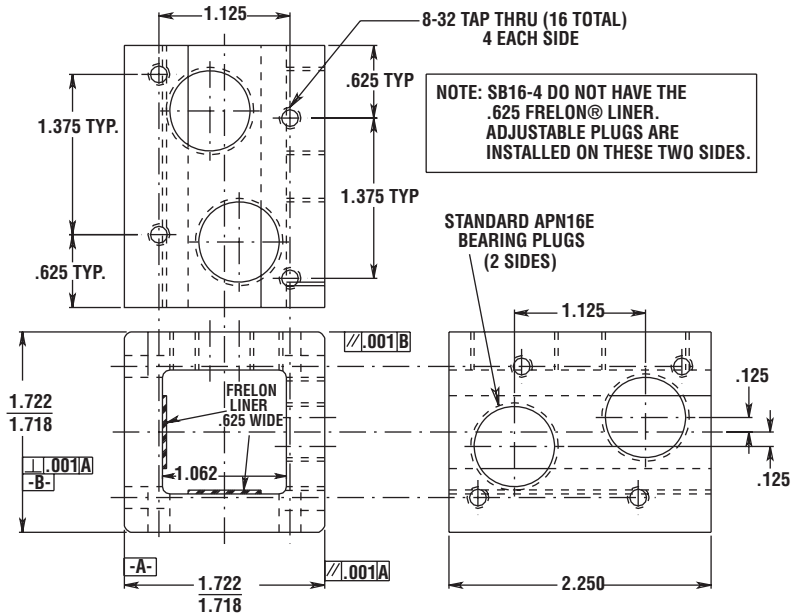
### SQUARE BEARING LOAD INFORMATION

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



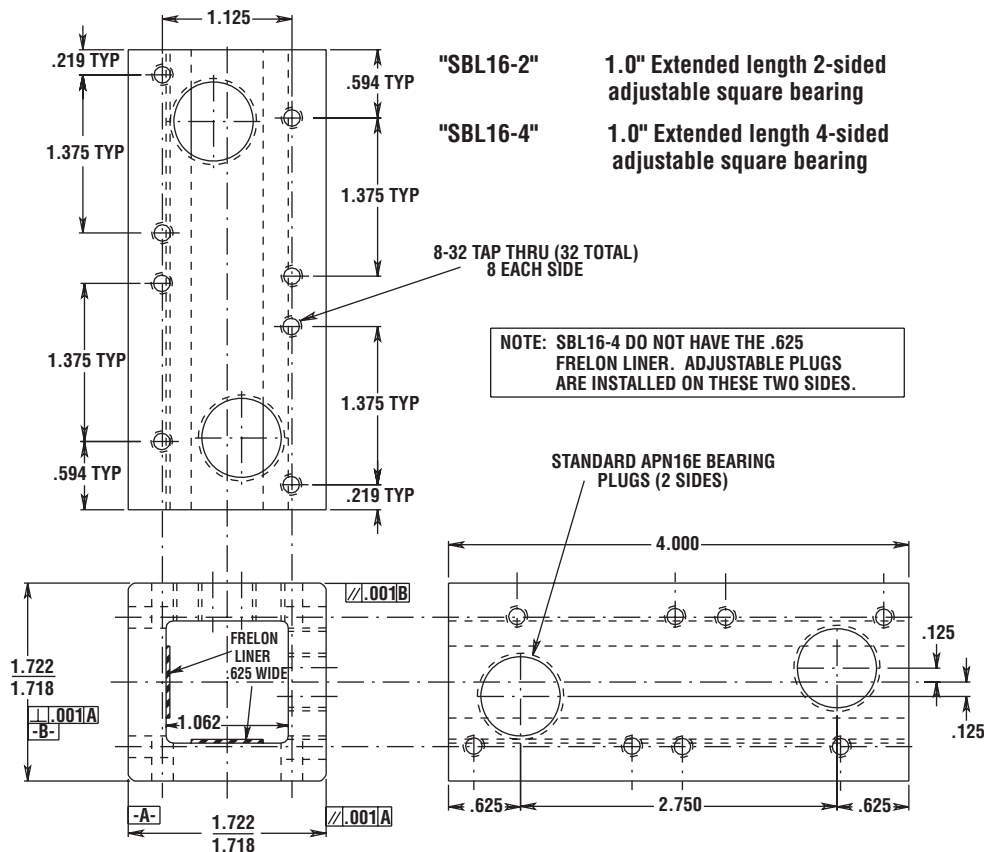
"SB16-2"  
"SB16-4"

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



### ORDERING INFORMATION

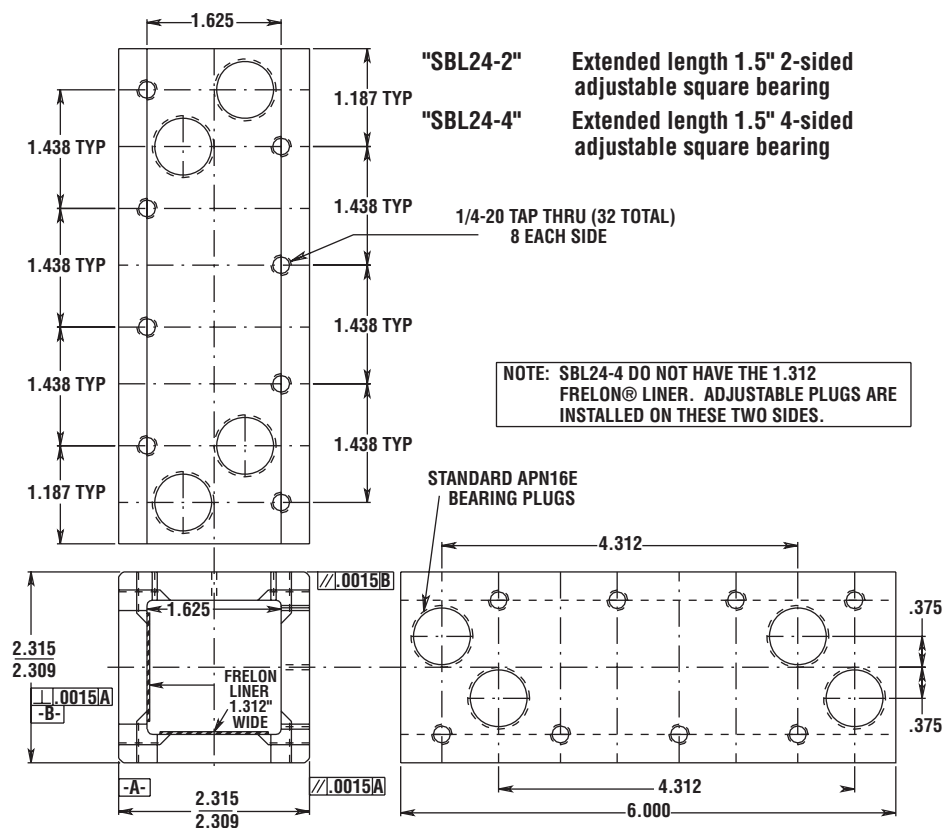
| PART NO. | DESCRIPTION                                                                                                           | BEARING WEIGHT (lbs.) |
|----------|-----------------------------------------------------------------------------------------------------------------------|-----------------------|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



NOTE: Square shafting located on page 37.



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



**NOTE:** Square shafting located on page 37.



## SQUARE SHAFTING

- 304 Stainless steel (standard) is highly corrosion resistant
- Buffed and polished to provide an excellent running surface for Frelon® J
- Both 1" and 1.5" available cut to any length up to 20 feet
- Wall thickness is  $\approx .120"$

| PART NO. | DESCRIPTION                                       | WEIGHT<br>LBS./IN. |
|----------|---------------------------------------------------|--------------------|
| PST16-XX | Standard 1.0" 304 stainless steel square shafting | 0.12               |
| PST24-XX | Standard 1.5" 304 stainless steel square shafting | 0.18               |

XX - Specify length in inches.

## Steel Shafting PST

Specify length in inches

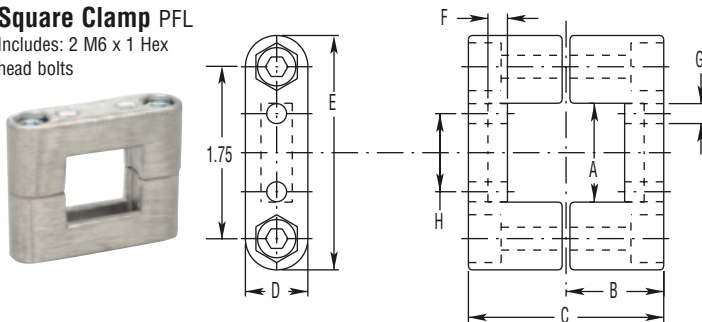


## MOUNTING ACCESSORIES

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

### Square Clamp PFL

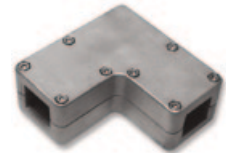
Includes: 2 M6 x 1 Hex head bolts



| PART NO. | A    | B     | C     | D     | E     | F     | G     | H     |
|----------|------|-------|-------|-------|-------|-------|-------|-------|
| PFL1000  | 1.00 | 0.984 | 1.968 | 0.630 | 2.362 | 0.197 | 0.200 | 0.787 |
| PFL1500  | 1.50 | 1.338 | 2.677 | 0.787 | 2.953 | 0.276 | 0.256 | 1.024 |

### Angle Bracket PAN1515

1-1/2" only



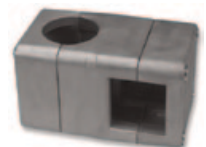
### Cross Mount PXK1515

1-1/2" only



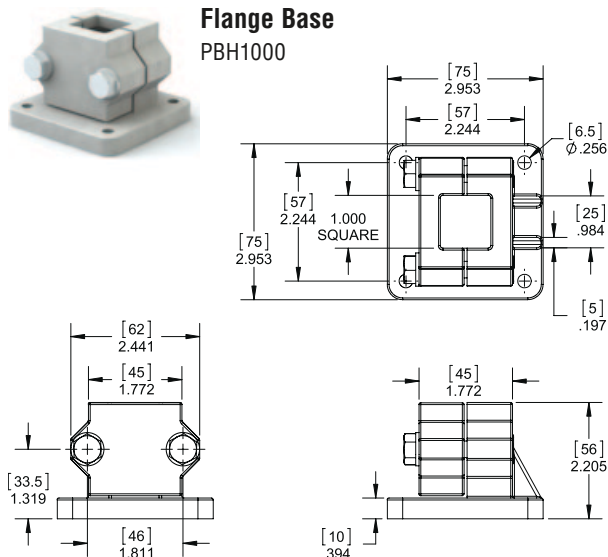
### Cross Mount Round & Square PXM1515

1-1/2" only



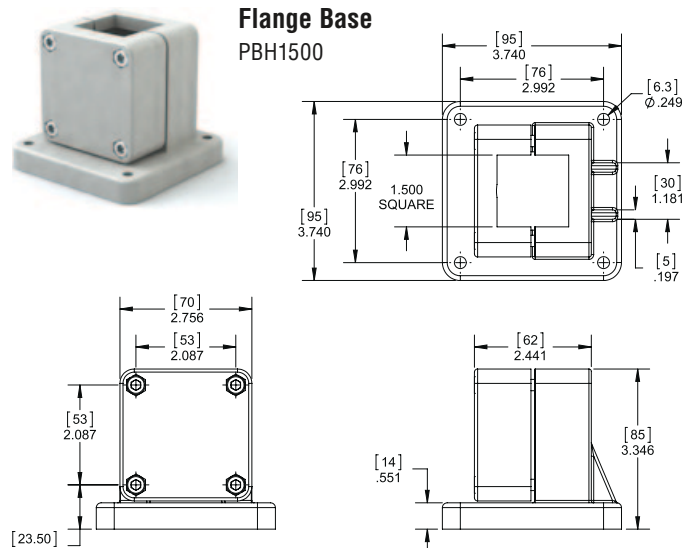
### Flange Base PBH1000

PBH1000



### Flange Base PBH1500

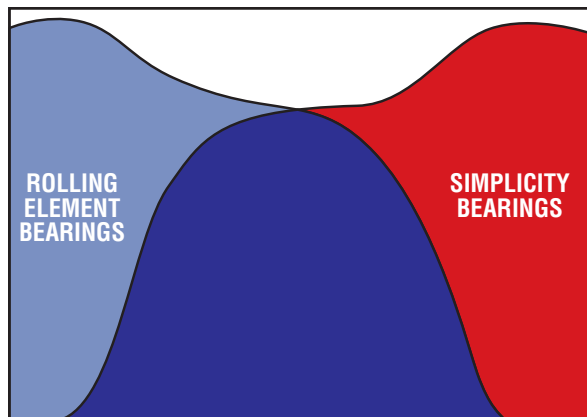
PBH1500





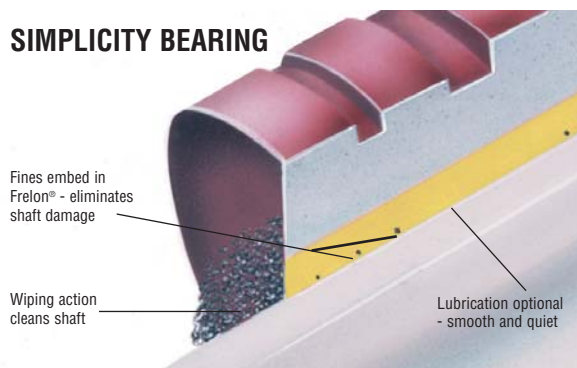
# Simplicity® Advantages

## Technical Information

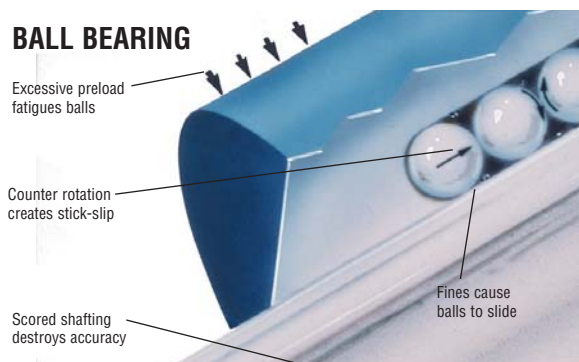


- |                                                                                                                                          |                                      |                                                                                                                       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

### SIMPLICITY BEARING



### BALL BEARING



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

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

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

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

### LINER

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

### LOAD CAPACITY

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

### PERFORMANCE

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

### LOW COST

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



### FRELON® BEARING LINER MATERIALS

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

#### TEFLON FEATURES:

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

#### FILLER BENEFITS:

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

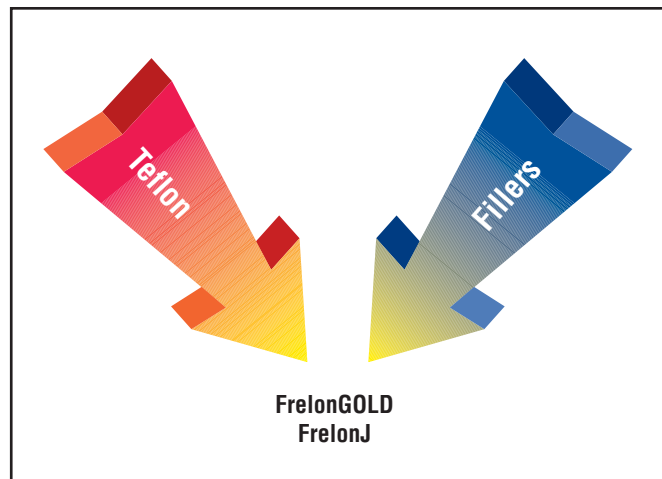
**Frelon GOLD®** is a dark gold colored high performance material with gold-colored fillers and is compatible with standard RC60 hardened steel shafting, RC70 ceramic coated and 440 stainless steel shafting.

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

### COMBINED FRELON® WITH PRECISION BEARING TECHNOLOGY TO CREATE SIMPLICITY®

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

Teflon® is a registered trademark of Dupont Corporation

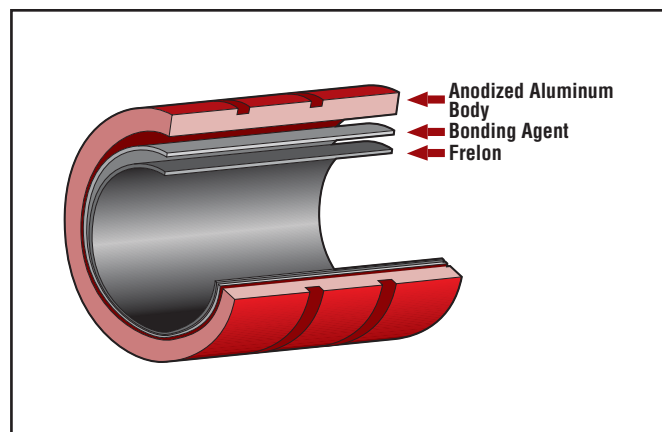


Frelon GOLD®

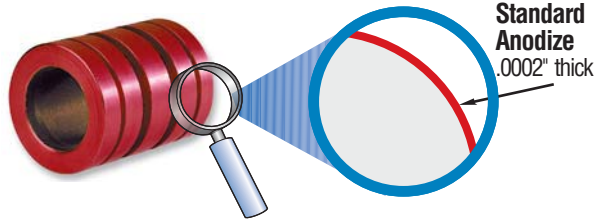
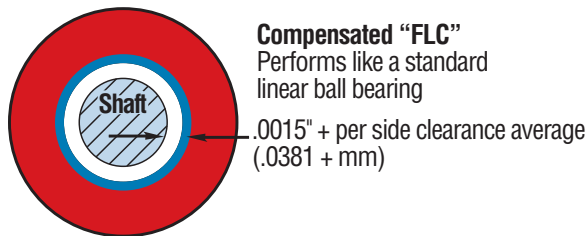
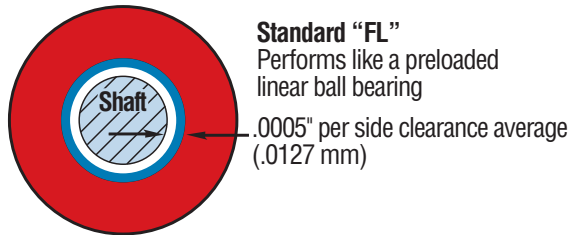
Frelon® J



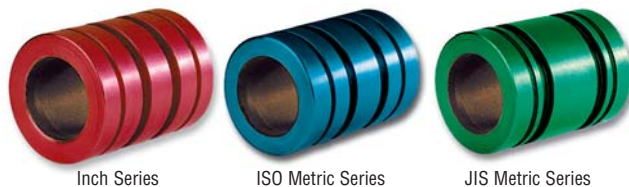
Bearing Plug Shown - See Page 33.



### RUNNING CLEARANCE



### STANDARD



### OPTIONAL



## RUNNING CLEARANCE

Simplicity bearings are available with two classes of running clearance.

### PRECISION—"FL":

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

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

### COMPENSATED—"FLC":

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

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

## BEARING SHELL

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

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

### MATERIALS:

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

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

### FINISHES:

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

**NOTE:** See page 62 for details on chemical resistance.



## TOLERANCES

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

## SELF-ALIGNMENT FEATURE

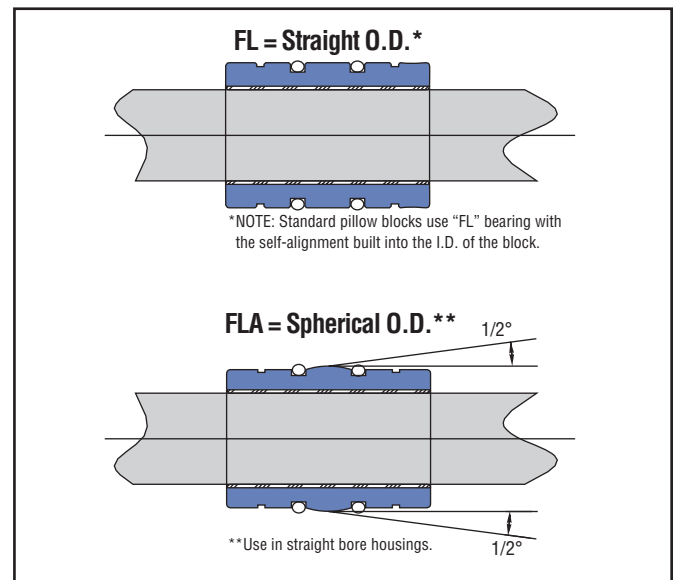
Simplicity bearings are available with a standard straight O.D. or a crowned self-aligning O.D.

### “FL” – (Standard):

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

### “FLA” – (Self-aligning O.D.):

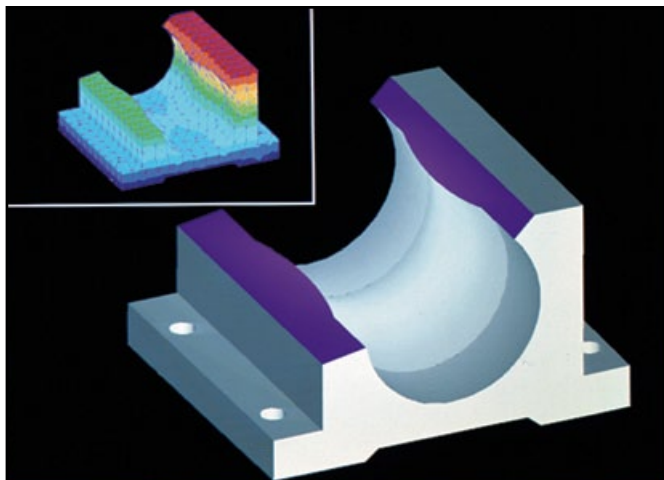
- Has a crown on the O.D. allowing the bearing to re-align itself in binding situations
- Specifically designed to easily retrofit straight bore housings
- The bearing will allow  $1/2^\circ$  of misalignment capability from centerline ( $1^\circ$  overall).
- O-rings are used on either side of the crown.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





# Pillow Blocks

## Technical Information



## PILLOW BLOCKS

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

### FINISHES:

- Clear anodized finish (Standard)

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

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

**Rigid or straight bore housings are available.**

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

## O-RINGS

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

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

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

## SEALS

Use only in the most contaminated environments.

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

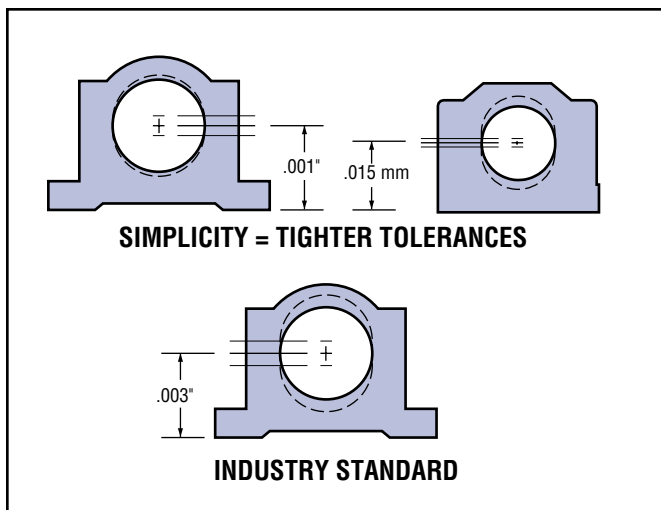
Polymod is a registered trademark of Polymod Technologies, Inc.

**Temperature** – -40 – +400°F

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

**Temperature** – -40 – +180°F

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





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

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

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

### LUBRICATION SYSTEM

Order with "JKM" modifier

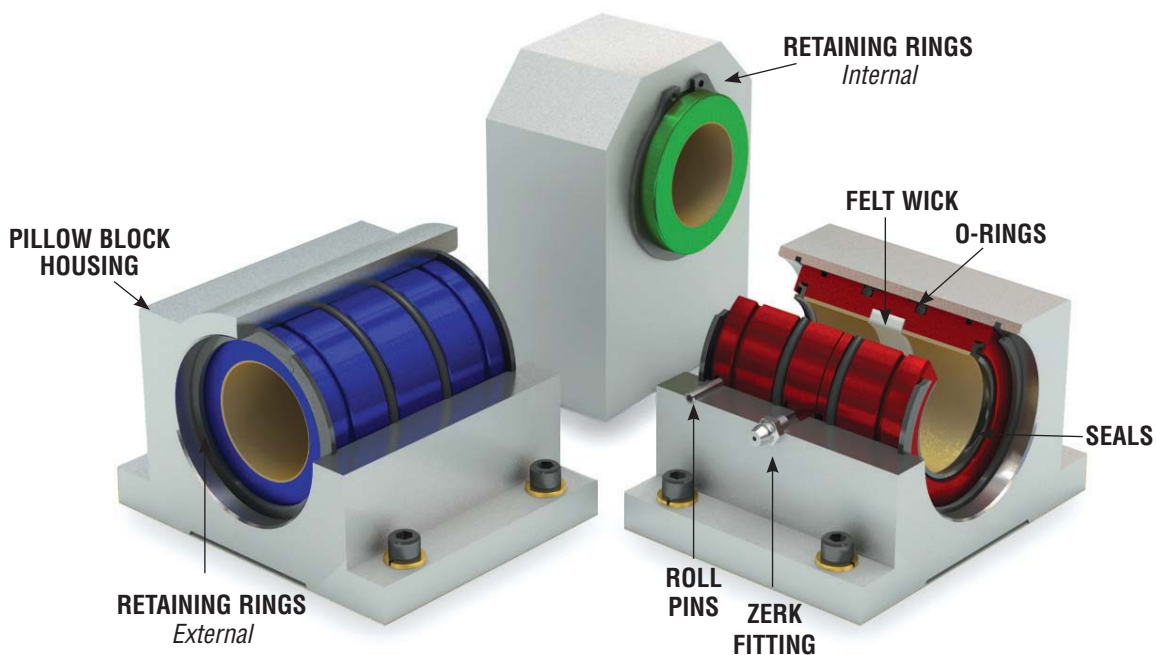
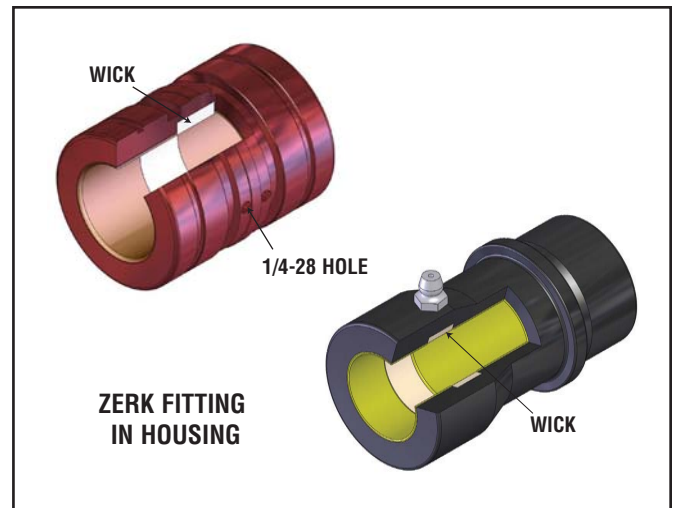
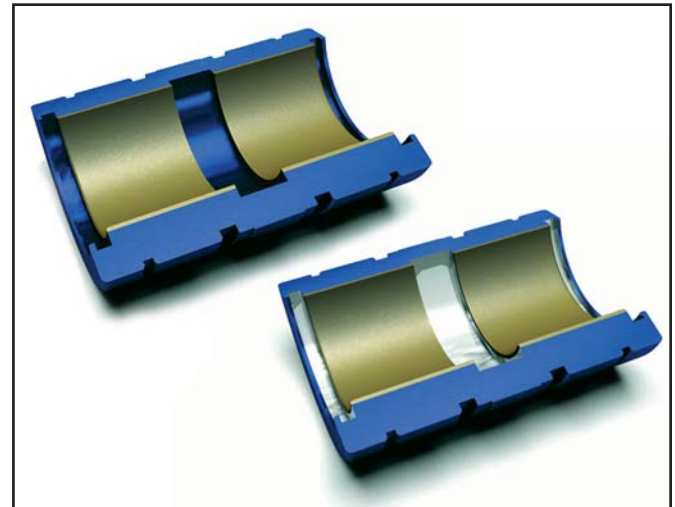
- Recommended for high speed, high load, and rotary or oscillating applications

#### LUBRICATION SYSTEM CONSISTS OF:

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

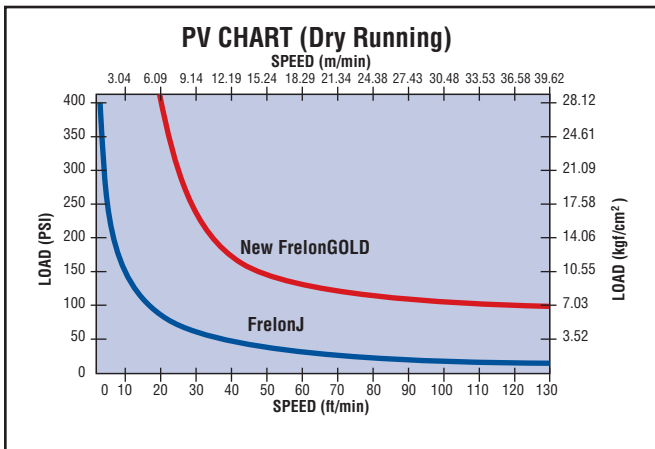
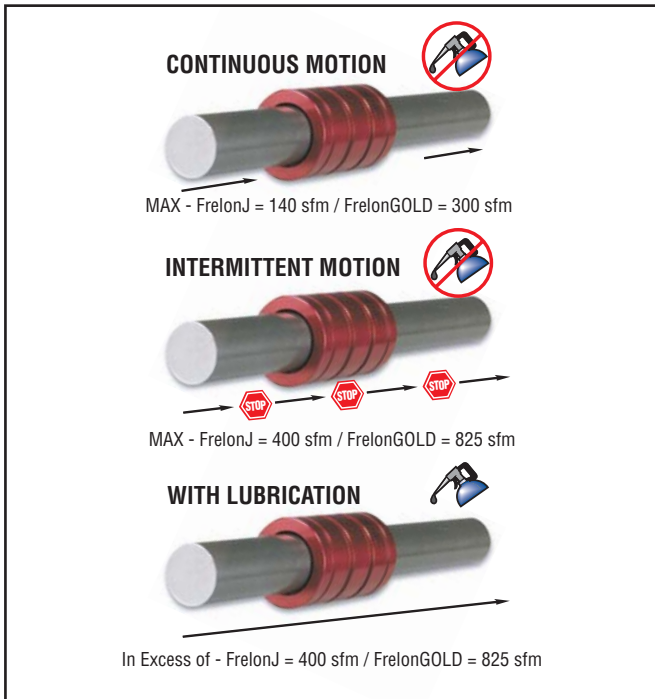
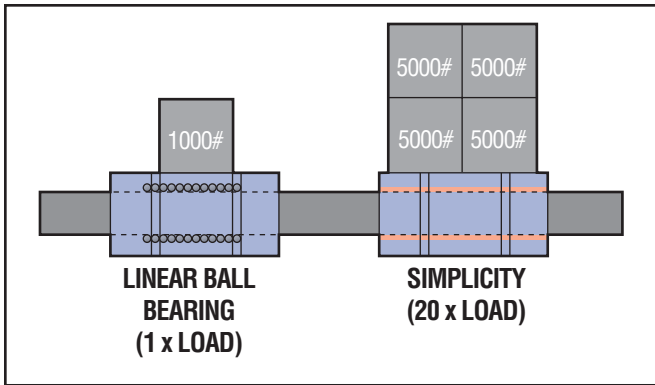
**Zerk fitting**– Installed into pillow block, other housing, or directly into die sets PAC, PACM

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





# Load Capacity Technical Information



## LOAD CAPACITY OF LINER

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

| BEARING MATERIAL | STATIC LOAD CAPACITY    |
|------------------|-------------------------|
| Frelon GOLD®     | 20.68 N/mm <sup>2</sup> |
| Frelon® J        | 10.34 N/mm <sup>2</sup> |

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

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

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

## SPEED CHARACTERISTICS

Exceeding these speeds causes frictional heat and accelerates liner wear.

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

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

## PERFORMANCE RATINGS (for Linear Motion)

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

| BEARING MATERIAL | MAX. "PV"                                                | MAX. "P"                         | MAX. "V"<br>(NO LUBRICATION)  |
|------------------|----------------------------------------------------------|----------------------------------|-------------------------------|
| Frelon GOLD®     | 20,000 (psi) x ft./min.)<br>or<br>430 (kgf/cm² x m/min.) | 3000 psi<br>or<br>210.9 kgf/cm²  | 300 sfm<br>or<br>91.44 m/min. |
| Frelon® J        | 10,000 (psi x ft./min.)<br>or<br>215 (kgf/cm² x m/min.)  | 1500 psi<br>or<br>105.45 kgf/cm² | 140 sfm<br>or<br>42.66 m/min. |

**PV** = The performance measurement of plane bearings

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

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

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



### WEAR RATE/LIFE EXPECTANCY

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

Factors that will affect life:

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

The Radial Wear chart gives a guideline for a typical application at 10 psi (.703 kgf/cm<sup>2</sup>) traveling at 100 ft./min. (30.48 m/min.).

### FACTORS AFFECTING WEAR RATE/LIFE

Shafting requirements for Frelon® bearing materials.

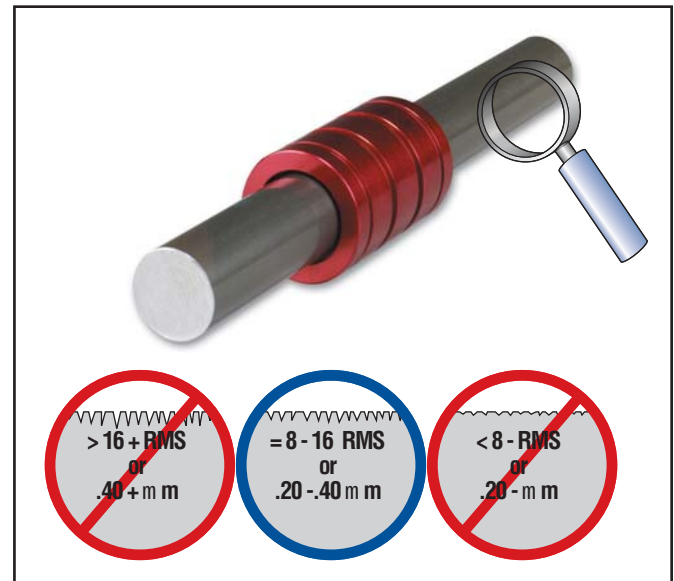
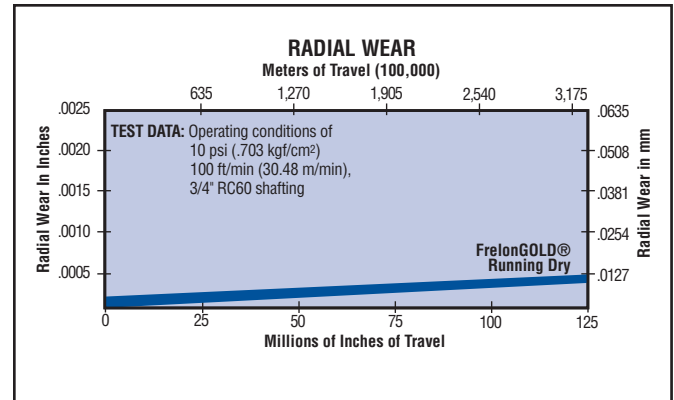
#### BEST PERFORMANCE:

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

#### ACCEPTABLE PERFORMANCE:

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

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

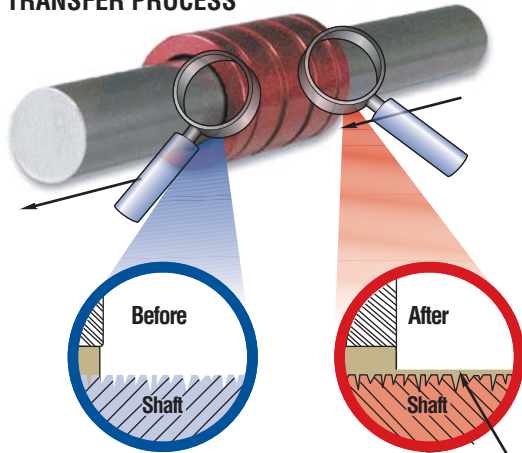




# Transfer Process

## Technical Information

### FRELON® TRANSFER PROCESS



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

### TRANSFER PROCESS OF LINER TO SHAFT

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

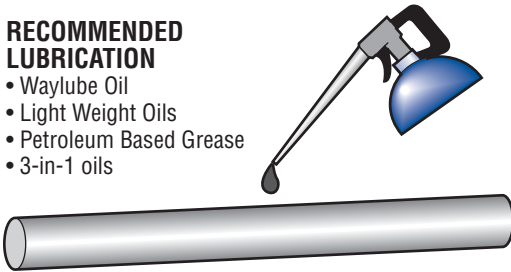
This break-in period will vary depending on several criteria:

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

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

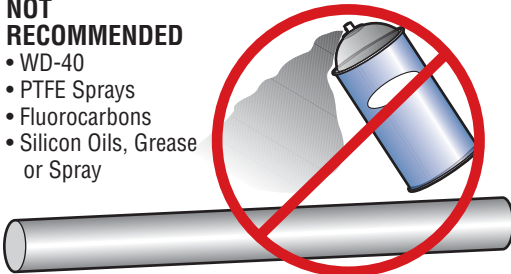
### RECOMMENDED LUBRICATION

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



### NOT RECOMMENDED

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



WD40® is a registered trademark of the WD40 company

### LUBRICATION

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



## TEMPERATURE

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

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

## THERMAL EXPANSION

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

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

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

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

## ROTARY APPLICATIONS

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

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

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

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

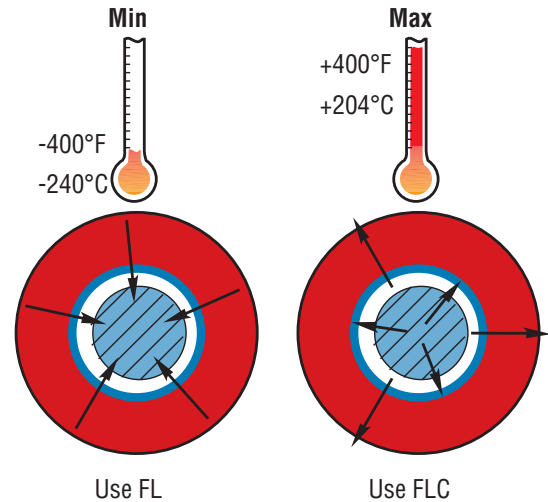
d = shaft diameter (inches)

RPM = revolutions per minute

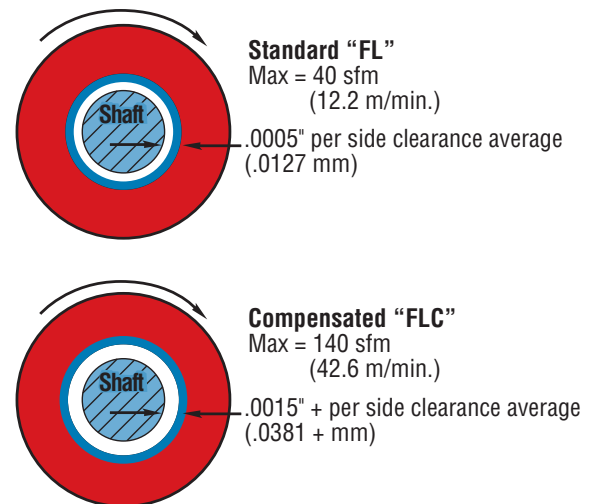
- Properly maintained lubrication can increase these speeds dramatically.

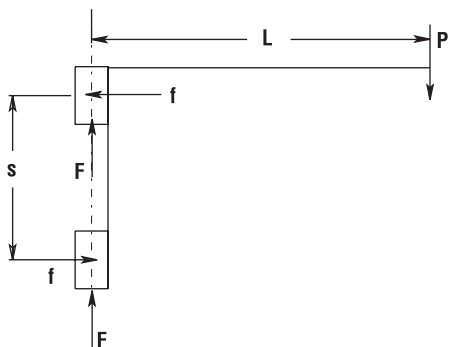
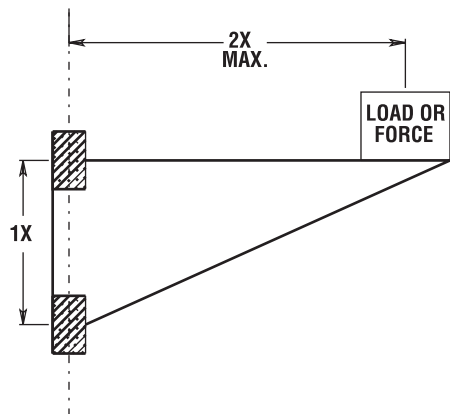
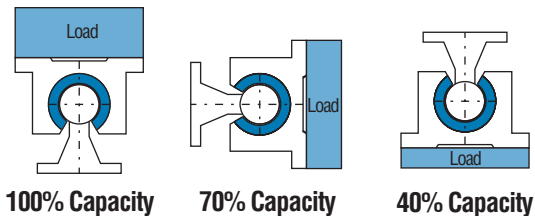
**CAUTION:** It is always best to do specific testing for rotary applications above these limits where lubrication is to be used.

### TEMPERATURE EXTREMES



### MAXIMUM ROTARY SPEEDS





### OPEN BEARINGS ORIENTATION

Simplicity bearings can operate in any orientation.

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

### CANTILEVERED LOADS

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

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

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

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

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

$P$  = force being applied

$L$  = distance out from shaft that  $P$  is being applied

$s$  = center to center spacing of bearings

$f$  = resultant force on bearings by shaft

$F$  = friction force on each bearing

$\mu$  = coefficient of friction (about .25 when not moving)

**BALANCE THE MOMENTS:**

$$f * s = L * P$$

$$L / s = f / P$$

**COMPUTE FRICTION FORCE:**

$$F = f * \mu$$

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

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

### SUBSTITUTE FOR $P$ :

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

**NOTE:** The forces drop out of the equation

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

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

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



### COUNTERBALANCE

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

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

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

W can be calculated - load on bearing will be:

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

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

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

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

### CANTILEVER LOADS AND DRIVE FORCE LOCATION WITHOUT COUNTERBALANCE

d = distance from shaft to Drive Force

l = distance from shaft to the load center of gravity

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

$L = l / s$  = Load Force Ratio

$D = d / s$  = Drive Force Ratio

### GENERAL RULES:

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

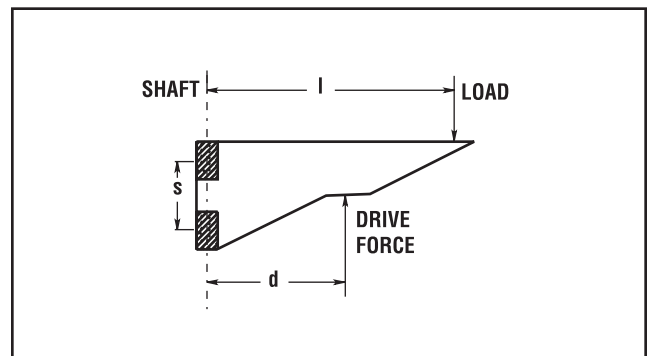
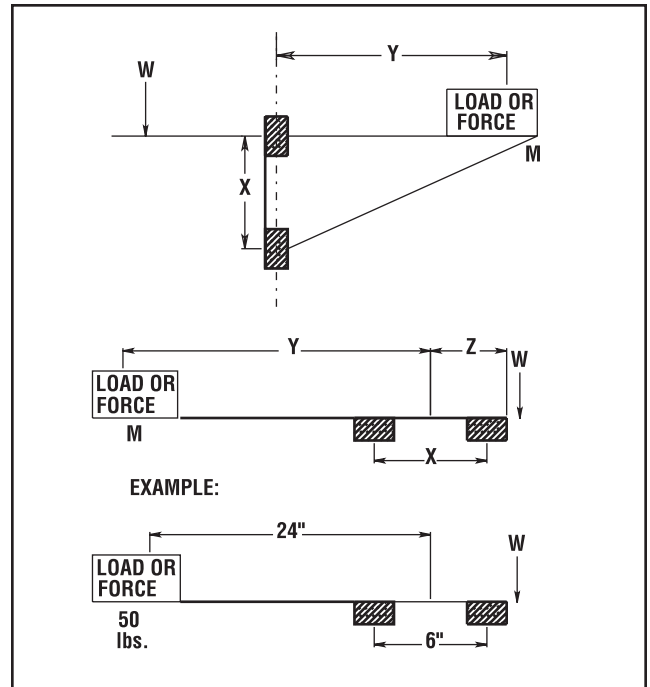
Load Force Ratio (L) can be larger than 2, but as this ratio increases, the drive force required to move the slide increases dramatically. A Load Force Ratio (L) larger than 4 is not recommended.

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

### VERTICAL APPLICATIONS:

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

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



### HORIZONTAL APPLICATIONS:

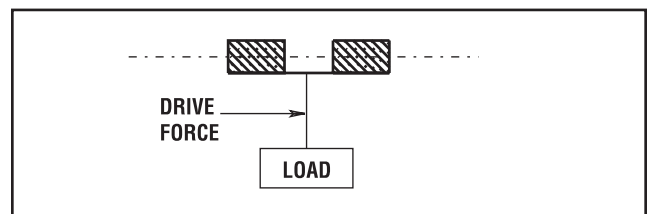
For best results, the drive force should be applied as close to the shaft as possible no matter what the value of the Load Force Ratio (L) is.

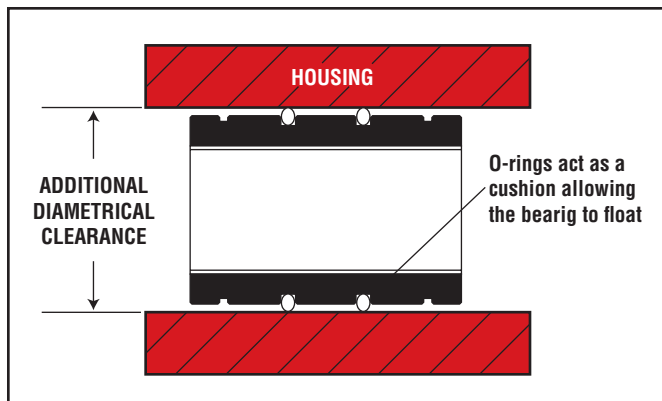
### HANGING OR "TOP HEAVY" HORIZONTAL APPLICATIONS WITH HIGH ACCELERATION RATES:

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

$$D = 0.8 \times L \times \sqrt{a}$$

where a is acceleration in g's.





### SEVERE MISALIGNMENT SOLUTIONS

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

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

#### POSSIBLE SOLUTIONS for use with Standard "FL":

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

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

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

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

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

### CHEMICAL RESISTANCE

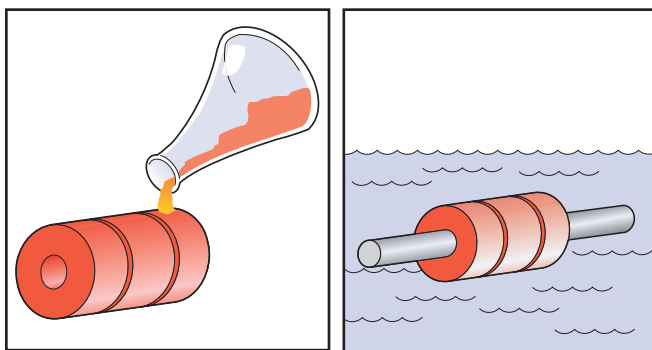
Simplicity bearings stand up to harsh environments.

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

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

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

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



### SUBMERGED APPLICATIONS

Simplicity bearings will provide excellent performance in a submerged condition.

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

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

### VACUUMS/OUTGASSING/CLEANROOMS

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

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

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

TML = Total Mass Loss

CVCM = Collected Volatile Condensable Materials



### CLASSES OF PLANE BEARINGS

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

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

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

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

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

### RATING A PLANE BEARING

Plane bearing performance capacity is rated by PV.

**P** - pressure or load in pounds per square inch (psi) or kilograms per square centimeter (kg/cm<sup>2</sup>).

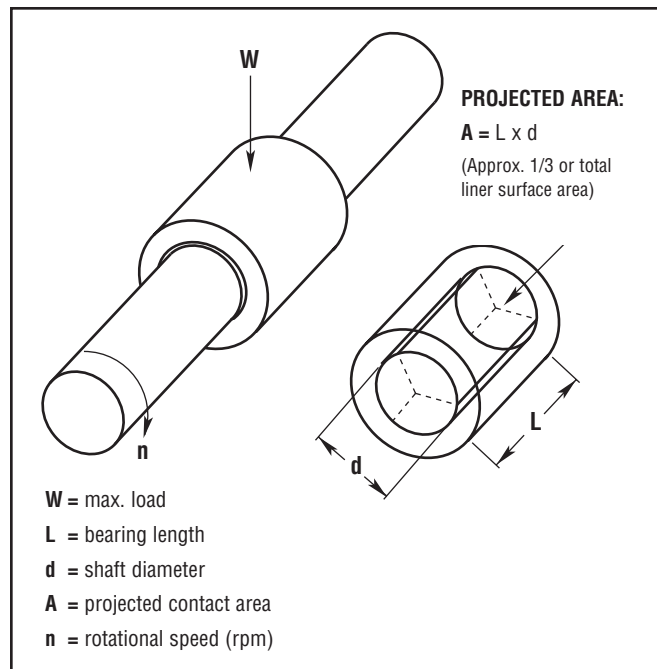
**V** - velocity or surface speed in feet per minute (fpm or sfm) or meters per minute (m/min.).

**PV** - pressure velocity value. (Pressure x Velocity)

### SIMPLICITY MAXIMUM PERIMETER

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

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



### FORMULAS FOR RATINGS

**PRESSURE IS OVER THE PROJECTED AREA OF LOAD:**

$$A = L \times d$$

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

**VELOCITY:**

Linear = total distance traveled in one minute

**ROTATIONAL VELOCITY:**

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

**PRESSURE VELOCITY VALUE (PV):**

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

### PV EQUIVALENTS

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



# Wear Rate

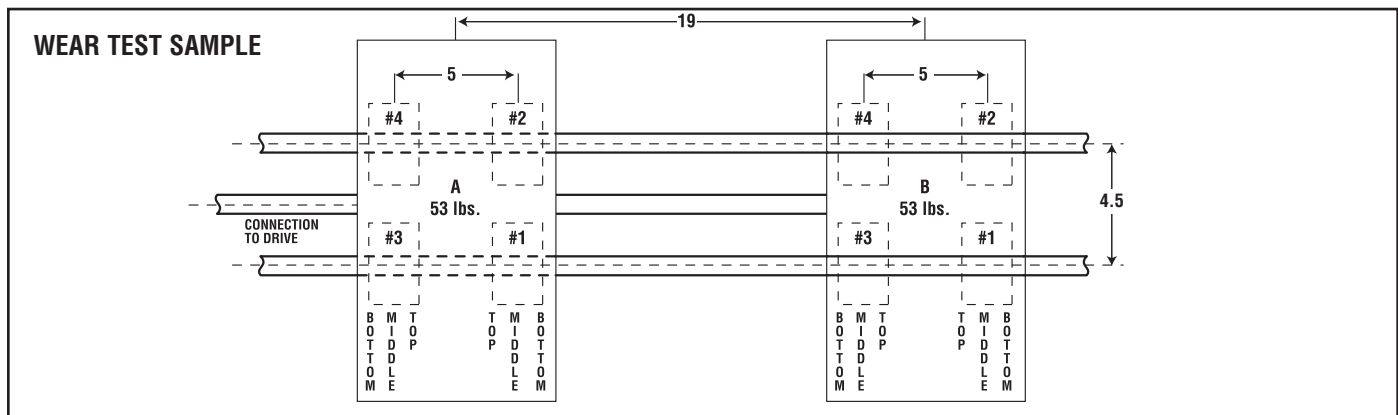
## Technical Information

### WEAR RATE VS. LIFE EXPECTANCY

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

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

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



**CONDUCTED BY:** Pacific Bearing® Company

**BEARING MATERIAL:** Frelon GOLD®

**SHAFT MATERIAL:** Standard RC60 steel shafting

**SURFACE FINISH:** 8-12 RMS

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

**STROKE:** 12"

**LOAD:** 10.87 psi (53 lbs.)

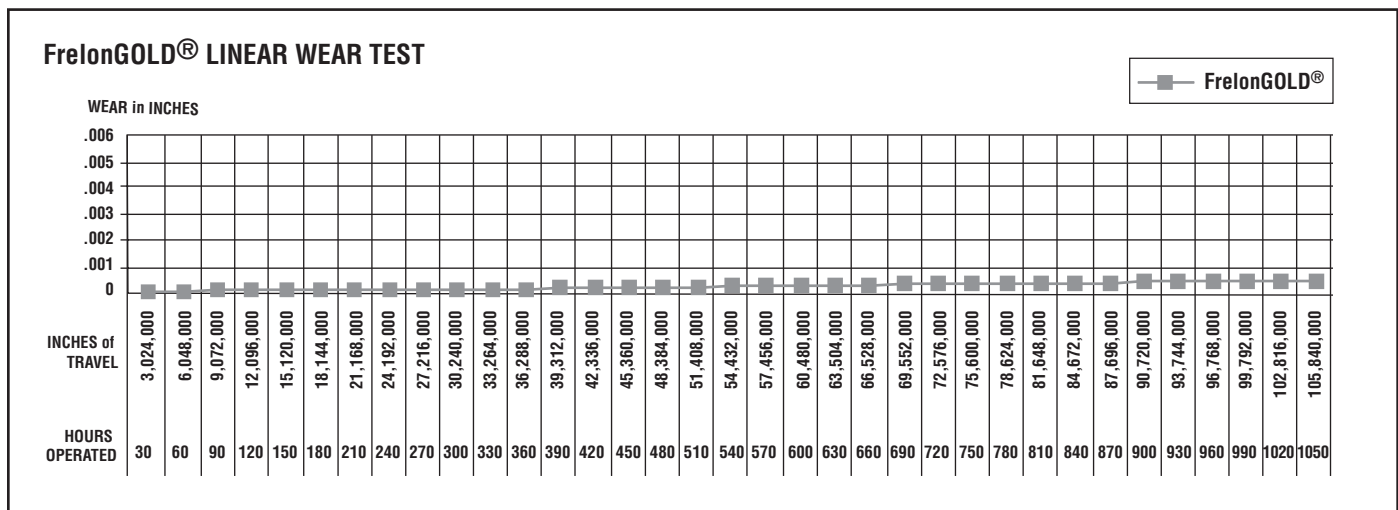
**BEARINGS USED:** FLN12 (3/4" open style bearings)

**LUBRICATION:** None

**TOTAL WEAR TO BEARING MATERIAL:**

Frelon GOLD® = .00042"

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



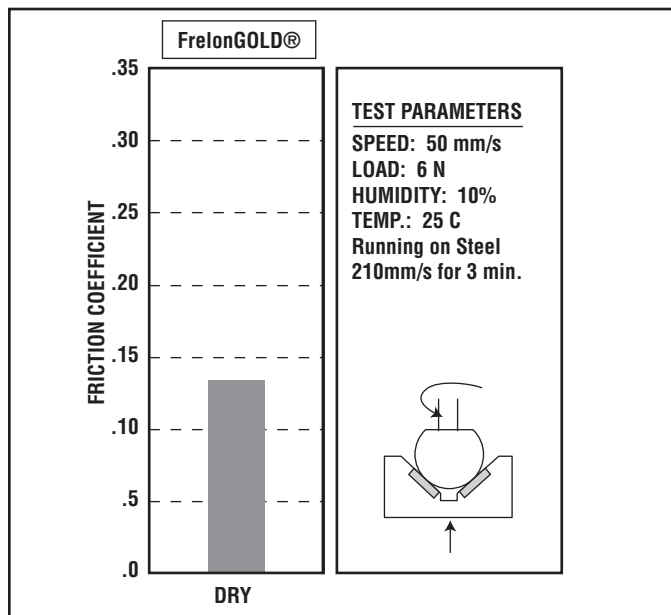


### COEFFICIENT OF FRICTION

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

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

#### FRICTION TEST SAMPLE #1



**CONDUCTED BY:** Dr. Tillwich GmbH

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

**BEARING MATERIAL:** Frelon GOLD®

**SHAFT MATERIAL:** Standard RC60 steel shafting

**SURFACE FINISH:** 8-12 RMS

**SPEED:** 50 mm/sec

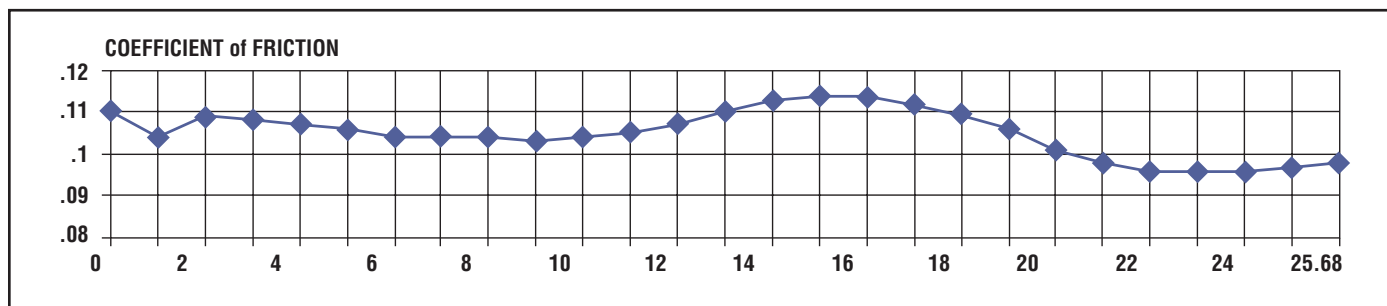
**LOAD:** 6 N

**TEMP.:** 25° C

**LUBRICATION:** None

**AVG. COEFFICIENT OF FRICTION:**  
 Frelon GOL<sup>D</sup>® = .125

#### FRICTION TEST SAMPLE #2



**CONDUCTED BY:** Frelon GOLD® material processor

**BEARING MATERIAL:** Frelon GOLD®

**SHAFT MATERIAL:** CRS 1018

**SPEED:** 100 fpm

**LOAD:** 100 psi

**DURATION:** 25.68 hours

**LUBRICATION:** None

**SURFACE FINISH:** 8 RMS

**AVERAGE COF:** 0.10

**MAX. COF:** 0.15

**MIN. COF:** 0.08

**AVG. RUNNING TEMP.:** 95.40° F



# Load Capacity

## Technical Information

### LOAD CAPACITY (Pressure)

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

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

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

### LINEAR SURFACE SPEEDS (Velocity)

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

### FACTORS THAT CONTRIBUTE TO WEAR LIFE

Proper mating of shaft and liner materials.

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

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

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

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

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

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

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

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

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



### TYPES AND EFFECTS OF LUBRICATION

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

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

#### RECOMMENDED LUBRICANTS:

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

WD40™ is a registered trademark of the WD40 Corporation.

### USING OILS WITH SIMPLICITY

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

### GREASE PRODUCTS

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

### PROPER USE OF GREASES

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

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

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

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

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

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

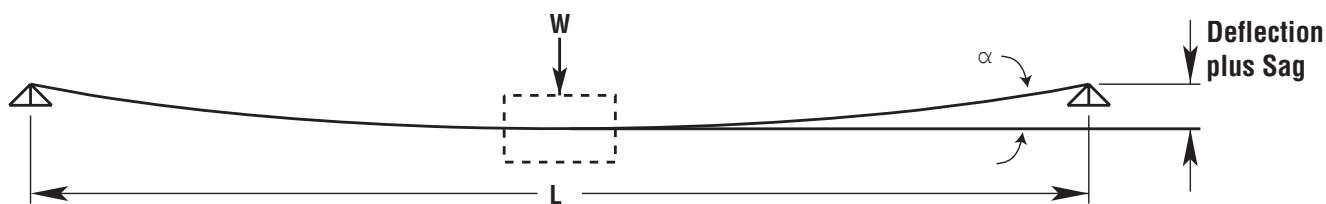
### EFFECTS OF LUBRICATION

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



# Application Information

## Technical Information



### INCH

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

### METRIC

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



### SHAFT DEFLECTION

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

#### FORMULA FOR INCH AND METRIC SHAFTING DEFLECTION

Total shaft deflection in horizontal applications:

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

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

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

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

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

L = Shaft unsupported length (inches or mm)

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

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

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

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

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

E = Modulus of Elasticity (Young's modulus)

### TOTAL DEFLECTION

ø1 in. Shaft

24 in. Length (L)

250 lbs. load (W)

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

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

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

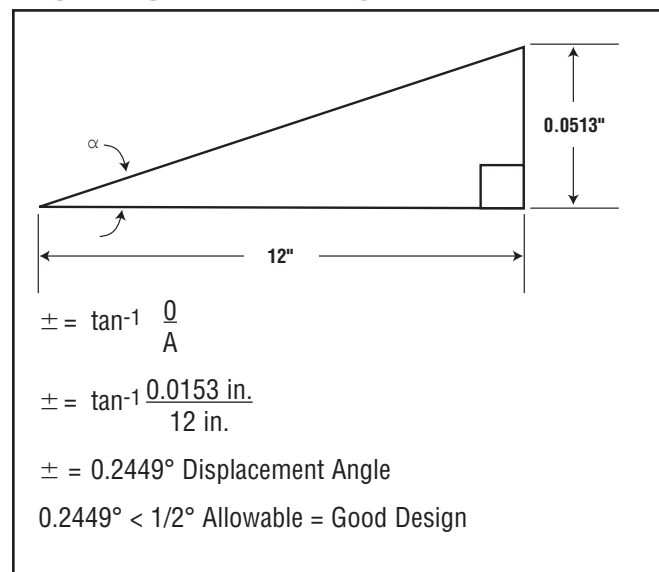
$$\text{SAG} = \frac{331,776 \text{ in.}^4}{492,000,000 \text{ in.}^3}$$

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

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

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

### DISPLACEMENT ANGLE





# Installation

## Technical Information

### INSTALLING SIMPLICITY® BEARINGS

Applies to standard linear bearing series.

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

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

#### STRAIGHT BORE HOUSING - PRESS FIT BEARING

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

It does NOT allow for any misalignment or shaft deflection.

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

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

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

**EXAMPLE:** FLC24, FMC30, FJC30

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

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

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

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



### STRAIGHT BORE HOUSING - SLIP FIT BEARING

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

#### 1. VIRTUALLY NO MISALIGNMENT

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

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

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

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



# Installation

## Technical Information

### STRAIGHT BORE HOUSING - SLIP FIT BEARING

#### 2. STANDARD APPLICATIONS WITH AVERAGE MISALIGNMENT

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

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

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

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

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

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



### STRAIGHT BORE HOUSING - SLIP FIT BEARING

#### 3. SEVERE MISALIGNMENT

A standard O.D. bearing is recommended.

**EXAMPLE:** FL24, FM30, FJ30

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

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

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

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

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



# Chemical Reaction Chart

## Technical Information

### CHEMICAL REACTION CHART

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

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

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

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

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

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

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

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

**E = < .002" per year**

**G = < .020" per year**

**S = < .050" per year**

**U = > .050" per year**

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



### NIL - RC60 STEEL - SOLID

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

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

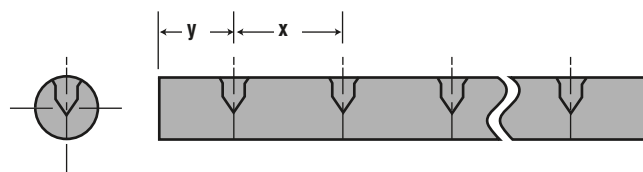
**\*NOTES:** Specify length in part number using inches.  
 Example: for 1/2" shafting total length 15" = NIL08-15  
 Surface finish 8 - 12 RMS.

RC60 STEEL SHAFTING,  
SOLID, PRE-DRILLED AND TAPPED



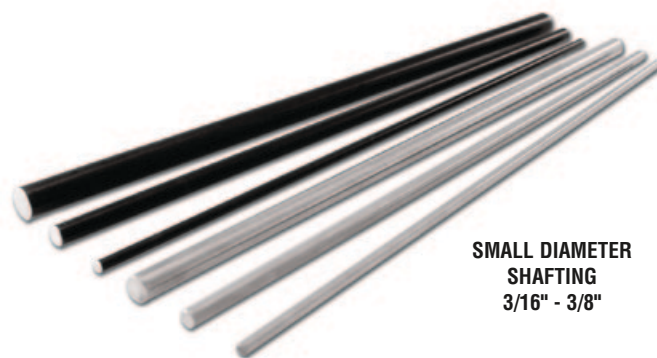
Shafting - RC60 Steel

### NIPDL - RC60- PRE-DRILLED & TAPPED



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

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



SMALL DIAMETER  
SHAFTING  
3/16" - 3/8"

### NIL - RC60 - SMALL DIAMETER

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



# Shafting & Support Rail - NILXXSS, SR & SRXXPD

## 440 Stainless Steel & Aluminum

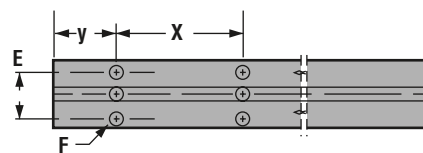
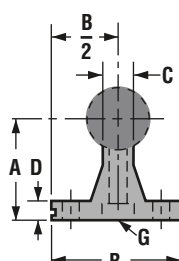
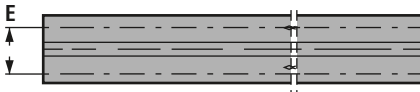
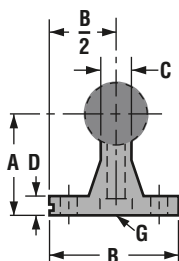
### NILXXSS - 440 STAINLESS STEEL - SOLID



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

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

### SR & SRXXPD - ALUMINUM - SUPPORT RAIL



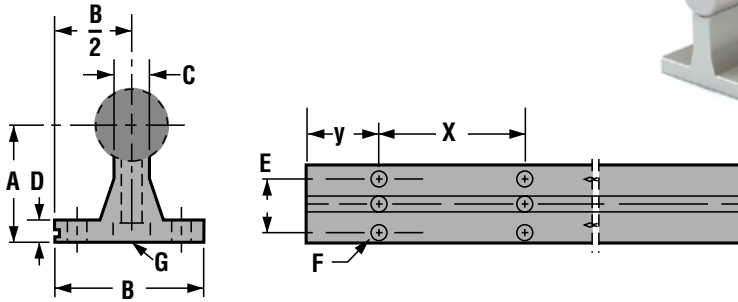
| PART NO.    |             | NOMINAL SIZE | A        | B     | C     | D     | E     | RECOMMENDED HOLE SIZE G |       | WEIGHT     |
|-------------|-------------|--------------|----------|-------|-------|-------|-------|-------------------------|-------|------------|
| NON-DRILLED | PRE-DRILLED | (in.)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

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



### SRA - ALUMINUM - RAIL ASSEMBLY

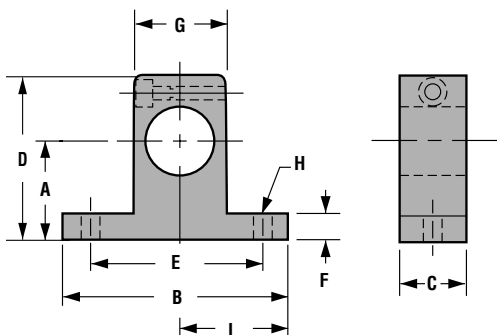
- (2) piece assembly RC60 steel shaft and aluminum support rail
- Cut-to-length or longer lengths available
- Shafting also available in 440 stainless steel & ceramic coated aluminum)



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

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

### NSB - ALUMINUM - END SUPPORT BLOCK



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



# Shafting - CC & CCPDL

## Ceramic Coated Aluminum

### CC - CERAMIC COATED - SOLID

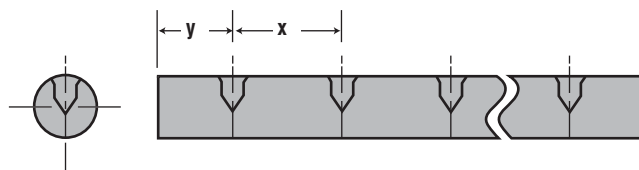


- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity Frelon GOLD® lined bearings
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

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

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

### CCPDL - CERAMIC COATED - PRE-DRILLED & TAPPED



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

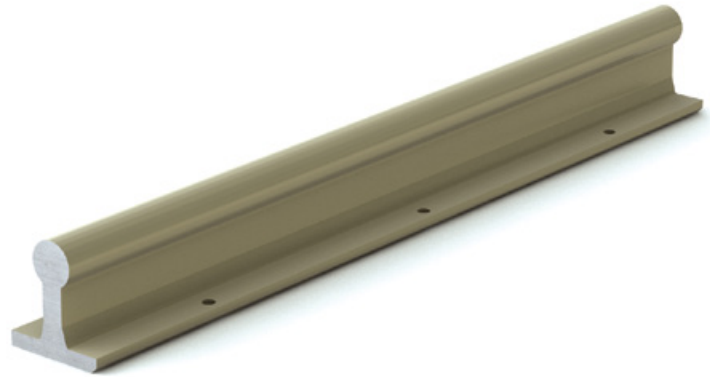
| PART NO.   | NOMINAL SHAFT SIZE | DIAMETER TOLERANCE |        | HOLE SPACING |   | THREAD  | MAX. LENGTH | WEIGHT     |
|------------|--------------------|--------------------|--------|--------------|---|---------|-------------|------------|
|            | (in.)              | MIN.               |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

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

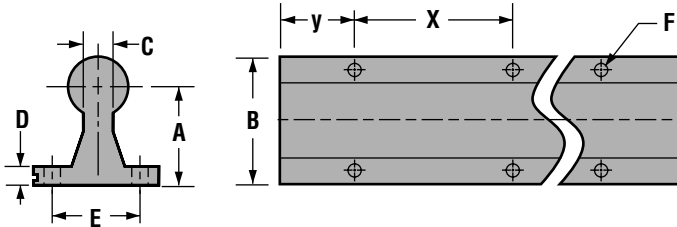


### CCR - CERAMIC COATED - RAIL ASSEMBLY

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



Rail Assembly - Ceramic



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

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

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

Customer specifies "y" dimension.

DO NOT use with linear ball bearings.

\*Undrilled rails are available on special request.



# Shafting - NIM & NIPDM

## RC60 Steel - ISO Metric

### NIM - RC60 STEEL - SOLID

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

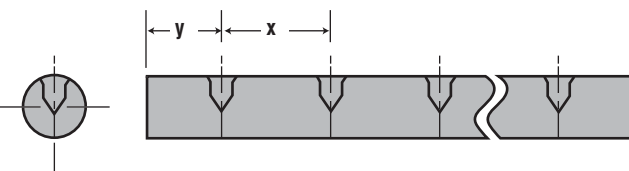
| PART NO. | NOMINAL SIZE | DIAMETER TOLERANCE CLASS "M" |      | LENGTH in m* | HARDNESS DEPTH | WEIGHT (kg/m) |
|----------|--------------|------------------------------|------|--------------|----------------|---------------|
|          | (mm)         | MIN.                         | MAX. | MAX.  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

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

### RC60 STEEL SHAFTING, SOLID, PRE-DRILLED AND TAPPED



### NIPDM - RC60 - PRE-DRILLED & TAPPED



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

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



SMALL DIAMETER  
SHAFTING  
3MM - 10MM

### NIM - RC60 - SMALL DIAMETER

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

# Shafting - NIM, CCM & CCMDL

## 440 Stainless Steel & Ceramic Coated



### NIM - 440 STAINLESS STEEL - SOLID



- 440 Stainless Steel
- Suitable for linear ball bearings
- Available cut-to-lengths, random lengths, pre-drilled & tapped
- Length tolerance of  $\pm 0.8\text{mm}$

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

### CCM - CERAMIC COATED - SOLID

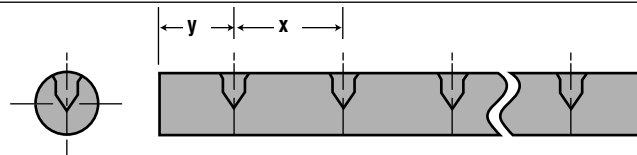


- Aluminum alloy base material
- RC70 ceramic coated finish
- Designed to run with Simplicity Frelon GOLD® lined bearings
- Non-magnetic and vibration resistant
- Weld splatter, paints, contaminants will not stick

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

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

### CCMDL - CERAMIC COATED - PRE-DRILLED & TAPPED



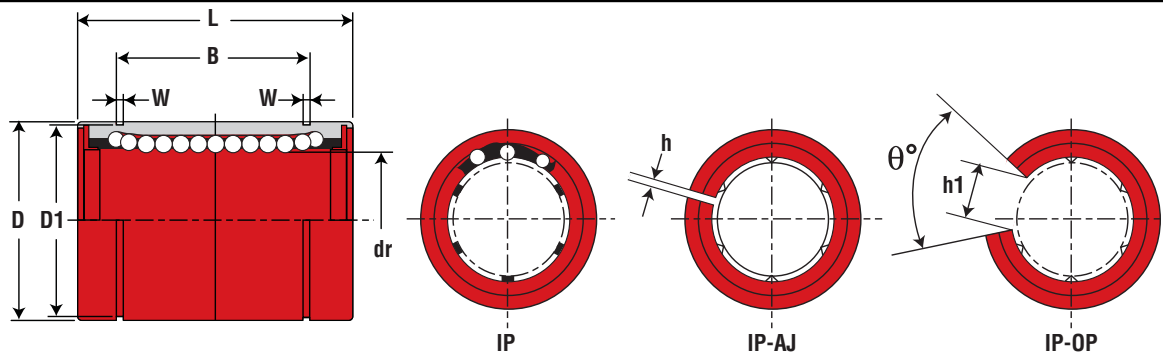
| PART NO.   | NOMINAL SIZE | DIAMETER TOLERANCE CLASS "M" | HOLE SPACING |      | THREAD    | MAX. LENGTH | WEIGHT |
|------------|--------------|------------------------------|--------------|------|-----------|-------------|--------|
|            | (mm)         | ( $\mu\text{m}$ )            | x  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

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

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



# Linear Ball Bearings - IP Inch Series



## IP - DIMENSIONAL INFORMATION

(Standard Steel Finish)

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

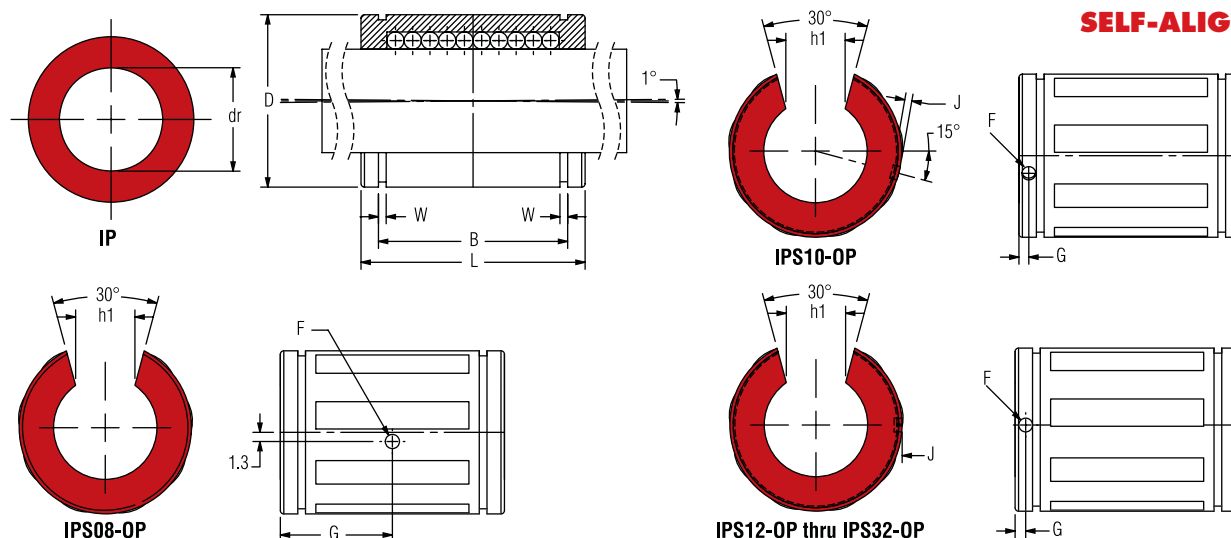
| MAJOR DIMENSIONS & TOLERANCES |                               |                           |                     |                    |                     |                     |                      |                               |                                          | LOAD RATING         |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

# Linear Ball Bearings - IPS & IPS-OP

## Inch Series



Ball Bearing - IPS



**SELF-ALIGNING**

### IPS - DIMENSIONAL INFORMATION

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

### IPS-OP - DIMENSIONAL INFORMATION

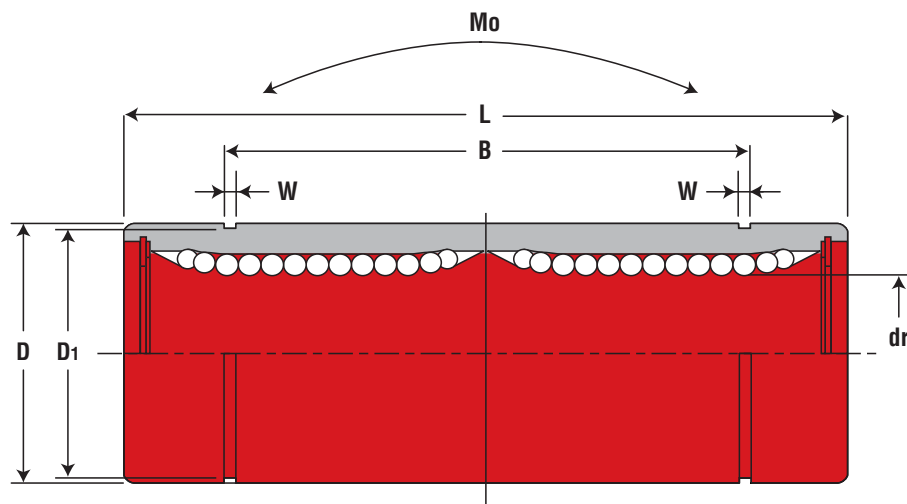
| SHAFT DIA.<br>(Inch/<br>mm) | PART NUMBER      |                 |                 | MAJOR DIMENSIONS & TOLERANCES |                    |                    |       |       |       |       |       |                     |    | LOAD RATING        |                    |
|-----------------------------|------------------|-----------------|-----------------|-------------------------------|--------------------|--------------------|-------|-------|-------|-------|-------|---------------------|----|--------------------|--------------------|
|                             | STANDARD<br>OPEN | BALL<br>CIRCUIT | WEIGHT<br>(lbf) | dr<br>(inch/<br>mm)           | D<br>(inch/<br>mm) | L<br>(inch/<br>mm) | F     | G     | B     | W     | D1    | h1<br>(inch/<br>mm) | θ° | Dynamic<br>C (lbf) | Static<br>Co (lbf) |
| 1/2<br>9.525                | IPS08-OP         | 3               | 0.030           | 0.500                         | 0.8750             | 1.250              | 0.140 | 0.630 | 1.032 | 0.050 | 0.320 | 0.320               | 30 | 210                | 190                |
| 5/8<br>15.875               | IPS10-OP         | 4               | 0.060           | 0.625                         | 1.1250             | 1.500              | 0.110 | 0.130 | 1.105 | 0.056 | 0.380 | 0.380               | 30 | 320                | 340                |
| 3/4<br>19.050               | IPS12-OP         | 5               | 0.110           | 0.750                         | 1.2500             | 1.625              | 0.140 | 0.130 | 1.270 | 0.056 | 0.430 | 0.430               | 30 | 510                | 430                |
| 1<br>25.400                 | IPS16-OP         |                 | 0.210           | 1.000                         | 1.5625             | 2.250              | 0.140 | 0.130 | 1.884 | 0.070 | 0.560 | 0.560               | 30 | 830                | 780                |
| 1-1/4<br>31.750             | IPS20-OP         |                 | 0.350           | 1.250                         | 2.0000             | 2.625              | 0.200 | 0.190 | 2.004 | 0.068 | 0.630 | 0.630               | 30 | 1250               | 1270               |
| 1-1/2<br>38.100             | IPS24-OP         |                 | 0.670           | 1.500                         | 2.3750             | 3.000              | 0.200 | 0.190 | 2.410 | 0.086 | 0.750 | 0.750               | 30 | 1520               | 1540               |
| 2<br>50.800                 | IPS32-OP         |                 | 1.10            | 1.500                         | 3.0000             | 4.000              | 0.270 | 0.310 | 3.193 | 0.105 | 1.000 | 1.000               | 30 | 2250               | 2580               |



# Double Wide - IP-W

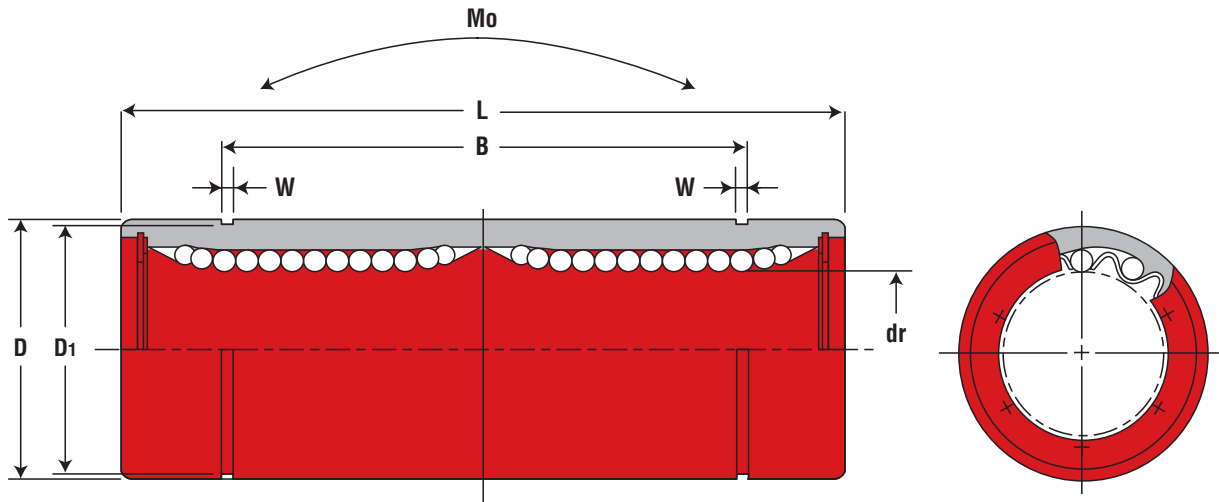
## Linear Ball Bearings

Double Wide - IP-W



### IP-W - DIMENSIONAL INFORMATION

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



### IP-W - DIMENSIONAL INFORMATION (cont.)

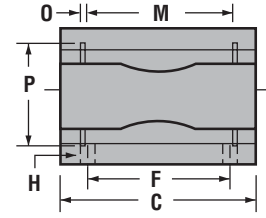
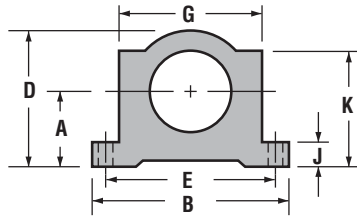
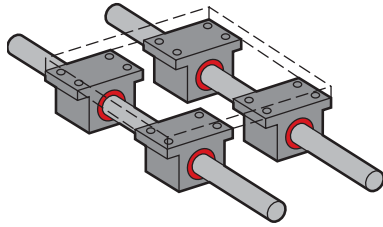
(Standard Steel Finish)

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



# Pillow Block - IPP & IPPN

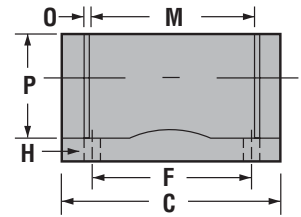
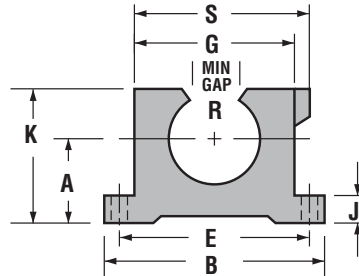
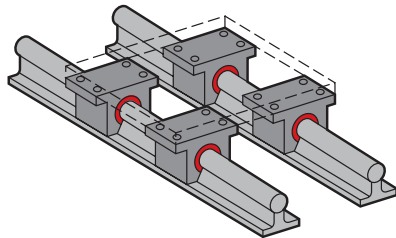
## Linear Ball Bearings



### IPP - CLOSED PILLOW BLOCKS

| PART NO.<br>CLOSED | NOM.<br>BRG. I.D. | A                      | B     | C      | D      | E        | F        | G             | H    |        | J              | K     | M             | O             | P            | SMALLEY<br>RET.<br>RING | ASSEM.<br>WT. |
|--------------------|-------------------|------------------------|-------|--------|--------|----------|----------|---------------|------|--------|----------------|-------|---------------|---------------|--------------|-------------------------|---------------|
| PRECISION          | MIN.              | CENTERLINE<br>+/- .001 | WIDTH | LENGTH | HEIGHT | +/- .010 | +/- .010 | BODY<br>WIDTH | BOLT | HOLE   | FLNG.<br>THICK |       | GRV.<br>SPACE | GRV.<br>WIDTH | GRV.<br>DIA. | RING<br>PART NO.        | (lbs.)        |
| IPP04G             | 1/4"              | 0.437                  | 1.625 | 1.19   | 0.813  | 1.3120   | 0.7500   | 1.000         | #6   | 5/32"  | 0.188          | 0.750 | 0.750         | 0.039         | 0.532        | WH-51                   | 0.099         |
| IPP06G             | 3/8"              | 0.500                  | 1.750 | 1.31   | 0.938  | 1.4370   | 0.8750   | 1.125         |      |        | 0.188          | 0.875 | 0.875         | 0.039         | 0.665        | WH-65                   | 0.129         |
| IPP08G             | 1/2"              | 0.687                  | 2.000 | 1.69   | 1.250  | 1.6880   | 1.0000   | 1.375         |      |        | 0.250          | 1.125 | 1.250         | 0.046         | 0.931        | WH-90                   | 0.250         |
| IPP10G             | 5/8"              | 0.875                  | 2.500 | 1.94   | 1.625  | 2.1250   | 1.1250   | 1.750         | #8   | 3/16"  | 0.281          | 1.438 | 1.500         | 0.056         | 1.197        | WH-115                  | 0.500         |
| IPP12G             | 3/4"              | 0.937                  | 2.750 | 2.06   | 1.750  | 2.3750   | 1.2500   | 1.875         |      |        | 0.313          | 1.563 | 1.625         | 0.056         | 1.330        | WH-128                  | 0.580         |
| IPP16G             | 1"                | 1.187                  | 3.250 | 2.81   | 2.188  | 2.8750   | 1.7500   | 2.375         | #10  | 7/32"  | 0.375          | 1.938 | 2.250         | 0.068         | 1.671        | WH-156                  | 1.000         |
| IPP20G             | 1-1/4"            | 1.500                  | 4.000 | 3.63   | 2.813  | 3.5000   | 2.0000   | 3.000         |      |        | 0.438          | 2.500 | 2.625         | 0.068         | 2.122        | WH-200                  | 2.000         |
| IPP24G             | 1-1/2"            | 1.750                  | 4.750 | 4.00   | 3.250  | 4.1250   | 2.5000   | 3.500         | 1/4" | 9/32"  | 0.500          | 2.875 | 3.000         | 0.086         | 2.519        | WH-237                  | 3.000         |
| IPP32G             | 2"                | 2.125                  | 6.000 | 5.00   | 4.063  | 5.2500   | 3.2500   | 4.500         | 3/8" | 13/32" | 0.625          | 3.625 | 4.000         | 0.103         | 3.182        | WH-300                  | 6.500         |

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



### IPPN - OPEN PILLOW BLOCKS

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

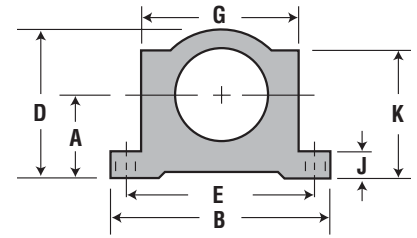
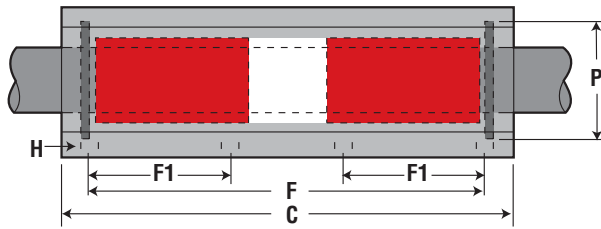
- NOTES:** (1) Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.  
(2) All standard pillow blocks use standard "IP" series bearings found on page 70.  
(3) All open pillow blocks have "notch".

# Twin Pillow Block - IPPW & IPPWN

## Linear Ball Bearings



Twin - IPPW & IPPWN

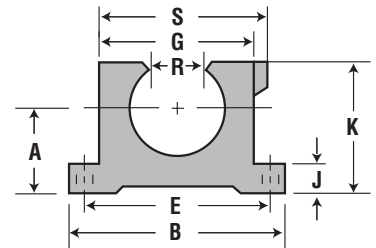
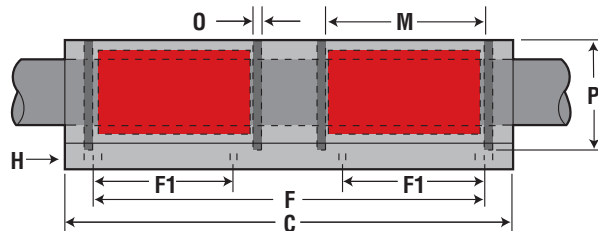


### IPPW - TWIN CLOSED PILLOW BLOCKS

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

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

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



### IPPWN - TWIN OPEN PILLOW BLOCKS

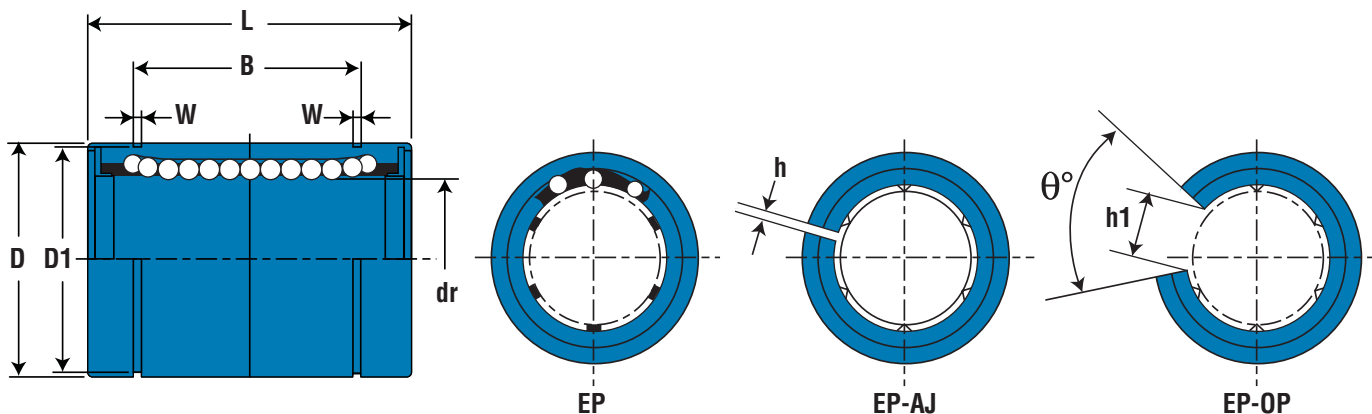
| PART NO.<br>OPEN | NOM.<br>BRG. I.D. | A<br>CENTERLINE | B     | C      | E        | F        | F1       | G             | H    |        | J              | K      | M             | O            | P            | R            | EATON<br>RET.<br>RING<br>PART NO. | ASSEM.<br>WT.<br>(lbs.) | S         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

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

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

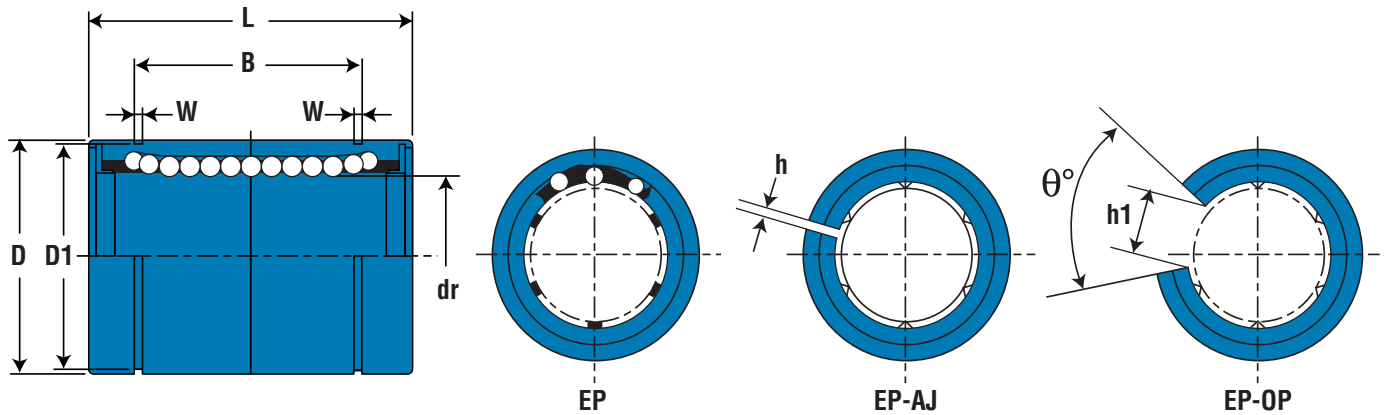


# Linear Ball Bearings - EP ISO Metric



## EP - DIMENSIONAL INFORMATION

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



### EP - DIMENSIONAL INFORMATION (cont.)

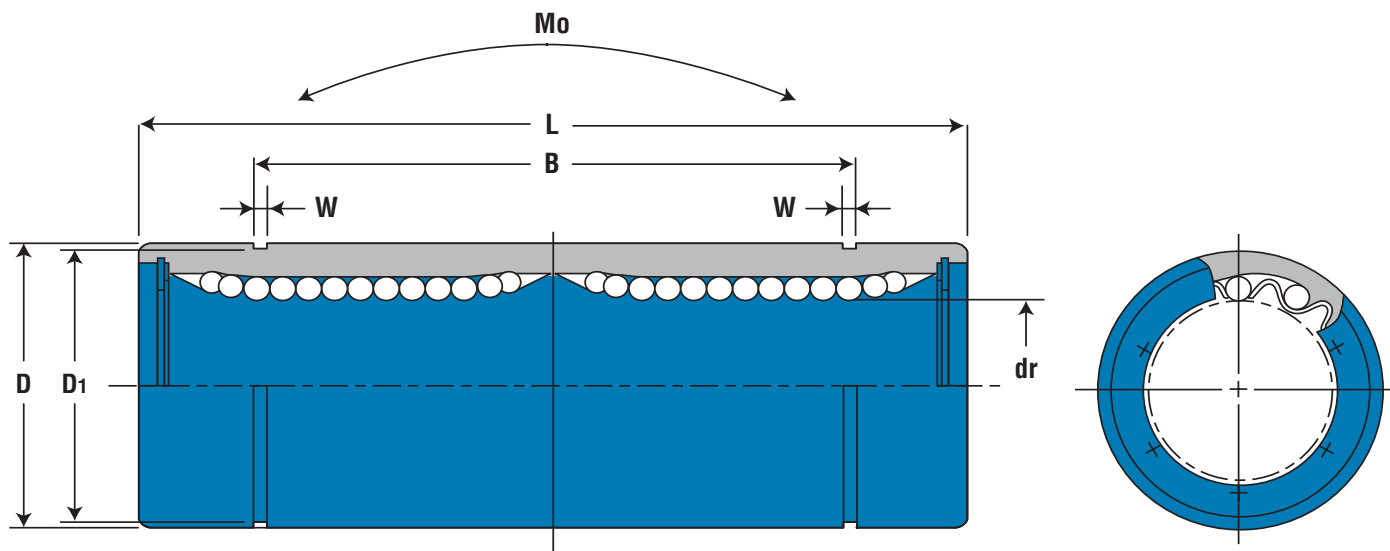
(Standard Steel Finish)

| MAJOR DIMENSIONS & TOLERANCES |                   |           |                   |            |                   |           |            |    |                      |                                     | LOAD RATING         |                     |                                      |       |       |    |
|-------------------------------|-------------------|-----------|-------------------|------------|-------------------|-----------|------------|----|----------------------|-------------------------------------|---------------------|---------------------|--------------------------------------|-------|-------|----|
| B<br>(mm)                     | TOLERANCE<br>(mm) | W<br>(mm) | TOLERANCE<br>(mm) | D1<br>(mm) | TOLERANCE<br>(mm) | h<br>(mm) | h1<br>(mm) | θ° | ECCENTRICITY<br>(μm) | MAX<br>RADIAL<br>CLEARANCE<br>( μm) | DYNAMIC<br>C<br>(N) | STATIC<br>Co<br>(N) | NOMINAL<br>SHAFT<br>DIAMETER<br>(mm) |       |       |    |
| 14.5                          | 0<br>-0.3         | 1.1       | +0.14<br>0        | 11.5       | 0<br>-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<br>-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<br>-0.21        | 2         | 10         | 60 | 15                   | -9                                  | 882                 | 1,370               | 20                                   |       |       |    |
| 44.1                          | 1.85              | 37.5      |                   | 12.5       |                   |           | 980        |    |                      |                                     | 1,570               | 25                  |                                      |       |       |    |
| 52.1                          | 1.85              | 44.5      |                   | 0<br>-0.25 |                   |           | 12.5       |    |                      |                                     | 1,570               | 2,740               | 30                                   |       |       |    |
| 60.6                          | 0<br>-0.4         | 2.15      |                   | 59         | 0<br>-0.30        | 3         | 16.8       |    |                      |                                     | 50                  | 17                  | -13                                  | 2,160 | 4,020 | 40 |
| 77.6                          |                   | 2.65      |                   | 72         |                   |           | 21         |    |                      |                                     |                     |                     |                                      | 3,820 | 7,940 | 50 |



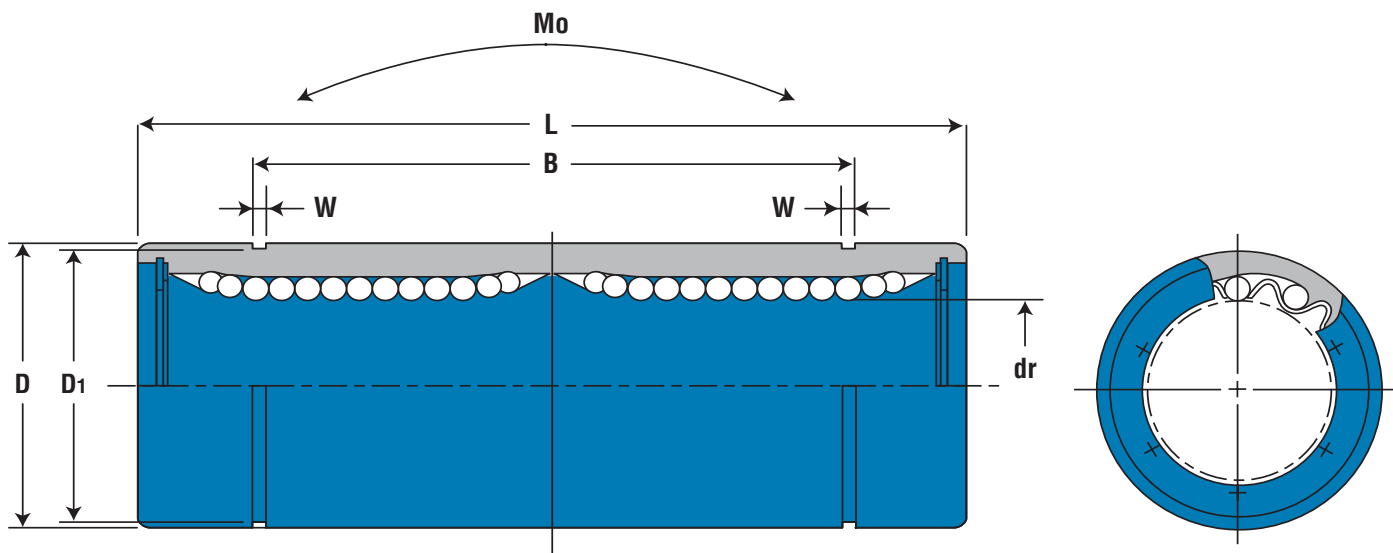
# Double Wide - EP-W

## Linear Ball Bearings



### EP-W - DIMENSIONAL INFORMATION

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



### EP-W - DIMENSIONAL INFORMATION (cont.)

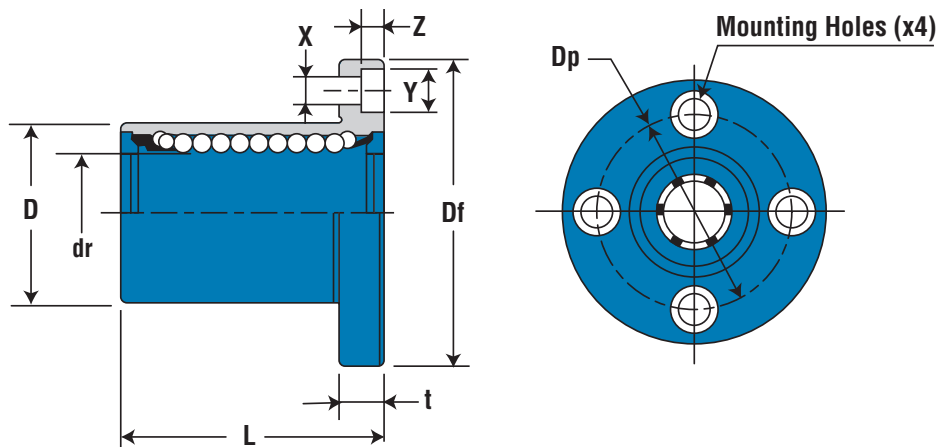
(Standard Steel Finish)

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



# Round Flange Mount - EPF

## Linear Ball Bearings

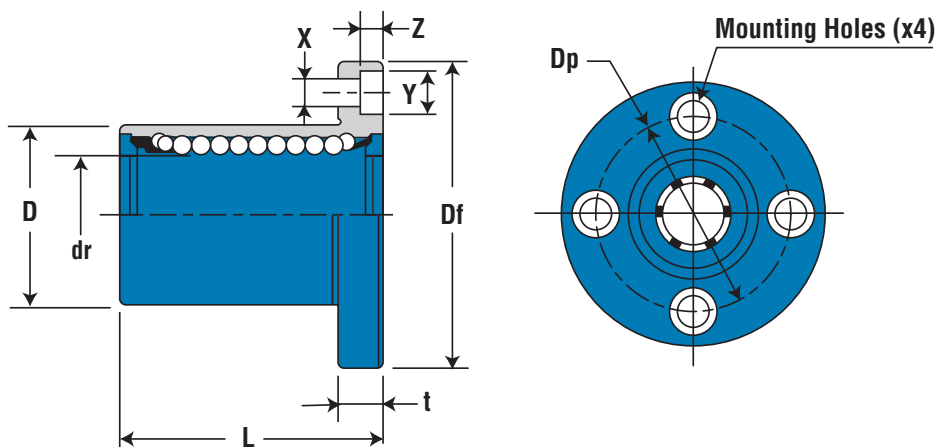


### EPF - DIMENSIONAL INFORMATION

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

# Round Flange Mount - EPF

## Linear Ball Bearings



### EPF - DIMENSIONAL INFORMATION (cont.)

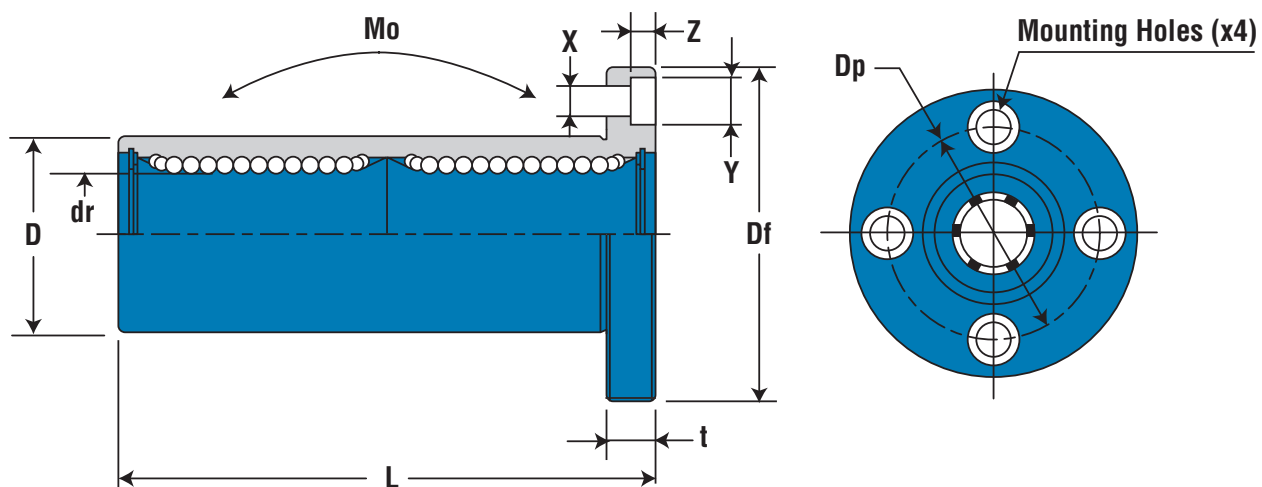
(Standard Steel Finish)

| MAJOR DIMENSIONS & TOLERANCES |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                      |
|-------------------------------|-----------|------------|-------------------|-------------------------------------------|--------------------------------------------------------|---------------------|---------------------|--------------------------------------|
| Df<br>(mm)                    | t<br>(mm) | Dp<br>(mm) | X x Y x Z<br>(mm) | ECCENTRICITY<br>ID to OD<br>(inch/<br>μm) | PERPENDICULARITY<br>FLANGE FACE to ID<br>(inch/<br>μm) | DYNAMIC<br>C<br>(N) | STATIC<br>Co<br>(N) | NOMINAL<br>SHAFT<br>DIAMETER<br>(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                                   |



# Round Flange Mount - Double Wide - EPF-W

## Linear Ball Bearings

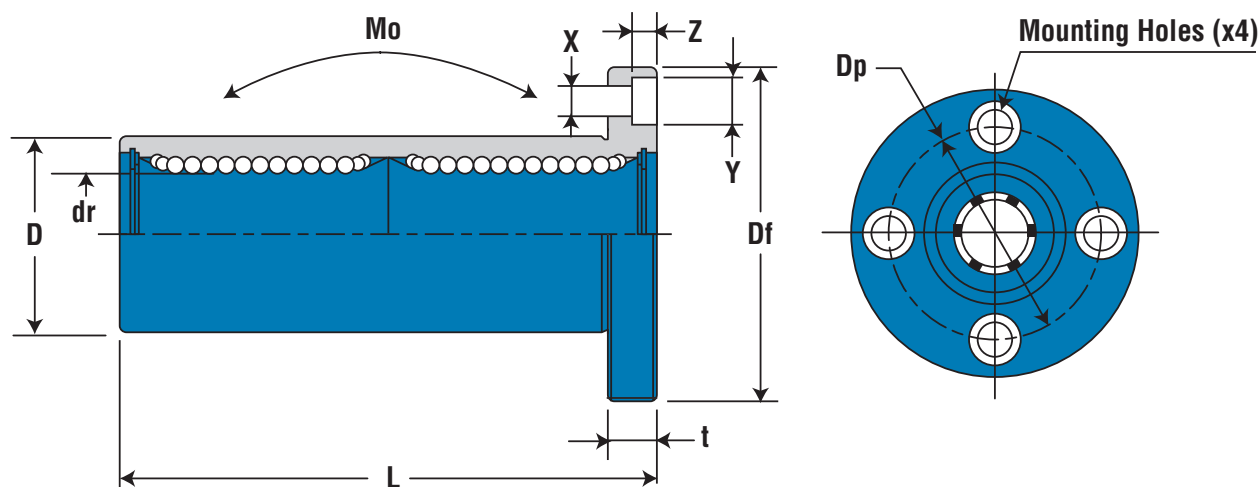


### EPF-W - DIMENSIONAL INFORMATION

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

# Round Flange Mount - Double Wide - EPF-W

## Linear Ball Bearings



### EPF-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

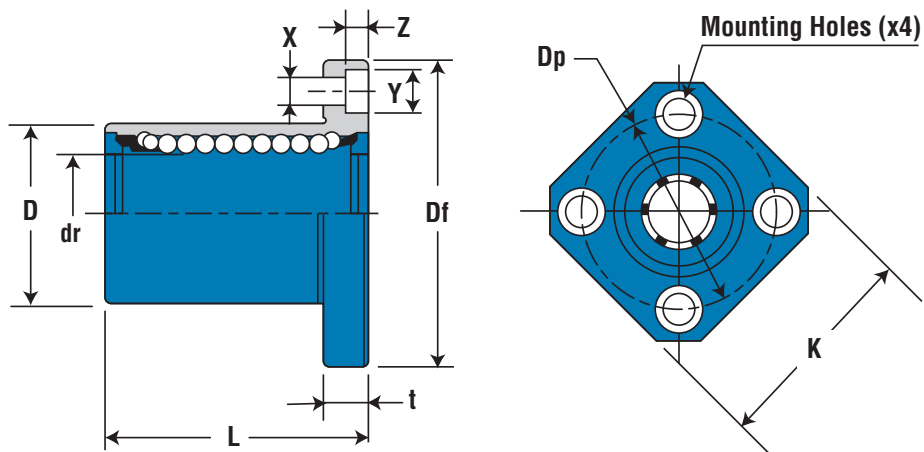
| MAJOR DIMENSIONS & TOLERANCES |           |            |                   |                                          |                                                        | LOAD RATING         |                     |                                              |                               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

Round Flange - EPF-W



# Square Flange Mount - EPK

## Linear Ball Bearings

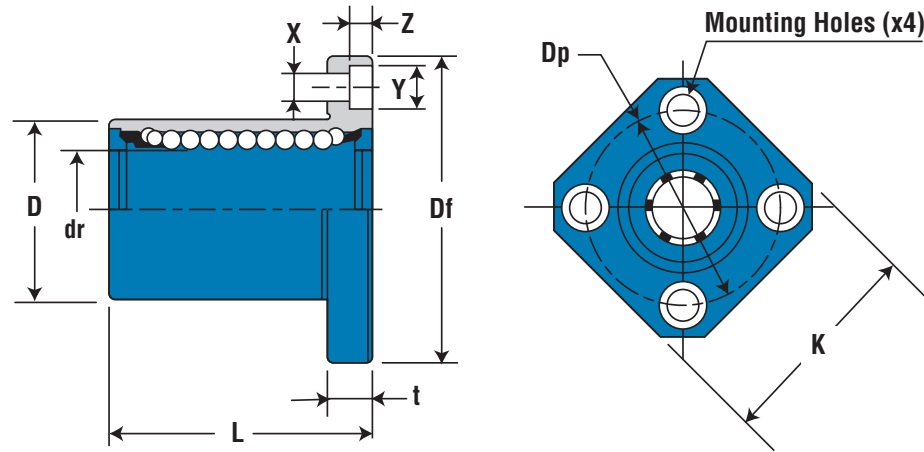


### EPK - DIMENSIONAL INFORMATION

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

# Square Flange Mount - EPK

## Linear Ball Bearings



### EPK - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

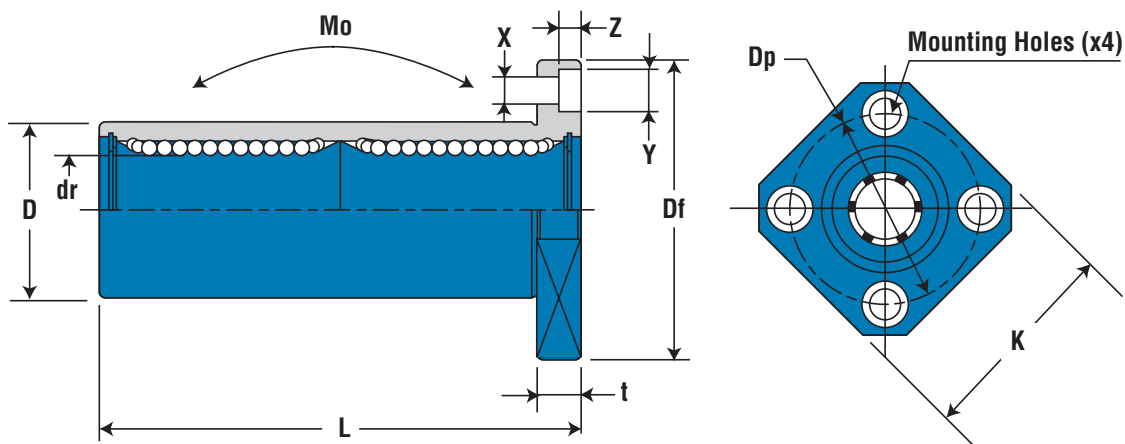
| MAJOR DIMENSIONS & TOLERANCES |           |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                      |
|-------------------------------|-----------|-----------|------------|-------------------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

Square Flange - EPK



# Square Flange Mount - Double Wide - EPK-W

## Linear Ball Bearings

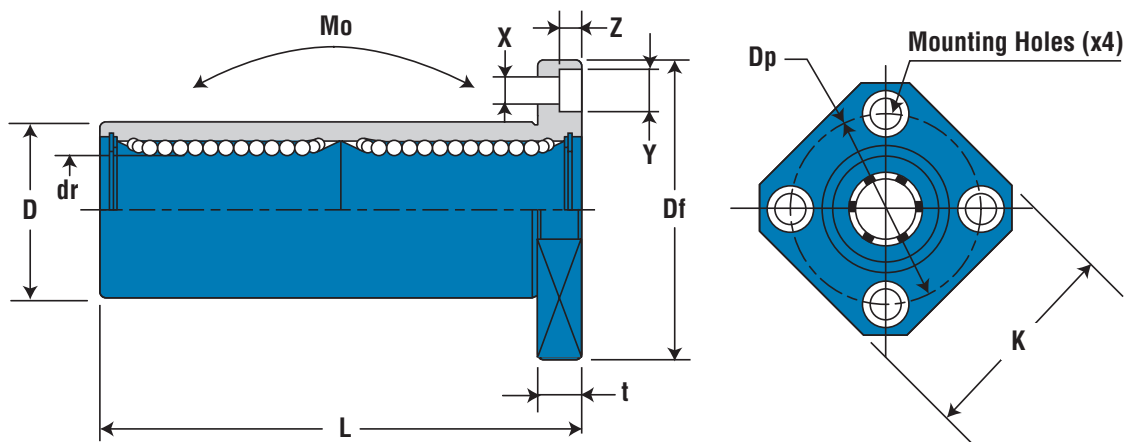


### EPK-W - DIMENSIONAL INFORMATION

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

# Square Flange Mount - Double Wide - EPK-W

## Linear Ball Bearings



### EPK-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

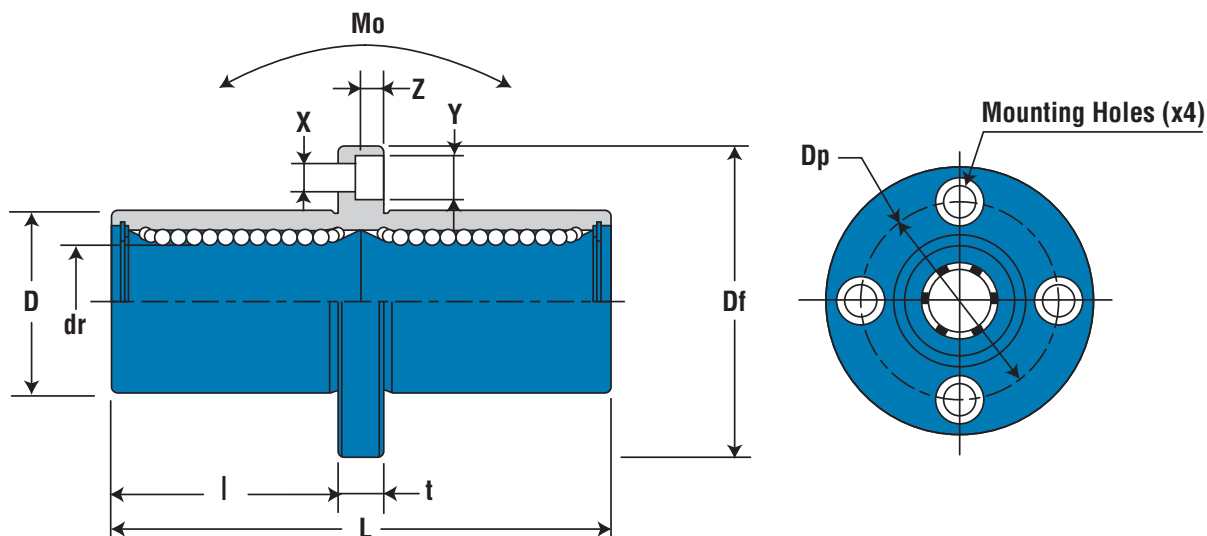
| MAJOR DIMENSIONS & TOLERANCES |           |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                              |                                      |
|-------------------------------|-----------|-----------|------------|-------------------|-------------------------------------------|--------------------------------------------------------|---------------------|---------------------|----------------------------------------------|--------------------------------------|
| Df<br>(mm)                    | K<br>(mm) | t<br>(mm) | Dp<br>(mm) | X x Y x Z<br>(mm) | ECCENTRICITY<br>ID to OD<br>(inch/<br>μm) | PERPENDICULARITY<br>FLANGE FACE to ID<br>(inch/<br>μm) | DYNAMIC<br>C<br>(N) | STATIC<br>Co<br>(N) | ALLOWABLE<br>STATIC<br>MOMENT<br>Mo<br>(N-m) | NOMINAL<br>SHAFT<br>DIAMETER<br>(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                                   |

Square Flange - EPK-W



# Round Flange - Center Mount - EPFC

## Linear Ball Bearings

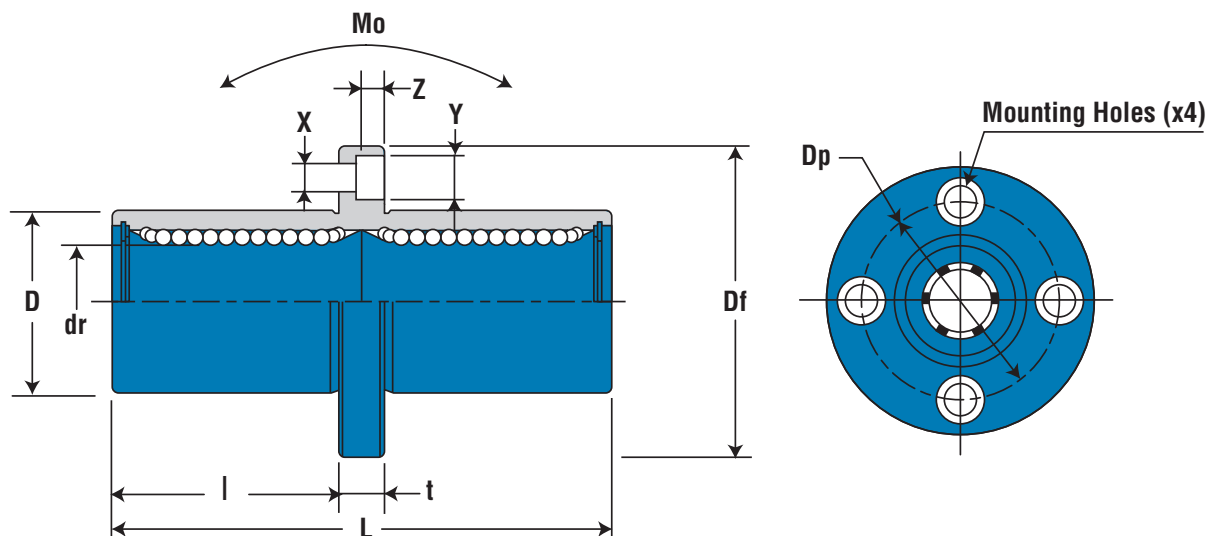


### EPFC - DIMENSIONAL INFORMATION

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

# Round Flange - Center Mount - EPFC

## Linear Ball Bearings



### EPFC - DIMENSIONAL INFORMATION (cont.)

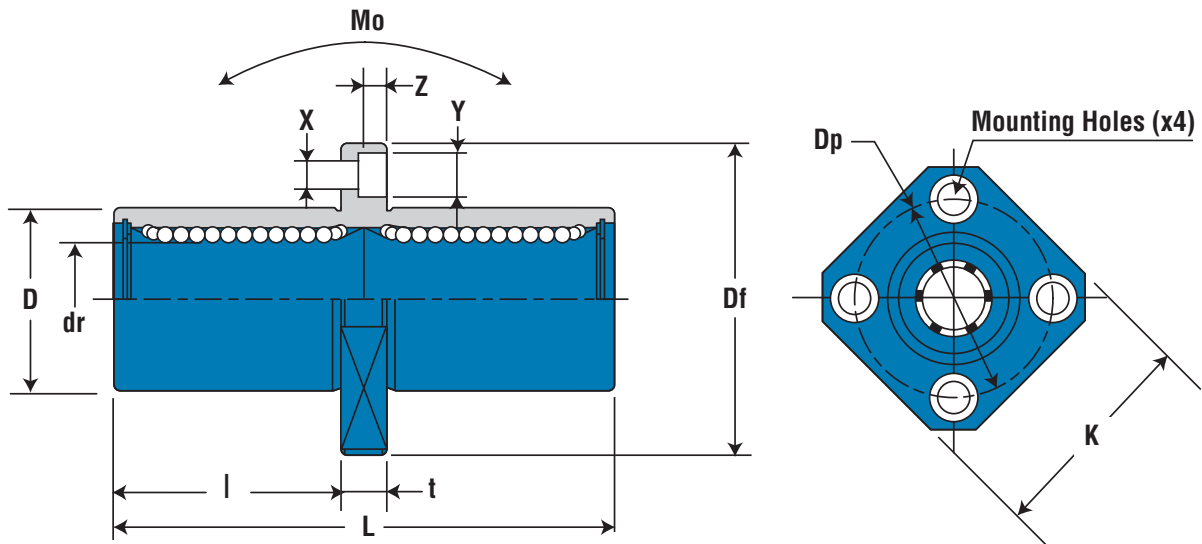
(Standard Steel Finish)

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



# Square Flange - Center Mount - EPKC

## Linear Ball Bearings

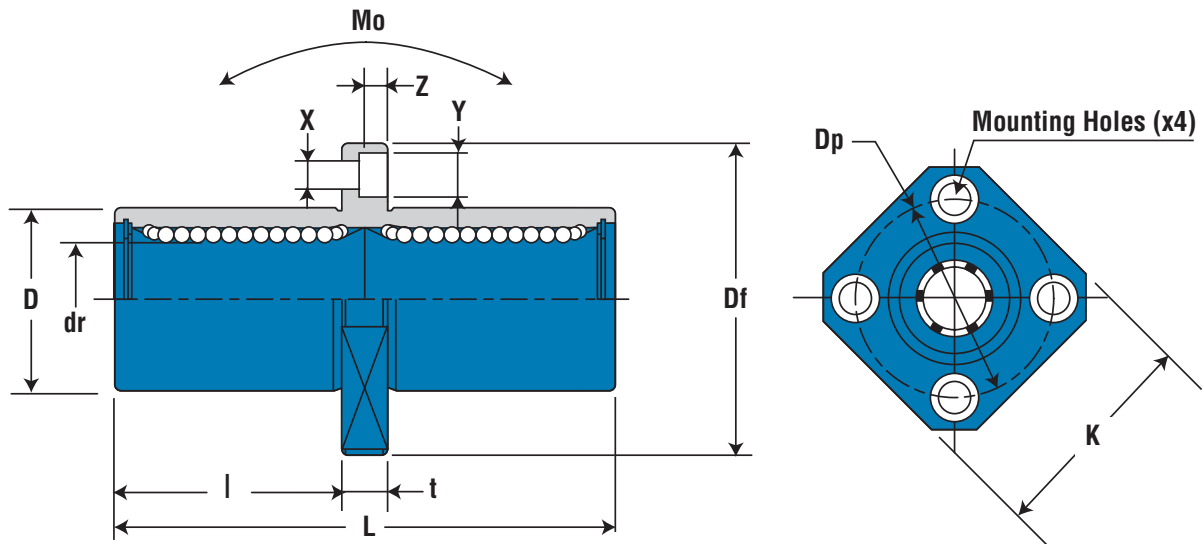


### EPKC - DIMENSIONAL INFORMATION

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

# Square Flange - Center Mount - EPKC

## Linear Ball Bearings



### EPKC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

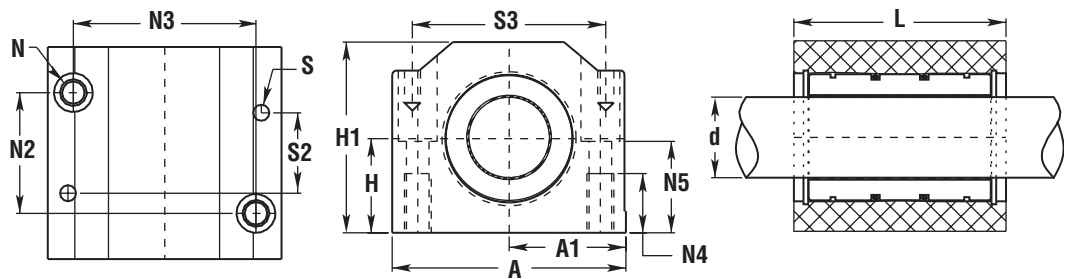
| MAJOR DIMENSIONS & TOLERANCES |            |           |           |            |                   |                                                |                                                             | LOAD RATING         |                     |                                          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

Square Flange - EPKC



# Pillow Block - EPPM & EPPMN

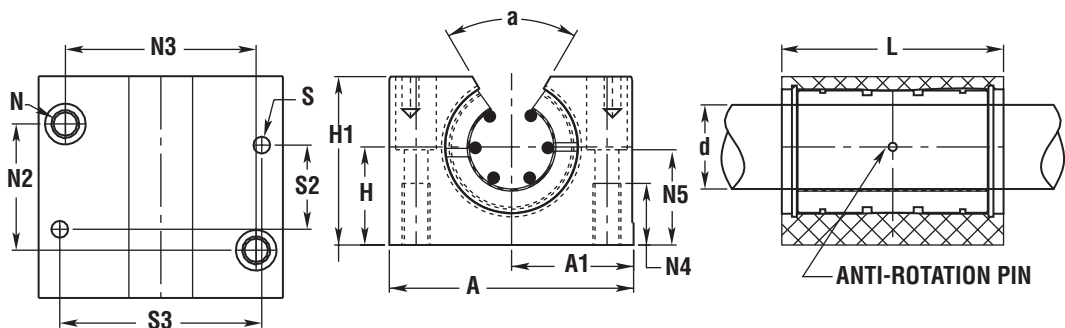
## Linear Ball Bearings



### EPPM - CLOSED PILLOW BLOCKS

| PART NO.  | d<br>NOM.<br>I.D. | H                  | H1     | A     | A1   | L      | N         |       |       |    |      |       |       |       | ASSEM.<br>WT. |
|-----------|-------------------|--------------------|--------|-------|------|--------|-----------|-------|-------|----|------|-------|-------|-------|---------------|
| PRECISION | MIN.              | CENTERLINE<br>.015 | HEIGHT | WIDTH | .013 | LENGTH | BOLT      | N2    | N3    | N4 | N5   | S     | S2    | S3    | (Kg.)         |
| EPPM08G   | 8                 | 15                 | 28     | 35    | 17.5 | 32     | M4 x 0.7  | 20.15 | 25.15 | 9  | 14.5 | N / A | N / A | N / A | 0.069         |
| EPPM10G   | 10                | 16                 | 31.5   | 40    | 20   | 36     | M5 x 0.8  |       | 29.15 | 11 | 15   | 4     | 29    | 31    | 0.095         |
| EPPM12G   | 12                | 18                 | 35     | 43    | 21.5 | 39     | M5 x 0.8  | 23.15 | 3 .15 |    | 16.5 |       | 32    | 34    | 0.118         |
| EPPM16G   | 16                | 22                 | 42     | 53    | 26.5 | 43     | M6 x 1.0  | 26.15 | 40.15 | 13 | 21   | 35    | 42    | 0.200 |               |
| EPPM20G   | 20                | 25                 | 50     | 60    | 30   | 54     | M8 x 1.25 | 32.15 | 45.15 | 18 | 24   | 5     | 45    | 50    | 0.329         |
| EPPM25G   | 25                | 30                 | 60     | 78    | 39   | 67     | M10 x 1.5 | 40.15 | 60.15 | 22 | 29   | 6     | 20    | 64    | 0.655         |
| EPPM30G   | 30                | 35                 | 71     | 87    | 43.5 | 79     | M10 x 1.5 | 45.15 | 68.15 |    | 34   |       | 30    | 72    | 1.020         |
| EPPM40G   | 40                | 45                 | 91     | 108   | 54   | 91     | M12 x1.75 | 58.15 | 86.15 | 26 | 44   | 8     | 35    | 90    | 1.846         |
| EPPM50G   | 50                | 50                 | 105    | 132   | 66   | 113    | M16 x 2.0 | 50.20 | 108.2 | 34 | 49   | 10    | 42    | 108   | 3.169         |

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



### EPPMN - OPEN PILLOW BLOCKS

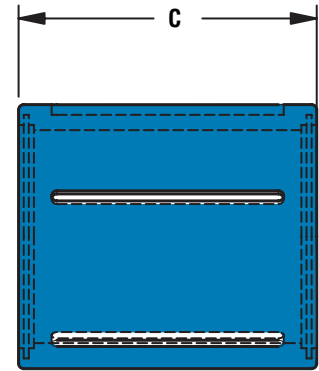
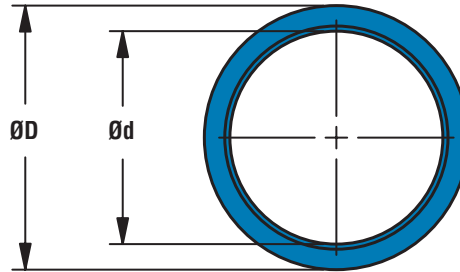
| PART NO.  | d<br>NOM.<br>I.D. | H                  | H1     | A     | A1                 | L      | N          |       |       |    |      |    |    |     |    | ASSEM.<br>WT. |
|-----------|-------------------|--------------------|--------|-------|--------------------|--------|------------|-------|-------|----|------|----|----|-----|----|---------------|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

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

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

# Compact Thin Wall - KHP

## Linear Ball Bearings



### KHP - BASIC DIMENSIONAL INFORMATION

(Standard Steel Finish)

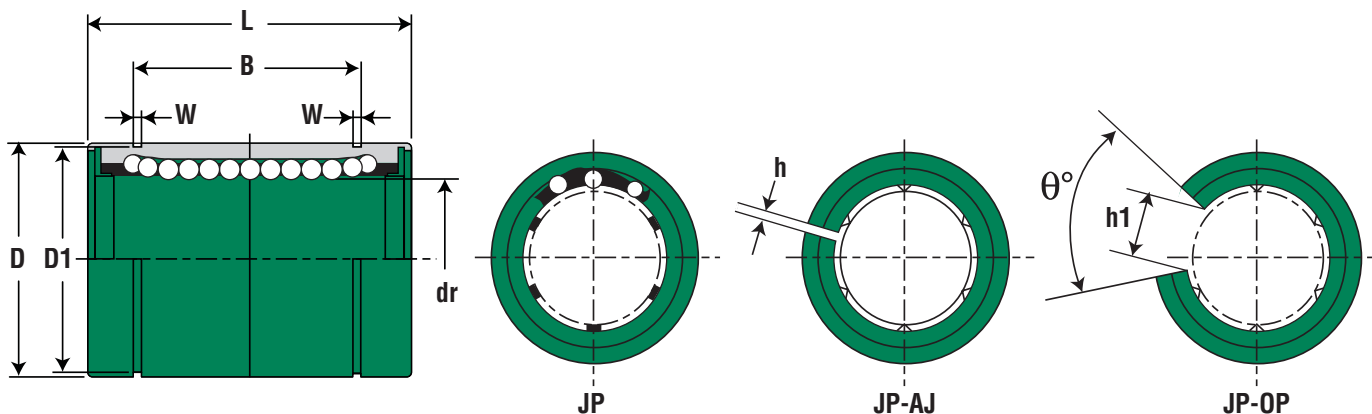
| PART NO. | DIMENSIONS (mm) |            |          |    |            |          |    |            |          |        | LOAD RATING |           |
|----------|-----------------|------------|----------|----|------------|----------|----|------------|----------|--------|-------------|-----------|
|   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

Compact Thin Wall - KHP



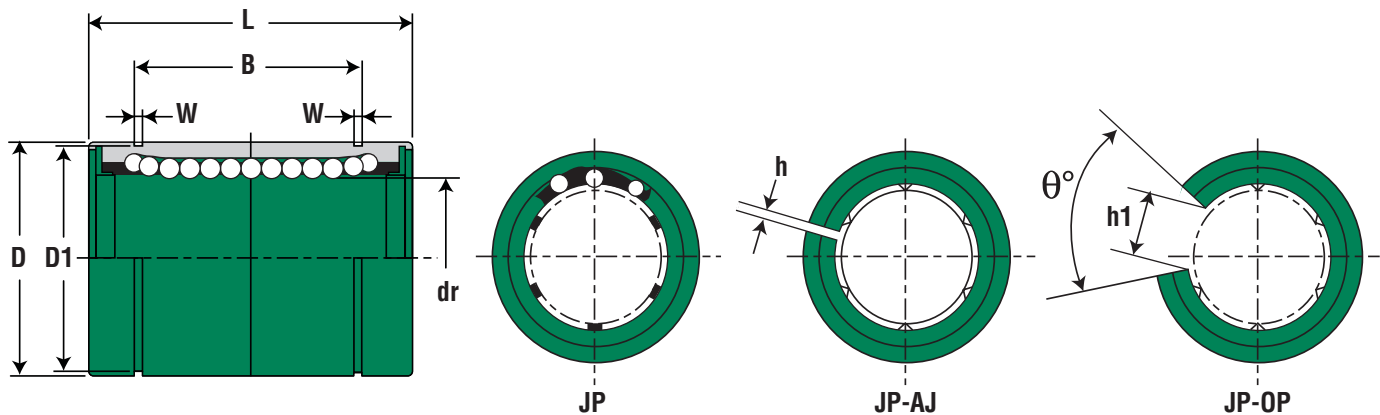
# Linear Ball Bearings - JP

## JIS Metric



### JP - DIMENSIONAL INFORMATION

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



### JP - DIMENSIONAL INFORMATION (cont.)

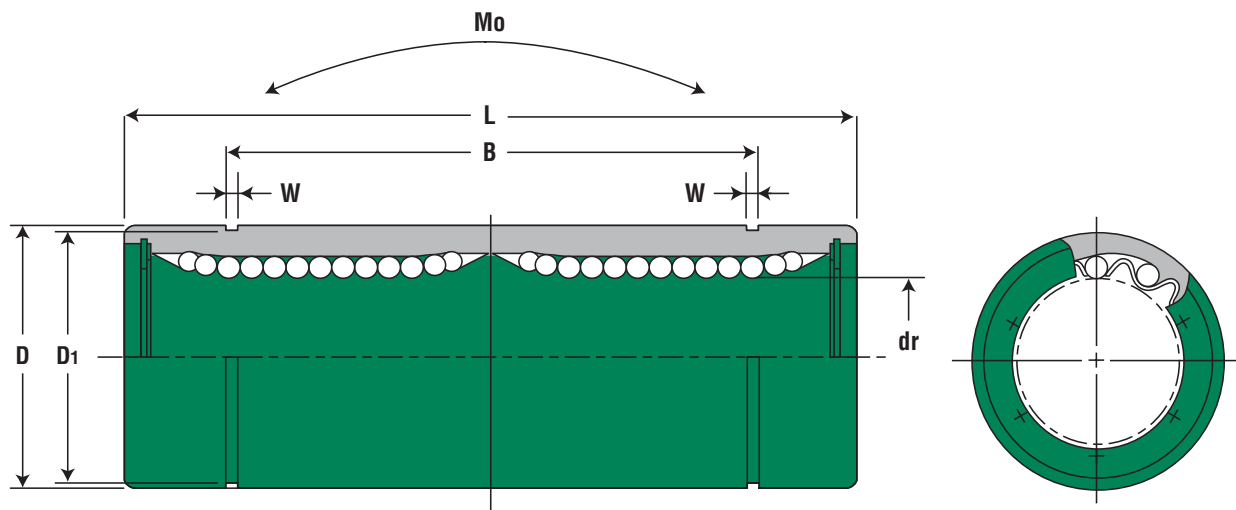
(Standard Steel Finish)

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



# Double Wide - JP-W

## Linear Ball Bearings

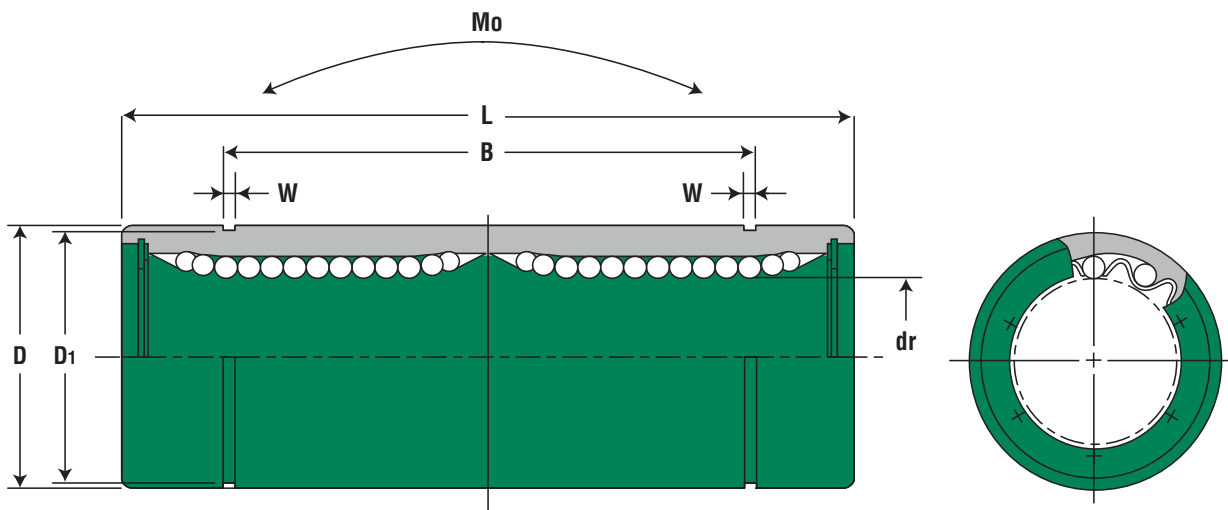


### JP-W - DIMENSIONAL INFORMATION

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

# Double Wide - JP-W

## Linear Ball Bearings



### JP-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

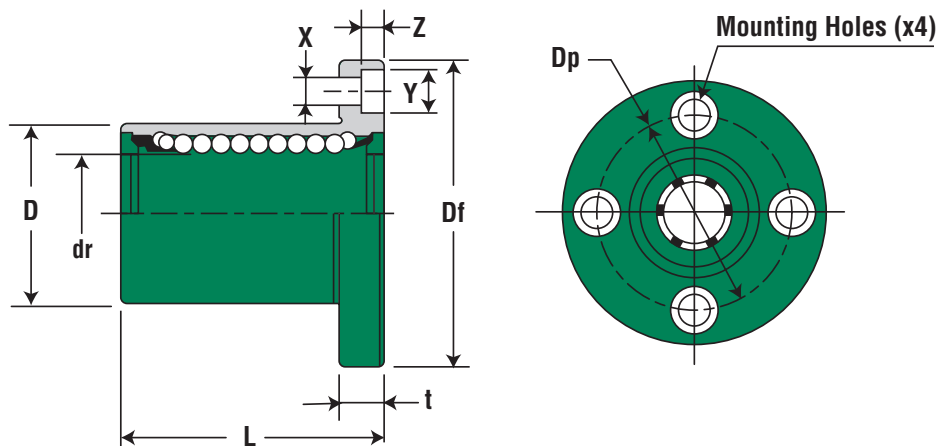
| MAJOR DIMENSIONS & TOLERANCES |                   |           |                   |            |                   |                      | LOAD RATING         |                     |                                              |                                      |
|-------------------------------|-------------------|-----------|-------------------|------------|-------------------|----------------------|---------------------|---------------------|----------------------------------------------|--------------------------------------|
| B<br>(mm)                     | TOLERANCE<br>(mm) | W<br>(mm) | TOLERANCE<br>(mm) | D1<br>(mm) | TOLERANCE<br>(mm) | ECCENTRICITY<br>(μm) | DYNAMIC<br>C<br>(N) | STATIC<br>Co<br>(N) | ALLOWABLE<br>STATIC<br>MOMENT<br>Mo<br>(N-m) | NOMINAL<br>SHAFT<br>DIAMETER<br>(mm) |
| 35                            | 0<br>-0.3         | 1.1       | +14<br>0          | 14.3       | 0<br>-.11         | 15                   | 431                 | 784                 | 4.3                                          | 8                                    |
| 46                            |                   | 1.3       |                   | 20         | 0<br>-.13         |                      | 657                 | 1,200               | 10.9                                         | 12                                   |
| 53                            |                   | 1.6       |                   | 27         | 0<br>-.21         |                      | 1,230               | 2,350               | 19.7                                         | 16                                   |
| 61                            |                   | 1.6       |                   | 30.5       |                   | 20                   | 1,400               | 2,750               | 26.8                                         | 20                                   |
| 82                            | 0<br>-0.4         | 1.85      |                   | 38         | 0<br>-.25         |                      | 1,560               | 3,140               | 43.4                                         | 25                                   |
| 89                            |                   | 1.85      |                   | 43         |                   |                      | 2,490               | 5,490               | 82.8                                         | 30                                   |
| 121                           |                   | 2.1       |                   | 57         | 0<br>-.30         | 25                   | 3,430               | 8,040               | 147                                          | 40                                   |
| 148                           |                   | 2.6       |                   | 76.5       |                   |                      | 6,080               | 15,900              | 397                                          | 50                                   |

Double Wide - JP-W



# Round Flange Mount - JPF

## Linear Ball Bearings

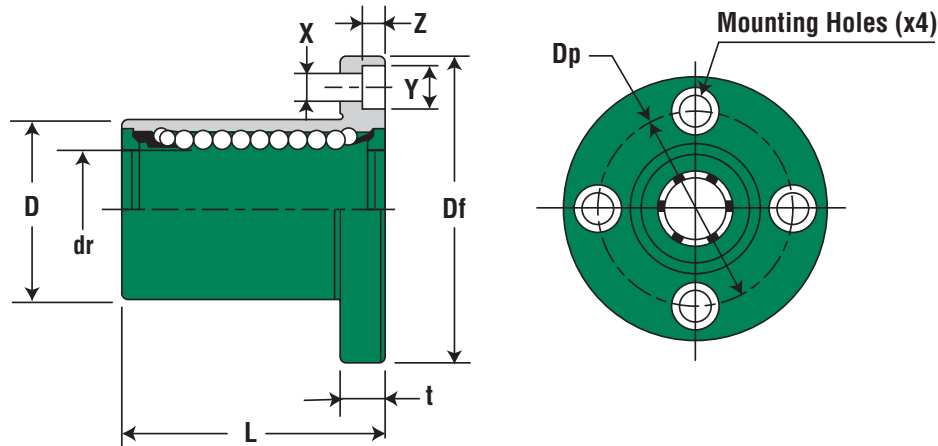


### JPF - DIMENSIONAL INFORMATION

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

# Round Flange Mount - JPF

## Linear Ball Bearings



### JPF - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

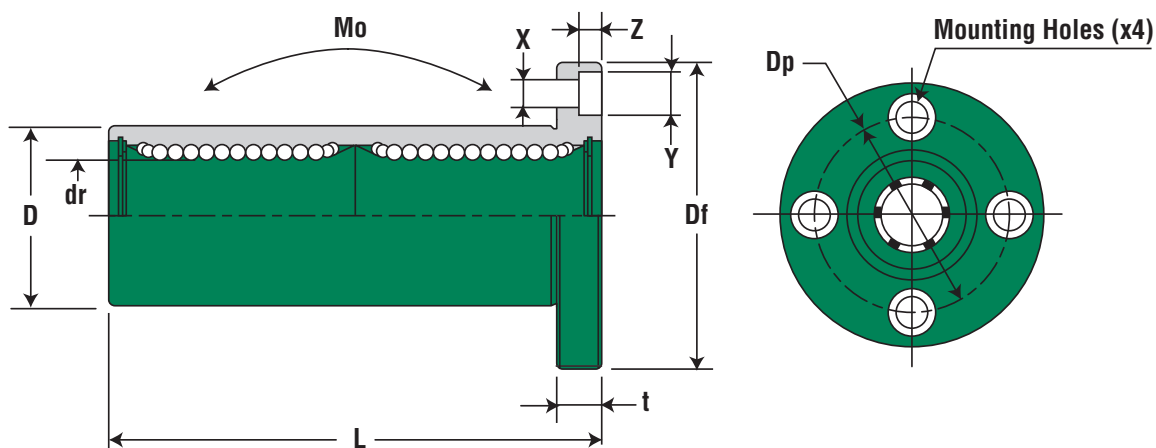
| MAJOR DIMENSIONS & TOLERANCES |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                      |
|-------------------------------|-----------|------------|-------------------|-----------------------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

Round Flange - JPF



# Round Flange Mount - Double Wide - JPF-W

## Linear Ball Bearings

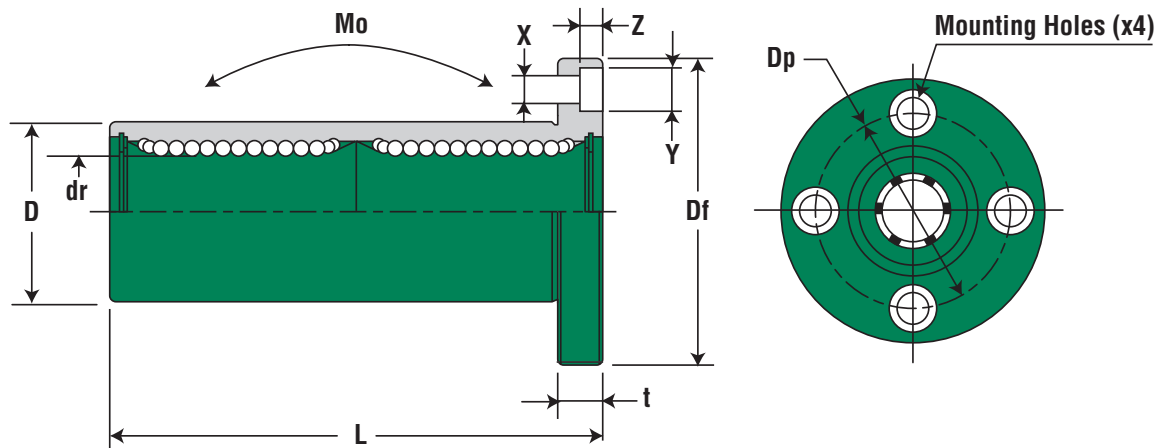


### JPF-W - DIMENSIONAL INFORMATION

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

# Round Flange Mount - Double Wide - JPF-W

## Linear Ball Bearings



### JPF-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

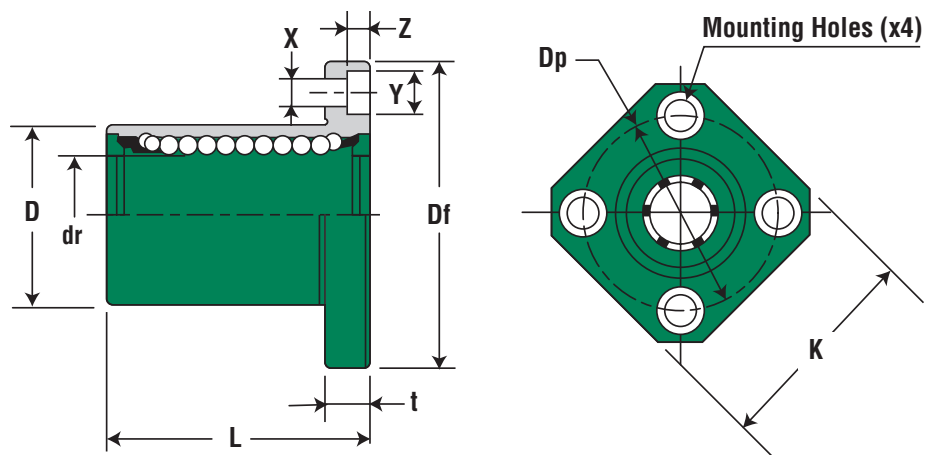
| MAJOR DIMENSIONS & TOLERANCES |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                              |                              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

Round Flange - JPF-W



# Square Flange Mount - JPK

## Linear Ball Bearings

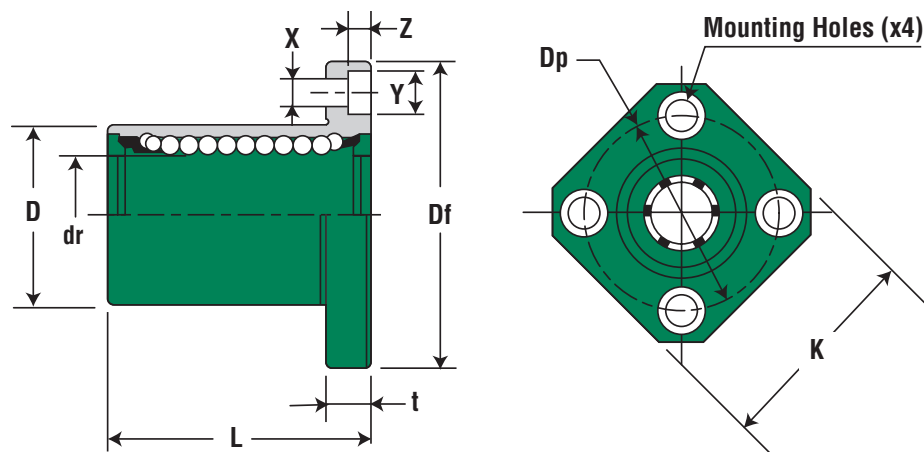


### JPK SERIES - DIMENSIONAL INFORMATION

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

# Square Flange Mount - JPK

## Linear Ball Bearings



### JPK - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

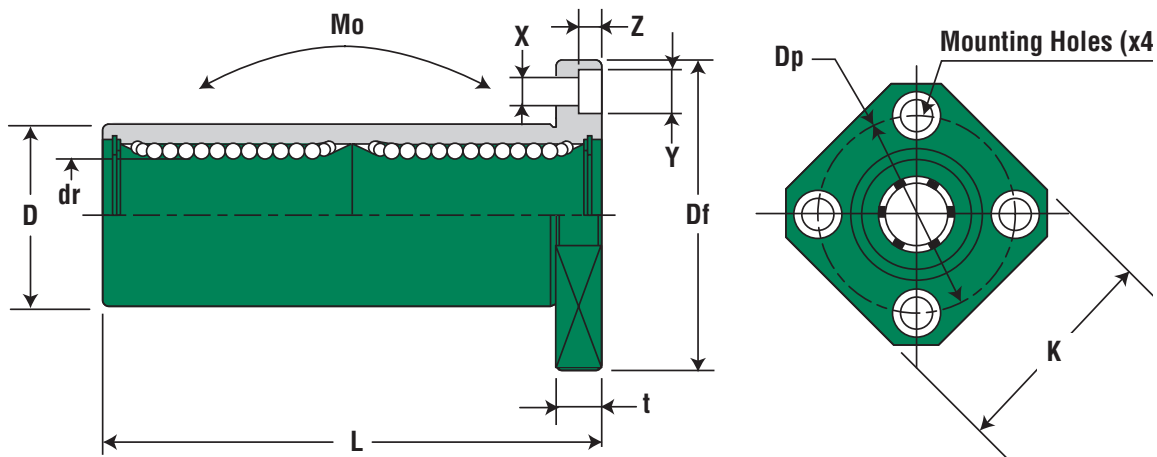
| MAJOR DIMENSIONS & TOLERANCE |           |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                      |
|------------------------------|-----------|-----------|------------|-------------------|-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

Square Flange - JPK



# Square Flange Mount - Double Wide - JPK-W

## Linear Ball Bearings

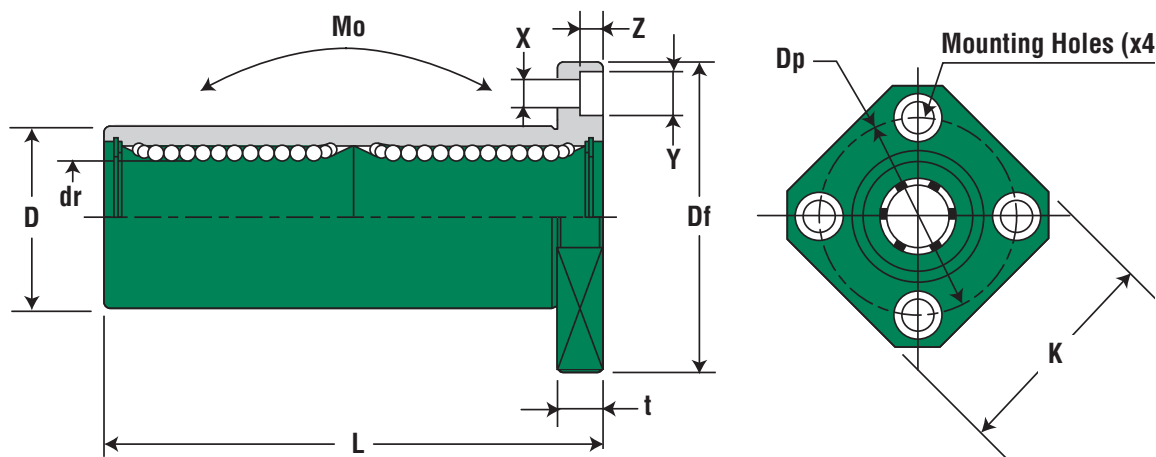


### JPK-W - DIMENSIONAL INFORMATION

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

# Square Flange Mount - Double Wide - JPK-W

## Linear Ball Bearings



### JPK-W - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

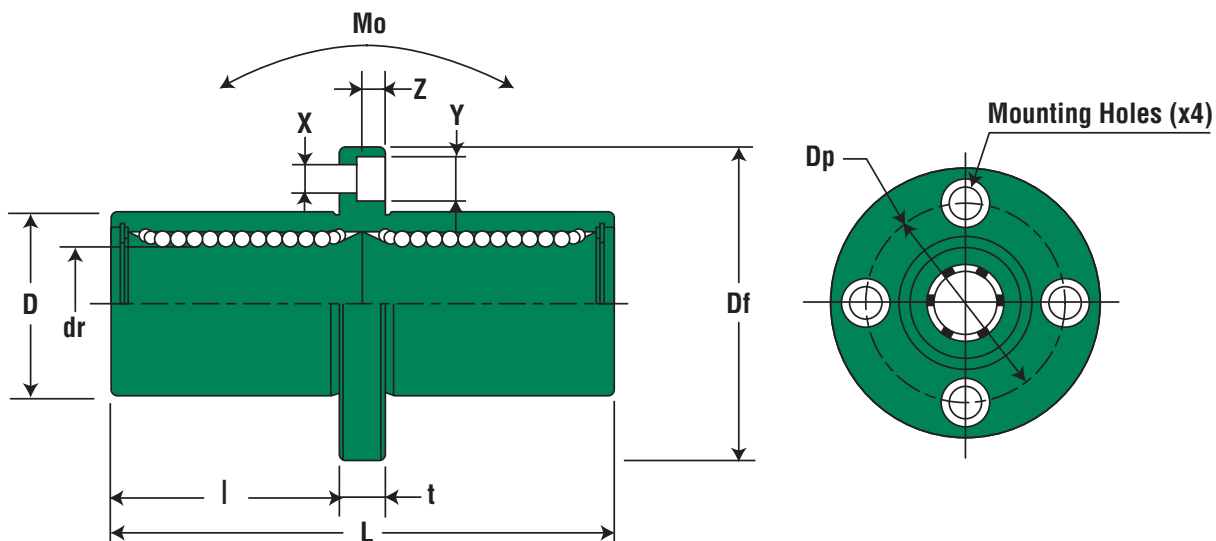
| MAJOR DIMENSIONS & TOLERANCE |           |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                              |                   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

Square Flange - JPK-W



# Round Flange - Center Mount - JPFC

## Linear Ball Bearings

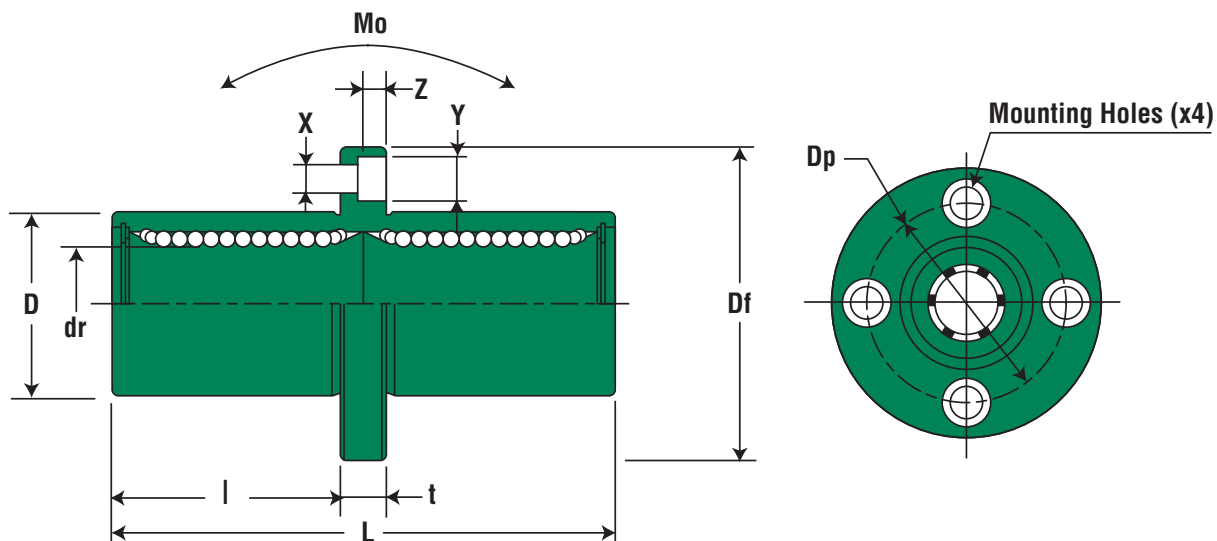


### JPFC - DIMENSIONAL INFORMATION

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

# Round Flange - Center Mount - JPFC

## Linear Ball Bearings



### JPFC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

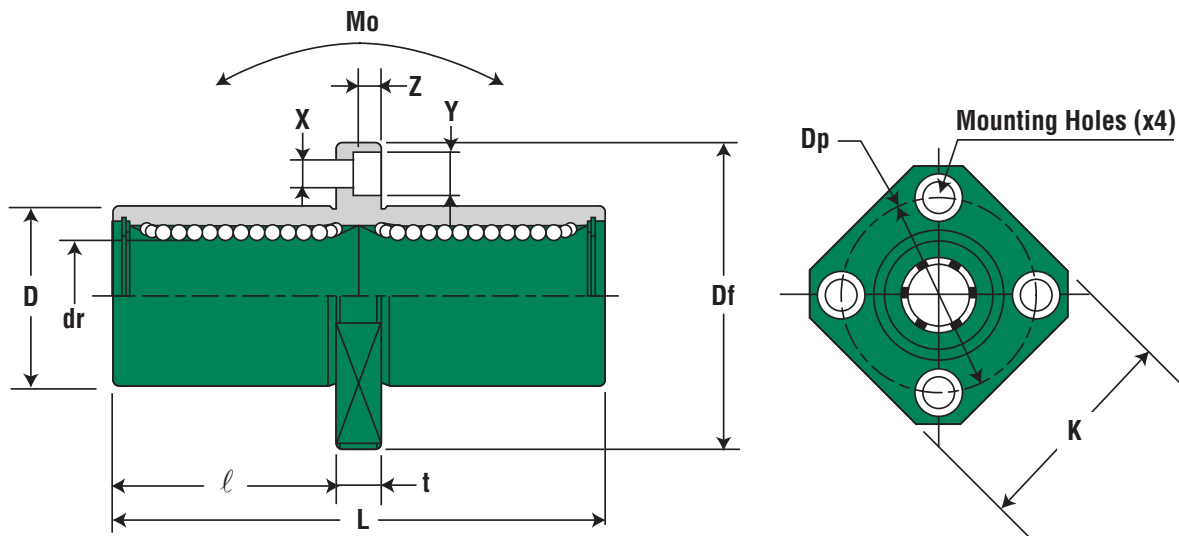
| MAJOR DIMENSIONS & TOLERANCES |           |            |                   |                                           |                                                        | LOAD RATING         |                     |                                              |                              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

Round Flange - JPFC



# Square Flange - Center Mount - JPKC

## Linear Ball Bearings

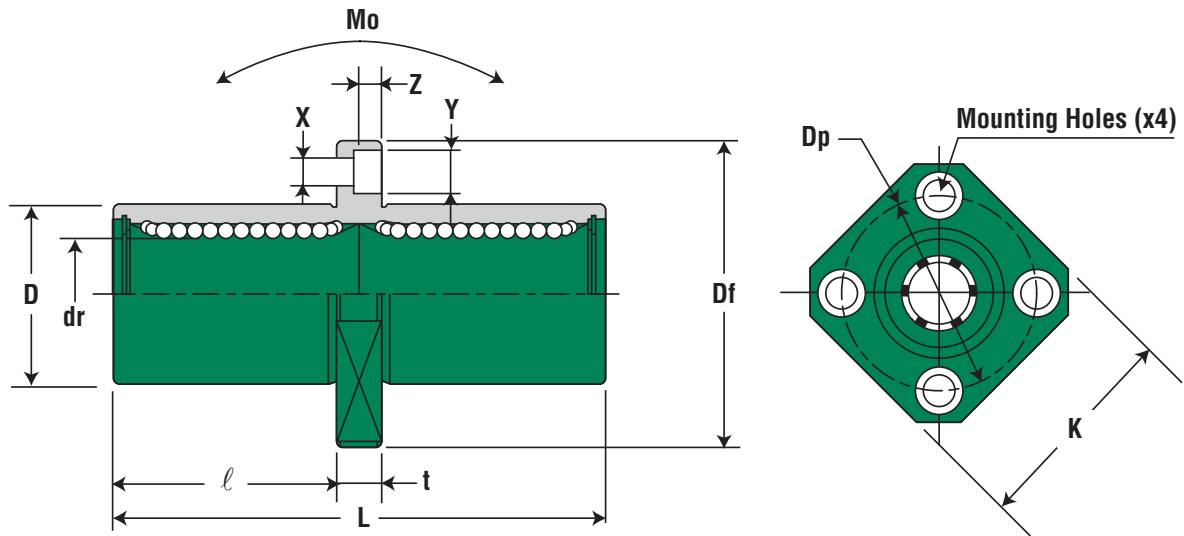


### JPKC - DIMENSIONAL INFORMATION

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

# Square Flange - Center Mount - JPKC

## Linear Ball Bearings



### JPKC - DIMENSIONAL INFORMATION (cont.)

(Standard Steel Finish)

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

Square Flange - JPKC



# Linear Ball Bearings

## Product Overview

### PRODUCT OVERVIEW

#### High Precision and Rigidity

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

#### Ease of Assembly

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

#### Ease of Replacement

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

#### Variety of Types

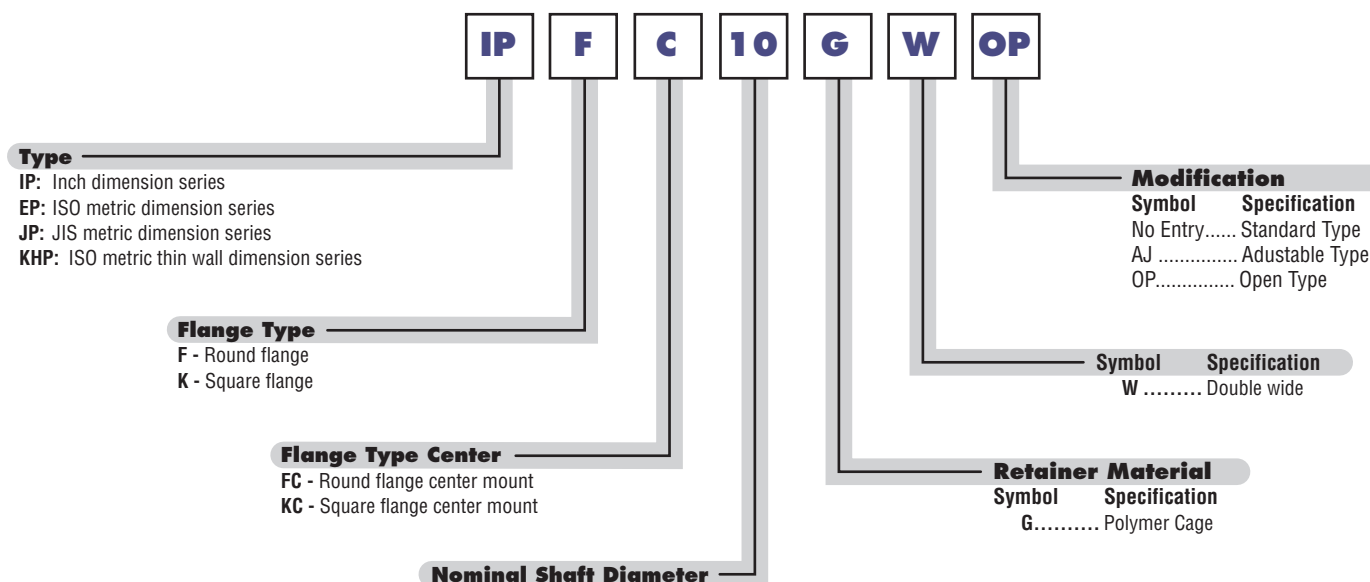
PBC offers a full line of Simplicity® ball bearings: the standard, integral single-retainer closed type, the clearance adjustable type and the open types. The user can choose from among these according to the application requirements to be met.

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



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

### ORDERING INFORMATION



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



### LOAD RATING AND LIFE EXPECTANCY

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

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

L : Rated life (km)

C : Basic dynamic load rating (N/lbf)

P : Working load (N/lbf)

$f_W$  : Load coefficient

$f_H$  : Hardness factor (see page 126)

$f_T$  : Temperature coefficient (see page 126)

$f_C$  : Contact coefficient (see page 126)

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

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

$L_h$  : Lifespan (hr)

L : Rated life (km)

s : Stroke length (m)

$n_1$  : Number of strokes per minute (cpm)

50: Constant base line (km)

### RELATION BETWEEN BALL CIRCUITS AND LOAD RATING

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

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

### LOAD RATING

#### Basic Dynamic Load Rating (C) -

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

#### Allowable Static Moment (M) -

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

#### Static Safety Factor (fs) -

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

TABLE 1 - STATIC SAFETY FACTORS

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

#### Basic Static Load Rating ( $C_0$ ) -

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

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

NOTES: 3 track bearing is equal.

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



# Clearance & Mounting

## Linear Ball Bearings

### CLEARANCE & FIT

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

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

**Table 2** shows recommended fit of the linear ball bearing:

TABLE 2

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

### SHAFT & HOUSING

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

#### Shaft

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

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

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

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

#### Housing

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

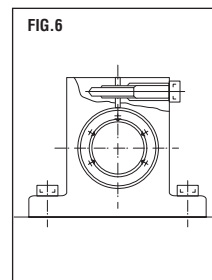
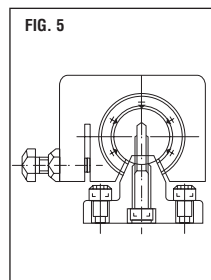
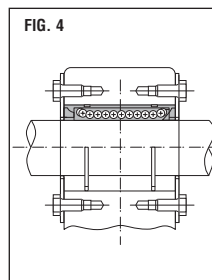
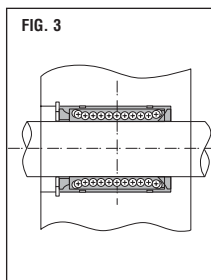
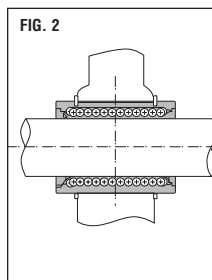
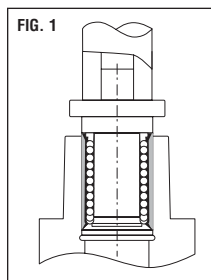
### MOUNTING

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

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

#### Examples of Mounting

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





## RATING LIFE

### Rating Life of the Linear System -

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

### Rating Life (L) -

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

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

L : Rating life (km)

C : Basic dynamic load rating (N)

P : load (N)

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

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

For ball type:

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

L : Rating life (km)

$f_H$  : Hardness factor (See Fig.1)

C : Basic dynamic load rating (N)

$f_T$  : Temperature coefficient (See Fig.2)

P : Load (N)

$f_C$  : Contact coefficient (See Table 2)

$f_W$  : Load coefficient (See Table 3)

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

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

$L_h$  : Rating life in hours (hr)

$\ell_s$  : 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  $L_h$  of the Simplicity® linear ball bearing used in the following conditions:

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

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

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

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

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

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

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 ..... 5cpm  
Lifespan ..... 10,000hr  
Total load ..... 980N

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

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

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

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

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

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

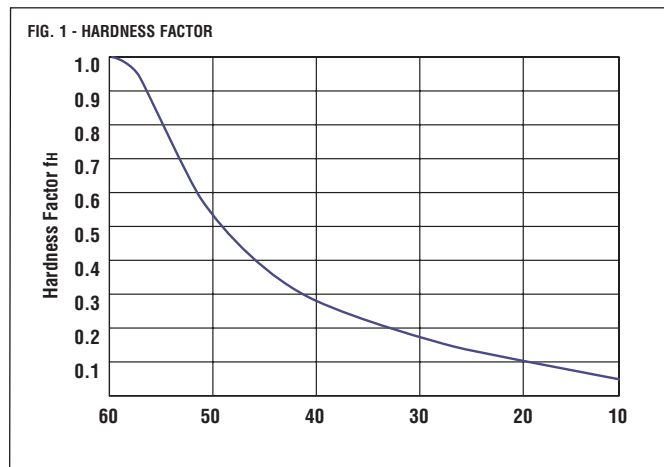


# Rating Life Linear Ball Bearings

## RATING LIFE (cont.)

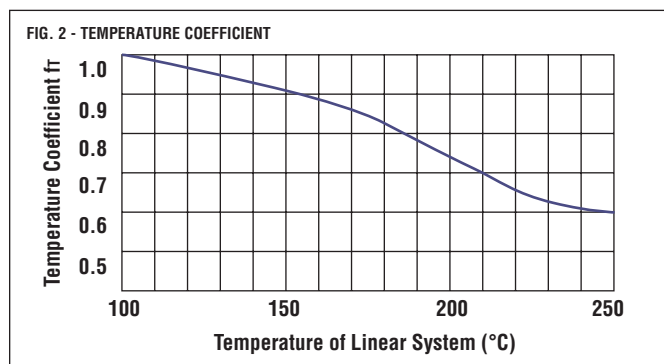
### Hardness Factor ( $f_H$ )

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



### Temperature Coefficient ( $f_T$ )

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



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

### Contact Coefficient ( $f_c$ )

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

TABLE 2 - CONTACT COEFFICIENT

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

### Load Coefficient ( $f_w$ )

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

TABLE 3 - LOAD COEFFICIENT

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



### FRictional RESISTANCE

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

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

F : Frictional resistance                       $\mu$  : 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 ( $\mu$ ) |            |                                   |
|------------------------------------------------------------|------------|-----------------------------------|
| LINEAR SYSTEM TYPE                                         | MODELS     | COEFFICIENT OF FRICTION ( $\mu$ ) |
| Linear Bearing                                             | JP, EP, IP | 0.002 to 0.003                    |

### AMBIENT WORKING TEMPERATURE

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

Temperature conversion equation:

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

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

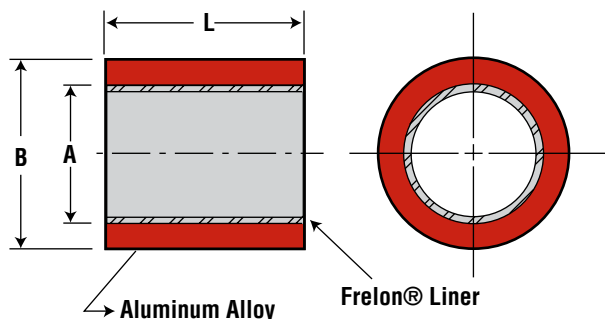
### LUBRICATION AND DUST PREVENTION

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



# Sleeve Bearings - PS Inch Series

## PS SLEEVE BEARINGS



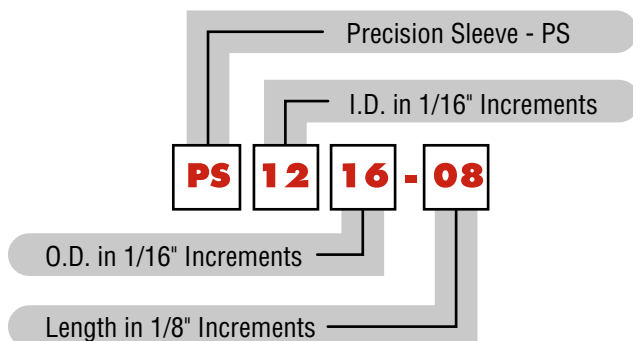
## BASIC DIMENSIONAL INFORMATION

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

## INSTALLATION INSTRUCTIONS

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

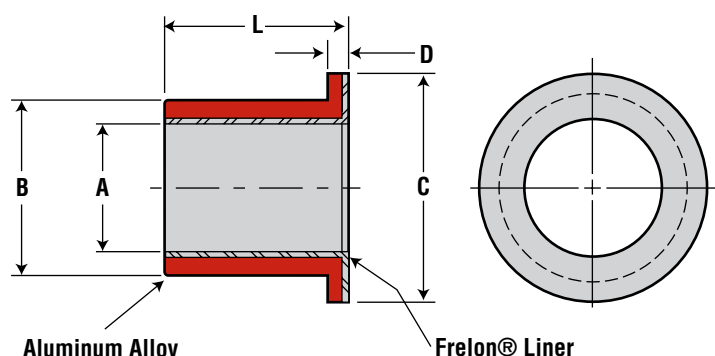
## ORDERING INFORMATION



**NOTE:** Lengths not listed above must be specially quoted.



### PSF SLEEVE BEARINGS



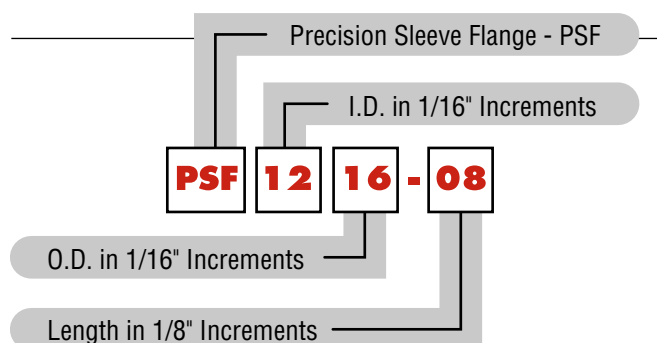
### BASIC DIMENSIONAL INFORMATION

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

### INSTALLATION INSTRUCTIONS

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

### ORDERING INFORMATION



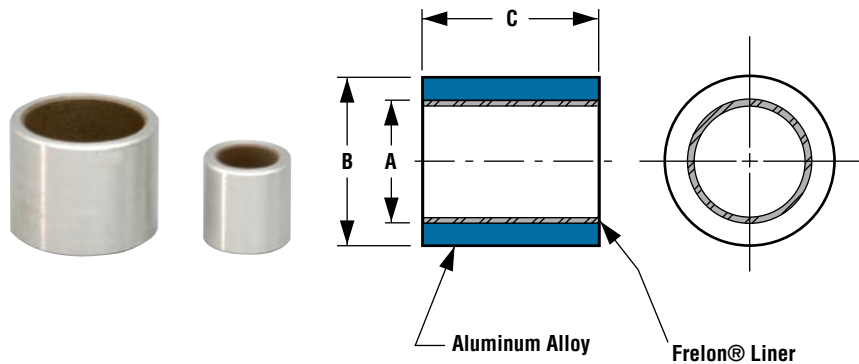
**NOTE:** Lengths not listed above must be specially quoted.



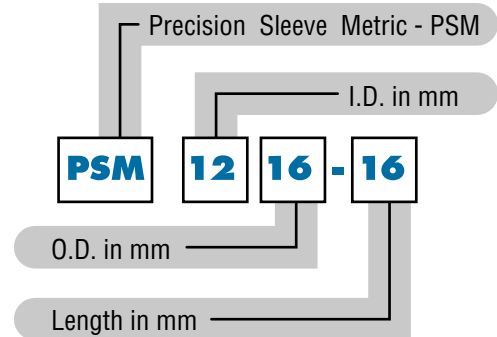
# Sleeve Bearings - PSM

## ISO Metric

### PSM SLEEVE BEARINGS



### ORDERING INFORMATION



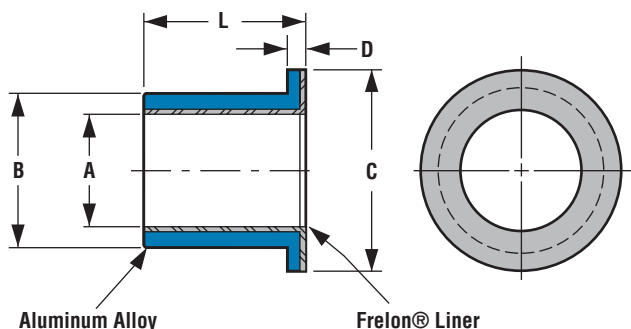
### DIMENSIONAL INFORMATION

NOTE: Lengths not listed below must be quoted.

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



## PSFM SLEEVE BEARINGS



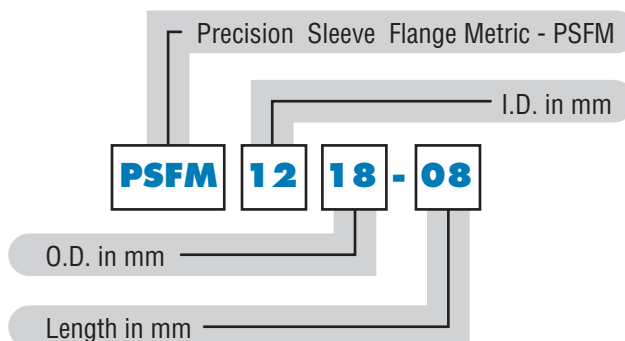
## DIMENSIONAL INFORMATION

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

## INSTALLATION INSTRUCTIONS

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

## ORDERING INFORMATION



NOTE: Lengths not listed above must be quoted.



# Simplicity® Linear Slides

## Product Overview

### PRODUCT OVERVIEW

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

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

#### Standard components include:

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

### MODULAR COMPONENTS

**SRB** - pre-assembled shaft, rail and bearing

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

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

### HIGH PROFILE

**RS** - comes with standard components

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

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

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

### LOW PROFILE

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

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

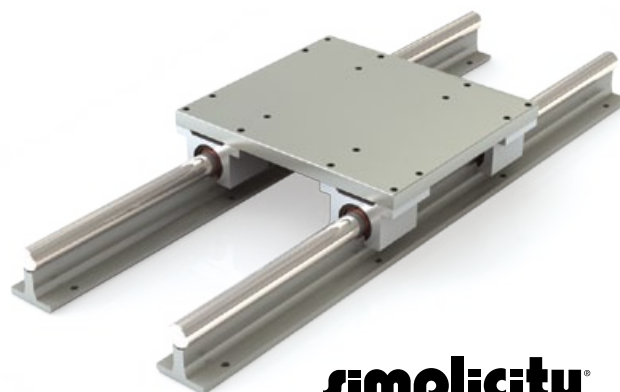
### ACCESSORIES:

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

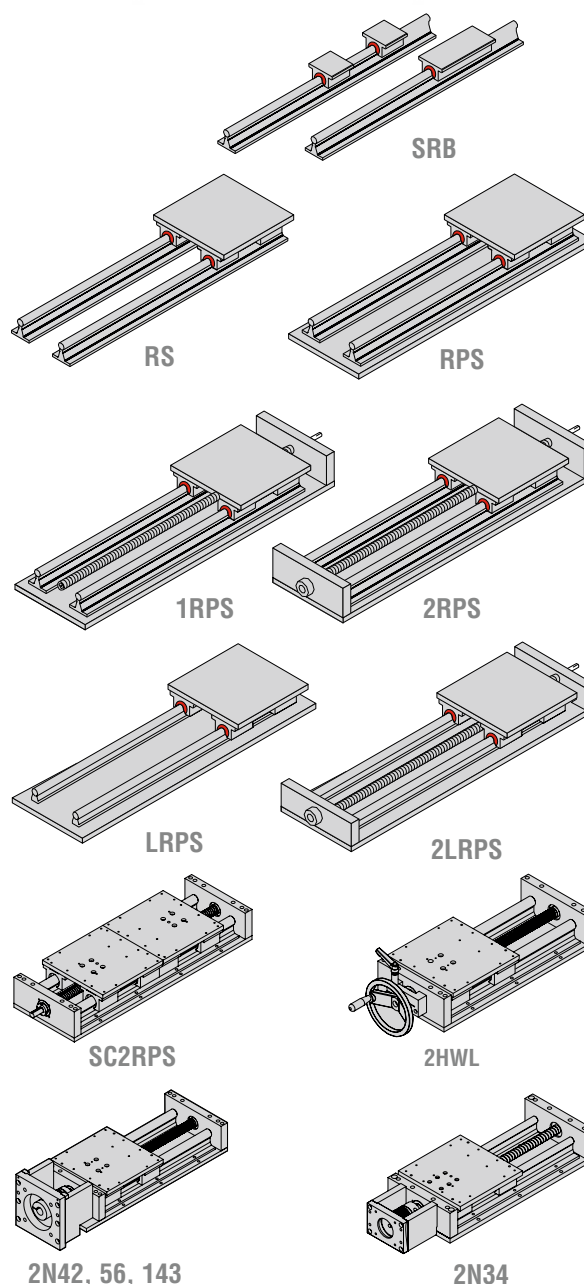
Call for more information. Special quotation requests for your specific application are welcome!

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

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



**simplicity®**





### 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

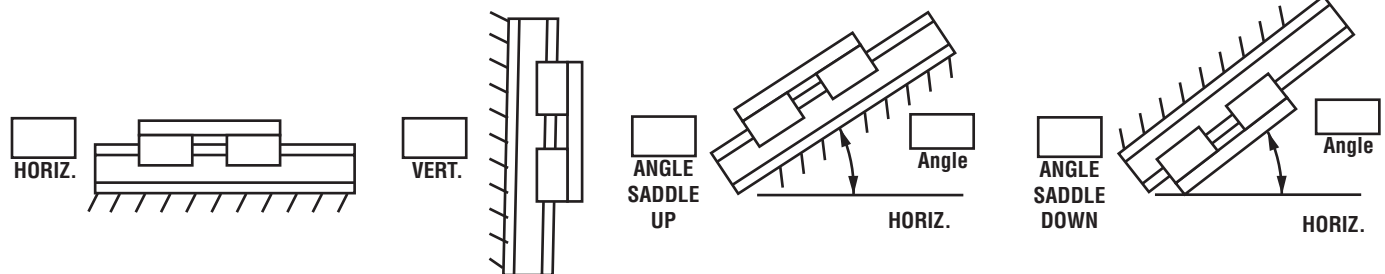
Size Code

Length Code

Ball Screw  
Lead Code

### MOUNTING ORIENTATION

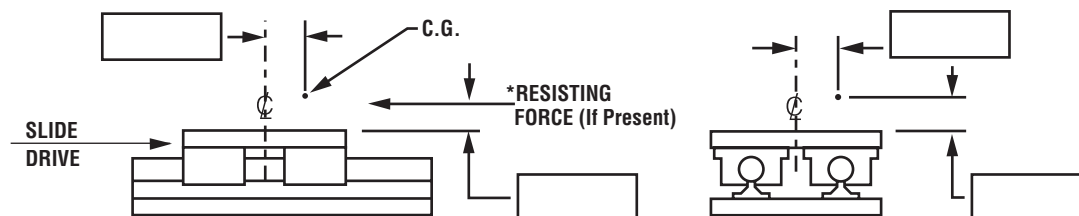
Please indicate the parameters of your application in the boxes below.



|                       |                      |                              |                      |             |                      |
|-----------------------|----------------------|------------------------------|----------------------|-------------|----------------------|
| Cycle Rate:           | <input type="text"/> | Per Hour:                    | <input type="text"/> | Per Minute: | <input type="text"/> |
| Max. Saddle Velocity: | <input type="text"/> | Inch/Second:                 | <input type="text"/> |             |                      |
| Acceleration Rate:    | <input type="text"/> | Inches/Second <sup>2</sup> : | <input type="text"/> |             |                      |
| Deceleration Rate:    | <input type="text"/> | Inches/Second <sup>2</sup> : | <input type="text"/> |             |                      |
| Load:                 | <input type="text"/> | lbs.                         | <input type="text"/> |             |                      |

### 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:  | <input type="text"/> | lbs.                               |
| Life Requirement: | <input type="text"/> | Strokes <input type="text"/> Hours |

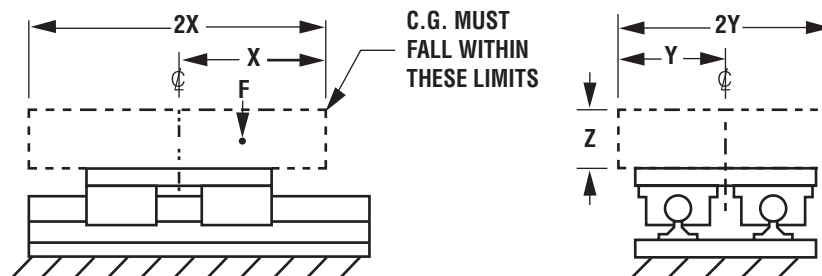


# Load Capacities

## Simplicity® Linear Slides

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

### STANDARD MOUNTING

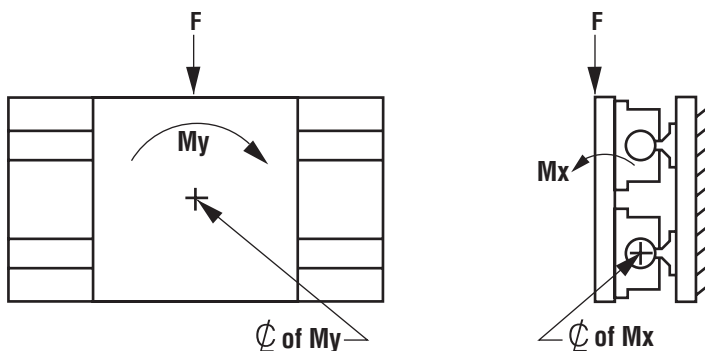


### RECOMMENDED SAFE LOADING\*

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

\*Load ratings for Simplicity plane bearings only.

### SIDE MOUNTING



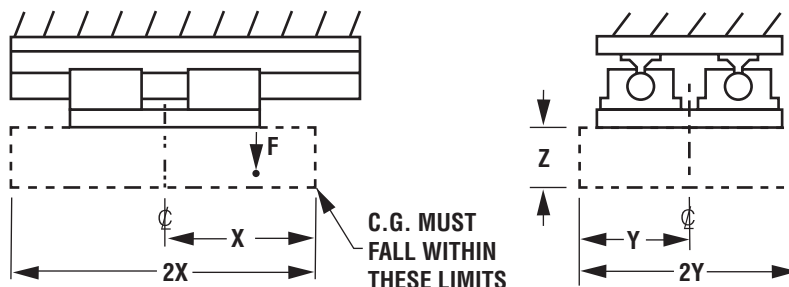
### RECOMMENDED SAFE LOADING\*

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

\*Load ratings for Simplicity plane bearings only.



### INVERTED MOUNTING

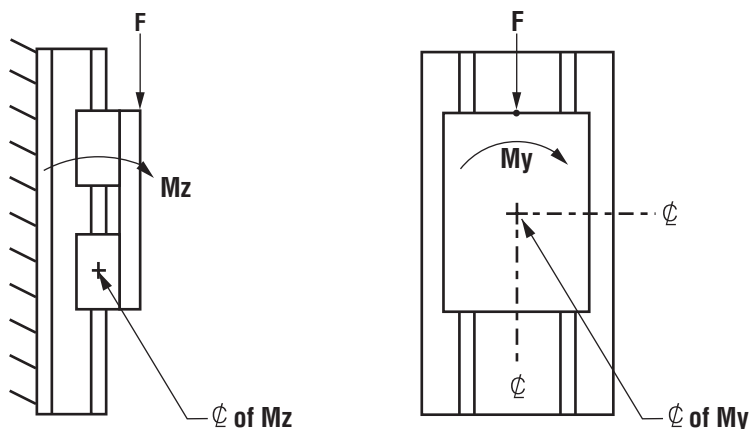


#### RECOMMENDED SAFE LOADING\*

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

\*Load ratings for Simplicity plane bearings only.

### VERTICAL MOUNTING



#### RECOMMENDED SAFE LOADING\*

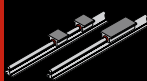
| SIZE | F<br>MAX. (lbs.) <sup>1,2</sup> | My<br>(in.-lbs.) | Mz<br>(in.-lbs.) | F<br>MAX. (N) | My<br>(Nm) | Mz<br>(Nm) |
|------|---------------------------------|------------------|------------------|---------------|------------|------------|
| 08   | 260                             | 1445       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

\*Load ratings for Simplicity plane bearings only.

<sup>1</sup> Applies only when using 2RPS & 2LRPS slides

<sup>2</sup> If "F" is exceeded consult factory.

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



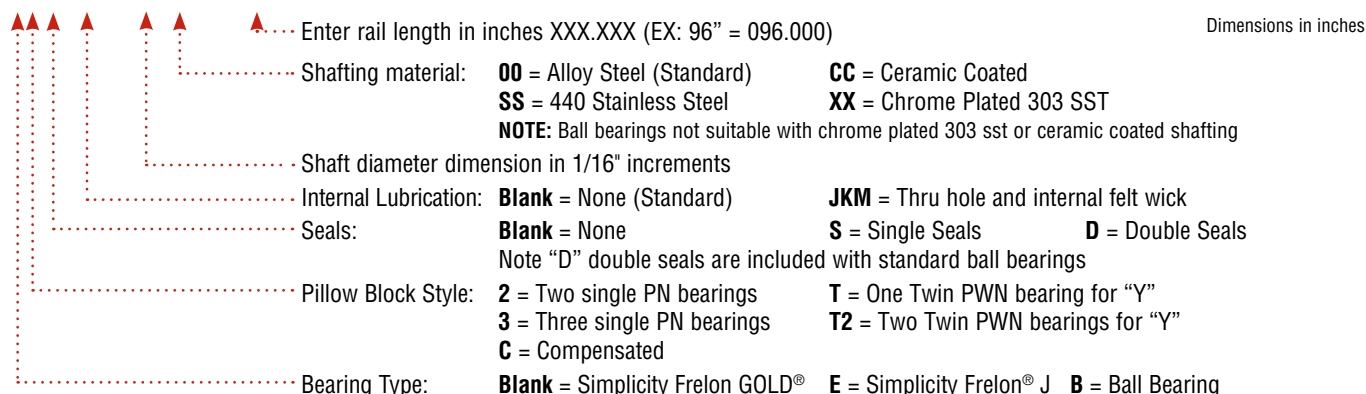
# Linear Slides - SRB

## Simplicity®

### SRB – Preassembled Shaft, Rail, & Bearing

#### PART NUMBER DIMENSIONS

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



#### MATERIAL:

**Support Rail** - Aluminum Alloy

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

**Simplicity Bearings** - Composite Teflon® and aluminum alloy

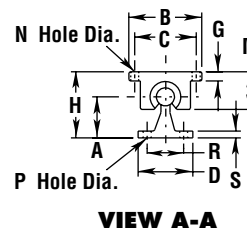
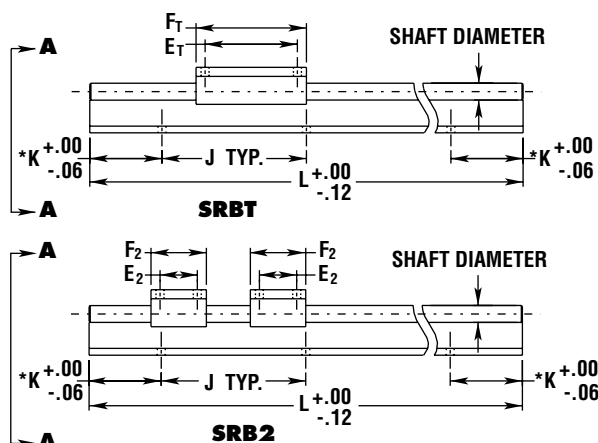
**Simplicity Pillow Blocks** - Aluminum Alloy

**Screws, Retaining Rings, Spring Pins** - Alloy Steel

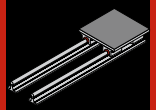
#### STANDARD LENGTH TABLE (Inches)

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

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



\*For standard length dimensions consult chart for "K" dimension.  
 \*For non-standard length dimensions "K" can be calculated with the following formula (in all cases equal on both ends).  
 $K(\text{non-std}) = (K(\text{from chart}) - (\Delta L/2))$   
 Where  $\Delta L$  = next longer standard length - desired length.



### RS – Rail Mounted Slide Assembly

#### PART NUMBER DIMENSIONS

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

Dimensions in inches

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

#### MATERIAL:

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

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

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

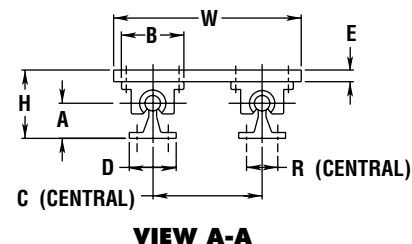
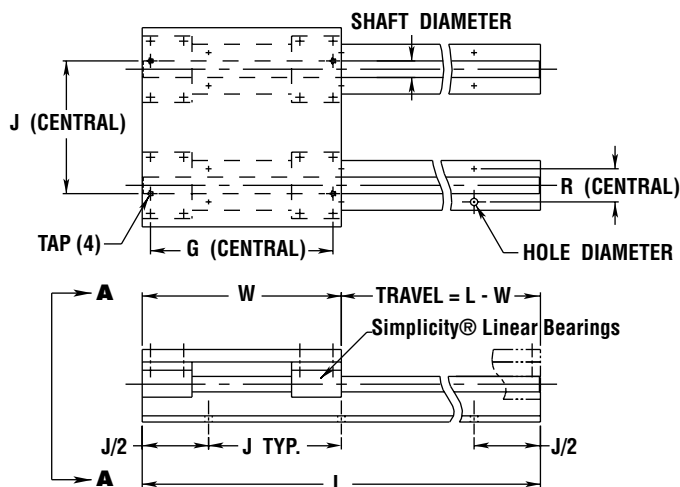
#### ORDERING EXAMPLE:

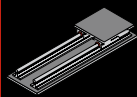
To order a slide with a 0.625 diameter alloy steel shaft, Simplicity bearings with Frelon GOLD® and 28" rail length, specify part number RS-10-028.000

#### STANDARD LENGTH TABLE (Inches)

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

\*Contact manufacturer for longer lengths.





# Linear Slides - RPS

## Simplicity®

### RPS - Rail Mounted & Plate Supported Slide Assembly

#### PART NUMBER DIMENSIONAL INFORMATION

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

Dimensions in inches.

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

#### MATERIAL:

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

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

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

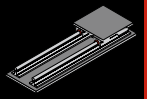
#### ORDERING EXAMPLE:

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

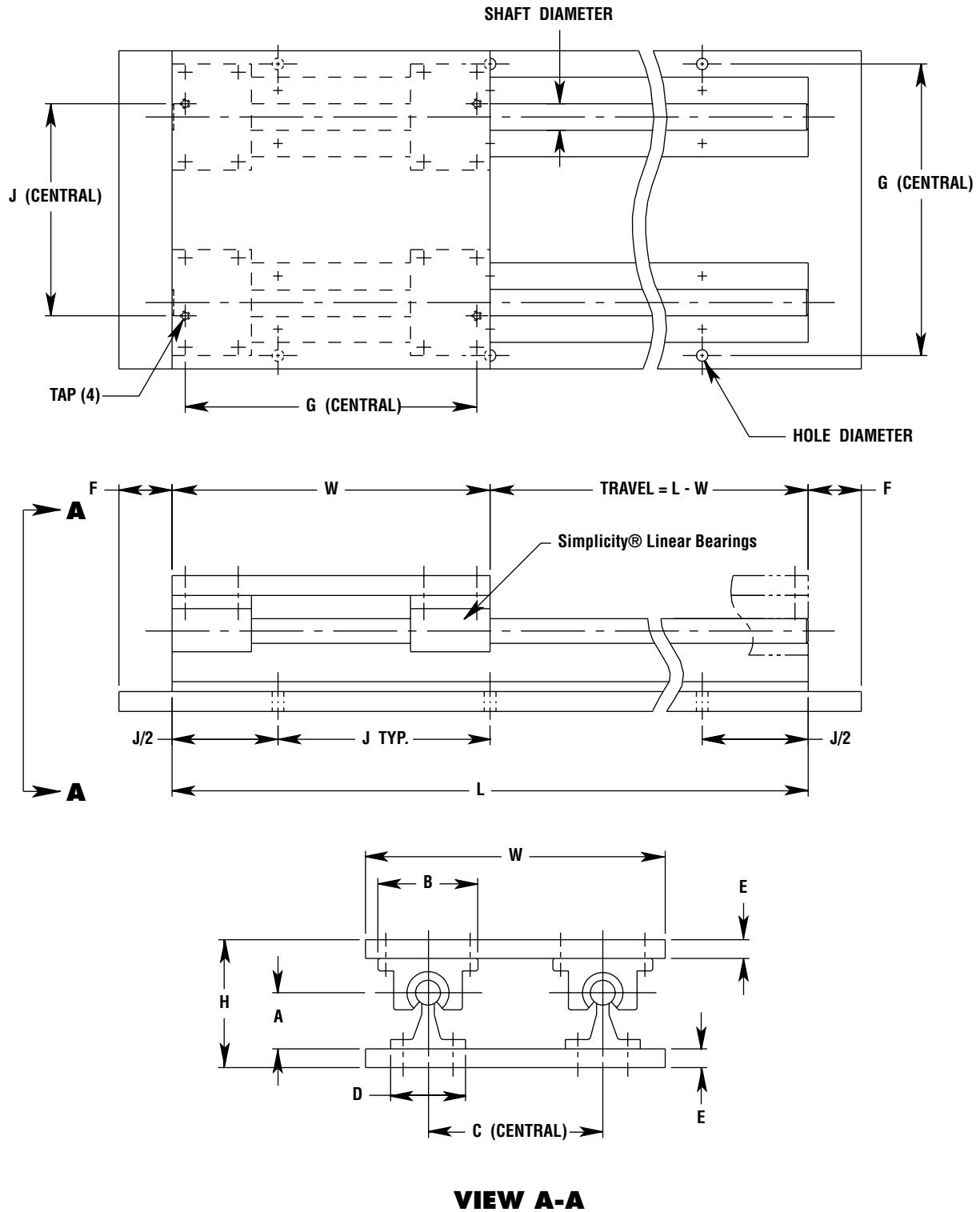
#### STANDARD LENGTH TABLE (Inches)

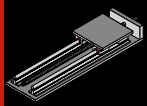
| SIZE | AVAILABLE RAIL LENGTHS - L* (in inches) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|------|-----------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----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

\*Contact manufacturer for longer lengths.



## RPS - Rail Mounted & Plate Supported Slide Assembly





# Linear Slides - 1RPS

## Simplicity®

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

#### PART NUMBER

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

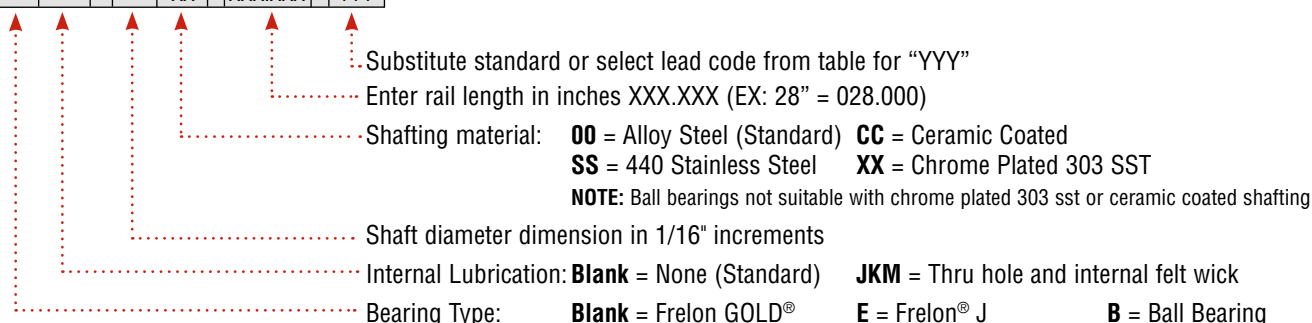
#### MATERIAL:

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

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

#### ORDERING EXAMPLE:

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



#### STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

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

#### SELECT LEAD TABLE

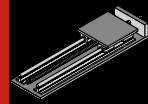
Accurate to less than .003" per foot accumulative

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

#### STANDARD LENGTH TABLE (Inches)

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

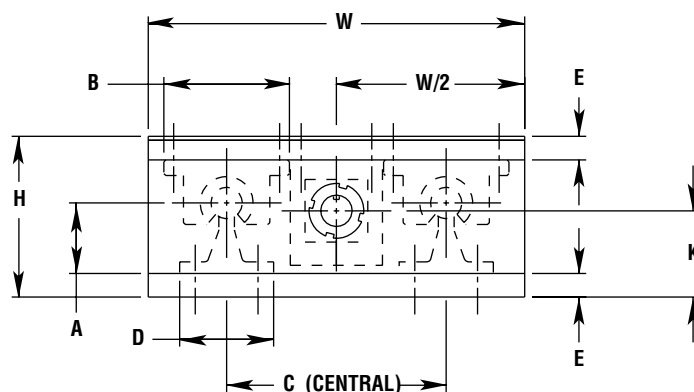
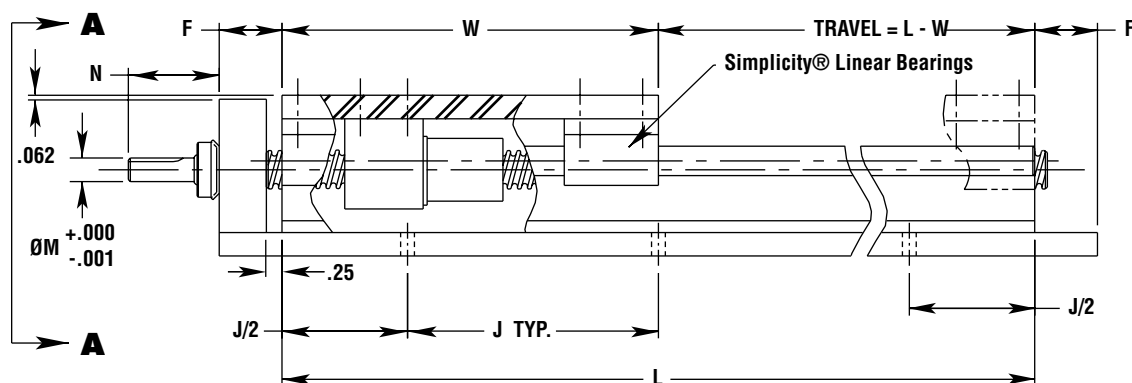
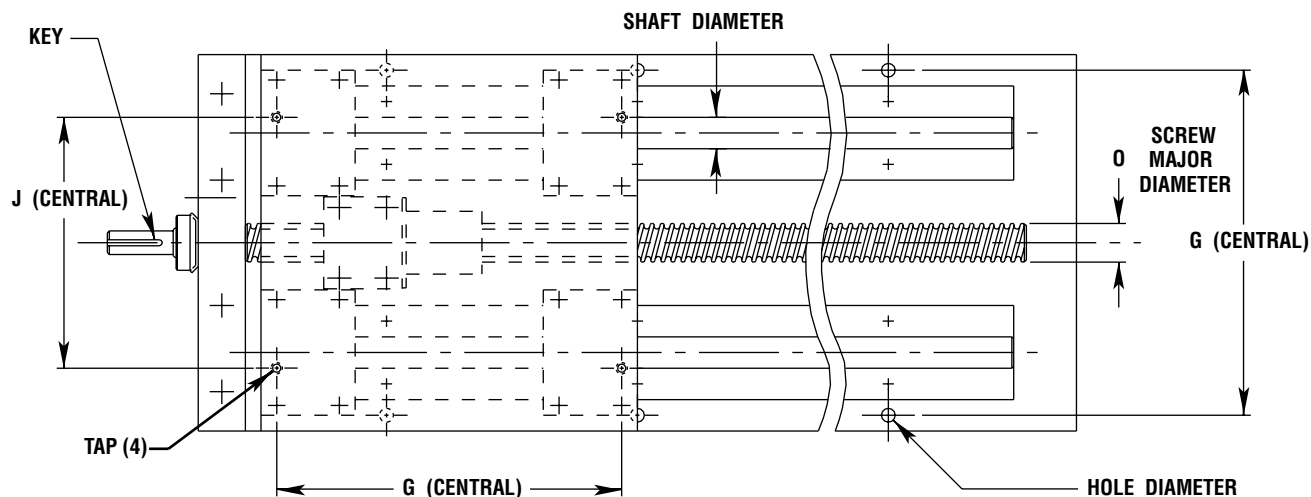
\*NOTE: Contact manufacturer for longer lengths.



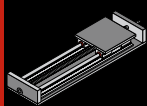
## 1RPS - DIMENSIONAL INFORMATION

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

Dimensions in inches.



VIEW A-A



# Linear Slides - 2RPS

## Simplicity®

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

#### PART NUMBER

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

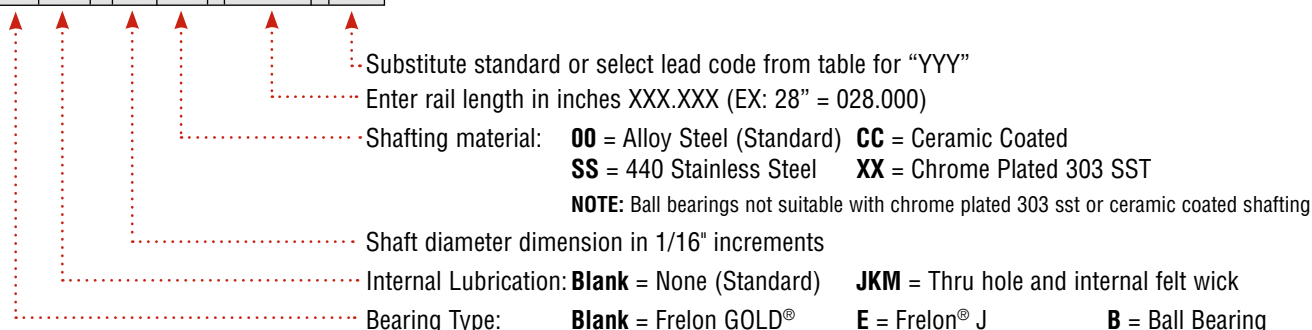
#### MATERIAL:

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

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

#### ORDERING EXAMPLE:

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



#### STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

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

#### SELECT LEAD TABLE

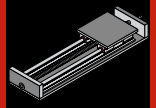
Accurate to less than .003" per foot accumulative

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

#### STANDARD LENGTH TABLE (Inches)

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

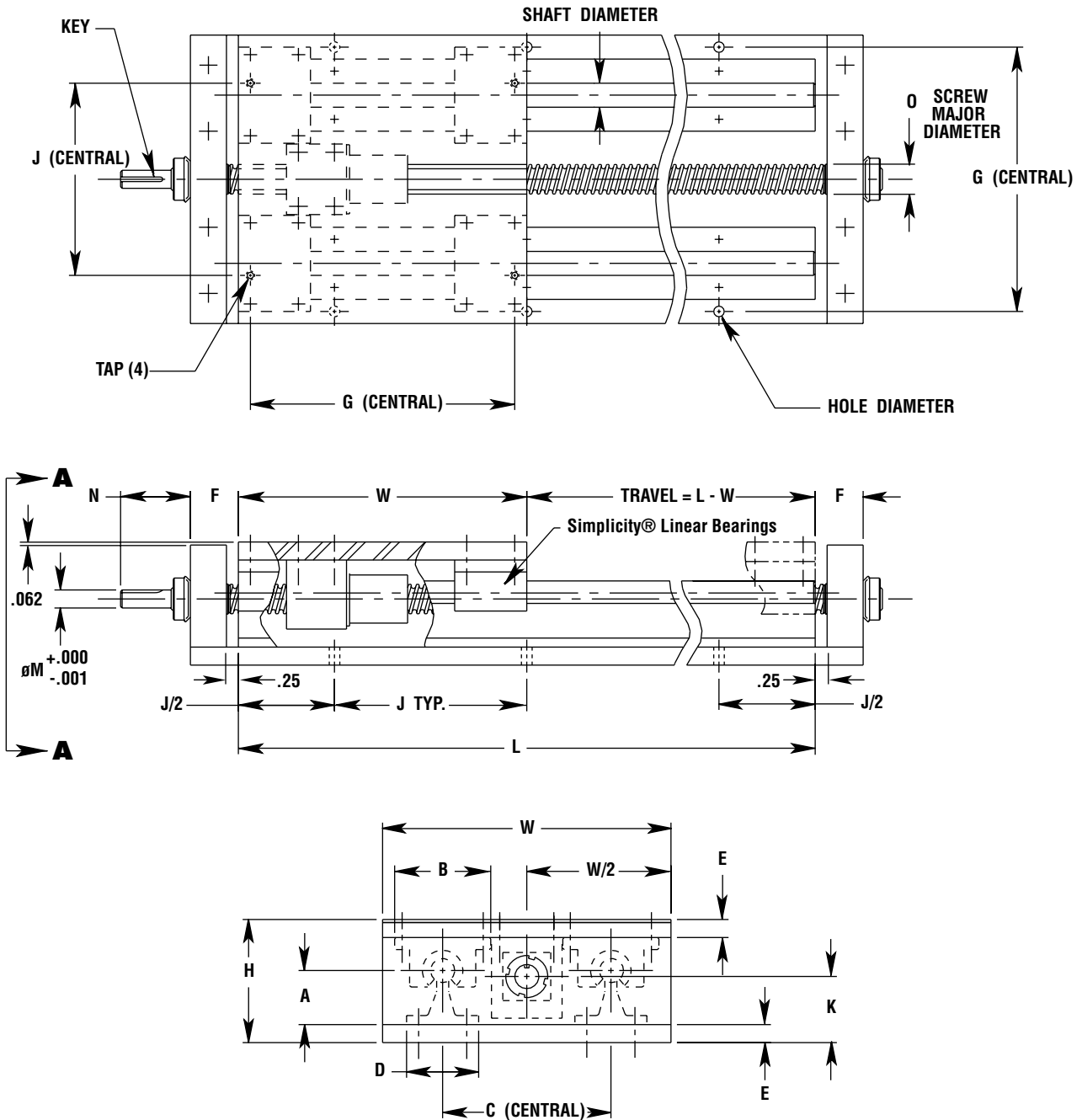
\*NOTE: Contact manufacturer for longer lengths.



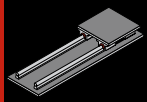
## 2RPS - DIMENSIONAL INFORMATION

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

Dimensions in inches.



**VIEW A-A**



# Low Profile Linear Slides - LRPS

## Simplicity®

### LRPS - Rail Mounted & Plate Supported Slide Assembly

#### PART NUMBER DIMENSIONAL INFORMATION

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

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

Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated  
**SS** = 440 Stainless Steel **XX** = Chrome Plated 303 SST  
**NOTE:** Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting

Shaft diameter dimension in 1/16" increments

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

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

#### MATERIAL:

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

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

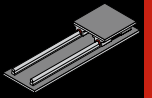
#### ORDERING EXAMPLE:

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

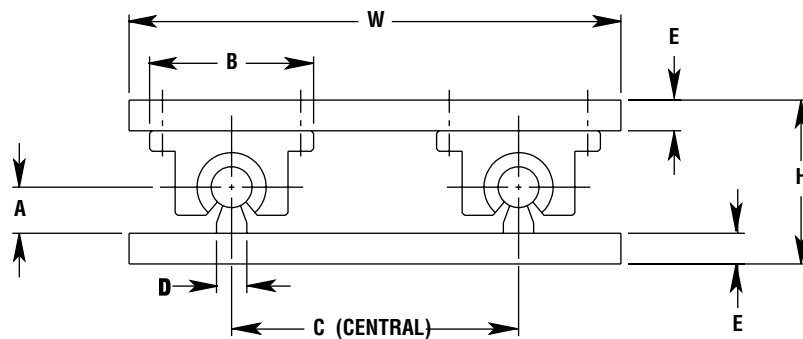
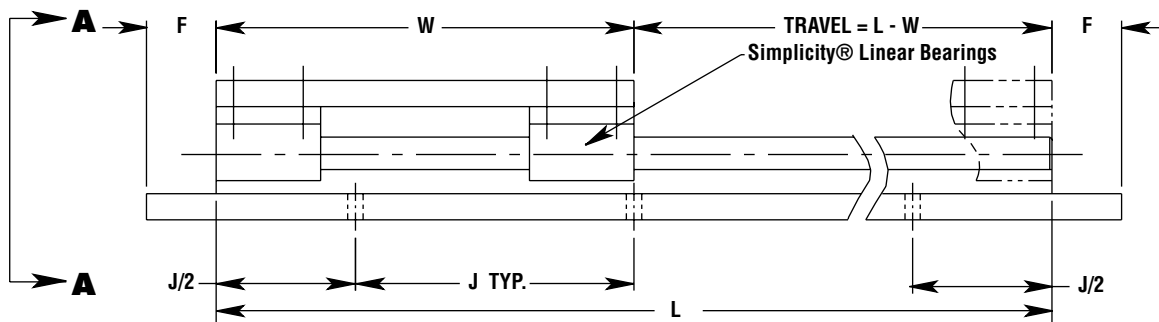
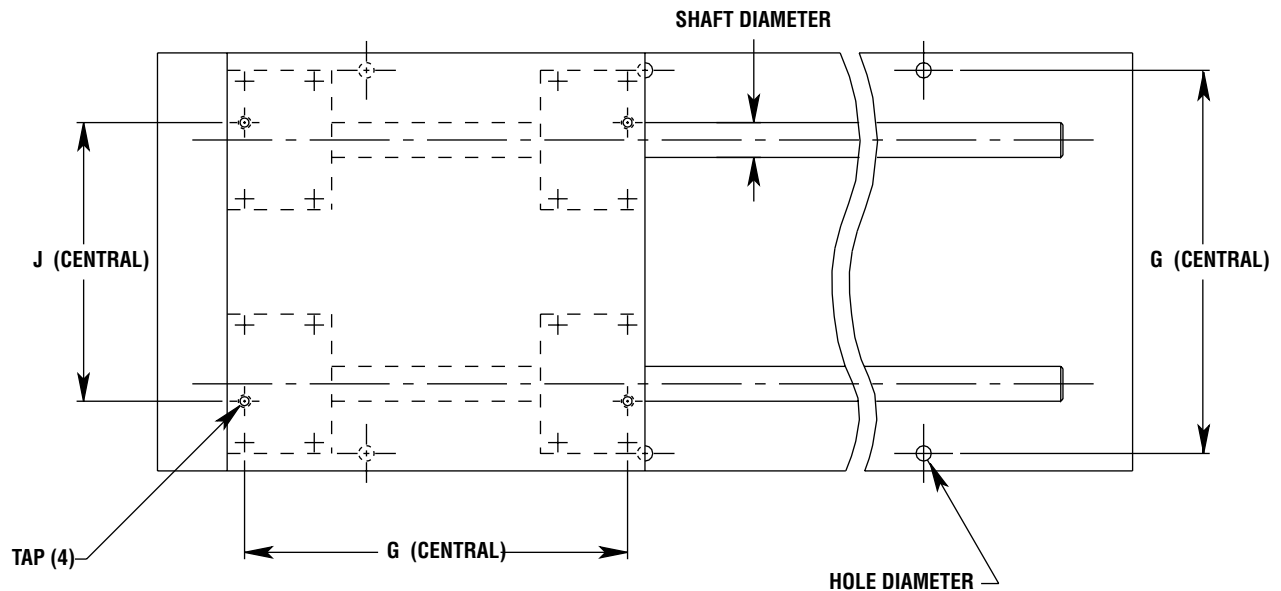
#### STANDARD LENGTH TABLE (Inches)

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

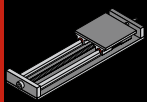
\*NOTE: Contact manufacturer for longer lengths.



## LRPS - Rail Mounted & Plate Supported Slide Assembly



**VIEW A-A**



# Low Profile Linear Slides - 2LRPS

## Simplicity®

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

#### PART NUMBER

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

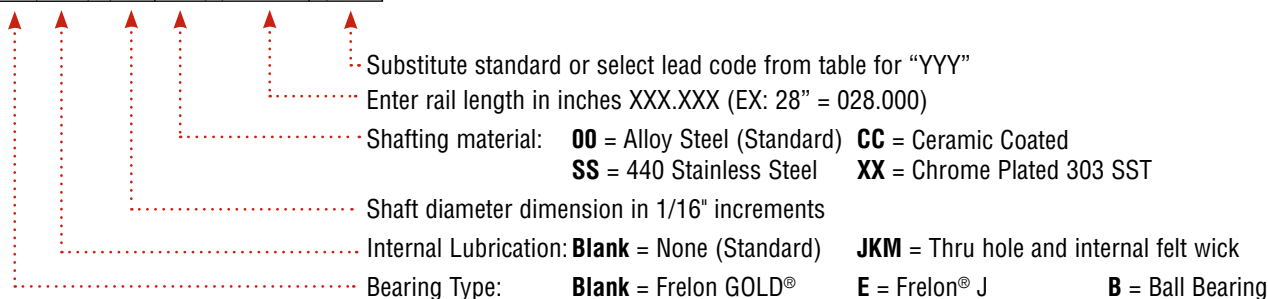
#### MATERIAL:

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

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

#### ORDERING EXAMPLE:

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



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

#### STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

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

#### SELECT LEAD TABLE

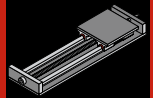
Accurate to less than .003" per foot accumulative

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

#### STANDARD LENGTH TABLE (Inches)

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

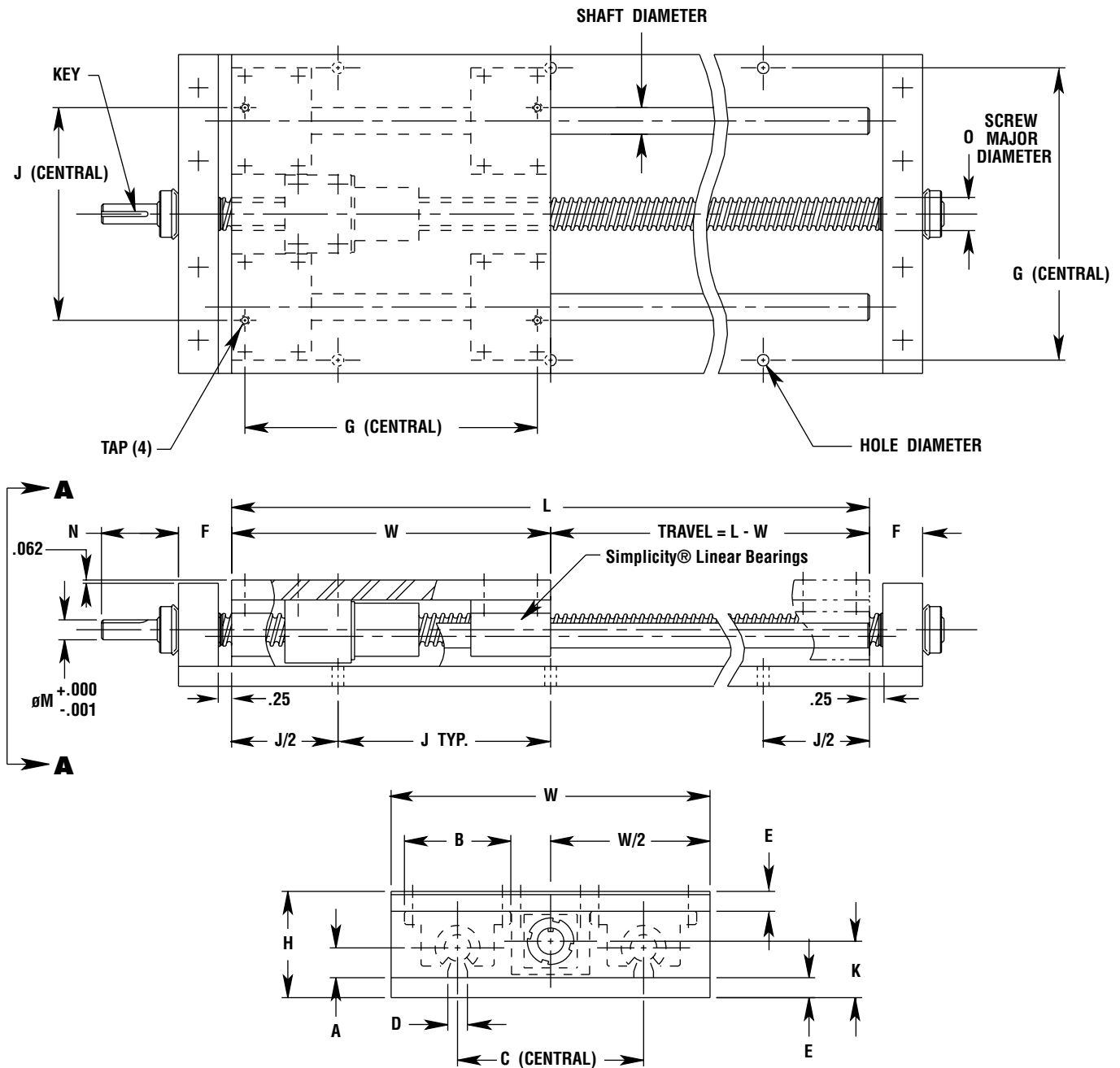
\*NOTE: Contact manufacturer for longer lengths.



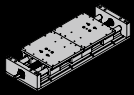
## 2LRPS - DIMENSIONAL INFORMATION

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

Dimensions in inches.



VIEW A-A



# Self Centering Linear Slides - SC2RPS

## Simplicity®

### SC2RPS - Self-Centering Slide Assembly

#### PART NUMBER

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

#### MATERIAL:

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

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

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

**ORDERING EXAMPLE:** SC2RPS-10-056.000-ALR1

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

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

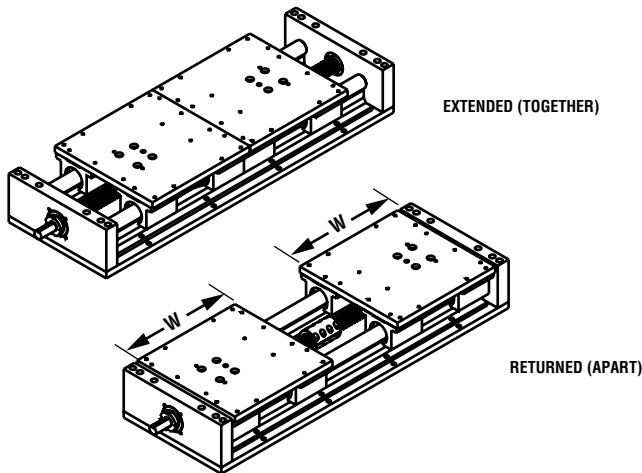
Shafting material: **00** = Alloy Steel (Standard) **CC** = Ceramic Coated  
**SS** = 440 Stainless Steel **XX** = Chrome Plate 303 SST

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

Shaft diameter dimension in 1/16" increments

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

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



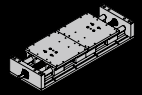
#### LEAD CODE TABLE STANDARD & SELECT BALL SCREW

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

#### STANDARD LENGTH TABLE (Inches)

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

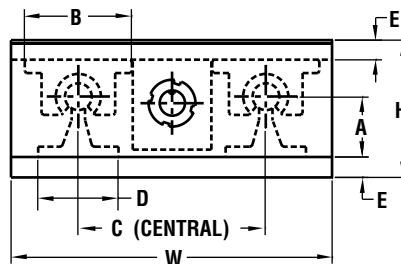
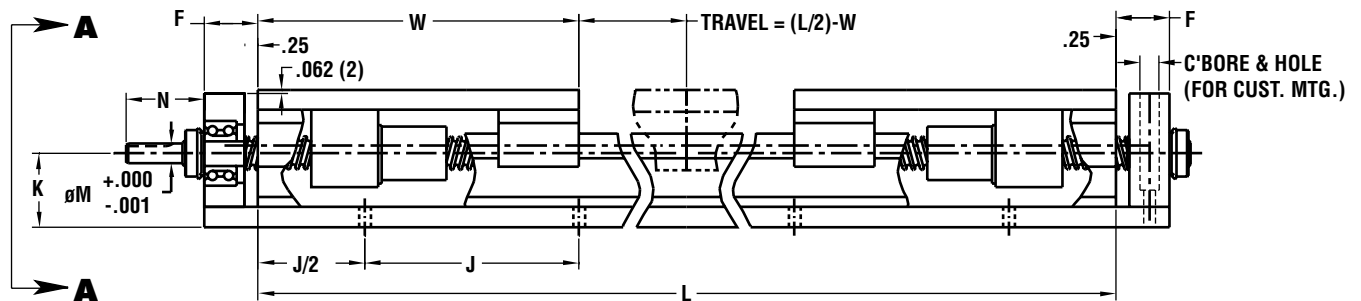
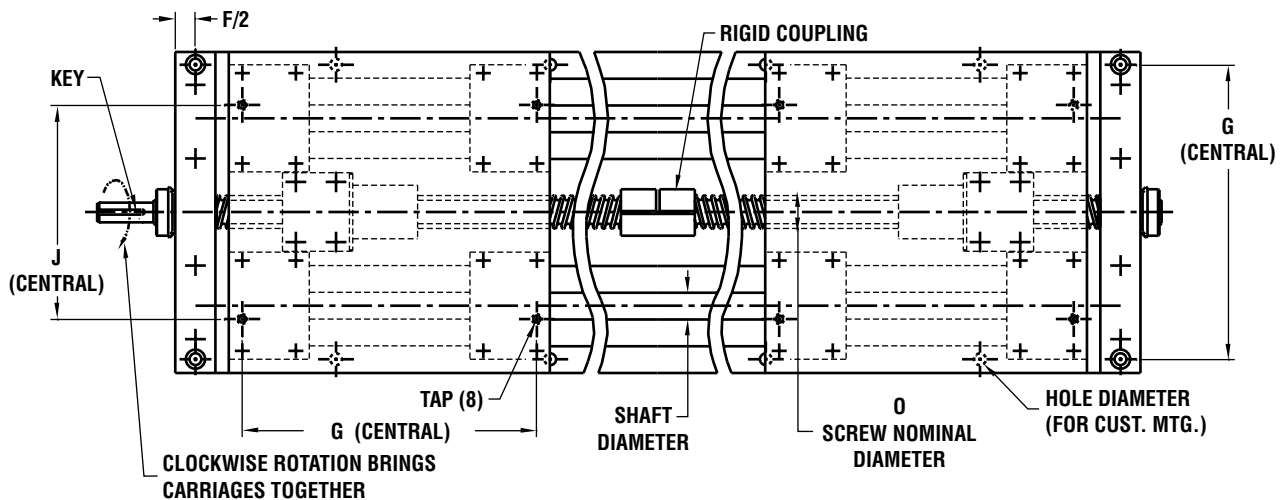
\*NOTE: Contact manufacturer for longer lengths.



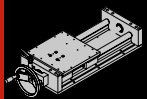
## SC2RPS - DIMENSIONAL INFORMATION

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

Dimensions in inches.



VIEW A-A



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

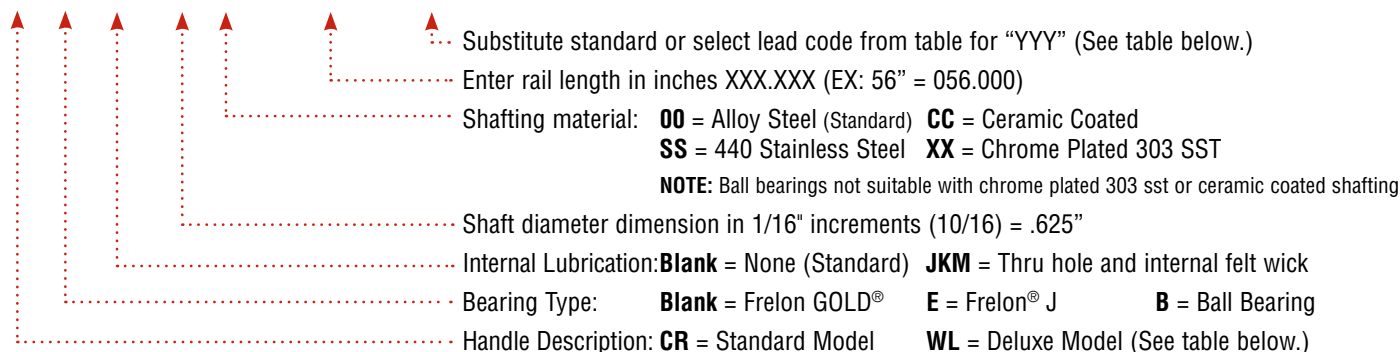
## Simplicity® Linear Slides

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

#### PART NUMBER

#### DIMENSIONAL INFORMATION

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



#### MATERIAL:

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

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

**ORDERING EXAMPLE:** 2HWL-20-054.000-AR1

#### HANDLE DESCRIPTION

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

#### LEAD CODE TABLE STANDARD & SELECT BALL SCREWS

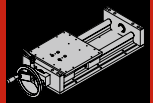
| SIZE                                                                                                   | AVAILABLE LEAD CODE |     |     |     |     |     |     |     | LEAD CODES             |  |
|--------------------------------------------------------------------------------------------------------|---------------------|-----|-----|-----|-----|-----|-----|-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

#### STANDARD LENGTH TABLE (Inches)

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

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

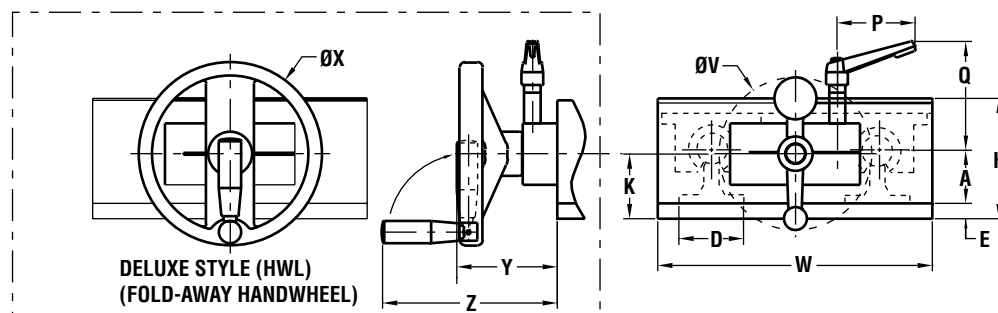
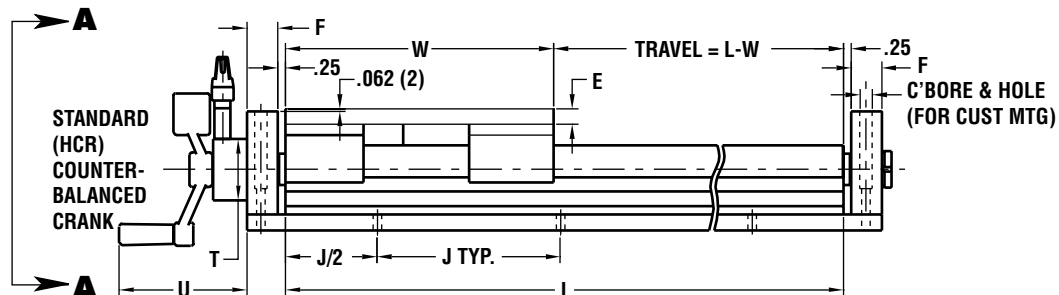
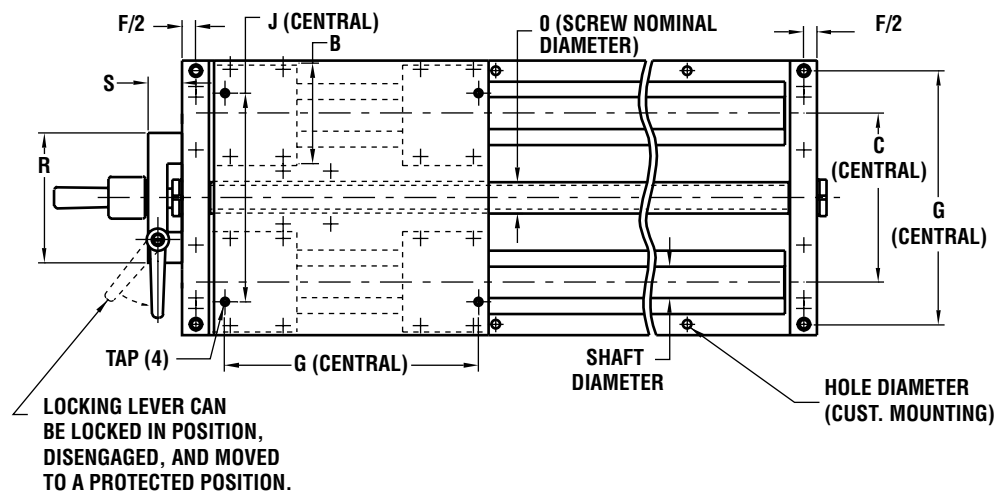
## Simplicity® Linear Slides



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

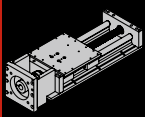
| K    | O     | P    | Q    | R     | S     | T     | U     | V     | X    | Y     | Z     | TAP     | HOLE DIA. | SIZE |
|------|-------|------|------|-------|-------|-------|-------|-------|------|-------|-------|---------|-----------|------|
| 1.38 | .631  | 2.56 | 3.85 | 3.000 | .875  | 1.312 |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

Dimensions in inches.



VIEW A-A

Handcrank - 2HCR / 2HWL



# NEMA Drive Kit - 2N42, 56, 143

## Simplicity® Linear Slides

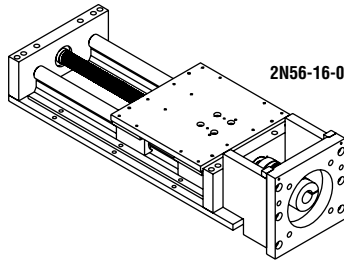
### 2N42, 56, 143 - Slide Assembly/NEMA Drive Kit

#### PART NUMBER

#### DIMENSIONAL INFORMATION

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

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



2N56-16-018-BRO REF.

#### MATERIAL:

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

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

**ORDERING:** 2N56-16-054.000-BR1

#### MOTOR MOUNTING DIMENSIONS

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

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

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

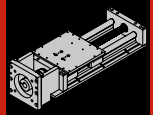
#### LEAD CODE TABLE STANDARD & SELECT BALL SCREWS

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

#### STANDARD LENGTH TABLE (Inches)

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

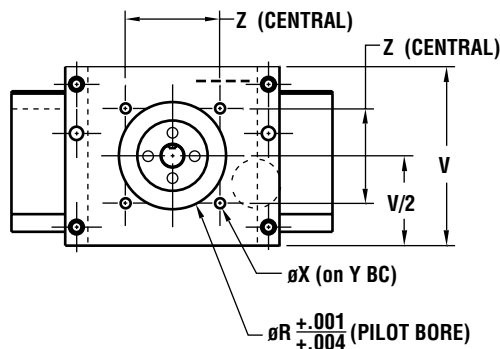
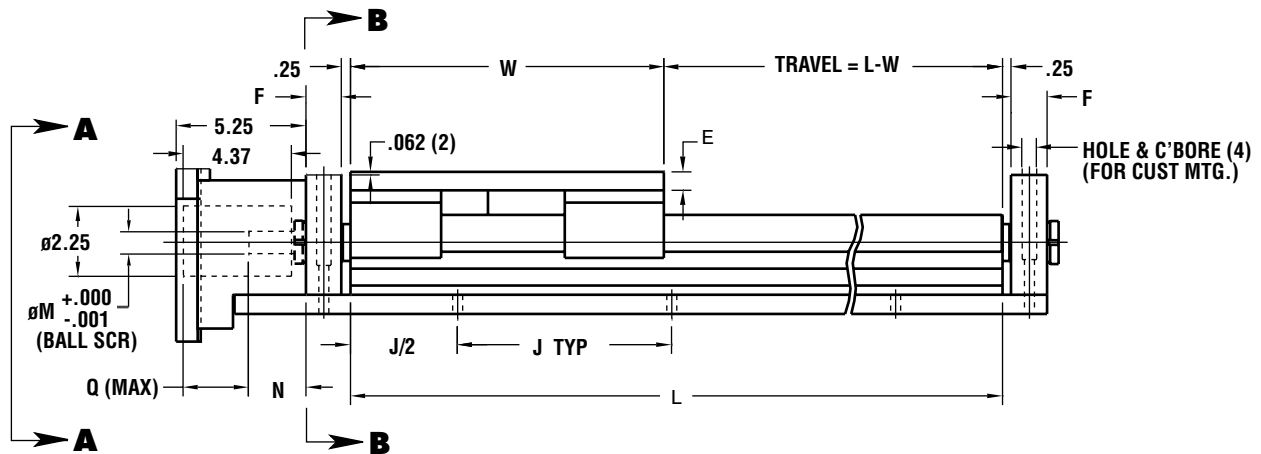
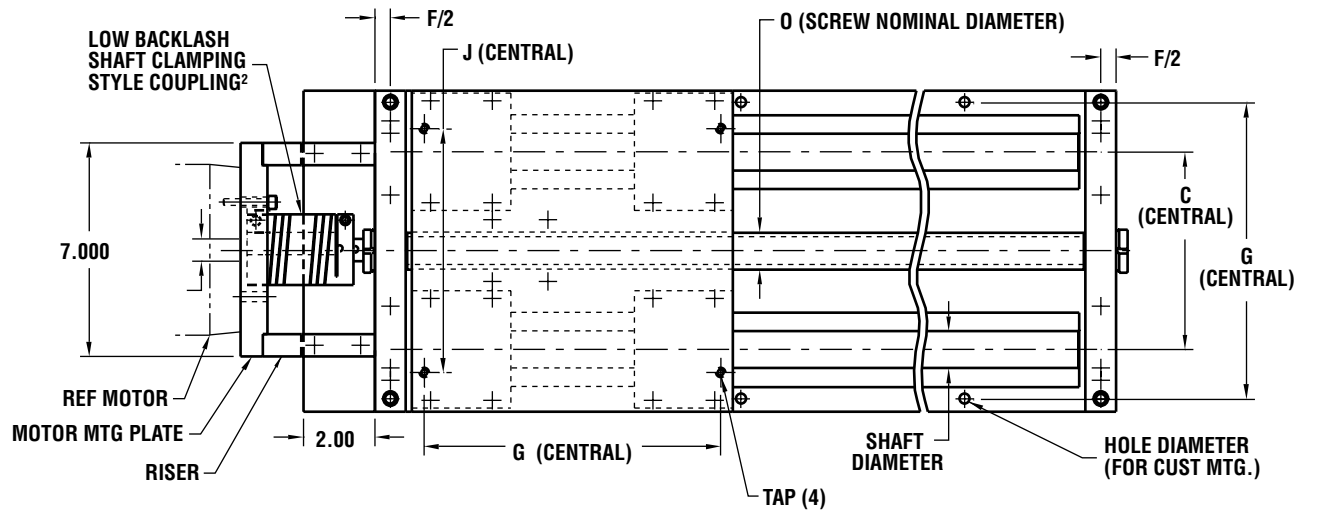
\*NOTE: Contact manufacturer for longer lengths.



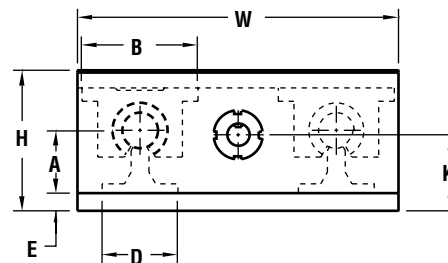
### 2N42, 56, 143 - Slide Assembly/NEMA Drive Kit

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

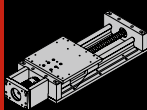
Dimensions in inches.



**VIEW A-A**



**VIEW B-B**



# NEMA Drive Kit - 2N23 & 2N34

## Simplicity® Linear Slides

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

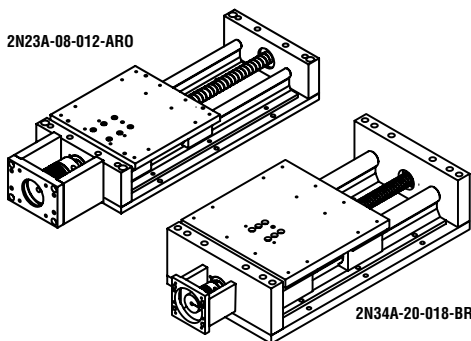
#### PART NUMBER

#### DIMENSIONAL INFORMATION

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

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

2N23A-08-012-ARO



2N34A-20-018-BRO

#### MATERIAL:

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

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

**ORDERING:** 2N23A-10-056.000-AR1

#### MOTOR MOUNTING DIMENSIONS

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

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

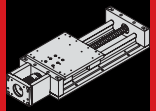
#### LEAD CODE TABLE STANDARD & SELECT BALL SCREW

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

#### STANDARD LENGTH TABLE (Inches)

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

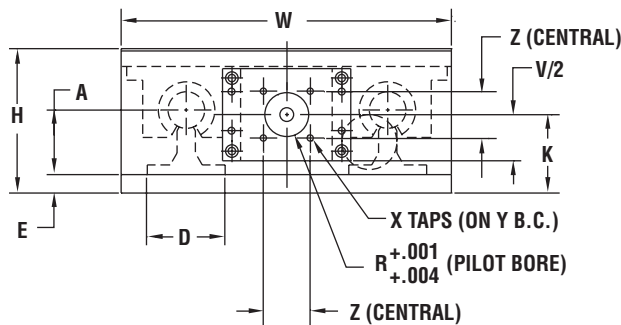
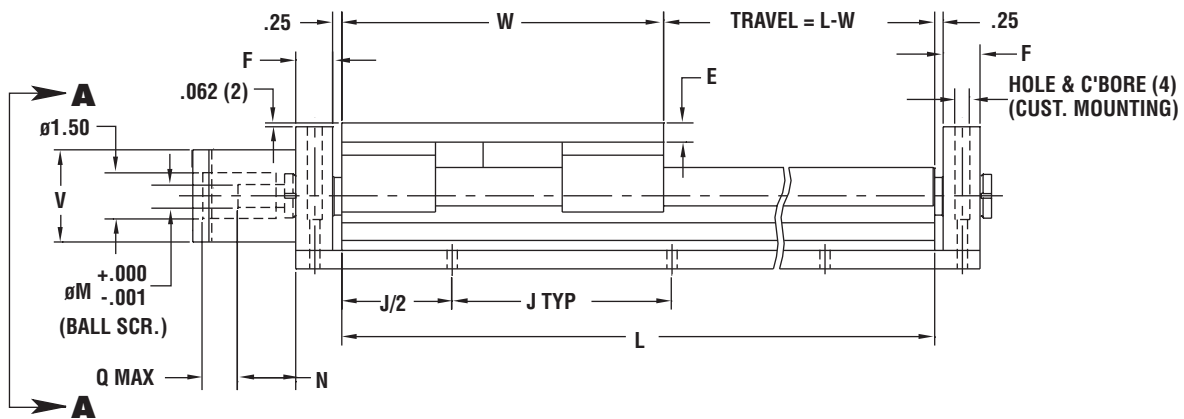
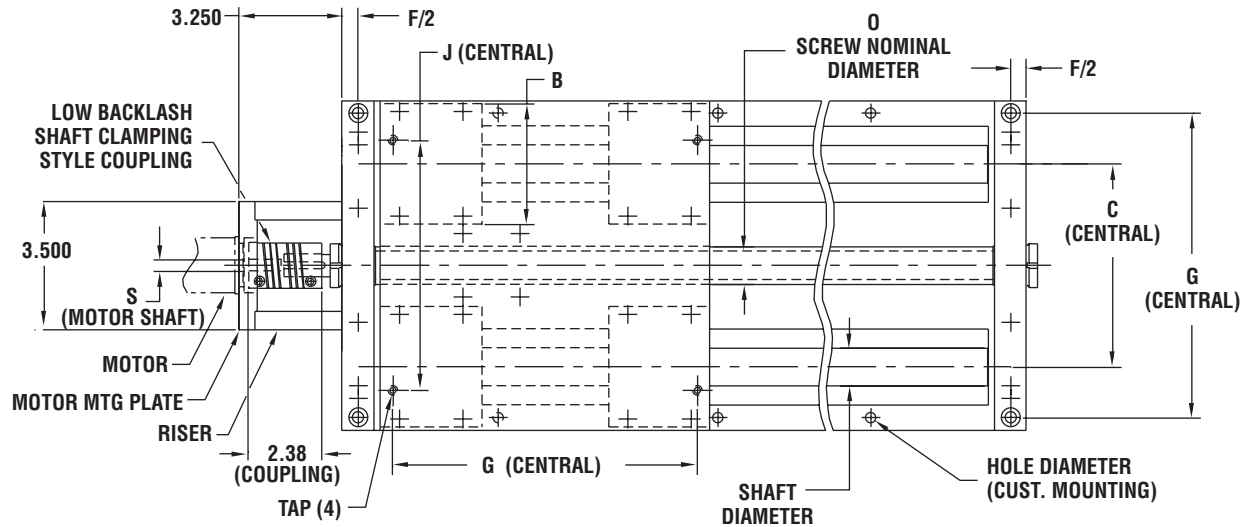
\*NOTE: Contact manufacturer for longer lengths.



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

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

Dimensions in inches.



VIEW A-A



# Column Load Chart

## Simplicity® Linear Slides

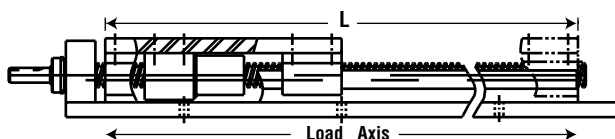
**COMPRESSION (COLUMN) LOAD:** A load that tends to buckle or compress the screw shaft.

### HOW TO USE CHART:

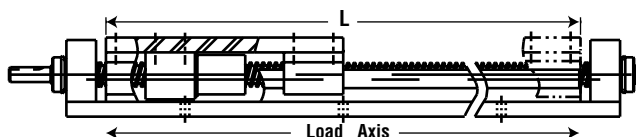
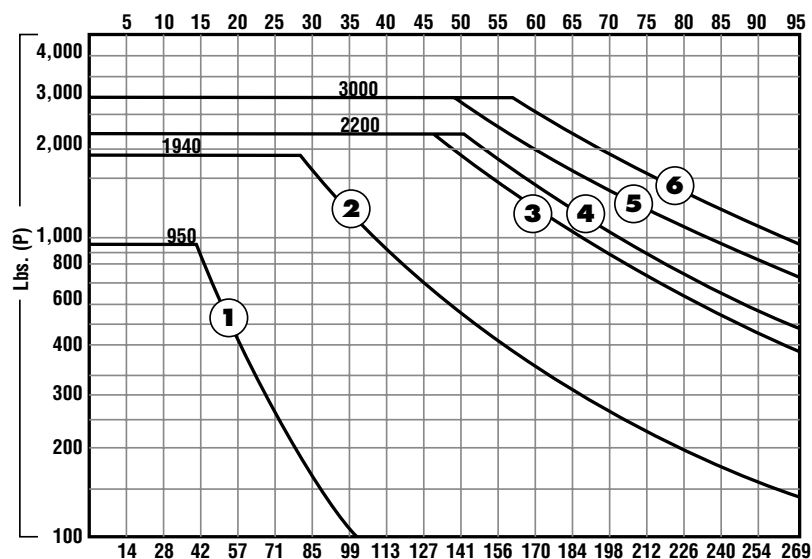
1. Determine maximum compression load (lbs.)
2. Determine slide length. ("L" dimension)
3. Determine end fixity and slide designation (2RPS & 2LRPS)
4. Find the point at which load and length intersect.
5. Select a slide above or to the right of the intersecting point.

Applies Primarily to Vertical Application

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



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



| LENGTH TABLE |         |
|--------------|---------|
| SERIES       | PAGE #  |
| 2RPS         | 168-169 |
| 2LRPS        | 172-173 |

| CURVE # | SLICE SERIES SIZE, LEAD                                                                                                                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | 2RPS-08-(AR OR AL)<br>2LRPS-08-(AR OR AL)<br>2RPS-10-(AR OR AL)<br>2LRPS-10-(AR OR AL)<br>2RPS-12-(AR OR AL)<br>2LRPS-12-(AR OR AL)<br><b>D = .500</b>                                                                                               |
| 2       | 2RPS-16-(BR OR BL)<br>2LRPS-16-(BR OR BL)<br>2RPS-20-(BR OR BL)<br>2LRPS-20-(BR OR BL)<br>2RPS-16-DR<br>2LRPS-16-DR<br>2RPS-20-DR<br>2LRPS-20-DR<br><b>D = .840</b><br><br>2RPS-16-CR<br>2LRPS-16-CR<br>2RPS-20-CR<br>2LRPS-20-CR<br><b>D = .870</b> |
| 3       | 2RPS-24-(DR OR DL)<br>2LRPS-24-(DR OR DL)<br>2RPS-32-(DR OR DL)<br>2LRPS-32-(DR OR DL)<br><b>D = 1.140</b>                                                                                                                                           |
| 4       | 2RPS-24-ER<br>2LRPS-24-ER<br>2RPS-32-ER<br>2LRPS-32-ER<br><b>D = 1.190</b>                                                                                                                                                                           |
| 5       | 2RPS-24-CR<br>2LRPS-24-CR<br>2RPS-32-CR<br>2LRPS-32-CR<br><b>D = 1.260</b>                                                                                                                                                                           |
| 6       | 2RPS-24-(BR OR BL)<br>2LRPS-24-(BR OR BL)<br>2RPS-32-(BR OR BL)<br>2LRPS-32-(BR OR BL)<br><b>D = 1.375</b>                                                                                                                                           |

### COLUMN LOAD FORMULAS\*:

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

$P_c$  = Critical column load (lbs.)

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

$L$  = Slide length (in.)

$C_c$  = End fixity factor

$C_c$  = .25 for 1RPS & 1LRPS

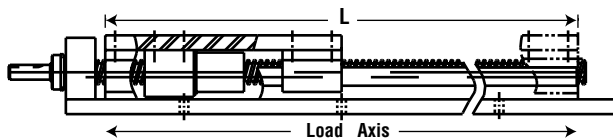
$C_c$  = 2.0 for 2RPS & 2LRPS



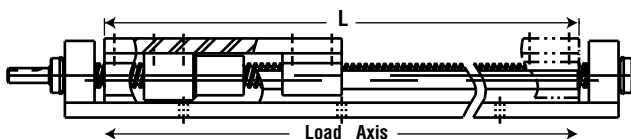
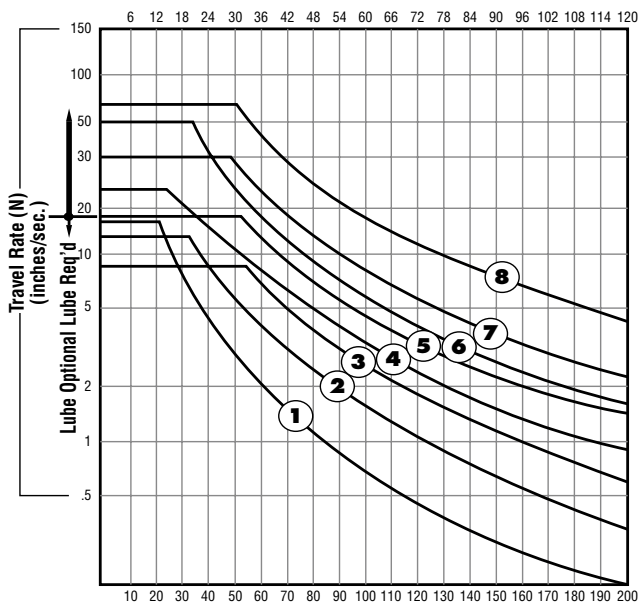
**CRITICAL SPEED:** The maximum speed at which a ball screw or ball nut can rotate without producing destructive resonant vibrations. The critical speed is a function of the ball screw diameter, the unsupported length of screw, rigidity of bearing supports, and RPM.

### HOW TO USE CHART:

1. Determine end fixity. How many ends are fixed? (Slide designation, 2RPS & 2LRPS)
2. Determine slide length. ("L" dimension)
3. Find the length – fixity vertical line, read up to find the intersecting, at the required travel rate.
4. Select a slide above or to the right of the intersection point.
5. Higher speeds and/or longer lengths are available as cost effective specials, having a larger ball screw and bearings. (Consult manufacturer.)



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



| LENGTH TABLE |         |
|--------------|---------|
| SERIES       | PAGE #  |
| 2RPS         | 168-169 |
| 2LRPS        | 172-173 |

| CURVE # | SLICE SERIES SIZE, LEAD                                                                                      |                                          |
|---------|--------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 1       | 2RPS-08-(AR or AL)<br>2LPS-08-(AR or AL)<br>2RPS-10-(AR or AL)<br>2LPS-10-(AR or AL)<br>D = .500<br>H = .200 | 2RPS-12-(AR or AL)<br>2LPS-12-(AR or AL) |
| 2       | 2RPS-16-(BR or BL)<br>2LPS-16-(BR or BL)<br>D = .840<br>H = .250                                             | 2RPS-20-(BR or BL)<br>2LPS-20-(BR or BL) |
| 3       | 2RPS-24-(BR or BL)<br>2LPS-24-(BR or BL)<br>D = 1.375<br>H = .250                                            | 2RPS-32-(BR or BL)<br>2LPS-32-(BR or BL) |
| 4       | 2RPS-16-(CR)<br>2LPS-16-(CR)<br>D = .870<br>H = .500                                                         | 2RPS-20-(CR)<br>2LPS-20-(CR)             |
| 5       | 2RPS-24-(CR)<br>2LPS-24-(CR)<br>D = 1.260<br>H = .500                                                        | 2RPS-32-(CR)<br>2LPS-32-(CR)             |
| 6       | 2RPS-16-(DR)<br>2LPS-16-(DR)<br>D = .840<br>H = 1.000                                                        | 2RPS-20-(DR)<br>2LPS-20-(DR)             |
| 7       | 2RPS-24-(DR or DL)<br>2LPS-24-(DR or DL)<br>D = 1.140<br>H = 1.000                                           | 2RPS-32-(DR or DL)<br>2LPS-32-(DR or DL) |
| 8       | 2RPS-24-(ER)<br>2LPS-24-(ER)<br>D = 1.190<br>H = 1.875                                                       | 2RPS-32-(ER)<br>2LPS-32-(ER)             |

### CRITICAL SPEED FORMULAS\*:

$$N = C_s \cdot 7.93 \times 10^4 \cdot \left( \frac{DH}{L^2} \right)$$

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

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

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

L = Slide length (in.)

C<sub>s</sub> = End fixity factor

C<sub>s</sub> = 0.36 for 1RPS & 1LRPS

C<sub>s</sub> = 1.47 for 2RPS & 2LRPS

\*NOTE: Chart figures at 80% of actual load.

DO NOT EXCEED THESE FIGURES.

# Mini-Rail® Miniature Linear Guides

## Product Overview

### PRODUCT OVERVIEW

An economical alternative to conventional miniature linear guides, Mini-Rail requires no maintenance, is fully interchangeable with industry standard sizes and is maintained in stock for quick delivery.

Mini-Rail miniature linear guides are available in five sizes: 7, 9, 12, 15 and 20mm - in lengths up to 3600mm, meaning no cumbersome butt joints. These guides are precision manufactured out of lightweight aluminum alloys to ensure long life and corrosion resistance.

- No rolling elements
- Self-lubricating Frelon GOLD® Liner
- Withstands vibration and shock
- Corrosion-resistant - ideal in harsh environments
- Ceramic coated, aluminum rail
- Compact design- small footprint

### CARRIAGE CONFIGURATIONS

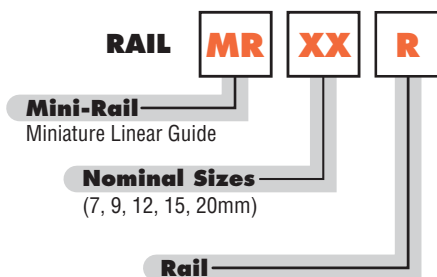
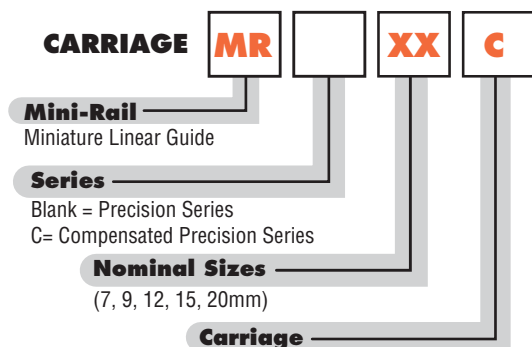
**Precision Series:** Ceramic coated rails and carriages are corrosion resistant. Frelon GOLD® self-lubricating liner delivers the best overall performance, the highest loads, the best wear life, and speeds. Most precise running clearance for high precision applications.

**Compensated Precision Series:** Same as Precision Series except with additional clearance provided to tolerate misalignment.

### APPLICATIONS

- Medical Precision
- Food Processing
- Automation
- Electronics
- Mobile Home Components
- Packaging
- Product Movement
- Printing
- Semi-conductor

### ORDERING INFORMATION



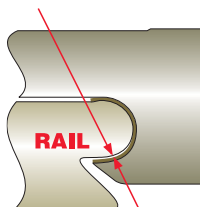
**EXAMPLE:** MRC20C  
MR20R

See following page for Mini-Rail full assembly ordering.



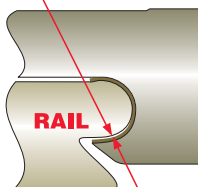
#### Precision Series

.025 - .051mm  
Running Clearance  
(CERAMIC COATED)



#### Compensated Precision Series

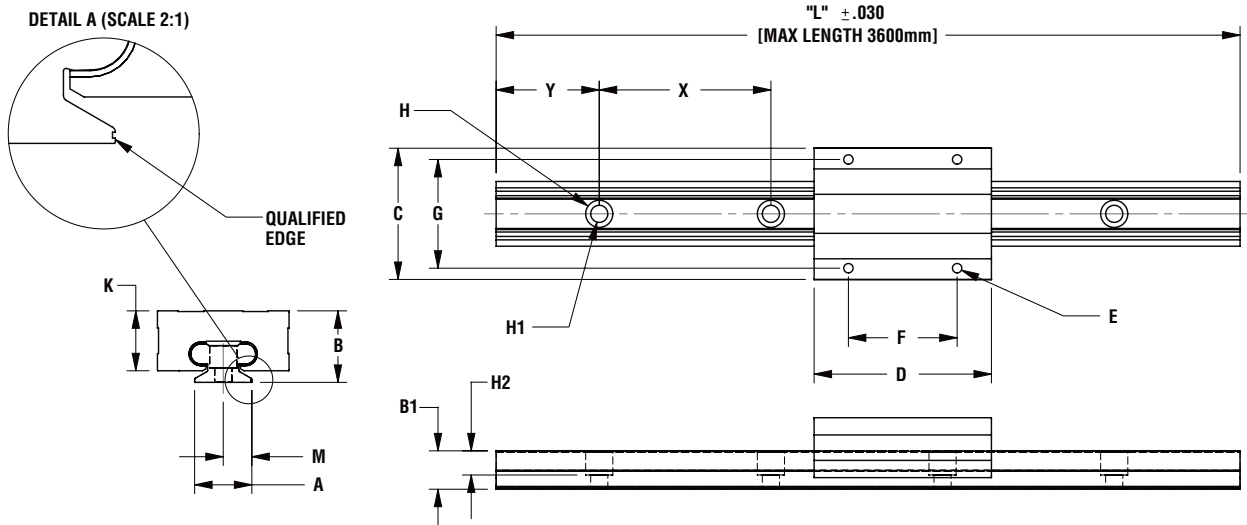
.064 - .089mm  
Running Clearance  
(CERAMIC COATED)



Frelon GOLD® and Frelon® J are Teflon® based materials that are truly self-lubricating. Frelon® materials are bonded to the carriage creating a one-piece unit.



### MINI-RAIL - MR



(Maximum Length 3600mm)

Materials: 6061-T6 aluminum rail and carriage, Frelon GOLD® or Frelon® J liner

Max V: 300 sfm for Frelon GOLD, 140 sfm for Frelon J

Max P: 3000 psi for Frelon GOLD, 1500 psi for Frelon J

| PART NUMBER | RUNNING CLEARANCE | A                  | B              | B1          | C              | D               | E                       |                          | F                               | G              | H   | H <sub>1</sub> | H <sub>2</sub>  | K                                | M                | Y                      | X    | RAIL WT.<br>(gram/mm) | CARRIAGE WT.<br>(gram) |
|-------------|-------------------|--------------------|----------------|-------------|----------------|-----------------|-------------------------|--------------------------|---------------------------------|----------------|-----|----------------|-----------------|----------------------------------|------------------|------------------------|------|-----------------------|------------------------|
|             |                   | BASE WIDTH<br>(mm) | OVERALL HEIGHT | RAIL HEIGHT | CARRIAGE WIDTH | CARRIAGE LENGTH | CARRIAGE MTG. HOLE SIZE | CARRIAGE MTG. HOLE DEPTH | CARRIAGE MTG. HOLE CTR. TO CTR. | RAIL HOLE SIZE |     |                | CARRIAGE HEIGHT | RAIL MTG. HOLE TO QUALIFIED EDGE | RAIL HOLE TO END | RAIL HOLE CTR. TO CTR. |      |                       |                        |
| MR7-XXX     | .025 - .051       | 7                  | 8              | 6.1         | 17             | 24              | M2 x 0.4                | THRU                     | 8                               | 12             | 4.2 | 2.4            | 2.3             | 6.2                              | 3.5              | 5                      | 15   | 0.10                  | 5.7                    |
| MRC7-XXX    | .064 - .089       |                    |                |             |                |                 |                         |                          |                                 |                |     |                |                 |                                  |                  |                        |      |                       |                        |
| MR9-XXX     | .025 - .051       | 9                  | 10             | 7.1         | 20             | 30              | M3 x 0.5                |                          | 13                              | 15             | 4.5 | 2.6            | 3               | 8.0                              | 4.5              | 7.5                    | 20   | 0.16                  | 8.5                    |
| MRC9-XXX    | .064 - .089       |                    |                |             |                |                 |                         |                          |                                 |                |     |                |                 |                                  |                  |                        |      |                       |                        |
| MR12-XXX    | .025 - .051       | 12                 | 13             | 8.0         | 27             | 34              |                         |                          | 15                              | 20             | 6   | 3.5            | 10.7            | 6                                | 10               | 25                     | 0.22 | 20.0                  |                        |
| MRC12-XXX   | .064 - .089       |                    |                |             |                |                 |                         |                          |                                 |                |     |                |                 |                                  |                  |                        |      |                       |                        |
| MR15-XXX    | .025 - .051       | 15                 | 16             | 9.2         | 32             | 42              |                         |                          | 20                              | 25             |     |                | 4.5             | 14.1                             | 7.5              | 15                     | 40   | 0.38                  | 34.0                   |
| MRC15-XXX   | .064 - .089       |                    |                |             |                |                 |                         |                          |                                 |                |     |                |                 |                                  |                  |                        |      |                       |                        |
| MR20-XXX    | .025 - .051       | 20                 | 25             | 13.4        | 46             | 62              | M4 x 0.7                | 12.5                     | 38                              | 38             | 9.5 | 6              | 8.5             | 21.2                             | 10               | 20                     | 60   | 0.48                  | 127.9                  |
| MRC20-XXX   | .064 - .089       |                    |                |             |                |                 |                         |                          |                                 |                |     |                |                 |                                  |                  |                        |      |                       |                        |

NOTES: Cut-to-length rails are available up to 3600mm.

Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

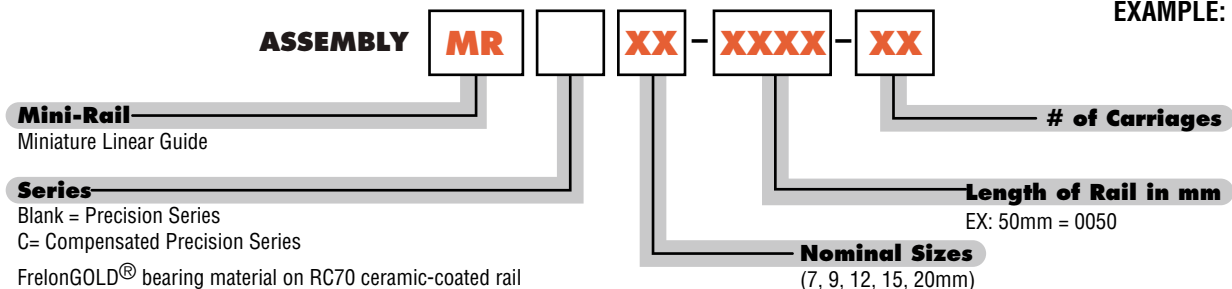
All carriage mounting holes are through tapped except MR20 12.5mm of thread.

The "Y" dimension will remain constant at one end unless requested otherwise.

Add the overall length of the rail to the part number (EX: "MR12-0220" for a Precision Series assembly with a 220mm rail)

### ORDERING INFORMATION

EXAMPLE: MR12-0220-2





# Mini-Rail® - MR

## Technical Information

### STATIC LOAD DATA

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

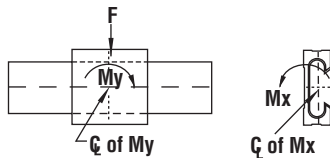
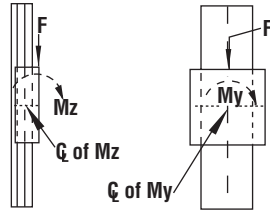
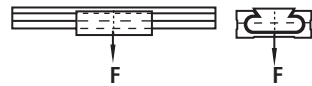
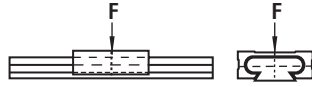
| SIZE | F (N) | MSL (N)* |
|------|-------|----------|
| 7    | 445   | 734      |
| 9    | 667   | 1557     |
| 12   | 1334  | 1957     |
| 15   | 2224  | 3114     |
| 20   | 3559  | 6005     |

\*Max static load in Newtons.

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

| SIZE | My (N-m) | Mx (N-m) | Mz (N-m) |
|------|----------|----------|----------|
| 7    | 2.3      | 1.8      | 1.8      |
| 9    | 5.0      | 3.2      | 3.2      |
| 12   | 9.0      | 5.6      | 5.6      |
| 15   | 15.1     | 9.0      | 9.0      |
| 20   | 24.9     | 14.7     | 14.7     |

| SIZE | F (N) | My (N-m) | Mx (N-m) | Mz (N-m) |
|------|-------|----------|----------|----------|
| 7    | 133   | 2.3      | 1.8      | 1.8      |
| 9    | 222   | 5.0      | 3.2      | 3.2      |
| 12   | 400   | 9.0      | 5.6      | 5.6      |
| 15   | 667   | 15.1     | 9.0      | 9.0      |
| 20   | 1112  | 24.9     | 14.7     | 14.7     |



### PERFORMANCE RATINGS FOR LINEAR MOTION

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

| BEARING MATERIAL | MAX. "PV"                                                     | MAX. "P"                                  | MAX. "V" (NO LUBRICATION)  |
|------------------|---------------------------------------------------------------|-------------------------------------------|----------------------------|
| Frelon GOLD®     | 20,000 (psi x ft./min.)<br>or<br>0.7 N/mm <sup>2</sup> x m/s  | 3000 psi<br>or<br>20.68 N/mm <sup>2</sup> | 300 sfm<br>or<br>1.524 m/s |
| Frelon® J        | 10,000 (psi x ft./min.)<br>or<br>0.35 N/mm <sup>2</sup> x m/s | 1500 psi<br>or<br>10.34 N/mm <sup>2</sup> | 140 sfm<br>or<br>0.711 m/s |

**PV** = The performance measurement of plane bearings.

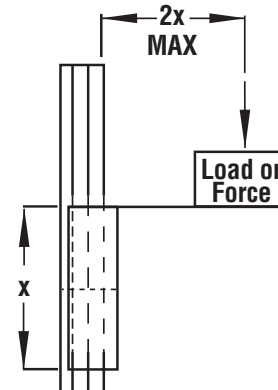
**PV** = P x V, where P = pressure (load) in psi (kgf/cm<sup>2</sup>)

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

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

### CANTILEVERED LOADS

Binding of the carriage will occur if the 2:1 ratio for cantilevered loads and drive forces is exceeded. This principle is not load or force dependent. It is a product of the coefficient of frictions associated with plane bearings. Contact factory or website for additional information.



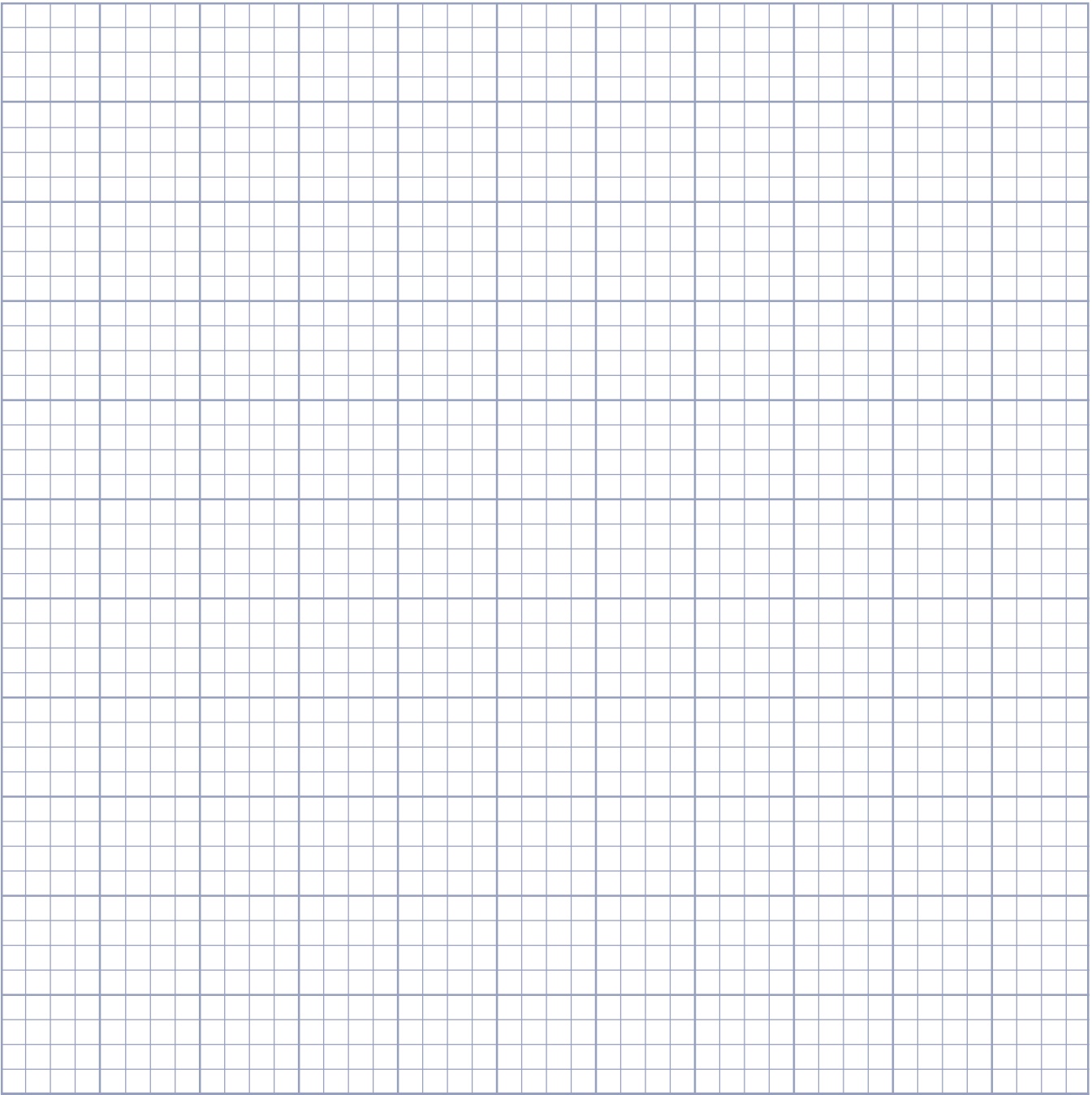
### LOAD/MOMENT CONVERSION

**N** = 4.45 x (lbs.)

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

# Design & Layout Options

|          |  |  |  |                    |  |  |      |  |  |
|----------|--|--|--|--------------------|--|--|------|--|--|
| Name:    |  |  |  | Date:              |  |  |      |  |  |
| Dept.:   |  |  |  | Phone:             |  |  | Fax: |  |  |
| Company: |  |  |  | Machine Type/Name: |  |  |      |  |  |
| Email:   |  |  |  |                    |  |  |      |  |  |
| Address: |  |  |  |                    |  |  |      |  |  |
|          |  |  |  |                    |  |  |      |  |  |

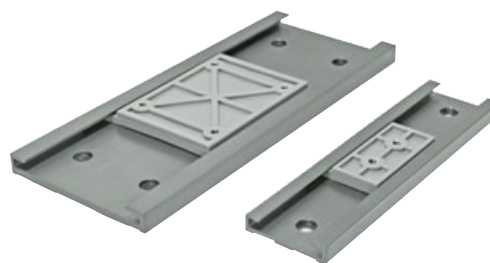


# Low Profile Mini-Rail® - LPM

## Miniature Guide/Slide Motion Systems

### LOW PROFILE MINI-RAIL® - LPM

- Low profile for small spaces
- Low cost polymer slider
- Molded SS threaded Inserts
- Double rail track
- Ideal in harsh environments
- Available in four sizes



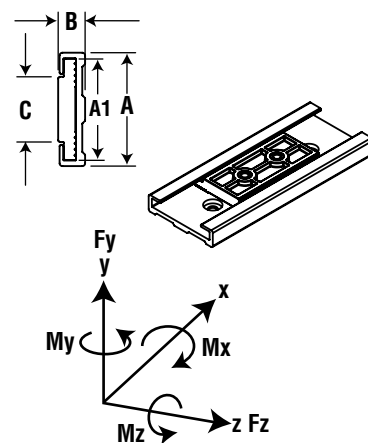
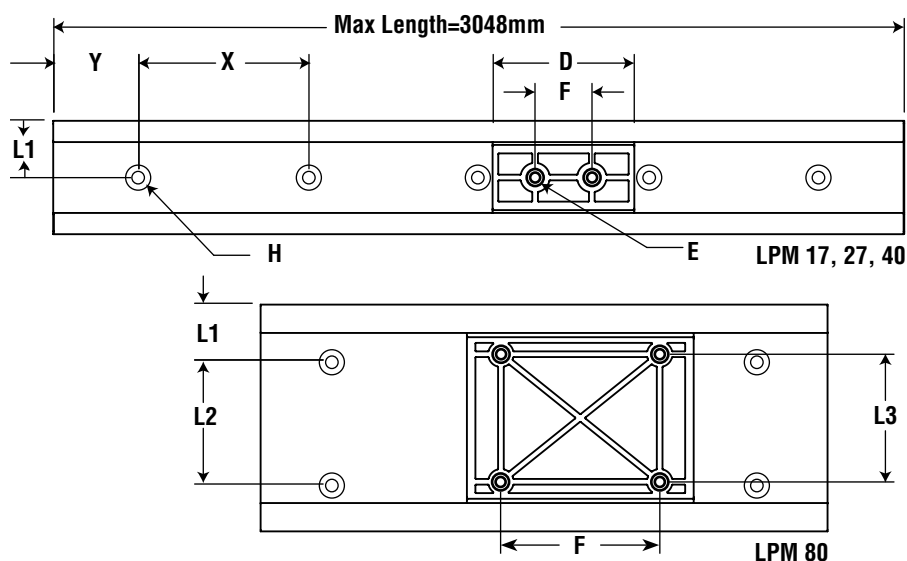
**Materials:** SimGlide™-J Polymer slider (UL 94 HB flammability rating)  
Molded-in stainless steel thread inserts  
Anodized aluminum rails

**Operating Temperatures:** -35C to 65C (-30F to 150F)

**Chemical Resistance:** Resistant to lubricants, fuels, dyes, weak acids

**Maximum Velocity:** 10 m/s

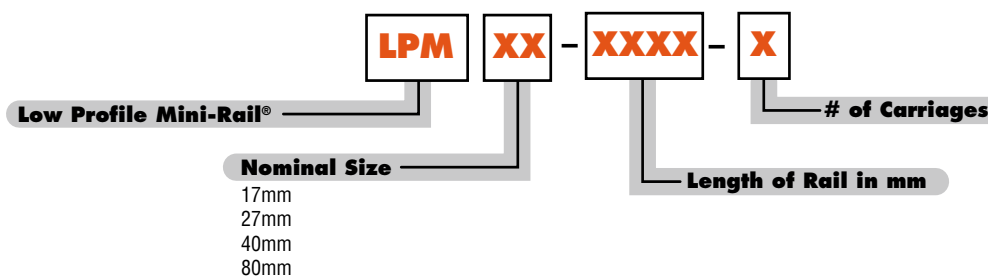
**Load Reduction Factor:** 0.7-1.0 for low speed application; 0.4-0.7 for medium speed application; 0.1-0.4 for high speed application



| PART<br>NUMBER | A1   | A  | B    | C   | D  | E        | F  | H<br>(C'BORE) | L1   | L2  | L3  | Y  | X   | CAR-<br>RIAGE<br>WT. | RAIL<br>UNIT<br>WT. | LOAD CAPACITY |        |     |        |       |                |       |                |       |                |  |  |
|----------------|------|----|------|-----|----|----------|----|---------------|------|-----|-----|----|-----|----------------------|---------------------|---------------|--------|-----|--------|-------|----------------|-------|----------------|-------|----------------|--|--|
|                |      |    |      |     |    |          |    |               |      |     |     |    |     |                      |                     | Fy            |        | Fz  |        | Mx    |                | My    |                | Mz    |                |  |  |
|                |      |    |      |     |    |          |    |               |      |     |     |    |     |                      |                     | (N)           | (lbs.) | (N) | (lbs.) | (N-m) | (lbs.-<br>in.) | (N-m) | (lbs.-<br>in.) | (N-m) | (lbs.-<br>in.) |  |  |
| LPM17          | 14.6 | 17 | 6    | 9.6 | 25 | M3 x 0.5 | 14 | M3 SBHCS      | 8.5  | N/A | N/A | 20 | 60  | 1.1                  | 0.15                | 35            | 8      | 10  | 2.5    | 0.2   | 1.5            | 0.3   | 2.5            | 0.2   | 1.5            |  |  |
| LPM27          | 24   | 27 | 9.5  | 14  | 40 | M4 x 0.7 | 20 | M4 SBHCS      | 13.5 | N/A | N/A | 20 | 60  | 4.8                  | 0.33                | 130           | 30     | 85  | 20     | 1     | 10             | 2.5   | 20             | 1     | 10             |  |  |
| LPM40          | 36   | 40 | 9.5  | 23  | 50 | M4 x 0.7 | 20 | M4 SBHCS      | 20   | N/A | N/A | 20 | 60  | 9.8                  | 0.38                | 270           | 60     | 150 | 35     | 2.5   | 25             | 5     | 50             | 2.5   | 25             |  |  |
| LPM80          | 75.2 | 80 | 12.0 | 57  | 80 | M4 x 0.7 | 56 | M4 SBHCS      | 20   | 40  | 45  | 25 | 150 | 32.3                 | 1.07                | 515           | 120    | 250 | 55     | 7     | 60             | 14    | 125            | 7     | 60             |  |  |

**NOTE:** Apply a load reduction factor 0.25 on Fy rating if the system is used inverted.

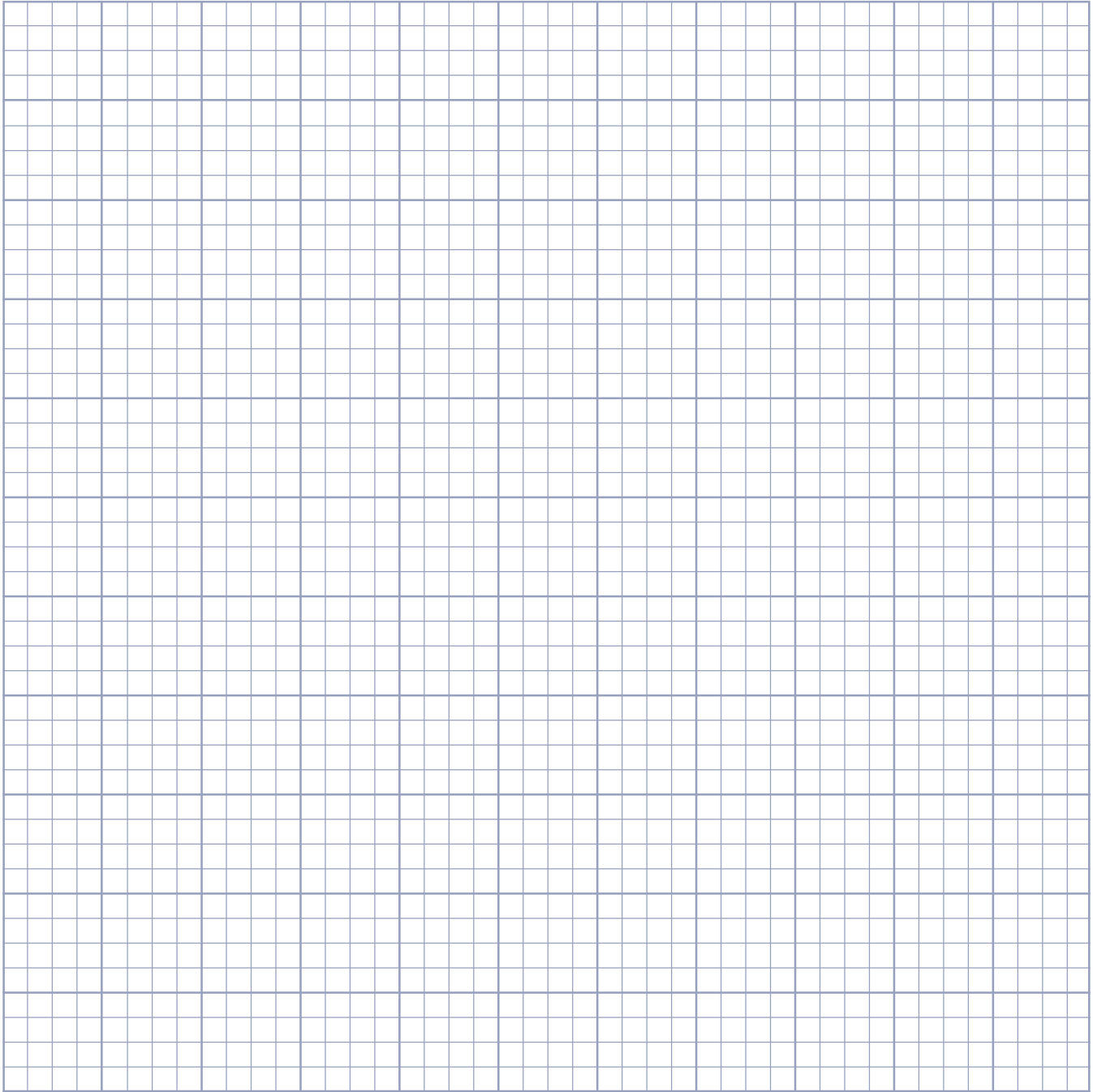
### ORDERING INFORMATION



**EXAMPLE:** LPMXX-XXXX-X

# Design & Layout Options

|                |                          |
|----------------|--------------------------|
| Name: _____    | Date: _____              |
| Dept.: _____   | Phone: _____ Fax: _____  |
| Company: _____ | Machine Type/Name: _____ |
| Email: _____   |                          |
| Address: _____ |                          |
| _____          |                          |



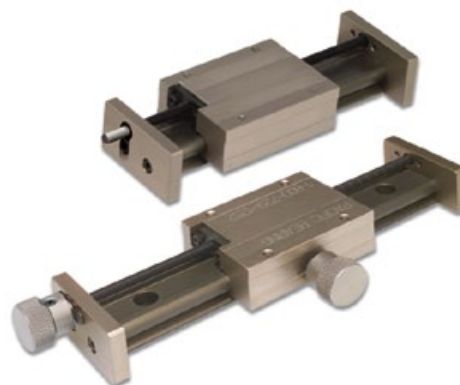


# Mini-Rail® - LS

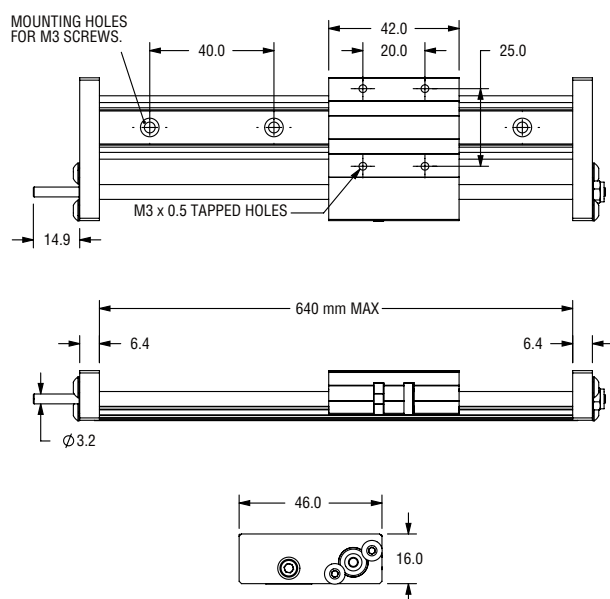
## Miniature Lead Screw - Driven Slides

### MINI-RAIL® LS - LEAD SCREW DRIVEN

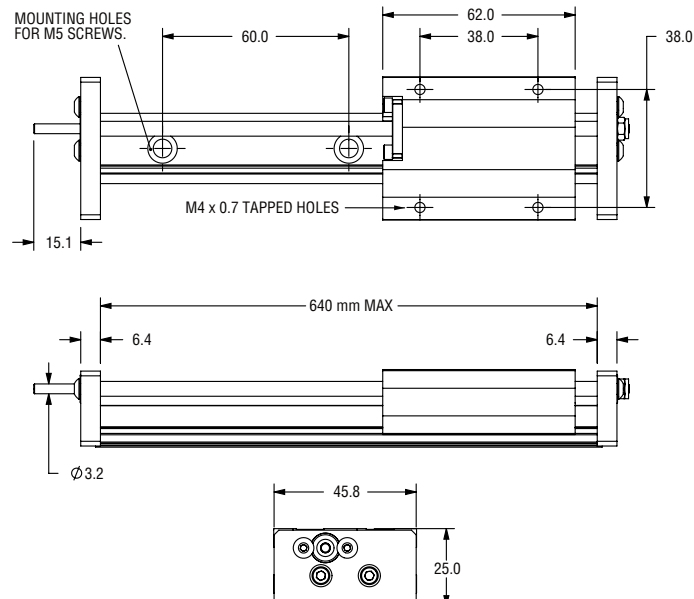
- Right hand rolled thread
- 304 stainless steel screw with PTFE coating
- Self-lubricating Polyacetal, anti-backlash nut
- Lengths up to 640 mm
- Eight (8) leads available
- Optional hand brake



#### MR15LS

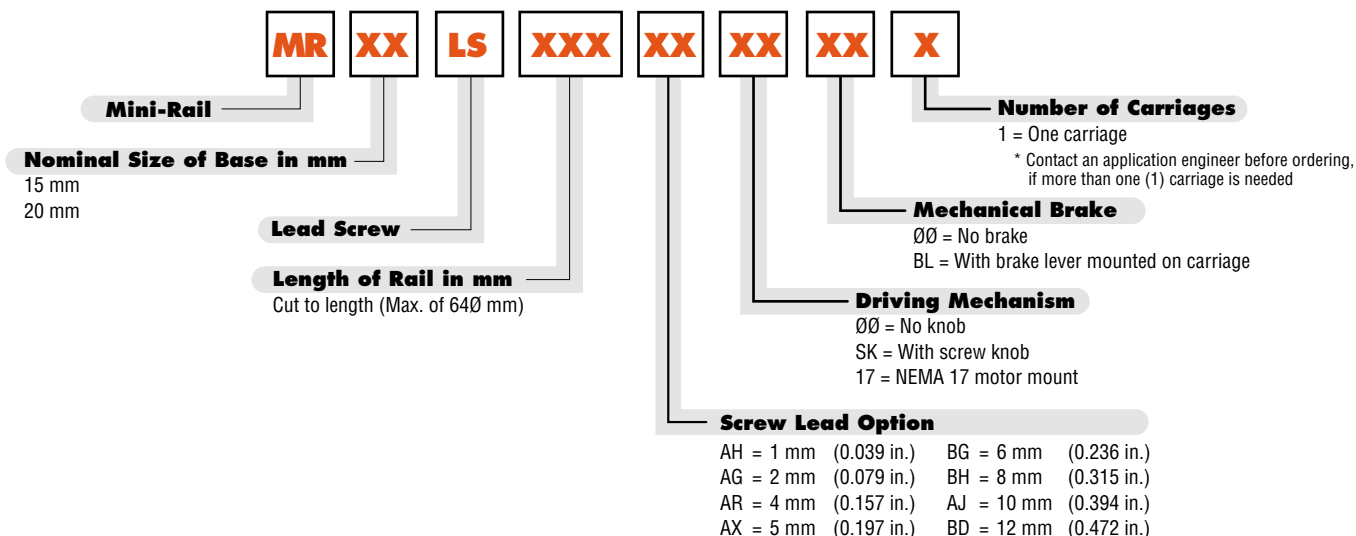


#### MR20LS



**NOTES:** Maximum length for lead screw driven MR is 640 mm.  
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

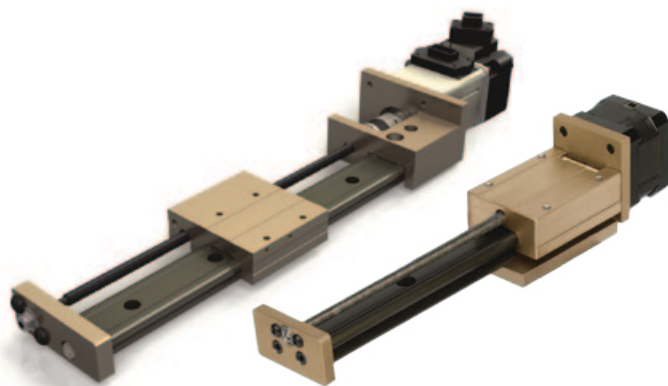
### ORDERING INFORMATION





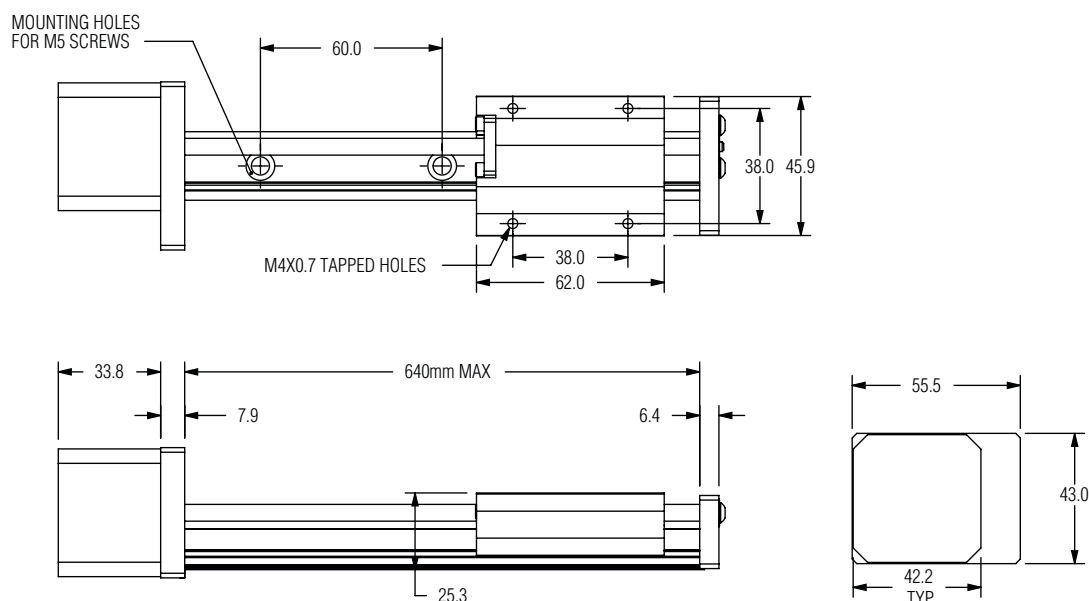
### MINI-RAIL® MS - LEAD SCREW DRIVEN

- 304 stainless steel screw with PTFE coating
- Robust design - outstanding reliability
- Fewer parts - less maintenance
- Preloaded Polyacetal, anti-backlash nut
- High torque stepper motor 42 mm (NEMA 17)
- Low cost
- Lengths up to 640 mm
- Ball bearing supports
- Integral screw for MR20 (coupling used for MR15)
- Eight (8) leads available



Mini-Rail® - MS

#### MR20MS



**NOTES:** Maximum length for lead screw driven MR is 640 mm.  
Standard and cut-to-length rail ends are NOT coated. Fully coated rails are available upon request.

### ORDERING INFORMATION

|                  |           |                                   |            |                                |            |                                                                                                                                                                                                        |          |
|------------------|-----------|-----------------------------------|------------|--------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>MR</b>        | <b>XX</b> | <b>MS</b>                         | <b>XXX</b> | <b>XX</b>                      | <b>M42</b> | <b>00</b>                                                                                                                                                                                              | <b>X</b> |
| <b>Mini-Rail</b> |           | <b>Nominal Size of Base in mm</b> |            | <b>Lead Screw</b>              |            | <b>Length of Rail in mm</b>                                                                                                                                                                            |          |
| 15 mm            |           | 20 mm                             |            | Cut to length (Max. of 640 mm) |            |                                                                                                                                                                                                        |          |
|                  |           |                                   |            |                                |            | <b>Number of Carriages</b>                                                                                                                                                                             |          |
|                  |           |                                   |            |                                |            | 1 = One carriage                                                                                                                                                                                       |          |
|                  |           |                                   |            |                                |            | * Contact an application engineer before ordering, if more than one (1) carriage is needed                                                                                                             |          |
|                  |           |                                   |            |                                |            | <b>Nominal Size of Stepper Motor</b>                                                                                                                                                                   |          |
|                  |           |                                   |            |                                |            | M42 = 42 mm (NEMA 17)                                                                                                                                                                                  |          |
|                  |           |                                   |            |                                |            | <b>Screw Lead Option</b>                                                                                                                                                                               |          |
|                  |           |                                   |            |                                |            | AH = 1 mm (0.039 in.)    BG = 6 mm (0.236 in.)<br>AG = 2 mm (0.079 in.)    BH = 8 mm (0.315 in.)<br>AR = 4 mm (0.157 in.)    AJ = 10 mm (0.394 in.)<br>AX = 5 mm (0.197 in.)    BD = 12 mm (0.472 in.) |          |



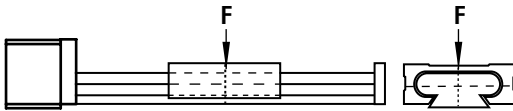
# Mini-Rail® LS/MS

## Technical Information

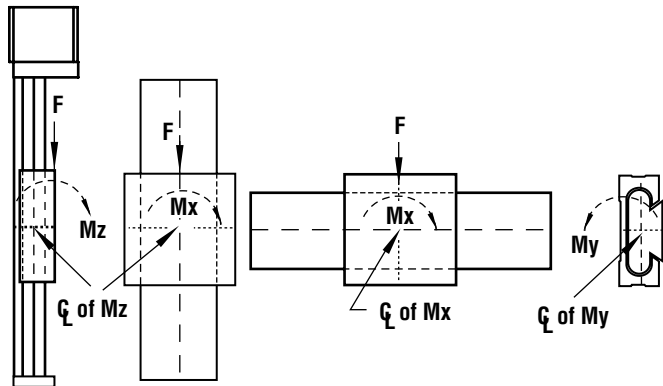
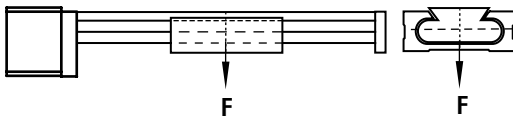
### STATIC LOAD DATA

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

| F (N) | MSL (N)* |
|-------|----------|
| 3559  | 6005     |



| F (N) |
|-------|
| 578   |



| F (N) | Mx (N-m) | My (N-m) | Mz (N-m) |
|-------|----------|----------|----------|
| 1112  | 24.9     | 14.7     | 14.7     |

### PERFORMANCE RATINGS FOR LINEAR MOTION

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

| BEARING MATERIAL | MAX. "PV"                                                    | MAX. "P"                                  | MAX. "V" (NO LUBRICATION)  |
|------------------|--------------------------------------------------------------|-------------------------------------------|----------------------------|
| Frelon GOLD®     | 20,000 (psi x ft./min.)<br>or<br>0.7 N/mm <sup>2</sup> x m/s | 3000 psi<br>or<br>20.68 N/mm <sup>2</sup> | 300 sfm<br>or<br>1.524 m/s |

**PV** = The performance measurement of plane bearings

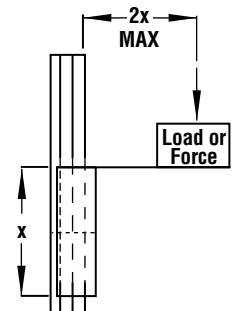
**PV** = P x V where P = pressure (load) in psi (kgf/cm<sup>2</sup>)

**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.

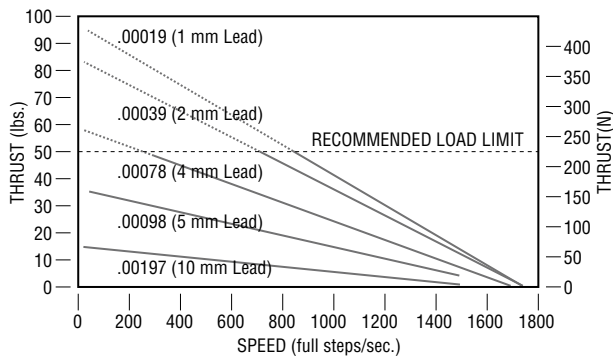


### LOAD/MOMENT CONVERSION

**N** = 4.45 x (lbs.)

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

### SIZE 17 STEPPER MOTOR WITH 6 MM (0.236") SCREW



| LEAD  | LEAD CODE | LINEAR TRAVEL PER STEP |          |
|-------|-----------|------------------------|----------|
|       |           | mm                     | Inch     |
| 1 mm  | AH        | 0.005                  | 0.000197 |
| 2 mm  | AG        | 0.010                  | 0.000394 |
| 4 mm  | AR        | 0.020                  | 0.000787 |
| 5 mm  | AX        | 0.025                  | 0.000984 |
| 6 mm  | BG        | 0.030                  | 0.001181 |
| 8 mm  | BH        | 0.040                  | 0.001575 |
| 10 mm | AJ        | 0.050                  | 0.001969 |
| 12 mm | BD        | 0.060                  | 0.002362 |

Note: 1.8° = 200 steps per revolution

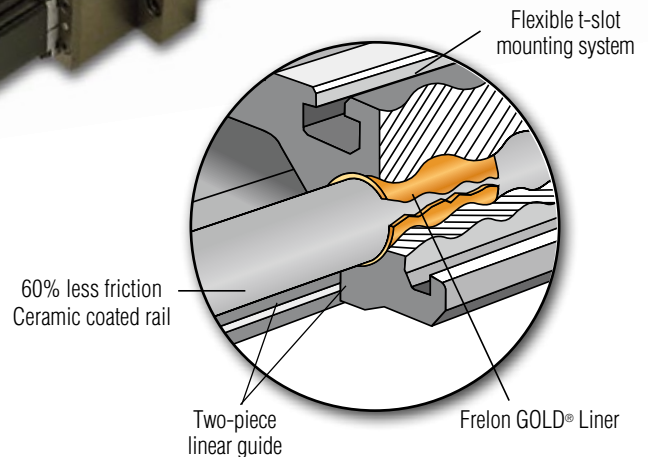
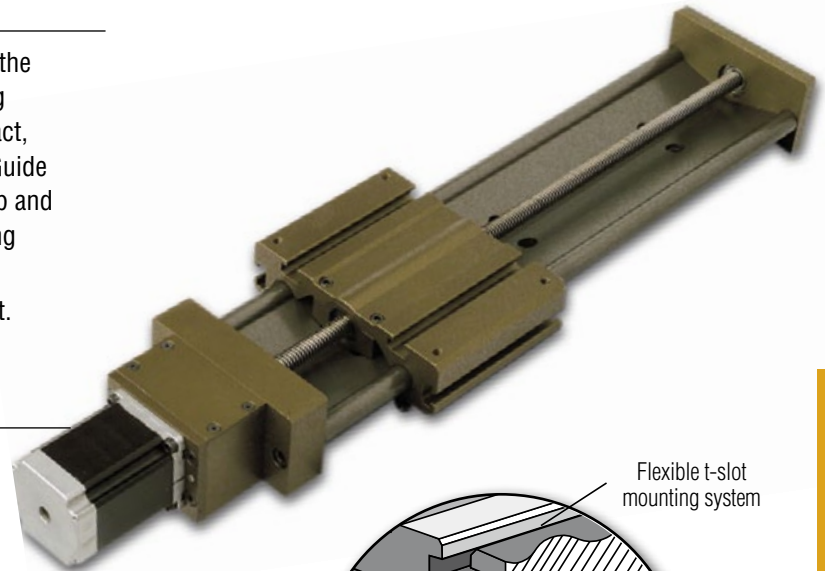


### PRODUCT OVERVIEW

Based on proven Simplicity® linear bearing technology, the Uni-Guide contain Frelon GOLD® self-lubricating bearing material. This material results in no metal to metal contact, while dampening vibrations and shock loads. The Uni-Guide unique two-piece assembly eliminates tolerance stack up and the integrated lightweight packages can drop into existing applications making installation easy. Ideal for low cost automation, positioning tables and packaging equipment.

### FEATURES & BENEFITS

- Two-piece assembly - lightweight and eliminates tolerance stack
- Self-lubricating - Frelon GOLD® provides low wear, low friction, and high strength
- Lengths up to 10' - butt-joinable for longer lengths
- Mounting Flexibility
  - Pre-drilled rails
  - T-slots & mounting holes on carriages
  - Side or top mounting
- Easy drop in unit - no alignment needed
- Drive options
  - Ball
  - Lead screw (includes motor and drive)
  - Belt Driven
- Corrosion-Resistant - ideal in washdown environments
- Pre-engineered - ready to use



Uni-Guide

# Uni-guide

MODULAR GUIDE SYSTEM

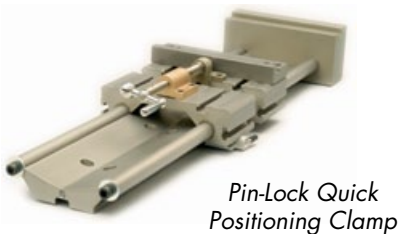
## UNLIMITED DESIGN OPTIONS AND VERSATILITY.

### ACCESSORIES\*

- |                      |                  |
|----------------------|------------------|
| • Hand Brake & Crank | • Motor Mount    |
| • Vise Block         | • End Block      |
| • Ratchet Pin        | • Pin Lock Clamp |

### APPLICATION EXAMPLES

(Application examples require accessories. Contact manufacturer for availability)



\* Optional configurations and special carriages are available. Contact manufacturer for availability.

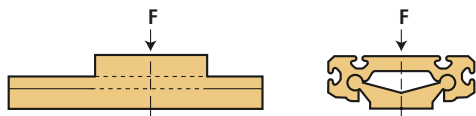


# Uni-Guide

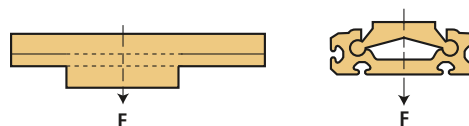
## Technical & Ordering Information

### STATIC LOADS WITH NO DRIVE MECHANISM

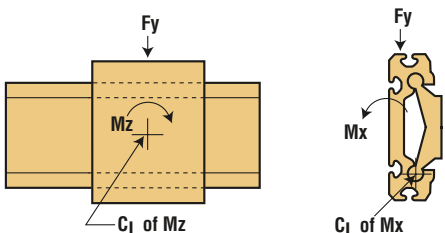
The numbers below are for guides only in a static condition. The drive mechanism selected (lead screw, ball screw, cylinder, etc.) becomes the limiting factor when calculating maximum load and speed capacities. The user is responsible for determining the maximum capacity for the complete system based on the manufacturer's data for their drive configuration.



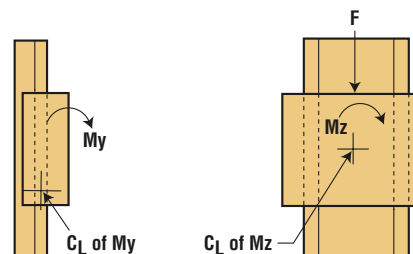
| SIZE | Fz<br>MAX LOAD (lbs.) | Fz<br>MAX LOAD (N) |
|------|-----------------------|--------------------|
| D075 | 500                   | 2,224              |
| D100 | 750                   | 3,336              |
| D125 | 1,000                 | 4,448              |



| SIZE | Fz (inverted)<br>MAX LOAD (lbs.) | Fz (inverted)<br>MAX LOAD (N) |
|------|----------------------------------|-------------------------------|
| D075 | 125                              | 556                           |
| D100 | 190                              | 845                           |
| D125 | 250                              | 1,112                         |



| SIZE | Fy<br>MAX LOAD<br>(lbs.) | Mx<br>(in./lbs.) | Mz<br>(in./lbs.) | Fy<br>MAX LOAD<br>(N) | Mx<br>(Nm) | Mz<br>(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        |

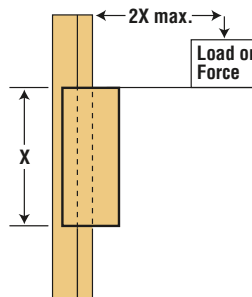


| SIZE | My<br>(in./lbs.) | Mz<br>(in./lbs.) | My<br>(Nm) | Mz<br>(Nm) |
|------|------------------|------------------|------------|------------|
| D075 | 340              | 350              | 38         | 40         |
| D100 | 650              | 730              | 73         | 82         |
| D125 | 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<sup>2</sup> x m/s)
- PV Example: Load = 85 psi  
Speed = 180 ft./min.  
PV = 85 x 180 = 15,300 PV

**NOTE:** Frelon GOLD® bearing material coefficient of friction is 0.125.



If the drive mechanism (lead screw, ball screw, cylinder, etc.) is centered on the carriage, the load may not exceed a 2:1 ratio to the length of the bearings or binding will occur.

### ORDERING INFORMATION

**D** **X** **XXX** **X** **CHB** - **XX** **X** **X** - **X** # of Carriages

#### Series

D - Standard Uni-Guide

#### Carriage Options

No Entry - Standard Carriage  
L - Extended Length Carriage

#### Nominal Size

075mm, 100mm, 125mm  
Based on mm from shaft center-to-center

#### Drive Options

No Entry - No Drive Mechanism  
M - Right Hand Lead Screw with Standard Pitch  
M1 - Right Hand Lead Screw with Optional Pitch  
**Notes:** Screw options require attaching collar.  
Call the factory for other optional drive mechanisms.

#### Data Entry Option

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

#### Power and Control Options

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

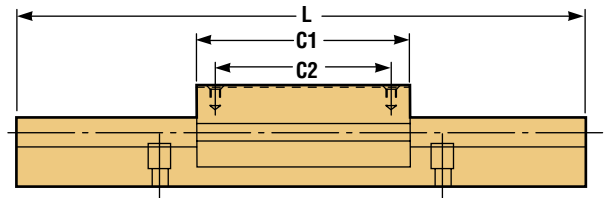
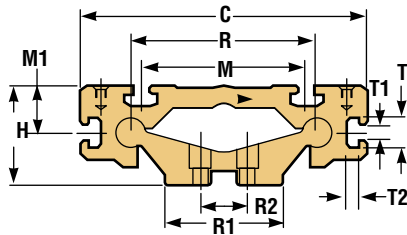
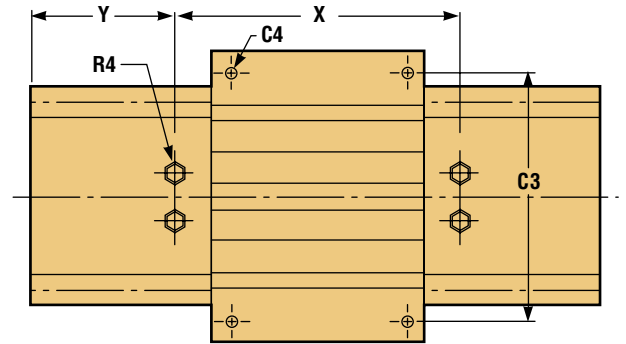
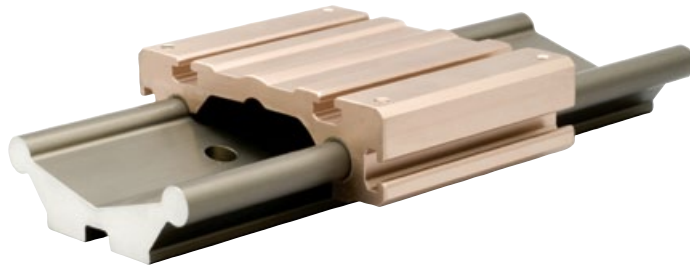
#### Overall Rail Length

"D" Series - enter length of rail in inches xxx.xxx (EX: 6" = 006.000)

#### Drive Mounting Options

No Entry - No Drive Mounting Options  
H - Hand Crank  
N - NEMA Standard Motor Mount  
HB - Handbrake (requires handcrank and screw)  
CHB - Carriage Handbrake (not offered with screw driven options)

**Metric Mounting Hole Option Retired -**  
**Click Here for Product Migration Matrix**



## STANDARD INCH SERIES WITH NO DRIVE MECHANISM (inches)

| PART NUMBER | R    | R1  | R2   | X | R4        | Y | H     | C   | C1       |          | C2       |          | C3   | C4        | M    | M1   | L<br>MAX-FEET |
|-------------|------|-----|------|---|-----------|---|-------|-----|----------|----------|----------|----------|------|-----------|------|------|---------------|
|             |      |     |      |   | BOLT SIZE |   |       |     | STANDARD | STANDARD | EXTENDED | EXTENDED |      | BOLT SIZE |      |      |               |
| D075-xxx    | 2.95 | 2   | 0.75 | 4 | 1/4       | 2 | 1.625 | 4.6 | 3.5      | 3        | 4.5      | 4        | 4    | 10-32     | 2.6  | .819 | 12            |
| D100-xxx    | 3.94 | 2.6 | 1    | 6 | 5/16      | 3 | 2.125 | 6.1 | 4.5      | 3.75     | 6        | 5.25     | 5.25 | 1/4-20    | 3.5  | 1.02 |               |
| D125-xxx    | 4.92 | 3.3 | 1.25 |   | 3/8       | 3 | 2.625 | 7.6 | 6        | 5.25     | 7.5      | 6.75     | 6.75 | 5/16-18   | 4.33 | 1.30 |               |

## CARRIAGE TYPES

| PART NO. | DRILL | DEPTH | TAP     | DEPTH |
|----------|-------|-------|---------|-------|
| D075-xxx | .159  | .534  | 10-32   | .440  |
| D100-xxx | .201  | .750  | 1/4-20  | .500  |
| D125-xxx | .257  |       | 5/16-18 | .625  |

## T-SLOT INFORMATION (inches)

| PART NO. | T    | T1   | T2   |
|----------|------|------|------|
| D075-xxx | .590 | .256 | .236 |
| D100-xxx | .661 | .319 | .268 |
| D125-xxx |      |      |      |

## STANDARD LENGTHS CHART (inches)

| PART NO. | 8" | 12" | 16" | 18" | 20" | 24" | 28" | 30" | 32" | 36" | 40" | 42" | 48" |
|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| D075-xxx | X  |     | X   |     | X   |     | X   |     | X   |     | X   |     |     |
| D100-xxx |    | X   |     | X   |     | X   |     | X   |     | X   |     | X   |     |
| D125-xxx |    |     |     |     |     |     |     |     |     |     |     |     | X   |

## WEIGHTS

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

## METRIC SERIES WITH NO DRIVE MECHANISM (mm)

| PART NUMBER | R   | R1 | R2 | X   | R4        | Y   | H    | C   | C1       |          | C2       |          | C3  | C4        | M   | M1   | L<br>MAX-FEET |
|-------------|-----|----|----|-----|-----------|-----|------|-----|----------|----------|----------|----------|-----|-----------|-----|------|---------------|
|             |     |    |    |     | BOLT SIZE |     |      |     | STANDARD | STANDARD | EXTENDED | EXTENDED |     | BOLT SIZE |     |      |               |
| DM075-xxx   | 75  | 51 | 20 | 120 | M 6       | 60  | 41.3 | 117 | 85       | 73       | 110      | 98       | 105 | M 5       | 66  | 16.5 | 3.66m         |
| DM100-xxx   | 100 | 66 | 25 | 150 | M 8       | 75  | 54   | 155 | 115      | 95       | 150      | 120      | 135 | M 6       | 89  | 26   |               |
| DM125-xxx   | 125 | 84 | 30 | 200 | M 10      | 100 | 66.7 | 193 | 130      | 130      | 190      | 170      | 175 | M 8       | 110 | 33   |               |

**UPDATED PRODUCT INFORMATION**

**CLICK HERE**

## T-SLOT INFORMATION FOR THE PRODUCT MIGRATION MATRIX

| PART NO.  | T    | T1  | T2  |
|-----------|------|-----|-----|
| DM075-xxx | 15.0 | 6.5 | 6.0 |
| DM100-xxx | 16.8 | 8.1 | 6.8 |
| DM125-xxx |      |     |     |

| RAIL Ø APPROXIMATE |             |
|--------------------|-------------|
| D075 =             | .470 = 12mm |
| D100 =             | .630 = 16mm |
| D125 =             | .820 = 22mm |

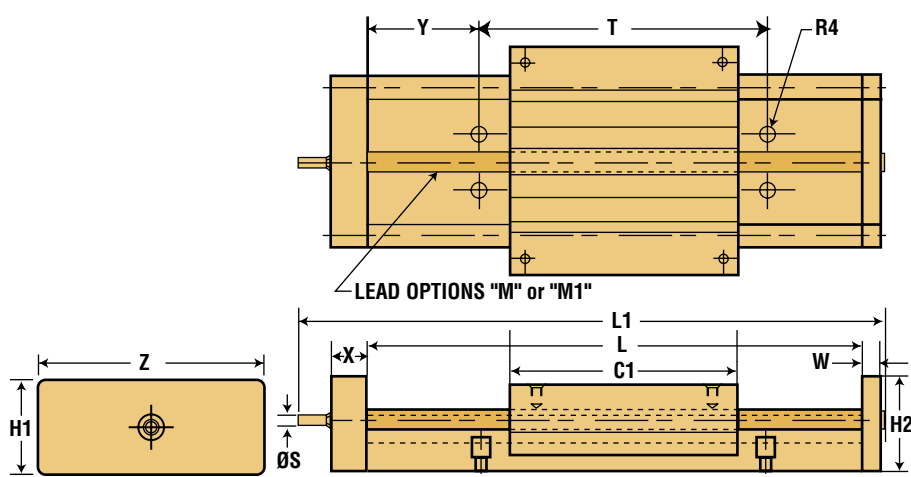
Straightness - ±.002"/ft



# Uni-Guide - D075

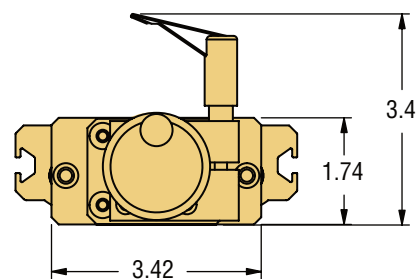
## Slides, Tables & Stages

### D075



### OPTIONAL HAND BRAKE

NOTE: available only with optional hand crank

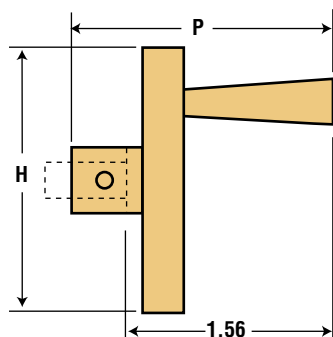


| PART NO. | P    | H    |
|----------|------|------|
| D075AHB  | 2.31 | 1.75 |

| PART NO.  | STROKE<br>(L-C1) | L  | L1    | C1  | NOMINAL<br>SCREW<br>DIA. | STANDARD<br>LEAD<br>M | OPTIONAL<br>LEAD<br>M1 | S     | Y | T | R4  | W     | X     | Z    | H1   | H2    |
|-----------|------------------|----|-------|-----|--------------------------|-----------------------|------------------------|-------|---|---|-----|-------|-------|------|------|-------|
| D075xx-12 | 8.5              | 12 | 13.93 | 3.5 | 10 mm                    | 6 mm                  | 12 mm                  | 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 |     |                          |                       |                        |       |   |   |     |       |       |      |      |       |

NOTE: Optional leads may be available - consult factory.

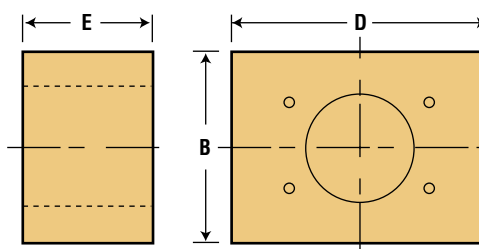
### OPTIONAL HAND CRANK



| PART NO. | P    | H    |
|----------|------|------|
| 75H      | 2.31 | 1.75 |

\*See order codes on page 199 to integrate.

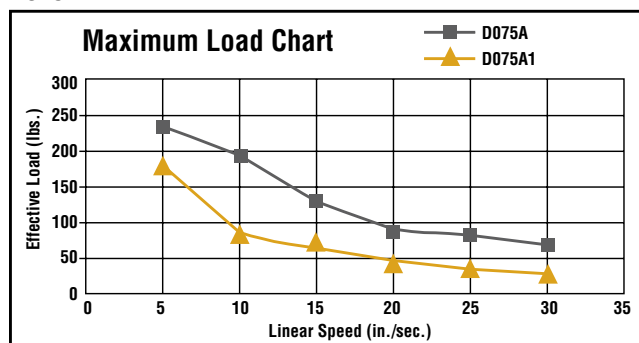
### OPTIONAL MOTOR MOUNT ATTACHMENT



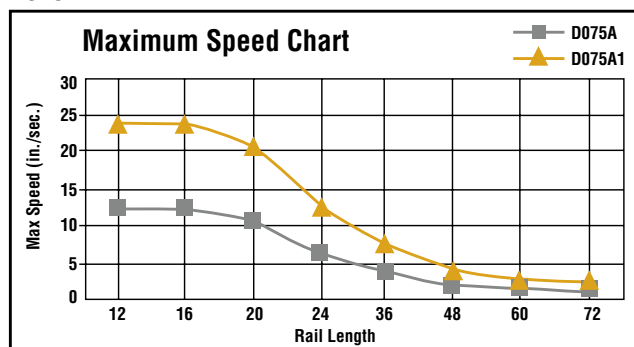
| PART NO. | MOTOR MOUNT | B | E    | D    |
|----------|-------------|---|------|------|
| 75N      | NEMA 17     | 2 | 1.81 | 3.25 |

### LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN (HORIZONTAL ORIENTATION)

#### D075A-xxx



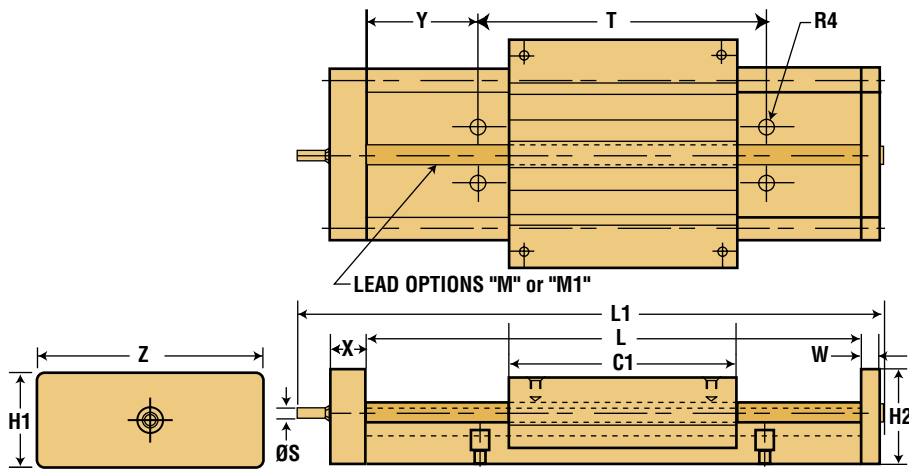
#### D075A-xxx



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

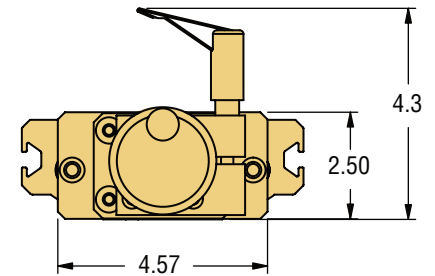


### D100



### OPTIONAL HAND BRAKE

NOTE: available only with optional hand crank

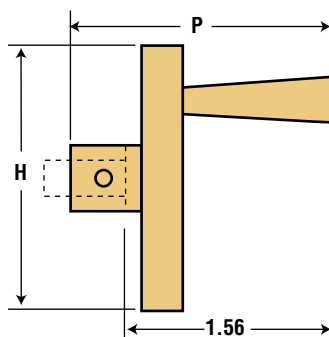


| PART NO. | P    | H    |
|----------|------|------|
| D0100AHB | 2.31 | 1.75 |

| PART NO.  | STROKE<br>(L-C1) | L  | L1    | C1  | NOMINAL<br>SCREW DIA. | STANDARD<br>LEAD<br>M | OPTIONAL<br>LEAD<br>M1 | S     | Y | T | R4   | W   | X | Z    | H1  | H2    |
|-----------|------------------|----|-------|-----|-----------------------|-----------------------|------------------------|-------|---|---|------|-----|---|------|-----|-------|
| D100xx-12 | 7.5              | 12 | 14.61 | 4.5 | 12 mm                 | 6 mm                  | 12 mm                  | 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 |     |                       |                       |                        |       |   |   |      |     |   |      |     |       |

NOTE: Optional leads may be available - consult factory.

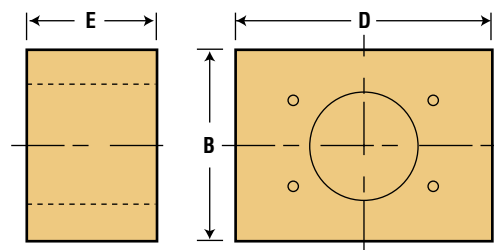
### OPTIONAL HAND CRANK



| PART NO. | P    | H    |
|----------|------|------|
| 100H     | 2.31 | 2.25 |

\*See order codes on page 199 to integrate.

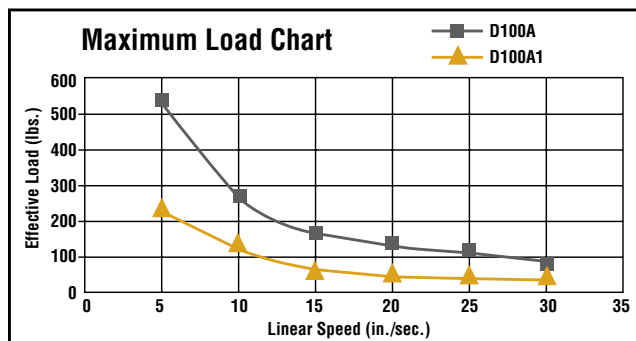
### OPTIONAL MOTOR MOUNT ATTACHMENT



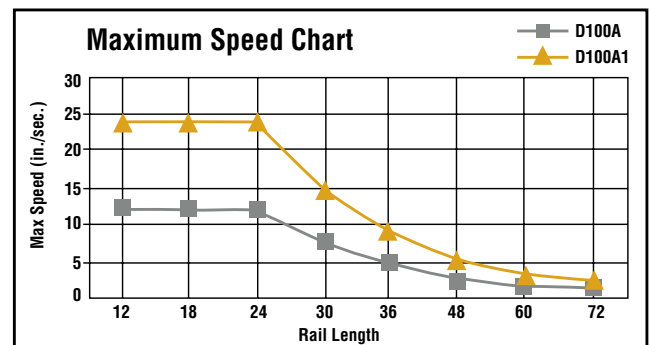
| PART NO. | MOTOR MOUNT | B   | E    | D    |
|----------|-------------|-----|------|------|
| 100N     | NEMA 23     | 2.5 | 1.81 | 3.25 |

### LOAD & SPEED DATA FOR STANDARD LEAD SCREW DRIVEN (HORIZONTAL ORIENTATION)

#### D100A-xxx



#### D100A-xxx



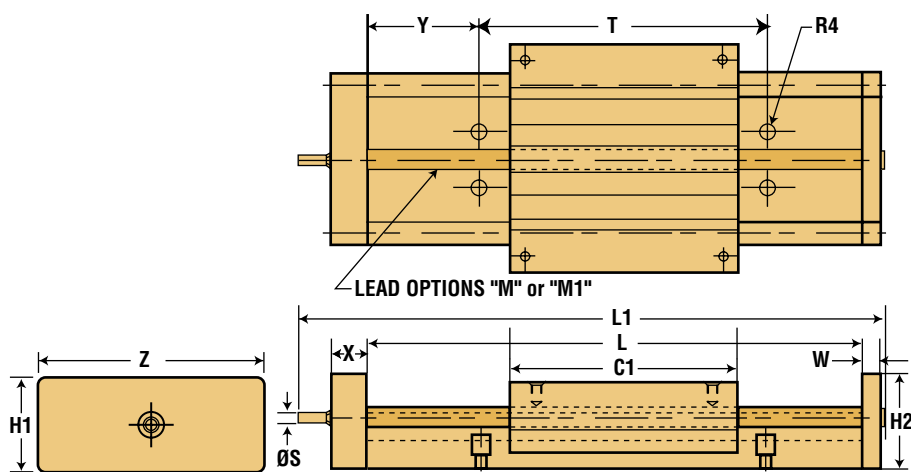
NOTE: Optional drives are available: ball screws, cylinders, linear motors, and belt drives.



# Uni-Guide - D125

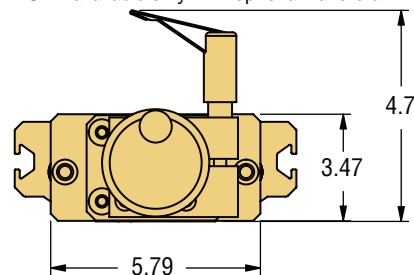
## Slides, Tables & Stages

### D125



### OPTIONAL HAND BRAKE

NOTE: available only with optional hand crank

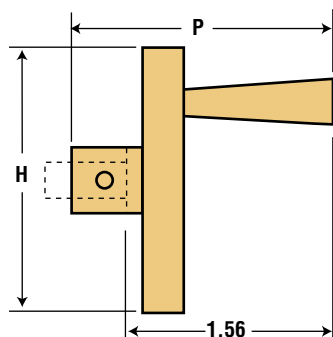


| PART NO. | P    | H    |
|----------|------|------|
| D0125AHB | 2.31 | 1.75 |

| PART NO.  | STROKE<br>(L-C1) | L  | L1    | C1 | NOMINAL<br>SCREW<br>DIA. | STANDARD<br>LEAD<br>M | OPTIONAL<br>LEAD<br>M1 | S     | Y | T | R4  | W   | X | Z    | H1  | H2    |
|-----------|------------------|----|-------|----|--------------------------|-----------------------|------------------------|-------|---|---|-----|-----|---|------|-----|-------|
| D125xx-12 | 6                | 12 | 14.85 | 6  | 16 mm                    | 5 mm                  | 12 mm                  | 0.314 | 3 | 6 | 3/8 | 0.5 | 1 | 5.78 | 3.5 | 2.500 |
| D125xx-18 | 12               | 18 | 20.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |
| D125xx-24 | 18               | 24 | 26.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |
| D125xx-30 | 24               | 30 | 32.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |
| D125xx-36 | 30               | 36 | 38.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |
| D125xx-48 | 42               | 48 | 50.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |
| D125xx-60 | 54               | 60 | 62.85 |    |                          |                       |                        |       |   |   |     |     |   |      |     |       |

NOTE: Optional leads may be available - consult factory.

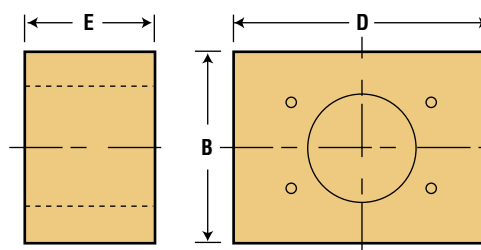
### OPTIONAL HAND CRANK



| PART NO. | P    | H    |
|----------|------|------|
| 125H     | 2.31 | 3.25 |

\*See order codes on page 199 to integrate.

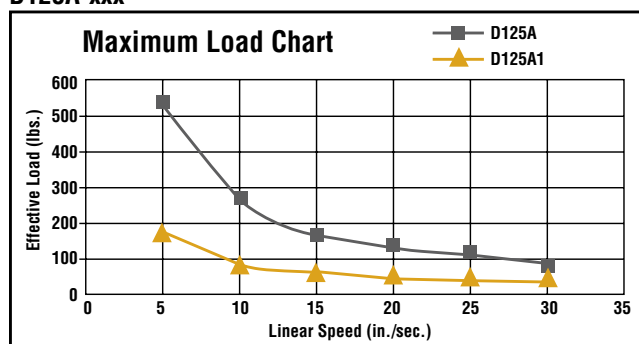
### OPTIONAL MOTOR MOUNT ATTACHMENT



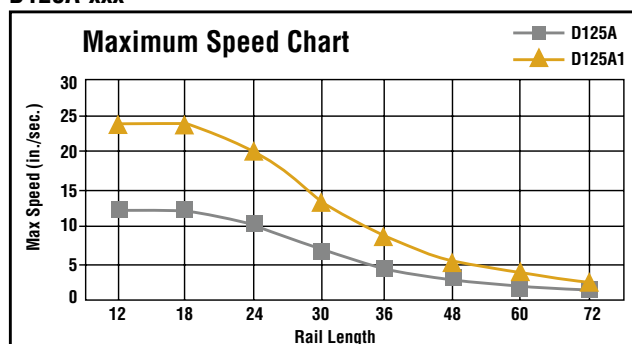
| PART NO. | MOTOR MOUNT | B   | E   | D    |
|----------|-------------|-----|-----|------|
| 125N     | NEMA 34     | 3.5 | 2.3 | 4.25 |

### LOAD & SPEED DATA FOR STANDARD LEAD SCREW (HORIZONTAL ORIENTATION)

#### D125A-xxx



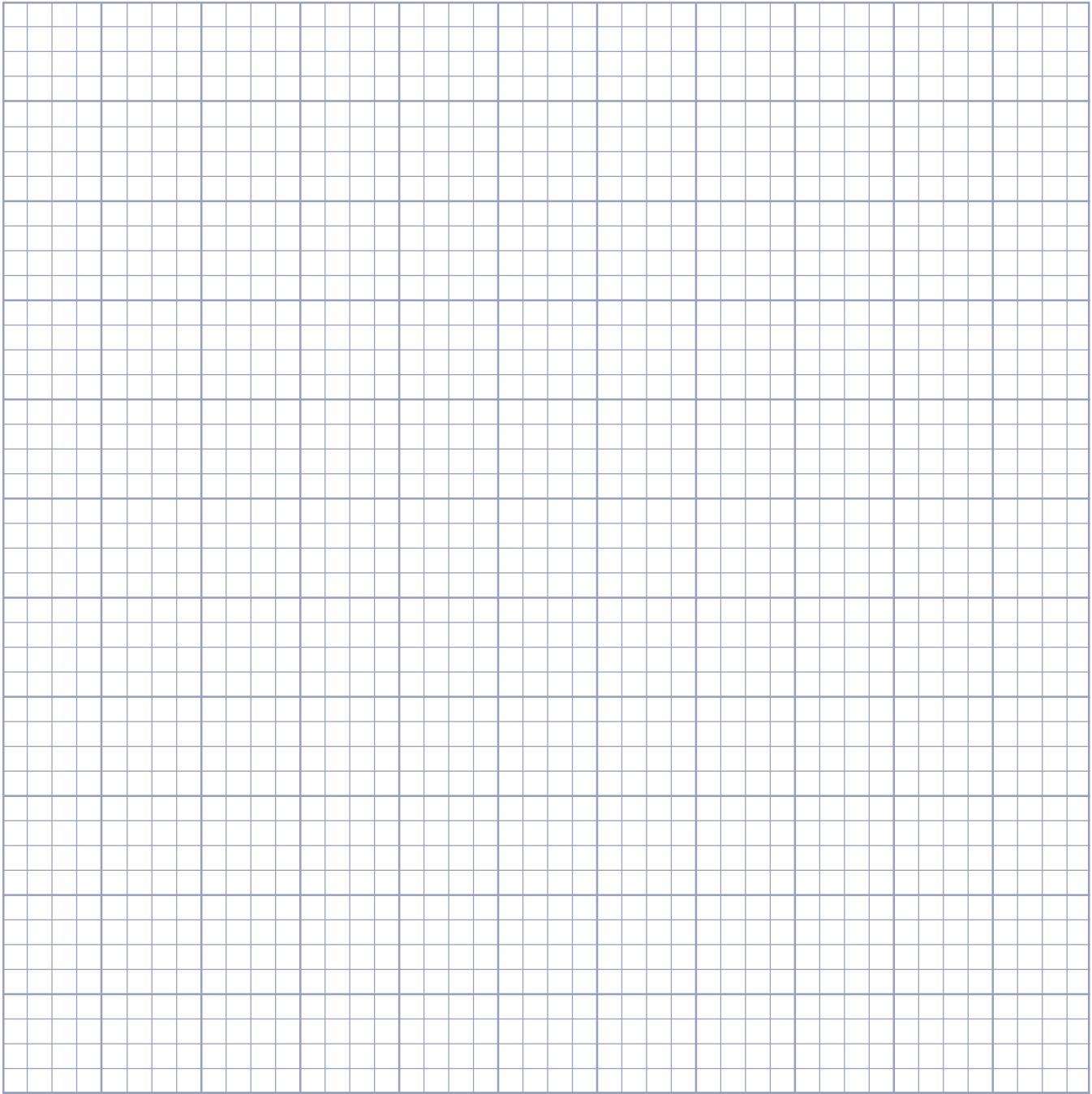
#### D125A-xxx



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

# Design & Layout Options

|          |       |        |       |
|----------|-------|--------|-------|
| Name:    | _____ | Date:  | _____ |
| Dept.:   | _____ | Phone: | _____ |
| Company: | _____ | Fax:   | _____ |
| Email:   | _____ |        |       |
| Address: | _____ |        |       |
|          | _____ |        |       |





# Redi-Rail® Linear Guides

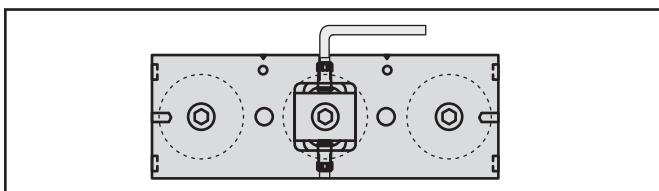
## Product Overview

### PRODUCT OVERVIEW

- Sealed double row bearings provide maintenance free, smooth linear guidance
- Side adjusted preload makes greatly simplifies assembly and installation
- Withstands temperatures up to 180°F
- Butt-joinable for longer length applications
- Available in Inch or ISO Metric

### ADJUSTING SLIDE PRELOAD

The preload of a slide should be properly set from the factory, but if you must adjust it yourself, here are some simple steps to follow.



#### Metric Series

1. To loosen the eccentric (center) roller, use an Allen wrench to loosen the screw that is on the side of the mounting block. Be sure to loosen the screw that is on the side of the direction you want the roller to move.
2. When it is loose, tighten the set screw on the opposite side of the block. This will move the roller and mounting stud.
3. Make a very small change, retighten the first set screw, and try it out. If the preload is too loose, you will feel the slider rock and you will hear a slight "clunk." If it is too tight, the slider will roll rough, like riding a bicycle on a gravel road.
4. Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere. It may take you several times to get the proper adjustment.
5. Make sure the rollers are tightened with the proper adjustment prior to operation.

### SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.



**redi-rail®**

### LUBRICATION - RAILS & BEARINGS

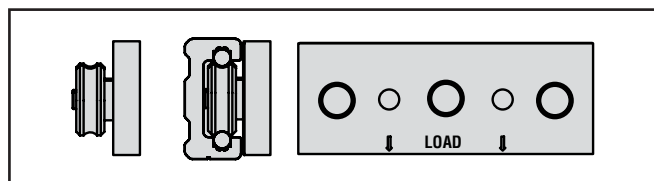
The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

### SLIDER ORIENTATION

The 3-Roller slide should be installed in the rail so the load is shared on the two outside rollers. The orientation marks indicate how to align the slider with the load direction.

### MOUNTING SLIDER BODY & MAX CAPACITY

Below are recommended bolt tightening torques for mounting to the slide body. Be sure to use bolts that are long enough to obtain full thread engagement.

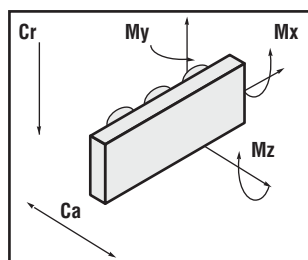


### MOUNTING TORQUE

| PART NUMBER    | IN-LBS. TORQUE | NM TORQUE |
|----------------|----------------|-----------|
| RRS14<br>RRS30 | 25             | 3         |
| RRS18<br>RRS45 | 70             | 8         |
| RRS65          | 150            | 24        |



### LIFE CALCULATIONS



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

#### Conversions

newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

| INCH PART NO. | Cr (lbs.) | Ca (lbs.) | Mx (in.-lbs.) | My (in.-lbs.) | Mz (in.-lbs.) |
|---------------|-----------|-----------|---------------|---------------|---------------|
| RRS14         | 336       | 79        | 21            | 54            | 201           |
| RRS18         | 847       | 168       | 67            | 153           | 677           |
| METRIC        | (N)       | (N)       | (Nm)          | (Nm)          | (Nm)          |
| RRS30         | 1,002     | 330       | 1.8           | 5.5           | 12.5          |
| RRS45         | 2,660     | 827       | 6.6           | 19.9          | 47.9          |
| RRS65         | 5,950     | 1,678     | 19.0          | 58.2          | 154.7         |

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

#### Inch Series

The value of  $L_{RR}$  is in meters

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

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

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

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

| PART NO. | MAX SPEED (fpm) | MAX SPEED (ipm) | Cd    |
|----------|-----------------|-----------------|-------|
| RRS14    | 500             | 6000            | 421   |
| RRS18    | 800             | 9,600           | 1,032 |

#### Metric Series

The value of  $L_{RR}$  is in meters

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

Cd = Slider Life Capacity which is found in the table

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

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

| PART NUMBER | MAX SPEED (m/min) | MAX SPEED (m/s) | Cd (N) |
|-------------|-------------------|-----------------|--------|
| RR30        | 300               | 5.0             | 1,440  |
| RR45        | 420               | 7.0             | 4,404  |
| RR65        | 480               | 8.0             | 10,200 |

**NOTE:** Reduction factors apply to both inch and metric series

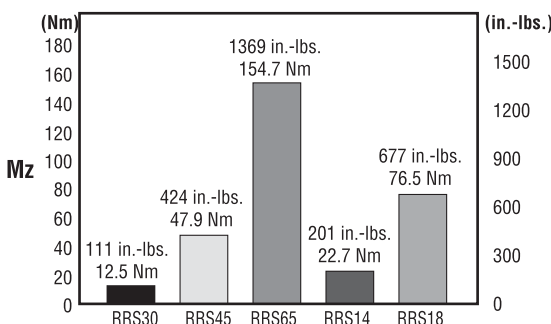
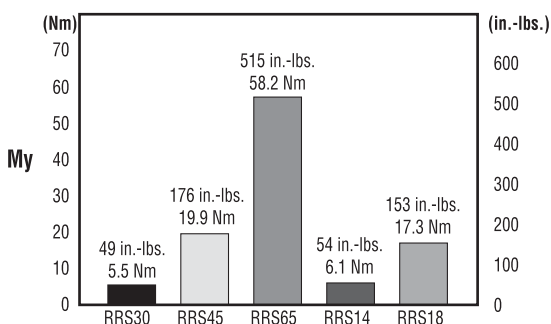
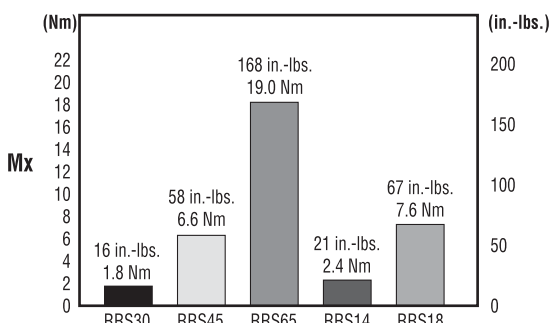
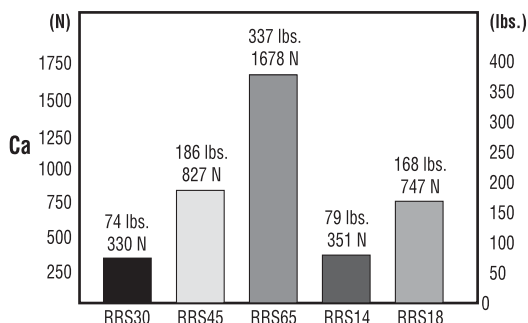
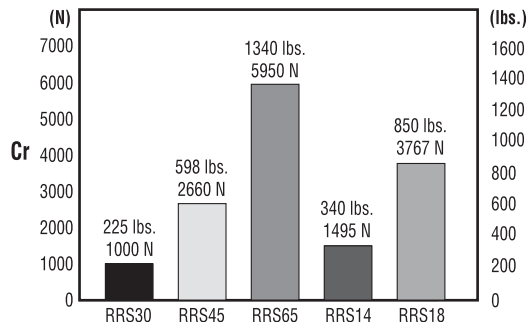
RF = Reduction Factor of the Application or Environment

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

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

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

### LOAD COMPARISON GRAPHS



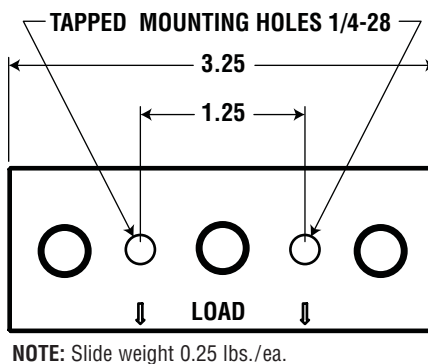
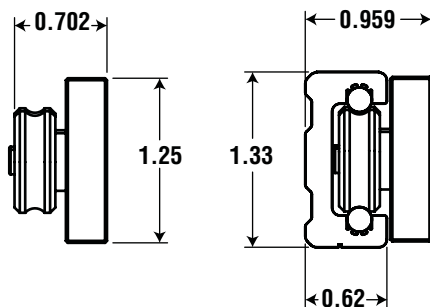
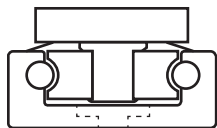


# RRS14 Slide

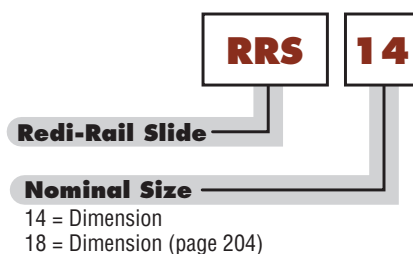
## Redi-Rail® Linear Guides - Inch Series

### RRS14 SLIDE

- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 19' lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F



### ORDER INFORMATION



**EXAMPLE:**  
Slider size 14



## RR14 RAIL

### SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)

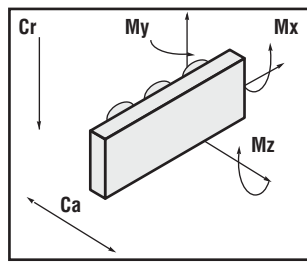
| PART NUMBER | LENGTH | HOLES | Y    | WT. (lbs./ft.) |
|-------------|--------|-------|------|----------------|
| RR14-12     | 12     | 4     | 0.75 | 0.56           |
| RR14-24     | 24     | 7     | 1.50 |                |
| RR14-36     | 36     | 11    | 0.50 |                |
| RR14-48     | 48     | 14    | 1.25 |                |
| RR14-60     | 60     | 17    | 2.00 |                |
| RR14-72     | 72     | 21    | 1.00 |                |
| RR14-84     | 84     | 24    | 1.75 |                |
| RR14-96     | 96     | 28    | 0.75 |                |

**NOTE:** Suggested lengths can be cut and are available up to 19' (6m).



Aluminum alloy with hardened steel raceways inserted.

### LIFE CALCULATIONS

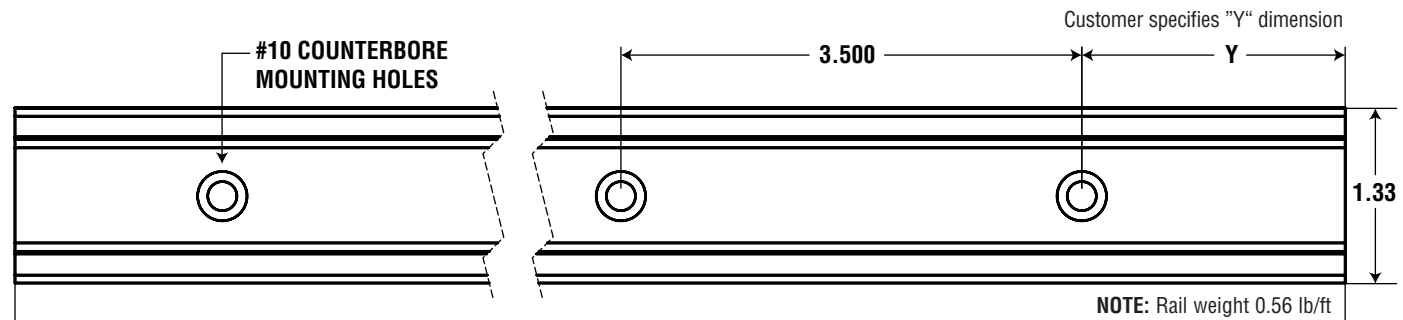


Cd = Dynamic capacity (LC)  
Cr = Radial capacity  
Ca = Axial capacity  
Mx, My, Mz = Moment capacities

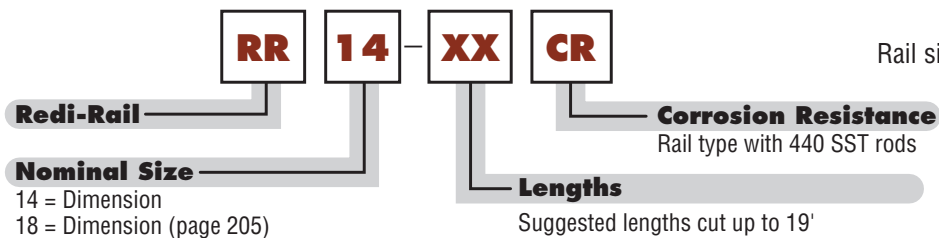
#### Conversions

newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

| PART NUMBER | Cd (lbs.) | Cr (lbs.) | Ca (lbs.) | Mx (in.-lbs.) | My (in.-lbs.) | Mz (in.-lbs.) |
|-------------|-----------|-----------|-----------|---------------|---------------|---------------|
| RRS14       | 421       | 340       | 79        | 21            | 54            | 201           |



### ORDER INFORMATION



**EXAMPLE:** RR14-36  
Rail size 14 cut to 36" long

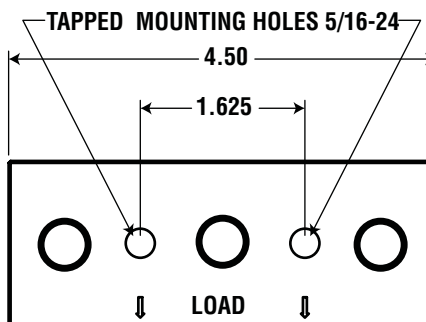
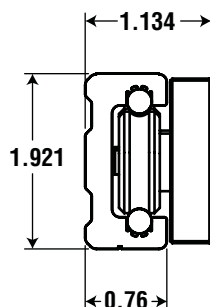
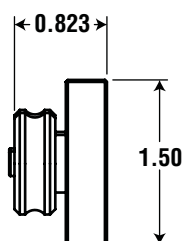
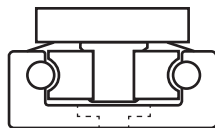


# RRS18 Slide

## Redi-Rail® Linear Guides

### RRS18 SLIDE

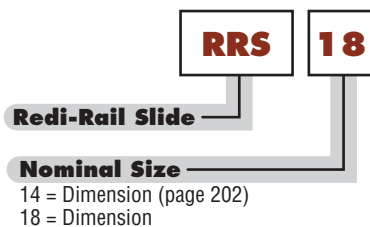
- Low cost precision
- Factory adjusted
- Sealed bearings
- Solid bearing mounting system
- Up to 5.79m lengths
- Gothic arch rollers
- Aluminum alloy body
- Rollers are 52100 steel, sealed against contamination, and are mounted with hardened steel mounting accessories
- Not available with seals
- Maximum temperature approximately 180°F



NOTE: Slide weight 0.50 lbs./ea.

### ORDER INFORMATION

EXAMPLE: RRS18





## RR18 RAIL

### SUGGESTED RAIL LENGTHS & DIMENSIONS (Inches)

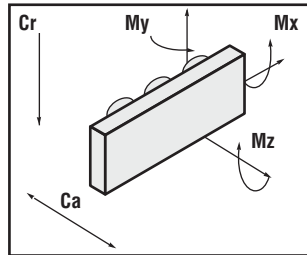
| PART NUMBER | LENGTH | HOLES | Y    | WT. (lbs./ft.) |
|-------------|--------|-------|------|----------------|
| RR18-12     | 12     | 4     | 0.75 | 0.85           |
| RR18-24     | 24     | 7     | 1.50 |                |
| RR18-36     | 36     | 11    | 0.50 |                |
| RR18-48     | 48     | 14    | 1.25 |                |
| RR18-60     | 60     | 17    | 2.00 |                |
| RR18-72     | 72     | 21    | 1.00 |                |
| RR18-84     | 84     | 24    | 1.75 |                |
| RR18-96     | 96     | 28    | 0.75 |                |

**NOTE:** Suggested lengths can be cut and are available up to 19' (6m).



Aluminum alloy with hardened steel raceways inserted.

### LIFE CALCULATIONS

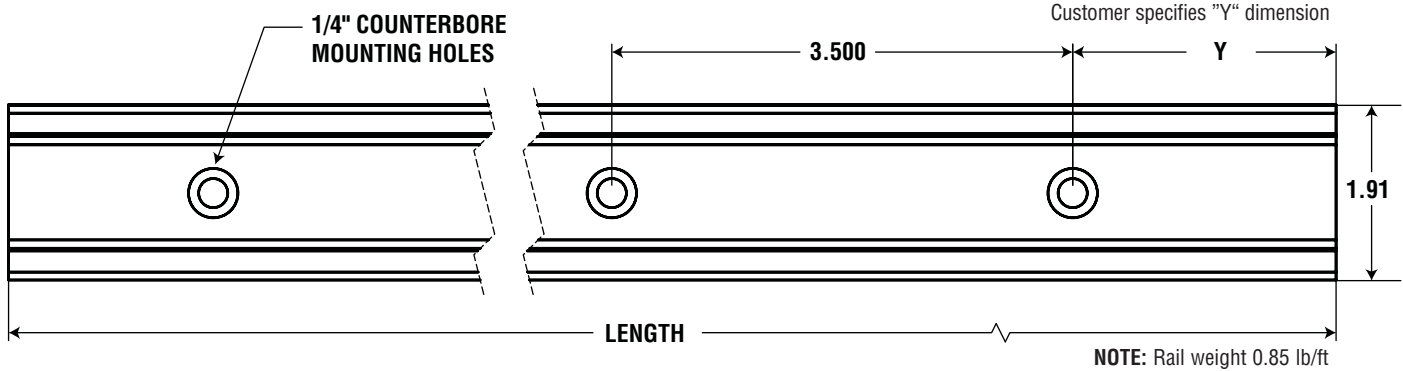


Cd = Dynamic capacity (LC)  
Cr = Radial capacity  
Ca = Axial capacity  
Mx, My, Mz = Moment capacities

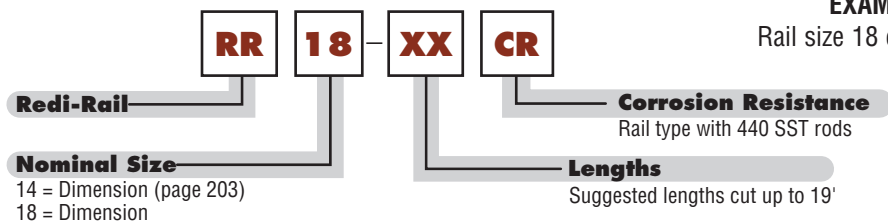
#### Conversions

newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

| PART NUMBER | Cd (lbs.) | Cr (lbs.) | Ca (lbs.) | Mx (in.-lbs.) | My (in.-lbs.) | Mz (in.-lbs.) |
|-------------|-----------|-----------|-----------|---------------|---------------|---------------|
| RRS18       | 1,032     | 850       | 168       | 67            | 153           | 677           |



### ORDER INFORMATION



**EXAMPLE:** RR18-36  
Rail size 18 cut to 36" long

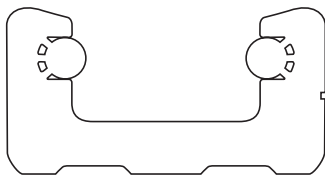


# RRS30 Slide

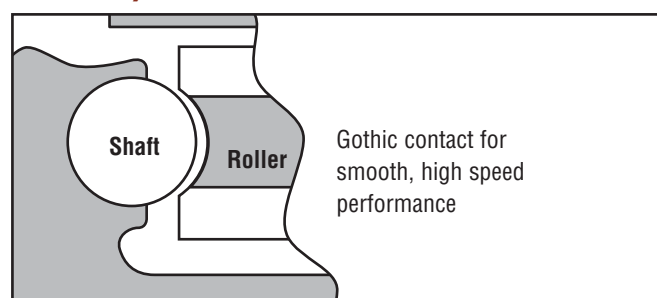
## Redi-Rail® Linear Guides - ISO Metric

### RRS30 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

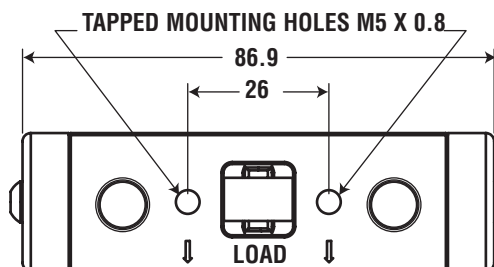
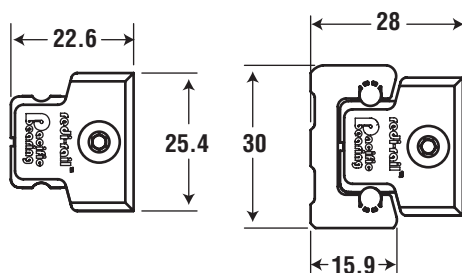


### ROLLER/SHAFT INTERFACE



### APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



NOTE: Slide weight .09 Kg

### ORDER INFORMATION

|                           |           |                                                 |
|---------------------------|-----------|-------------------------------------------------|
| <b>RRS</b>                | <b>30</b> | <b>U</b>                                        |
| <b>Redi-Rail Slide</b>    |           | <b>Wiper Options</b>                            |
| <b>Nominal Size</b>       |           | <b>No Entry</b> - Oil filled plastic (Standard) |
| 30 = Dimension            |           | <b>U</b> = UHMW                                 |
| 45 = Dimension (page 208) |           |                                                 |
| 65 = Dimension (page 210) |           |                                                 |

**EXAMPLE: RRS30U**  
Slide size 30 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers.  
No entry in the part # results in use of oil impregnated wiper.

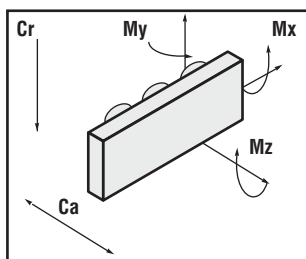


## RR30 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



## LIFE CALCULATIONS

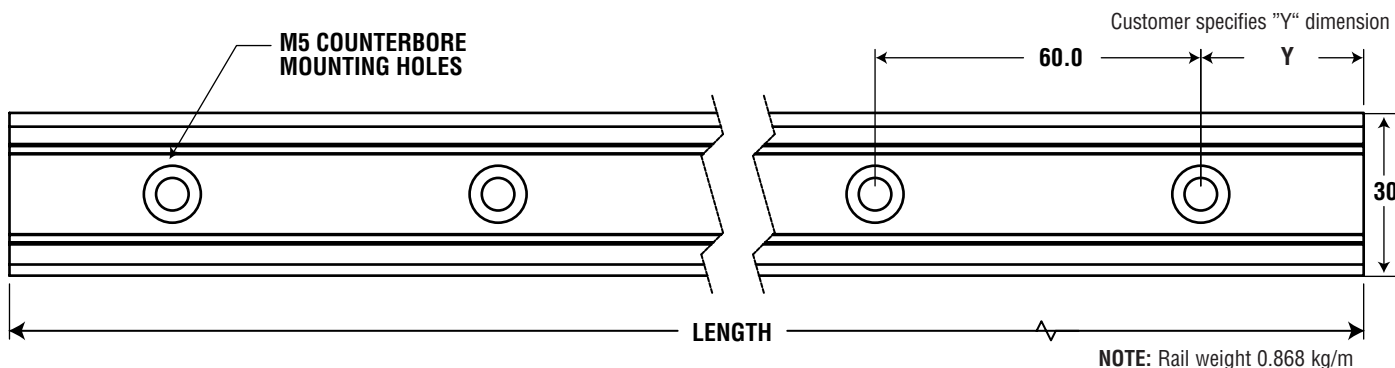


Cd = Dynamic capacity (LC)  
Cr = Radial capacity  
Ca = Axial capacity  
Mx, My, Mz = Moment capacities

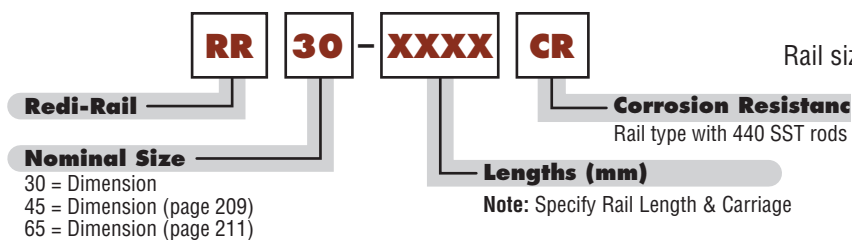
### Conversions

newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

| PART NUMBER | Cd (N) | Cr (N) | Ca (N) | Mx (Nm) | My (Nm) | Mz (Nm) |
|-------------|--------|--------|--------|---------|---------|---------|
| RRS30       | 1,440  | 1,000  | 330    | 1.8     | 5.5     | 12.5    |



## ORDER INFORMATION



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

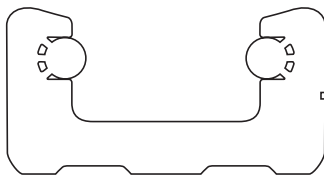


# RRS45 Slide

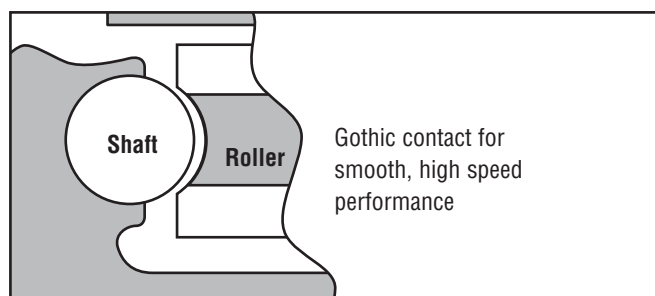
## Redi-Rail® Linear Guides

### RRS45 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

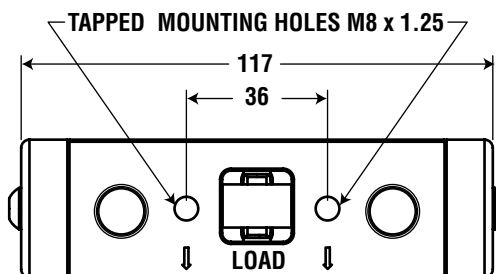
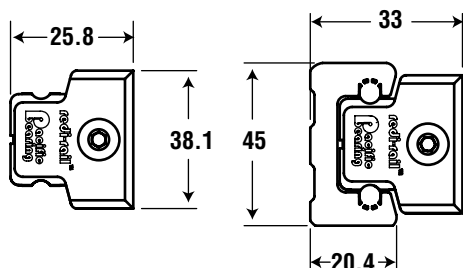


### ROLLER/SHAFT INTERFACE



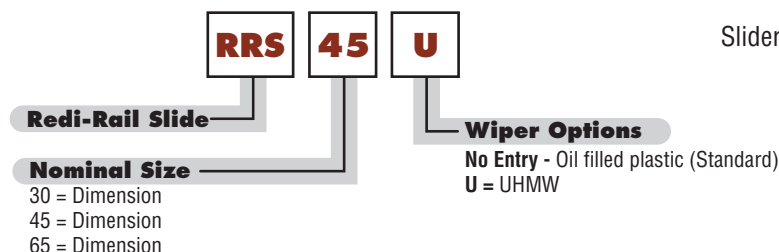
### APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



NOTE: Slide weight .23 Kg

### ORDER INFORMATION



**EXAMPLE: RRS45U**  
Slider size 45 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers.  
No entry in the part # results in use of oil impregnated wiper.

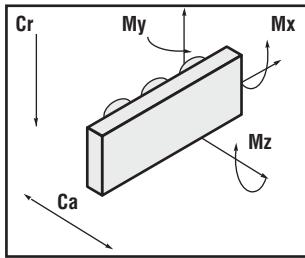


## RR45 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



## LIFE CALCULATIONS

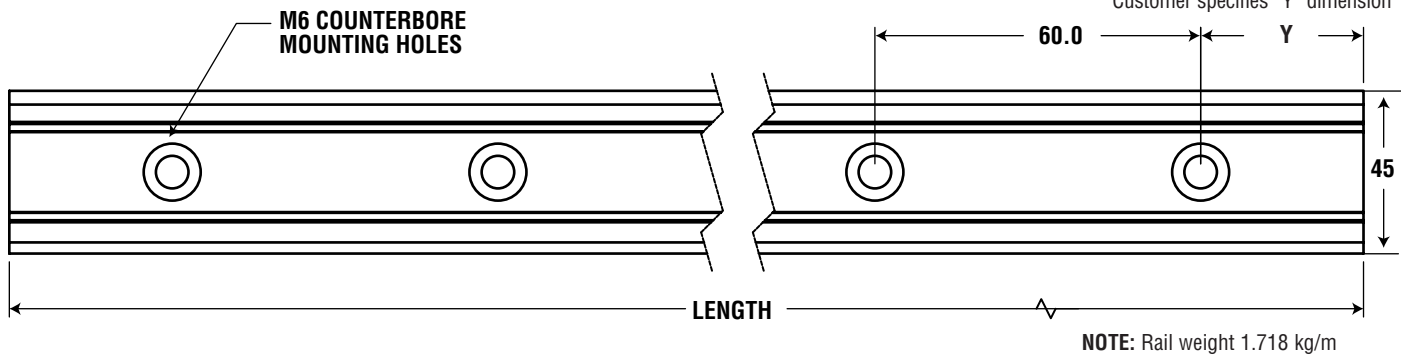


Cd = Dynamic capacity (LC)  
Cr = Radial capacity  
Ca = Axial capacity  
Mx, My, Mz = Moment capacities

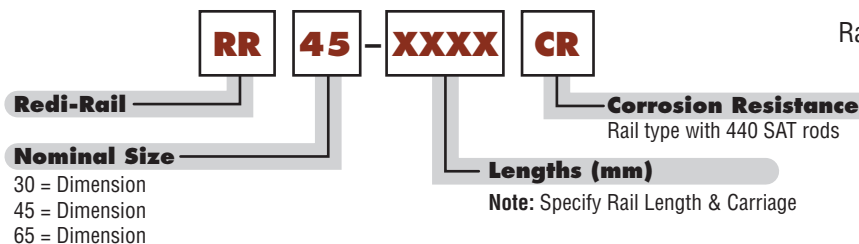
### Conversions

newton (N) x 0.2248 = lbs.  
(lbf) meter x 0.0397 = inch  
newton - meter (Nm) x 8.851 = in.-lbs.

| PART NUMBER | Cd (N) | Cr (N) | Ca (N) | Mx (Nm) | My (Nm) | Mz (Nm) |
|-------------|--------|--------|--------|---------|---------|---------|
| RRS45       | 4404   | 2660   | 827    | 6.6     | 19.9    | 47.9    |



## ORDER INFORMATION



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

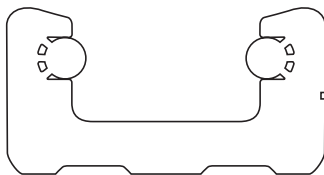


# RRS65 Slide

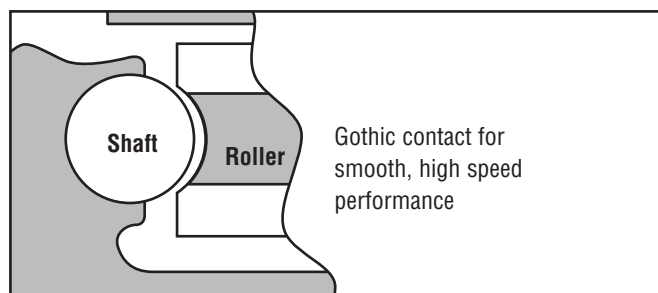
## Redi-Rail® Linear Guides

### RRS65 SLIDE

- 5.79 Meter Lengths
- Sealed Bearings
- Integral Seals
- Easy Adjusting
- Gothic Arch Rollers
- Solid Roller Mounting
- Slider body is aluminum alloy.
- Maximum temperature approximately 80°C.
- Gothic rollers are 52100 steel, hardened and ground, lubricated for life and sealed against contamination.
- Oil-filled plastic or UHMW spring loaded seals keep contamination clear of the rollers.
- Custom roller configurations can be designed, engineered, and manufactured to meet your specific requirements.
- Patented pre-load adjustment eliminates eccentrics.

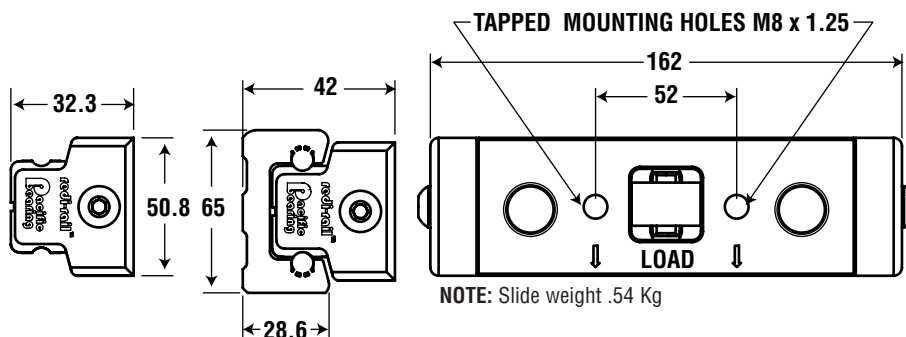


### ROLLER/SHAFT INTERFACE

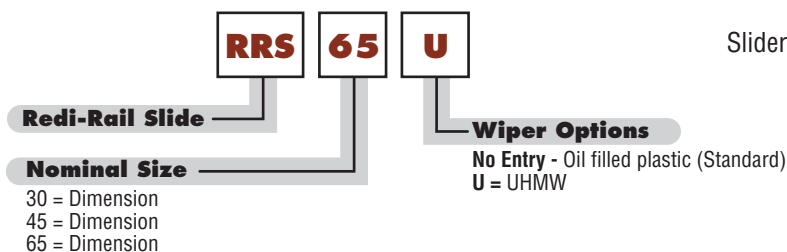


### APPLICATIONS

- Automation
- Material Handling
- Assembly
- Packaging



### ORDER INFORMATION



**EXAMPLE: RRS65U**  
Slider size 65 with UHMW seals

**NOTES:** Felt wipers have been replaced by low friction oil impregnated plastic wipers.  
No entry in the part # results in use of oil impregnated wiper.

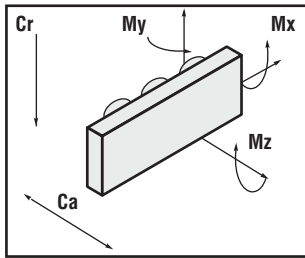


## RR65 RAIL

- Rail is aluminum alloy with hardened and ground steel raceways inserted.
- Custom solutions can be designed, engineered, and manufactured to meet your specific requirements.
- Maximum lengths up to 5800mm are available.
- Patented preload adjustment
- Joinable for even longer runs.
- Cut-to-length



## LIFE CALCULATIONS

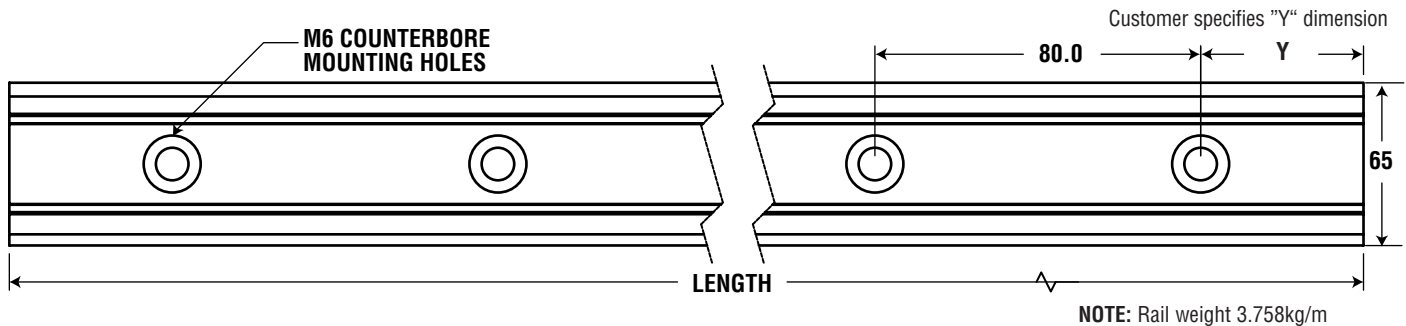


Cd = Dynamic capacity (LC)  
 Cr = Radial capacity  
 Ca = Axial capacity  
 Mx, My, Mz = Moment capacities

### Conversions

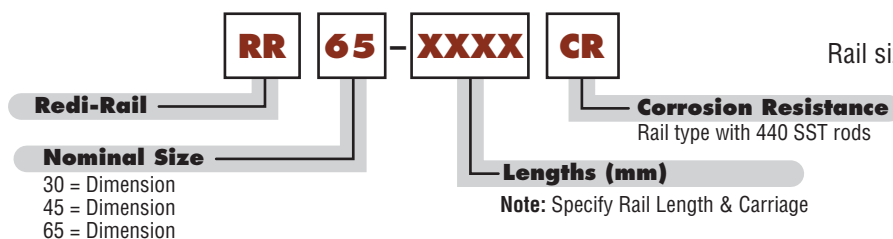
newton (N) x 0.2248 = lbs.  
 (lbf) meter x 0.0397 = inch  
 newton - meter (Nm) x 8.851 = in.-lbs.

| PART NUMBER | Cd (N) | Cr (N) | Ca (N) | Mx (Nm) | My (Nm) | Mz (Nm) |
|-------------|--------|--------|--------|---------|---------|---------|
| RRS65       | 10200  | 5950   | 1678   | 19.0    | 58.2    | 154.7   |



Redi-Rail® RR65

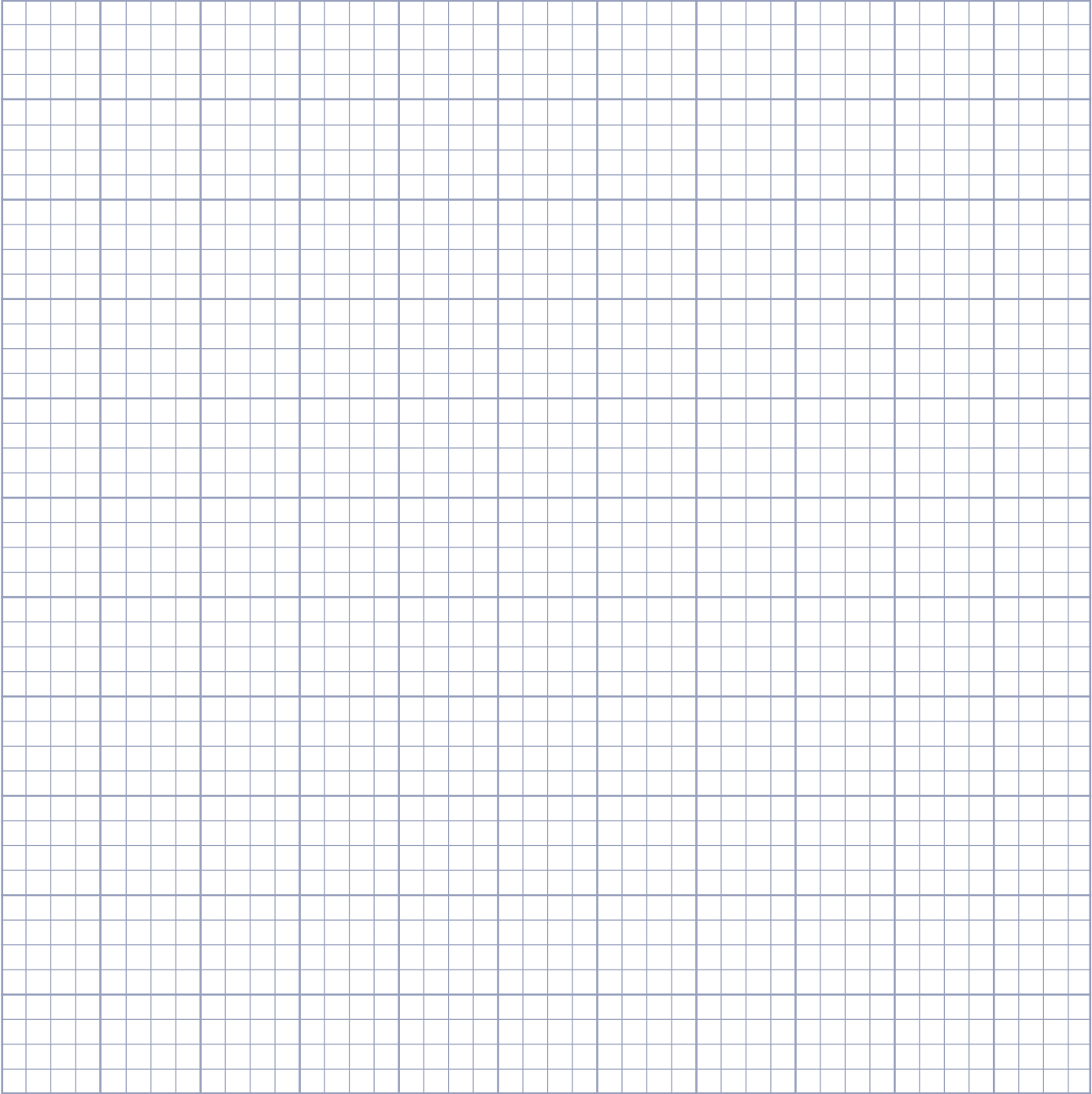
## ORDER INFORMATION



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

# Design & Layout Options

|          |  |  |  |                    |  |  |      |  |  |
|----------|--|--|--|--------------------|--|--|------|--|--|
| Name:    |  |  |  | Date:              |  |  |      |  |  |
| Dept.:   |  |  |  | Phone:             |  |  | Fax: |  |  |
| Company: |  |  |  | Machine Type/Name: |  |  |      |  |  |
| Email:   |  |  |  |                    |  |  |      |  |  |
| Address: |  |  |  |                    |  |  |      |  |  |
|          |  |  |  |                    |  |  |      |  |  |





## PRODUCT OVERVIEW

V-Guide System components provide an excellent alternative for linear motion applications in harsh environments with medium accuracy requirements, and high speed capabilities.

## FEATURES & BENEFITS

V-Guide systems are an industry standard for linear motion, and offer features that make them an ideal solution for a wide range of motion control applications.

### V-Guide Rail:

- Has shoulder for simple mounting and alignment
- Available in long lengths
- Induction hardened way surface
- 1045 Carbon Steel or 400 Series Stainless Steel
- Optional black oxide finish
- Choose predrilled rail from stock, or custom cut and drilled to your specification

### V-Guide Wheels:

- Four (4) sizes
- Permanently lubricated
- Precision dual row bearing construction
- Available in 52100 Bearing Steel or 420 Stainless Steel construction
- 304 Stainless Steel shields, or nitrile rubber seals

### Wheel Bushings:

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

## APPLICATIONS

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



## TECHNICAL SPECIFICATIONS

### V-Guide Wheels:

V-Guide Wheels are precision ground dual row angular contact ball bearings with hardened outer way surfaces that provide low friction guidance for linear motion applications. V-Guide wheels can be used with internal or external 90-degree ways, or used with round shafts.

### V-Guide Rails:

The rail V-Ways are induction or flame hardened, ground and polished. The track body is left soft for easy drilling of mounting holes. Available in (4) four sizes, which are designed for the corresponding size wheels.

### Wheel Bushings:

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

**Working Temperature Rating:**  $\approx 180^{\circ}\text{F}$

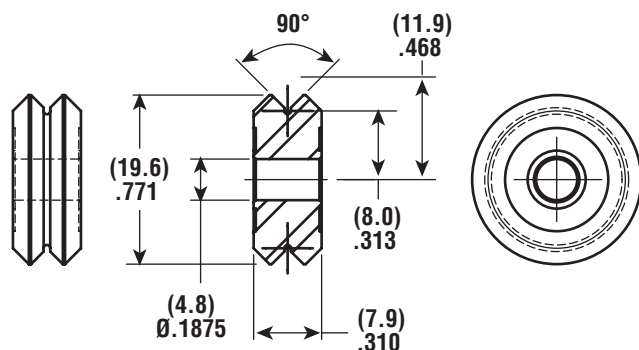


# V-Guide System - 20 mm (3/4")

Radial Loads to 283 lbs. (1,260 N) per Wheel

## V-GUIDE WHEELS

|       |                          |
|-------|--------------------------|
| VW1   | Shielded Bearing         |
| VWS1  | Sealed Bearing           |
| VWSS1 | Sealed Stainless Bearing |



WEIGHT: .42 oz. (12 g)

Rated for:

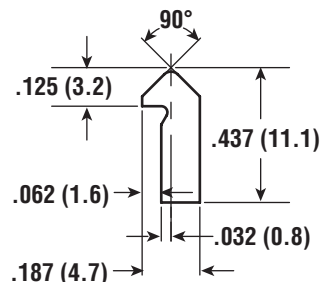
Radial loads to 283 lbs. (1,260 N) per wheel

Axial loads to 67 lbs. (297 N) per wheel

## V-GUIDE RAIL

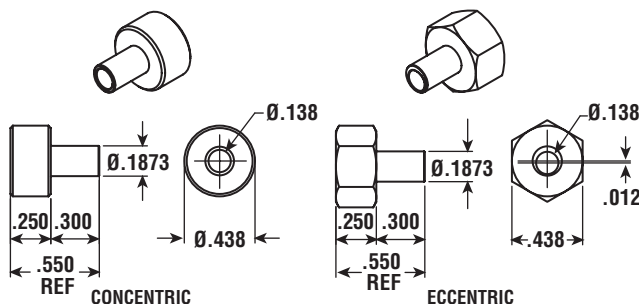
| Carbon Steel    |                                           |
|-----------------|-------------------------------------------|
| VR1-xxx         | undrilled rail max. length 21' (6400 mm)  |
| VRD1-xxx        | drilled rail, see table                   |
| Stainless Steel |                         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

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



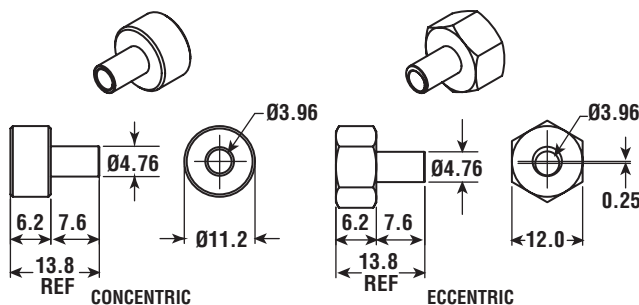
## WHEEL BUSHINGS

|      |                    |
|------|--------------------|
| VB1  | Fixed Bushing      |
| VBA1 | Adjustable Bushing |



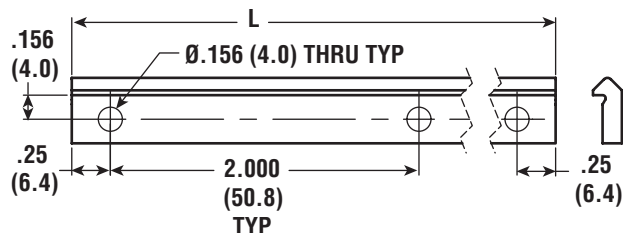
## METRIC WHEEL BUSHINGS

|       |                           |
|-------|---------------------------|
| MVB1  | Metric Fixed Bushing      |
| MVBA1 | Metric Adjustable Bushing |



## STANDARD DRILLED RAILS

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



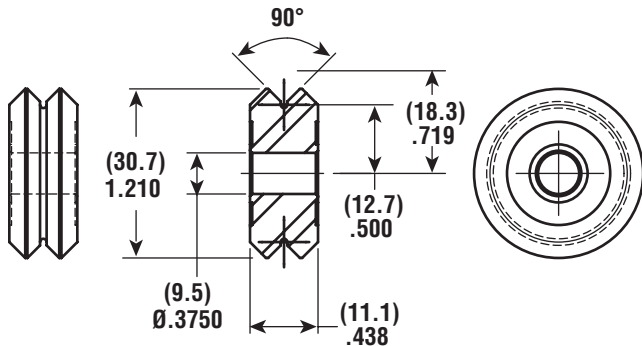
# V-Guide System - 30 mm (1-1/4")

Radial Loads to 614 lbs. (2,730 N) per Wheel



## V-GUIDE WHEELS

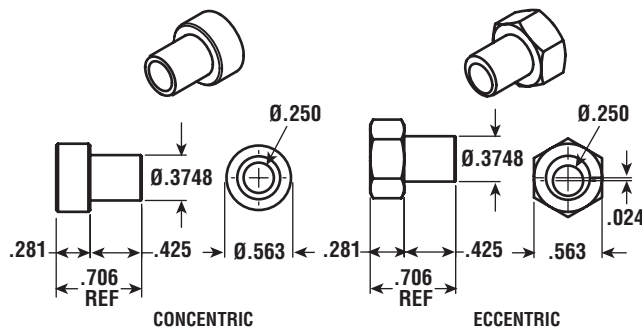
|       |                          |
|-------|--------------------------|
| VW2   | Shielded Bearing         |
| VWS2  | Sealed Bearing           |
| VWSS2 | Sealed Stainless Bearing |



WEIGHT: 1.3 oz. (38 g)

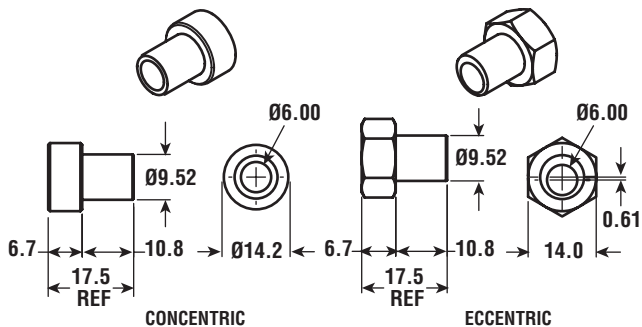
## WHEEL BUSHINGS

|      |                    |
|------|--------------------|
| VB2  | Fixed Bushing      |
| VBA2 | Adjustable Bushing |



## METRIC WHEEL BUSHINGS

|       |                           |
|-------|---------------------------|
| MVB2  | Metric Fixed Bushing      |
| MVBA2 | Metric Adjustable Bushing |



Rated for:

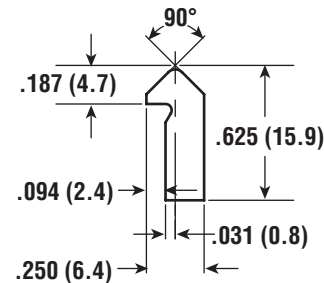
Radial loads to 614 lbs. (2,730 N) per wheel

Axial loads to 142 lbs. (632 N) per wheel

## V-GUIDE RAIL

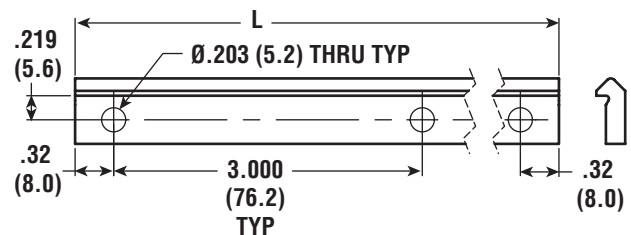
| Carbon Steel    |                                           |
|-----------------|-------------------------------------------|
| VR2-xxx         | undrilled rail max. length 21' (6400 mm)  |
| VRD2-xxx        | drilled rail, see table                   |
| Stainless Steel |                         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

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



## STANDARD DRILLED RAILS

| PART NUMBER     | LENGTH             | # OF HOLES |
|-----------------|--------------------|------------|
| Carbon Steel    |                    |            |
| VRD2-1263       | 12.63" (320.8 mm)  | 5          |
| VRD2-2463       | 24.63" (625.6 mm)  | 9          |
| VRD2-3663       | 36.63" (930.4 mm)  | 13         |
| VRD2-4863       | 48.63" (1235.2 mm) | 17         |
| VRD2-6063       | 60.63" (1540 mm)   | 21         |
| VRD2-7263       | 72.63" (1844.8 mm) | 25         |
| Stainless Steel |                    |            |
| VRSD2-1263      | 12.63" (320.8 mm)  | 5          |
| VRSD2-2463      | 24.63" (625.6 mm)  | 9          |
| VRSD2-3663      | 36.63" (930.4 mm)  | 13         |
| VRSD2-4863      | 48.63" (1235.2 mm) | 17         |
| VRSD2-6063      | 60.63" (1540 mm)   | 21         |
| VRSD2-7263      | 72.63" (1844.8 mm) | 25         |



V-Guide - 30 mm (1-1/4")

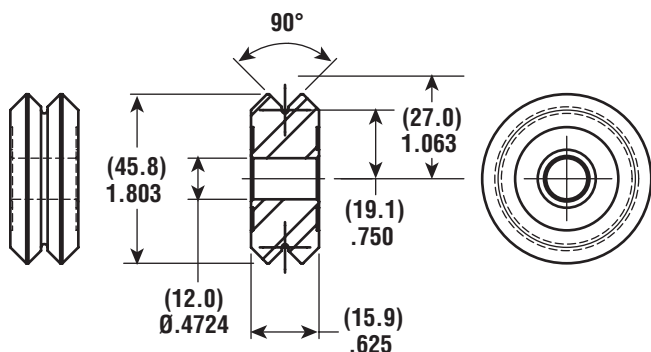


# V-Guide System - 45 mm (1-3/4")

Radial Loads to 1,386 lbs. (6,166 N) per Wheel

## V-GUIDE WHEELS

|       |                          |
|-------|--------------------------|
| VW3   | Shielded Bearing         |
| VWS3  | Sealed Bearing           |
| VWSS3 | Sealed Stainless Bearing |



WEIGHT: 4.6 oz. (131 g)

Rated for:

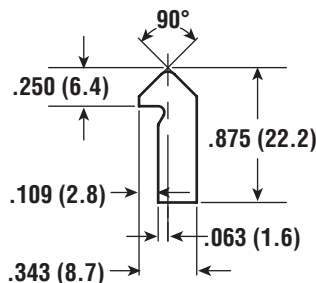
Radial loads to 1,386 lbs. (6,166 N) per wheel

Axial loads to 326 lbs. (1,448 N) per wheel

## V-GUIDE RAIL

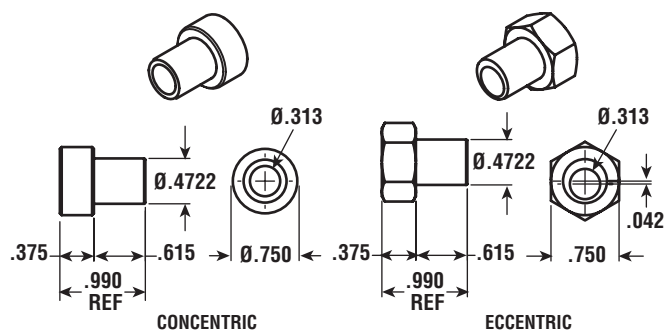
| Carbon Steel    |                                           |
|-----------------|-------------------------------------------|
| VR3-xxx         | undrilled rail max. length 21' (6400 mm)  |
| VRD3-xxx        | drilled rail, see table                   |
| Stainless Steel |                         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

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



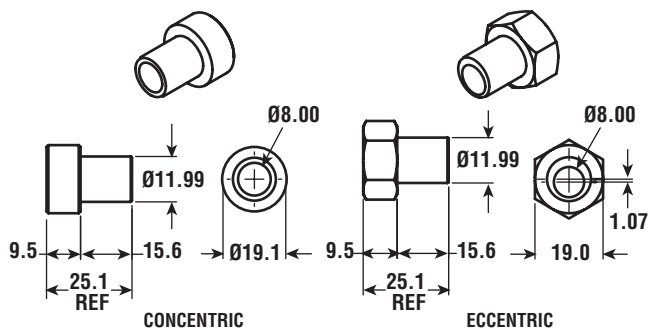
## WHEEL BUSHINGS

|      |                    |
|------|--------------------|
| VB3  | Fixed Bushing      |
| VBA3 | Adjustable Bushing |



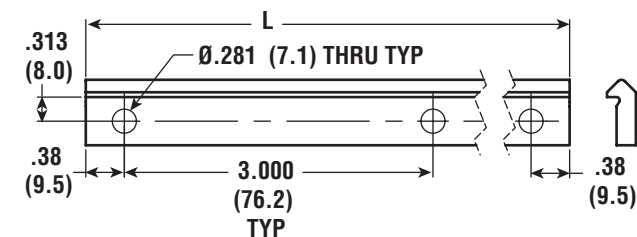
## METRIC WHEEL BUSHINGS

|       |                           |
|-------|---------------------------|
| MVB3  | Metric Fixed Bushing      |
| MVBA3 | Metric Adjustable Bushing |



## STANDARD DRILLED RAILS

| PART NUMBER            | LENGTH             | # OF HOLES |
|------------------------|--------------------|------------|
| <b>CARBON STEEL</b>    |                    |            |
| 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         |
| <b>STAINLESS STEEL</b> |                    |            |
| VRSD3-1275             | 12.75" (323.9 mm)  | 5          |
| VRSD3-2475             | 24.75" (628.7 mm)  | 9          |
| VRSD3-3675             | 36.75" (933.5 mm)  | 13         |
| VRSD3-4875             | 48.75" (1238.3 mm) | 17         |
| VRSD3-6075             | 60.75" (1543.1 mm) | 21         |
| VRSD3-7275             | 72.75" (1847.9 mm) | 25         |



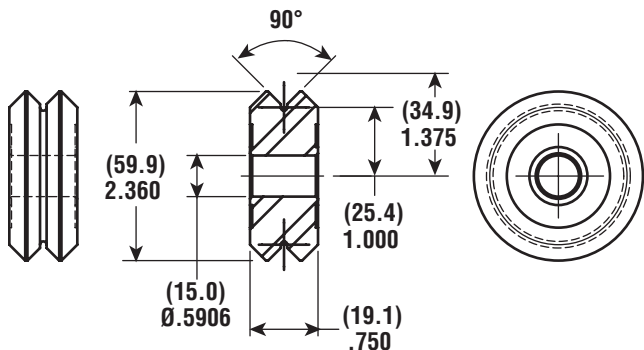
# V-Guide System - 60 mm (2-1/4")

Radial Loads to 2,246 lbs. (9,991 N) per Wheel



## V-GUIDE WHEELS

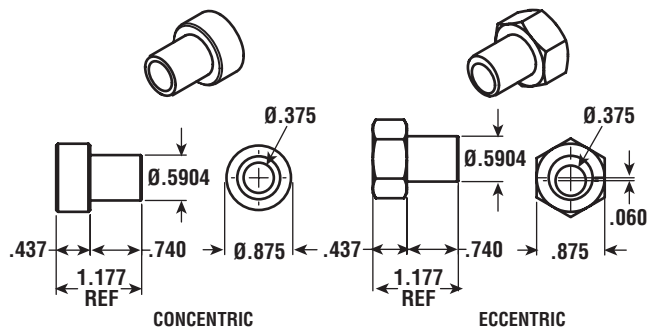
|       |                          |
|-------|--------------------------|
| VW4   | Shielded Bearing         |
| VWS4  | Sealed Bearing           |
| VWSS4 | Sealed Stainless Bearing |



WEIGHT: 10 oz. (281 g)

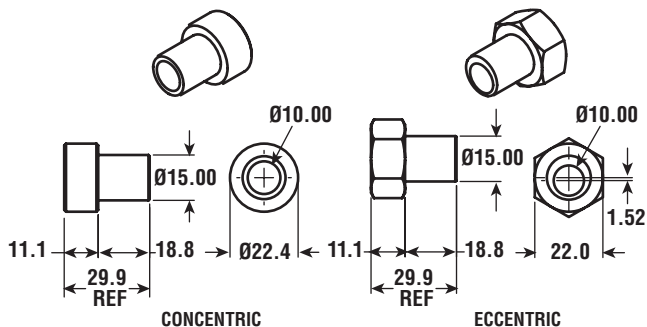
## WHEEL BUSHINGS

|      |                    |
|------|--------------------|
| VB4  | Fixed Bushing      |
| VBA4 | Adjustable Bushing |



## METRIC WHEEL BUSHINGS

|       |                           |
|-------|---------------------------|
| MVB4  | Metric Fixed Bushing      |
| MVBA4 | Metric Adjustable Bushing |



Rated for:

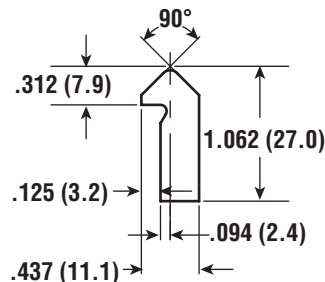
Radial loads to 2,246 lbs. (9,991 N) per wheel

Axial loads to 520 lbs. (2,313 N) per wheel

## V-GUIDE RAIL

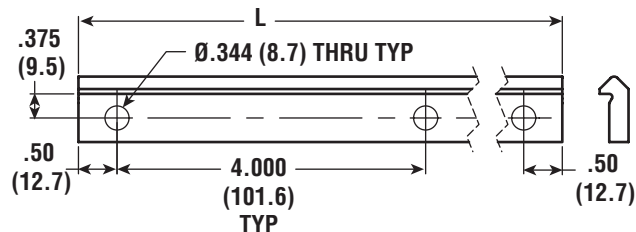
| Carbon Steel    |                                           |
|-----------------|-------------------------------------------|
| VR4-xxx         | undrilled rail max. length 21' (6400 mm)  |
| VRD4-xxx        | drilled rail, see table                   |
| Stainless Steel |                         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

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



## STANDARD DRILLED RAILS

| PART NUMBER            | LENGTH             | # OF HOLES |
|------------------------|--------------------|------------|
| <b>CARBON STEEL</b>    |                    |            |
| 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         |
| <b>Stainless Steel</b> |                    |            |
| VRSD4-1300             | 13.00" (330.2 mm)  | 4          |
| VRSD4-2500             | 25.00" (635 mm)    | 7          |
| VRSD4-3700             | 37.00" (939.8 mm)  | 10         |
| VRSD4-4900             | 49.00" (1244.6 mm) | 13         |
| VRSD4-6100             | 61.00" (1549.4 mm) | 16         |



V-Guide - 60 mm (2-1/4")



# V-Guide System

## Technical Information

### LOAD CALCULATIONS

$L$  = applied load / number of wheel pairs

$L_R$  = wheel radial load

$L_0$  = wheel load from moment

$A$  = load offset dimension

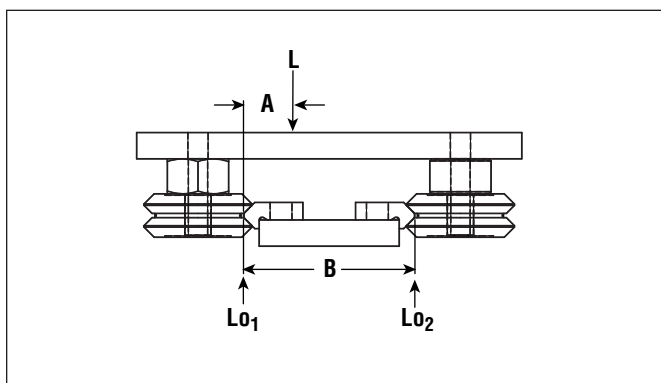
$B$  = track width dimension

$F_A$  = .5 for light duty, well lubricated use

$F_A$  = 1 for normal lubricated use

$F_A$  = 2 for dry, or harsh environments

### LOAD CONDITION A



$$L_{01} = \frac{L \times (B - A) \times F_A}{B}$$

$$L_{02} = (L \times F_A) - L_{01}$$

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

**Example:**

Load is 100 lbs on 4 wheel carriage,

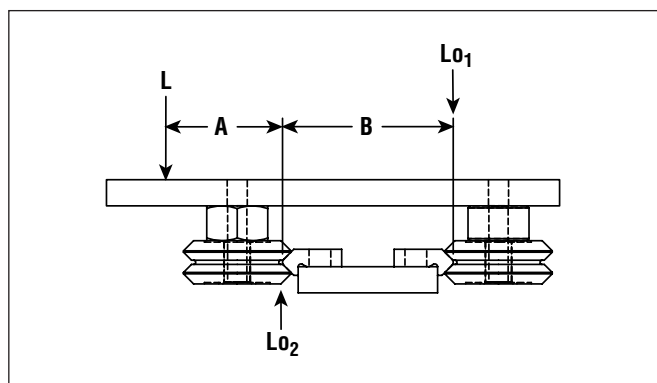
$L = 100 / 2$  pair wheels = 50 lbs.

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

$$L_{01} = \frac{50 \times (10 - 4) \times 1}{10} = 30 \text{ lbs.}$$

$$L_{02} = 50 - 30 = 20 \text{ lbs.}$$

### LOAD CONDITION B



$$L_{01} = \frac{L \times A}{B} \times F_A$$

$$L_{02} = (L \times F_A) + L_{01}$$

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

**Example:**

Load is 100 lbs. on 4 wheel carriage,

$L = 100 / 2$  pair wheels = 50 lbs.

$A = 4"$ ,  $B = 6"$ ,  $F_A = 1$

$$L_{01} = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

$$L_{02} = 50 + 33 = 83 \text{ lbs.}$$

### LOAD CONDITION C

$$L_{01} = \frac{L \times A \times F_A}{B}$$

$$L_R = (L \times F_A) + L_{01}$$

$$L_{01} = L_{02}$$

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

**Example:**

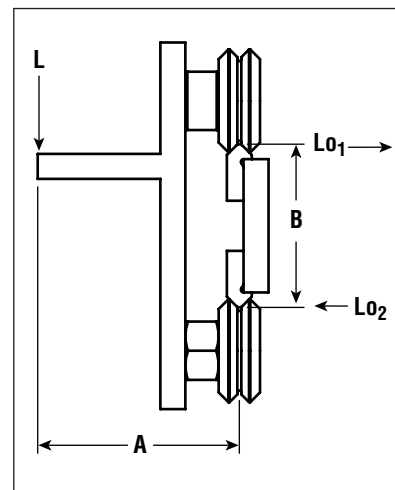
Load is 100 lbs. on 4 wheel carriage,

$L = 100 / 2$  pair wheels = 50 lbs.

$A = 4"$ ,  $B = 6"$ ,  $F_A = 1$

$$L_{01} = \frac{50 \times 4 \times 1}{6} = 33 \text{ lbs.}$$

$$L_R = (50 \times 1) + 33 = 83 \text{ lbs.}$$





### MOUNTING AND ADJUSTMENT

Use the recommended fasteners for the specified track and wheel bushings.

Use the following table, and the center distance formulas in the next column, to configure the appropriate wheel mounting dimensions.

| V-RAIL SIZE | IV<br>(in.) | OV<br>(in.) | IV<br>(mm) | OV<br>(mm) |
|-------------|-------------|-------------|------------|------------|
| 1           | 0.874       | 0.934       | 22.2       | 23.7       |
| 2           | 1.374       | 1.436       | 34.9       | 36.5       |
| 3           | 2           | 2.124       | 50.8       | 53.9       |
| 4           | 2.624       | 2.75        | 66.6       | 69.9       |

The fixed bushing should be used to carry the heaviest loading. Preload the adjustable bushing so that the wheel can just be turned by hand. Over-tightening the preload will cause premature wear of the components.

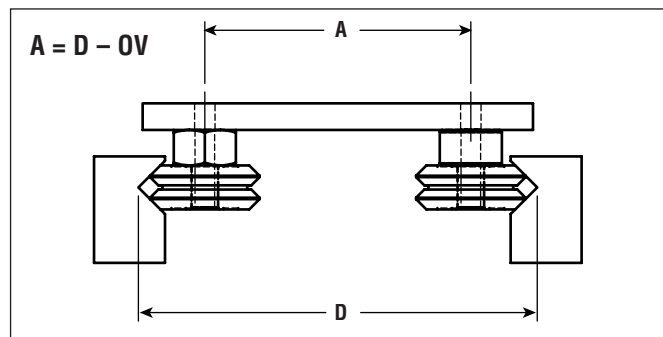
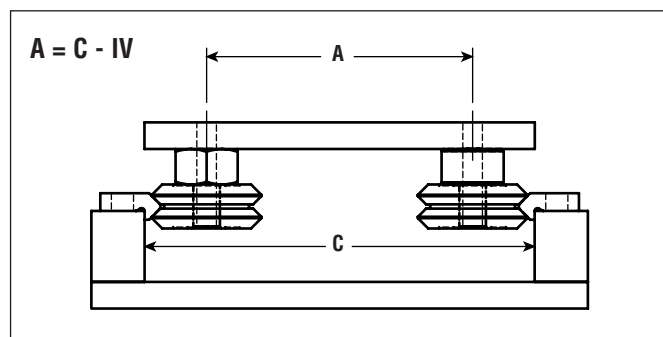
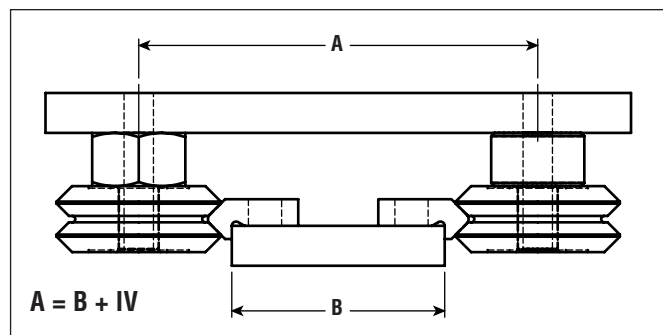
### LUBRICATION

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

### SUGGESTED FASTENERS

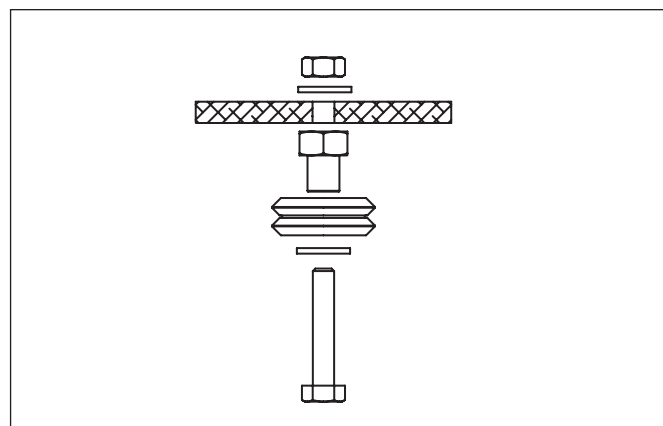
| BUSHINGS |         |        |           |
|----------|---------|--------|-----------|
| INCH     |         | METRIC |           |
| VB1      | #6      | MVB1   | M4        |
| VB2      | 1/4"    | MVB2   | M6        |
| VB3      | 5/16"   | MVB3   | M8        |
| VB4      | 3/8"    | MVB4   | M10       |
| V-RAIL   |         |        |           |
| VR1      | #6, M3  | VR3    | 1/4", M6  |
| VR2      | #10, M6 | VR4    | 5/16", M8 |

### CENTER DISTANCE FORMULA



### WHEEL / BUSHING ASSEMBLY

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





# Commercial Rail

## Product Overview

### PRODUCT OVERVIEW

Commercial Rail is a simple and cost effective linear motion solution with high load capacity and corrosion resistance.

- Roll formed rails made of steel/stainless steel sheet for low cost and corrosion resistance application
- Zinc plated rail length up to 6,000 mm
- Machined slider body made of aluminum alloy and anodized for corrosion resistance
- Steel rollers are made of 52100 chrome steel, hardened and ground, lubricated for life and sealed against contamination
- Stainless steel rollers made of 440C stainless steel for better corrosion resistance, lubricated for life and sealed against contamination
- Rollers made with thread integrated inner ring for ease of assembly and adjustment of pre-load
- Custom polymer wipers can be designed and manufactured to improve the smoothness of motion and service life
- Maximum operating temperature 100°C or 212°F
- Consult with factory for special hole spacing
- Speed up to 1.5 m/s
- Moment loads should be carried by two slides or two parallel rollers

### SLIDE ORIENTATION

The 3-roller slide should be installed in the rail so that the load is shared among the two outside rollers. The orientation marks indicate how to align the slider with the load direction

### LUBRICATION - RAILS & BEARINGS

The rollers are internally lubricated for life, but the rails must always have a layer of grease. As a guideline, reapply fresh grease every 50,000 cycles.

### PRELOAD ADJUSTMENT

- To loosen the center roller, use an Allen wrench to un-tighten the screw while holding the roller still with an open-end wrench
- Turn the center roller to a position to achieve the desired pre-load
- Move the slide along the length of the rail by hand. Adjust it so that it does not feel loose anywhere.
- Tighten the screw while holding the roller flat with an open-end wrench

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



### APPLICATIONS

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

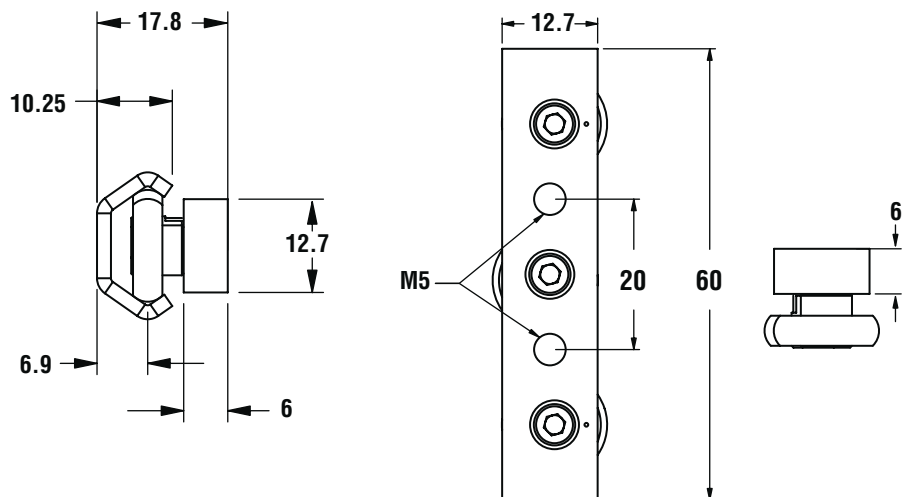
### MATERIAL & FINISH SPECIFICATIONS

|          | CR SERIES                       | SS SERIES                 |
|----------|---------------------------------|---------------------------|
| Rail     | Carbon steel sheet, Zinc plated | Stainless steel 304 sheet |
| Slide    | Aluminum alloy anodized         | Aluminum alloy anodized   |
| Rollers  | Chrome steel                    | Stainless steel           |
| Hardware | Steel zinc plated               | Stainless steel 18-8      |

| RAIL MOUNT                           | CR20/CRSS20 | CR30/CRSS30 | CR45/CRSS45 |
|--------------------------------------|-------------|-------------|-------------|
| Slide mount screws (Socket head cap) | M5          | M6          | M8          |
| Tightening torque (lbs-in)           | 25          | 43          | 103         |
| Tightening torque (N-m)              | 3           | 5           | 12          |
| SLIDES                               | CR20/SS20   | CR30/SS30   | CR45/SS45   |
| Rail mount screw (Button head cap)   | M4          | M6          | M8          |



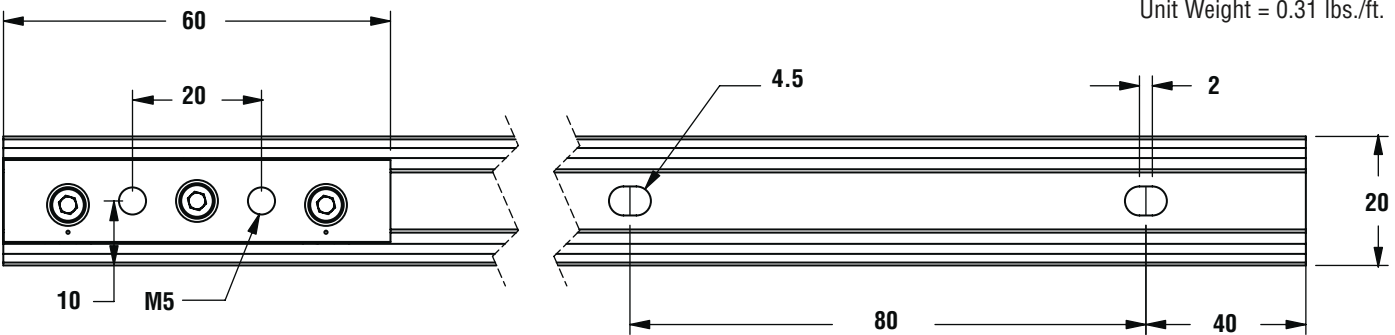
## CR20 SLIDE



| DIMENSION | LOAD RATINGS                         |                                     |                          |
|-----------|--------------------------------------|-------------------------------------|--------------------------|
|           | STATIC RADIAL<br>C <sub>or</sub> (N) | STATIC AXIAL<br>C <sub>oa</sub> (N) | DYNAMIC RADIAL<br>Cr (N) |
| CR20      | 210                                  | 160                                 | 280                      |
| CRSS20    | 210                                  | 160                                 | 280                      |

CR20MCA Thread Pitch M5 x 0.8

## CR20 RAIL

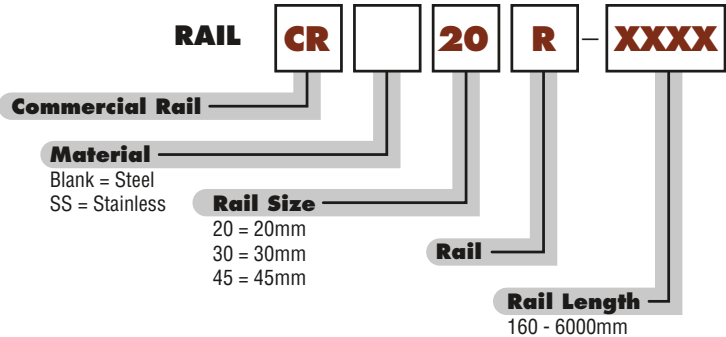
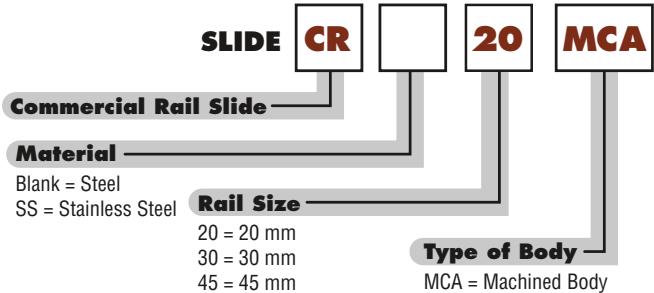


Unit Weight = 0.31 lbs./ft.

Commercial Rail - CR20

## ORDER INFORMATION

EXAMPLE: CR20MCA / CR20R-XXXX

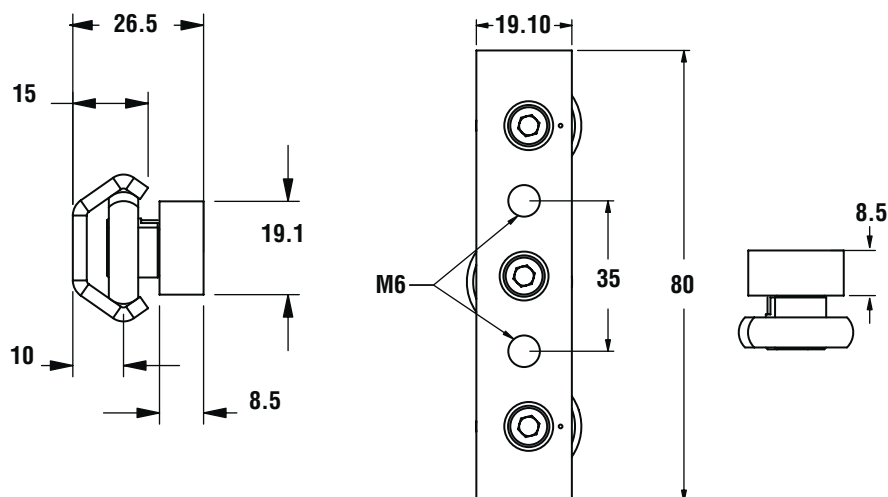




# Commercial Rail - CR30

Dynamic Radial Cr = 800 N

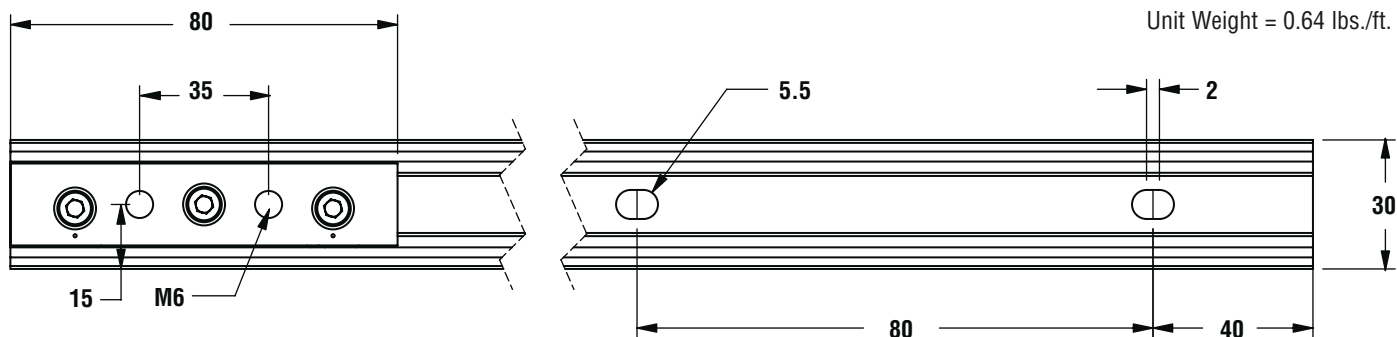
## CR30 SLIDE



| DIMENSION | LOAD RATINGS                         |                                     |                          |
|-----------|--------------------------------------|-------------------------------------|--------------------------|
|           | STATIC RADIAL<br>C <sub>or</sub> (N) | STATIC AXIAL<br>C <sub>oa</sub> (N) | DYNAMIC RADIAL<br>Cr (N) |
| CR30      | 610                                  | 420                                 | 800                      |
| CRSS30    | 610                                  | 420                                 | 800                      |

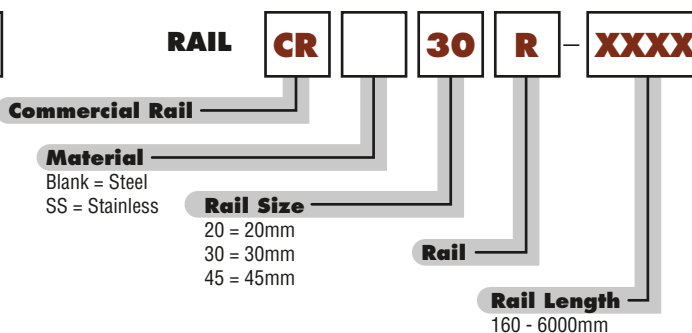
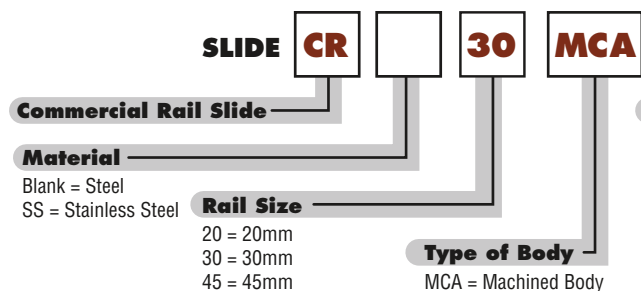
CR30MCA Thread Pitch M6 x 1.0

## CR30 RAIL



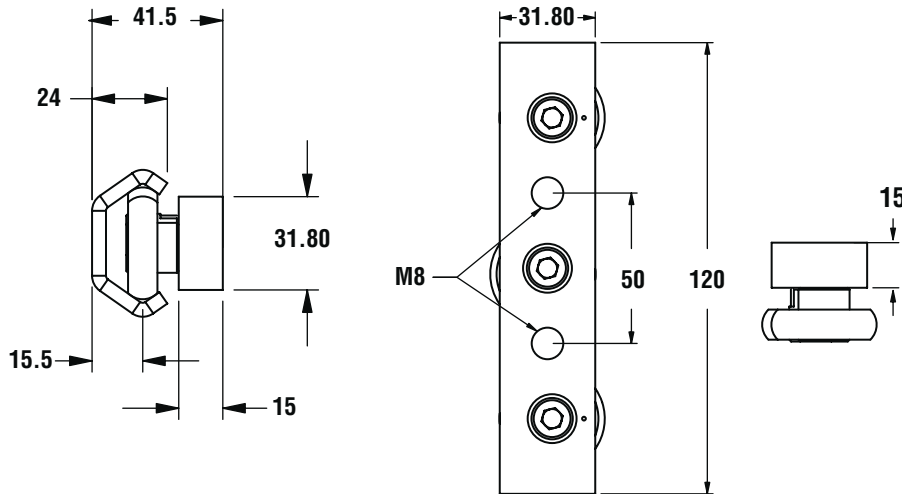
## ORDER INFORMATION

EXAMPLE: CR30MCA / CR30R-XXXX





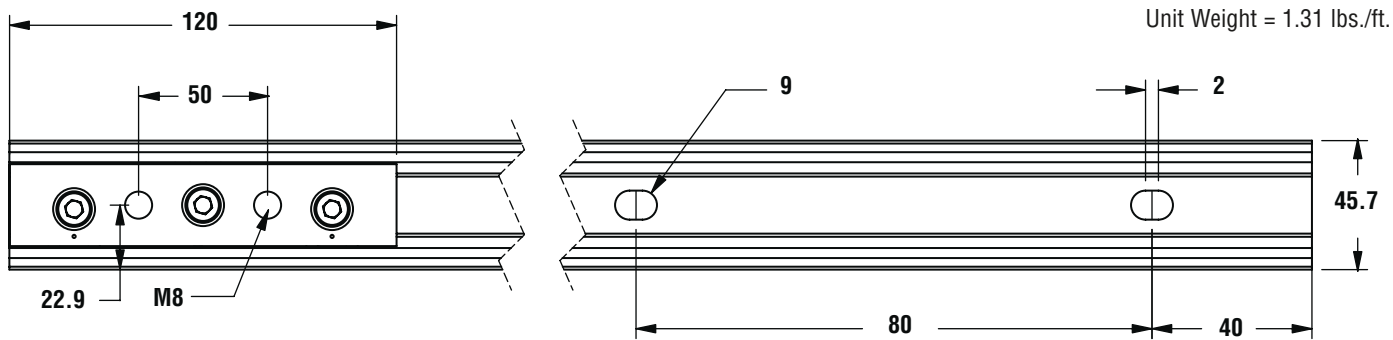
## CR45 SLIDE



| DIMENSION | LOAD RATINGS                         |                                     |                          |
|-----------|--------------------------------------|-------------------------------------|--------------------------|
|           | STATIC RADIAL<br>C <sub>or</sub> (N) | STATIC AXIAL<br>C <sub>oa</sub> (N) | DYNAMIC RADIAL<br>Cr (N) |
| CR45      | 1330                                 | 930                                 | 1740                     |
| CRSS45    | 1330                                 | 930                                 | 1740                     |

CR45MCA Thread Pitch M8 x 1.25

## CR45 RAIL

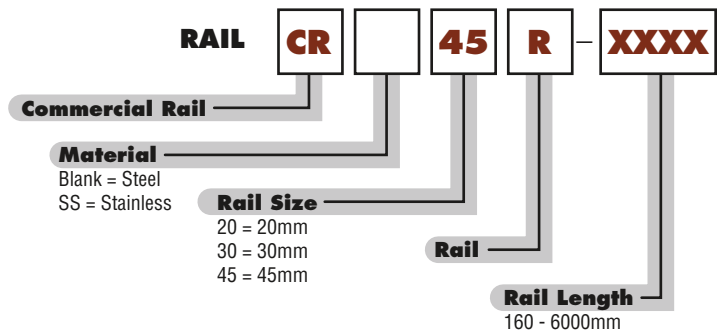
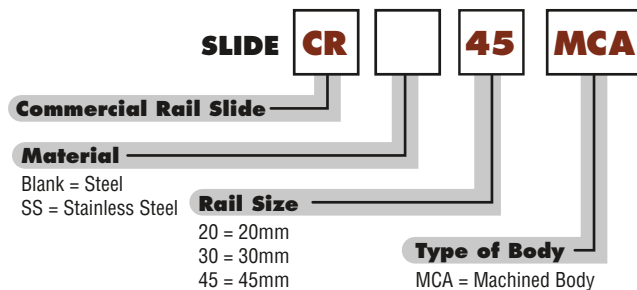


Unit Weight = 1.31 lbs./ft.

Commercial Rail - CR45

## ORDER INFORMATION

EXAMPLE: CR45MCA / CR45R-XXXX





# Hardened Crown Rollers

## Inch & ISO Metric Series



### FEATURES & BENEFITS

- Low cost linear motion solution
- Precision rolling element bearing riding in a rail from Copper B-Line Series
- 9/16" Hex head for easier mounting
- Simple solution and setup for point-to-point applications
- Rollers provide self-alignment, durability and longevity
- MAX. bearing load - 300 lbs.
- MAX. bearing speed - 150 ft./ min. (30 in./sec.)
- Rails lengths available up to 10 ft.  
Contact manufacturer for longer lengths.

### RAILS FINISHES:

- Bare steel
- Powder coated

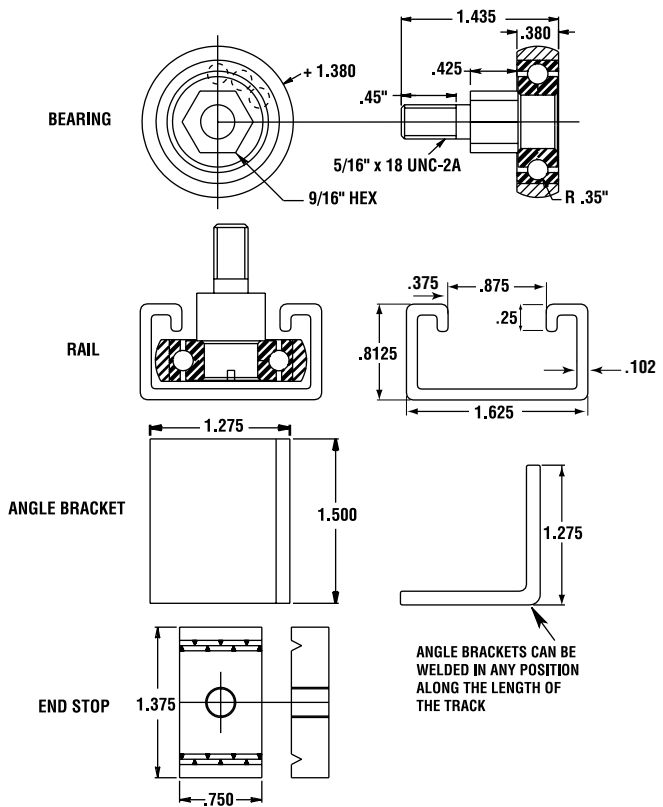
### ACCESSORIES AVAILABLE:

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

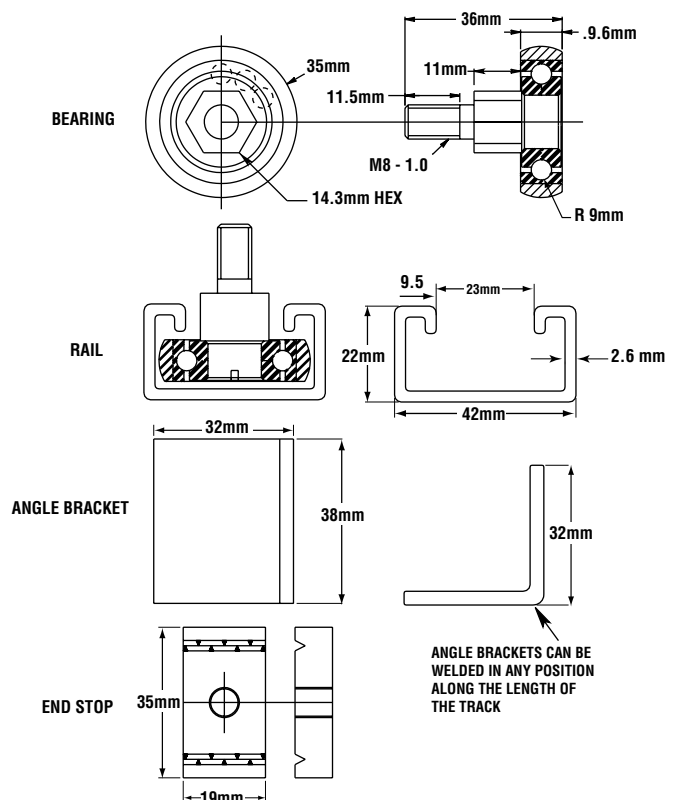
### ORDERING INFORMATION

| PART NUMBER     | DESCRIPTION                                                             |
|-----------------|-------------------------------------------------------------------------|
| <b>PAC3016</b>  | Hardened Crown Roller Bearing                                           |
| <b>PAC3016M</b> | Hardened Crown Roller Bearing with metric thread                        |
| <b>PAC2245</b>  | Rail System - unpainted (specify length - priced per foot)              |
| <b>PAC2247</b>  | Rail System - black powder coat finish (specify length- price per foot) |
| <b>PAC2244</b>  | Angle Brackets - 1" Steel                                               |
| <b>PAC2246</b>  | End Stops for Rail System (bolt included)                               |

### INCH



### METRIC



**NOTE:** All metric dimensions are conversions from inch dimensions all parts are manufactured to inch standards.



### PRODUCT OVERVIEW

The economical Hevi-Rail® guide systems offer a lifetime of durability under continuous use. The easily interchangeable bearing components provide even dispersion of forces in the profile rails for longer system life and stability.

#### Linear Bearings:

- Outer ring made of case-hardened steel
- Handles very high axial and radial loads
- Easily interchangeable components for less down-time

#### Profile Rails:

- Standard length up to 6 meters
- Sand blasted or lightly oiled
- U-channel or I-channel available

#### Flange Plates:

- Simple mounting for bearings
- Can be ordered pre-welded to bearing

**Ordering example:** HVB-054/HVPO

#### Clamp Flanges:

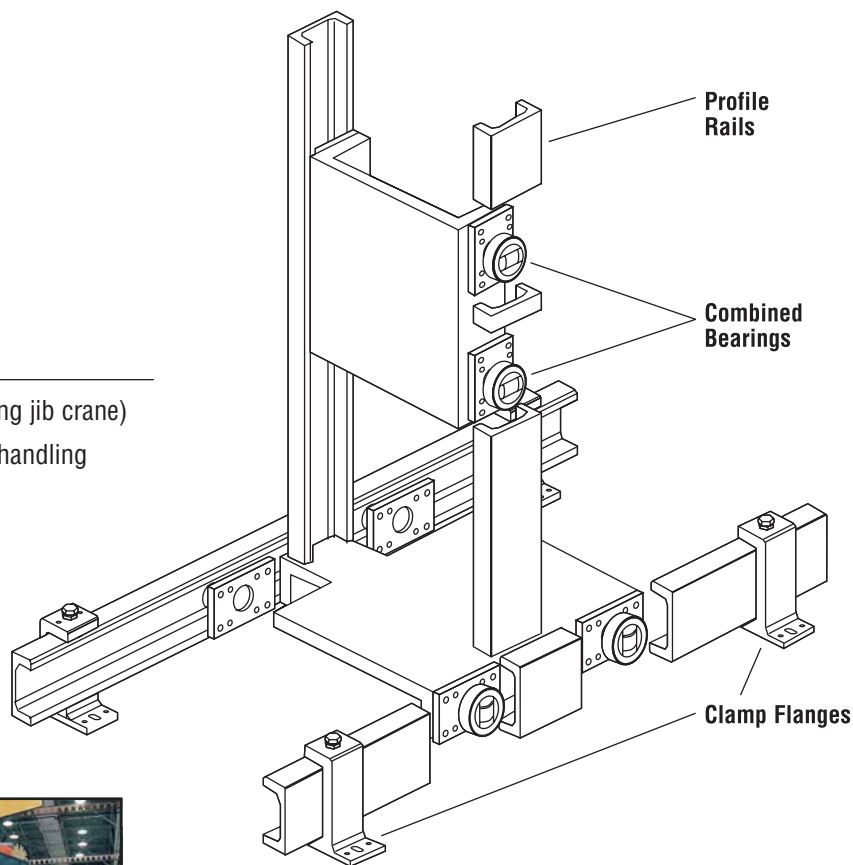
- Adjustable
- Eliminates need for welding and straightening
- Easily adjustable parallelism



**Hevi-Rail®**  
Heavy Duty Bearing Systems

### APPLICATIONS

- Telescoping applications (ex. overhead extending jib crane)
- Warehouse handling systems / other material handling
- Custom and standard lift units
- Large Shrink-wrap machinery
- Steel and coil handling
- Large variety of material handling





# Hevi-Rail® Linear Bearing Systems

## Technical Information & Selection Guide

### TECHNICAL SPECIFICATIONS

#### Linear Bearing for Axial & Radial Loads

Prior to welding, disassemble bearing components. To avoid cracks in welded joints, please use welding electrodes and core weld for unalloyed steel.

#### Materials:

**Outer ring** - Case-hardened steel UNI 20 MnCr 5 hardened at 60+2 HRc

**Inner ring** - Hardened steel En 31 - SAE 52100 hardened at 62-2 HRc

**Cylindrical rollers** - Flat ground heads are hardened steel, En 31 - SAE 52100, hardened at 59-64 HRC

**Bolt tolerance** = 0.05 mm

**Profile Rails:** High quality steel, ASTM A 252 Gr.1, A 252 Gr.2, A 252 Gr.3, A 663 Gr.45-80, A 675 Gr. 45-90. Standard length (1024/1524 steel) of 6 m (19.7ft.). MnCr 5 with maximum contact pressure of 750 MPa (N/mm<sup>2</sup>). Optional sand blasted and/or lightly oiled. Rails are not hardened but have a Brinell hardness of 145-185. The guide ways in the rails should be lightly greased and not painted.

**Clamp Flange:** Low carbon steel, adjustable clamp

**Flange Plate:** Low carbon steel. Special designs available, contact manufacturer.

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

Bearings with eccentric adjustable axial bearing (HVBEA-454 to HVBEA-463) - Both radial and axial bearings utilize rubber seals (RS type)

**Lubrication:** Bearings are supplied lubricated with grease grade 3. Bearings from HVB-056 to HVB-063 can be re-lubricated with grease zerk. Adjustable bearings are not available with zerk.

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

#### Bearing Life Calculations:

$$L_{10} = \left( \frac{1666}{n} \right) \left( \frac{C}{P} \right)^{10/3} \text{ (Hours)}$$

C = Dynamic load rating (KN)

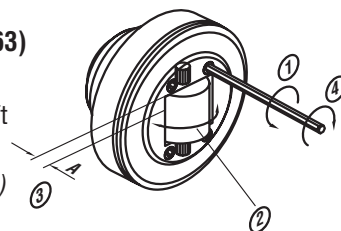
P = Automatic dynamic load (KN)

n = Revolutions per minute (rpm)

**NOTE:** Above calculation formula is for predicting life expectancy with 90% reliability level. Customers shall use their discretion to determine the reduction factor based on the actual operation needs and conditions such as reliability level, load, speed, impact and environments.

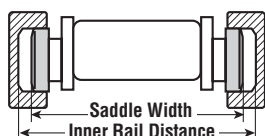
#### Adjusting Axial Bearing (HVBEA-454 to HVBEA-463)

1. Remove front screws.
2. Rotate axial bearing shaft
3. Check dimension A (repeat step 2, if needed)
4. Re-install front screws



### SYSTEM DESIGN CLEARANCE

1. The overall system clearance should be 1.524 mm to 3.048 mm



Inner Rail Distance =  
Saddle Width + (1.524  
mm to 3.048 mm)

2. Verify that the Axial bearing is aligned parallel to the rail; especially in vertical operations.



### CALCULATION OF FMAX FOR CANTILEVERED LOADS

Q = Load capacity (N)

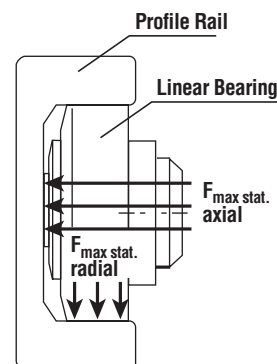
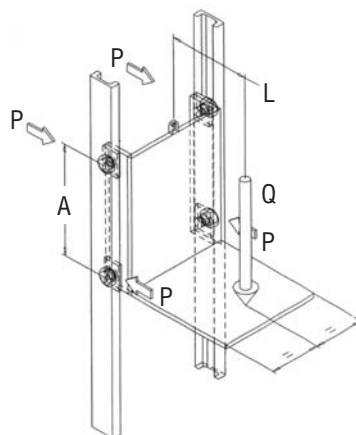
L = Load distance to suspension point (mm)

P = Suspension point

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

$$\text{Formula: } F_{\max}[\text{N}] = \frac{Q \cdot L}{2 \cdot A}$$

$P_{\text{zul}} = 750 \text{ N/mm}^2$  for all profile rails. Indicated here are  $F_{\max}$  stat radial + axial for each bearing.





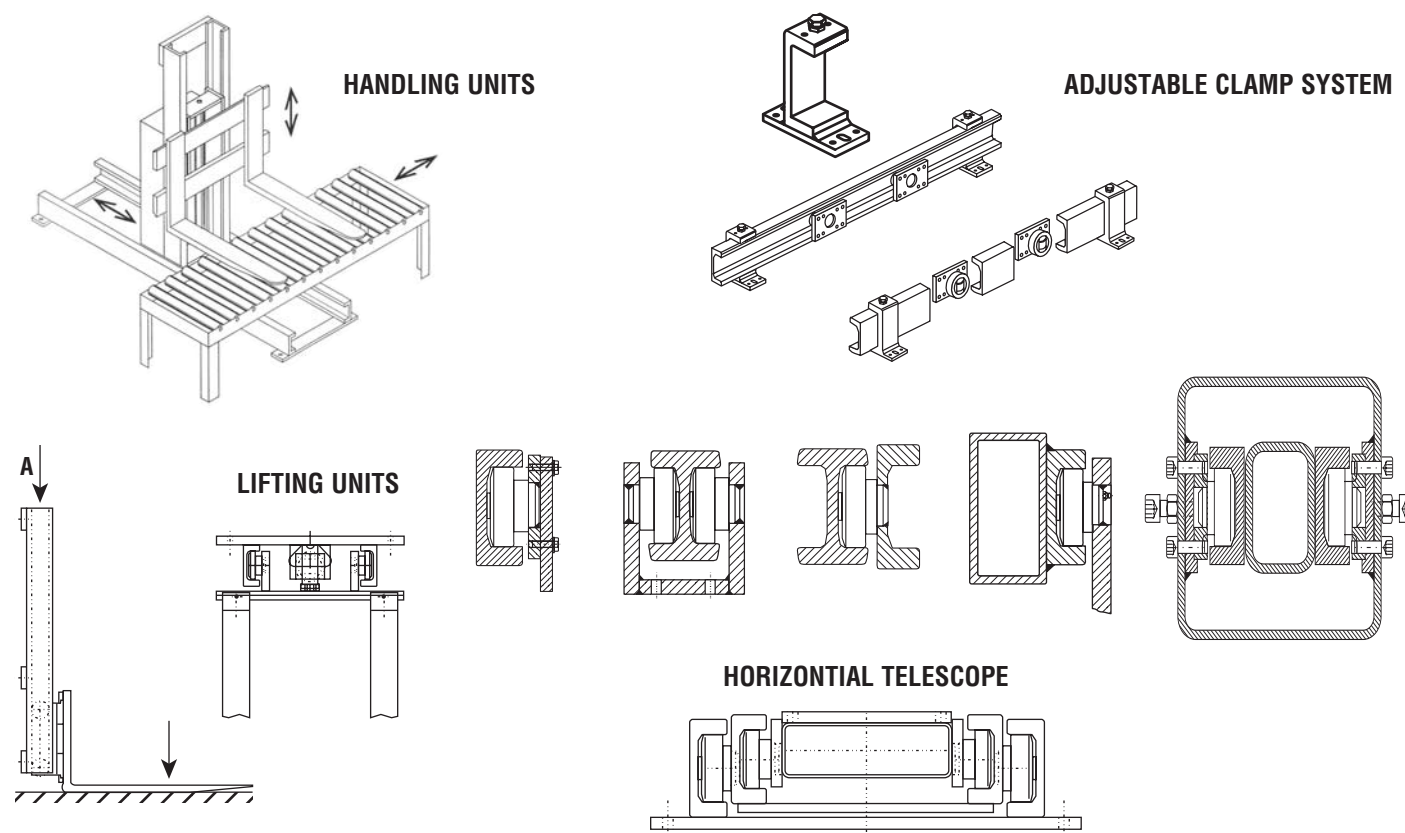
### SELECTION GUIDE (when used with Profile Rails HVR-S to HVR-6)

Use the following chart to select the bearings (fixed or adjustable), rails, flange plates and clamp flanges according to your system's maximum static radial and axial loading. A "system" is defined as a bearing in the corresponding rail. For dimensional and detailed specifications for the system selected, simply refer to the corresponding pages.

| F (KN)<br>MAX STAT RADIAL | F (KN)<br>MAX STAT AXIAL | COMBINED BEARING<br>AXIAL BEARING FIXED | COMBINED BEARING<br>AXIAL BEARING ADJUSTABLE | PROFILE RAILS  | CLAMP FLANGE | FLANGE PLATE | PAGE NO. |
|---------------------------|--------------------------|-----------------------------------------|----------------------------------------------|----------------|--------------|--------------|----------|
| 5.2                       | 1.7                      | HVB-053                                 | —                                            | HVR-S          | —            | HVPS-1       | 246      |
| 7.2                       | 2.4                      | HVB-054                                 | HVBEA-454                                    | HVR-0          | HVC-0        | HVP0-1       | 244      |
| 8.6                       | 2.8                      | HVB-055                                 | HVBEA-455                                    | HVR-1, HVRI-07 | HVC-1        | HVP1-1       | 248      |
| 8.9                       | 3.0                      | HVB-056                                 | HVBEA-456                                    | HVR-2          | HVC-2        | HVP2-1       | 249      |
| 8.9                       | 3.0                      | HVB-057                                 | HVBEA-457                                    | HVRI-08        | —            | HVP2-1       | 250      |
| 15.6                      | 5.2                      | HVB-058                                 | HVBEA-458                                    | HVR-3, HVRI-09 | HVC-3        | HVP3-1       | 251      |
| 15.5                      | 5.1                      | HVB-059                                 | HVBEA-459                                    | HVRI-10        | —            | —            | 252      |
| 16.5                      | 5.5                      | HVB-060                                 | HVBEA-460                                    | HVRI-11        | —            | —            | 252      |
| 16.5                      | 5.5                      | HVB-061                                 | HVBEA-461                                    | HVR-4          | HVC-4        | HVP4-1       | 253      |
| 23.5                      | 7.8                      | HVB-062                                 | —                                            | HVR-5          | —            | HVP4-1       | 254      |
| 41.1                      | 13.7                     | HVB-063                                 | HVBEA-463                                    | HVR-6          | —            | HVP6-1       | 255      |

**NOTE:** For cantilevered loads, static verification calculations can be found on page 244. \*All dimensions in mm.

### MOUNTING CONFIGURATIONS



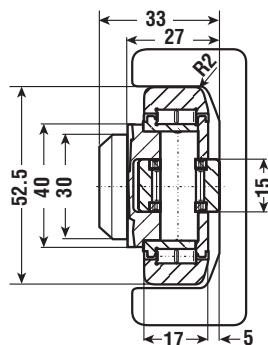


# Hevi-Rail® Linear Bearing System

## 0.6 US Ton-Force

### AXIAL BEARING - FIXED

### HVB-053



**WEIGHT** = 0.36 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 24 KN

Max. static load = 33 KN

#### **BEARING AXIAL LOAD**

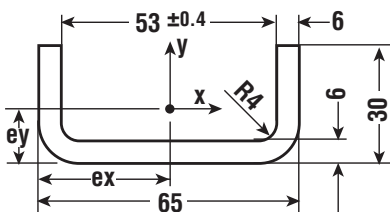
Max. dynamic load = 10 KN

Max. static load = 14 KN

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

### PROFILE RAIL U-CHANNEL

### HVR-S



**WEIGHT** = 5.3 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 5.2 \text{ cm}^4$ ,  $I_y = 38.8 \text{ cm}^4$

#### **MOMENT OF RESISTANCE**

$W_x = 2.50 \text{ cm}^3$ ,  $W_y = 11.90 \text{ cm}^3$

#### **RADIUS OF INERTIA**

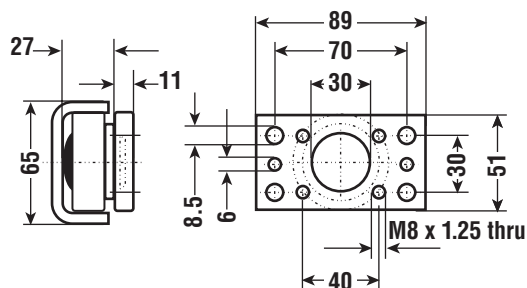
$i_x = 0.80 \text{ cm}$ ,  $i_y = 2.40 \text{ cm}$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 0.94 \text{ cm}$ ,  $e_x = 32.50 \text{ cm}$

### FLANGE PLATE

### HVPS-1



WHEN USED WITH SHOWN PROFILE RAILS

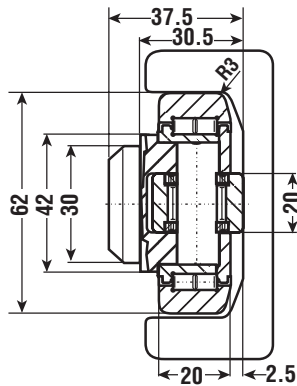
System Max. Static Radial Load = 5.2 KN / 0.6 US Ton-Force

System Max. Static Axial Load = 1.7 KN / 0.2 US Ton-Force



## AXIAL BEARING - FIXED

### HVB-054



**WEIGHT** = 0.53 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 39 KN

Max. static load = 65 KN

#### **BEARING AXIAL LOAD**

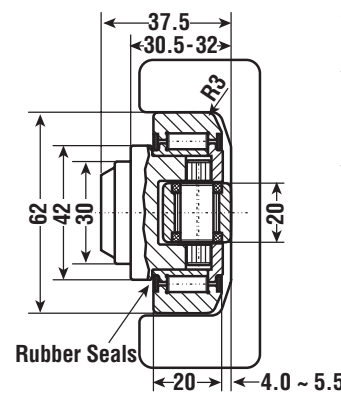
Max. dynamic load = 15 KN

Max. static load = 22 KN

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

## ECCENTRIC ADJUSTABLE

### HVBEA-454



**WEIGHT** = 0.53 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 39 KN

Max. static load = 65 KN

#### **BEARING AXIAL LOAD**

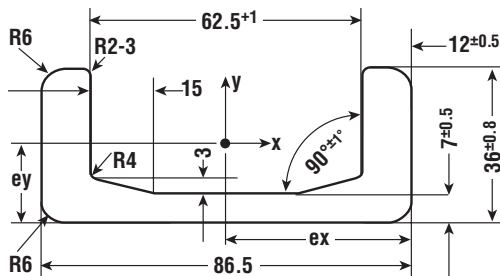
Max. dynamic load = 16 KN

Max. static load = 25 KN

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

## PROFILE RAIL U-CHANNEL

### HVR-O



**WEIGHT** = 10.5 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 15.35 \text{ cm}^4$ ,  $I_y = 137.05 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 1.29 \text{ cm}$ ,  $e_x = 4.33 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 1.07 \text{ cm}$ ,  $i_y = 3.20 \text{ cm}$

#### **MOMENT OF RESISTANCE**

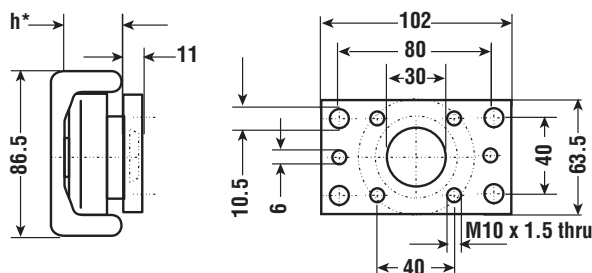
$W_{x_{min}} = 6.64 \text{ cm}^3$

$W_{x_{max}} = 11.93 \text{ cm}^3$

$W_y = 31.69 \text{ cm}^3$

## FLANGE PLATE

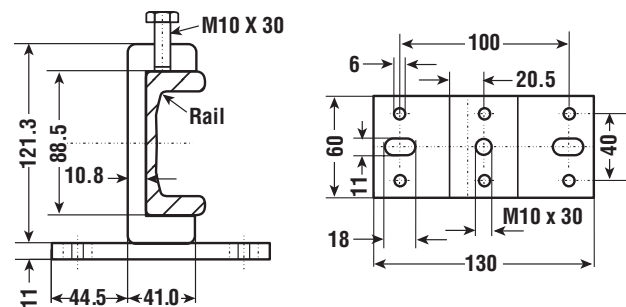
### HVPO-1



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

## CLAMP FLANGE

### HVC-O



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 7.2 KN / 0.8 US Ton-Force

System Max. Static Axial Load = 2.4 KN / 0.3 US Ton-Force

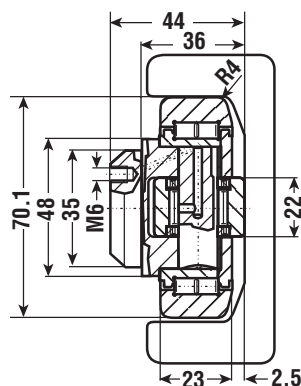


# Hevi-Rail® Linear Bearing Systems

## 0.9 US Ton-Force

### AXIAL BEARING - FIXED

### HVB-055



WEIGHT = 0.80 Kg

#### BEARING AXIAL LOAD

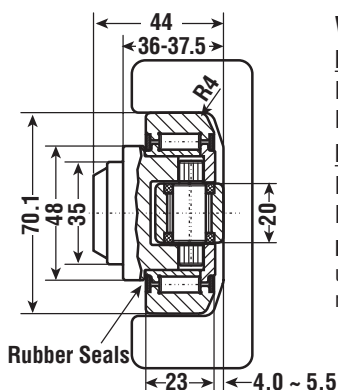
Max. dynamic load = 18 KN

Max. static load = 26 KN

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

### ECCENTRIC ADJUSTABLE

### HVBEA-455



WEIGHT = 0.80 Kg

#### BEARING RADIAL LOAD

Max. dynamic load = 56 KN

Max. static load = 93 KN

#### BEARING AXIAL LOAD

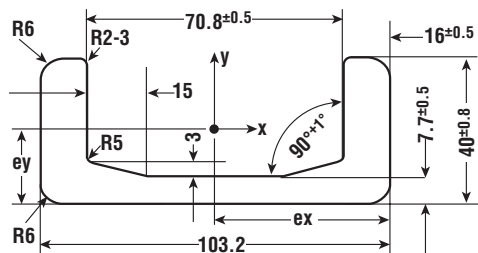
Max. dynamic load = 16 KN

Max. static load = 25 KN

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

### PROFILE RAIL U-CHANNEL

### HVR-1



WEIGHT = 14.8 Kg/m

#### MOMENT OF INERTIA

$I_x = 27.29 \text{ cm}^4$ ,  $I_y = 273.50 \text{ cm}^4$

#### DIST. TO CENTER OF GRAVITY

$e_y = 1.50 \text{ cm}$ ,  $e_x = 5.16 \text{ cm}$

#### RADIUS OF INERTIA

$i_x = 1.20 \text{ cm}$ ,  $i_y = 3.81 \text{ cm}$

#### MOMENT OF RESISTANCE

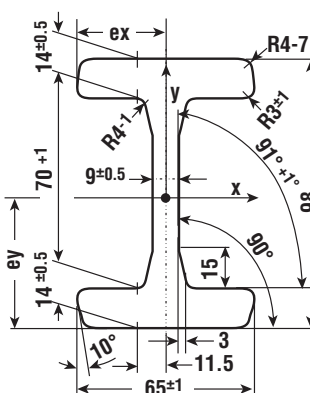
$W_{x_{min}} = 10.91 \text{ cm}^3$

$W_{x_{max}} = 18.20 \text{ cm}^3$

$W_y = 53.00 \text{ cm}^3$

### PROFILE RAIL I-CHANNEL

### HVRI-07



WEIGHT = 19.4 Kg/m

#### MOMENT OF INERTIA

$I_x = 344.29 \text{ cm}^4$ ,  $I_y = 57.63 \text{ cm}^4$

#### DIST. TO CENTER OF GRAVITY

$e_y = 4.90 \text{ cm}$ ,  $e_x = 3.25 \text{ cm}$

#### RADIUS OF INERTIA

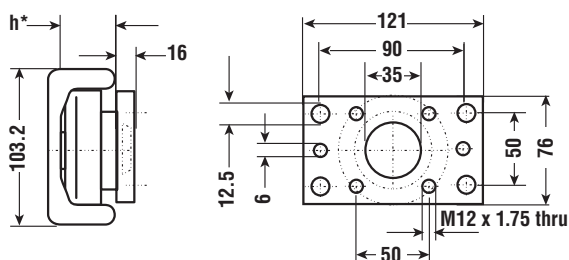
$i_x = 3.73 \text{ cm}$ ,  $i_y = 1.52 \text{ cm}$

#### MOMENT OF RESISTANCE

$W_x = 70.26 \text{ cm}^3$ ,  $W_y = 17.73 \text{ cm}^3$

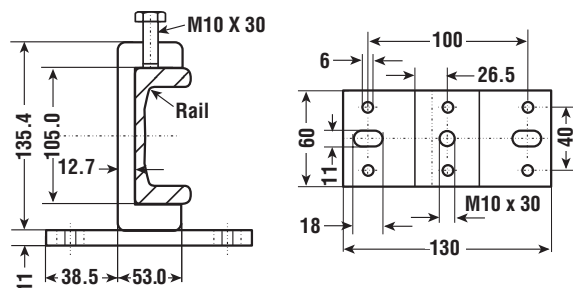
### FLANGE PLATE

### HVP1-1



### CLAMP FLANGE

### HVC-1



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

WHEN USED WITH SHOWN PROFILE RAILS

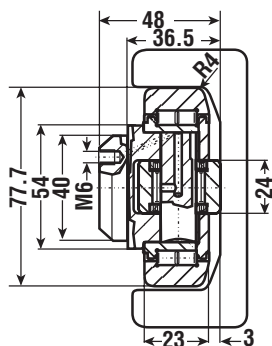
System Max. Static Radial Load = 8.6 KN / 0.9 US Ton-Force

System Max. Static Axial Load = 2.8 KN / 0.3 US Ton-Force



## AXIAL BEARING - FIXED

### HVB-056



**WEIGHT** = 1.00 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 59 KN

Max. static load = 102 KN

#### **BEARING AXIAL LOAD**

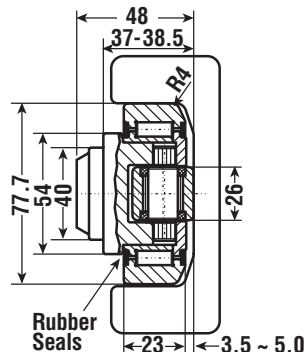
Max. dynamic load = 20 KN

Max. static load = 32 KN

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

## ECCENTRIC ADJUSTABLE

### HVBEA-456



**WEIGHT** = 1.00 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 59 KN

Max. static load = 102 KN

#### **BEARING AXIAL LOAD**

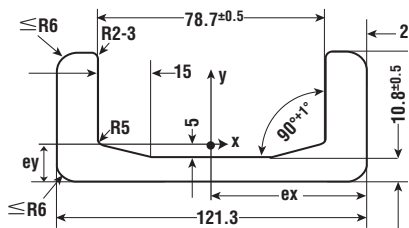
Max. dynamic load = 23 KN

Max. static load = 36 KN

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

## PROFILE RAIL U-CHANNEL

### HVR-2



**WEIGHT** = 20.9 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 37.92 \text{ cm}^4$ ,  $I_y = 493.58 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 1.54 \text{ cm}$ ,  $e_x = 6.07 \text{ cm}$

#### **RADIUS OF INERTIA**

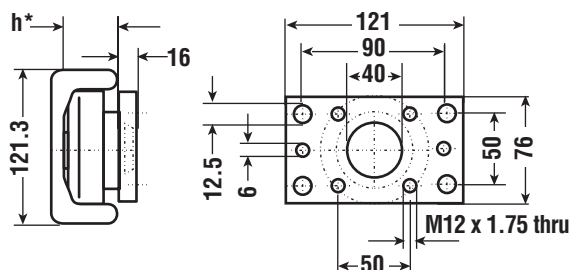
$i_x = 1.19 \text{ cm}$ ,  $i_y = 4.30 \text{ cm}$

#### **MOMENT OF RESISTANCE**

$W_{x_{min}} = 14.83 \text{ cm}^3$ ,  $W_{x_{max}} = 24.58 \text{ cm}^3$ ,  $W_y = 81.38 \text{ cm}^3$

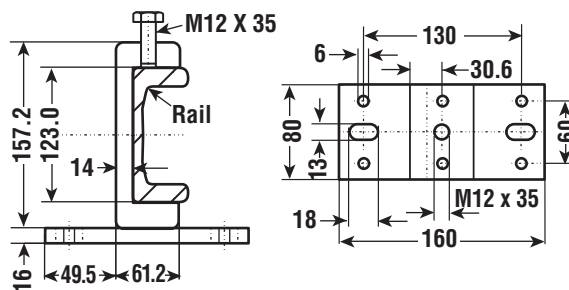
## FLANGE PLATE

### HVP2-1



## CLAMP FLANGE

### HVC-2



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

WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force  
System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force

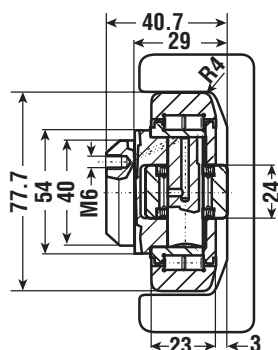


# Hevi-Rail® Linear Bearing Systems

## 1.0 US Ton-Force

### AXIAL BEARING - FIXED

### HVB-057



**WEIGHT** = 0.90 Kg

#### BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

#### BEARING AXIAL LOAD

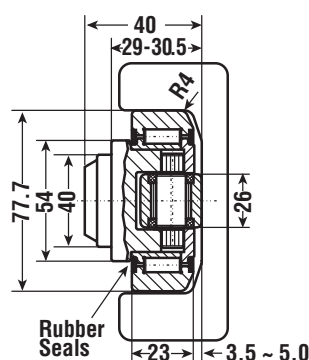
Max. dynamic load = 20 KN

Max. static load = 32 KN

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

### ECCENTRIC ADJUSTABLE

### HVBEA-457



**WEIGHT** = 0.87 Kg

#### BEARING RADIAL LOAD

Max. dynamic load = 59 KN

Max. static load = 102 KN

#### BEARING AXIAL LOAD

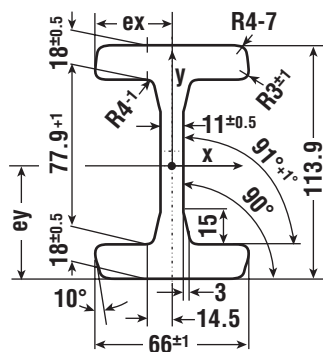
Max. dynamic load = 23 KN

Max. static load = 36 KN

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

### PROFILE RAIL I-CHANNEL

### HVRI-08



**WEIGHT** = 25.3 Kg/m

#### MOMENT OF INERTIA

$I_x = 597.54 \text{ cm}^4$ ,  $I_y = 76.79 \text{ cm}^4$

#### DIST. TO CENTER OF GRAVITY

$e_y = 5.70 \text{ cm}$ ,  $e_x = 3.30 \text{ cm}$

#### RADIUS OF INERTIA

$i_x = 4.24 \text{ cm}$ ,  $i_y = 1.54 \text{ cm}$

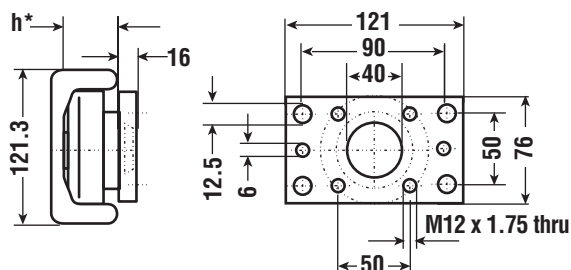
#### MOMENT OF RESISTANCE

$W_x = 104.92 \text{ cm}^3$ ,

$W_y = 23.27 \text{ cm}^3$

### FLANGE PLATE

### HVP2-1



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

WHEN USED WITH SHOWN PROFILE RAILS

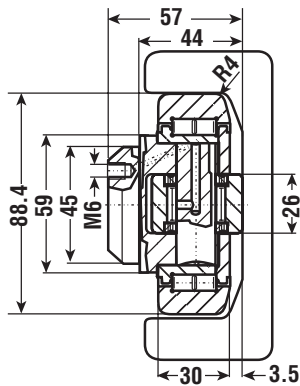
System Max. Static Radial Load = 8.9 KN / 1.0 US Ton-Force

System Max. Static Axial Load = 3.0 KN / 0.3 US Ton-Force



### AXIAL BEARING - FIXED

**HVB-058**



**WEIGHT** = 1.62 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 85 KN

Max. static load = 134 KN

#### **BEARING AXIAL LOAD**

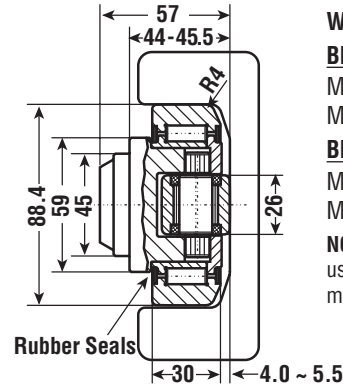
Max. dynamic load = 27 KN

Max. static load = 44 KN

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

### ECCENTRIC ADJUSTABLE

**HVBEA-458**



**WEIGHT** = 1.62 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 85 KN

Max. static load = 134 KN

#### **BEARING AXIAL LOAD**

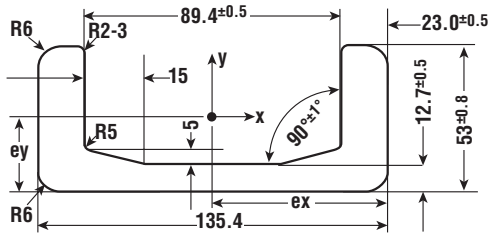
Max. dynamic load = 23 KN

Max. static load = 36 KN

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

### PROFILE RAIL U-CHANNEL

**HVR-3**



**WEIGHT** = 28.6 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 89.47 \text{ cm}^4$ ,  $I_y = 865.23 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 1.99 \text{ cm}$ ,  $e_x = 6.77 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 1.57 \text{ cm}$ ,  $i_y = 4.87 \text{ cm}$

#### **MOMENT OF RESISTANCE**

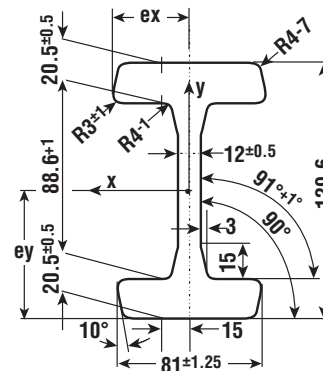
$W_{x_{min}} = 27.03 \text{ cm}^3$

$W_{x_{max}} = 44.96 \text{ cm}^3$

$W_y = 127.80 \text{ cm}^3$

### PROFILE RAIL I-CHANNEL

**HVRI-09**



**WEIGHT** = 34.1 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 1037.22 \text{ cm}^4$ ,  $I_y = 161.89 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 6.48 \text{ cm}$ ,  $e_x = 4.05 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 4.89 \text{ cm}$ ,  $i_y = 1.93 \text{ cm}$

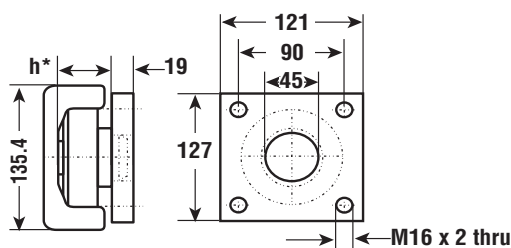
#### **MOMENT OF RESISTANCE**

$W_x = 160.07 \text{ cm}^3$ ,

$W_y = 39.97 \text{ cm}^3$

### FLANGE PLATE

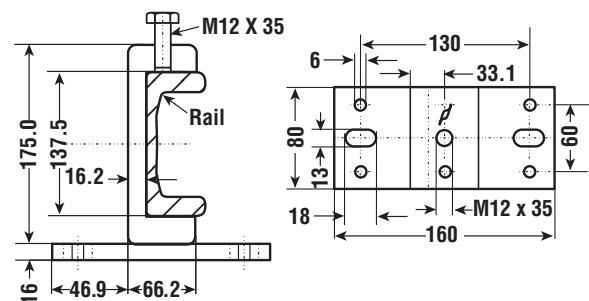
**HVP3-1**



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

### CLAMP FLANGE

**HVC-3**



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 15.6 KN / 1.7 US Ton-Force

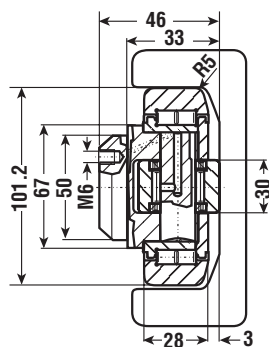
System Max. Static Axial Load = 5.2 KN / 0.6 US Ton-Force



# Hevi-Rail® Linear Bearing Systems

## 1.8 US Ton-Force

### AXIAL BEARING - FIXED HVB-059



**WEIGHT** = 1.80 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 92 KN

Max. static load = 153 KN

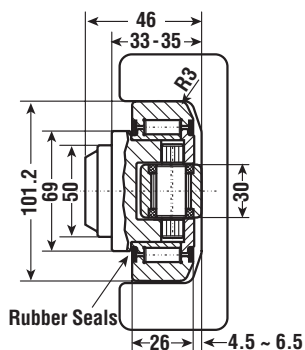
#### **BEARING AXIAL LOAD**

Max. dynamic load = 32 KN

Max. static load = 50 KN

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

### ECCENTRIC ADJUSTABLE HVBEA-459



**WEIGHT** = 1.74 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 91 KN

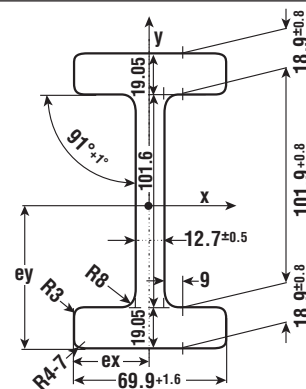
Max. static load = 140 KN

#### **BEARING AXIAL LOAD**

Max. dynamic load = 32 KN

Max. static load = 50 KN

### PROFILE RAIL I-CHANNEL HVRI-10



**WEIGHT** = 30.9 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 1078.01 \text{ cm}^4$ ,  $I_y = 104.38 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 6.99 \text{ cm}$ ,  $e_x = 3.49 \text{ cm}$

#### **MOMENT OF RESISTANCE**

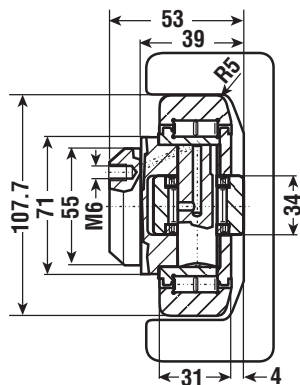
$W_x = 154.33 \text{ cm}^3$ ,  $W_y = 29.89 \text{ cm}^3$

**WHEN USED WITH SHOWN PROFILE RAILS**

**System Max. Static Radial Load = 15.5 KN / 1.7 US Ton-Force**

**System Max. Static Axial Load = 5.1 KN / 0.6 US Ton-Force**

### AXIAL BEARING - FIXED HVB-060



**WEIGHT** = 2.30 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 100 KN

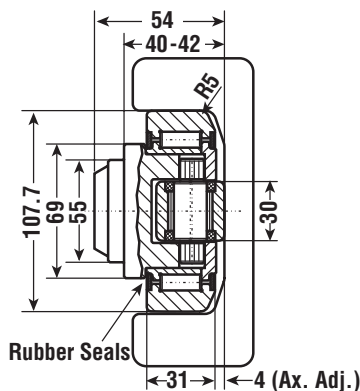
Max. static load = 174 KN

#### **BEARING AXIAL LOAD**

Max. dynamic load = 39 KN

Max. static load = 66 KN

### ECCENTRIC ADJUSTABLE HVBEA-460



**WEIGHT** = 2.27 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 100 KN

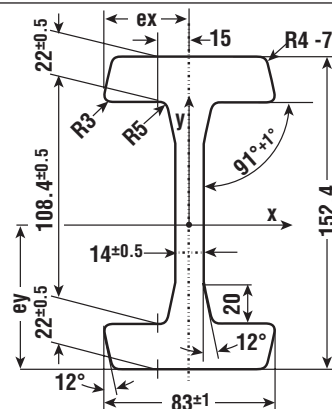
Max. static load = 174 KN

#### **BEARING AXIAL LOAD**

Max. dynamic load = 32 KN

Max. static load = 50 KN

### PROFILE RAIL I-CHANNEL HVRI-11



**WEIGHT** = 40.5 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 1670.08 \text{ cm}^4$ ,  $I_y = 184.52 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 7.62 \text{ cm}$ ,  $e_x = 4.15 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 5.69 \text{ cm}$ ,  $i_y = 1.91 \text{ cm}$

#### **MOMENT OF RESISTANCE**

$W_x = 219.17 \text{ cm}^3$ ,  $W_y = 44.46 \text{ cm}^3$

**WHEN USED WITH SHOWN PROFILE RAILS**

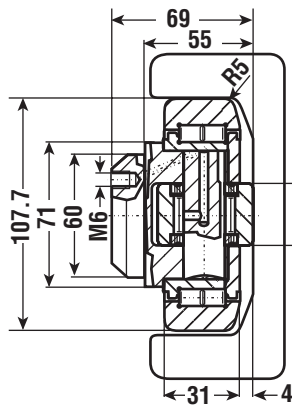
**System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force**

**System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force**



## AXIAL BEARING - FIXED

### HVB-061



**WEIGHT** = 2.82 Kg

#### BEARING RADIAL LOAD

Max. dynamic load = 100 KN

Max. static load = 174 KN

#### BEARING AXIAL LOAD

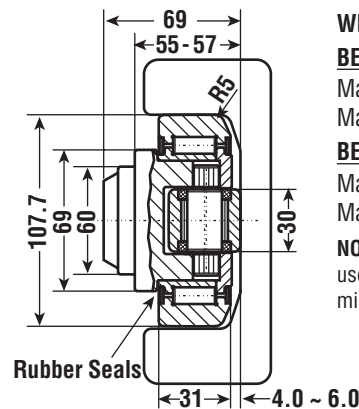
Max. dynamic load = 39 KN

Max. static load = 66 KN

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

## ECCENTRIC ADJUSTABLE

### HVBEA-461



**WEIGHT** = 2.82 Kg

#### BEARING RADIAL LOAD

Max. dynamic load = 100 KN

Max. static load = 174 KN

#### BEARING AXIAL LOAD

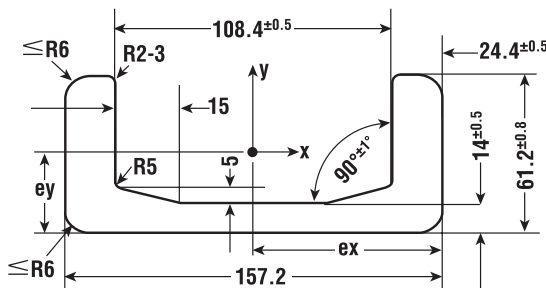
Max. dynamic load = 32 KN

Max. static load = 50 KN

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

## PROFILE RAIL U-CHANNEL

### HVR-4



**WEIGHT** = 35.9 Kg/m

#### MOMENT OF INERTIA

$I_x = 150.98 \text{ cm}^4$

$I_y = 1,494.32 \text{ cm}^4$

#### DIST. TO CENTER OF GRAVITY

$e_y = 2.25 \text{ cm}$ ,  $e_x = 7.86 \text{ cm}$

#### RADIUS OF INERTIA

$i_x = 1.82 \text{ cm}$ ,  $i_y = 5.72 \text{ cm}$

#### MOMENT OF RESISTANCE

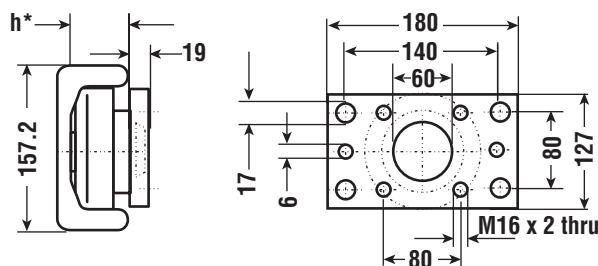
$W_{x_{min}} = 39.00 \text{ cm}^3$

$W_{x_{max}} = 67.13 \text{ cm}^3$

$W_y = 190.12 \text{ cm}^3$

## FLANGE PLATE

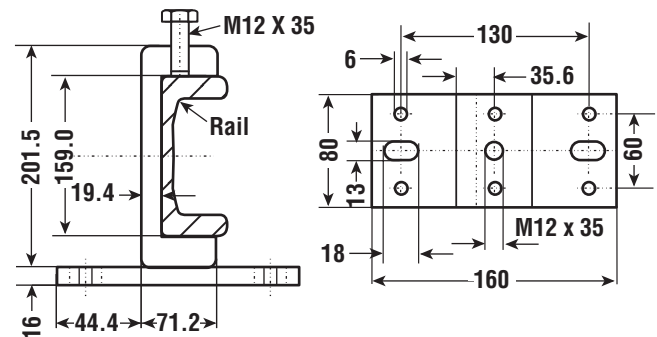
### HVP4-1



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

## CLAMP FLANGE

### HVC-4



WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 16.5 KN / 1.8 US Ton-Force

System Max. Static Axial Load = 5.5 KN / 0.6 US Ton-Force

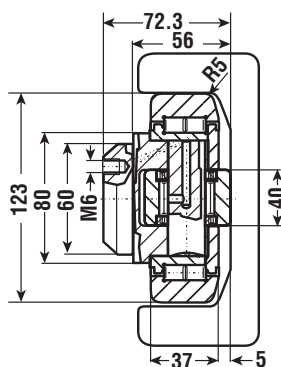


# Hevi-Rail® Linear Bearing Systems

## 2.6 US Ton-Force

### AXIAL BEARING - FIXED

### HVB-062



**WEIGHT** = 4.50 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 135 KN

Max. static load = 242 KN

#### **BEARING AXIAL LOAD**

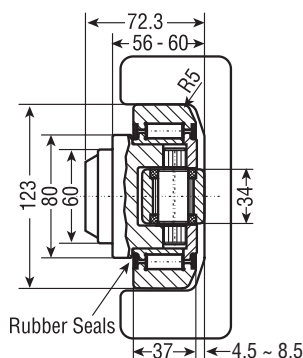
Max. dynamic load = 47 KN

Max. static load = 90 KN

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

### ECCENTRIC ADJUSTABLE

### HVBEA-462



**WEIGHT** = 3.90 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 135 KN

Max. static load = 242 KN

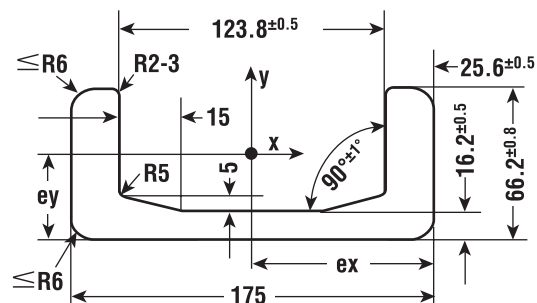
#### **BEARING AXIAL LOAD**

Max. dynamic load = 41 KN

Max. static load = 72 KN

### PROFILE RAIL U-CHANNEL

### HVR-5



**WEIGHT** = 42.9 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 205.84 \text{ cm}^4$ ,

$I_y = 2,185.32 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 2.37 \text{ cm}$ ,  $e_x = 8.75 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 1.94 \text{ cm}$ ,  $i_y = 6.32 \text{ cm}$

#### **MOMENT OF RESISTANCE**

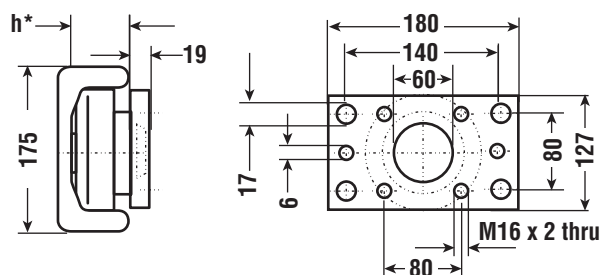
$W_{x_{min}} = 48.42 \text{ cm}^3$

$W_{x_{max}} = 86.89 \text{ cm}^3$

$W_y = 249.75 \text{ cm}^3$

### FLANGE PLATE

### HVP4-1



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

WHEN USED WITH SHOWN PROFILE RAILS,

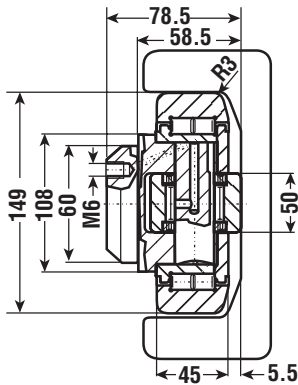
**System Max. Static Radial Load = 23.5 KN / 2.6 US Ton-Force**

**System Max. Static Axial Load = 7.8 KN / 0.9 US Ton-Force**



### AXIAL BEARING - FIXED

### HVB-063



**WEIGHT** = 6.52 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 183 KN

Max. static load = 353 KN

#### **BEARING AXIAL LOAD**

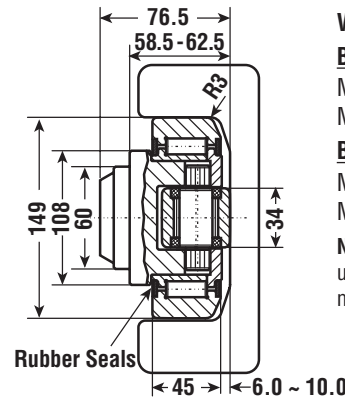
Max. dynamic load = 82 KN

Max. static load = 131 KN

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

### ECCENTRIC ADJUSTABLE

### HVBEA-463



**WEIGHT** = 6.50 Kg

#### **BEARING RADIAL LOAD**

Max. dynamic load = 183 KN

Max. static load = 353 KN

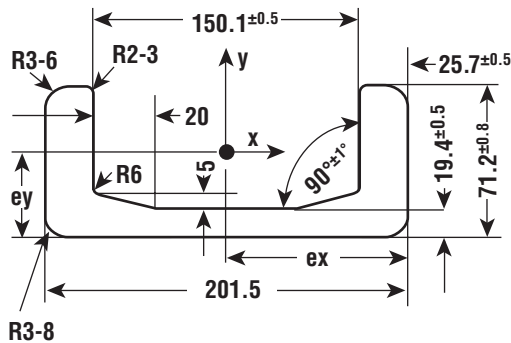
#### **BEARING AXIAL LOAD**

Max. dynamic load = 41 KN

Max. static load = 72 KN

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

### PROFILE RAIL HVR-6



**WEIGHT** = 52.3 Kg/m

#### **MOMENT OF INERTIA**

$I_x = 269.52 \text{ cm}^4$ ,

$I_y = 3,423.08 \text{ cm}^4$

#### **DIST. TO CENTER OF GRAVITY**

$e_y = 2.40 \text{ cm}$ ,  $e_x = 10.08 \text{ cm}$

#### **RADIUS OF INERTIA**

$i_x = 2.01 \text{ cm}$ ,  $i_y = 7.17 \text{ cm}$

#### **MOMENT OF RESISTANCE**

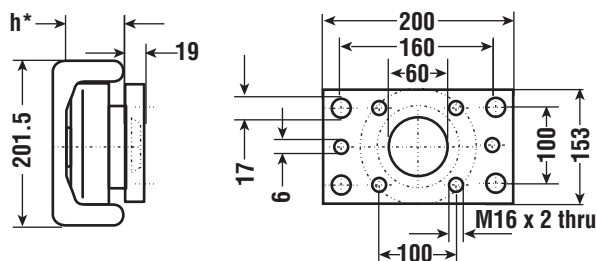
$W_{x_{min}} = 57.15 \text{ cm}^3$

$W_{x_{max}} = 112.11 \text{ cm}^3$

$W_y = 339.76 \text{ cm}^3$

### FLANGE PLATE

### HVP6-1



\* "h" refers to the depth of the axial bearing, so "h" depends on choice of HVB-063 or HVBEA-463.

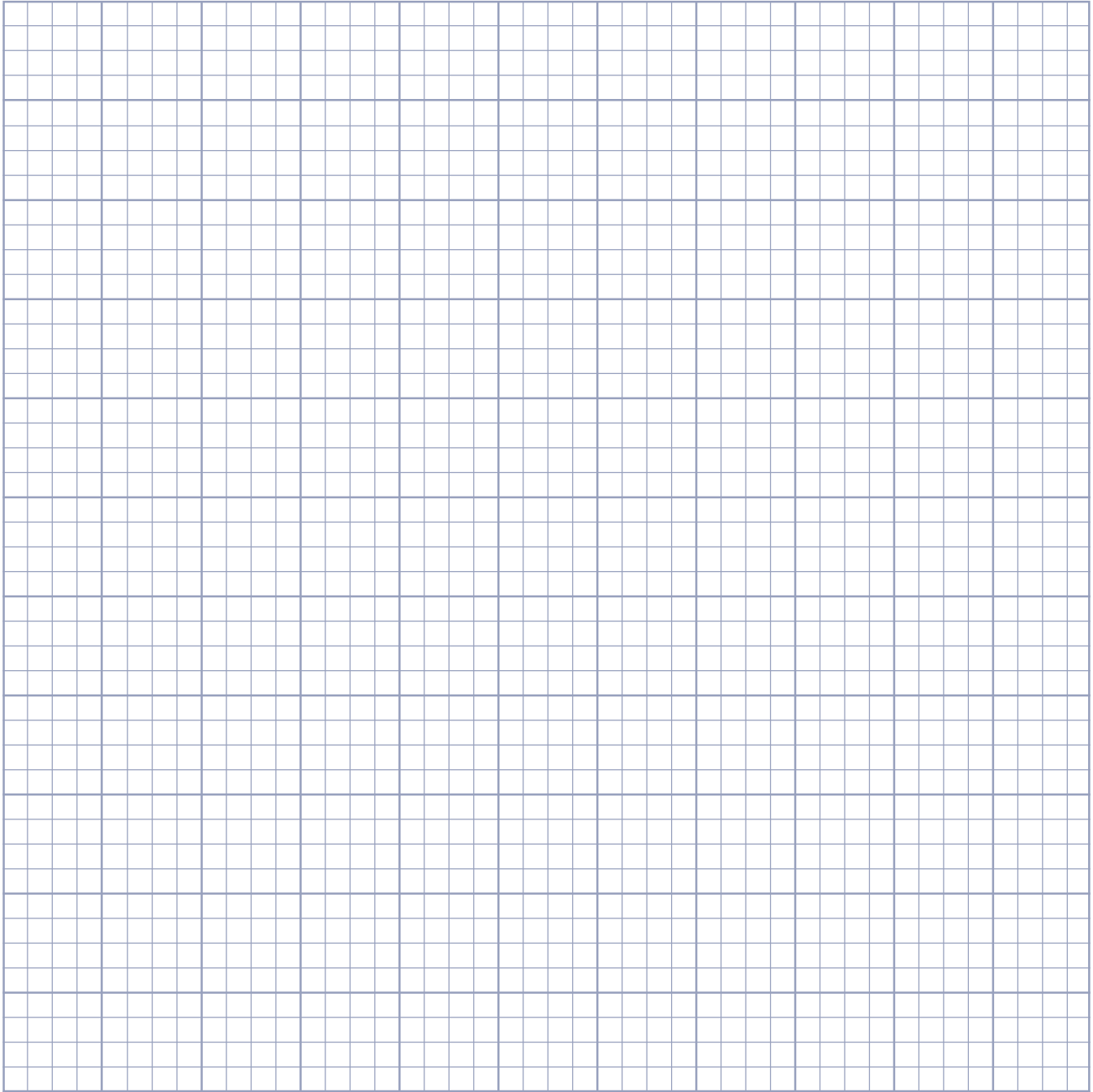
WHEN USED WITH SHOWN PROFILE RAILS

System Max. Static Radial Load = 41.1 KN / 4.6 US Ton-Force

System Max. Static Axial Load = 13.7 KN / 1.5 US Ton-Force

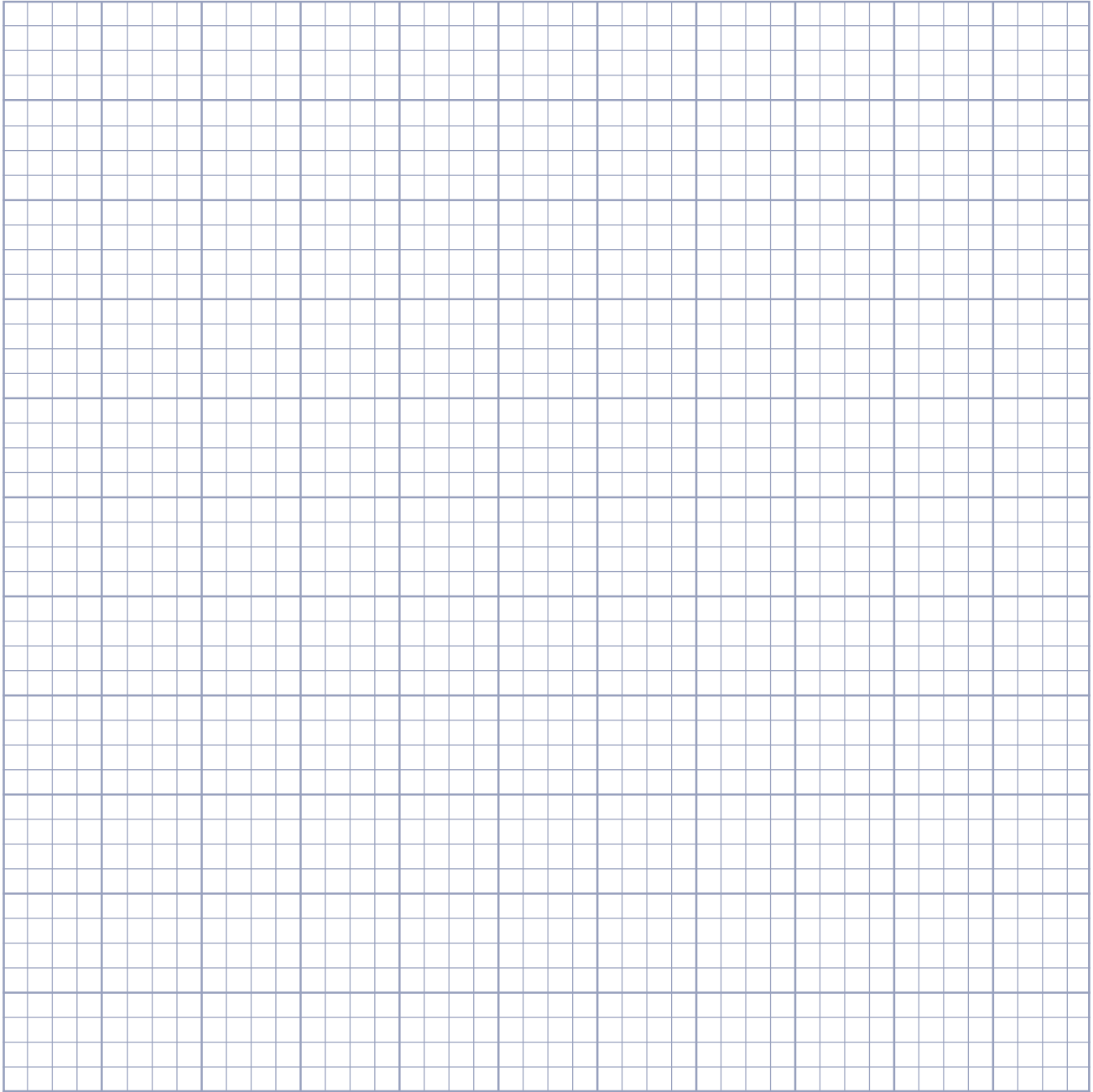
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|                |                          |
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| Company: _____ | Machine Type/Name: _____ |
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| Address: _____ |                          |
| _____          |                          |

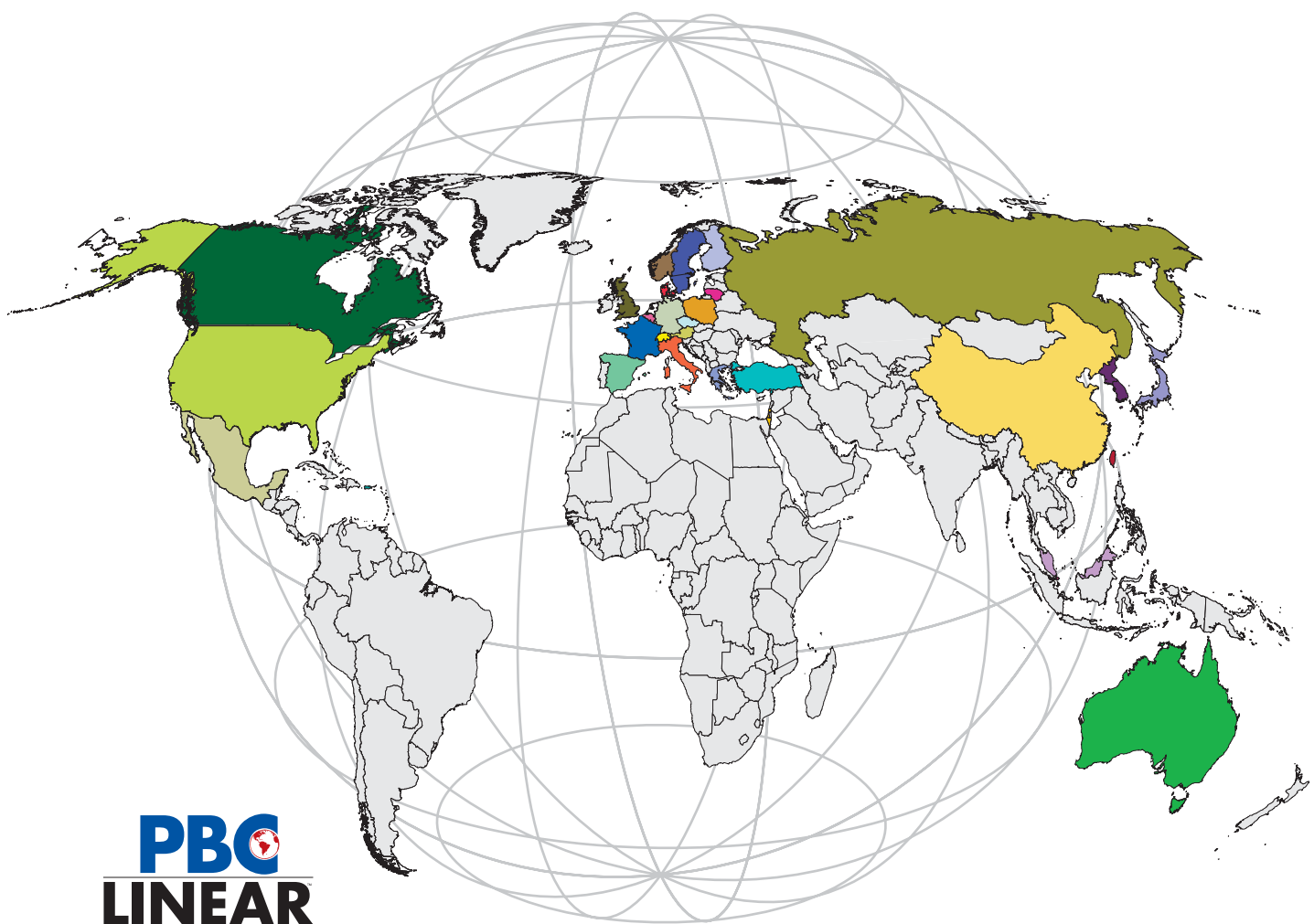


# Design & Layout Options

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