

Round Shaft Technology

Linear Bearings & Shafting



A PACIFIC BEARING CO.

1-800-962-8979

www.pbcllinear.com



Linear Shafting

Engineered for Maximum Linear Bearing Performance

Inch Series—page 40 Metric Series—page 72

Introducing **simplicity[®]** **60 PLUS[®]** S H A F T I N G



Only certified
Simplicity 60 Plus Shafting
provides maximum
bearing performance.



Optimized shaft finish
for ball bearings

Linear Ball Bearings

The right amount of microscopic surface texture holds lubrication for consistent smooth ball rotation minimizing the effects of metal-to-metal contact.

- **Excellent rigidity** while providing smooth, quiet operation
- **Extremely low friction** - rolling elements provide consistent anti-friction movement
- **Outer shell** - Available with steel jacket or self-aligning super bearing shell.



Optimized shaft finish
for plain bearings.

Simplicity[®] Plain Bearings

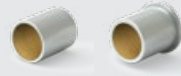
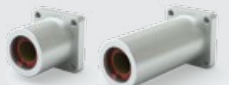
The Frelon[®] break-in and transfer process operates at maximum efficiency with Simplicity 60 Plus Shafting resulting in true self-lubrication and the longest life possible.

- **Self-lubricating** - maintenance-free, additional lubrication optional
- **Wide temperatures range** (-400°F/+400°F), (-240°C/+204°C)
- **Vibration damping** - eliminates fretting corrosion



I Inch Series **M** ISO Metric Series **J** JIS Metric Series

Product Selection Guide

SHAPE	SIZES	PRODUCT TYPE & DESCRIPTION		AVAILABLE IN:			FOUND ON PAGE		
				OPEN	CLOSED	WIDE	I	M	J
ROUND BEARINGS	I	PLAIN	Materials: aluminum alloy, steel, stainless steel						
	M		Self lubricating bearing with patented compound of PTFE developed for improved performance over other bearings. Standard sizes in stock.	•	•				
	J								
	I	BALL	Materials: steel						
	M		Each ball bearing consists of an outer cylinder, ball retainer, balls, and double seals.	•	•	•			
	J								
ROUND BEARINGS WITH HOUSINGS	M	THIN WALL	Materials: aluminum alloy housing or steel						
	M		Both plain and ball bearing versions of European metric sizes.		•				
	I	SLEEVE & SLEEVE WITH FLANGE	Materials: aluminum alloy housing						
	M		Replaces Oilite, bronze, and plastic bearings. Ideal for slow or moderate speeds for oscillating or rotary motion.		•				
	I	PILLOW BLOCK	Materials: aluminum alloy housing						
	M		Available with either plain or ball bearings. Self aligning for ease of mounting. Standard sizes in stock.	•	•	•			
ROUND BEARINGS WITH HOUSINGS	I	FLANGE MOUNT	Materials: aluminum alloy housing with clear anodized coating and inner plain bearing						
	I		Ease of mounting. Compact design.	•		•			
	M	FLANGE BEARING	Materials: aluminum alloy housing or steel						
	J		Both plain and ball bearing available. Ease of mounting. Compact design.		•	•			
	I	DIE SET FLANGE MOUNT	Materials: black oxidized steel or aluminum housing with inner plain bearing						
	M		Mounting precision. Size interchangeable with industry standard die sets.		•	•			
ROUND SHAFT	I	ROUND SHAFTING	Materials: ceramic coated aluminum, hardened steel, 440 stainless steel						
	M		Cut to length, random lengths, machined, pre-drilled, or tapped. Shaft assemblies and support rails also available.						
PRE-ASSEMBLED ROUND SHAFT	I	LINEAR SLIDE ASSEMBLIES	Materials: alloy steel, 440 stainless steel, ceramic coated, or chrome plated 303 SST shafts, aluminum support rails, standard Simplicity pillowblocks						
	I		Plain bearing and ball bearing slide assemblies. Standard components include: mounting plate, pillow block assemblies, steel shafts, and support rails. Options include shaft materials, lead screws, ball screws, hand cranks, and motors.						
SQUARE BEARINGS	I	SQUARE BEARINGS & SHAFTING	Materials: aluminum alloy housing with clear anodized coating and stainless steel shafting						
	I		Resists torque & eliminates extra costly components in parallel shafts.		•				



Contents



Inch Series



ISO Metric Series



JIS Metric Series



Applications



Product Overview – Plain & Ball Bearing



Plain Bearings – Performance Benefits



Plain Bearings – Ordering Information



Ball Bearings – Performance Benefits



Ball Bearings – Ordering Information

INCH SERIES

Linear Plain Bearings



Closed FL

Open FLN



Linear Ball Bearings



Closed IP

Adjustable IPxx-AJ

Open IPxx-OP



Linear Ball Bearings Super Self-Aligning



Closed IPS

Open IPSxx-OP



Linear Ball Bearings – Double Wide



IP-W

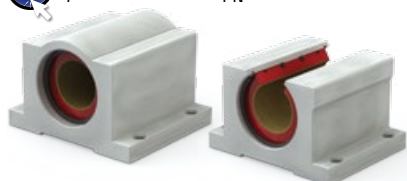


Simplicity Pillow Blocks



Closed P

Open PN



Simplicity Pillow Blocks – Twin



Closed PW

Open PWN



Linear Ball Bearing Pillow Blocks



Closed IPP

Open IPPN



Linear Ball Bearing Pillow Blocks – Twin



Closed IPPW

Open IPPWN

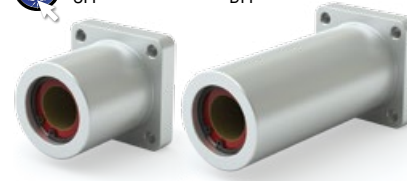


Simplicity Flange Mounts



Single SFP

Double DFP



Die Set Flange Mounts



Single SDS

Double DDS



Die Set Bushings



PAC



Simplicity Sleeve Bearings



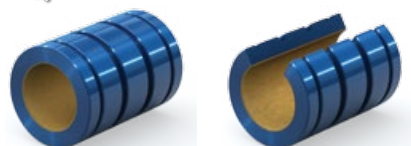
PS

With Flange PSF



**I** Inch Series**M** ISO Metric Series**J** JIS Metric Series

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EPxx-AJOpen
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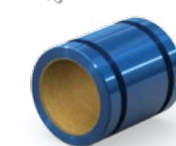
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CFPMR

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Email an Application Engineer



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Square Flange
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Email an Application Engineer

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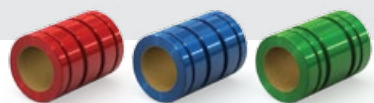
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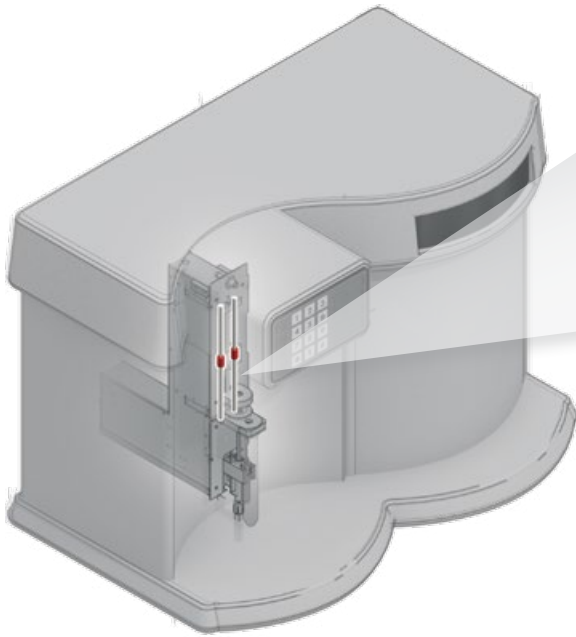
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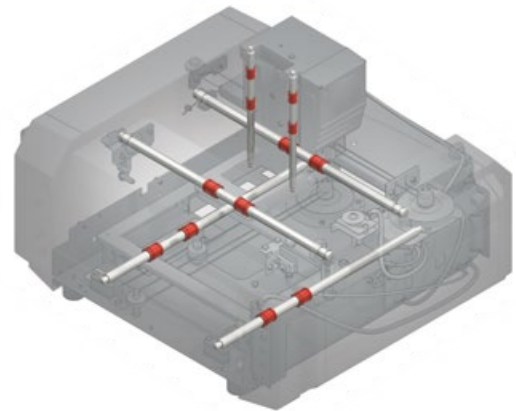


Applications

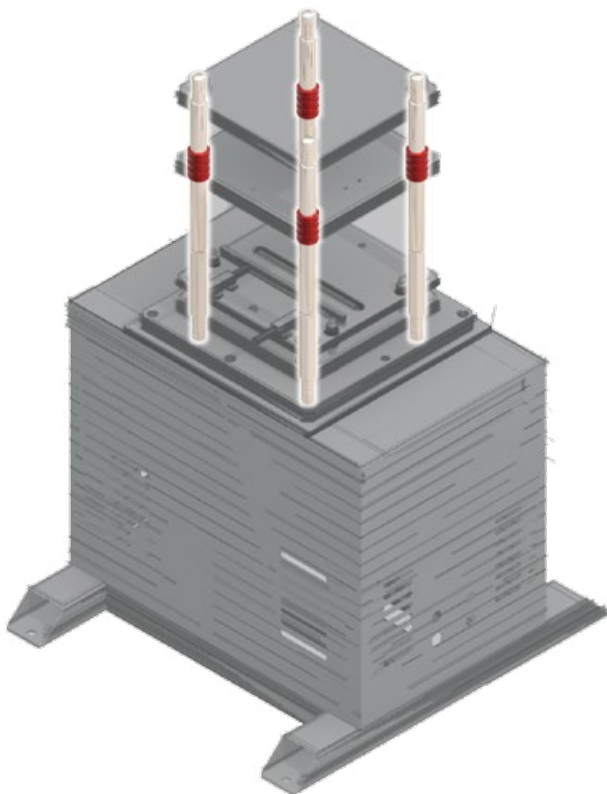


LAB EQUIPMENT: This blood analyzer utilizes Simplicity plain bearings because they are self-lubricating and do not require additional grease, which can cause contamination.

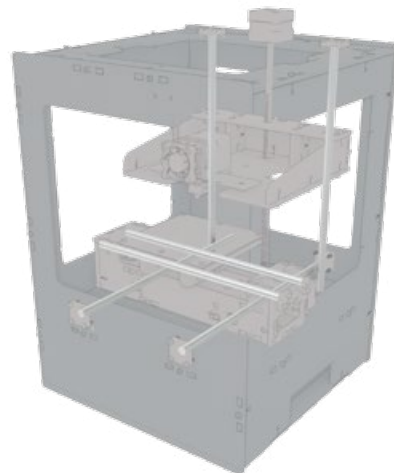
PRINTING: Commercial printers, 3D printers, laser printers, and deskjets all require smooth, precise, and quiet linear motion – which Simplicity linear plain bearings provide.



THERMOFORMING: Simplicity linear plain bearings operate in a wide range of temperatures – which is required when molding heated plastic sheeting in thermoforming machines.



ADDITIVE MANUFACTURING: 3D printers require smooth, repeatable linear motion which is achieved with Frelon-lined linear plain bearings.

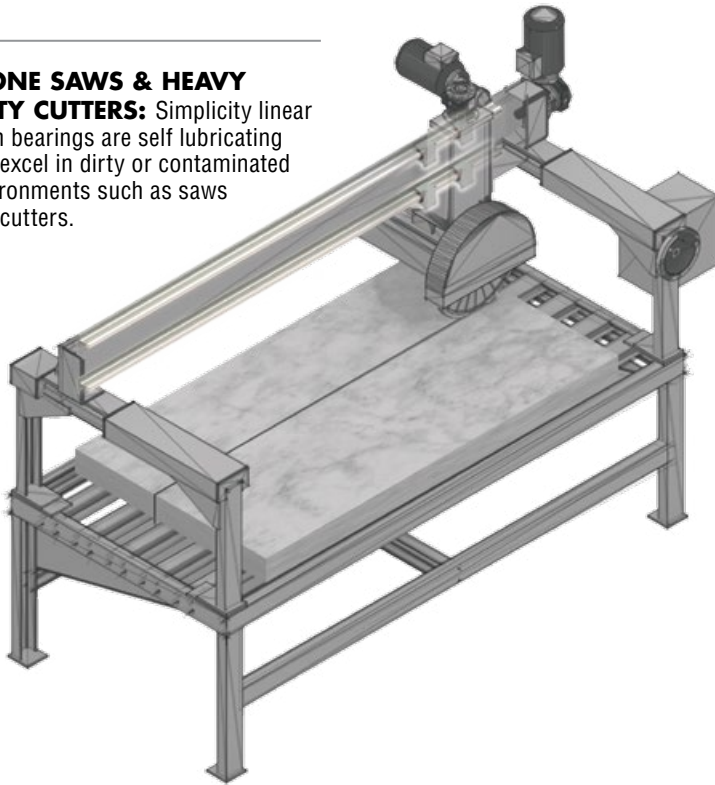




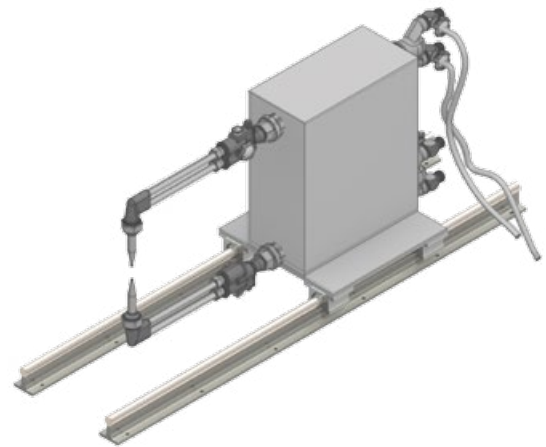
Applications

STONE SAWS & HEAVY

DUTY CUTTERS: Simplicity linear plain bearings are self lubricating and excel in dirty or contaminated environments such as saws and cutters.

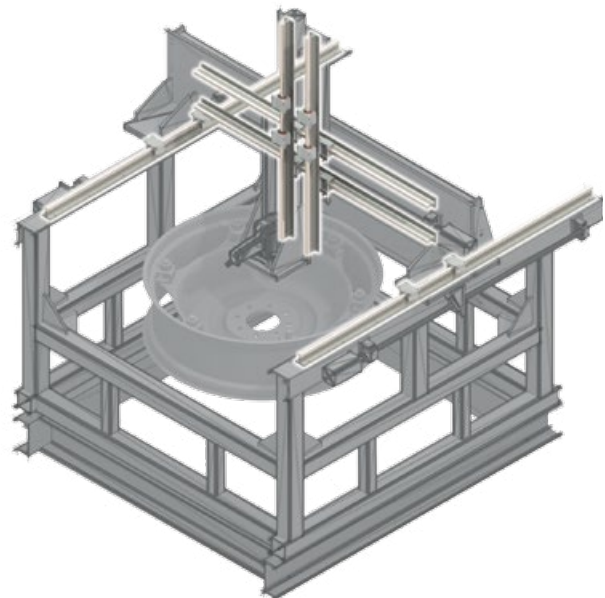


WELDING MACHINES: Simplicity linear bearings handle loads over 700 kN – 157,000 lbs and have a high temperature range – up to 204° C. As required in welding applications, they require low maintenance in contaminated environments.



SEAT ADJUSTMENT & SHOCK ABSORPTION: Not all applications are easily accessible for maintenance or repair, including tough military vehicle seating. This is one reason Simplicity plain bearings, with Frelon self-lubricating liner, is the best choice. Simplicity provides long lasting linear motion that will not catastrophically fail.

ASSEMBLY & INSPECTION STATIONS: Round Shaft Technology utilizes precision round shafting as a guideway and combines linear plain or ball bearings for movement – providing a low maintenance solution in assembly stations.





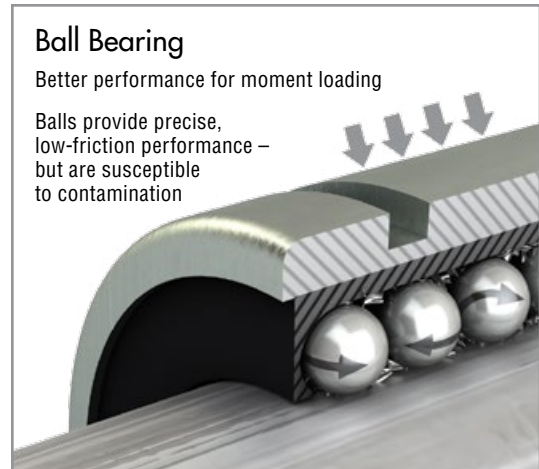
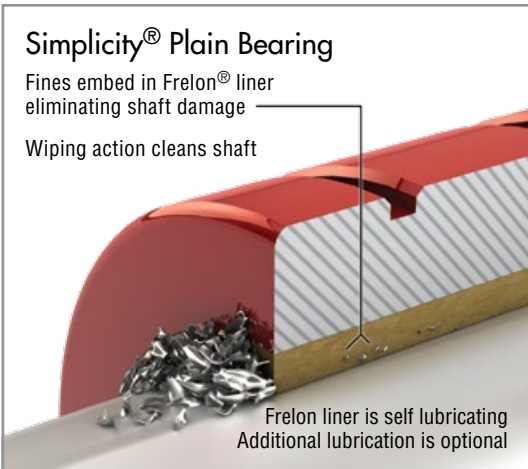
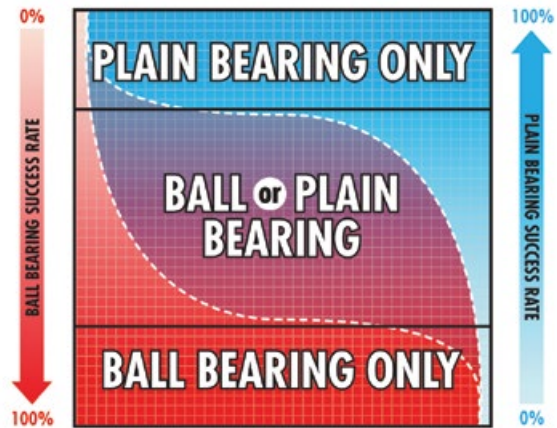
Plain Bearings & Ball Bearings Overview

LINEAR PLAIN & BALL BEARINGS

Good engineering principles dictate that the best bearing design be utilized for any given bearing application. Each type of bearing has advantages and disadvantages. Strengths or limitations can make it a clear choice depending on the application environment. At other times, an engineer will have a choice because multiple types of bearing can meet the need.

In 1983, PBC Linear® created the self-lubricating Simplicity® linear bearing – a technology that solves problems in dirt, vibration, shock loading, cleanrooms, welding, foundry, and washdown situations where linear ball bearings regularly fail.

Today, PBC Linear provides a full range of linear motion solutions for both plain bearing and ball bearing applications – giving engineers the versatility to choose the right bearing for the application. Below is a chart to help guide in that decision making process.



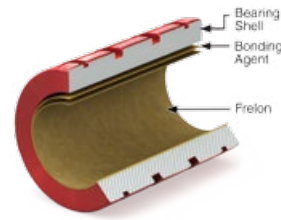
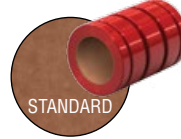
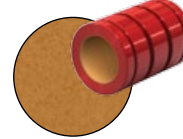
BEARING TYPE	LOAD	MOMENT LOADS	LINEAR SPEED	COEFFICIENT OF FRICTION	PRECISION	ENVIRONMENT
 Plain	Up to 20x ball bearings	Limited due to 2:1 ratio  Link to 2:1 Ratio	Up to 300 sfm (1.524 m/sec) dry running Up to 825 sfm (4.19 m/sec) with lubrication	Frelon Gold® = .125 Consistent over life and in a variety of environments	Precision running clearance = .0005" (.0127 mm) per side	Excels in contaminated, wet, dry, and clean room applications
 Ball	Limited due to point-to-point contact of balls to shaft	Moderate to good High moment loads can cause increased wear and shorten bearing life	Up to 3 m/sec (590 sfm) Always requires lubrication	Average = .05 Can change dramatically dependent on environmental conditions	Can be preloaded, virtually eliminating play This can shorten life	Will corrode and fail in contamination



Simplicity® Plain Bearings

FRELON® + PRECISION BEARING TECHNOLOGY = 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 316 stainless steel shell
- Patented self-aligning capabilities are standard
- Provides both linear, oscillating, rotary, or any combination of motions
- Maintenance free operation
- Smooth and quiet operation – plus long life
- Highly accurate – all critical surfaces are ground on precision bearing grinders
- Will not catastrophically fail or damage shaft!

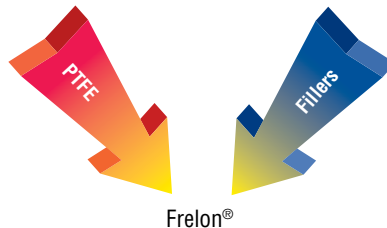
**Frelon Gold®****Frelon® J****Frelon® W**

FRELON BEARING LINER MATERIALS

The Frelon liners are compounds of PTFE and fillers developed for improved performance over other bearings. They provide low wear, low friction, self-lubrication, and high strength.

PTFE 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 damping (NO metal-to-metal contact)



- Frelon GOLD® – dark gold high performance material compatible with RC60 hardened steel shafting, RC70 ceramic coated and 440 stainless steel shafting.
- Frelon® J – yellow material formulated to provide the optimum performance with 300 series stainless steel and softer shafting such as bare aluminum.
- Frelon® W – white color, food-grade liner, FDA compliant, compatible with stainless steel and softer metal shafting.
- PBC Linear's unique bonding process facilitates the ability to provide solutions for applications with a range of additional bearing liner materials. Contact PBC Linear to discuss your specific application.



Email an Application Engineer

FILLER BENEFITS:

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

SIMPLICITY® 60 PLUS® SHAFTING

PBC Linear's® development team, working in close conjunction with engineers from Lee Linear®, have together formulated a linear shaft designed specifically for optimal bearing performance – *Simplicity 60 Plus Shafting*. Advanced process capabilities maintain the ideal surface finish resulting in the longest life and highest performing shaft-to-bearing combination.

Don't be misled—all shafting is not alike! Don't settle for below average performance. The smoothest shafting is NOT always the best for all situations. **In most applications, smoother does not equal better; in fact, it means decreased performance and shortened life.** A shaft surface finish of 8-12 Ra is the optimal smoothness for linear plain and ball bearings.

Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

- Optimized shaft surface finish
- Holds lubrication for consistent and smooth ball rotation for linear ball bearings
- Faster break-in and better Frelon® transfer for plain bearings
- Longest bearing life possible, less down time and maintenance



PERFORMANCE
BENEFITS



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

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Plain Bearings Simplicity®

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

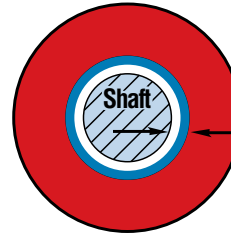
*Caution: Not recommended for all parallel shaft applications
Any misalignment can cause binding on the shaft.
See recommended "FLC".*

COMPENSATED—"FLC":

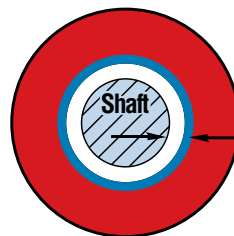
- Performs like a standard ball bearing
- Additional clearance built into the I.D. (all other dimensions are the same as the precision bearings)
- Ideally suited for parallel shaft applications

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

RUNNING CLEARANCE



Standard "FL"
Performs like a preloaded linear ball bearing
.0005" per side clearance average
(.0127 mm)



Compensated "FLC"
Performs like a standard linear ball bearing
.0015" + per side clearance average
(.0381 + mm)

BEARING SHELL

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

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

MATERIALS:

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

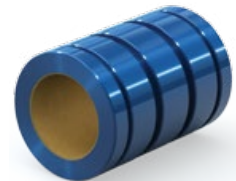
316 Stainless Steel – Has an excellent corrosion resistance and is widely used by the paper, food, and other industries.



Standard



Inch Series



ISO Metric Series



JIS Metric Series

Optional



316 Stainless Steel

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.



[Link to the Simplicity Video](#)



[More Information about Simplicity's Chemical Resistance](#)

Only certified Simplicity® 60 Plus® Shafting provides maximum linear bearing performance.



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

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Simplicity® Plain Bearings

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° of misalignment capability from centerline (1° overall).
- O-rings are used on either side of the crown. This cushions and eliminates clatter in operation.

PILLOW BLOCKS

- Made of aluminum alloy
- Pillow blocks are interchangeable with industry standard ball bearing pillow blocks
- Critical centerline dimensions hold accuracy within $\pm .001$ " 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.

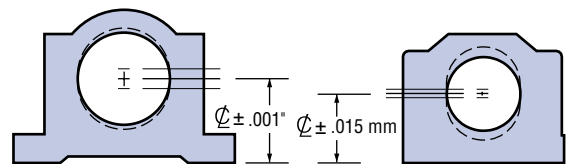
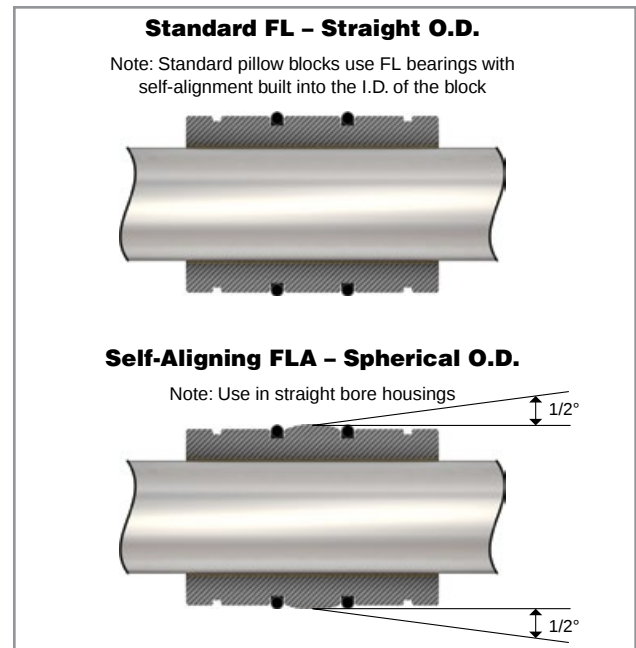
- Standard pillow blocks have 1/2° misalignment from centerline.
- This feature is built into the housing with a spherical radius at the midpoint of the block.
- This self-aligning capability will allow for some shaft deflection and misalignment.

Rigid or straight bore housings are available.

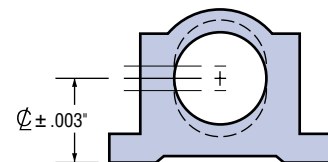
- This does not allow for any self-alignment and provides a very rigid assembly.
- They are typically used in single shaft applications.

OPEN BEARINGS ORIENTATION

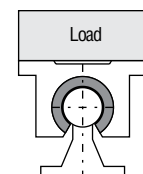
Simplicity bearings can operate in any orientation. Load capacities will vary on open bearings depending on the orientation in which they are being used.



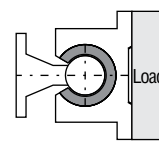
SIMPLICITY = TIGHTER TOLERANCES



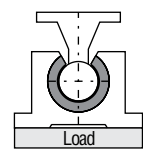
INDUSTRY STANDARD



100% Capacity



70% Capacity



40% Capacity

PERFORMANCE
BENEFITS



Plain Bearings Simplicity®

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®	3000 psi or 210.9 kgf/cm ²
Frelon® J / Frelon® W	1500 psi or 105.45 kgf/cm ²

- Allows the engineer to maintain performance in a smaller designed package
Example: Simplicity 1/2" I.D. = 1" I.D. linear ball bearing
- Shock loads and vibration are absorbed
- Metal to metal contact is eliminated providing a smoother, quieter running assembly

SPEED CHARACTERISTICS

Exceeding these speeds causes frictional heat and accelerates liner wear.

BEARING MATERIAL	NO LUBE CONTINUOUS MOTION	NO LUBE INTERMITTENT MOTION	WITH LUBRICATION*
Frelon GOLD®	300 sfm	825 sfm	825 sfm
	60 in./sec.	165 in./sec.	165 in./sec.
	1.524 m/sec.	4.19m/sec.	4.19 m/sec.
Frelon® J / Frelon® W	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)

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

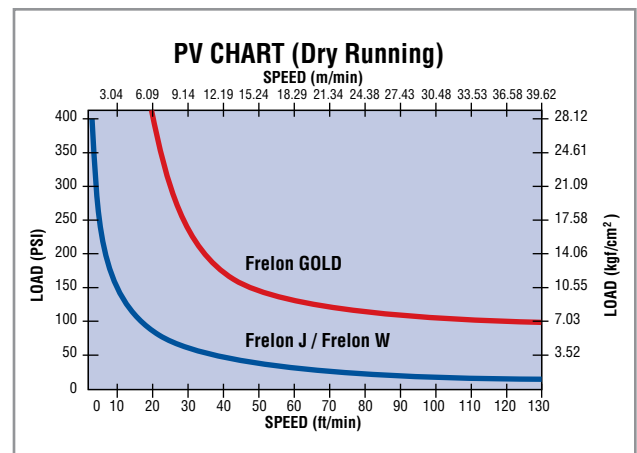
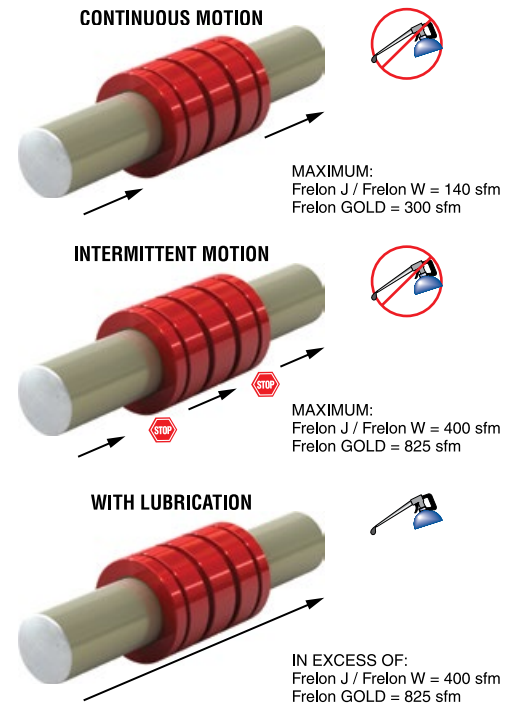
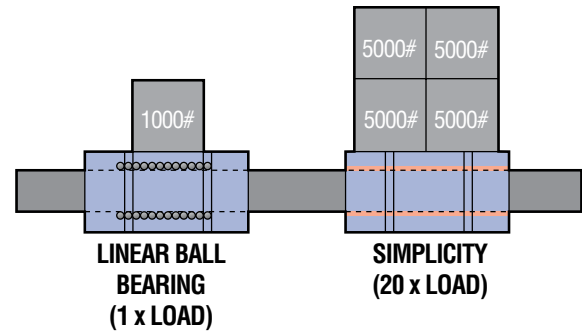
BEARING MATERIAL	MAX. "PV"	MAX. "P"	MAX. "V" (NO LUBRICATION)
Frelon GOLD®	20,000 (psi x ft./min.)	3000 psi	300 sfm
	430 (kgf/cm ² x m/min.)	210.9 kgf/cm ²	91.44 m/min.
Frelon® J / Frelon® W	10,000 (psi x ft./min.)	1500 psi	140 sfm
	215 (kgf/cm ² x m/min.)	105.45 kgf/cm ²	42.66 m/min.

PV = The performance measurement of plain 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.





Simplicity® Plain Bearings

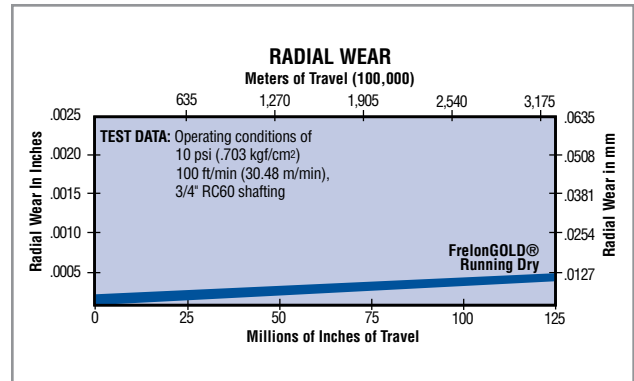
WEAR RATE/LIFE EXPECTANCY

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

Factors that will affect life:

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

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



FACTORS AFFECTING WEAR RATE/LIFE

Shafting requirements for Frelon® bearing materials.

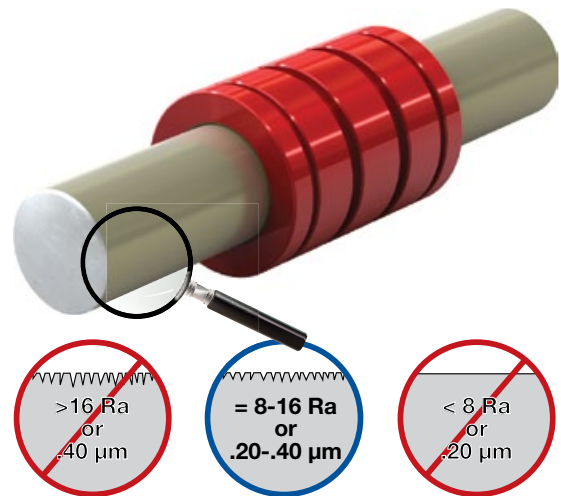
BEST PERFORMANCE:

- Finish of 8 - 12 Ra
- Hardness of RC 60

ACCEPTABLE PERFORMANCE:

- Finish of 8 - 16 Ra
- Hardness of RC 35
- Surface finish requirements apply to all 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 that is polished to < 8 Ra.



CANTILEVERED LOADS

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

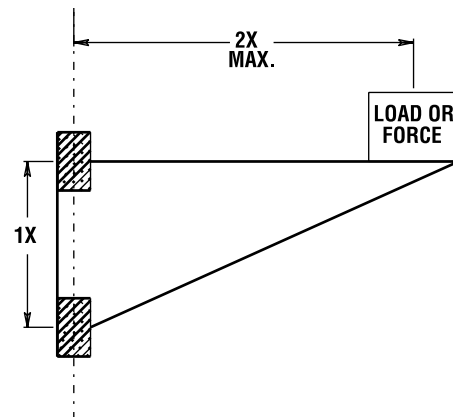
Example: If 2x equals 10" then 1x must be at least 5"



Binding will occur if the 2:1 ratio is exceeded!



2:1 Ratio Information





Plain Bearings Simplicity®

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.



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

Do not use smooth chrome shafting with Frelon bearings. The surface finish is less than 8 Ra and does not maintain proper transfer of Frelon material. This will result in accelerated wear.

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.

CHEMICAL RESISTANCE

Simplicity bearings stand up to harsh environments and will provide excellent performance in a submerged condition.

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

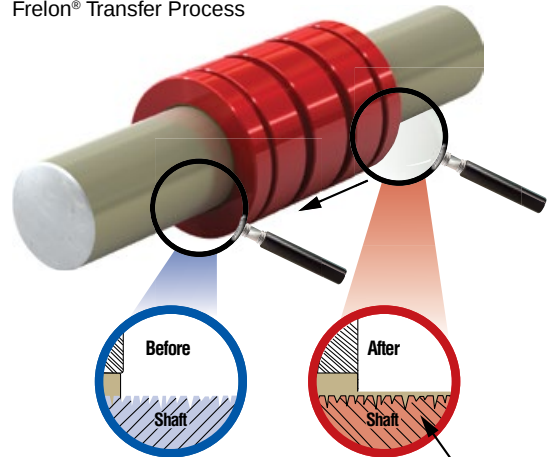
Frelon® J – almost universal chemical inertness. Only molten sodium and fluorine at elevated temperatures and pressures show any signs of attack.

Frelon® W – A white colored food-grade liner that is FDA compliant.

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

316 Stainless Steel Shell (Optional) – excellent chemical and corrosion resistance in harsh environments.

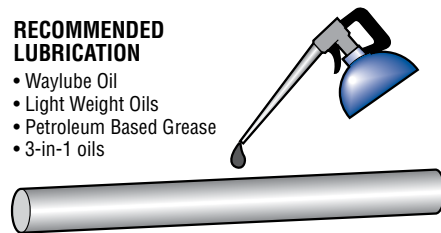
Frelon® Transfer Process



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.

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



[More Information about Simplicity's Chemical Resistance](#)



Simplicity® Plain Bearings

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.

VACUUMS/OUTGASSING/CLEANROOMS

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

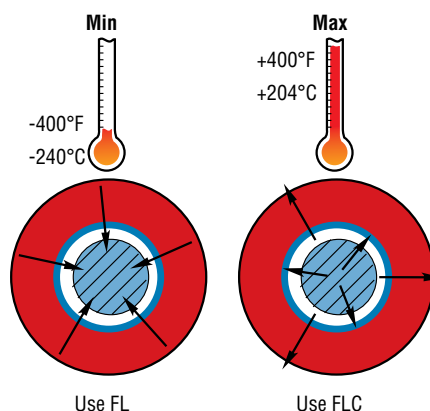
Testing has been done on the Frelon® materials in accordance with ASTM E-595-90 with acceptable maximums of 1.00% TML and .10% CVCVM.

MATERIAL	%TML	%CVCVM
Frelon Gold	0.00	0.00
Frelon J	0.18	0.01

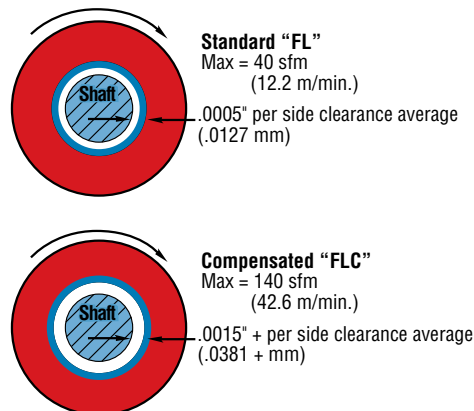
TML = Total Mass Loss

CVCVM = Collected Volatile Condensable Materials

Temperature Extremes



Maximum Rotary Speeds



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.



Plain Bearings Simplicity®

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 (-54°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: -20°F – +212°F

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

Temperature: -40 – +200°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

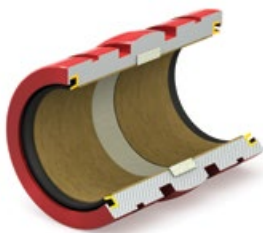
Order with “JKM” modifier

- 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 are glued / Closed are not

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



BEARING ALIGNMENT

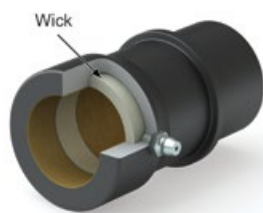
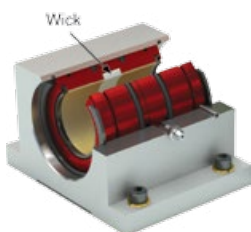
- Linear ball bearings will continue to operate in a misaligned condition, but can cause damage to shafting and could catastrophically fail.
- Simplicity bearings DO NOT tolerate misalignment. They simply will stop moving without any damage to the shafting. Self-aligning housings will aid in misalignment – up to 1/2° from centerline.

Misalignment considerations: Please refer to the tables in the installation section for possible solutions to misalignment.



[Misalignment Considerations—page 126](#)

ZERK FITTING IN HOUSING





Accessories Plain Bearings

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.		
	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	N/A	N/A	6030025
FL64	N/A	N/A	6030026
FM/FJ SERIES	PART NO.		
FM20/FJ20	N/A	N/A	6030027
FM25/FJ25	N/A	N/A	6030028
FM30/FJ30	N/A	N/A	6030029
FJ35	N/A	N/A	6030030
FJ38	N/A	N/A	6030030
FM40/FJ40	N/A	N/A	6030031
FM50/FJ50	N/A	N/A	6030032
FM60/FJ60	N/A	N/A	6030033
FM80/FJ80	N/A	N/A	6030034
FJ100	N/A	N/A	6030052
FJ120	N/A	N/A	6030053

O-RINGS

FL SERIES	PART NO.	
	NITRILE BUNA 70	VITON
FL04	6000001	N/A
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	N/A
FM08	6000014	N/A
FM10	6000015	N/A
FM12	6000016	N/A
FM16	6000017	N/A
FM20	6000018	N/A
FM25	6000019	N/A
FM30	6000020	N/A
FM40	6000021	N/A
FM50	6000022	N/A
FM60	6000023	N/A
FM80	6000024	N/A

RETAINING RINGS (INTERNAL)

*INCH OPEN	PART NO.		*METRIC OPEN	PART NO.	
	STEEL	STAINLESS STEEL		STEEL	*STAINLESS STEEL
PN08	6010035	6010064	PMN12	6010044	N/A
PN10	6010036	6010066	PMN16	6010045	6010107
PN12	6010037	6010068	PMN20	6010046	N/A
PN16	6010038	6010070	PMN25	6010047	N/A
PN20	6010039	6010072	PMN30	6010048	6010083
PN24	6010040	6010074	PMN40	6010049	N/A
PN32	6010041	6010076	PMN50	6010050	N/A
CLOSED	PART NO.		CLOSED	PART NO.	
P04	6010026	6010052	PM08	6010042	N/A
P06	6010027	6010053	PM10	6010043	N/A
P08	6010028	6010054	PM12	6010044	N/A
P10	6010029	6010055	PM16	6010045	6010107
P12	6010030	6010056	PM20	6010046	N/A
P16	6010031	6010057	PM25	6010047	N/A
P20	6010032	6010058	PM30	6010048	6010083
P24	6010033	6010059	PM40	6010049	N/A
P32	6010034	6010060	PM50	6010050	N/A

ZERK FITTINGS

INCH	PART NO.
1/4-28" Steel	6050002
1/4-28" Stainless	6050003
METRIC	PART NO.
M8 x 1.0 Steel	6050001

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

* Stainless steel rings for open bearings are trimmed/cut prior to shipping.



Ordering Information Plain Bearings

PLAIN BEARINGS

Series

FL - Standard Inch Series
FLR - Supergroove Interchange
 Available only with **FL06, 08, 12, 16**

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

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

I.D. Features

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

Closed or Open Style

No Entry - Standard closed bearing
N - Open series bearing (not available in **FLA**)
 Available only on **FL, FM, FJ** series

Bearing Shell Material

Available ONLY on the **FL, FM, FMT, FG, FJ** series
No Entry - Standard aluminum alloy
***S** - 316 Stainless Steel
 *Made to order. No finish plating or anodize available.

Nominal Shaft Diameter

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

FL A C N S 16 - D E JKM Q

Seal Options

D - Double seals of standard Polymod® material
DU - Double seals of moly impregnated urethane material
DV - Double seals of viton - high temperature material
 D, DU, and DV seals available with **FL08-FL32**
 DU seals available with **FM20-FM80, FJ20-FJ120**

Bearing Liner Material

No Entry - Standard Frelon GOLD® liner for hardened steel, ceramic coated, and 440 stainless steel shafting
***E** - Special Frelon J® liner for soft shafting (aluminum, 300 series stainless steel, etc.)
 * Limited availability may require special quote
W - Food grade liner (contact PBC Linear before ordering)

Internal Lubrication

No Entry - Standard bearing - No lube system
JKM - Thru hole, and internal felt wick to help lubrication retention and flow.
 JKM available with **FL08-FL64, FM12-FM80, FJ20-FJ150**

Special Modifications

No Entry - Standard Options
Q - Shipped Oil Free
 (contact PBC Linear before ordering)



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72

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



Plain Bearings **Ordering Information**

PLAIN BEARINGS WITH HOUSINGS

Series

- P** - Standard Inch Pillow Blocks (FL)
- PW** - Inch Twin Pillow Blocks (FL)
- PM** - ISO Metric Pillow Blocks (FM)
- SFP** - Inch Single Flange Mounts (FL)
- DFP** - Inch Double Flange Mounts (FL)
- SDSx*** - Single Flange Mount Die Set (FLA)
- DDSx*** - Double Flange Mount Die Set (FLA)
- PACx*** - Inch Die Set Bearings
- PACMx*** - ISO Metric Die Set Bearings
- SFPM** - ISO Metric Single Flange Bearings
- DFPM** - ISO Metric Double Flange Bearings
- CFPM** - ISO Metric Double Center Flange Bearings
- SFPJ** - JIS Metric Single Flange Bearings
- DFPJ** - JIS Metric Double Flange Bearings
- CFPJ** - JIS Metric Double Center Flange Bearings

* Specify shell material. In part number, replace 'x' with: Z = Aluminum; or T = Steel.

Notes: Standard Simplicity bearings are installed in housings.
Metric flange bearings do not have bearing inserts.

Closed or Open Style

- No Entry** - Standard Closed Series
 - N** - Open Series
- Available only on **P**, **PW**, **PM** 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.)
- Available only on **SFP**, **DFP**, **SDS**, **DDS** series
- No Entry** - Standard Square Flange
 - R** - Round Flange
- Available only on **SFPM**, **DFPM**, **CFPM**, **SFPJ**, **DFPJ**, **CFPJ** series

Housings Only

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

Nominal Shaft Diameter

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

- D** - Double seals of standard Polymod® material
- DU** - Double seals of moly impregnated urethane material
- DV** - Double seals of viton - high temperature material
- PAC** and **PACM** available only as:
- S** - Single seals of standard Polymod® material
- SU** - Single seals of moly impregnated urethane material
- SV** - Single seals of viton - high temperature material

Bearing Liner Material

- No Entry** - Standard Frelon GOLD® liner for hardened steel or ceramic coated aluminum
- *E** - Special Frelon J® liner for soft shafting
(aluminum, 300 series stainless steel, etc.)
- * Limited availability may require special quote
- W** - Food grade liner (contact PBC Linear before ordering)

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
- Zerk fitting installed into pillow block, other housing, or directly into die sets **PAC** & **PACM**.

Special Modifications

- No Entry** - Standard Options
- Q** - Shipped Oil Free
(contact PBC Linear before ordering)



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Ball Bearings 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 linear 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

Linear ball bearings 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.

Materials

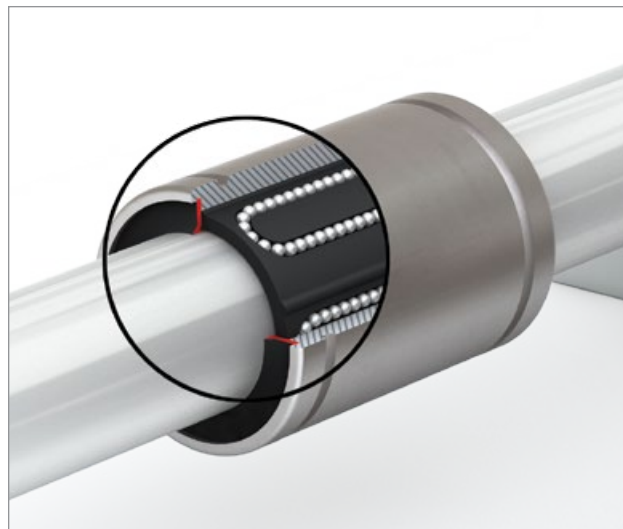
Ball bearings consist of an outer cylinder, ball retainer, balls, double seals and two end rings. The ball retainer which holds the balls in the recirculating tracks is held inside the outer cylinder by end rings.

- 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.
- Double seals are standard.

VARIETY OF TYPES

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

- Inch, ISO Metric, and JIS Metric sizes
- Self-aligning super ball bearings in Inch sizes
- Double wide in Inch, ISO Metric, and JIS Metric sizes
- Square and round flange in ISO Metric, and JIS Metric sizes
- Double wide square and round flange in ISO Metric, and JIS Metric sizes
- Double wide with center flange location in ISO Metric, and JIS Metric sizes
- Pillow blocks, open and closed, in Inch and ISO Metric
- Double wide pillow blocks in Inch sizes



Linear ball bearings
perform best
when paired with
Simplicity® 60 Plus® Shafting
– designed to deliver top
performance and long life
from PBC Linear.



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Overview **Ball Bearings**

Simplicity® linear ball bearings are available in a variety of configurations designed to meet a range of application needs.

Bearings – IP, EP, & JP Series (Inch, ISO, & JIS Metric)

Pillow Blocks – IPP & EPP (Inch & ISO Metric)

- Solid steel outer shell
- Industrial strength polymer ball retainer
- End rings with integrated seals standard
- Used in standard PBC pillow blocks that supply 1/2° self-alignment in all directions
- Excellent rigidity while providing smooth, quiet operation

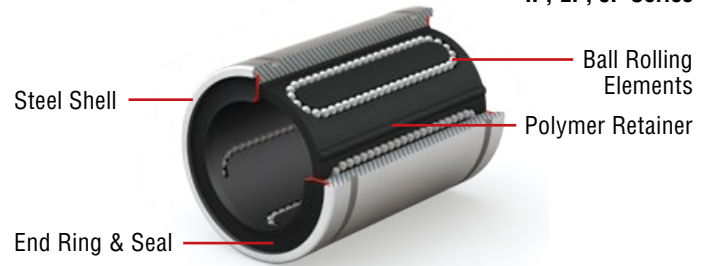
IPS Series (Inch sizes only)

- Outer shell is of high strength polymer
- Ball bearing raceway inserts are hardened steel
- Inserts allow smooth ball rotation while maintaining even preload with the shaft or inner race
- Inserts provide 1/2° self-alignment in all directions when used in a straight bore pillow block or housing
- Provide increased load capacity and life in a lightweight design

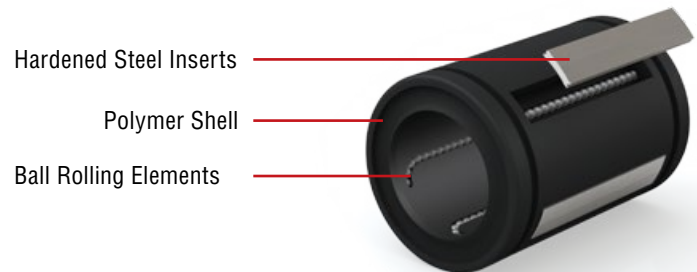
Flanged Bearings – IP, EP, & JP Series (Inch, ISO, & JIS Metric)

- Solid steel outer shell
- Industrial strength polymer ball retainer
- End rings with integrated seals standard
- Excellent rigidity while providing smooth, quiet operation

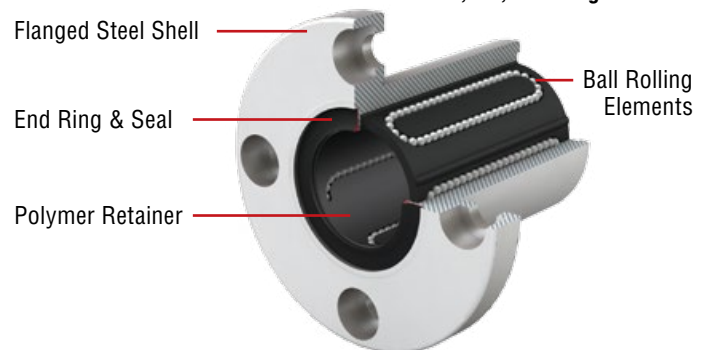
IP, EP, JP Series



IPS Series



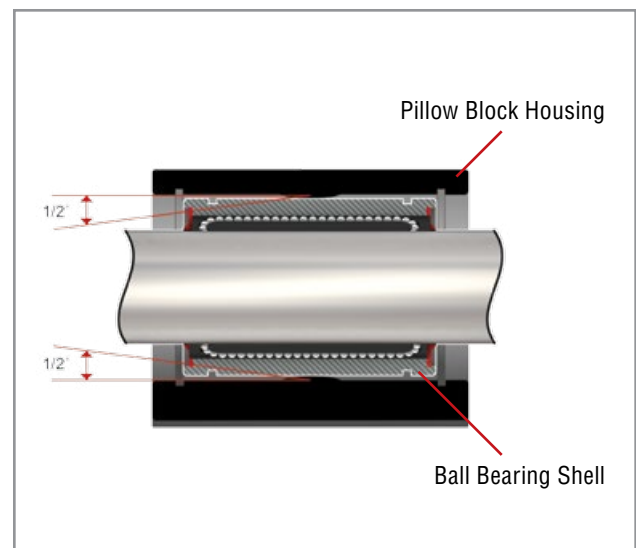
IP, EP, JP Flanged Series



SELF-ALIGNING PILLOW BLOCKS

Pillow blocks combine linear ball bearings with PBC's self-aligning pillow block to compensate for misalignment or shaft deflection in the application.

- Used in standard PBC pillow blocks that supply 1/2° self-alignment in all directions.
- Straight bore pillow blocks are also available for applications which demand more rigidity. Contact factory for details.
- PBC Linear's bearings are size interchangeable with industry standard ball bearings and with PBC's Simplicity® plain bearings.





Ball Bearings Selection Guide



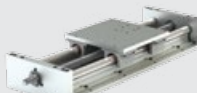
Inch Series



ISO Metric Series



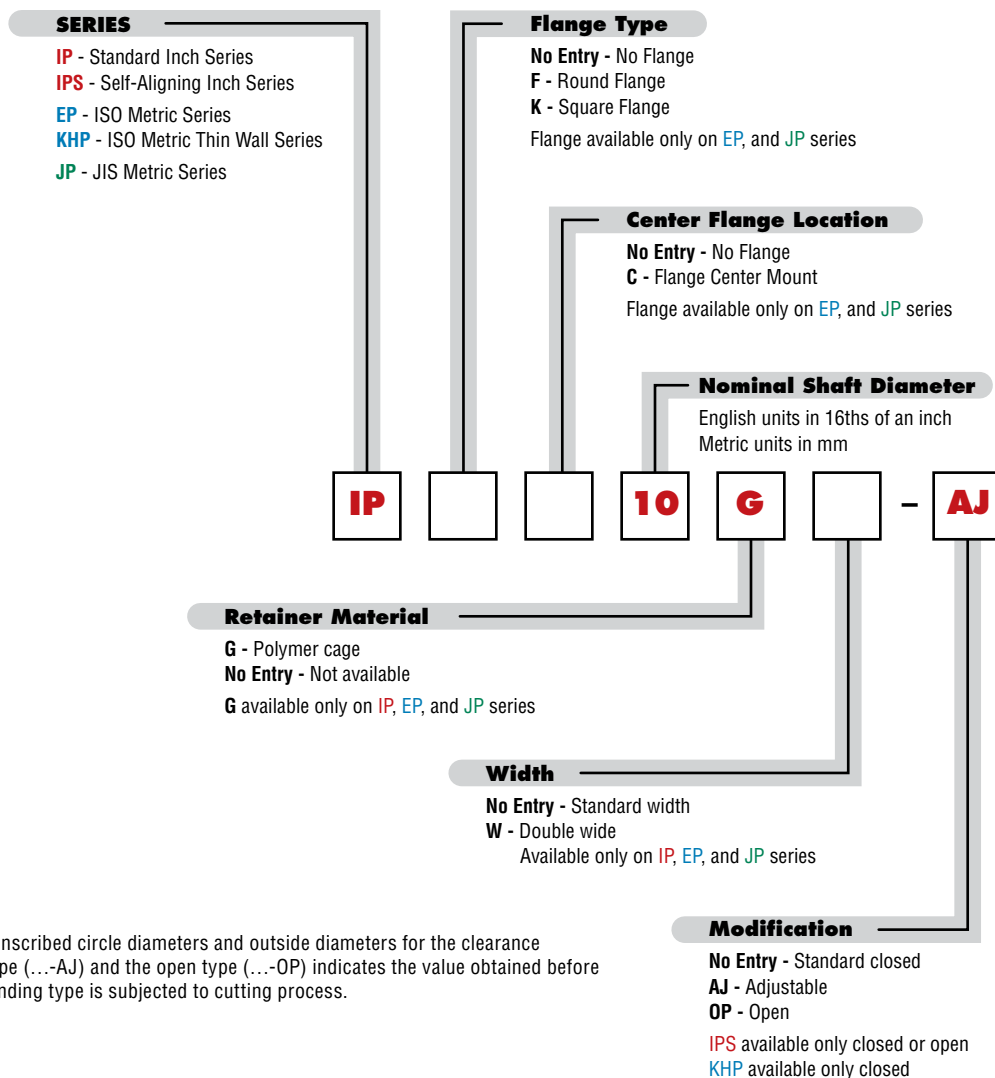
JIS Metric Series

SIZES	PRODUCT TYPE & DESCRIPTION		AVAILABLE IN:			FOUND ON PAGE		
			OPEN	CLOSED	WIDE	I	M	J
I	STANDARD	Materials: steel						
M		Each ball bearing consists of an outer cylinder, ball retainer, balls, and two double seals.	•	•				
J								
I	PILLOW BLOCKS	Materials: aluminum housing with inner steel bearing						
M		Size interchangeable, industry standard pillow block housing.	•	•				
	PILLOW BLOCKS – DOUBLE WIDE	Materials: ceramic coated aluminum, hardened steel, 440 stainless steel						
I		Extended length, size interchangeable, industry standard pillow block housing.	•	•	•			
	SUPER SELF-ALIGNING	Materials: steel						
I		Interchangeable with industry standard super-type ball bearings. Inserts provide 1/2° self-alignment in all directions when used in a straight bore pillow block or housing.	•	•				
	THIN WALL	Materials: steel						
M		A thin wall bushing in European metric sizes.		•				
I	DOUBLE WIDE	Materials: steel						
M		Extended length ball bearings consisting of steel outer cylinder, ball retainer, balls, and two double seals.		•	•			
J								
	FLANGE MOUNT	Materials: steel						
M		Standard ball bearing with either a square or round flange.		•				
J								
	FLANGE MOUNT – DOUBLE WIDE	Materials: steel						
M		Extended length standard ball bearing with either a square or round flange.		•	•			
J								
	FLANGE MOUNT – CENTER	Materials: aluminum alloy housing or steel						
M		Extended length standard ball bearing with a center located square or round flange.		•				
J								
	LINEAR SLIDE ASSEMBLIES	Materials: alloy steel, 440 stainless steel, or chrome plated shafts, aluminum support rails, standard self-aligning pillowblocks						
I		Ball bearing slide assemblies. Standard components include: mounting plate, pillow block assemblies, steel shafts, and support rails. Options include shaft materials, lead screws, ball screws, hand cranks, and motors.						
	ROUND SHAFTING	Materials: hardened steel, 440 stainless steel						
I		Cut to length, random lengths, machined, pre-drilled, or tapped. Shaft assemblies and support rails also available.						
M								



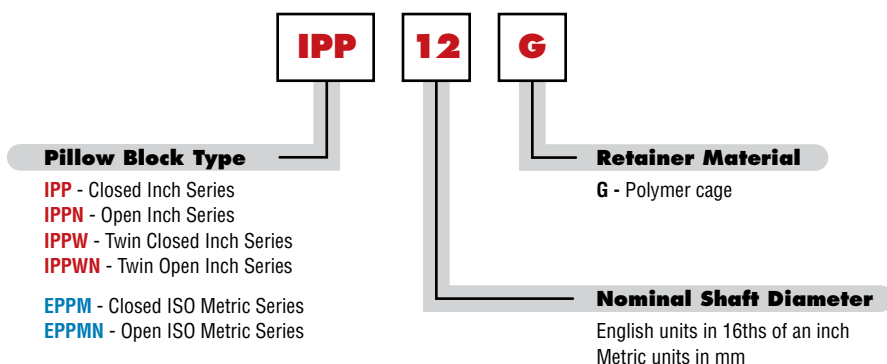
Linear Ball Bearings **Ordering Information**

BALL BEARINGS



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.

BALL BEARING PILLOW BLOCKS



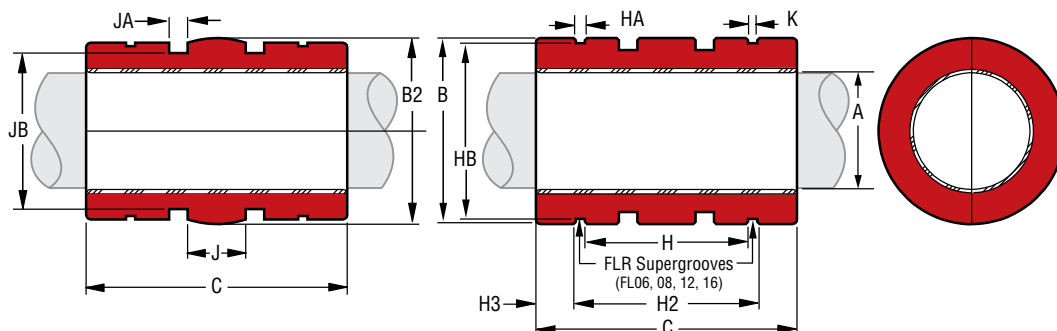


Simplicity® Linear Plain Bearings



*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 for self-aligning bearings.

DIMENSIONAL INFORMATION

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

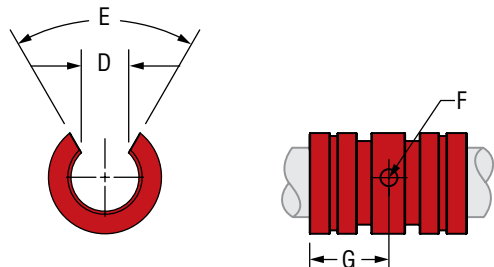
MOUNTING DIMENSIONAL INFORMATION

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

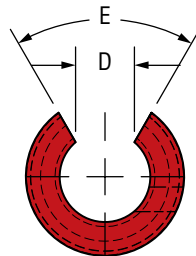
Note: FLR is only available on FL06, FL08, FL12 and FL16.

Linear Plain Bearings **Simplicity®****LINEAR PLAIN BEARINGS – FL & FLN**

FLN 04 - FLN 06

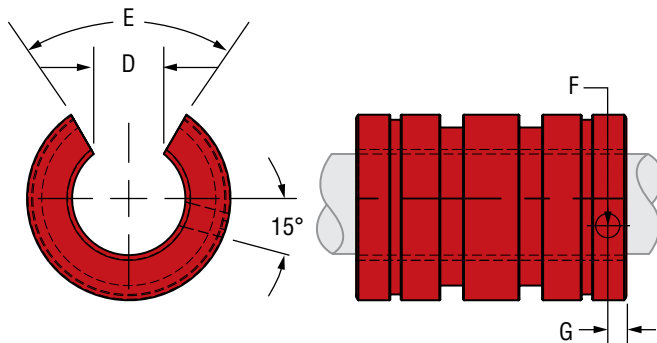


FLN 08

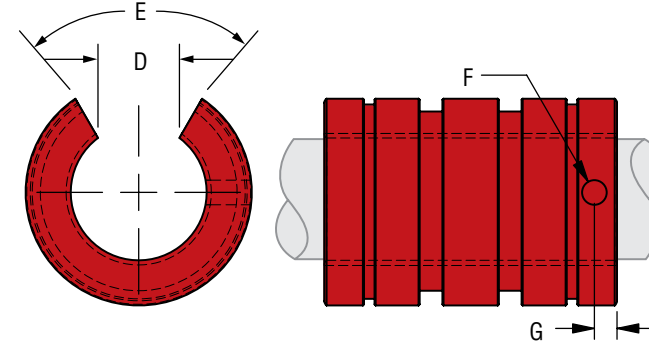


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FLN 10



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	BEARING WEIGHT
PRECISION	COMPENSATED	IN				IN	LBS.
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®.



Plain Bearing Accessories: Retaining Rings, Seals, O-Rings—page 17



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD LBS.	
		FRELON	
		GOLD	J & W
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

Note: 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

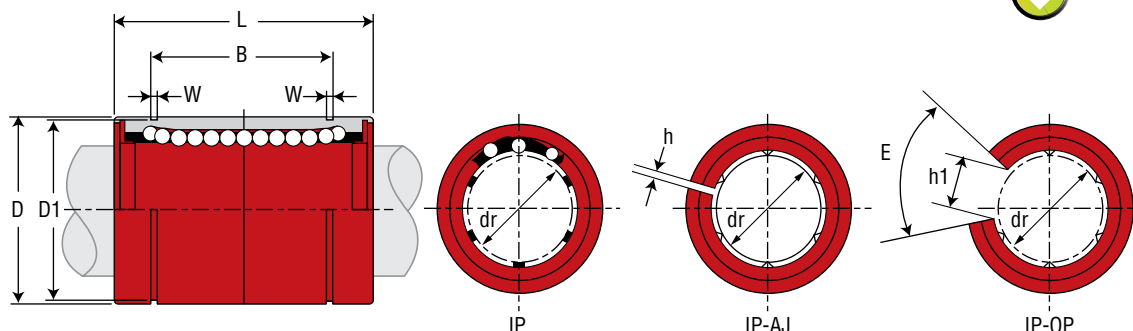
INCH

ISO
METRICJIS
METRIC



Linear Ball Bearings Standard

LINEAR BALL BEARINGS – IP


[Download CAD](#)


IP – Standard Closed

IPxx-AJ – Adjustable

IPxx-OP – Standard Open



IP DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER			NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT G	MAJOR DIMENSIONS & TOLERANCES					
STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN	SIZE INCH	dr INCH	TOLERANCE INCH			D INCH	TOLERANCE INCH	L INCH	TOLERANCE INCH	B INCH	TOLERANCE INCH
IP4G	-	-	1/4	0.2500	0/-0.0005	4	8	0.5000	0/-0.00045	0.7500	0/-0.008	0.5110	0/-0.008
IP6G	-	-	3/8	0.3750	0/-0.0005	4	15	0.6250	0/-0.00050	0.8750	0/-0.008	0.6358	0/-0.008
IP8G	IP8G-AJ	IP8G-OP	1/2	0.5000	0/-0.0005	4	42	0.8750	0/-0.00050	1.2500	0/-0.008	0.9625	0/-0.008
IP10G	IP10G-AJ	IP10G-OP	5/8	0.6250	0/-0.0005	5	85	1.1250	0/-0.00050	1.5000	0/-0.008	1.1039	0/-0.008
IP12G	IP12G-AJ	IP12G-OP	3/4	0.7500	0/-0.0005	5	104	1.2500	0/-0.00065	1.6250	0/-0.008	1.1657	0/-0.008
IP16G	IP16G-AJ	IP16G-OP	1	1.0000	0/-0.0005	6	220	1.5625	0/-0.00065	2.2500	0/-0.12	1.7547	0/-0.12
IP20G	IP20G-AJ	IP20G-OP	1-1/4	1.2500	0/-0.0006	6	465	2.0000	0/-0.00075	2.6250	0/-0.12	2.0047	0/-0.12
IP24G	IP24G-AJ	IP24G-OP	1-1/2	1.5000	0/-0.0006	6	720	2.3750	0/-0.00075	3.0000	0/-0.12	2.4118	0/-0.12
IP32G	IP32G-AJ	IP32G-OP	2	2.0000	0/-0.0008	6	1310	3.0000	0/-0.00090	4.0000	0/-0.12	3.1917	0/-0.12

PART NUMBER			NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES							LOAD RATINGS	
STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN	SIZE INCH	dr INCH	TOLERANCE INCH	W INCH	D1 INCH	h INCH	h1 INCH	E SLOT ANGLE	MAX ECCENTRICITY INCH	MAX RADIAL CLEARANCE INCH	DYNAMIC C LBF	STATIC Co LBF
IP4G	-	-	1/4	0.2500	0/-0.0005	.0390	0.4687	-	-	-	0.0004	-0.0001	46	59
IP6G	-	-	3/8	0.3750	0/-0.0005	.0390	0.5880	-	-	-	0.0004	-0.0001	50	70
IP8G	IP8G-AJ	IP8G-OP	1/2	0.5000	0/-0.0005	.0459	0.8209	.06	0.3400	80°	0.0004	-0.0001	114	176
IP10G	IP10G-AJ	IP10G-OP	5/8	0.6250	0/-0.0005	.0559	1.0590	.06	0.3750	80°	0.0004	-0.0001	174	265
IP12G	IP12G-AJ	IP12G-OP	3/4	0.7500	0/-0.0005	.0559	1.1760	.06	0.4375	60°	0.0005	-0.0002	193	307
IP16G	IP16G-AJ	IP16G-OP	1	1.0000	0/-0.0005	.0679	1.4687	.06	0.5625	50°	0.0005	-0.0002	220	352
IP20G	IP20G-AJ	IP20G-OP	1-1/4	1.2500	0/-0.0006	.0679	1.8859	.10	0.6250	50°	0.0007	-0.0003	352	615
IP24G	IP24G-AJ	IP24G-OP	1-1/2	1.5000	0/-0.0006	.0859	2.2389	.12	0.7500	50°	0.0007	-0.0003	490	903
IP32G	IP32G-AJ	IP32G-OP	2	2.0000	0/-0.0008	.1029	2.8379	.12	1.000	50°	0.0009	-0.0005	858	1784



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)

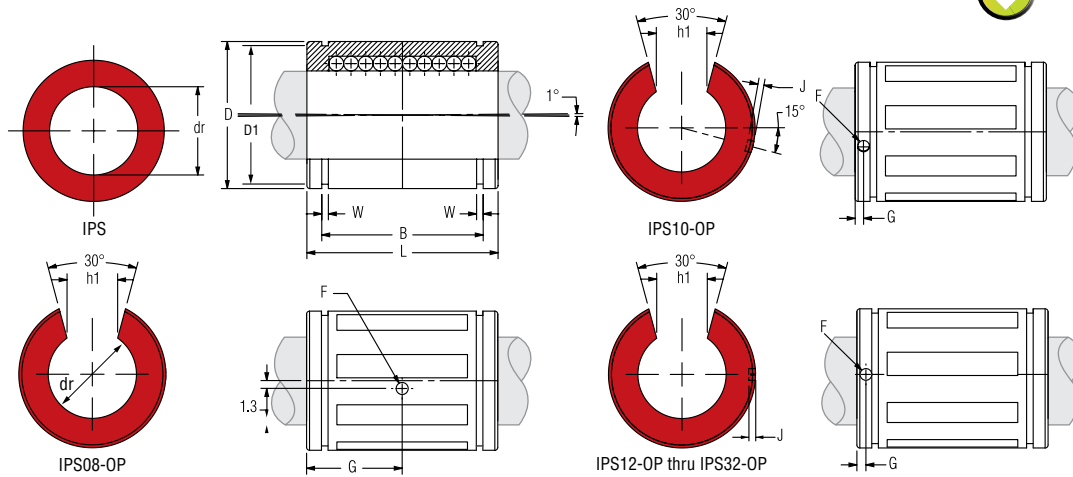


Super Self Aligning **Linear Ball Bearings**

LINEAR BALL BEARINGS – SUPER SELF ALIGNING – IPS & IPSxx-OP



Download CAD



IPS – Self Aligning Closed

IPSxx-OP – Self Aligning Open



IPS DIMENSIONAL INFORMATION

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES							LOAD RATINGS	
SELF ALIGNING CLOSED	SIZE	dr	TOLERANCE			D	L	TOLERANCE	B	TOLERANCE	W	D1	DYNAMIC C	STATIC Co
	INCH	INCH	INCH			INCH	INCH	INCH	INCH	INCH	INCH	INCH	LBF	LBF
IPS04	1/4	0.2500	0/- .0005	4	.009	0.5000	0.7500	0/- .015	0.515	0/- .015	0.0390	0.4687	60	80
IPS06	3/8	0.3750	0/- .0005	4	.014	0.6250	0.8750	0/- .015	0.703	0/- .015	0.0390	0.5880	95	120
IPS08	1/2	0.5000	0/- .0005	4	.043	0.8750	1.2500	0/- .020	1.032	0/- .020	0.0459	0.8209	230	290
IPS10	5/8	0.6250	0/- .0005	5	.103	1.1250	1.5000	0/- .020	1.112	0/- .020	0.0559	1.0590	400	500
IPS12	3/4	0.7500	0/- .0005	6	.123	1.2500	1.6250	0/- .020	1.272	0/- .020	0.0559	1.1760	470	590
IPS16	1	1.0000	0/- .0005	6	.265	1.5625	2.2500	0/- .020	1.886	0/- .020	0.0679	1.4687	850	1060
IPS20	1-1/4	1.2500	0/- .0006	6	.485	2.0000	2.6250	0/- .025	2.011	0/- .025	0.0679	1.8859	1230	1530
IPS24	1-1/2	1.5000	0/- .0006	6	.750	2.3750	3.0000	0/- .030	2.422	0/- .030	0.0859	2.2389	1480	1850
IPS32	2	2.0000	0/- .0008	6	1.411	3.0000	4.0000	0/- .040	3.206	0/- .040	0.1029	2.8379	2430	3040

IPS-OP DIMENSIONAL INFORMATION

PART NUMBER	NOMINAL DIAMETER					MAJOR DIMENSIONS & TOLERANCES											LOAD RATINGS	
	SIZE	dr	TOLERANCE			D	L	TOLERANCE	B	TOLERANCE	W	D1	h1	F	G	J	DYNAMIC C	STATIC Co
SELF ALIGNING OPEN	INCH	INCH	INCH	BALL CIRCUIT	LBS													
IPS08-OP	1/2	0.5000	0/- .0005	3	.033	0.8750	1.2500	0/- .020	1.032	0/- .020	0.0459	0.8209	.313	.136	.6250	through	230	290
IPS10-OP	5/8	0.6250	0/- .0005	4	.083	1.1250	1.5000	0/- .020	1.112	0/- .020	0.0559	1.0590	.375	.105	.1250	.0390	400	500
IPS12-OP	3/4	0.7500	0/- .0005	5	.102	1.2500	1.6250	0/- .020	1.272	0/- .020	0.0559	1.1760	.438	.136	.1250	.0590	470	590
IPS16-OP	1	1.0000	0/- .0005	5	.220	1.5625	2.2500	0/- .020	1.886	0/- .020	0.0679	1.4687	.563	.136	.1250	.0470	850	1060
IPS20-OP	1-1/4	1.2500	0/- .0006	5	.419	2.0000	2.6250	0/- .025	2.011	0/- .025	0.0679	1.8859	.625	.201	.1875	.0900	1230	1530
IPS24-OP	1-1/2	1.5000	0/- .0006	5	.639	2.3750	3.0000	0/- .030	2.422	0/- .030	0.0859	2.2389	.750	.201	.1875	.0900	1480	1850
IPS32-OP	2	2.0000	0/- .0008	5	1.168	3.0000	4.0000	0/- .040	3.206	0/- .040	0.1029	2.8379	1.000	.265	.3125	through	2430	3040

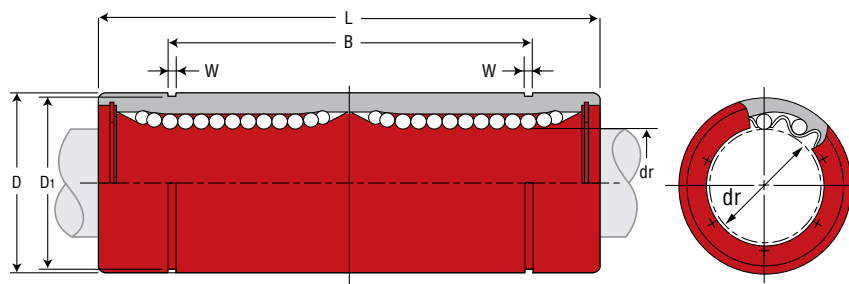
INCH

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Linear Ball Bearings Double Wide

DOUBLE WIDE BALL BEARINGS – IP-W


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IP-W DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES					
STANDARD CLOSED	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE	B	TOLERANCE
	INCH	INCH	INCH			INCH	INCH	INCH	INCH	INCH	INCH
IP8GW	1/2	0.5000	0/- .0004	4	80	0.8750	0/- .00065	2.3750	0/- .012	1.9250	0/- .012
IP10GW	5/8	0.6250	0/- .0004	4	160	1.1250	0/- .00065	2.8125	0/- .012	2.2079	0/- .012
IP12GW	3/4	0.7500	0/- .0005	5	195	1.2500	0/- .00075	3.0937	0/- .012	2.3314	0/- .012
IP16GW	1	1.0000	0/- .0005	6	410	1.5625	0/- .00075	4.2813	0/- .016	3.5094	0/- .016
IP20GW	1-1/4	1.2500	0/- .0006	6	820	2.0000	0/- .00090	5.0000	0/- .016	4.0094	0/- .016
IP24GW	1-1/2	1.5000	0/- .0006	6	1250	2.3750	0/- .00090	5.6875	0/- .016	4.8236	0/- .016
IP32GW	2	2.0000	0/- .0006	6	2350	3.0000	0/- .00100	7.7500	0/- .016	6.3834	0/- .016

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES			LOAD RATINGS	
	SIZE	dr	TOLERANCE	W	D1	MAX ECCENTRICITY	DYNAMIC C	STATIC Co
STANDARD CLOSED	INCH	INCH	INCH	INCH	INCH	INCH	LBF	LBF
IP8GW	1/2	0.5000	0/- .0004	.0459	0.8209	0.0005	182	352
IP10GW	5/8	0.6250	0/- .0004	.0559	1.0590	0.0005	276	528
IP12GW	3/4	0.7500	0/- .0005	.0559	1.1760	0.0007	307	615
IP16GW	1	1.0000	0/- .0005	.0679	1.4687	0.0007	352	705
IP20GW	1-1/4	1.2500	0/- .0006	.0679	1.8859	0.0009	562	1234
IP24GW	1-1/2	1.5000	0/- .0006	.0859	2.2389	0.0009	771	1807
IP32GW	2	2.0000	0/- .0006	.1029	2.8379	0.0011	1366	3574



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



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



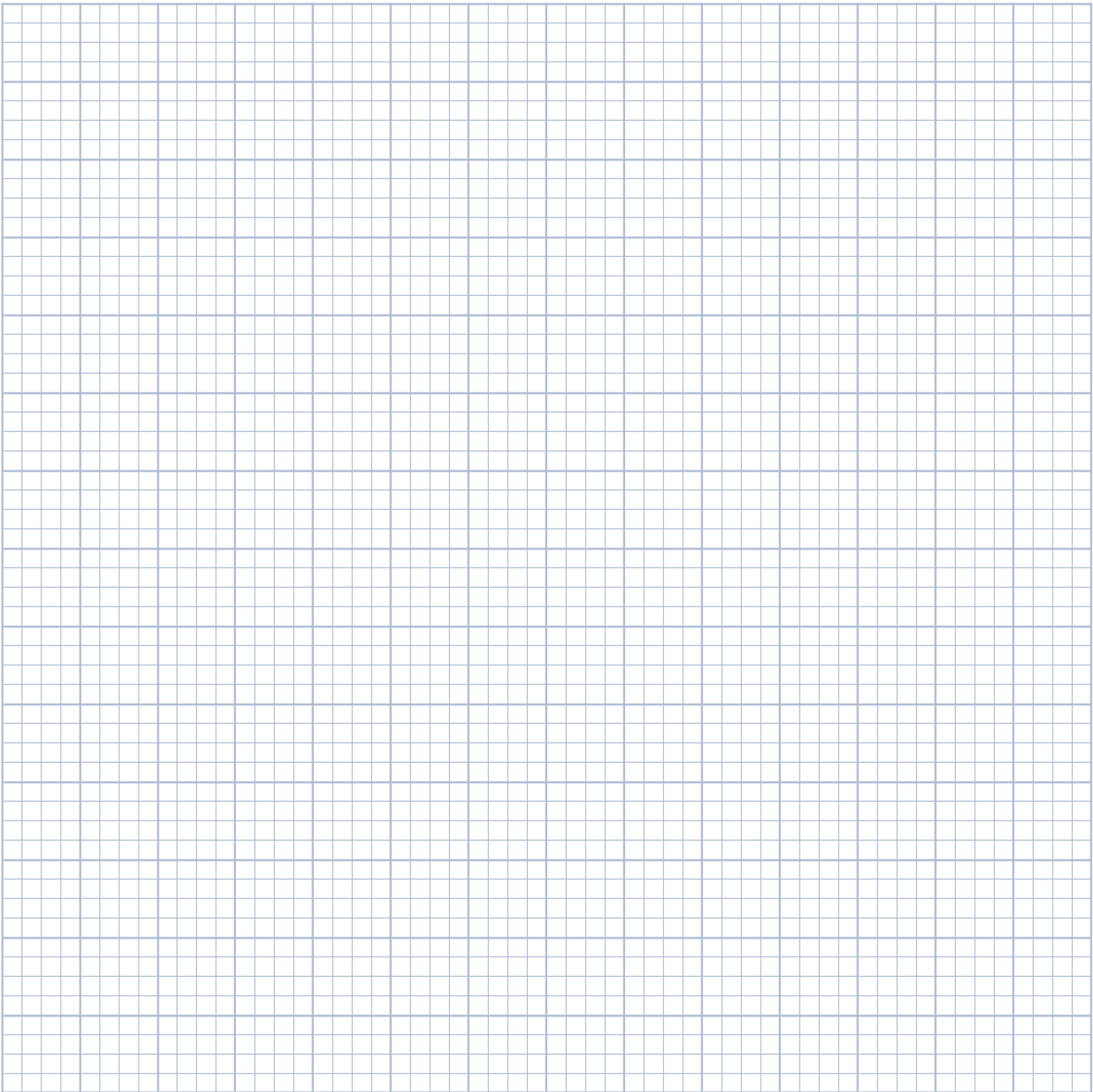
Ordering Info: Plain Bearings—page 18



Ordering Info: Ball Bearings—page 23



Email an Application Engineer



INCH

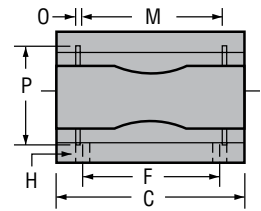
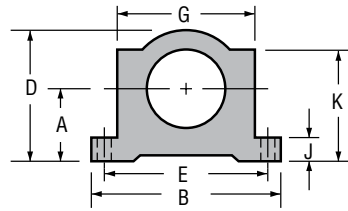
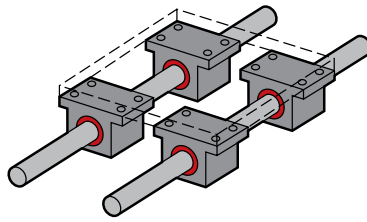
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Simplicity® Pillow Blocks

CLOSED PILLOW BLOCKS – P

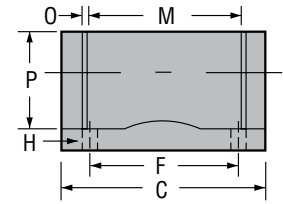
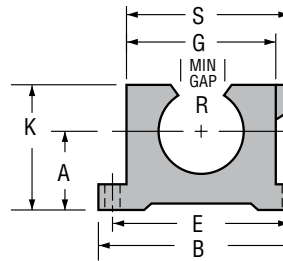
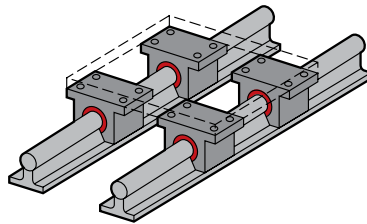


PART NO.		NOM. BRG. I.D.	A	B	C	D	E	F	G	H	J	K	M	O	P	RETAINING RING PART NO.	MAX. STATIC LOAD LBS.		ASSEM. WT.	
																	FRELON			
CLOSED		CENTERLINE							BODY		FLANGE		GRV.	GRV.	GRV.		GOLD	J & W	LBS.	
PRECISION	COMPENSATED	INCH	+/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK		SPACE	WIDTH	DIA.				
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.
 (3) Straight bore, pre-assembled pillow blocks use standard FL series bearings.


[Download CAD](#)

OPEN PILLOW BLOCKS – PN



PART NO.		NOM. BRG. I.D.	A CENTERLINE	B	C	E	F	G BODY	H		J FLANGE		K	M GRV.	O GRV.	P GRV.	R MIN.	RETAINING RING PART NO.	MAX. STATIC LOAD LBS.		ASSEM. WT.	S OVERALL
																			FRELON	J & W		
PRECISION	COMPENSATED	INCH	+/- .001	WIDTH	LENGTH	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK	HEIGHT	SPACE	WIDTH	DIA.	OPEN		GOLD	J & W	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	1.750	
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.

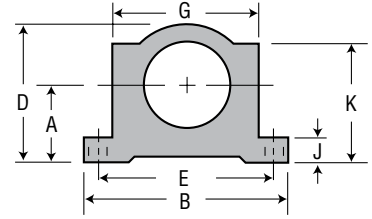
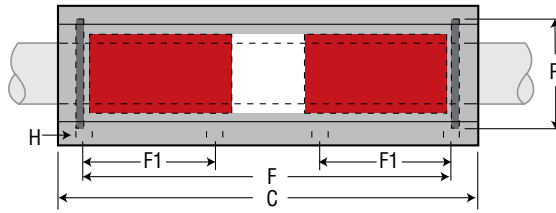
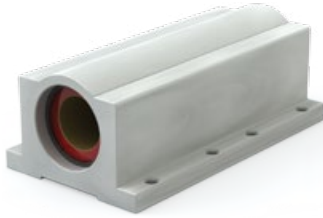


Simplicity Linear Slides: Pre-Assembled Pillow Block, Shaft, and Support Rail—page 88.



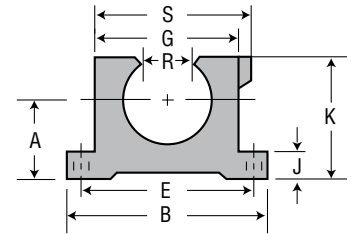
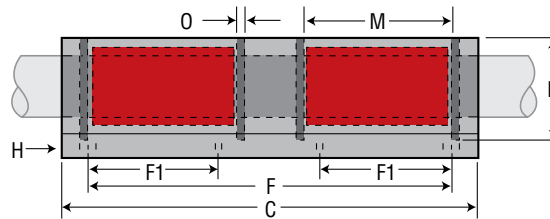
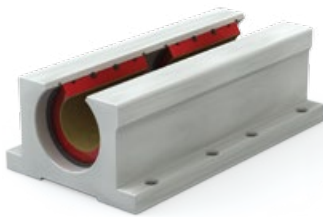
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72

Twin Pillow Blocks **Simplicity®****CLOSED TWIN PILLOW BLOCKS – PW**

PART NO.		NOM. BRG. I.D.	A	B	C	D	E	F	F1	G	H	J	K	P	RETAINING RING PART NO.	MAX. STATIC LOAD LBS.		ASSEM. WT.	
CLOSED			CENTERLINE									BODY				FLANGE	GRV.		FRELON
PRECISION	COMPENSATED	INCH	+/- .001	WIDTH	LENGTH	HEIGHT	+/- .010	+/- .010	+/- .010	WIDTH	BOLT	HOLE	THICK		DIA.		GOLD	J & W	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"	0.188	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.
 (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 standard option.
 (5) Twin pillow blocks, closed, with double seal option: Use (2) single seal bearings.

[Download CAD](#)**OPEN TWIN PILLOW BLOCKS – PWN**

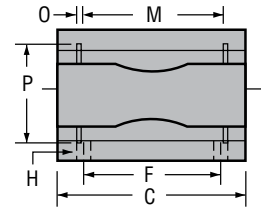
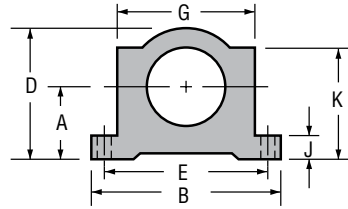
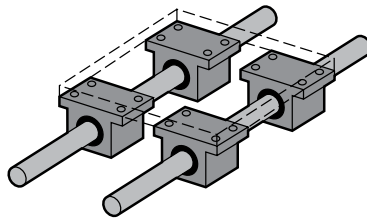
PART NO.		NOM. BRG. I.D.	A	B	C	E	F	F1	G	H	J	K	M	O	P	R	RETAINING RING	MAX. STATIC LOAD LBS.		ASSEM. WT.	S	
																		FRELON	LBS.			OVERALL
CLOSED		INCH	±.001	WIDTH	LENGTH	±.010	±.010	±.010	BODY	BOLT	HOLE	THICK	HEIGHT	SPACE	WIDTH	DIA.	OPEN	PART NO.	GOLD	J & W	LBS.	WIDTH
PRECISION	COMPENSATED	1/2	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 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.
 (3) Twin pillowblocks, open, with no seal option: Use (2) standard open bearings, based on compensated or standard option.
 (4) Twin pillowblocks, open, with double seal option: Use (2) double seal bearings.



Linear Ball Bearings Pillow Blocks

CLOSED PILLOW BLOCKS – IPP

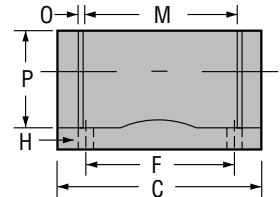
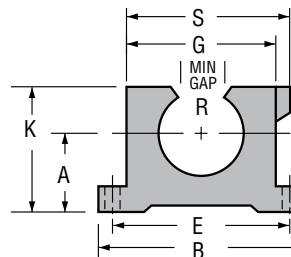
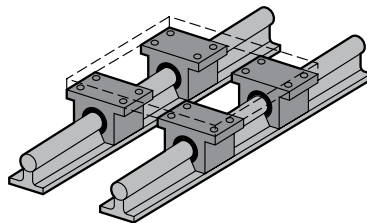


PART NUMBER	NOM. BRG. DIA.	A	B	C	D	E	F	G	H		J	K	M	O	P	SMALLEY RET. RING PART NO.	ASSEM. WT.	LOAD RATINGS LBF	
									PRECISION	INCH								CENTERLINE +/- .001	WIDTH
IPP04G	1/4	0.437	1.625	1.19	0.813	1.3120	0.7500	1.000	#6	5/32"	0.188	0.750	0.750	0.039	0.532	WH-51	0.099	46	59
IPP06G	3/8	0.500	1.750	1.31	0.938	1.4370	0.8750	1.125	#6	5/32"	0.188	0.875	0.875	0.039	0.665	WH-65	0.129	50	70
IPP08G	1/2	0.687	2.000	1.69	1.250	1.6880	1.0000	1.375	#6	5/32"	0.250	1.125	1.250	0.046	0.931	WH-90	0.250	114	176
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	174	265
IPP12G	3/4	0.937	2.750	2.06	1.750	2.3750	1.2500	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	WH-128	0.580	193	307
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	220	352
IPP20G	1-1/4	1.500	4.000	3.63	2.813	3.5000	2.0000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	WH-200	2.000	352	615
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	490	903
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	858	1784

- Notes: 1. Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 2. All standard pillow blocks use standard IP series bearings.
 3. Straight bore, pre-assembled pillow blocks use standard IP series bearing.


[Download CAD](#)

OPEN PILLOW BLOCKS – IPPN



PART NUMBER	NOM. BRG. DIA.	A	B	C	E	F	G	H		J	K	M	O	P	R	EATON RET. RING PART NO.	ASSEM. WT.	S	LOAD RATINGS LBF	
		CENTERLINE +/- .001	WIDTH +/- .010	LENGTH	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	FLNG THICK	HEIGHT	GRV. SPACE	GRV. WIDTH	GRV. DIA.	MIN. OPEN			LBS.	OVERALL WIDTH	DYNAMIC C
PRECISION	INCH																			
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	114	176
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	174	265
IPPN12G	3/4	0.937	2.750	1.88	2.3750	1.2500	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	0.438	MNAN-125	0.580	1.938	193	307
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	220	352
IPPN20G	1-1/4	1.500	4.000	3.38	3.5000	2.0000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	0.625	MNAN-200	2.000	3.125	352	615
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	490	903
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	858	1784

- Notes: 1. Standard, pre-assembled pillow blocks include self-aligning housing and precision bearing.
 2. All standard pillow blocks use standard IP series bearings.



Simplicity Linear Slides: Pre-Assembled Pillow Block, Shaft, and Support Rail—page 88.



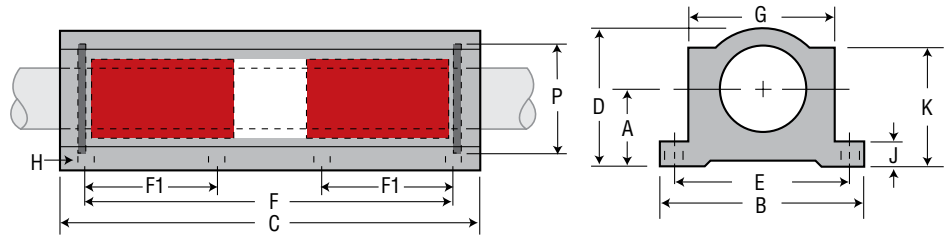
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Twin Pillow Blocks **Linear Ball Bearings**

TWIN CLOSED PILLOW BLOCKS – IPPW



PART NUMBER	NOM. BRG. DIA.	A CENTERLINE +/- .001	B WIDTH	C LENGTH	D HEIGHT	E +/- .010	F +/- .010	F1 +/- .010	G BODY WIDTH	H		J	K HEIGHT	P GRV. DIA.	SMALLEY RET. RING PART NO.	ASSEM. WT. LBS.	LOAD RATINGS LBF	
										BOLT	HOLE						DYNAMIC C	STATIC Co
PRECISION	INCH																	
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	92	118
IPPW06G	3/8	0.500	1.750	2.750	0.938	1.4370	2.2500	.875	1.125	#6	5/32"	0.188	0.875	0.665	WH-65	0.258	100	140
IPPW08G	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	WH-90	0.500	228	352
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	348	530
IPPW12G	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	WH-128	1.125	386	614
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	440	704
IPPW20G	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	WH-200	4.250	704	1230
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	980	1806
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	1716	3568

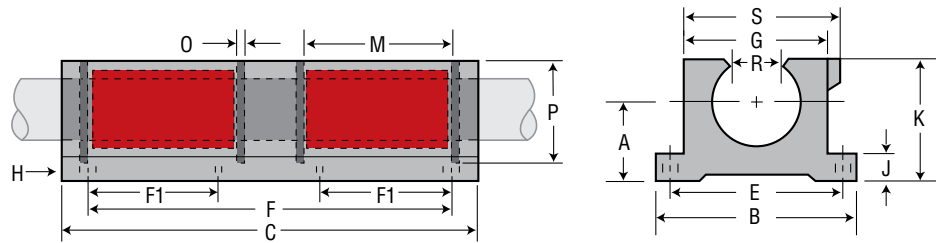
Notes: 1. All standard pillow blocks use standard IP series bearings.

2. Twin closed pillow blocks are not self-aligning.



[Download CAD](#)

TWIN OPEN PILLOW BLOCKS – IPPWN



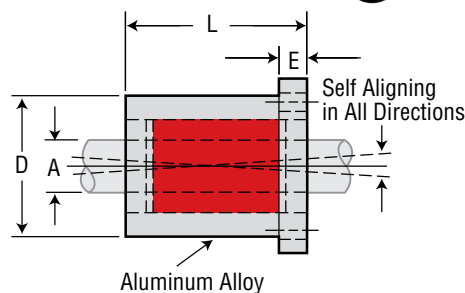
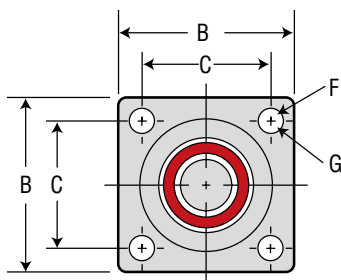
PART NUMBER	NOM. BRG. DIA.	A	B	C	E	F	F1	G	H		J	K	M	O	P	R	EATON RET. RING PART NO.	ASSEM.	S	LOAD	
									WT.	OVERALL WIDTH								DYNAMIC C		STATIC Co	
PRECISION	INCH	CENTERLINE +/- .001	WIDTH	LENGTH	+/- .010	+/- .010	+/- .010	BODY WIDTH	BOLT	HOLE	FLNG. THICK	HEIGHT	GRV. SPACE	GRV. WIDE	GRV. DIA.	MIN. OPEN		LBS.			
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	228	352
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	348	530
IPPWN12G	3/4	0.937	2.750	4.500	2.3750	3.5000	1.250	1.875	#8	3/16"	0.313	1.563	1.625	0.056	1.330	0.438	MNAN-125	1.060	1.938	386	614
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	440	704
IPPWN20G	1-1/4	1.500	4.000	7.500	3.5000	5.5000	2.000	3.000	#10	7/32"	0.438	2.500	2.625	0.068	2.122	0.625	MNAN-200	3.725	3.125	704	1230
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	980	1806
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	1716	3568

Note: All standard pillow blocks use standard IP series bearings.



Simplicity® Flange Mounts

FLANGE MOUNTS – SFP

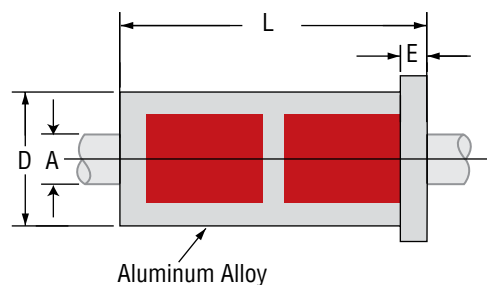
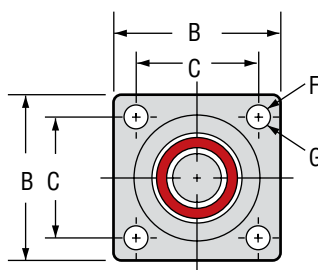
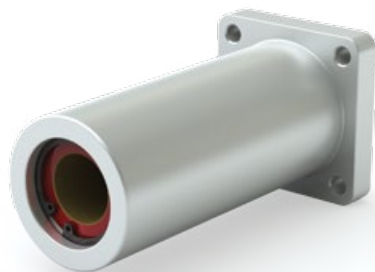

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DIMENSIONAL INFORMATION

PART NO.		A NOMINAL BEARING SIZE	B	C	D	E	F	G	L	MAX. STATIC LOAD LBS.		ASSEMBLY WEIGHT
			FLANGE SQUARE	HOLE SPACING	BARREL DIA.	FLANGE LENGTH	BOLT SIZE	HOLE SIZE	LENGTH OVERALL	FRELON		
										GOLD	J & W	
SFP 06	SFP 06 C	3/8"	1.25	1.00	0.875	0.188	#4	0.125	1.31	1020	510	0.070
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 - allowing the bearing to self-align.
SFPB assemblies include a straight bore housing and standard FL bearings - allowing for a tighter fit.

FLANGE MOUNTS – DFP



DIMENSIONAL INFORMATION

PART NO.		A NOMINAL BEARING SIZE	B	C	D	E	F	G	L	MAX. STATIC LOAD LBS.		ASSEMBLY WEIGHT
			FLANGE SQUARE	HOLE SPACING	BARREL DIA.	FLANGE LENGTH	BOLT SIZE	HOLE SIZE	LENGTH OVERALL	FRELON		
										GOLD	J & W	
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 - allowing the bearing to self-align.
Straight bore DFPB assemblies include a straight bore housing and standard FL bearings - allowing for a tighter fit.



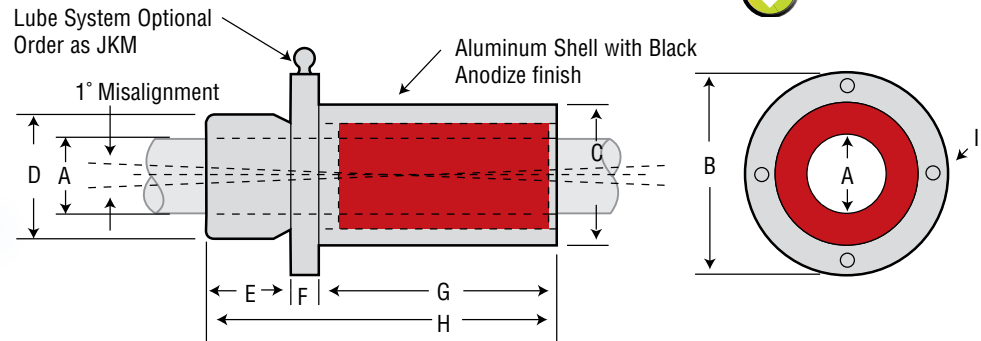
Only certified Simplicity 60 Plus Shafting provides
maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Die Set Flange Mounts **Simplicity®**

FLANGE MOUNTS – SDS

[Download CAD](#)

DIMENSIONAL INFORMATION

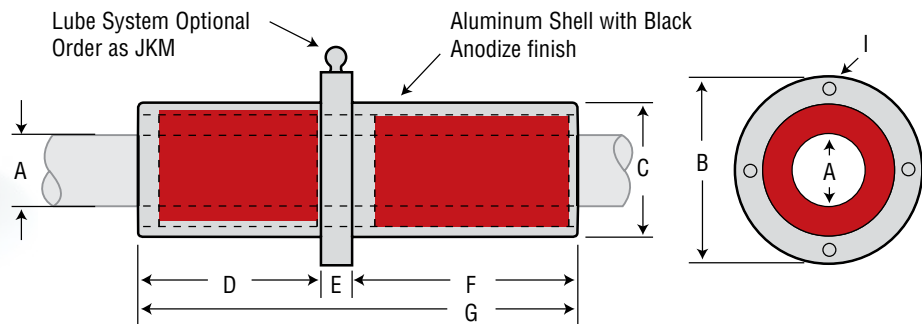
PART NO.		A NOMINAL BEARING SIZE	B	C		D		E	F	G	H	I			MAX. STATIC LOAD LBS.		ASSEMBLY WEIGHT
			FLANGE	BARREL DIA.		PILOT DIA.		PILOT LENGTH	FLANGE LENGTH	HEAD LENGTH	OVERALL LENGTH	MOUNTING HOLES 4 PLACES			FRELON		
BOLT SIZE	HOLE SIZE											CIRCLE	GOLD	J & W			
PRECISION	COMPENSATED		O.D.	MIN.	MAX.	MIN.	MAX.										
SDSx16	SDSx16C	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
SDSx20	SDSx20C	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
SDSx24	SDSx24C	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
SDSx32	SDSx32C	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: Specify shell material. In part number, replace 'x' with: Z = Aluminum; or T = Steel.

All standard, pre-assembled SDS assemblies include a straight bore housing and standard FLA bearings - allowing the bearing to self-align.

SDSB assemblies include a straight bore housing and standard FL bearings - allowing for a tighter fit.

FLANGE MOUNTS – DDS



DIMENSIONAL INFORMATION

PART NO.		A NOMINAL BEARING SIZE	B	C		D	E	F	G	I			MAX. STATIC LOAD LBS.		ASSEMBLY WEIGHT
			FLANGE	BARREL DIA.		LENGTH	FLANGE LENGTH	LENGTH	OVERALL LENGTH	MOUNTING HOLES 4 PLACES			FRELON		
BOLT SIZE	HOLE SIZE									CIRCLE					
PRECISION	COMPENSATED									O.D.	MIN.	MAX.			
DDSx16	DDSx16C	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
DDSx20	DDSx20C	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
DDSx24	DDSx24C	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
DDSx32	DDSx32C	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: Specify shell material. In part number, replace 'x' with: Z = Aluminum; or T = Steel.

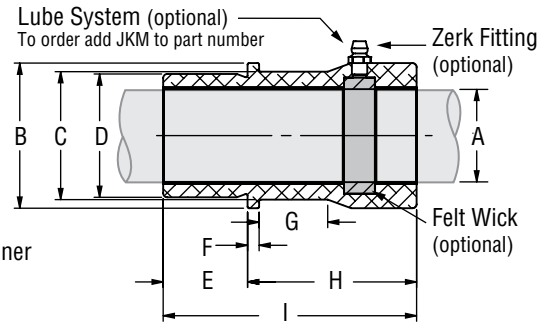
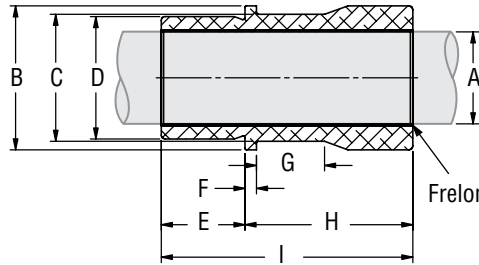
All standard, pre-assembled DDS assemblies include a straight bore housing and standard FLA bearings - allowing the bearing to self-align.

All straight bore, pre-assembled DDSB assemblies include a straight bore housing and standard FL bearings - allowing for a tighter fit.



Simplicity® Die Set Bushings

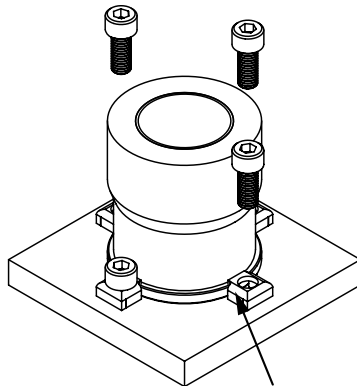
DIE SET BUSHINGS – PAC



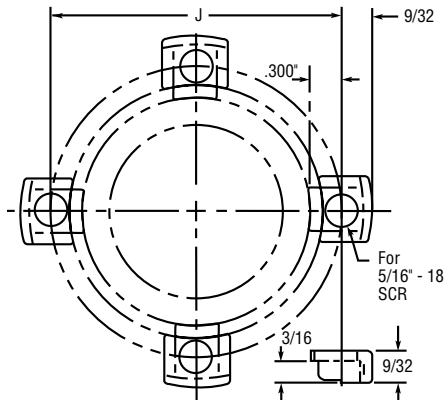
DIMENSIONAL INFORMATION

P = PRECISION C = COMPENSATED	PART NO.	NOMINAL SIZE	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.		BEARING WEIGHT
		IN	MIN.	MAX.	MIN.	MAX.	MIN.	MIN.	MAX.						SQ. IN.	GOLD	J & W	LBS.
P	PACx750	3/4	0.750	0.7510	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
C	PACx750C		0.7530	0.7540														
P	PACx100	1	1.000	1.0010	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
C	PACx100C		1.0030	1.0040														
P	PACx125	1-1/4	1.250	1.2510	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
C	PACx125C		1.2540	1.2550														
P	PACx150	1-1/2	1.500	1.5012	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
C	PACx150C		1.5040	1.5050														
P	PACx200	2	2.000	2.0014	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
C	PACx200C		2.0050	2.0064														
P	PACx250	2-1/2	2.500	2.5016	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
C	PACx250C		2.5050	2.5065														
P	PACx300	3	3.000	3.0020	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
C	PACx300C		3.0060	3.0080														

Notes: Formula used for effective surface area is $(\pi \cdot ID \cdot L)/3$
 Specify shell material. In part number, replace 'x' with: Z = Aluminum; or T = Steel.
 For lubrication system add JKM, example: PACZ750JKM.
 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 & W


[Download CAD](#)


4 PAC clamps are shipped with each die set.
 Extra clamps can be ordered using part # PACCLAMP.



Dimension for calculating bolt circle: $J = C + .600$



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



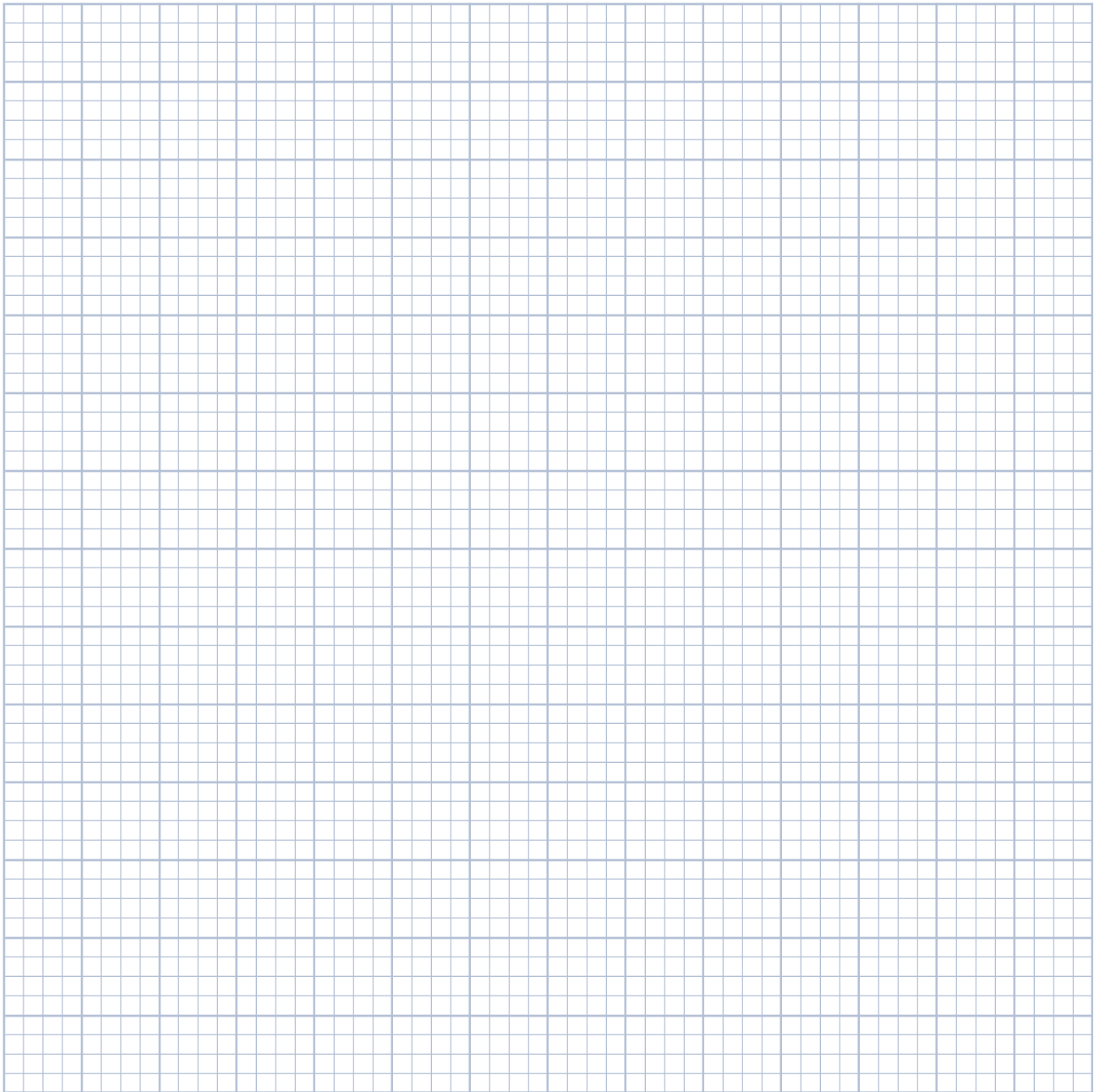
Ordering Info: Plain Bearings—page 18



Ordering Info: Ball Bearings—page 23



Email an Application Engineer



INCH

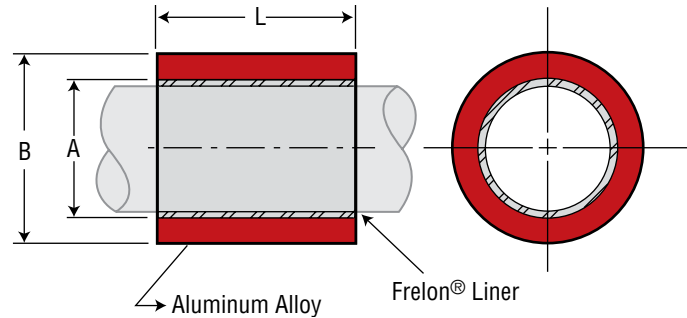
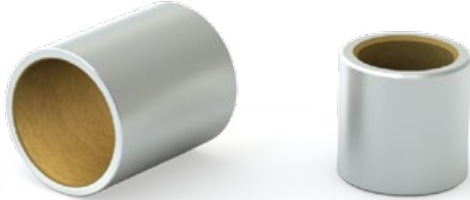
ISO
METRIC

JIS
METRIC



Simplicity® Sleeve Bearings

SLEEVE BEARINGS – PS


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DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D.		L LENGTH		MAX. STATIC LOAD LBS. FRELON		BEARING WEIGHT	RECOMMENDED HOUSING BORE			
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	GOLD	J & W		SLIP FIT & EPOXY		PRESS FIT	
													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

ORDERING INFORMATION

PS	12	16	-	08
Type	I.D.	O.D.	Length	
PS: Precision Sleeve Bearing	I.D. in 1/16" Increments	O.D. in 1/16" Increments	Length in 1/8" Increments	

Note: Lengths not listed above must be specially quoted.

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.

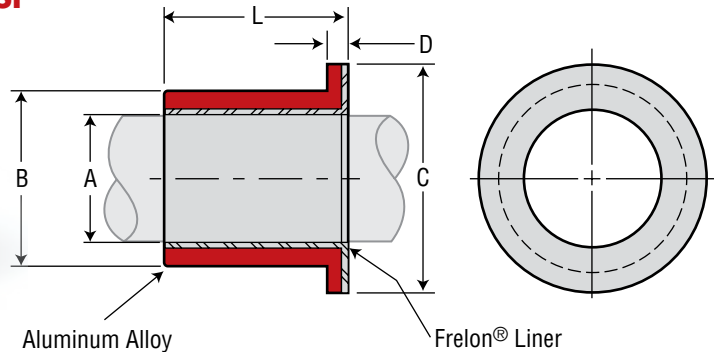


Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Consult Factory • 800-962-8979

Sleeve Bearings with Flange **Simplicity®****SLEEVE BEARINGS WITH FLANGE – PSF**

Download CAD

DIMENSIONAL INFORMATION

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

ORDERING INFORMATION

PSF	12	16	-	08
Type	I.D.	O.D.	Length	
PSF: Precision Sleeve Bearing with Flange	I.D. in 1/16" Increments	O.D. in 1/16" Increments	Length in 1/8" Increments	

Note: Lengths not listed above must be specially quoted.

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.



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Email an Application Engineer



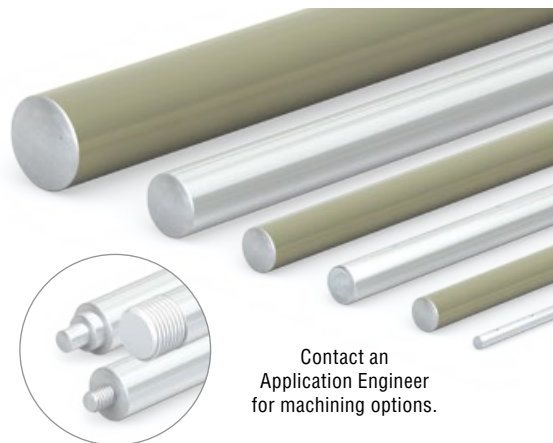
Shafting Steel & Stainless Steel

simplicity
60 PLUS
SHAFTING

SIMPLICITY® 60 PLUS® SHAFTING

PBC Linear's® development team, working in close conjunction with engineers from Lee Linear®, have together formulated a linear shaft designed specifically for optimal bearing performance – Simplicity 60 Plus Shafting. Advanced process capabilities maintain the ideal surface finish for linear bearings resulting in the longest life and highest performing shaft-to-bearing combination available.

- Optimized surface finish
- Faster break-in and better Frelon® transfer for plain bearings
- Longest life possible, less down time and maintenance
- Straight to within .001" to .002" per foot cumulative, except on 3/8" diameter and smaller



Contact an
Application Engineer
for machining options.

RC60 STEEL

SOLID SHAFTING – NIL

PART NUMBER	NOMINAL DIA.	DIA. TOLERANCE CLASS L IN.		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT PER INCH
	IN.	MIN.	MAX.	IN.	IN.	LBS.
NIL03-xxx.xxx	3/16"	0.1865	0.1870	252	N/A	0.008
NIL04-xxx.xxx	1/4"	0.2490	0.2495	96	0.040	0.014
NIL06-xxx.xxx	3/8"	0.3740	0.3745	172	0.060	0.031
NIL08-xxx.xxx	1/2"	0.4990	0.4995	196	0.060	0.055
NIL10-xxx.xxx	5/8"	0.6240	0.6245	196	0.060	0.086
NIL12-xxx.xxx	3/4"	0.7490	0.7495	196	0.060	0.125
NIL16-xxx.xxx	1"	0.9990	0.9995	196	0.080	0.222
NIL20-xxx.xxx	1-1/4"	1.2490	1.2495	196	0.080	0.348
NIL24-xxx.xxx	1-1/2"	1.4989	1.4994	196	0.080	0.500
NIL32-xxx.xxx	2"	1.9987	1.9994	196	0.100	0.890
NIL40-xxx.xxx	2-1/2"	2.4985	2.4993	184	0.100	1.391
NIL48-xxx.xxx	3"	2.9983	2.9992	148	0.100	2.003
NIL64-xxx.xxx	4"	3.9976	3.9988	198	0.100	3.560

Notes: Specify length in part number using inches.

Example: for 1/2" shafting total length 15" = NIL08-015.000

Surface finish bearing recommended 8 Ra. Contact factory for diameter tolerance class 'N'.

- RC 60 Plus® case hardened steel shafting
- Optimized for Simplicity® bearings and linear ball bearings
- Available cut-to-length or random lengths
- Length tolerance:
3/16" – 1-1/4" shaft = +/- .030"
1-3/8" – 2" shaft = +/- .060"
2-1/2" – 4" shaft = +/- .125"
- Joinable for longer lengths
- Available as solid shafting or pre-drilled
(See pre-drilled NIPDL on next page)



440 STAINLESS STEEL

SOLID SHAFTING – NILxxSS

PART NO.	NOMINAL DIA.	DIA. TOLERANCE CLASS L IN.		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT PER INCH
	IN.	MIN.	MAX.	IN.	IN.	LBS.
NIL03SS-xxx.xxx	3/16"	0.1865	0.1870	252	N/A	0.008
NIL04SS-xxx.xxx	1/4"	0.2490	0.2495	154	0.040	0.014
NIL06SS-xxx.xxx	3/8"	0.3740	0.3745	154	0.040	0.031
NIL08SS-xxx.xxx	1/2"	0.4990	0.4995	154	0.060	0.055
NIL10SS-xxx.xxx	5/8"	0.6240	0.6245	154	0.060	0.087
NIL12SS-xxx.xxx	3/4"	0.7490	0.7495	154	0.060	0.125
NIL16SS-xxx.xxx	1"	0.9990	0.9995	170	0.080	0.222
NIL20SS-xxx.xxx	1-1/4"	1.2490	1.2495	154	0.080	0.348
NIL24SS-xxx.xxx	1-1/2"	1.4989	1.4994	154	0.080	0.498
NIL32SS-xxx.xxx	2"	1.9987	1.9994	154	0.100	0.886

- 440 stainless steel RC 50 Plus™ hardness
- Optimized for Simplicity® bearings and linear ball bearings
- Available cut-to-length or random lengths
- Length tolerance:
3/16" – 1-1/4" shaft = +/- .030"
1-3/8" – 2" shaft = +/- .060"
2-1/2" – 4" shaft = +/- .125"
- Available as solid shafting or pre-drilled
(See pre-drilled NIPDLxxSS on next page)



Email an Application Engineer



Steel, Stainless Steel & Ceramic Coated **Shafting**

PRE-DRILLED & TAPPED

STEEL – NIPDL & 440 STAINLESS STEEL – NIPDLxxSS

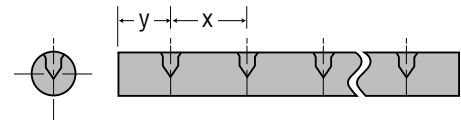
PART NUMBER		NOMINAL DIA.	DIA. TOLERANCE CLASS L IN.			STANDARD HOLE SPACING		MAX. LENGTH	WEIGHT PER INCH
STEEL	STAINLESS STEEL	IN.	MIN.	MAX.	x	y	THREAD	IN.	LBS.
NIPDL08-xxx.xxx	NIPDL08SS-xxx.xxx	1/2"	0.4990	0.4995	4	2	6-32	144	0.055
NIPDL10-xxx.xxx	NIPDL10SS-xxx.xxx	5/8"	0.6240	0.6245	4	2	8-32	144	0.086
NIPDL12-xxx.xxx	NIPDL12SS-xxx.xxx	3/4"	0.7490	0.7495	6	3	10-32	144	0.125
NIPDL16-xxx.xxx	NIPDL16SS-xxx.xxx	1"	0.9990	0.9995	6	3	1/4-20	144	0.222
NIPDL20-xxx.xxx	NIPDL20SS-xxx.xxx	1-1/4"	1.2490	1.2495	6	3	5/16-18	144	0.348
NIPDL24-xxx.xxx	NIPDL24SS-xxx.xxx	1-1/2"	1.4989	1.4994	8	4	3/8-16	132	0.500
NIPDL32-xxx.xxx	NIPDL32SS-xxx.xxx	2"	1.9987	1.9994	8	4	1/2-13	132	0.890
NIPDL48-xxx.xxx	NIPDL48SS-xxx.xxx	3"	2.9983	2.9992	8	4	3/4-10	132	2.003

Notes: Specify length in part number using inches.

Example: for 1/2" shafting total length 15" = NIPDL08-015.000

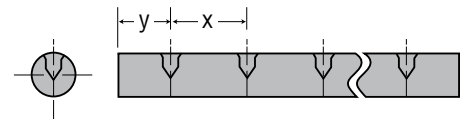
Customer specifies 'y' dimension, if different than standard. Hole to hole tolerance = +/- .015".

Consult factory for chrome plated, 303, or 316 stainless steel shafting.



CERAMIC COATED

- Aluminum alloy base material
- RC 70 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



SOLID SHAFTING – CC

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

Notes: Specify length in part number using inches.

Example: for 1/2" shafting total length 36" long = CC08-036.000

Ends of cut-to-length shafting are not coated.

Fully coated shafting is available on special request.

PRE-DRILLED & TAPPED – CCPDL

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

Notes: Specify length in part number using inches.

Example: for 1/2" shafting total length 36" long = CCPDL08-036.000

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, if different than standard.


[Download CAD](#)



Shafting End Support Blocks & Rails

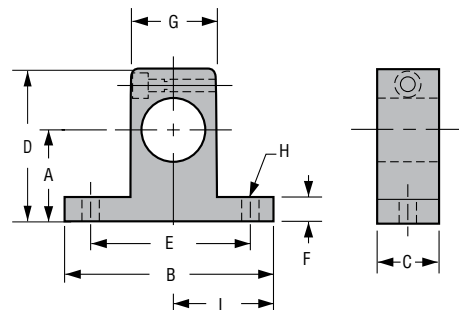
simplicity
60 PLUS
SHAFTING

END SUPPORT BLOCK – ALUMINUM – NSB

End support blocks can be used for end or intermittent shaft support. The aluminum end support block is lightweight and strong, and can be used with all shaft types. Ideally, they should be used where deflection between supports is not a problem.

- Available in inch sizes from 1/4" - 2"
- Instant bolt-down installation

PART NO.	NOMINAL DIA.	A	B	C	D	E	F	G	H		I	WEIGHT
	IN.	+/- .001							BOLT	HOLE		
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	0.250	0.688	#6	5/32"	0.800	0.044
NSB08	1/2"	1.000	2.000	0.625	1.625	1.500	0.250	0.750	#8	3/16"	1.000	0.079
NSB10	5/8"	1.000	2.500	0.688	1.750	1.875	0.313	0.875	#10	7/32"	1.250	0.112
NSB12	3/4"	1.250	2.500	0.750	2.055	2.000	0.313	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	1/4"	9/32"	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	5/16"	11/32"	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



SUPPORT RAIL – ALUMINUM – SR & SRXXPD

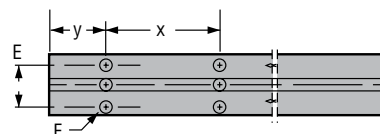
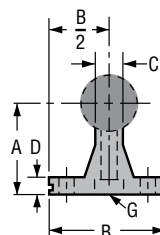
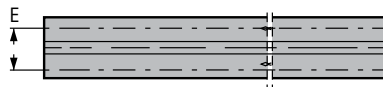
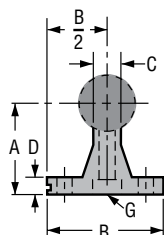
Non-Drilled (SR)



Pre-Drilled (SRxxPD)



Download CAD



PART NO.		NOMINAL DIA.	A					STANDARD HOLE SPACING		G RECOMMENDED MOUNTING HOLE SIZE			MAX LENGTH	WEIGHT
NON-DRILLED	PRE-DRILLED	IN.	+/- .002	B	C	D	E	x	y	HOLE	SCREW	FASTENER LENGTH	+0/- .125	LBS./IN.
SR08-xxx.xxx	SR08PD-xxx.xxx	1/2"	1.125	1.500	0.250	0.188	1.000	4	2	0.169	6-32 x 7/8"	7/8"	48	0.045
SR10-xxx.xxx	SR10PD-xxx.xxx	5/8"	1.125	1.625	0.313	0.250	1.125	4	2	0.193	8-32 x 7/8"	7/8"	48	0.058
SR12-xxx.xxx	SR12PD-xxx.xxx	3/4"	1.500	1.750	0.375	0.250	1.250	6	3	0.221	10-32 x 7/8"	7/8"	48	0.077
SR16-xxx.xxx	SR16PD-xxx.xxx	1"	1.750	2.125	0.500	0.250	1.500	6	3	0.281	1/4-20 x 1-1/2"	1-1/2"	48	0.104
SR20-xxx.xxx	SR20PD-xxx.xxx	1-1/4"	2.125	2.500	0.563	0.313	1.875	6	3	0.343	5/16-18 x 1-3/4"	1-3/4"	48	0.145
SR24-xxx.xxx	SR24PD-xxx.xxx	1-1/2"	2.500	3.000	0.688	0.375	2.250	8	4	0.406	3/8-16 x 2"	2"	48	0.210
SR32-xxx.xxx	SR32PD-xxx.xxx	2"	3.250	3.750	0.875	0.500	2.750	8	4	0.531	1/2-13 x 2-1/2"	2-1/2"	48	0.342

Notes: Specify length in part number. Example: for 1/2" shafting support rail to 24" length = SR08-024.000 (Aluminum alloy construction)

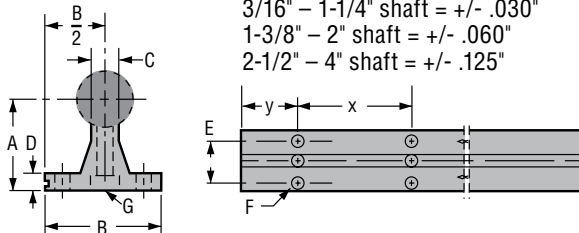
Shafts & support rails sold separately. Customer specifies 'y' dimension. Shaft rails and assemblies are available in long lengths, consult factory.



Rail Assemblies **Shafting**

RAIL ASSEMBLY – ALUMINUM SUPPORT RAIL – SRA

- (2) piece assembly RC60 steel shaft and aluminum support rail standard
- Other shaft materials – 440 stainless steel & ceramic coated aluminum
- Available cut-to-length, tolerance:



Note: PBC Linear is migrating to a design that incorporates a notch along the bottom of the rail. This improves quality by eliminating bow, warp, and twist due to even cooling of the material during the extrusion process. Both rails are fit, form, and functionally equivalent, but if you require one or the other for a design, please contact a PBC sales associate at (800) 962-8979.

SHAFTING TYPE			NOMINAL DIA.	DIAMETER TOLERANCE		A	B	C	D	E	F		STANDARD HOLE SPACING		WEIGHT
STEEL RAIL PART NO.	CERAMIC COATED SHAFTING PART NO.	440 STAINLESS STEEL PART NO.		MIN.	MAX.						BOLT	HOLE	x	y	
SRA08-xxx.xxx	SRA08CC-xxx.xxx	SRA08SS-xxx.xxx	1/2	0.4988	0.4996	1.125	1.500	0.250	0.188	1.000	#6	0.169	4	2	0.101
SRA10-xxx.xxx	SRA10CC-xxx.xxx	SRA10SS-xxx.xxx	5/8	0.6238	0.6246	1.125	1.625	0.313	0.250	1.125	#8	0.193	4	2	0.145
SRA12-xxx.xxx	SRA12CC-xxx.xxx	SRA12SS-xxx.xxx	3/4	0.7488	0.7496	1.500	1.750	0.375	0.250	1.250	#10	0.221	6	3	0.202
SRA16-xxx.xxx	SRA16CC-xxx.xxx	SRA16SS-xxx.xxx	1	0.9988	0.9996	1.750	2.125	0.500	0.250	1.500	1/4"	0.281	6	3	0.328
SRA20-xxx.xxx	SRA20CC-xxx.xxx	SRA20SS-xxx.xxx	1-1/4	1.2488	1.2496	2.125	2.500	0.563	0.313	1.875	5/16"	0.343	6	3	0.493
SRA24-xxx.xxx	SRA24CC-xxx.xxx	SRA24SS-xxx.xxx	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-xxx.xxx	SRA32CC-xxx.xxx	SRA32SS-xxx.xxx	2	1.9985	1.9995	3.250	3.750	0.875	0.500	2.750	3/8"	0.406	8	4	1.231

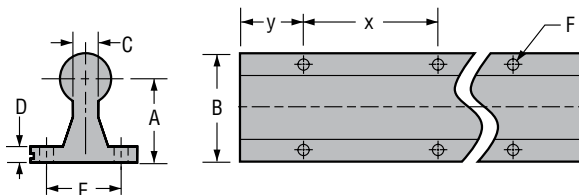
Note: Specify length in part number using inches. Example: for 1/2" shafting total length 36" long = SRA08-036.000
Customer specifies 'y' dimension, if different than standard.



[Download CAD](#)

RAIL ASSEMBLY – CERAMIC COATED – CCR

- Aluminum alloy base material and RC70 ceramic coated finish
- One-piece integrated design eliminates assembly time
- Weld splatter, paints, contaminants will not stick
- Non-magnetic and vibration resistant
- Economical, lightweight alternative to traditional steel shafting
- Optimized for Simplicity Frelon GOLD® lined bearings
- Available pre-drilled and undrilled*



PART NO.	NOMINAL DIA.	DIAMETER TOLERANCE		A	B	C	D	E	F		STANDARD HOLE SPACING		MAX. LENGTH	WEIGHT
	IN.	MIN.	MAX.						BOLT	HOLE	x	y	IN	
CCR08-xxx.xxx	1/2	0.4988	0.4996	1.125	1.500	0.250	0.188	1.000	#6	0.169	4	2	120	0.019
CCR10-xxx.xxx	5/8	0.6238	0.6246	1.125	1.625	0.313	0.250	1.125	#8	0.193	4	2	120	0.030
CCR12-xxx.xxx	3/4	0.7488	0.7496	1.500	1.750	0.375	0.250	1.250	#10	0.221	6	3	120	0.043
CCR16-xxx.xxx	1	0.9988	0.9996	1.750	2.125	0.500	0.250	1.500	1/4"	0.281	6	3	120	0.076
CCR20-xxx.xxx	1-1/4	1.2488	1.2496	2.125	2.500	0.563	0.313	1.875	5/16"	0.343	6	3	120	0.119
CCR24-xxx.xxx	1-1/2	1.4987	1.4995	2.500	3.000	0.688	0.375	2.250	5/16"	0.343	8	4	120	0.172
CCR32-xxx.xxx	2	1.9985	1.9995	3.250	3.750	0.875	0.500	2.750	3/8"	0.406	8	4	120	0.305

Notes: Specify length in part number using inches.
Example: for 1/2" shafting total length 36" long = CCR08-036.000
Cut-to-length rails may not be coated on the ends.

Customer specifies 'y' dimension, if different than standard.
DO NOT use with linear ball bearings.
*Undrilled rails are available on special request.

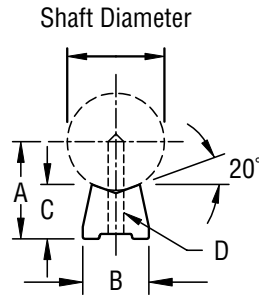


Shafting Low Support Rails

simplicity
60 PLUS
SHAFTING

LOW SUPPORT RAIL – STEEL – LSR

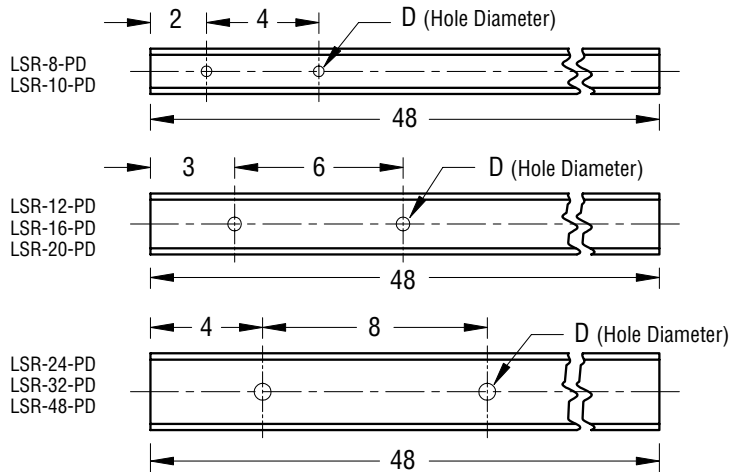
The AISI C-1018 steel LSR shaft support is a low support rail with a reduced footprint, and 40% lower profile than other support rails. This is an excellent choice for applications requiring compact low shaft support. The standard length for LSR type supports is 48". Contact factory for alternate lengths. Length tolerance +0", -1/8".



PART NO.	SHAFT DIA.	A	B	C	D		HOLE SPACING FOR LSR-PD PRE-DRILLED		WEIGHT PER 48" (APPROXIMATE)
	IN.	+/- .002	+/- .005	(REF)	BOLT	HOLE	Y	X	LBS. +/- .001
LSR-8	1/2	0.562	0.370	0.341	6-32	0.169	2	4	1.320
LSR-8-PD									
LSR-10	5/8	0.687	0.450	0.412	8-32	1.193	2	4	1.950
LSR-10-PD									
LSR-12	3/4	0.750	0.510	0.420	10-32	0.221	3	6	2.250
LSR-12-PD									
LSR-16	1	1.000	0.690	0.560	1/4-20	0.281	3	6	4.250
LSR-16-PD									
LSR-20	1-1/4	1.187	0.780	0.626	5/16-18	0.343	3	6	5.080
LSR-20-PD									
LSR-24	1-1/2	1.375	0.930	0.703	3/8-16	0.406	4	8	6.720
LSR-24-PD									
LSR-32	2	1.750	1.180	0.845	1/2-13	0.531	4	8	11.000
LSR-32-PD									
LSR-48	3	2.750	1.875	1.404	3/4-10	0.812	4	8	27.920
LSR-48-PD									

HOW TO ORDER

- When ordering standard 48" long low shaft rails without mounting holes, order by part number. For example, LSR-12.
- If standard mounting holes are required, specify low shaft rails with pre-drilled mounting holes by part number. For example, LSR-12-PD. Hole sizes and spacings are shown in the table.
- If other than standard hole spacing is required, please provide drawings with all dimensions, tolerances and quantity. With or without mounting holes, low shaft rails will be supplied in 48" lengths when ordered by part number. Contact factory for alternate lengths.



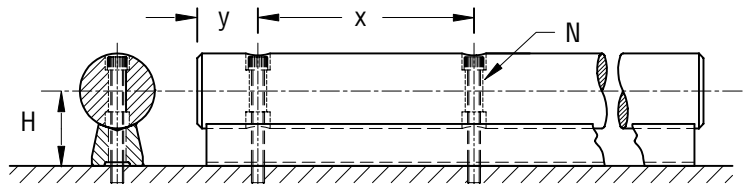
LOW SUPPORT RAIL & SHAFT SET – LSG

Precision case hardened and ground shaft, plus an LSR steel support rail. This guide effectively doubles the life of the shaft by allowing it to be turned over for a fresh surface when wear becomes evident. Both sides of the shaft are counterbored so the shaft may be rotated 180°, and rebolted for use on the new side. This guide is sold as a two piece set; the shaft and support are not assembled. The guide is then bolted down through the top of the shaft to reduce installation time. The shafts are also available in 440C stainless steel. Drilled through and counterbored shafts may not be suitable for all linear bearings.



PART NO.	SHAFT DIA.	H	B	x	N	WEIGHT PER INCH
	IN.	IN.	IN.	IN.	IN.	LBS.
LSG-10	5/8	0.687	0.450	2	#5	0.132
LSG-12	3/4	0.750	0.510	3	#6	0.171
LSG-16	1	1.000	0.690	3	#10	0.311
LSG-20	1-1/4	1.187	0.780	3	5/16	0.454
LSG-24	1-1/2	1.375	0.930	4	3/8	0.640
LSG-32	2	1.750	1.180	4	1/2	1.119

Note: Customer specifies 'y' dimension.





Square Shafting, Bearings & Plugs **Simplicity**

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: Part number APN16E plug with Frelon® J is standard for PST stainless steel square shafting. Part number APN16 plug with Frelon GOLD® is also available for applications to be run on steel.

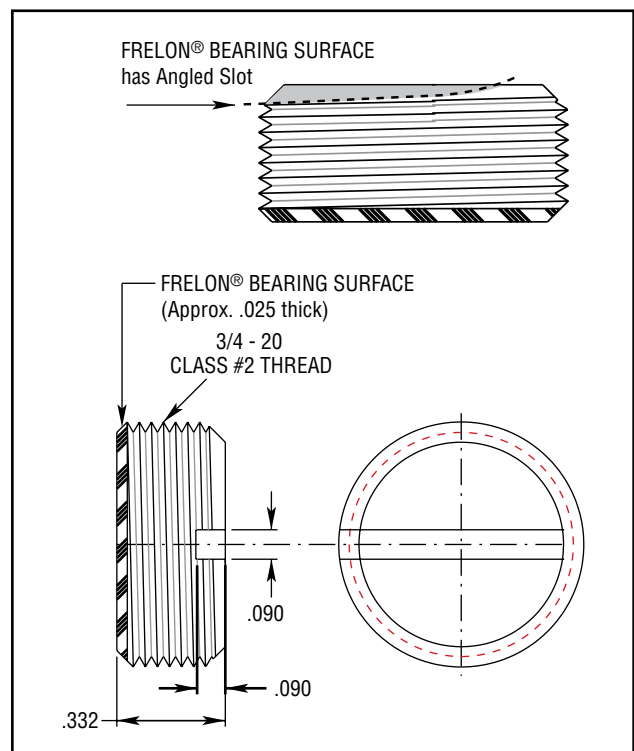
- Bearing plugs can be purchased separately
- Ideal for use in many applications as a wear pad
- Bearing surface area = .300 in²
- Max static load capacity per plug (Frelon J)= 450 lbs.
- The use of green Loctite or similar is recommended to hold the adjustable bearing plugs in position while allowing relative ease of adjustment

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.

[Download CAD](#)

INCH

ISO
METRICJIS
METRIC

**Frelon GOLD®
APN16**



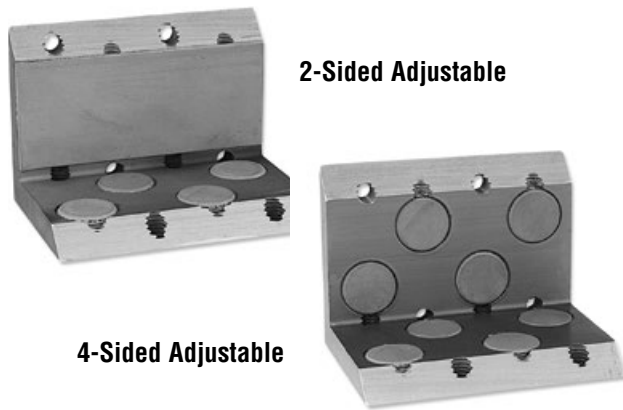
**Frelon® J
APN16E**





Simplicity® Square Shafting, Bearings & Plugs

SQUARE BEARING CUTAWAY VIEW



4-Sided Adjustable

APPLICATION NOTE

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

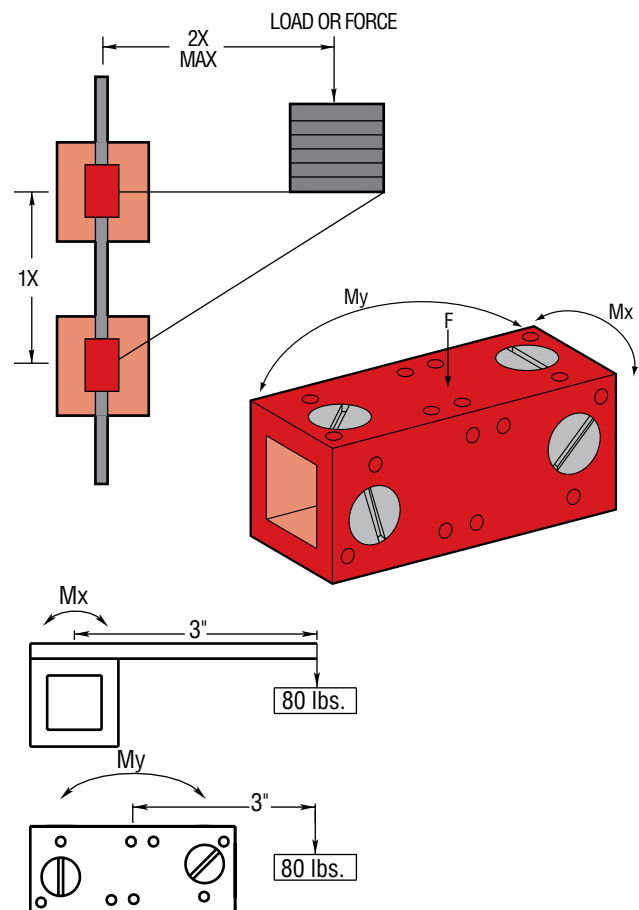
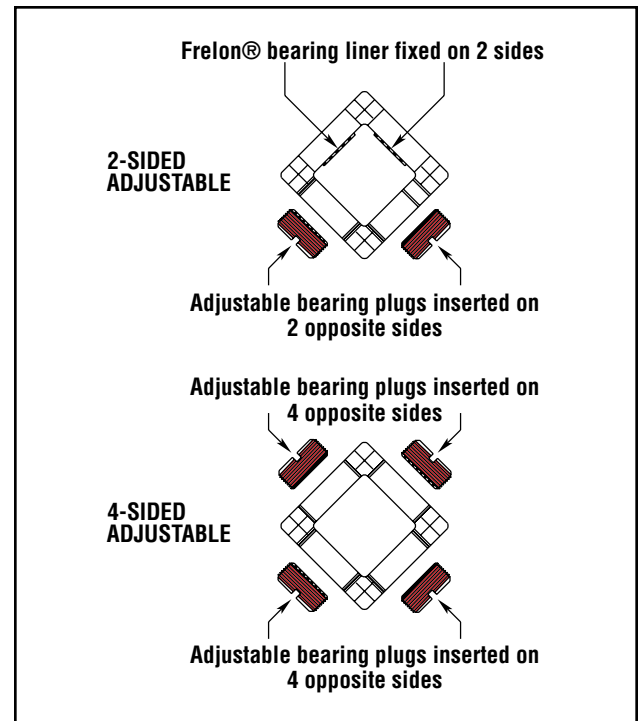
Two parameters must be met in the design and use of square bearings:

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

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

SQUARE BEARING LOAD INFORMATION

PART NO.	MAXIMUM MOMENTS TORSIONAL CAPACITIES IN.-LBS.		MAXIMUM FORCE LBS.
	Mx	My	F
SB16	74	165	920
SBL16	74	475	920
SB24	416	402	1840
SBL24	416	1413	1840





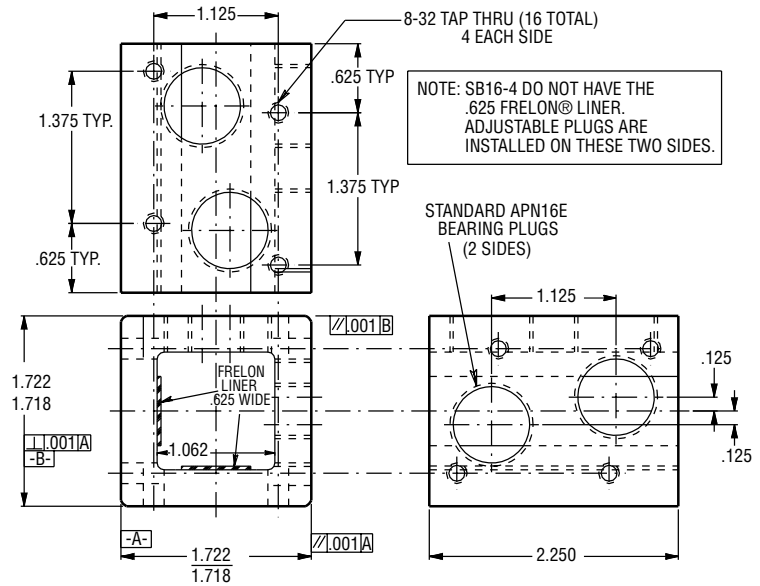
Square Bearings • 1.0 Inch **Simplicity®**

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	.48
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	.56
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	.77
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	.85

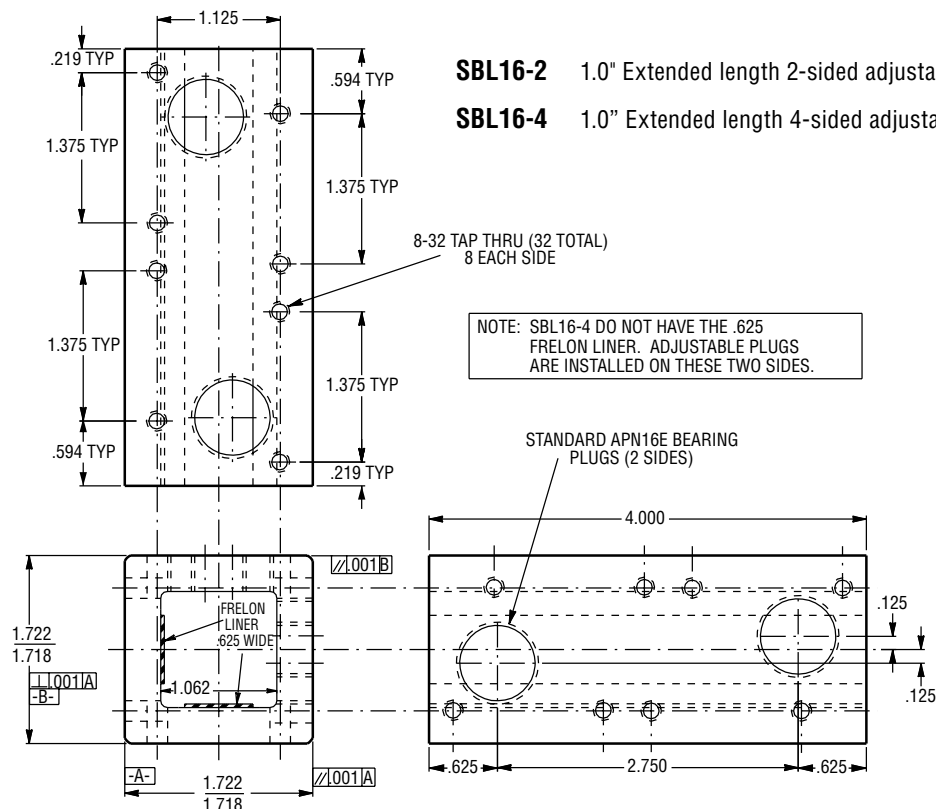
SB16-2 1.0" 2-Sided adjustable square bearing

SB16-4 1.0" 4-Sided adjustable square bearing



SBL16-2 1.0" Extended length 2-sided adjustable square bearing

SBL16-4 1.0" Extended length 4-sided adjustable square bearing





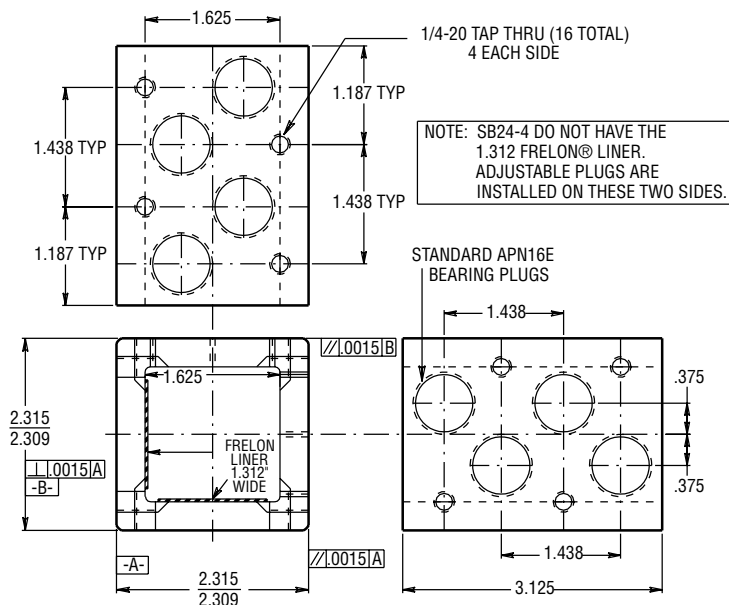
Simplicity® 1.5 Inch • Square Bearings

ORDERING INFORMATION

PART NO.	DESCRIPTION	BEARING WEIGHT LBS.
SB24-2E	Standard 1.5" two-sided adjustable square bearing with Frelon® J plugs for stainless steel shafting	.96
SB24-2	Optional 1.5" two-sided adjustable square bearing with Frelon GOLD® plugs for steel shafting	.96
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	1.12
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	1.71
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	1.84

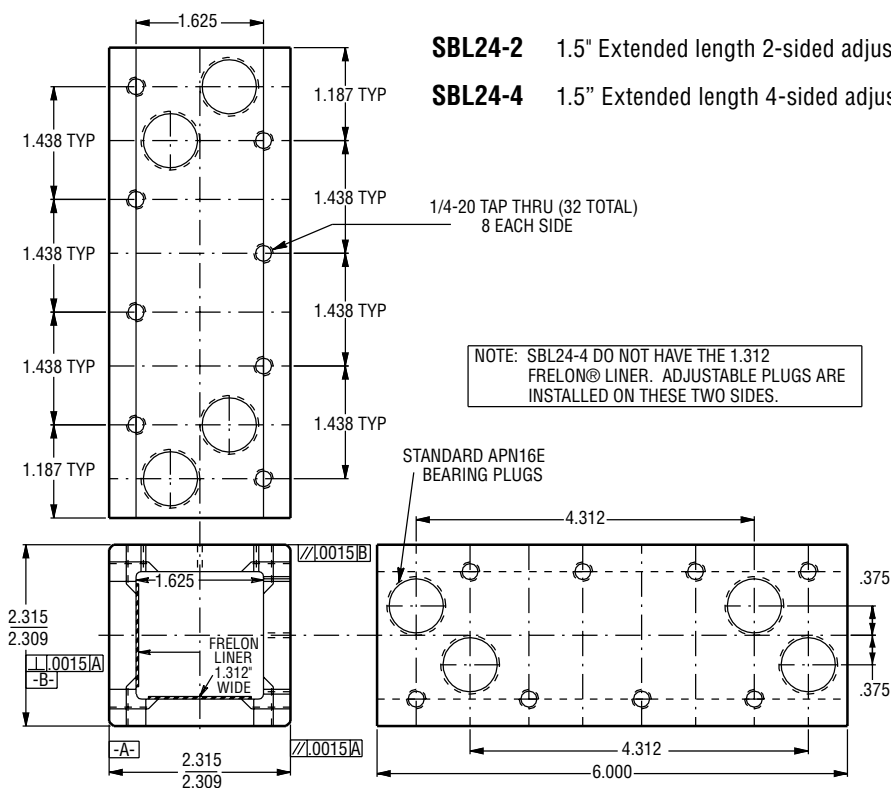
SB24-2 1.5" 2-Sided adjustable square bearing

SB24-4 1.5" 4-Sided adjustable square bearing



SBL24-2 1.5" Extended length 2-sided adjustable square bearing

SBL24-4 1.5" Extended length 4-sided adjustable square bearing





Square Shafting & Accessories **Simplicity®**

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 $\approx .120"$

Steel Shafting PST
Specify length in inches



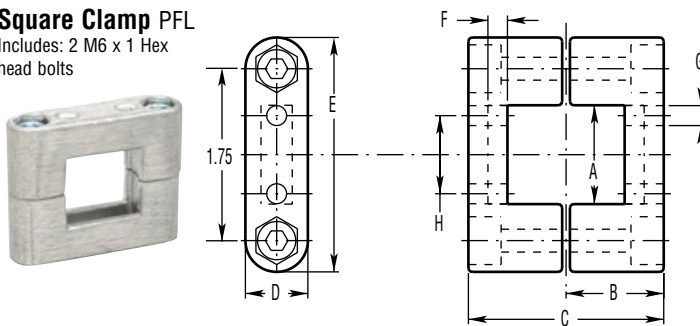
PART NO.	DESCRIPTION	WEIGHT LBS./IN.
PST16-xxx.xxx	Standard 1.0" 304 stainless steel square shafting	0.12
PST24-xxx.xxx	Standard 1.5" 304 stainless steel square shafting	0.18

Note: Specify length in part number using inches.
Example: for 1.0" shafting total length 15" = PST16-015.000

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

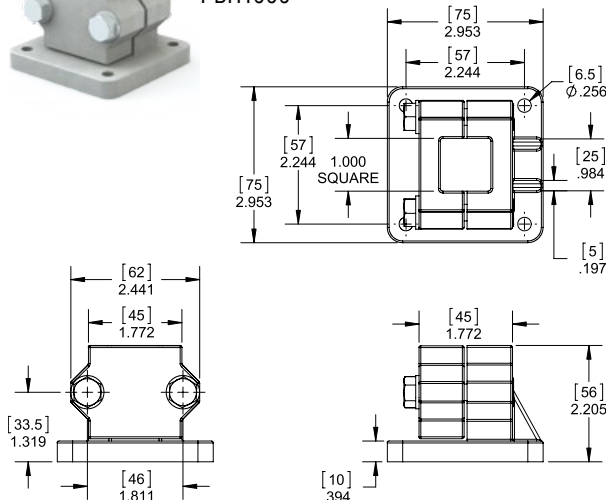


Cross Mount PXM1515
1-1/2" only

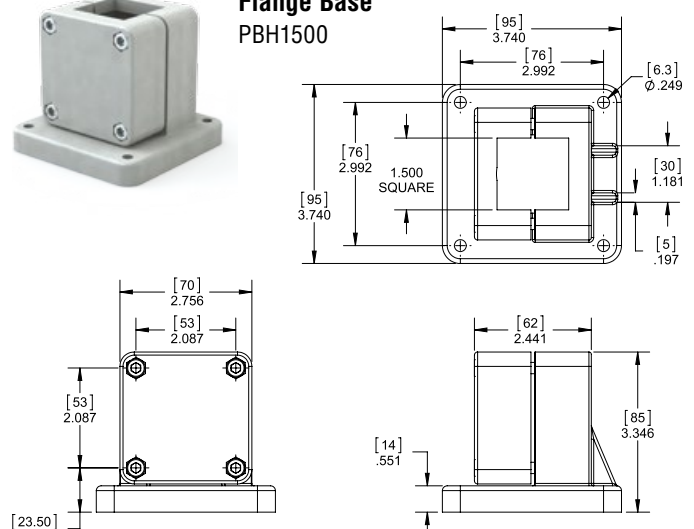
Cross Mount Round & Square PXM1515
1-1/2" only



Flange Base PBH1000

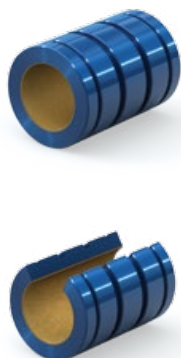


Flange Base PBH1500



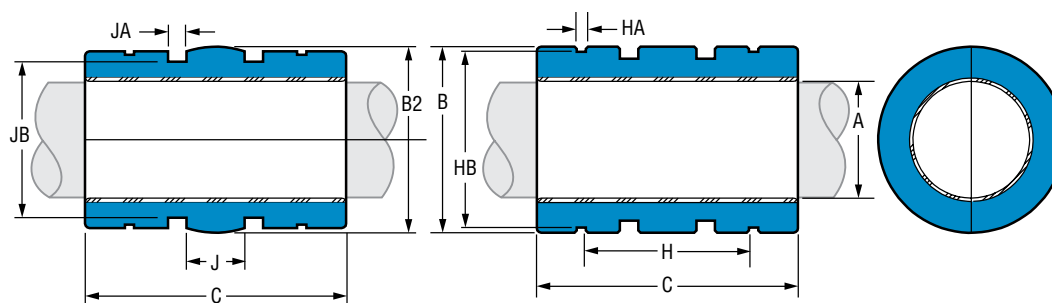


Simplicity® Linear Plain Bearings



*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 for use in a straight bore housing. Add an "A" to the part number for self-aligning bearings.

DIMENSIONAL INFORMATION

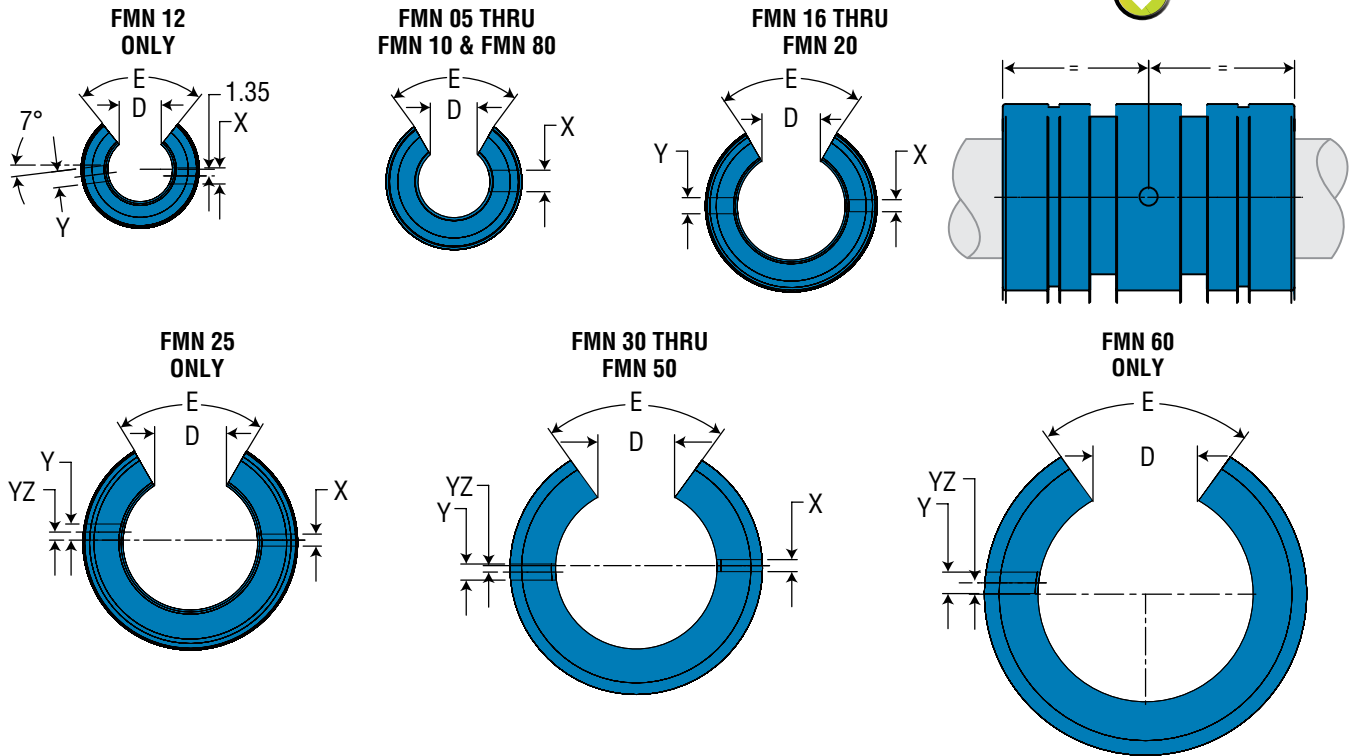
PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING					COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING				B		B2		C LENGTH	CONCENTRIC	BEARING WEIGHT	
PART NO.		NOMINAL SIZE	A BEARING I.D. F8		PART NO.		A BEARING I.D.		STANDARD O.D. h7		SELF-ALIGNING O.D. FMA					
CLOSED	OPEN	MM	MIN.	MAX.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

MOUNTING DIMENSIONAL INFORMATION

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

Linear Plain Bearings **Simplicity®****LINEAR PLAIN BEARINGS – FMN**

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**OPEN DIMENSIONAL INFORMATION**

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

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD LBS.		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
		FRELON			FRELON	
	SQ. IN.	GOLD	J	CM ²	GOLD	J & W
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

Note: MAX. PV (m/min. * kg/sq. cm)

Frelon Gold = 430 PV

Frelon J = 215 PV

MAX. Speed Running Dry (m/min.)

Frelon Gold = 91.4

Frelon J = 42.6

MAX. Speed Running

with Lubrication (m/min.)

Frelon Gold = 251.5

Frelon J = 122

MAX. PV (m/s. * N/mm²)

Frelon Gold = 0.70 PV

Frelon J = 0.35 PV

MAX. Speed Running Dry (m/s)

Frelon Gold = 1.52

Frelon J = 0.71

MAX. Speed Running

with Lubrication (m/s)

Frelon Gold = 4.19

Frelon J = 2.03



Plain Bearing Accessories: Retaining Rings, Seals, O-Rings—page 17

**Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.**

Inch Series—page 40 Metric Series—page 72

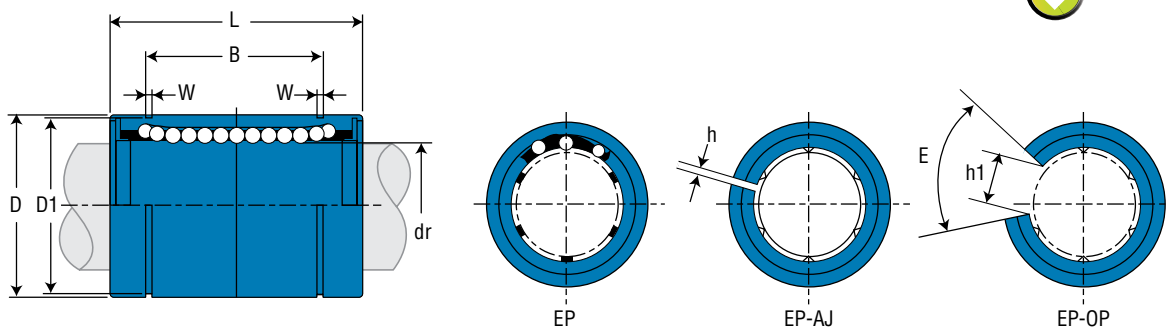
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Linear Ball Bearings Standard

LINEAR BALL BEARINGS – EP


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EP – Standard Closed

EPxx-AJ – Adjustable

EPxx-OP – Standard Open



DIMENSIONAL INFORMATION

(Standard Steel Finish)

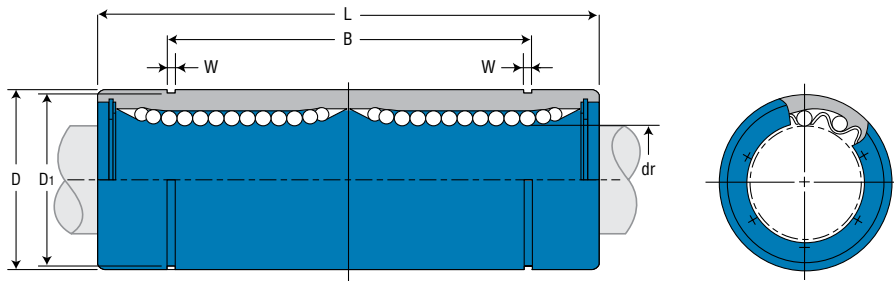
PART NUMBER			NOMINAL DIAMETER		TOLERANCE	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES					
STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN	SIZE	dr				D	TOLERANCE	L	TOLERANCE	B	TOLERANCE
			MM	MM	MM		G	MM	MM	MM	MM	MM	MM
EP5G	-	-	5	5	+0.008/0	4	11	12	0/-0.008	22	0/-0.2	14.5	0/-0.2
EP8G	-	-	8	8	+0.008/0	4	20	16	0/-0.008	25	0/-0.2	16.5	0/-0.2
EP10G	-	-	10	10	+0.008/0	4	36	19	0/-0.009	29	0/-0.2	22	0/-0.2
EP12G	EP12G-AJ	EP12G-OP	12	12	+0.008/0	5	41	22	0/-0.009	32	0/-0.2	22.9	0/-0.2
EP16G	EP16G-AJ	EP16G-OP	16	16	+0.009/-0.001	5	65	26	0/-0.009	36	0/-0.2	24.9	0/-0.2
EP20G	EP20G-AJ	EP20G-OP	20	20	+0.009/-0.001	5	91	32	0/-0.011	45	0/-0.2	31.5	0/-0.2
EP25G	EP25G-AJ	EP25G-OP	25	25	+0.011/-0.001	6	215	40	0/-0.011	58	0/-0.3	44.1	0/-0.3
EP30G	EP30G-AJ	EP30G-OP	30	30	+0.011/-0.001	6	325	47	0/-0.011	68	0/-0.3	52.1	0/-0.3
EP40G	EP40G-AJ	EP40G-OP	40	40	+0.013/-0.002	6	705	62	0/-0.013	80	0/-0.3	60.6	0/-0.3
EP50G	EP50G-AJ	EP50G-OP	50	50	+0.013/-0.002	6	1130	75	0/-0.013	100	0/-0.3	77.6	0/-0.3

PART NUMBER			NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES							LOAD RATINGS	
STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN	SIZE	dr	TOLERANCE	W	D1	h	h1	E SLOT ANGLE	MAX ECCENTRICITY	MAX RADIAL CLEARANCE	DYNAMIC C	STATIC Co
			MM	MM	MM	MM	MM	MM	MM		MM	μM	μM	N
EP5G	-	-	5	5	+0.008/0	1.1	11.5	-	-	-	12	-5	200	260
EP8G	-	-	8	8	+0.008/0	1.1	15.2	-	-	-	12	-5	260	400
EP10G	-	-	10	10	+0.008/0	1.3	18	-	-	-	12	-5	372	549
EP12G	EP12G-AJ	EP12G-OP	12	12	+0.008/0	1.3	21	1.5	7.5	78°	12	-7	410	590
EP16G	EP16G-AJ	EP16G-OP	16	16	+0.009/-0.001	1.3	24.9	1.5	10	78°	12	-7	770	1170
EP20G	EP20G-AJ	EP20G-OP	20	20	+0.009/-0.001	1.6	30.3	2	10	60°	15	-9	860	1370
EP25G	EP25G-AJ	EP25G-OP	25	25	+0.011/-0.001	1.85	37.5	2	12.5	60°	15	-9	980	1560
EP30G	EP30G-AJ	EP30G-OP	30	30	+0.011/-0.001	1.85	44.5	2	12.5	50°	15	-9	1560	2740
EP40G	EP40G-AJ	EP40G-OP	40	40	+0.013/-0.002	2.15	59	3	16.8	50°	17	-13	2150	4010
EP50G	EP50G-AJ	EP50G-OP	50	50	+0.013/-0.002	2.65	72	3	21	50°	17	-13	3820	7930



Double Wide Linear Ball Bearings

DOUBLE WIDE BALL BEARINGS – EP-W


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DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES					
STANDARD CLOSED	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE	B	TOLERANCE
	MM	MM	MM			MM	MM	MM	MM	MM	MM
						G					
EP8GW	8	8	+0.009/-0.001	4	40	16	0/-0.009	45	0/-0.3	33	0/-0.3
EP12GW	12	12	+0.009/-0.001	4	80	22	0/-0.011	57	0/-0.3	45.8	0/-0.3
EP16GW	16	16	+0.011/-0.001	5	115	26	0/-0.011	70	0/-0.3	49.8	0/-0.3
EP20GW	20	20	+0.011/-0.001	5	180	32	0/-0.013	80	0/-0.3	61	0/-0.3
EP25GW	25	25	+0.013/-0.002	6	430	40	0/-0.013	112	0/-0.4	82	0/-0.4
EP30GW	30	30	+0.013/-0.002	6	615	47	0/-0.013	123	0/-0.4	104.2	0/-0.4
EP40GW	40	40	+0.016/-0.004	6	1400	62	0/-0.015	154	0/-0.4	121.2	0/-0.4
EP50GW	50	50	+0.016/-0.004	6	2320	75	0/-0.020	192	0/-0.4	155.2	0/-0.4

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES			LOAD RATINGS	
	SIZE	dr	TOLERANCE	W	D1	MAX ECCENTRICITY	DYNAMIC C	STATIC Co
STANDARD CLOSED	MM	MM	MM	MM	MM	μM	N	N
EP8GW	8	8	+0.009/-0.001	1.1	15.2	15	421	804
EP12GW	12	12	+0.009/-0.001	1.3	21	15	813	1570
EP16GW	16	16	+0.011/-0.001	1.3	24.9	15	921	1780
EP20GW	20	20	+0.011/-0.001	1.6	30.3	17	1370	2740
EP25GW	25	25	+0.013/-0.002	1.85	38	17	1570	3140
EP30GW	30	30	+0.013/-0.002	1.85	44.5	17	2500	5490
EP40GW	40	40	+0.016/-0.004	2.15	59	20	3430	8040
EP50GW	50	50	+0.016/-0.004	2.65	72	20	6080	15900



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)

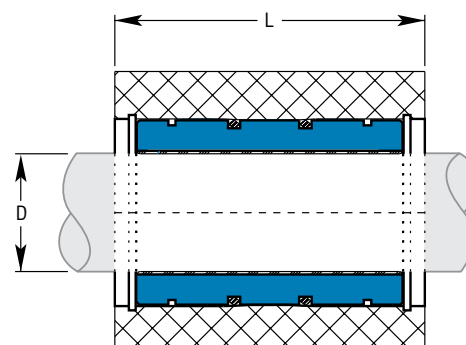
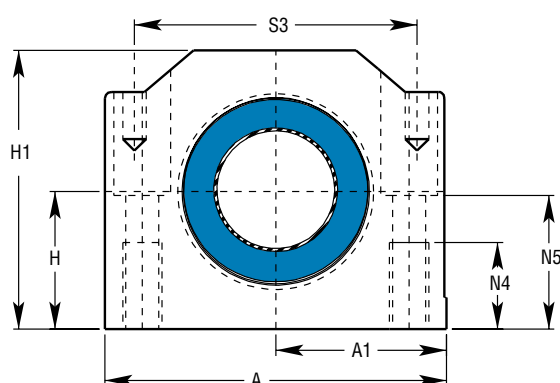
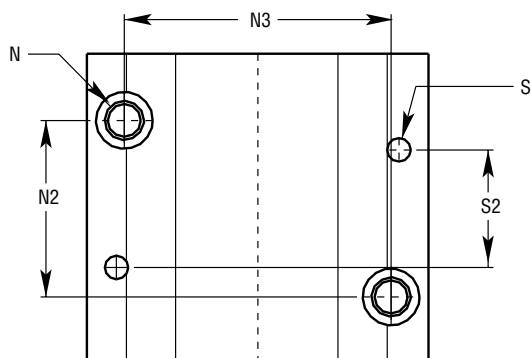
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Simplicity® Closed Pillow Blocks

CLOSED PILLOW BLOCKS – PM


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DIMENSIONAL INFORMATION

PART NO.		D NOM. BRG. I.D.	H	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	MAX. STATIC LOAD LBS.		MAX. STATIC LOAD N		ASSEM WT.
																FRELON		FRELON		
CLOSED			CENTERLINE													GOLD	J & W	GOLD	J & W	
PRECISION	COMPENSATED	MM	.015	HEIGHT	WIDTH	.013	LENGTH	BOLT												
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 x1.75	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.

(3) Straight bore pillow block assembly includes standard O.D. FM series bearing in straight bore housing.

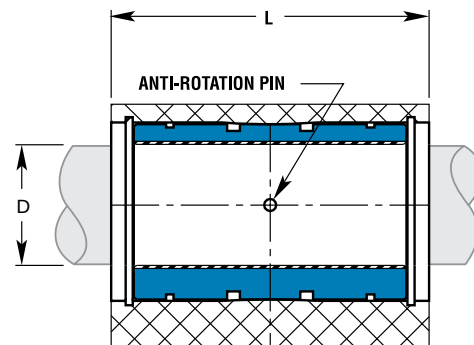
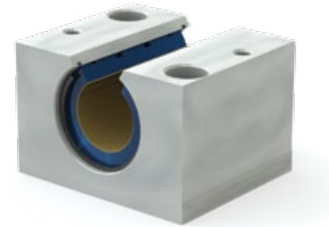
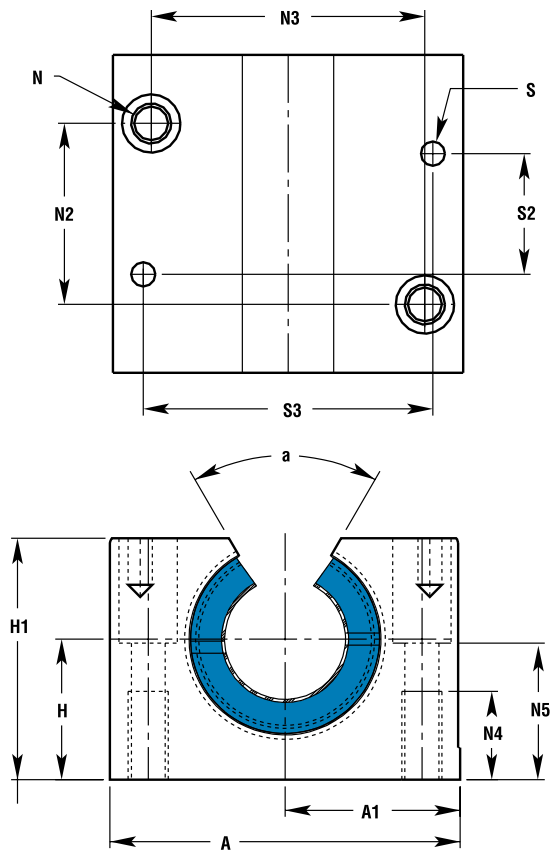


Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)

Open Pillow Blocks **Simplicity®****OPEN PILLOW BLOCKS – PMN**

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**DIMENSIONAL INFORMATION**

PART NO.		D NOM. BRG. I.D.	H CENTERLINE	H1 HEIGHT	A WIDTH	A1 .013	L LENGTH	N BOLT	N2	N3	N4	N5	S	S2	S3	a MM	MAX. STATIC LOAD LBS.		MAX. STATIC LOAD N		ASSEM. WT. KG.
OPEN	COMPENSATED																FRELON	FRELON	FRELON	FRELON	
PRECISION	COMPENSATED	MIN.	.015														GOLD	J & W	GOLD	J & W	
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	20	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	22	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



Only certified Simplicity 60 Plus Shafting provides
maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72

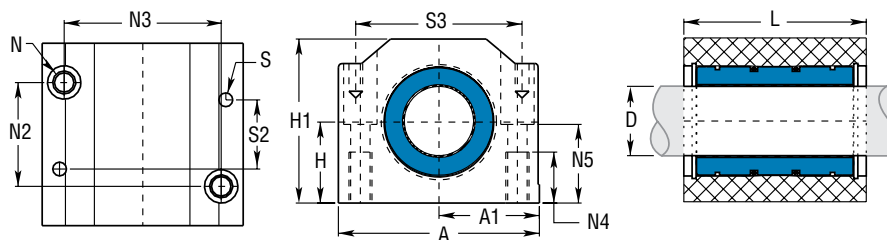
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Linear Ball Bearings Pillow Blocks

CLOSED PILLOW BLOCKS – EPPM



PART NO.	D NOM. BRG. I.D.	H	H1	A	A1	L	N	N2	N3	N4	N5	S	S2	S3	ASSEM. WT.	LOAD RATINGS	
		CENTERLINE +/- .015	HEIGHT	WIDTH	CENTERLINE +/- .013	LENGTH	DYNAMIC C									STATIC Co	
						BOLT											
PRECISION	MM	MM	MM	MM	MM	MM		MM	MM	MM	MM	MM	MM	MM	KG.	N	N
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	260	400
EPPM10G	10	16	31.5	40	20	36	M5 x 0.8	20.15	29.15	11	15	4	29	31	0.095	372	549
EPPM12G	12	18	35	43	21.5	39	M5 x 0.8	23.15	3.15	11	16.5	4	32	34	0.118	410	590
EPPM16G	16	22	42	53	26.5	43	M6 x 1.0	26.15	40.15	13	21	4	35	42	0.200	770	1170
EPPM20G	20	25	50	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	0.329	860	1370
EPPM25G	25	30	60	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	0.655	980	1560
EPPM30G	30	35	71	87	43.5	79	M10 x 1.5	45.15	68.15	22	34	6	30	72	1.020	1560	2740
EPPM40G	40	45	91	108	54	91	M12 x1.75	58.15	86.15	26	44	8	35	90	1.846	2150	4010
EPPM50G	50	50	105	132	66	113	M16 x 2.0	50.20	108.2	34	49	10	42	108	3.169	3820	7930

Notes: 1. Standard pillow block assembly includes self-aligning housing.

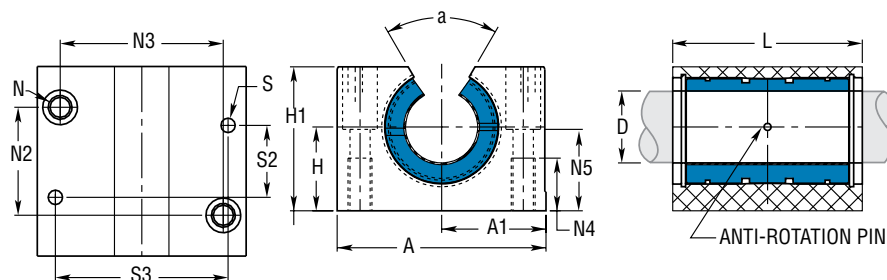
2. All standard metric pillow blocks use standard EP series bearings.

3. Straight bore pillow block assembly includes standard EP series bearing in straight bore housing.



[Download CAD](#)

OPEN PILLOW BLOCKS – EPPMN



PART NO.	D NOM. BRG. I.D.	H	H1	A	A1	L	N									ASSEM. WT.	LOAD RATINGS	
		CENTERLINE +/- .015	HEIGHT	WIDTH	CENTERLINE +/- .013	LENGTH	BOLT	N2	N3	N4	N5	S	S2	S3	a		DYNAMIC C	STATIC Co
PRECISION	MM	MM	MM	MM	MM	MM	BOLT	MM	MM	MM	MM	MM	MM	MM	MM	KG.		N
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		410
EPPMN16G	16	22	35	53	26.5	43	M6 x 1.0	26.15	40.15	13	21	4	35	42	68	0.162		770
EPPMN20G	20	25	42	60	30	54	M8 x 1.25	32.15	45.15	18	24	5	45	50	60	0.267		860
EPPMN25G	25	30	51	78	39	67	M10 x 1.5	40.15	60.15	22	29	6	20	64	60	0.536		980
EPPMN30G	30	35	60	87	43.5	79	M10 x 1.5	45.15	68.15	22	34	6	30	72	60	0.831		1560
EPPMN40G	40	45	77	108	54	91	M12 x 1.75	58.15	86.15	26	44	8	35	90	60	1.499		2150
EPPMN50G	50	50	88	132	66	113	M16 x 2.0	50.20	108.2	34	49	10	42	108	60	2.539		3820

Notes: 1. Standard pillow block assembly includes self-aligning housing.

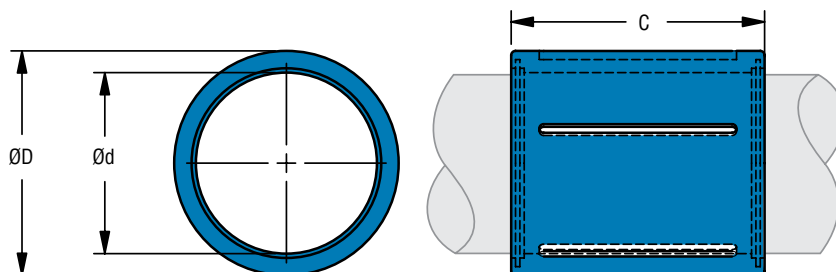
2. All standard metric pillow blocks use standard EP series bearings.

3. For empty pillow block with no bearing add LBB after the part number.



Compact Thin Wall **Linear Ball Bearings**

LINEAR BALL BEARINGS – COMPACT THIN WALL – KHP

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DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NO.	DIMENSIONS							LOAD RATING	
	Ød	TOLERANCE	ØD	TOLERANCE	C	TOLERANCE	WEIGHT	DYNAMIC C	STATIC Co
	MM	µm	MM	µm	MM	µm	G	N	N
KHP6	6	0/+12	12	-11/0	22	-520/0	7	400	239
KHP8	8	0/+15	15	-11/0	24	-520/0	12	435	280
KHP10	10	0/+15	17	-11/0	26	-520/0	14.5	500	370
KHP12	12	0/+18	19	-13/0	28	-520/0	18.5	620	510
KHP14	14	0/+18	21	-13/0	28	-520/0	20.5	620	520
KHP16	16	0/+18	24	-13/0	30	-520/0	27.5	800	620
KHP20	20	0/+21	28	-13/0	30	-520/0	32.5	950	790
KHP25	25	0/+21	35	-16/0	40	-620/0	66	1990	1670
KHP30	30	0/+21	40	-16/0	50	-620/0	95	2880	2700
KHP40	40	0/+25	52	-19/0	60	-740/0	182	4400	4450
KHP50	50	0/+25	62	-19/0	70	-740/0	252	5500	6300



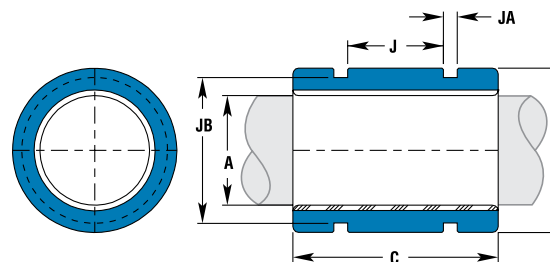
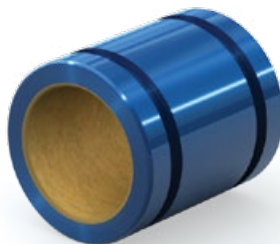
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Simplicity® Thin Wall Bearings

COMPACT THIN WALL BEARINGS – FG


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DIMENSIONAL INFORMATION

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

MOUNTING DIMENSIONS

PART NO.		NOMINAL SIZE	J BETWEEN O-RING GRVS.	JA O-RING GRV. WIDTH	JB O-RING GRV. DIA.	O-RING SIZE	O-RING PART NUMBER
PRECISION	COMPENSATED						
FG 06	FGC 06	6	N/A	N/A	N/A	N/A	N/A
FG 08	FGC 08	8	8.0	2.032	12.201	12 x 1.7	6000025
FG 10	FGC 10	10	8.3	2.032	14.415	14 x 1.6	6000026
FG 12	FGC 12	12	12.0	3.175	17.907	17.5 x 2.5	6000016
FG 15	FGC 15	15	12.7	3.175	20.671	20 x 2.65	6000029
FG 16	FGC 16	16	12.7	3.175	21.882	21.5 x 2.5	6000017
FG 18	FGC 18	18	14.0	3.175	23.885	23.5 x 2.5	6000031
FG 20	FGC 20	20	17.0	3.175	27.864	27.5 x 2.5	6000018
FG 25	FGC 25	25	24.0	3.175	35.865	35.5 x 2.5	6000019
FG 30	FGC 30	30	30.0	3.175	40.895	40 x 2.5	6000034
FG 35	FGC 35	35	36.0	4.115	46.200	46 x 3.5	6000035
FG 40	FGC 40	40	37.3	4.115	54.255	53 x 3.5	6000036
FG 50	FGC 50	50	50	4.115	69.215	69 x 3.5	6000022

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD LBS.		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD	
		FRELON			FRELON	
	CM²	GOLD	J & W	CM²	GOLD	J & W
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

Note: MAX. PV (m/min. * kg/sq. cm)

Frelon Gold = 430 PV

Frelon J = 215 PV

MAX. Speed Running Dry (m/min.)

Frelon Gold = 91.4

Frelon J = 42.6

MAX. Speed Running

with Lubrication (m/min.)

Frelon Gold = 251.5

Frelon J = 122

MAX. PV (m/s. * N/mm²)

Frelon Gold = 0.70 PV

Frelon J = 0.35 PV

MAX. Speed Running Dry (m/s)

Frelon Gold = 1.52

Frelon J = 0.71

MAX. Speed Running

with Lubrication (m/s)

Frelon Gold = 4.19

Frelon J = 2.03



[Plain Bearing Accessories: Retaining Rings, Seals, O-Rings—page 17](#)

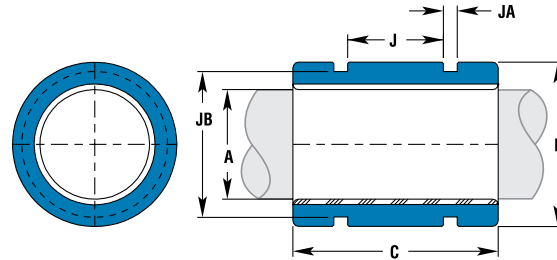
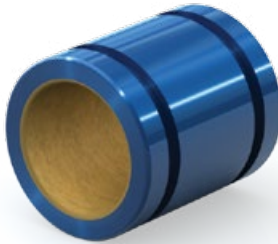


Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

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Thin Wall Bearings **Simplicity®****COMPACT THIN WALL BEARINGS – FMT**

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**DIMENSIONAL INFORMATION**

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING				COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING			B O.D. h7		C LENGTH h13		CONCENTRIC	BEARING WEIGHT
PART NO.	NOMINAL SIZE	A BEARING I.D. F8		PART NO.	A BEARING I.D.							
CLOSED	MM	MIN.	MAX.	CLOSED	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MAX. MM	KG.
FMT 06	6	6.010	6.028	FMTC 06	6.060	6.078	11.982	12	21.746	22	0.0254	0.0057
FMT 08	8	8.013	8.035	FMTC 08	8.063	8.085	14.982	15	23.746	24	0.0254	0.0071
FMT 10	10	10.013	10.035	FMTC 10	10.063	10.085	16.982	17	25.746	26	0.0254	0.0085
FMT 12	12	12.016	12.043	FMTC 12	12.066	12.093	18.979	19	27.746	28	0.0254	0.0113
FMT 14	14	14.016	14.043	FMTC 14	14.066	14.093	20.979	21	27.746	28	0.0254	0.0128
FMT 16	16	16.016	16.043	FMTC 16	16.066	16.093	23.979	24	29.746	30	0.0254	0.0184
FMT 20	20	20.020	20.053	FMTC 20	20.096	20.129	27.979	28	29.746	30	0.0254	0.0227
FMT 25	25	25.020	25.053	FMTC 25	25.096	25.129	34.975	35	39.746	40	0.0254	0.0439
FMT 30	30	30.020	30.053	FMTC 30	30.096	30.129	39.975	40	49.746	50	0.0254	0.0652
FMT 40	40	40.025	40.064	FMTC 40	40.127	40.166	51.970	52	59.746	60	0.0254	0.1233
FMT 50	50	50.025	50.064	FMTC 50	50.127	50.166	61.970	62	69.746	70	0.0254	0.1772

MOUNTING DIMENSIONS

PART NO.		NOMINAL SIZE	J BETWEEN O-RING GRVS.	JA O-RING GRV. WIDTH	JB O-RING GRV. DIA.	O-RING SIZE	O-RING PART NUMBER
PRECISION	COMPENSATED						
FMT 06	FMTC 06	6	N/A	N/A	N/A	N/A	N/A
FMT 08	FMTC 08	8	10.0	2.000	12.200	12 x 1.7	6000025
FMT 10	FMTC 10	10	12.0	2.000	14.400	14 x 1.6	6000026
FMT 12	FMTC 12	12	14.0	2.000	16.600	16 x 1.5	6000027
FMT 14	FMTC 14	14	14.0	2.000	18.500	18 x 1.5	6000028
FMT 16	FMTC 16	16	14.0	2.000	21.300	21.1 x 1.6	6000030
FMT 20	FMTC 20	20	14.0	2.000	25.500	25 x 1.5	6000032
FMT 25	FMTC 25	25	22.0	3.200	30.900	30.5 x 2.5	6000033
FMT 30	FMTC 30	30	30.0	3.200	35.900	35.5 x 2.5	6000019
FMT 40	FMTC 40	40	40.0	4.100	46.200	46 x 3.5	6000035
FMT 50	FMTC 50	50	50.0	4.100	56.300	26 x 3.5	6000021

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD LBS.		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
		FRELON			FRELON	
	CM²	GOLD	J & W	CM²	GOLD	J & W
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

Note: MAX. PV (m/min. * kg/sq. cm)
 Frelon Gold = 430 PV
 Frelon J = 215 PV

MAX. Speed Running Dry (m/min.)
 Frelon Gold = 91.4
 Frelon J = 42.6

MAX. Speed Running
 with Lubrication (m/min.)
 Frelon Gold = 251.5
 Frelon J = 122

MAX. PV (m/s. * N/mm²)
 Frelon Gold = 0.70 PV
 Frelon J = 0.35 PV

MAX. Speed Running Dry (m/s)
 Frelon Gold = 1.52
 Frelon J = 0.71

MAX. Speed Running
 with Lubrication (m/s)
 Frelon Gold = 4.19
 Frelon J = 2.03



Plain Bearing Accessories: Retaining Rings, Seals, O-Rings—page 17



**Only certified Simplicity 60 Plus Shafting provides
 maximum linear bearing performance.**

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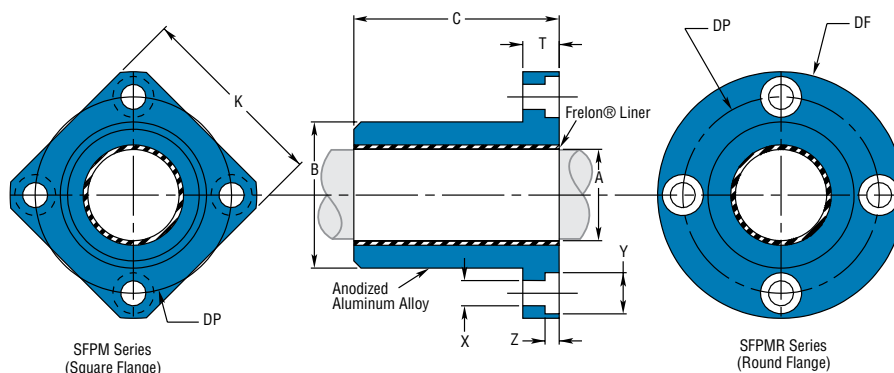
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Simplicity® Flange Bearings

FLANGE BEARINGS – SFPM



DIMENSIONAL INFORMATION

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING				COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING				NOMINAL SIZE	B BODY O.D. h7		C LENGTH h13		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
PART NO.		A BEARING I.D. F8		PART NO.		A BEARING I.D.								FRELON	
SQUARE	ROUND	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.		MM	MIN.	MAX.	MIN.	MAX.	CM ²	GOLD
SFPM 08	SFPMR 08	8.013	8.035	SFPM 08C	SFPMR 08C	8.063	8.085	8	15.982	16	24.8	25	2.094	4316	2168
SFPM 12	SFPMR 12	12.016	12.043	SFPM 12C	SFPMR 12C	12.066	12.093	12	21.979	22	31.8	32	4.021	8280	4159
SFPM 16	SFPMR 16	16.016	16.043	SFPM 16C	SFPMR 16C	16.066	16.093	16	25.979	26	35.8	36	6.032	12429	6239
SFPM 20	SFPMR 20	20.020	20.053	SFPM 20C	SFPMR 20C	20.096	20.129	20	31.975	32	44.8	45	9.425	19414	9751
SFPM 25	SFPMR 25	25.020	25.053	SFPM 25C	SFPMR 25C	25.096	25.129	25	39.975	40	57.7	58	15.184	31284	15706
SFPM 30	SFPMR 30	30.020	30.053	SFPM 30C	SFPMR 30C	30.096	30.129	30	46.975	47	67.7	68	21.363	44008	22102
SFPM 40	SFPMR 40	40.025	40.064	SFPM 40C	SFPMR 40C	40.127	40.166	40	61.970	62	79.7	80	33.510	69033	34669
SFPM 50	SFPMR 50	50.025	50.064	SFPM 50C	SFPMR 50C	50.127	50.166	50	74.970	75	99.7	100	52.360	107871	54161
SFPM 60	SFPMR 60	60.030	60.076	SFPM 60C	SFPMR 60C	60.182	60.228	60	89.965	90	124.6	125	78.540	161796	81246
SFPM 80	SFPMR 80	80.030	80.076	SFPM 80C	SFPMR 80C	80.182	80.228	80	119.965	120	164.6	165	138.230	284765	142991

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



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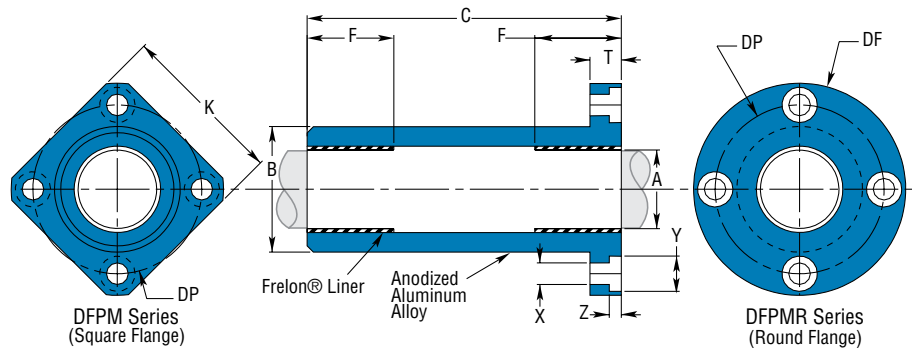
MOUNTING DIMENSIONS

PART NO.		K SQUARE	DF O.D.	T LENGTH	DP BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	SFPM WEIGHT KG.	SFPMR WEIGHT KG.
SQUARE	ROUND	MAX.	MAX.	MAX.									
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	0.012	0.012	0.037	0.046
SFPM 16	SFPMR 16	35	46	9	36	4.5	7.5	4.1	M 4	0.012	0.012	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	11	51	5.5	9	5.1	M 5	0.015	0.015	0.156	0.172
SFPM 30	SFPMR 30	60	76	14	62	6.6	11	6.1	M 6	0.015	0.015	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	18	94	9.0	14	8.1	M 8	0.017	0.017	0.825	0.930
SFPM 60	SFPMR 60	106	134	24	112	11.0	17	11.1	M 10	0.020	0.020	1.506	1.697
SFPM 80	SFPMR 80	136	164	24	142	11.0	17	11.1	M 10	0.020	0.020	3.308	3.483



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

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Flange Bearings **Simplicity®****FLANGE BEARING – DFPM****DIMENSIONAL INFORMATION**

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING				COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING				NOMINAL SIZE	B BODY O.D. h7		C LENGTH		F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
PART NO.		A BEARING I.D. F8		PART NO.		A BEARING I.D.									FRELON	
SQUARE	ROUND	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.		MM	MIN.	MAX.	MIN.		MAX.	CM ²	GOLD
DFPM 08	DFPMR 08	8.013	8.035	DFPM 08C	DFPMR 08C	8.063	8.085	8	15.982	16	44.7	45	12.1	2.027	4179	2099
DFPM 12	DFPMR 12	12.016	12.043	DFPM 12C	DFPMR 12C	12.066	12.093	12	21.979	22	56.7	57	15.4	3.870	7976	4002
DFPM 16	DFPMR 16	16.016	16.043	DFPM 16C	DFPMR 16C	16.066	16.093	16	25.979	26	69.7	70	20.4	6.836	14087	7073
DFPM 20	DFPMR 20	20.020	20.053	DFPM 20C	DFPMR 20C	20.096	20.129	20	31.975	32	79.7	80	22.1	9.257	19071	9575
DFPM 25	DFPMR 25	25.020	25.053	DFPM 25C	DFPMR 25C	25.096	25.129	25	39.975	40	111.6	112	33.1	17.331	35708	17933
DFPM 30	DFPMR 30	30.020	30.053	DFPM 30C	DFPMR 30C	30.096	30.129	30	46.975	47	122.6	123	35	21.991	45303	22749
DFPM 40	DFPMR 40	40.025	40.064	DFPM 40C	DFPMR 40C	40.127	40.166	40	61.970	62	150.6	151	44	36.861	75939	38131
DFPM 50	DFPMR 50	50.025	50.064	DFPM 50C	DFPMR 50C	50.127	50.166	50	74.970	75	191.6	192	69.5	72.780	149936	75282
DFPM 60	DFPMR 60	60.030	60.076	DFPM 60C	DFPMR 60C	60.182	60.228	60	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)



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MOUNTING DIMENSIONS

PART NO.		K SQUARE	DF O.D.	T LENGTH	DP BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	DFPM WEIGHT KG.	DFPMR WEIGHT KG.
SQUARE	ROUND	MAX.	MAX.	MAX.									
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	0.015	0.015	0.055	0.064
DFPM 16	DFPMR 16	35	46	9	36	4.5	7.5	4.1	M 4	0.015	0.015	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	11	51	5.5	9	5.1	M 5	0.017	0.017	0.270	0.286
DFPM 30	DFPMR 30	60	76	14	62	6.6	11	6.1	M 6	0.017	0.017	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	18	94	9.0	14	8.1	M 8	0.020	0.020	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

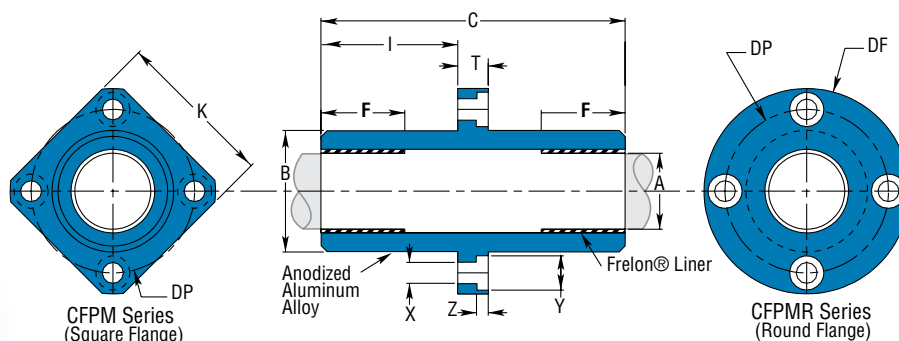
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maximum linear bearing performance.

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Simplicity® Flange Bearings

FLANGE BEARING – CFPM



DIMENSIONAL INFORMATION

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING				COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING														MAX. STATIC LOAD N
PART NO.		A BEARING I.D. F8		PART NO.		A BEARING I.D.												
		SQUARE	ROUND			MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MM	MIN.	MAX.	MIN.	MAX.	CM ²	GOLD
CFPM 08	CFPMR 08	8.013	8.035	CFPM 08C	CFPMR 08C	8.063	8.085	8	15.982	16	45.7	46.3	19.0	12.1	2.027	4179	2099	
CFPM 12	CFPMR 12	12.016	12.043	CFPM 12C	CFPMR 12C	12.066	12.093	12	21.979	22	60.7	61.3	26.0	15.4	3.870	7976	4002	
CFPM 16	CFPMR 16	16.016	16.043	CFPM 16C	CFPMR 16C	16.066	16.093	16	25.979	26	67.7	68.3	29.5	20.4	6.836	14087	7073	
CFPM 20	CFPMR 20	20.020	20.053	CFPM 20C	CFPMR 20C	20.096	20.129	20	31.975	32	79.7	80.3	34.5	22.1	9.257	19071	9575	
CFPM 25	CFPMR 25	25.020	25.053	CFPM 25C	CFPMR 25C	25.096	25.129	25	39.975	40	111.7	112.3	50.5	33.1	17.331	35708	17933	
CFPM 30	CFPMR 30	30.020	30.053	CFPM 30C	CFPMR 30C	30.096	30.129	30	46.975	47	122.7	123.3	54.5	35	21.991	45303	22749	
CFPM 40	CFPMR 40	40.025	40.064	CFPM 40C	CFPMR 40C	40.127	40.166	40	61.970	62	150.7	151.3	66.5	44	36.861	75939	38131	
CFPM 50	CFPMR 50	50.025	50.064	CFPM 50C	CFPMR 50C	50.127	50.166	50	74.970	75	191.7	192.3	87.0	69.5	72.780	149936	75282	
CFPM 60	CFPMR 60	60.030	60.076	CFPM 60C	CFPMR 60C	60.182	60.228	60	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)



Download CAD

MOUNTING DIMENSIONS

PART NO.		K SQUARE	DF O.D.	T LENGTH	DP BOLT CIRCLE	X HOLE	Y C'BORE DEPTH	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	CFPM WEIGHT	CFPMR WEIGHT
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	0.015	0.015	0.058	0.067
CFPM 16	CFPMR 16	35	46	9	36	4.5	7.5	4.1	M 4	0.015	0.015	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	11	51	5.5	9	5.1	M 5	0.017	0.017	0.270	0.286
CFPM 30	CFPMR 30	60	76	14	62	6.6	11	6.1	M 6	0.017	0.017	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	18	94	9.0	14	8.1	M 8	0.020	0.020	1.450	1.556
CFPM 60	CFPMR 60	106	134	24	112	11.0	17	11.1	M 10	0.025	0.025	2.329	2.519



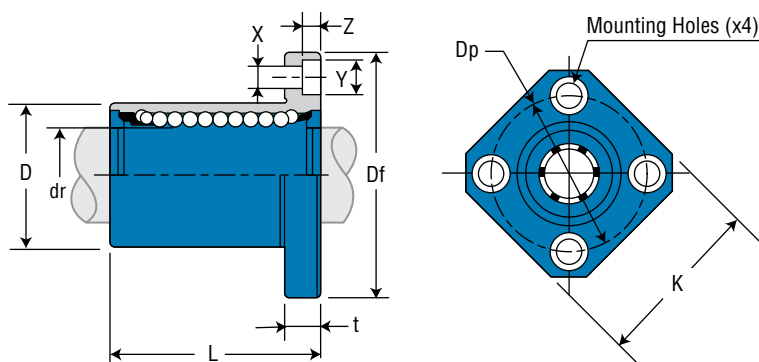
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Square Flange Mount **Linear Ball Bearings**

LINEAR BALL BEARINGS – SQUARE FLANGE MOUNT – EPK



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
STANDARD POLYMER CAGE	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	MM			MM	MM	MM	MM
EPK8G	8	8	+0.008/0	4	41	16	0/-0.013	25	±0.3
EPK12G	12	12	+0.008/0	4	80	22	0/-0.016	32	±0.3
EPK16G	16	16	+0.009/-0.001	5	103	26	0/-0.016	36	±0.3
EPK20G	20	20	+0.009/-0.001	5	182	32	0/-0.019	45	±0.3
EPK25G	25	25	+0.011/-0.001	6	335	40	0/-0.019	58	±0.3
EPK30G	30	30	+0.011/-0.001	6	560	47	0/-0.019	68	±0.3
EPK40G	40	40	+0.013/-0.002	6	1175	62	0/-0.022	80	±0.3
EPK50G	50	50	+0.013/-0.002	6	1745	75	0/-0.022	100	±0.3



Download CAD

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
	SIZE	dr	TOLERANCE	Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
EPK8G	8	8	+0.008/0	32	25	5	24	3.5	6.5	3.1	12	12	265	402
EPK12G	12	12	+0.008/0	42	32	6	32	4.5	8	4.1	12	12	510	784
EPK16G	16	16	+0.009/-0.001	46	35	6	36	4.5	8	4.1	12	12	578	892
EPK20G	20	20	+0.009/-0.001	54	42	8	43	5.5	9.3	5.1	15	15	862	1370
EPK25G	25	25	+0.011/-0.001	62	50	8	51	5.5	9.3	5.1	15	15	980	1570
EPK30G	30	30	+0.011/-0.001	76	60	10	62	6.6	11	6.1	15	15	1570	2740
EPK40G	40	40	+0.013/-0.002	98	75	13	80	9	14	8.1	17	17	2160	4020
EPK50G	50	50	+0.013/-0.002	112	88	13	94	9	14	8.1	17	17	3820	7940



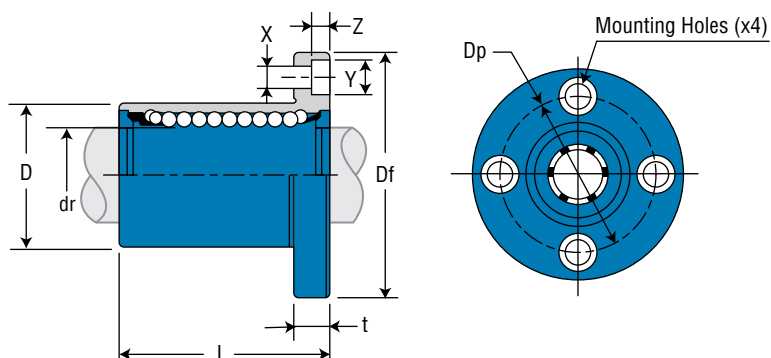
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Linear Ball Bearings Round Flange Mount

LINEAR BALL BEARINGS – ROUND FLANGE MOUNT – EPF



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	MM			MM	MM	MM	MM
EPF8G	8	8	+0.008/0	4	41	16	0/-0.013	25	±0.3
EPF12G	12	12	+0.008/0	4	80	22	0/-0.016	32	±0.3
EPF16G	16	16	+0.009/-0.001	5	103	26	0/-0.016	36	±0.3
EPF20G	20	20	+0.009/-0.001	5	182	32	0/-0.019	45	±0.3
EPF25G	25	25	+0.011/-0.001	6	335	40	0/-0.019	58	±0.3
EPF30G	30	30	+0.011/-0.001	6	560	47	0/-0.019	68	±0.3
EPF40G	40	40	+0.013/-0.002	6	1175	62	0/-0.022	80	±0.3
EPF50G	50	50	+0.013/-0.002	6	1745	75	0/-0.022	100	±0.3



Download CAD

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE								LOAD RATINGS	
	SIZE	dr	TOLERANCE	Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
	MM	MM	MM	MM	MM	MM	MM	MM	MM	μm	μm	N	N
EPF8G	8	8	+0.008/0	32	5	24	3.5	6.5	3.1	12	12	265	402
EPF12G	12	12	+0.008/0	42	6	32	4.5	8	4.1	12	12	510	784
EPF16G	16	16	+0.009/-0.001	46	6	36	4.5	8	4.1	12	12	578	892
EPF20G	20	20	+0.009/-0.001	54	8	43	5.5	9.3	5.1	15	15	862	1370
EPF25G	25	25	+0.011/-0.001	62	8	51	5.5	9.3	5.1	15	15	980	1570
EPF30G	30	30	+0.011/-0.001	76	10	62	6.6	11	6.1	15	15	1570	2740
EPF40G	40	40	+0.013/-0.002	98	13	80	9	14	8.1	17	17	2160	4020
EPF50G	50	50	+0.013/-0.002	112	13	94	9	14	8.1	17	17	3820	7940



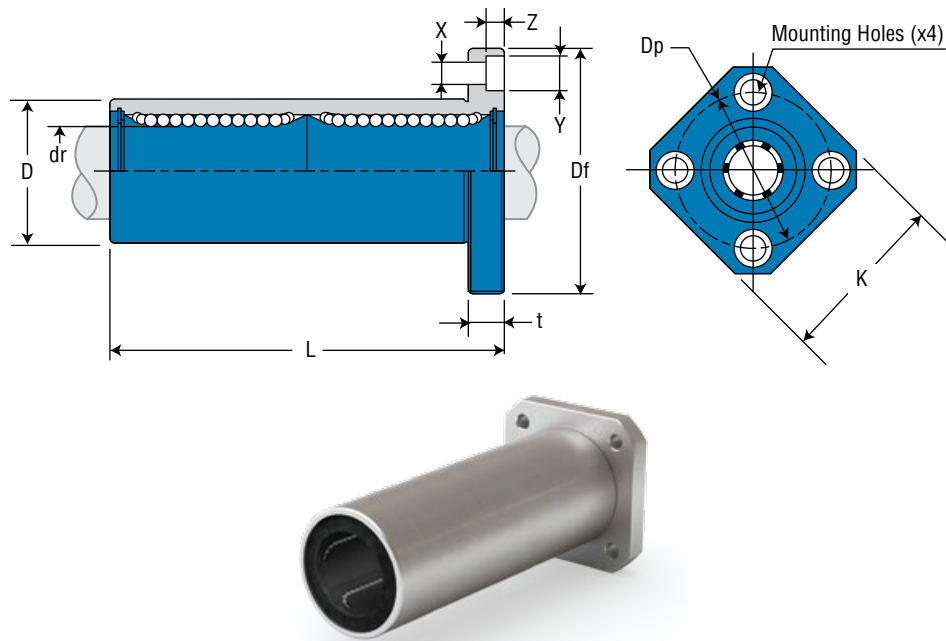
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Double Wide **Linear Ball Bearings**

DOUBLE WIDE BALL BEARINGS – SQUARE FLANGE MOUNT – EPK-W



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
STANDARD POLYMER CAGE	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	MM			MM	MM	MM	MM
EPK8GW	8	8	+0.009/-0.001	4	51	16	0/-0.013	45	±0.3
EPK12GW	12	12	+0.009/-0.001	4	90	22	0/-0.016	57	±0.3
EPK16GW	16	16	+0.011/-0.001	5	135	26	0/-0.016	70	±0.3
EPK20GW	20	20	+0.011/-0.001	5	225	32	0/-0.019	80	±0.3
EPK25GW	25	25	+0.013/-0.002	6	500	40	0/-0.019	112	±0.3
EPK30GW	30	30	+0.013/-0.002	6	720	47	0/-0.019	123	±0.3
EPK40GW	40	40	+0.016/-0.004	6	1600	62	0/-0.022	154	±0.3
EPK50GW	50	50	+0.016/-0.004	6	2620	75	0/-0.022	192	±0.3

[Download CAD](#)

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
	SIZE	dr	TOLERANCE	Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
EPK8GW	8	8	+0.009/-0.001	32	25	5	24	3.5	6.5	3.1	15	15	421	804
EPK12GW	12	12	+0.009/-0.001	42	32	6	32	4.5	8	4.1	15	15	813	1570
EPK16GW	16	16	+0.011/-0.001	46	35	6	36	4.5	8	4.1	15	15	921	1780
EPK20GW	20	20	+0.011/-0.001	54	42	8	43	5.5	9.3	5.1	17	17	1370	2740
EPK25GW	25	25	+0.013/-0.002	62	50	8	51	5.5	9.3	5.1	17	17	1570	3140
EPK30GW	30	30	+0.013/-0.002	76	60	10	62	6.6	11	6.1	17	17	2500	5490
EPK40GW	40	40	+0.016/-0.004	98	75	13	80	9	14	8.1	20	20	3430	8040
EPK50GW	50	50	+0.016/-0.004	112	88	13	94	9	14	8.1	20	20	6080	15900



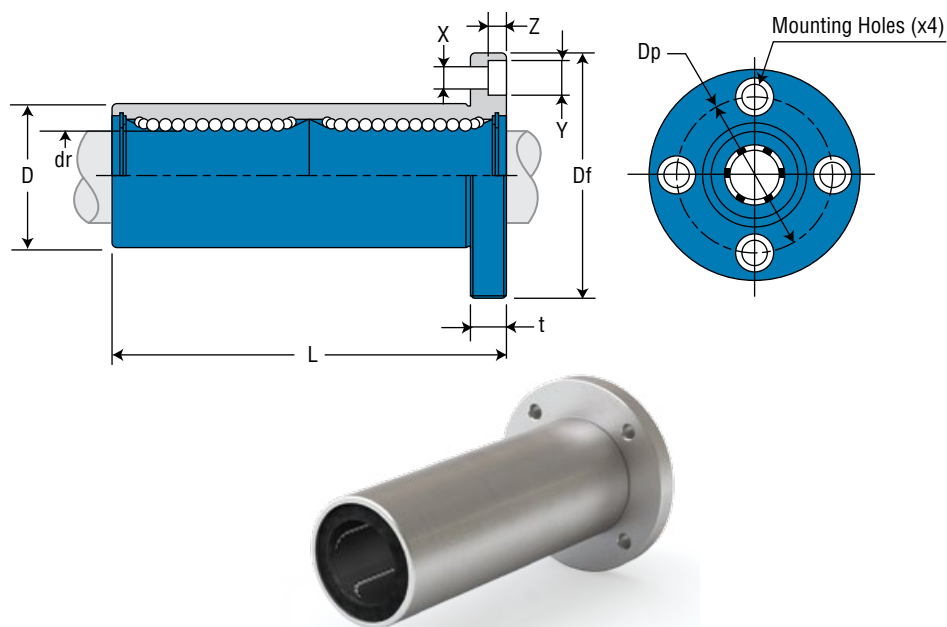
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maximum linear bearing performance.

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Linear Ball Bearings Double Wide

DOUBLE WIDE BALL BEARINGS – ROUND FLANGE MOUNT – EPF-W



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
STANDARD POLYMER CAGE	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	MM			MM	MM	MM	MM
EPF8GW	8	8	+0.009/-0.001	4	59	16	0/-0.013	45	±0.3
EPF12GW	12	12	+0.009/-0.001	4	110	22	0/-0.016	57	±0.3
EPF16GW	16	16	+0.011/-0.001	5	160	26	0/-0.016	70	±0.3
EPF20GW	20	20	+0.011/-0.001	5	260	32	0/-0.019	80	±0.3
EPF25GW	25	25	+0.013/-0.002	6	540	40	0/-0.019	112	±0.3
EPF30GW	30	30	+0.013/-0.002	6	815	47	0/-0.019	123	±0.3
EPF40GW	40	40	+0.016/-0.004	6	1805	62	0/-0.022	154	±0.3
EPF50GW	50	50	+0.016/-0.004	6	2820	75	0/-0.022	192	±0.3



Download CAD

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE								LOAD RATINGS	
	SIZE	dr	TOLERANCE	Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	MM	MM	MM	μm	μm	N	N
EPF8GW	8	8	+0.009/-0.001	32	5	24	3.5	6.5	3.1	15	15	421	804
EPF12GW	12	12	+0.009/-0.001	42	6	32	4.5	8	4.1	15	15	813	1570
EPF16GW	16	16	+0.011/-0.001	46	6	36	4.5	8	4.1	15	15	921	1780
EPF20GW	20	20	+0.011/-0.001	54	8	43	5.5	9.3	5.1	17	17	1370	2740
EPF25GW	25	25	+0.013/-0.002	62	8	51	5.5	9.3	5.1	17	17	1570	3140
EPF30GW	30	30	+0.013/-0.002	76	10	62	6.6	11	6.1	17	17	2500	5490
EPF40GW	40	40	+0.016/-0.004	98	13	80	9	14	8.1	20	20	3430	8040
EPF50GW	50	50	+0.016/-0.004	112	13	94	9	14	8.1	20	20	6080	15900



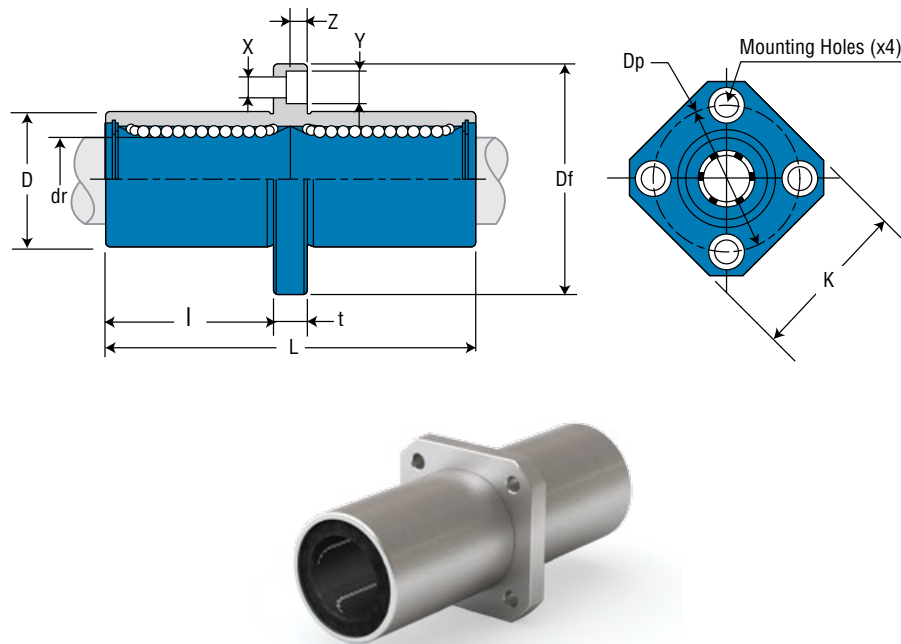
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Square Flange Center Mount **Linear Ball Bearings**

LINEAR BALL BEARINGS – SQUARE FLANGE CENTER MOUNT – EPKC



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT G	MAJOR DIMENSIONS & TOLERANCES			
	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	μM			MM	μM	MM	μM
EPKC8G	8	8	+9/-1	4	51	16	0/-13	45	±300
EPKC12G	12	12	+9/-1	4	90	22	0/-16	57	±300
EPKC16G	16	16	+11/-1	5	135	26	0/-16	70	±300
EPKC20G	20	20	+11/-1	5	225	32	0/-19	80	±300
EPKC25G	25	25	+13/-2	6	500	40	0/-19	112	±300
EPKC30G	30	30	+13/-2	6	720	47	0/-19	123	±300
EPKC40G	40	40	+16/-4	6	1600	62	0/-22	154	±300
EPKC50G	50	50	+16/-4	6	2620	75	0/-22	192	±300



[Download CAD](#)

PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE										LOAD RATINGS	
	SIZE	dr	TOLERANCE	I	Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
	MM	MM	μM	MM	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
EPKC8G	8	8	+9/-1	20.5	32	25	5	24	3.5	6.5	3.1	15	15	421	804
EPKC12G	12	12	+9/-1	27.5	42	32	6	32	4.5	8	4.1	15	15	813	1570
EPKC16G	16	16	+11/-1	31	46	35	6	36	4.5	8	4.1	15	15	921	1780
EPKC20G	20	20	+11/-1	36	54	42	8	43	5.5	9.3	5.1	17	17	1370	2740
EPKC25G	25	25	+13/-2	52	62	50	8	51	5.5	9.3	5.1	17	17	1570	3140
EPKC30G	30	30	+13/-2	56.5	76	60	10	62	6.6	11	6.1	17	17	2500	5490
EPKC40G	40	40	+16/-4	69	98	75	13	80	9	14	8.1	20	20	3430	8040
EPKC50G	50	50	+16/-4	89.5	112	88	13	94	9	14	8.1	20	20	6080	15900



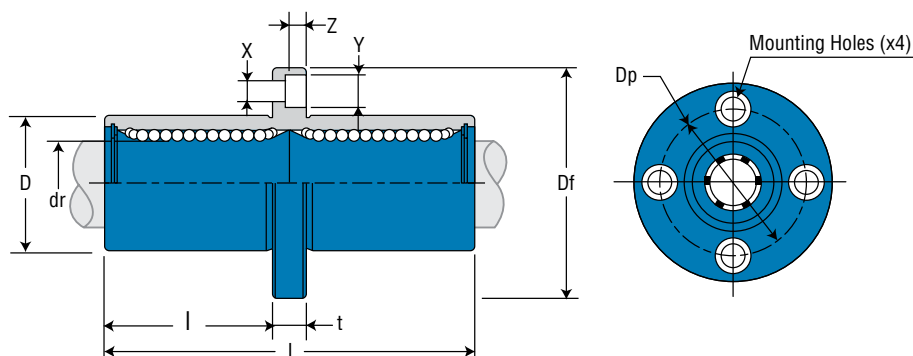
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Linear Ball Bearings Round Flange Center Mount

LINEAR BALL BEARINGS – ROUND FLANGE CENTER MOUNT – EPFC



DIMENSIONAL INFORMATION

(Standard Steel Finish)

PART NUMBER	NOMINAL DIAMETER			BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
	SIZE	dr	TOLERANCE			D	TOLERANCE	L	TOLERANCE
	MM	MM	μM			MM	μM	MM	μM
EPFC8G	8	8	+9/-1	4	59	16	0/-13	45	±300
EPFC12G	12	12	+9/-1	4	110	22	0/-16	57	±300
EPFC16G	16	16	+11/-1	5	160	26	0/-16	70	±300
EPFC20G	20	20	+11/-1	5	260	32	0/-19	80	±300
EPFC25G	25	25	+13/-2	6	540	40	0/-19	112	±300
EPFC30G	30	30	+13/-2	6	815	47	0/-19	123	±300
EPFC40G	40	40	+16/-4	6	1805	62	0/-22	154	±300
EPFC50G	50	50	+16/-4	6	2820	75	0/-22	192	±300



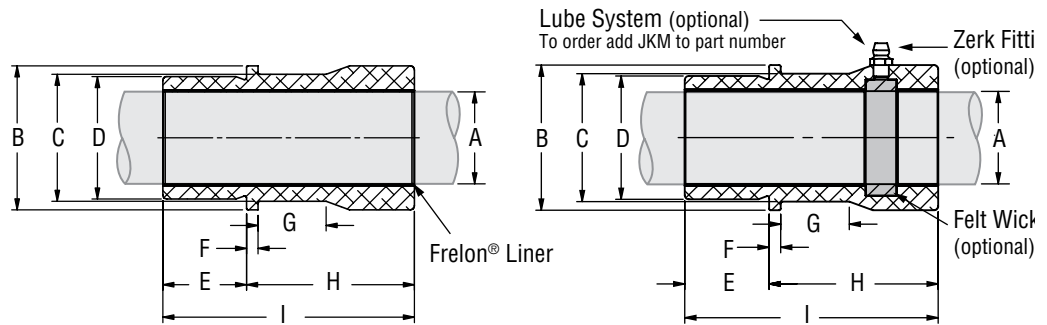
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PART NUMBER	NOMINAL DIAMETER			MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
	SIZE	dr	TOLERANCE	I	Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
	MM	MM	μM	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
EPFC8G	8	8	+9/-1	20.5	32	5	24	3.5	6.5	3.1	15	15	421	804
EPFC12G	12	12	+9/-1	27.5	42	6	32	4.5	8	4.1	15	15	813	1570
EPFC16G	16	16	+11/-1	31	46	6	36	4.5	8	4.1	15	15	921	1780
EPFC20G	20	20	+11/-1	36	54	8	43	5.5	9.3	5.1	17	17	1370	2740
EPFC25G	25	25	+13/-2	52	62	8	51	5.5	9.3	5.1	17	17	1570	3140
EPFC30G	30	30	+13/-2	56.5	76	10	62	6.6	11	6.1	17	17	2500	5490
EPFC40G	40	40	+16/-4	69	98	13	80	9	14	8.1	20	20	3430	8040
EPFC50G	50	50	+16/-4	89.5	112	13	94	9	14	8.1	20	20	6080	15900



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

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Die Set Bushings **Simplicity®****DIE SET BUSHINGS – PACM**

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DIMENSIONAL INFORMATION

P = PRECISION C = COMPENSATED	PART NO.	NOMINAL SIZE	A BEARING I.D.		B FLANGE & BARREL O.D. h7		C CLAMP DIA.	D PILOT O.D. h7		E	F	G	H	I	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N		BEARING WEIGHT
																GOLD	J & W	
		MM	MIN.	MAX.	MIN.	MAX.	MIN.	MIN.	MAX.	PILOT LENGTH	FLANGE LENGTH	RECESS LENGTH	HEAD LENGTH	OVERALL LENGTH	CM²		KG.	
P	PACMx19	19	19.020	19.053	33.975	34	29	27.979	28	18	5	18	52	70	13.928	28694	14411	0.282
C	PACMx19C		19.096	19.129														
P	PACMx25	25	25.020	25.053	43.975	44	39	37.975	38	23		20	57	80	20.944	43144	21670	0.551
C	PACMx25C		25.096	25.129														
P	PACMx32	32	32.020	32.053	52.970	53	48	44.975	45	26		20	64	90	30.159	62127	31196	0.834
C	PACMx32C		32.096	32.129														
P	PACMx40	40	40.025	40.064	62.970	63	58	53.970	54	30		25	70	100	41.888	86289	43331	1.229
C	PACMx40C		40.127	40.166														
P	PACMx50	50	50.025	50.064	78.970	79	74	64.970	65	35		25	75	110	57.596	118652	59576	2.055
C	PACMx50C		50.127	50.166														
P	PACMx63	63	63.030	63.076	91.965	92	87	80.970	81	48		25	82	130	85.765	106056	88722	2.984
C	PACMx63C		63.182	63.228														
P	PACMx80	80	80.030	80.076	110.965	111	106	99.965	100	48		25	102	150	125.664	258876	129992	4.772
C	PACMx80C		80.182	80.228														

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

Specify shell material. In part number, replace 'x' with:

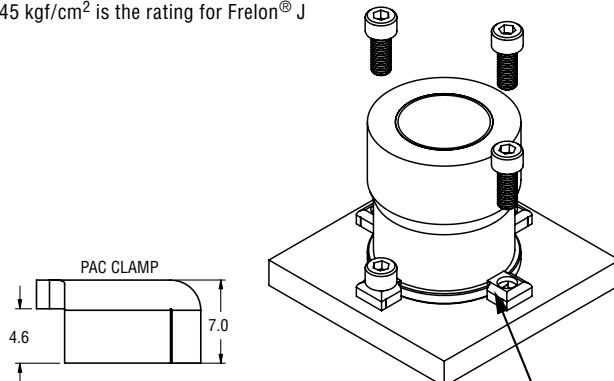
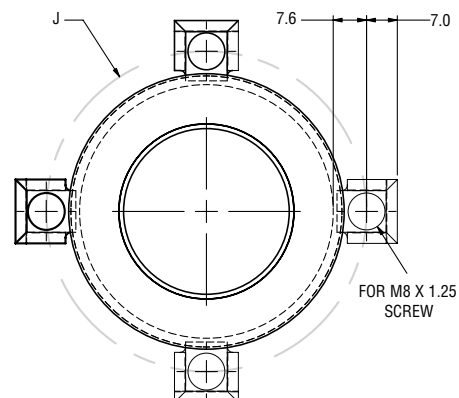
Z = Aluminum; or T = Steel.

For lubrication system add JKM, example: PACMZ750JKM.

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**Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.**

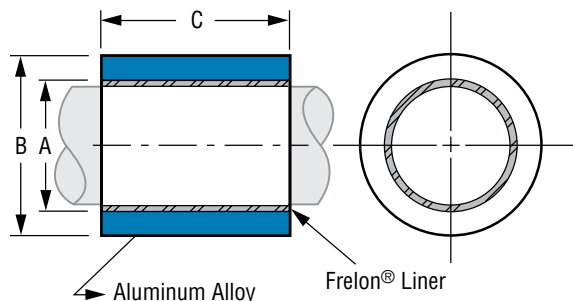
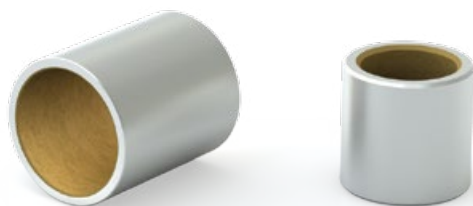
Inch Series—page 40 Metric Series—page 72

4 PAC clamps are shipped with each die set.
Extra clamps can be ordered using part # PACCLAMP.Dimension for calculating bolt circle: $J = C + 15.8 \text{ mm}$



Simplicity® Sleeve Bearings

SLEEVE BEARINGS – PSM



DIMENSIONAL INFORMATION

PART NO.	NOMINAL BEARING SIZE			A BEARING I.D.		B O.D. S7		C LENGTH		MAX. STATIC LOAD KG.		MAX. STATIC LOAD N		BEARING WEIGHT	RECOMMENDED HOUSING BORE			
										FRELON		FRELON			SLIP FIT & EPOXY		PRESS FIT	
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	GOLD	J & W	GOLD	J & W		KG.	MIN.	MAX.	MIN.
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	25.035	25.056	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	25.035	25.056	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	25.035	25.056	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	25.035	25.056	29.50	30	1260	630	12356	6178	0.01476	20.056	25.081	25.000	25.021
PSM2530-20	25	30	20	25.050	25.096	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	25.050	25.096	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	25.050	25.096	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



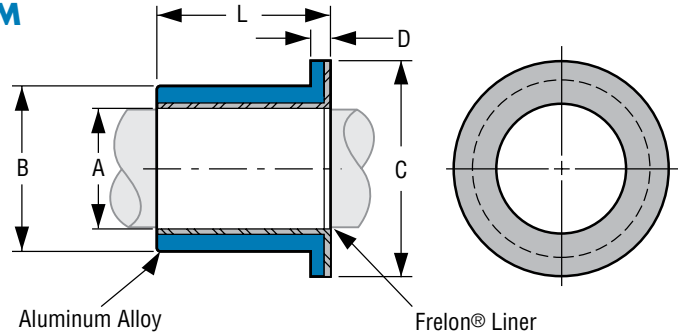
Consult Factory • 800-962-8979



Download CAD



Email an Application Engineer

Sleeve Bearings with Flange **Simplicity®****SLEEVE BEARINGS WITH FLANGE – PSFM****DIMENSIONAL INFORMATION**

PART NO.	NOMINAL BEARING SIZE MM			A BEARING I.D.		B O.D. S7		C FLANGE O.D.	D FLANGE WIDTH	L LENGTH		MAX. STATIC LOAD KG.		MAX. STATIC LOAD N		BEARING WEIGHT KG.	RECOMMENDED HOUSING BORE			
												FRELON		FRELON			SLIP FIT & EPOXY		PRESS FIT	
	I.D.	O.D.	LENGTH	MIN.	MAX.	MIN.	MAX.			MIN.	MAX.	GOLD	J & W	GOLD	J & W		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
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

ORDERING INFORMATION

PSM	16	20	16
Type	I.D.	O.D.	Length
PSM: Precision Sleeve Bearing	I.D. in mm	O.D. in mm	Length in mm
PSFM: Precision Sleeve Bearing with Flange	I.D. in mm	O.D. in mm	Length in mm

Note: Lengths not listed above must be specially quoted.

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.

**Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.**

Inch Series—page 40 Metric Series—page 72



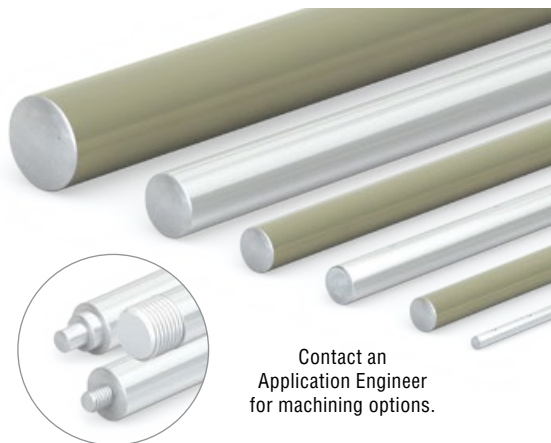
Shafting RC60 Steel & Stainless Steel

simplicity
60 PLUS
SHAFTING

SIMPLICITY® 60 PLUS® SHAFTING

PBC Linear's® development team, working in close conjunction with engineers from Lee Linear®, have together formulated a linear shaft designed specifically for optimal bearing performance – Simplicity 60 Plus Shafting. Advanced process capabilities maintain the ideal surface finish for linear bearings resulting in the longest life and highest performing shaft-to-bearing combination available.

- Optimized surface finish
- Faster break-in and better Frelon® transfer for plain bearings
- Longest life possible, less down time and maintenance
- Straight to within .001" to .002" per foot cumulative, except on 3/8" diameter and smaller



Contact an
Application Engineer
for machining options.

RC60 STEEL SOLID SHAFTING – NIM

PART NO.	NOMINAL DIA.	DIA. TOLERANCE MM		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT
	MM	MIN.	MAX.	MM	MM	KG/M
NIM03-xxxx	3	2.991	3	6400.8	thru	0.06
NIM04-xxxx	4	3.991	4	6400.8	thru	0.10
NIM05-xxxx	5	4.991	5	6400.8	thru	0.15
NIM06-xxxx	6	5.991	6	1981.2	1.02	0.23
NIM08-xxxx	8	7.991	8	4368.8	1.02	0.39
NIM10-xxxx	10	9.991	10	4673.6	1.02	0.62
NIM12-xxxx	12	11.989	12	4673.6	1.52	0.89
NIM16-xxxx	16	15.989	16	4673.6	1.52	1.57
NIM20-xxxx	20	19.987	20	4673.6	1.52	2.45
NIM25-xxxx	25	24.987	25	4978.4	2.03	3.80
NIM30-xxxx	30	29.987	30	4673.6	2.03	5.50
NIM40-xxxx	40	39.984	40	4673.6	2.03	9.80
NIM50-xxxx	50	49.984	50	4673.6	2.54	15.30
NIM60-xxxx	60	59.981	60	5029.2	3.70	22.20
NIM80-xxxx	80	79.981	80	5029.2	3.70	39.50

Notes: Specify length in part number using millimeters.

Example: for 25 mm shafting total length 900 mm = NIM25-0900

Surface finish bearing recommended 8 Ra.

- RC 60 Plus® case hardened steel shafting
- Optimized for Simplicity® bearings and linear ball bearings
- Available cut-to-length or random lengths
- Length tolerance:
3 mm – 30 mm shaft = .8 mm
40 mm – 50 mm shaft = 1.6 mm
60 mm – 80 mm shaft = 3.2 mm
- Joinable for longer lengths
- Available as solid shafting or pre-drilled
(See pre-drilled NIPDL on next page)



440 STAINLESS STEEL SOLID SHAFTING – NIMxxSS

PART NO.	NOMINAL SIZE	DIA. TOLERANCE MM		MAX. LENGTH	MIN. HARDNESS DEPTH	WEIGHT
	MM	MIN.	MAX.	MM	MM	KG/M
NIM03SS-xxxx	3	2.992	3	6400.8	thru	0.06
NIM04SS-xxxx	4	3.992	4	6400.8	thru	0.10
NIM05SS-xxxx	5	4.992	5	6400.8	thru	0.15
NIM06SS-xxxx	6	5.992	6	1981.2	1.02	0.23
NIM08SS-xxxx	8	7.991	8	3911.6	1.02	0.39
NIM10SS-xxxx	10	9.991	10	3911.6	1.02	0.62
NIM12SS-xxxx	12	11.989	12	3911.6	1.52	0.89
NIM16SS-xxxx	16	15.989	16	3911.6	1.52	1.57
NIM20SS-xxxx	20	19.987	20	3911.6	1.52	2.45
NIM25SS-xxxx	25	24.987	25	4318	2.03	3.80
NIM30SS-xxxx	30	29.987	30	2997.2	2.03	5.50
NIM40SS-xxxx	40	39.987	40	2997.2	2.03	22.20
NIM50SS-xxxx	50	49.985	50	3911.6	2.54	39.50

- 440 stainless steel RC 50 Plus™ hardness
- Optimized for Simplicity® bearings and linear ball bearings
- Available cut-to-length or random lengths
- Length tolerance:
3 mm – 30 mm shaft = .8 mm
40 mm – 50 mm shaft = 1.6 mm
60 mm – 80 mm shaft = 3.2 mm
- Available as solid shafting or pre-drilled
(See NIPDMxxSS on next page)



Email an Application Engineer



Stainless Steel & Ceramic Coated **Shafting**

PRE-DRILLED & TAPPED

STEEL – NIPDM & 440 STAINLESS STEEL – NIPDMxxSS

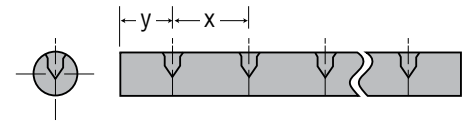
PART NO.		NOMINAL DIA.	DIA. TOLERANCE MM		STANDARD HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT
STEEL	STAINLESS STEEL	MM	MIN.	MAX.	X	Y		MM	KG/M
NIPDM12-xxxx	NIPDM12SS-xxxx	12	11.9888	12	120	60	M4 x .7	4597	0.89
NIPDM16-xxxx	NIPDM16SS-xxxx	16	15.9893	16	150	75	M5 x .8	4597	1.57
NIPDM20-xxxx	NIPDM20SS-xxxx	20	19.9873	20	150	75	M6 x 1.0	4597	2.45
NIPDM25-xxxx	NIPDM25SS-xxxx	25	24.9885	25	200	100	M8 x 1.25	4902	3.80
NIPDM30-xxxx	NIPDM30SS-xxxx	30	29.9872	30	200	100	M10 x 1.5	4597	5.50
NIPDM40-xxxx	NIPDM40SS-xxxx	40	39.9872	40	200	100	M10 x 1.5	4496	9.80
NIPDM50-xxxx	NIPDM50SS-xxxx	50	49.9846	50	200	100	M12 x 1.75	4496	15.30

Notes: Specify length in part number using mm.

Example: for 12 mm shafting total length 97 mm = NIPDM12-0097

Customer specifies 'y' dimension, if different than standard. Hole to hole tolerance = +/- .015".

Consult factory for chrome plated, 303, or 316 stainless steel shafting.



CERAMIC COATED

- Aluminum alloy base material
- RC 70 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



SOLID SHAFTING – CCM

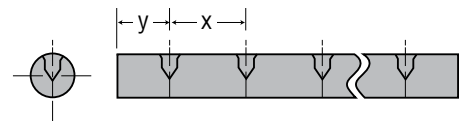
PART NO.	NOMINAL DIA.	DIA. TOLERANCE CLASS M MM		MAX. LENGTH	WEIGHT
	MM	MIN.	MAX.	MM	KG/M
CCM03-xxxx	3	2.992	3	3700	0.01
CCM04-xxxx	4	3.992	4	3700	0.02
CCM05-xxxx	5	4.992	5	3700	0.03
CCM06-xxxx	6	5.992	6	3700	0.04
CCM08-xxxx	8	7.991	8	3700	0.07
CCM10-xxxx	10	9.991	10	3700	0.10
CCM12-xxxx	12	11.989	12	3700	0.15
CCM16-xxxx	16	15.989	16	3700	0.26
CCM20-xxxx	20	19.987	20	3700	0.41
CCM25-xxxx	25	24.987	25	3700	0.63
CCM30-xxxx	30	29.987	30	3700	0.92
CCM40-xxxx	40	39.984	40	3700	1.63
CCM50-xxxx	50	49.984	50	3700	2.55
CCM60-xxxx	60	59.981	60	3700	3.70
CCM80-xxxx	80	79.981	80	3700	6.58

Notes: Specify length in part number using mm.

Example: for 8 mm shafting total length 97 mm = CCM08-0097

Ends of cut-to-length shafting are not coated.

Fully coated shafting is available on special request.



PRE-DRILLED & TAPPED – CCMDL

PART NO.	NOMINAL DIA.	DIA. TOLERANCE CLASS M MM		STANDARD HOLE SPACING		THREAD	MAX. LENGTH	WEIGHT
	MM	MIN.	MAX.	x	y		MM	KG/M
CCMDL08-xxxx	8	7.991	8	101.6	50.8	M2 x .4	3700	0.07
CCMDL10-xxxx	10	9.991	10	101.6	50.8	M3 x .5	3700	0.10
CCMDL12-xxxx	12	11.989	12	120	60	M4 x .7	3700	0.15
CCMDL16-xxxx	16	15.989	16	150	75	M5 x .8	3700	0.26
CCMDL20-xxxx	20	19.987	20	150	75	M6 x 1.0	3700	0.41
CCMDL25-xxxx	25	24.987	25	200	100	M8 x 1.25	3700	0.63
CCMDL30-xxxx	30	29.987	30	200	100	M10 x 1.5	3700	0.92

Notes: Specify length in part number using mm.

Example: for 10 mm shafting total length 97 mm = CCMDL08-0097

Ends of cut-to-length shafting are not coated.

Fully coated shafting is available on special request.

Customer specifies 'y' dimension, if different than standard.



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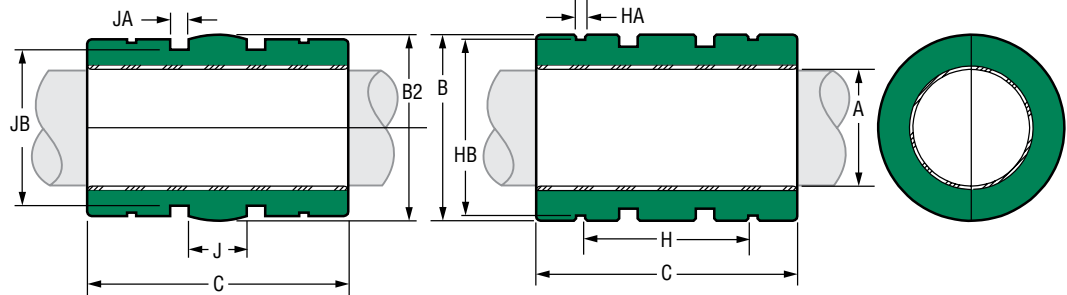


Simplicity® Linear Plain Bearings



*Self Aligning O.D. (FJA-XX)

Standard O.D. (FJ-XX)



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

DIMENSIONAL INFORMATION

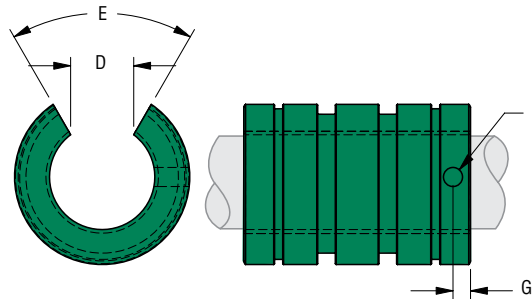
PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING					COMPENSATED I.D. SERIES ALLOWS ADDITIONAL RUNNING CLEARANCE				STANDARD O.D.		SELF-ALIGNING O.D. FJA		C LENGTH		CONCENTRIC	BEARING WEIGHT
PART NO.		NOMINAL SIZE	A BEARING I.D.		PART NO.		A BEARING I.D.		B BEARING O.D.		B2 BEARING O.D.					
CLOSED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

MOUNTING DIMENSIONS

PART NO.		NOMINAL SIZE	H	HA	HB	RET. RING	J	JA	JB	METRIC O'RING SIZE
CLOSED	OPEN	MM	BETWEEN RET. RINGS	RET. RING GRV. WIDTH	RET. RING GRV. DIA.	RET. RING PART NO. JIS B 2904				
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

Linear Plain Bearings **Simplicity®****LINEAR PLAIN BEARING – FJ & FJN**

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**OPEN DIMENSIONAL INFORMATION**

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

LOAD & SPEED DATA

PART NO.	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD KG		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
		FRELON			FRELON	
	CM²	GOLD	J & W	CM²	GOLD	J & W
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

Note: MAX. PV (m/min. * kg/sq. cm)

Frelon Gold = 430 PV

Frelon J = 215 PV

MAX. Speed Running Dry (m/min.)

Frelon Gold = 91.4

Frelon J = 42.6

MAX. Speed Running

with Lubrication (m/min.)

Frelon Gold = 251.5

Frelon J = 122

MAX. PV (m/s. * N/mm²)

Frelon Gold = 0.70 PV

Frelon J = 0.35 PV

MAX. Speed Running Dry (m/s)

Frelon Gold = 1.52

Frelon J = 0.71

MAX. Speed Running

with Lubrication (m/s)

Frelon Gold = 4.19

Frelon J = 2.03



Plain Bearing Accessories: Retaining Rings, Seals, O-Rings—page 17

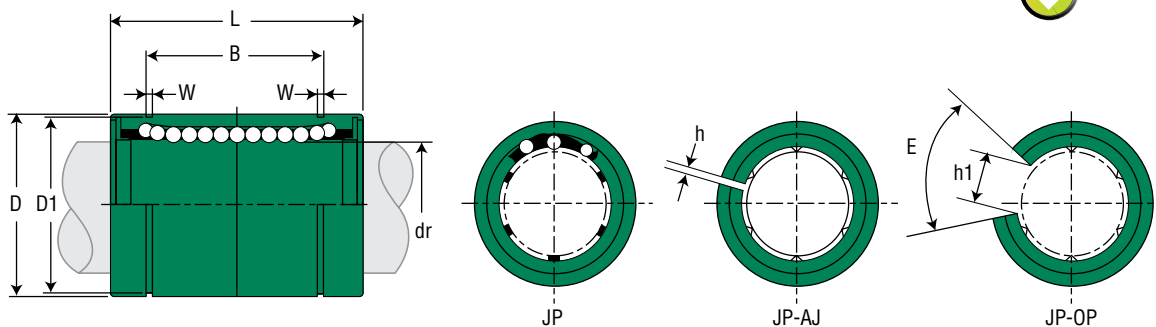
Only certified Simplicity 60 Plus Shafting provides
maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Linear Ball Bearings Standard

LINEAR BALL BEARINGS – JP


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JP – Standard Closed

JPxx-AJ – Adjustable

JPxx-OP – Standard Open



DIMENSIONAL INFORMATION

(Standard Steel Finish)

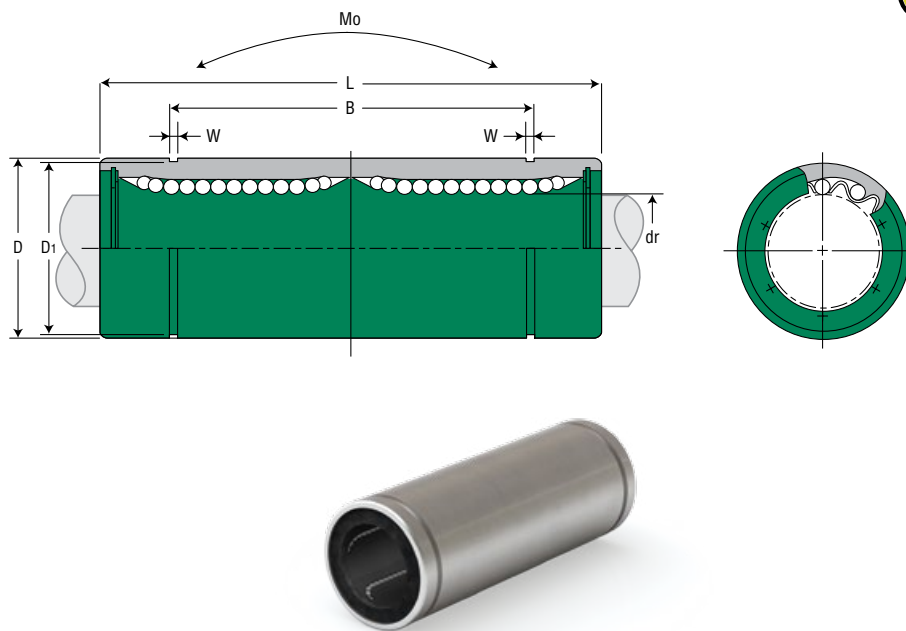
NOMINAL SHAFT DIAMETER			PART NUMBER			BALL CIRCUIT	WEIGHT G	MAJOR DIMENSIONS & TOLERANCES					
SIZE	dr	TOLERANCE	STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN			D	TOLERANCE	L	TOLERANCE	B	TOLERANCE
MM	MM	MM						MM	MM	MM	MM	MM	MM
8	8	0/- .009	JP8G	-	-	4	16	15	0/- .011	24	0/-0.2	17.5	0/-0.2
10	10	0/- .009	JP10G	-	-	4	30	19	0/- .013	29	0/-0.2	22	0/-0.2
12	12	0/- .009	JP12G	JP12G-AJ	JP12G-OP	4	31.5	21	0/- .013	30	0/-0.2	23	0/-0.2
13	13	0/- .009	JP13G	JP13G-AJ	JP13G-OP	4	43	23	0/- .013	32	0/-0.2	23	0/-0.2
16	16	0/- .009	JP16G	JP16G-AJ	JP16G-OP	5	69	28	0/- .013	37	0/-0.2	26.5	0/-0.2
20	20	0/- .010	JP20G	JP20G-AJ	JP20G-OP	5	87	32	0/- .016	42	0/-0.2	30.5	0/-0.2
25	25	0/- .010	JP25G	JP25G-AJ	JP25G-OP	6	220	40	0/- .016	59	0/-0.3	41	0/-0.3
30	30	0/- .010	JP30G	JP30G-AJ	JP30G-OP	6	250	45	0/- .016	64	0/-0.3	44.5	0/-0.3
35	35	0/- .012	JP35G	JP35G-AJ	JP35G-OP	6	390	52	0/- .019	70	0/-0.3	49.5	0/-0.3
40	40	+0/- .012	JP40G	JP40G-AJ	JP40G-OP	6	585	60	0/- .019	80	0/-0.3	60.5	0/-0.3
50	50	+0/- .015	JP50G	JP50G-AJ	JP50G-OP	6	1580	80	0/- .022	100	0/-0.3	74	0/-0.3

NOMINAL SHAFT DIAMETER			PART NUMBER			MAJOR DIMENSIONS & TOLERANCES							LOAD RATINGS	
SIZE	dr	TOLERANCE	STANDARD CLOSED	ADJUSTABLE POLYMER CAGE	STANDARD OPEN	W	D1	h	h1	E SLOT ANGLE	MAX ECCENTRICITY	MAX RADIAL CLEARANCE	DYNAMIC C	STATIC Co
MM	MM	MM				MM	MM	MM	MM		μM	μM	N	N
8	8	0/- .009	JP8G	-	-	1.1	14.3	1	-	-	12	-5	260	400
10	10	0/- .009	JP10G	-	-	1.3	18	1	-	-	12	-5	370	540
12	12	0/- .009	JP12G	JP12G-AJ	JP12G-OP	1.3	20	1.5	8	80°	12	-5	410	590
13	13	0/- .009	JP13G	JP13G-AJ	JP13G-OP	1.3	22	1.5	9	80°	12	-5	500	770
16	16	0/- .009	JP16G	JP16G-AJ	JP16G-OP	1.6	27	1.5	11	80°	12	-7	770	1170
20	20	0/- .010	JP20G	JP20G-AJ	JP20G-OP	1.6	30.5	1.5	11	60°	15	-7	860	1370
25	25	0/- .010	JP25G	JP25G-AJ	JP25G-OP	1.85	38	2	12	50°	15	-9	980	1560
30	30	0/- .010	JP30G	JP30G-AJ	JP30G-OP	1.85	43	2.5	15	50°	15	-9	1560	2740
35	35	0/- .012	JP35G	JP35G-AJ	JP35G-OP	2.1	49	2.5	17	50°	20	-9	1660	3130
40	40	+0/- .012	JP40G	JP40G-AJ	JP40G-OP	2.1	57	3	20	50°	20	-13	2150	4010
50	50	+0/- .015	JP50G	JP50G-AJ	JP50G-OP	2.6	76.5	3	25	50°	20	-13	3820	7930



Double Wide **Linear Ball Bearings**

DOUBLE WIDE BALL BEARINGS – JP-W


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DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES					
SIZE	dr	TOLERANCE				D	TOLERANCE	L	TOLERANCE	B	TOLERANCE
MM	MM	MM	STANDARD POLYMER CAGE		G	MM	MM	MM	MM	MM	MM
8	8	0/- .010	JP8GW	4	31	15	0/- .013	45	0/- .3	35	0/- .3
12	12	0/- .010	JP12GW	4	80	21	0/- .016	57	0/- .3	46	0/- .3
16	16	0/- .010	JP16GW	5	145	28	0/- .016	70	0/- .3	53	0/- .3
20	20	0/- .012	JP20GW	5	180	32	0/- .019	80	0/- .3	61	0/- .3
25	25	0/- .012	JP25GW	6	440	40	0/- .019	112	0/- .4	82	0/- .4
30	30	0/- .012	JP30GW	6	580	45	0/- .019	123	0/- .4	89	0/- .4
40	40	0/- .015	JP40GW	6	1170	60	0/- .022	151	0/- .4	121	0/- .4
50	50	0/- .015	JP50GW	6	3100	80	0/- .022	192	0/- .4	148	0/- .4

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES			LOAD RATINGS	
SIZE	dr	TOLERANCE		W	D1	MAX ECCENTRICITY	DYNAMIC C	STATIC Co
MM	MM	MM	STANDARD POLYMER CAGE	MM	MM	μM	N	N
8	8	0/- .010	JP8GW	1.1	14.3	15	431	784
12	12	0/- .010	JP12GW	1.3	20	15	657	1200
16	16	0/- .010	JP16GW	1.6	27	15	1230	2350
20	20	0/- .012	JP20GW	1.6	30.5	20	1400	2750
25	25	0/- .012	JP25GW	1.85	38	20	1560	3140
30	30	0/- .012	JP30GW	1.85	43	20	2490	5490
40	40	0/- .015	JP40GW	2.1	57	25	3430	8040
50	50	0/- .015	JP50GW	2.6	76.5	25	6080	15900



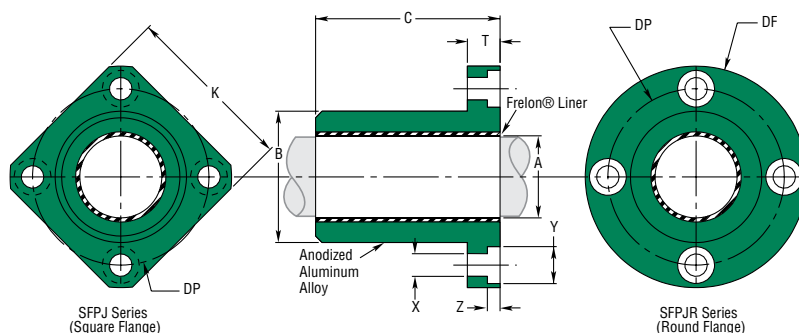
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Simplicity® Flange Bearings

FLANGE BEARINGS – SFPJ



DIMENSIONAL INFORMATION

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING					COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING				B BODY O.D. h7		C LENGTH h13		EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
PART NO.		NOMINAL SIZE	A BEARING I.D. F8		PART NO.		A BEARING I.D.							FRELON	
SQUARE	ROUND	MM	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	CM²	GOLD	J & W
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 $(\pi \cdot ID \cdot L)/3$

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



Download CAD

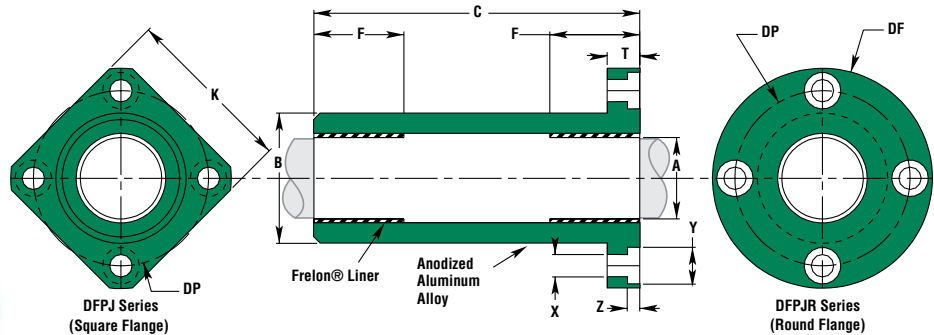
MOUNTING DIMENSIONS

PART NO.		K	DF	T	DP	X	Y	Z	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	SFPJ WEIGHT	SFPJR WEIGHT
SQUARE	ROUND	SQUARE MAX.	O.D. MAX.	LENGTH MAX.	BOLT CIRCLE	HOLE	C'BORE DIA.	C'BORE DEPTH				KG.	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



Flange Bearings **Simplicity®**

FLANGE BEARINGS – DFPJ



DIMENSIONAL INFORMATION

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING					COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING				B BODY O.D. h7		C LENGTH		F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
PART NO.		NOMINAL SIZE	A BEARING I.D. F8		PART NO.		A BEARING I.D.								FRELON	
SQUARE	ROUND	MM	MIN.	MAX.	SQUARE	ROUND	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		CM ²	GOLD	J & W
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)


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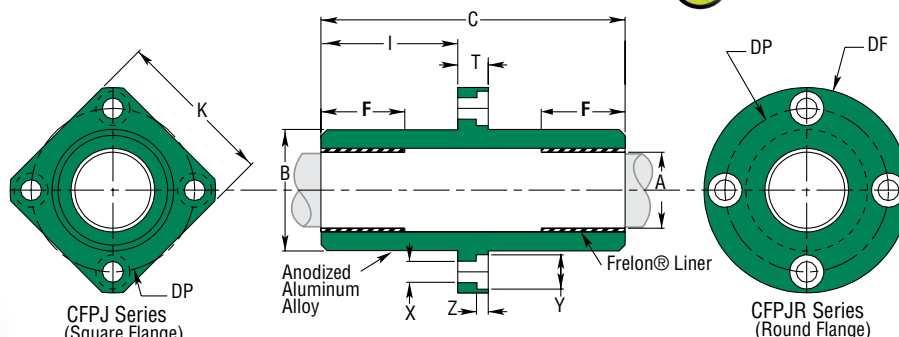
MOUNTING DIMENSIONS

PART NO.		K SQUARE	DF O.D.	T LENGTH	DP BOLT CIRCLE	X HOLE	Y C'BORE DIA.	Z C'BORE DEPTH	CLAMPING BOLT	CONCENTRICITY	SQUARENESS	DFPJ WEIGHT KG.	DFPJR WEIGHT KG.
SQUARE	ROUND	MAX.	MAX.	MAX.									
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	8	24	3.5	6	3.1	M 3	0.015	0.015	0.024	0.028
DFPJ 10	DFPJR 10	30	40	9	29	4.5	7.5	4.1	M 4	0.015	0.015	0.044	0.053
DFPJ 12	DFPJR 12	32	42	9	32	4.5	7.5	4.1	M 4	0.015	0.015	0.051	0.060
DFPJ 13	DFPJR 13	34	43	9	33	4.5	7.5	4.1	M 4	0.015	0.015	0.063	0.071
DFPJ 16	DFPJR 16	37	48	9	38	4.5	7.5	4.1	M 4	0.015	0.015	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	11	51	5.5	9	5.1	M 5	0.017	0.017	0.270	0.286
DFPJ 30	DFPJR 30	58	74	14	60	6.6	11	6.1	M 6	0.017	0.017	0.360	0.397
DFPJ 35	DFPJR 35	64	82	14	67	6.6	11	6.1	M 6	0.020	0.020	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	18	98	9.0	14	8.1	M 8	0.020	0.020	1.780	1.885
DFPJ 60	DFPJR 60	106	134	24	112	11.0	17	11.1	M 10	0.025	0.025	2.329	2.519



Simplicity® Flange Bearings

FLANGE BEARINGS – CFPJ


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DIMENSIONAL INFORMATION

PRECISION I.D. SERIES SIMILAR TO PRELOADED BALL BEARING					COMPENSATED I.D. SERIES SIMILAR TO STANDARD BALL BEARING								I LENGTH TO FLNG.	F LENGTH EACH END	EFFECTIVE SURFACE AREA	MAX. STATIC LOAD N	
PART NO.		NOMINAL SIZE	A BEARING I.D. F8		PART NO.		A BEARING I.D.									FRELON	
									SQUARE	ROUND	MM	MIN.				MAX.	SQUARE
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 $(\pi * ID * L)/3$

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)



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)

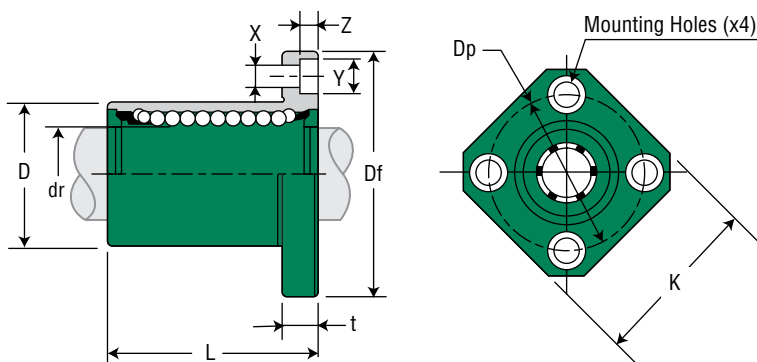
MOUNTING DIMENSIONS

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



Square Flange Mount **Linear Ball Bearings**

LINEAR BALL BEARINGS – SQUARE FLANGE MOUNT – JPK


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DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER		WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE				D	TOLERANCE	L	TOLERANCE
MM	MM	MM	STANDARD POLYMER CAGE	BALL CIRCUIT	G	MM	MM	MM	MM
8	8	0/- .009	JPK8G	4	37	15	0/- .013	24	±0.3
12	12	0/- .009	JPK12G	4	76	21	0/- .016	30	±0.3
16	16	0/- .009	JPK16G	5	120	28	0/- .016	37	±0.3
20	20	0/- .010	JPK20G	5	180	32	0/- .019	42	±0.3
25	25	0/- .010	JPK25G	6	340	40	0/- .019	59	±0.3
30	30	0/- .010	JPK30G	6	470	45	0/- .019	64	±0.3
40	40	0/- .012	JPK40G	6	1060	60	0/- .022	80	±0.3
50	50	0/- .012	JPK50G	6	2200	80	0/- .022	100	±0.3

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
SIZE	dr	TOLERANCE		Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	MM	STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/- .009	JPK8G	32	25	5	24	3.5	6.5	3.1	12	12	274	392
12	12	0/- .009	JPK12G	42	32	6	32	4.5	8	4.1	12	12	510	784
16	16	0/- .009	JPK16G	48	37	6	38	4.5	8	4.1	12	12	774	1180
20	20	0/- .010	JPK20G	54	42	8	43	5.5	9.3	5.1	15	15	882	1370
25	25	0/- .010	JPK25G	62	50	8	51	5.5	9.3	5.1	15	15	980	1570
30	30	0/- .010	JPK30G	74	58	10	60	6.6	11	6.1	15	15	1570	2740
40	40	0/- .012	JPK40G	96	75	13	78	9	14	8.1	20	20	2160	4020
50	50	0/- .012	JPK50G	116	92	13	98	9	14	8.1	20	20	3820	7940



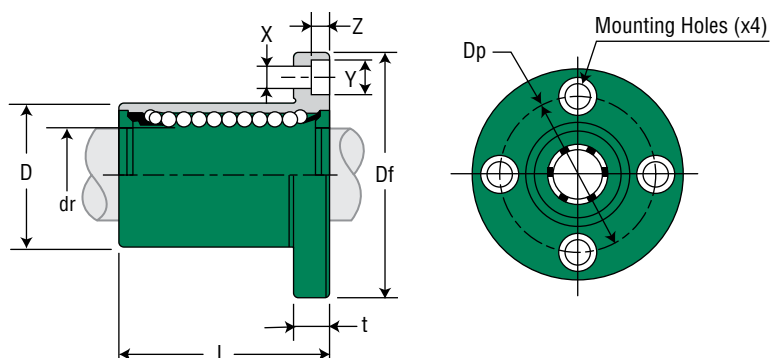
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[Inch Series—page 40](#) [Metric Series—page 72](#)



Linear Ball Bearings Round Flange Mount

LINEAR BALL BEARINGS – ROUND FLANGE MOUNT – JPF



DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT G	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE					D	TOLERANCE	L	TOLERANCE
MM	MM	MM					MM	MM	MM	MM
8	8	0/- .009	JPF8G		4	37	15	0/- .013	24	±0.3
12	12	0/- .009	JPF12G		4	76	21	0/- .016	30	±0.3
16	16	0/- .009	JPF16G		5	120	28	0/- .016	37	±0.3
20	20	0/- .010	JPF20G		5	180	32	0/- .019	42	±0.3
25	25	0/- .010	JPF25G		6	340	40	0/- .019	59	±0.3
30	30	0/- .010	JPF30G		6	470	45	0/- .019	64	±0.3
40	40	0/- .012	JPF40G		6	1060	60	0/- .022	80	±0.3
50	50	0/- .012	JPF50G		6	2200	80	0/- .022	100	±0.3



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NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE								LOAD RATINGS	
SIZE	dr	TOLERANCE		Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	MM		MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/- .009	JPF8G	32	5	24	3.5	6.5	3.1	12	12	274	392
12	12	0/- .009	JPF12G	42	6	32	4.5	8	4.1	12	12	510	784
16	16	0/- .009	JPF16G	48	6	38	4.5	8	4.1	12	12	774	1180
20	20	0/- .010	JPF20G	54	8	43	5.5	9.3	5.1	15	15	882	1370
25	25	0/- .010	JPF25G	62	8	51	5.5	9.3	5.1	15	15	980	1570
30	30	0/- .010	JPF30G	74	10	60	6.6	11	6.1	15	15	1570	2740
40	40	0/- .012	JPF40G	96	13	78	9	14	8.1	20	20	2160	4020
50	50	0/- .012	JPF50G	116	13	98	9	14	8.1	20	20	3820	7940



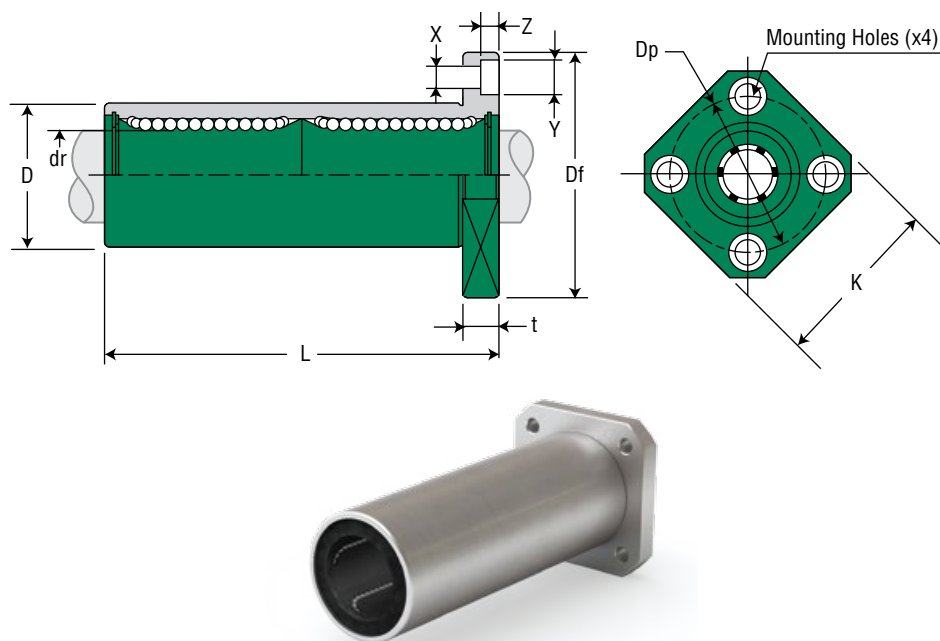
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Inch Series—page 40 Metric Series—page 72



Double Wide **Linear Ball Bearings**

DOUBLE WIDE BALL BEARINGS – SQUARE FLANGE MOUNT – JPK-W



DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE				D	TOLERANCE	L	TOLERANCE
MM	MM	MM	STANDARD POLYMER CAGE		G	MM	MM	MM	MM
8	8	0/- .010	JPK8GW	4	43	15	0/- .013	45	±0.3
12	12	0/- .010	JPK12GW	4	90	21	0/- .016	57	±0.3
16	16	0/- .010	JPK16GW	5	165	28	0/- .016	70	±0.3
20	20	0/- .010	JPK20GW	5	225	32	0/- .019	80	±0.3
25	25	0/- .012	JPK25GW	6	500	40	0/- .019	112	±0.3
30	30	0/- .012	JPK30GW	6	590	45	0/- .019	123	±0.3
40	40	0/- .015	JPK40GW	6	1380	60	0/- .022	154	±0.3
50	50	0/- .015	JPK50GW	6	3400	80	0/- .025	192	±0.3

[Download CAD](#)

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
SIZE	dr	TOLERANCE		Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	MM	STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/- .010	JPK8GW	32	25	5	24	3.5	6.5	3.1	15	15	431	784
12	12	0/- .010	JPK12GW	42	32	6	32	4.5	8	4.1	15	15	813	1570
16	16	0/- .010	JPK16GW	48	37	6	38	4.5	8	4.1	15	15	1230	2350
20	20	0/- .010	JPK20GW	54	42	8	43	5.5	9.3	5.1	20	20	1400	2740
25	25	0/- .012	JPK25GW	62	50	8	51	5.5	9.3	5.1	20	20	1560	3140
30	30	0/- .012	JPK30GW	74	58	10	60	6.6	11	6.1	20	20	2490	5490
40	40	0/- .015	JPK40GW	96	75	13	78	9	14	8.1	25	25	3430	8040
50	50	0/- .015	JPK50GW	116	92	13	98	9	14	8.1	25	25	6080	15900



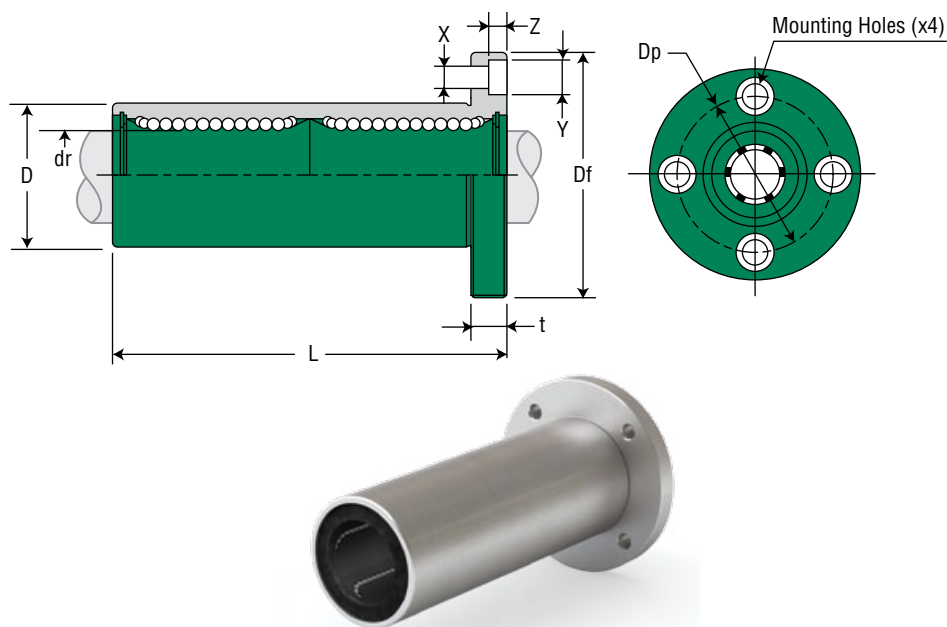
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Linear Ball Bearings Double Wide

DOUBLE WIDE BALL BEARINGS – ROUND FLANGE MOUNT – JPF-W



DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE				D	TOLERANCE	L	TOLERANCE
MM	MM	MM	STANDARD POLYMER CAGE		G	MM	MM	MM	MM
8	8	0/- .010	JPF8GW	4	51	15	0/- .013	45	±0.3
12	12	0/- .010	JPF12GW	4	110	21	0/- .016	57	±0.3
16	16	0/- .010	JPF16GW	5	190	28	0/- .016	70	±0.3
20	20	0/- .010	JPF20GW	5	260	32	0/- .019	80	±0.3
25	25	0/- .012	JPF25GW	6	540	40	0/- .019	112	±0.3
30	30	0/- .012	JPF30GW	6	680	45	0/- .019	123	±0.3
40	40	0/- .015	JPF40GW	6	1570	60	0/- .022	154	±0.3
50	50	0/- .020	JPF50GW	6	3600	80	0/- .025	192	±0.3



Download CAD

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE								LOAD RATINGS	
SIZE	dr	TOLERANCE		Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	MM	STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/- .010	JPF8GW	32	5	24	3.5	6.5	3.1	15	15	431	784
12	12	0/- .010	JPF12GW	42	6	32	4.5	8	4.1	15	15	813	1570
16	16	0/- .010	JPF16GW	48	6	38	4.5	8	4.1	15	15	1230	2350
20	20	0/- .010	JPF20GW	54	8	43	5.5	9.3	5.1	20	20	1400	2740
25	25	0/- .012	JPF25GW	62	8	51	5.5	9.3	5.1	20	20	1560	3140
30	30	0/- .012	JPF30GW	74	10	60	6.6	11	6.1	20	20	2490	5490
40	40	0/- .015	JPF40GW	96	13	78	9	14	8.1	25	25	3430	8040
50	50	0/- .020	JPF50GW	116	13	98	9	14	8.1	25	25	6080	15900



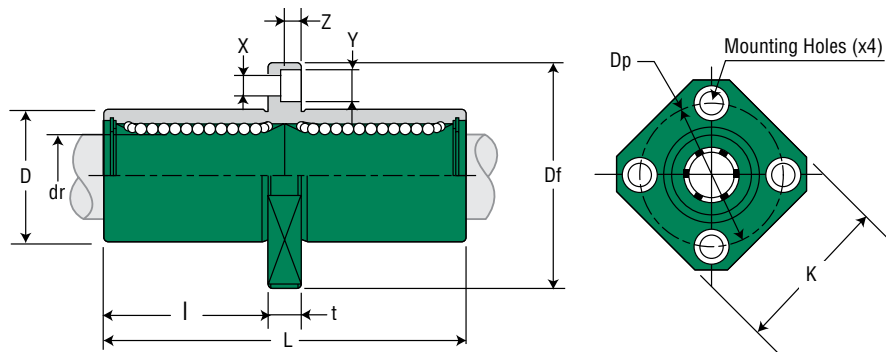
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



Square Flange Center Mount **Linear Ball Bearings**

LINEAR BALL BEARINGS – SQUARE FLANGE CENTER MOUNT – JPKC



DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	STANDARD POLYMER CAGE	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE					D	TOLERANCE	L	TOLERANCE
MM	MM	μM				G	MM	μM	MM	μM
8	8	0/-10	JPKC8G		4	43	15	0/-13	45	±300
12	12	0/-10	JPKC12G		4	90	21	0/-16	57	±300
16	16	0/-10	JPKC16G		5	165	28	0/-16	70	±300
20	20	0/-12	JPKC20G		5	225	32	0/-19	80	±300
25	25	0/-12	JPKC25G		6	500	40	0/-19	112	±300
30	30	0/-12	JPKC30G		6	590	45	0/-19	123	±300
40	40	0/-15	JPKC40G		6	1380	60	0/-22	154	±300
50	50	0/-15	JPKC50G		6	3400	80	0/-22	192	±300



[Download CAD](#)

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE										LOAD RATINGS	
SIZE	dr	TOLERANCE		I	Df	K	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	μM		MM	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/-10	JPKC8G	20	32	25	5	24	3.5	6.5	3.1	15	15	431	784
12	12	0/-10	JPKC12G	25.5	42	32	6	32	4.5	8	4.1	15	15	813	1570
16	16	0/-10	JPKC16G	32	48	37	6	38	4.5	8	4.1	15	15	1230	2350
20	20	0/-12	JPKC20G	36	54	42	8	43	5.5	9.3	5.1	20	20	1400	2740
25	25	0/-12	JPKC25G	52	62	50	8	51	5.5	9.3	5.1	20	20	1560	3140
30	30	0/-12	JPKC30G	56.5	74	58	10	60	6.6	11	6.1	20	20	2490	5490
40	40	0/-15	JPKC40G	69	96	75	13	78	9	14	8.1	25	25	3430	8040
50	50	0/-15	JPKC50G	89.5	116	92	13	98	9	14	8.1	25	25	6080	15900



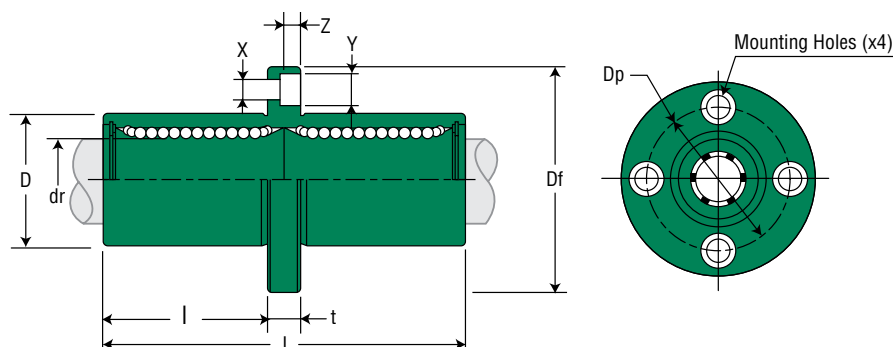
Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

[Inch Series—page 40](#) [Metric Series—page 72](#)



Linear Ball Bearings Round Flange Center Mount

LINEAR BALL BEARINGS – ROUND FLANGE CENTER MOUNT – JPFC



DIMENSIONAL INFORMATION

(Standard Steel Finish)

NOMINAL SHAFT DIAMETER			PART NUMBER	BALL CIRCUIT	WEIGHT	MAJOR DIMENSIONS & TOLERANCES			
SIZE	dr	TOLERANCE				D	TOLERANCE	L	TOLERANCE
MM	MM	μM	STANDARD POLYMER CAGE		G	MM	μM	MM	μM
8	8	0/-10	JPFC8G	4	51	15	0/-13	45	±300
12	12	0/-10	JPFC12G	4	110	21	0/-16	57	±300
16	16	0/-10	JPFC16G	5	190	28	0/-16	70	±300
20	20	0/-12	JPFC20G	5	260	32	0/-19	80	±300
25	25	0/-12	JPFC25G	6	540	40	0/-19	112	±300
30	30	0/-12	JPFC30G	6	680	45	0/-19	123	±300
40	40	0/-15	JPFC40G	6	1570	60	0/-22	154	±300
50	50	0/-15	JPFC50G	6	3600	80	0/-22	192	±300



Download CAD

NOMINAL SHAFT DIAMETER			PART NUMBER	MAJOR DIMENSIONS & TOLERANCES – FLANGE									LOAD RATINGS	
SIZE	dr	TOLERANCE		I	Df	t	Dp	X	Y	Z	ECCENTRICITY	SQUARENESS	DYNAMIC C	STATIC Co
MM	MM	μM	STANDARD POLYMER CAGE	MM	MM	MM	MM	MM	MM	MM	μM	μM	N	N
8	8	0/-10	JPFC8G	20.0	32	5	24	3.5	6.5	3.1	15	15	431	784
12	12	0/-10	JPFC12G	25.5	42	6	32	4.5	8	4.1	15	15	813	1570
16	16	0/-10	JPFC16G	32.0	48	6	38	4.5	8	4.1	15	15	1230	2350
20	20	0/-12	JPFC20G	36.0	54	8	43	5.5	9.3	5.1	20	20	1400	2740
25	25	0/-12	JPFC25G	52.0	62	8	51	5.5	9.3	5.1	20	20	1560	3140
30	30	0/-12	JPFC30G	56.5	74	10	60	6.6	11	6.1	20	20	2490	5490
40	40	0/-15	JPFC40G	69.0	96	13	78	9	14	8.1	25	25	3430	8040
50	50	0/-15	JPFC50G	89.5	116	13	98	9	14	8.1	25	25	6080	15900



Only certified Simplicity 60 Plus Shafting provides maximum linear bearing performance.

Inch Series—page 40 Metric Series—page 72



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



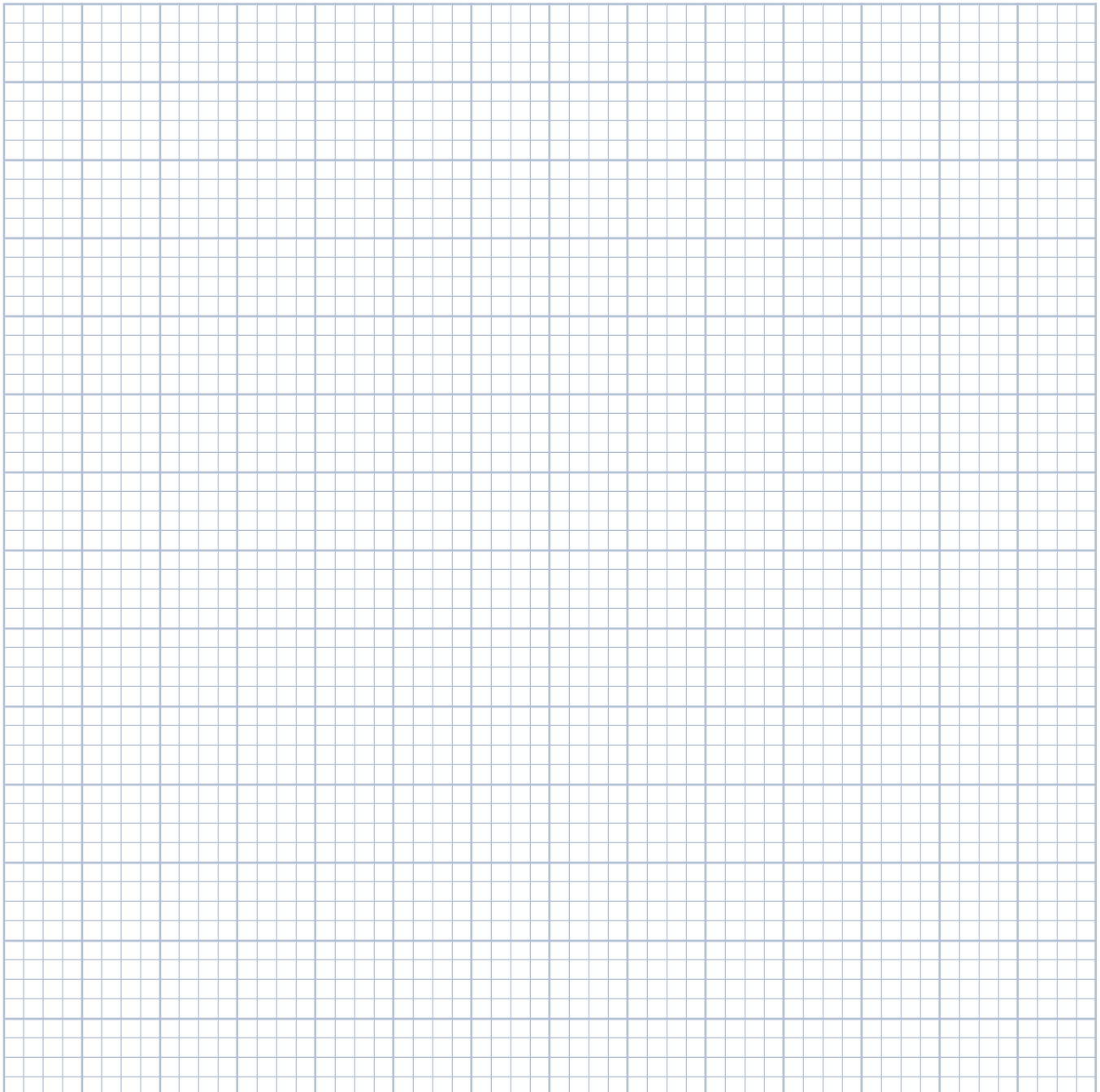
[Ordering Info: Plain Bearings—page 18](#)



[Ordering Info: Ball Bearings—page 23](#)



[Email an Application Engineer](#)





Simplicity® Linear Slides Overview

PRODUCT OVERVIEW

Available with plain or ball bearings, Simplicity slides provide solutions in the toughest environments.

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



Custom Solutions Available!
Call 800-962-8979

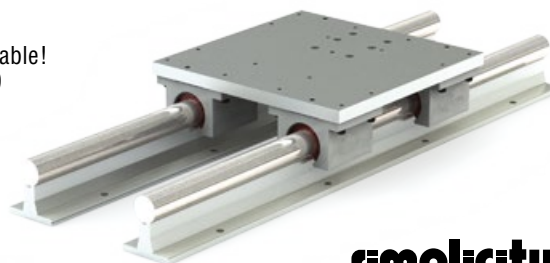
Standard components include:

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

Plain Bearing



Ball Bearing



simplicity

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



SRB



RS



RPS



1RPS



2RPS



LRPS



2LRPS



SC2RPS



2HCR & 2HWL



2N42, 2N56,
2N143



2N23, 2N34

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 supported with end plates

LOW PROFILE

LRPS - low profile support rail version of a standard RPS

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

ACCESSORIES:

- Hand crank with ball screw lock rotational lock
- Handwheel (Foldaway)
- Direct drive NEMA 23 & 34 motor bracket kit
- N42, 56, & 143 bracket options available



Simplicity® Linear Slides

SLIDE SELECTION INFORMATION

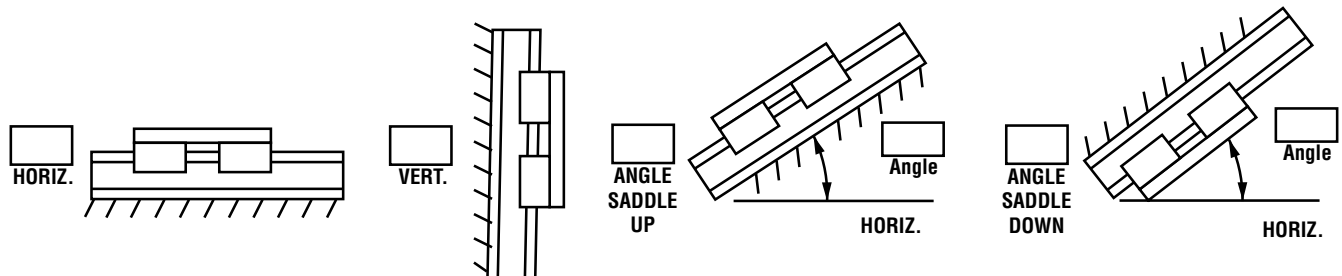
1. Determine the size and stroke of slide.
2. Is a lube system required?
3. Please furnish the following to the factory:
 - a. Model designation
 - b. Lube system requirements
 - c. Mounting orientation, saddle position if mounted at an angle
 - d. Load to be carried and approximate center of gravity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

MODEL NUMBER

Series Code Size Code Length Code Ball Screw Lead Code

MOUNTING ORIENTATION

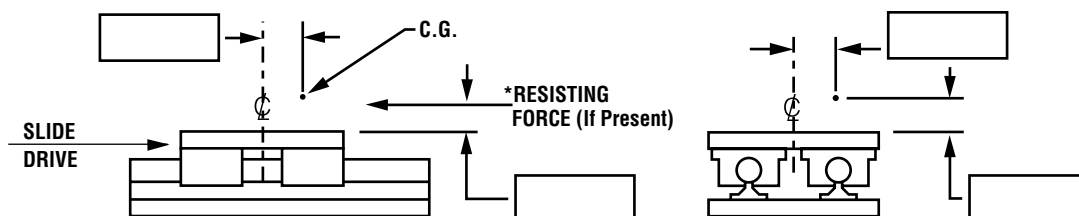
Please indicate the parameters of your application in the boxes below.



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

LOCATION OF CENTER OF GRAVITY FROM SADDLE CENTER

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



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

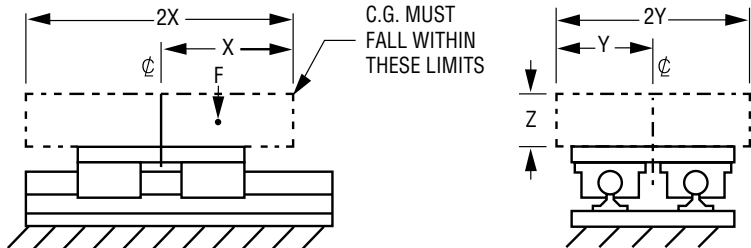
Resisting Force:		lbs.		
Life Requirement:		Strokes		Hours



Simplicity® Linear Slides Load Capacities

The safe loading recommendations shown apply to plain bearing, 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. **Load capacities shown reflect the use of Simplicity linear plain bearings.** Contact PBC Linear for load capacities for linear slides with ball bearings.

STANDARD MOUNTING

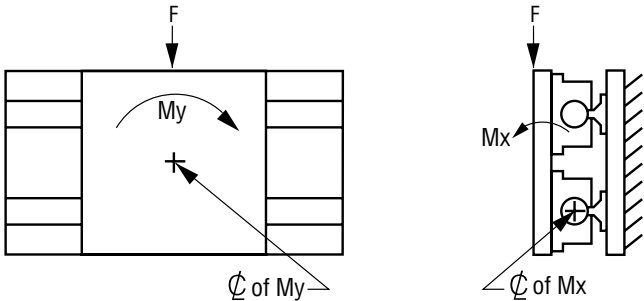


RECOMMENDED SAFE LOADING

Size	F Max	F Max	X	Y	Z
	LBS	N	IN	IN	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

Note: Load ratings apply to Simplicity plain bearings only.

SIDE MOUNTING



RECOMMENDED SAFE LOADING

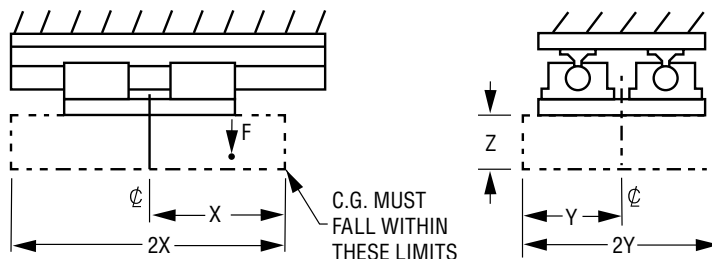
Size	F Max	My	Mx	F Max	My	Mx
	LBS	IN-LBS	IN-LBS	N	NM	NM
08	540	910	1500	2402	103	169
10	760	1680	2750	3381	190	311
12	840	1710	2875	3737	193	325
16	1050	3300	4430	4671	373	501
20	1750	6175	8750	7784	698	989
24	2100	9600	12600	9341	1085	1424
32	3300	19000	28050	14679	2147	3169

Note: Load ratings apply to Simplicity plain bearings only.



Load Capacities **Simplicity® Linear Slides**

INVERTED MOUNTING

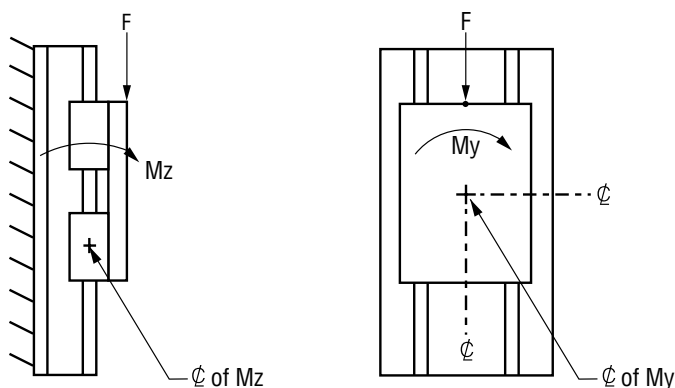


RECOMMENDED SAFE LOADING

Size	F Max	F Max	X	Y	Z
	LBS	N			
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

Note: Load ratings apply to Simplicity plain bearings only.

VERTICAL MOUNTING



RECOMMENDED SAFE LOADING

Size	F Max ^{1,2}	My	Mz	F Max	My	Mz
	LBS	IN-LBS	IN-LBS	N	NM	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

Note: Load ratings apply to Simplicity plain bearings only. ¹ Applies only when using 2RPS & 2LRPS slides. ² If "F" is exceeded consult factory. For RPS, FMAX is dependent upon customer's method of moving the slide.



Simplicity® Linear Slides SRB

PREASSEMBLED SHAFT, RAIL, & BEARING – SRB

Ordering Example:

To order an assembly with a 0.750 diameter linear shaft, support rail, one twin double sealed Simplicity bearing with Frelon Gold, with a rail length of 96.00", specify part number SRBTD-1200-096.000.

To order an assembly with a 0.625 diameter shaft, support rail and two single Simplicity bearings without seals, with a rail length of 73.25", specify part number SRB2-1000-073.250.

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



Note: PBC Linear is migrating to a design that incorporates a notch along the bottom of the rail. This improves quality by eliminating bow, warp, and twist due to even cooling of the material during the extrusion process. Both rails are fit, form, and functionally equivalent, but if you require one or the other for a design, please contact a PBC sales associate at (800) 962-8979.

PART NUMBER

Series				Size			L
SRBXY	X	XXX	-	08	XX	-	XXX.XXX
SRBXY	X	XXX	-	10	XX	-	XXX.XXX
SRBXY	X	XXX	-	12	XX	-	XXX.XXX
SRBXY	X	XXX	-	16	XX	-	XXX.XXX
SRBXY	X	XXX	-	20	XX	-	XXX.XXX
SRBXY	X	XXX	-	24	XX	-	XXX.XXX
SRBXY	X	XXX	-	32	XX	-	XXX.XXX



Custom Solutions Available!
Call 800-962-8979

Enter rail length in inches XXX.XXX (EX: 96" = 096.000)	
Shafting material:	00 = Alloy Steel (Standard) SS = 440 Stainless Steel CC = Ceramic Coated XX = Chrome Plated 303 SST Note: Ball bearings not suitable with chrome plated 303 sst or ceramic coated shafting
Shaft diameter dimension in 1/16" increments	
Internal Lubrication:	Blank = None (Standard) JKM = Thru hole and internal felt wick
Seals:	Blank = None Note: "D" double seals are included with standard ball bearings S = Single Seals D = Double Seals
Pillow Block Style:	2 = Two single PN bearings 3 = Three single PN bearings C = Compensated T = One Twin PWN bearing T2 = Two Twin PWN bearings S1 = One SST PN bearing S2 = Two SST PN bearings
Bearing Type:	Blank = Simplicity Frelon GOLD® E = Simplicity Frelon® J B = Ball Bearing

STANDARD LENGTH TABLE

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			054		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.



Download CAD

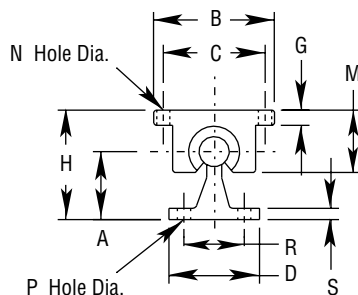
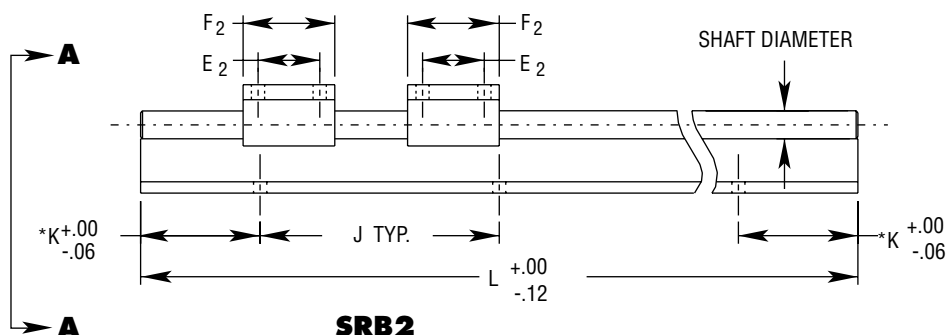
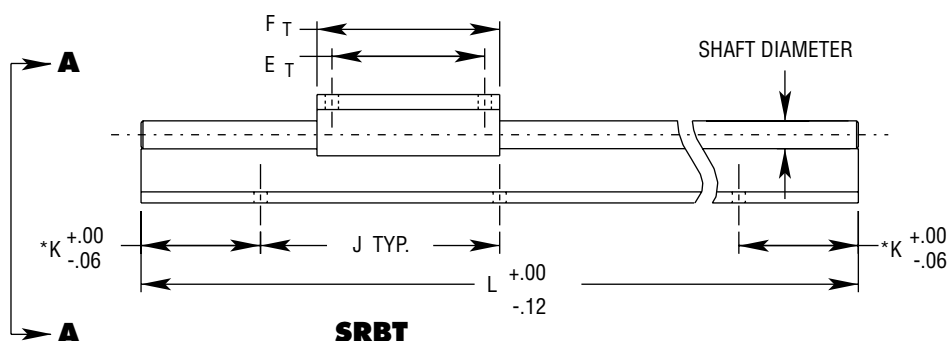


SRB Simplicity® Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	A	B	C	D	E _T	F _T	E ₂	F ₂	G	H	J	K	M	N	P	R	S
SRBXY	08	.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	10	.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	12	.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	16	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	20	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	24	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	32	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

Dimensions in inches.



VIEW A - A

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



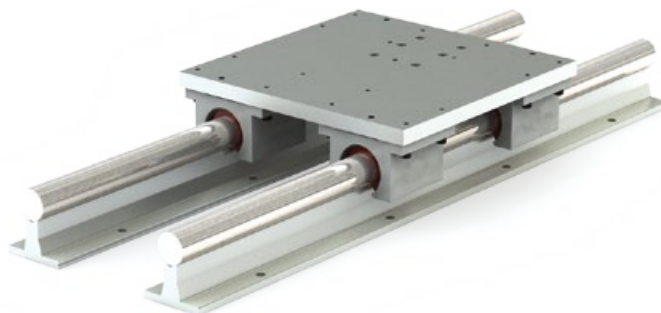
Simplicity® Linear Slides RS

RAIL MOUNTED SLIDE ASSEMBLY – RS

Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft, Simplicity bearings with Frelon GOLD® and 28" rail length, specify part number RS-1000-028.000

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.



PART NUMBER

Series			Size			L
RS	X	XXX	-	08	XX	- XXX.XXX
RS	X	XXX	-	10	XX	- XXX.XXX
RS	X	XXX	-	12	XX	- XXX.XXX
RS	X	XXX	-	16	XX	- XXX.XXX
RS	X	XXX	-	20	XX	- XXX.XXX
RS	X	XXX	-	24	XX	- XXX.XXX
RS	X	XXX	-	32	XX	- XXX.XXX



Custom Solutions Available!
Call 800-962-8979

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

Note: Ball bearings not suitable with stainless steel or chrome plate shafting

CC = Ceramic Coated

XX = Chrome Plated 303 SST

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

STANDARD LENGTH TABLE

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 or non-standard lengths.

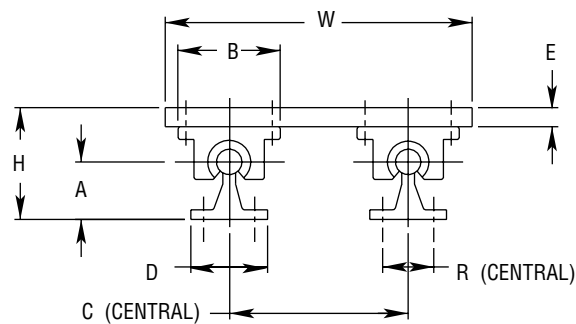
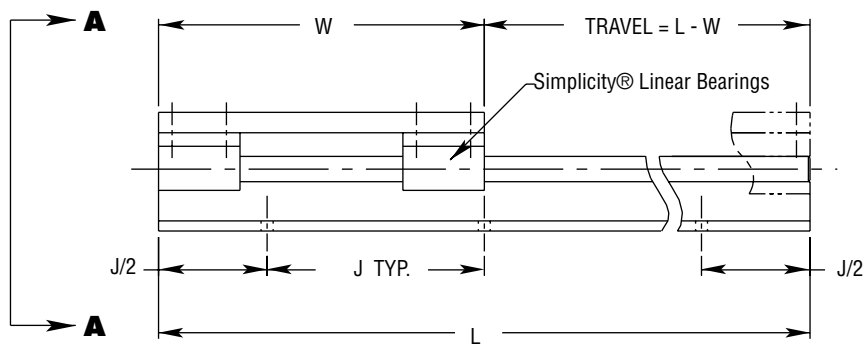
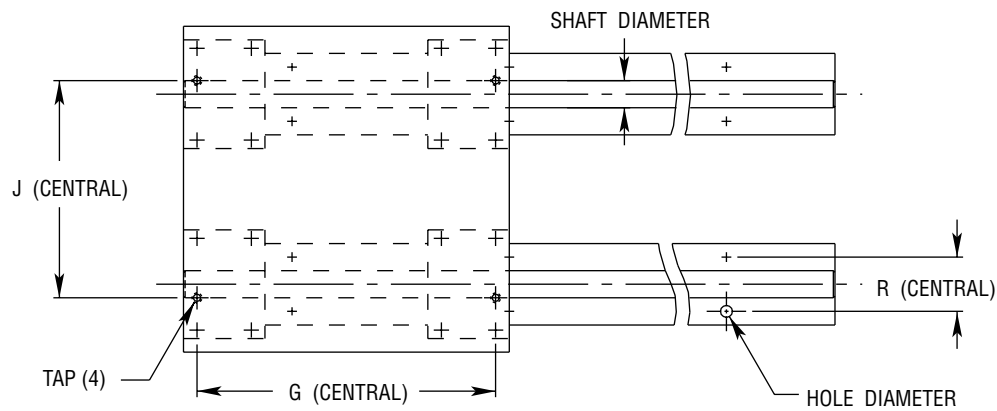


RS **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	G	J	R	Tap	Hole Dia.
RS	08	.500	6.000	2.188	1.125	2.00	3.500	1.500	.375	5.500	4.000	1.000	10-24	.17
RS	10	.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	12	.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	16	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	20	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	24	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	32	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.



VIEW A - A



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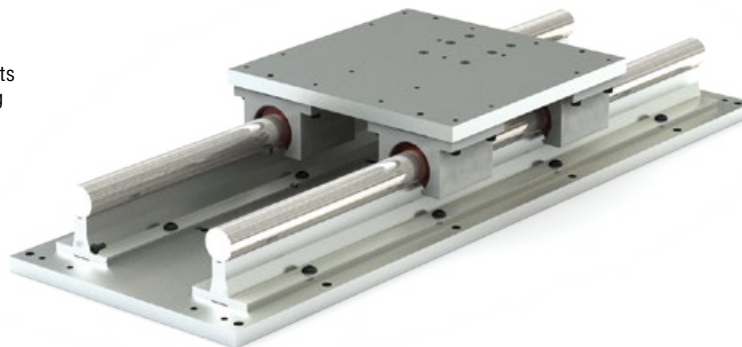
Simplicity® Linear Slides Assembly

RAIL MOUNTED & PLATE SUPPORTED SLIDE ASSEMBLY – RPS

Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft and 28" rail length, specify part number RPS-1000-028.000

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.



PART NUMBER

Series			Size		L
RPS	X	XXX	- 08	XX	- XXX.XXX
RPS	X	XXX	- 10	XX	- XXX.XXX
RPS	X	XXX	- 12	XX	- XXX.XXX
RPS	X	XXX	- 16	XX	- XXX.XXX
RPS	X	XXX	- 20	XX	- XXX.XXX
RPS	X	XXX	- 24	XX	- XXX.XXX
RPS	X	XXX	- 32	XX	- XXX.XXX



Custom Solutions Available!
Call 800-962-8979

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

CC = Ceramic Coated

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

STANDARD LENGTH TABLE

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 or non-standard lengths.

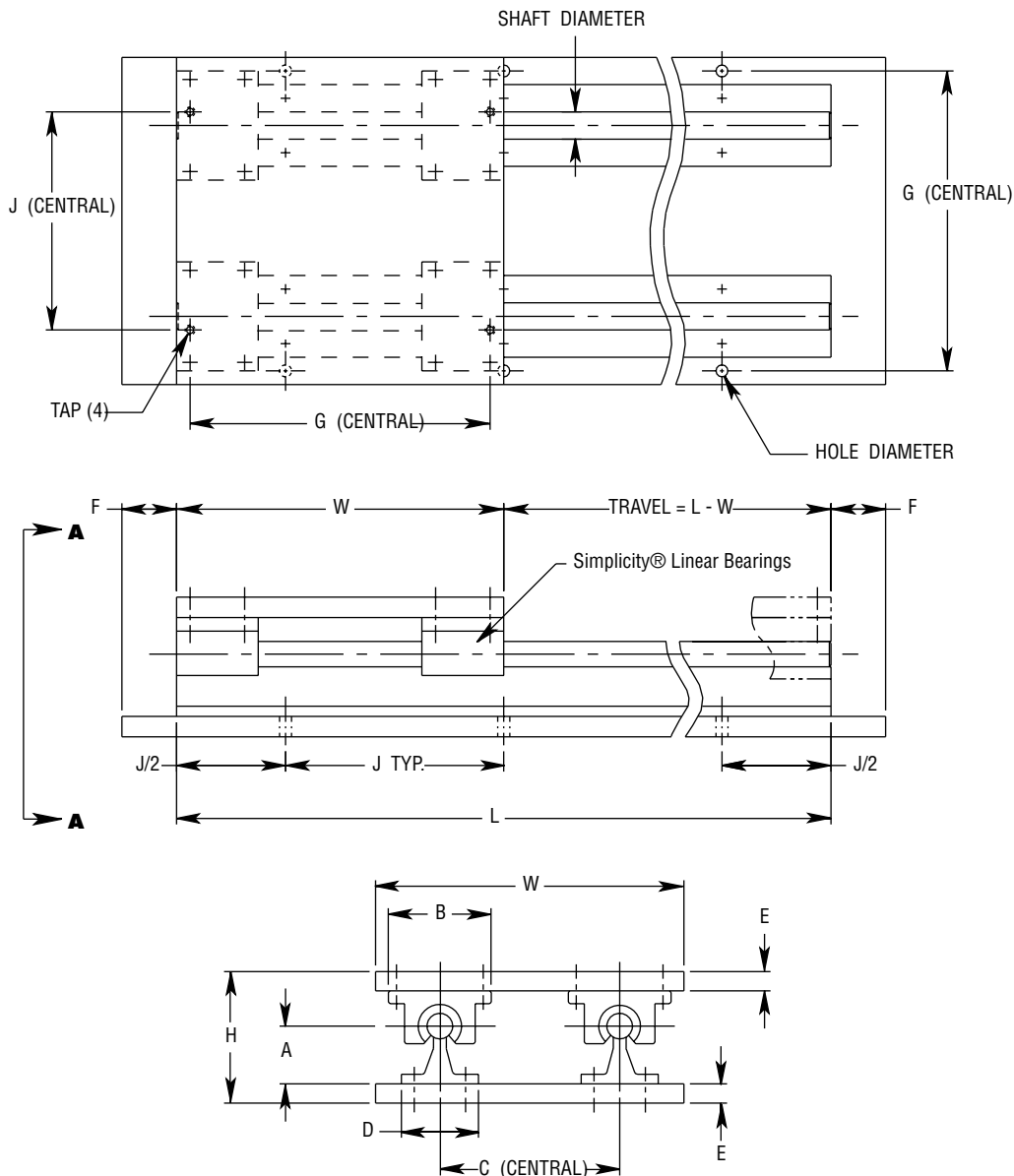


Assembly **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	Tap	Hole Dia.
RPS	08	.500	6.000	2.562	1.125	2.00	3.500	1.500	.375	1.00	5.500	4.000	10-24	.22
RPS	10	.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	12	.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	16	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	20	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	24	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	32	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.



Download CAD

VIEW A - A

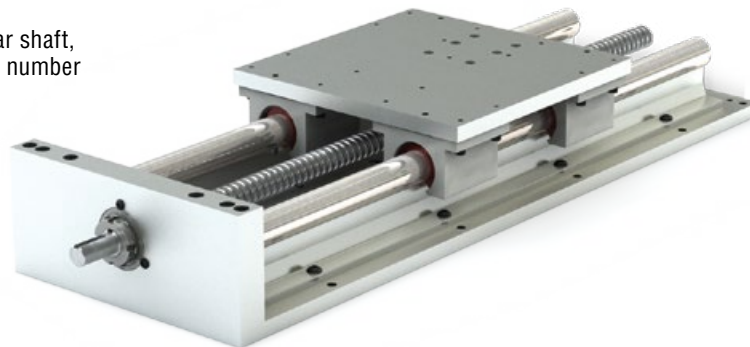


Simplicity® Linear Slides One End Support

RAIL MOUNTED & PLATE SUPPORTED – BALL SCREW DRIVEN – 1RPS SUPPORTED ON ONE END

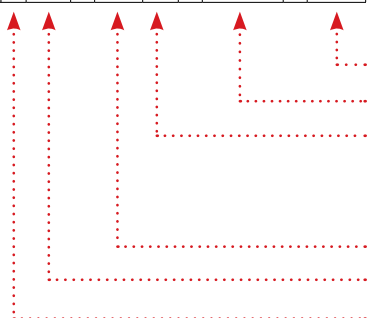
Ordering Example:

To order a slide with a 0.625 diameter 440 stainless steel linear shaft, 28" rail length, .200" right hand select ball screw, specify part number 1RPS-10SS-028.000-AA7R.



PART NUMBER

Series				Size				L		Lead
1RPS	X	XXX	-	08	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	10	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	12	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	16	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	20	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	24	XX	-	XXX.XXX	-	YYYY	
1RPS	X	XXX	-	32	XX	-	XXX.XXX	-	YYYY	



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

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

Note: Ball bearings not suitable with chrome plated 303 sst

or ceramic coated shafting

CC = Ceramic Coated

XX = Chrome Plated 303 SST

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

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes							
08	AAXR	AAXL						
10	AAXR	AAXL						
12	AAXR	AAXL						
16			ABXR	ABXL	ACXR	ADXR		
20			ABXR	ABXL	ACXR	ADXR		
24			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR
32			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR

AAXR = .200 Right Hand
AAXL = .200 Left Hand
ABXR = .250 Right Hand
ABXL = .250 Left Hand
ACXR = .500 Right Hand
ADXR = 1.000 Right Hand
ADXL = 1.000 Left Hand
AEXR = 1.875 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes							
08	AA7R	AA7L						
10	AA7R	AA7L						
12	AA7R	AA7L						
16			AB7R	AB7L	AC7R	AD7R		
20			AB7R	AB7L	AC7R	AD7R		
24			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R
32			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R

AA7R = .200 Right Hand
AA7L = .200 Left Hand
AB7R = .250 Right Hand
AB7L = .250 Left Hand
AC7R = .500 Right Hand
AD7R = 1.000 Right Hand
AD7L = 1.000 Left Hand
AE7R = 1.875 Right Hand

STANDARD LENGTH TABLE

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				018		024		030		036		042
20		012		018		024		030		036		048
24			016			024		032		040		048
32						024		032		040		048

*Contact manufacturer for longer or non-standard lengths.



Custom Solutions Available!
Call 800-962-8979

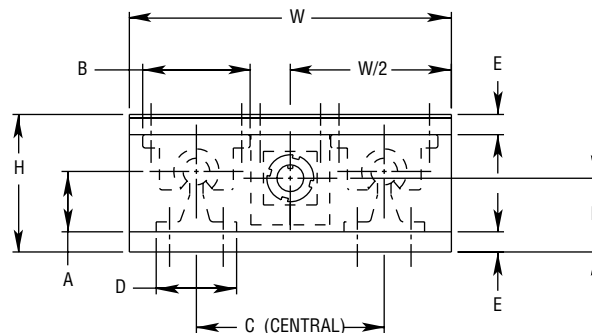
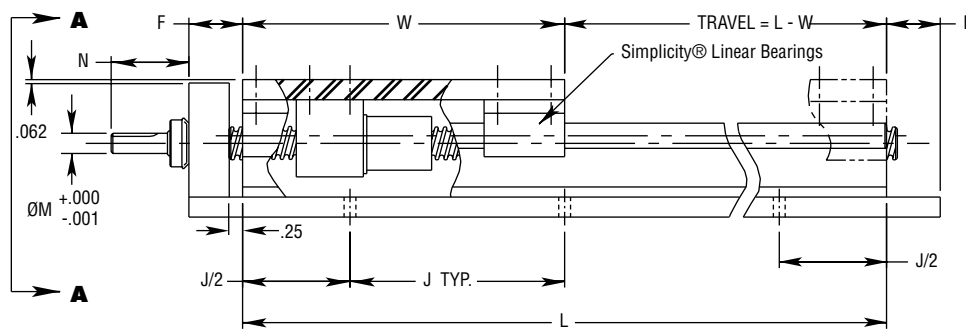
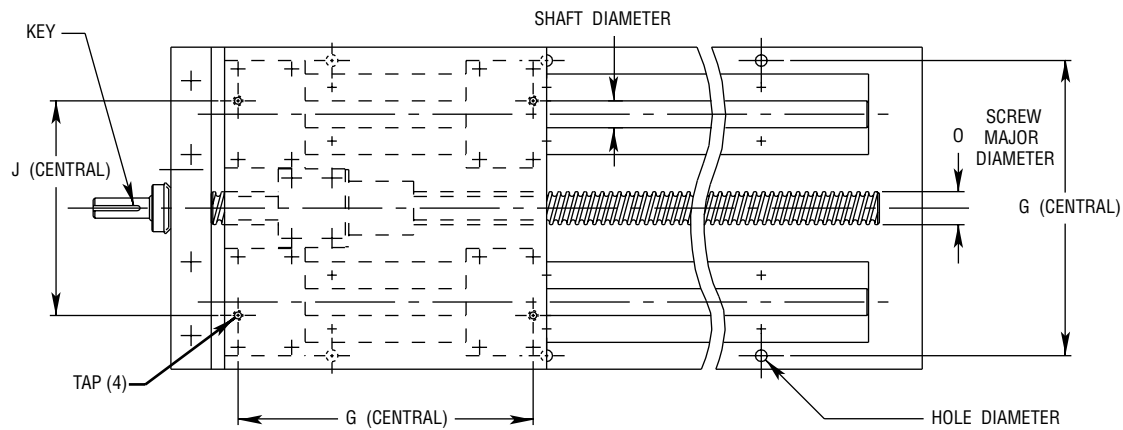


One End Support **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Tap	Hole Dia.	Key
1RPS	08	.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
1RPS	10	.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
1RPS	12	.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
1RPS	16	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
1RPS	20	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
1RPS	24	1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	.875	2.31	1.50	5/16-18	.34	1/4 sq x 1.62 lg
1RPS	32	2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	.875	2.31	1.50	3/8-16	.41	1/4 sq x 1.62 lg

Dimensions in inches.



VIEW A - A



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INCH

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METRIC

JIS
METRIC

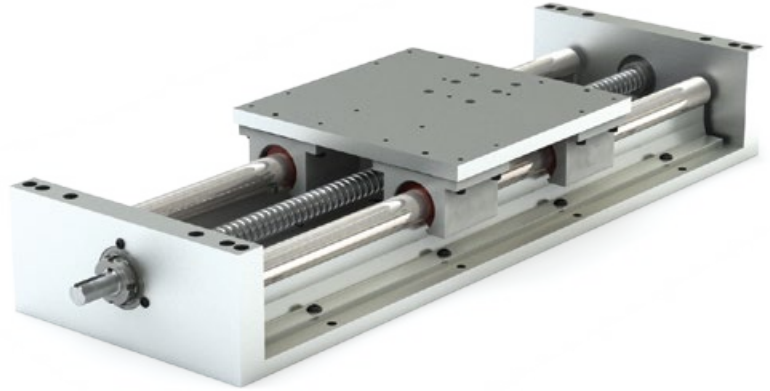


Simplicity® Linear Slides Both Ends Supported

RAIL MOUNTED & PLATE SUPPORTED – BALL SCREW DRIVEN – 2RPS SUPPORTED ON BOTH ENDS

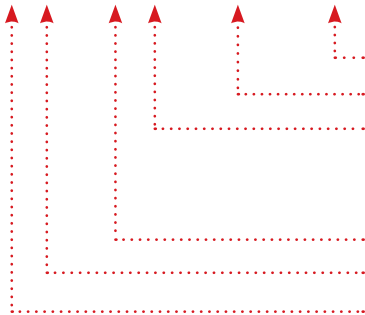
Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft, 28" rail length, .200" right hand select ball screw, specify part number 2RPS-1000-028.000-AA7R.



PART NUMBER

Series				Size				L		Lead
2RPS	X	XXX	-	08	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	10	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	12	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	16	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	20	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	24	XX	-	XXX.XXX	-	YYYY	
2RPS	X	XXX	-	32	XX	-	XXX.XXX	-	YYYY	



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

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

CC = Ceramic Coated

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

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes							
08	AAXR	AAXL						
10	AAXR	AAXL						
12	AAXR	AAXL						
16			ABXR	ABXL	ACXR	ADXR		
20			ABXR	ABXL	ACXR	ADXR		
24			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR
32			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR

AAXR = .200 Right Hand
AAXL = .200 Left Hand
ABXR = .250 Right Hand
ABXL = .250 Left Hand
ACXR = .500 Right Hand
ADXR = 1.000 Right Hand
ADXL = 1.000 Left Hand
AEXR = 1.875 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes							
08	AA7R	AA7L						
10	AA7R	AA7L						
12	AA7R	AA7L						
16			AB7R	AB7L	AC7R	AD7R		
20			AB7R	AB7L	AC7R	AD7R		
24			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R
32			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R

AA7R = .200 Right Hand
AA7L = .200 Left Hand
AB7R = .250 Right Hand
AB7L = .250 Left Hand
AC7R = .500 Right Hand
AD7R = 1.000 Right Hand
AD7L = 1.000 Left Hand
AE7R = 1.875 Right Hand

STANDARD LENGTH TABLE

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 or non-standard lengths.

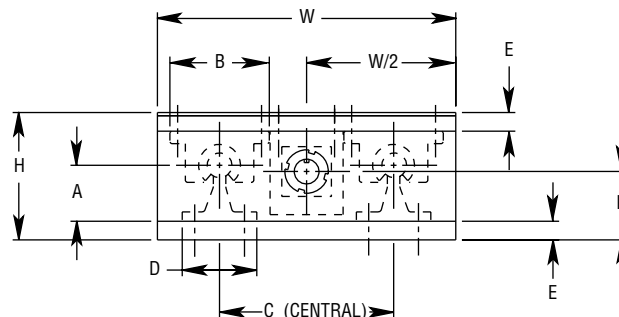
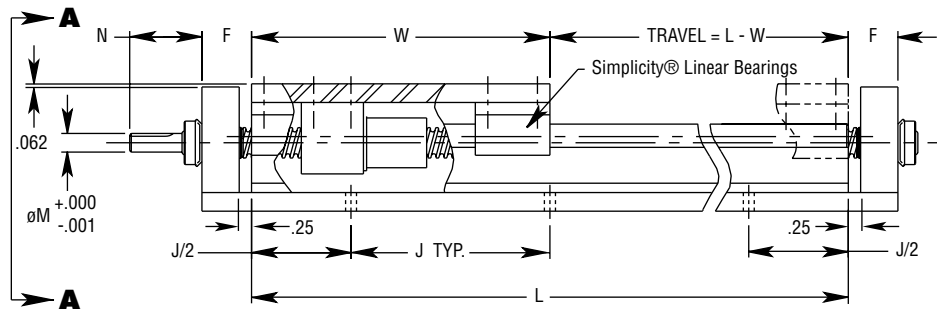
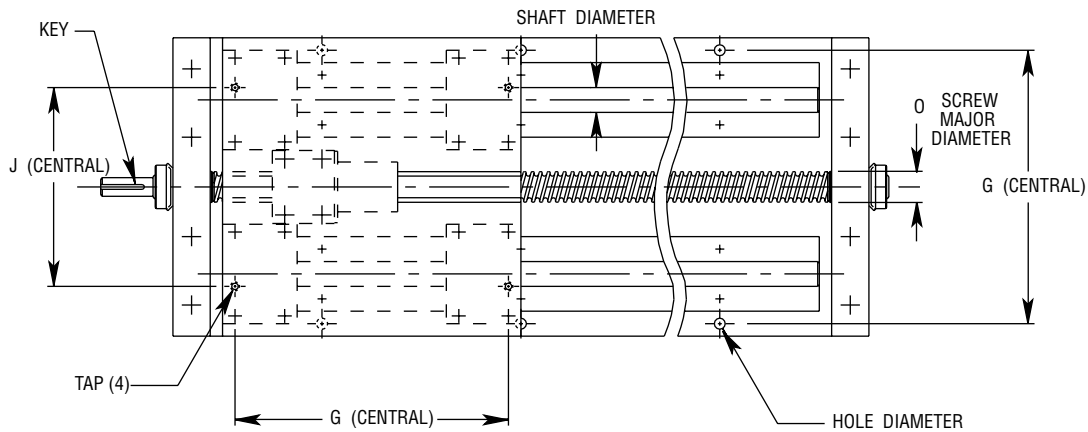


Both Ends Supported **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Tap	Hole Dia.	Key
2RPS	08	.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
2RPS	10	.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
2RPS	12	.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
2RPS	16	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
2RPS	20	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
2RPS	24	1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	.875	2.31	1.50	5/16-18	.34	1/4 sq x 1.62 lg
2RPS	32	2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	.875	2.31	1.50	3/8-16	.41	1/4 sq x 1.62 lg

Dimensions in inches.



VIEW A - A



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Simplicity® Linear Slides Low Profile

RAIL MOUNTED & PLATE SUPPORTED SLIDE ASSEMBLY – LRPS

LOW PROFILE

Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft and 28" rail length, specify part number LRPS-1000-028.000.



PART NUMBER

Series			Size		L
LRPS	X	XXX	- 08	XX	- XXX.XXX
LRPS	X	XXX	- 10	XX	- XXX.XXX
LRPS	X	XXX	- 12	XX	- XXX.XXX
LRPS	X	XXX	- 16	XX	- XXX.XXX
LRPS	X	XXX	- 20	XX	- XXX.XXX
LRPS	X	XXX	- 24	XX	- XXX.XXX
LRPS	X	XXX	- 32	XX	- XXX.XXX



Custom Solutions Available!
Call 800-962-8979

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

CC = Ceramic Coated

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

STANDARD LENGTH TABLE

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 or non-standard lengths.

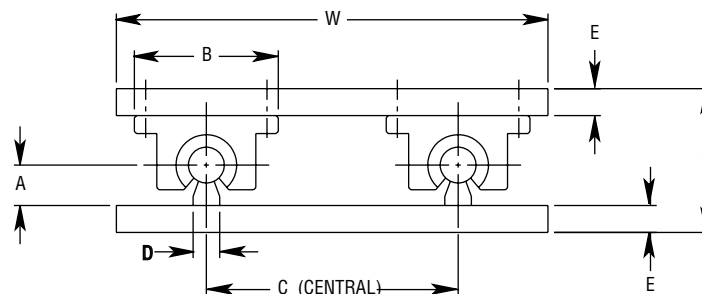
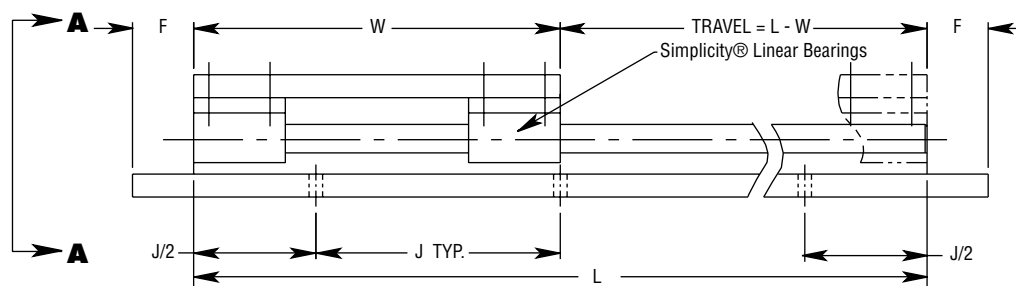
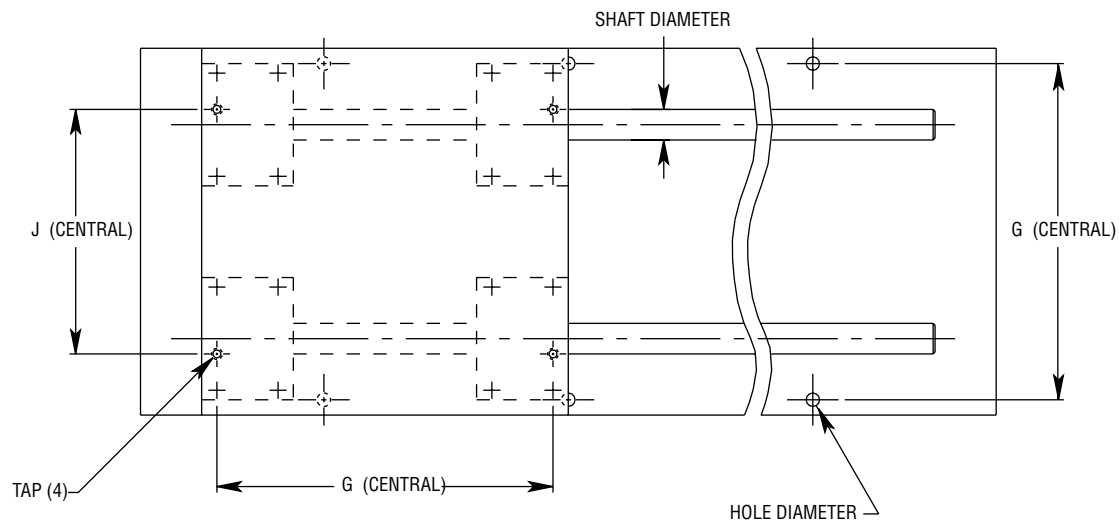


Low Profile **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	Tap	Hole Dia.
LRPS	08	.500	6.000	2.000	.563	2.00	3.500	.37	.375	1.00	5.500	4.000	10-24	.22
LRPS	10	.625	7.000	2.313	.688	2.50	4.000	.45	.375	1.00	6.312	4.000	1/4-20	.28
LRPS	12	.750	8.000	2.688	.750	2.75	4.500	.51	.500	1.25	7.125	6.000	1/4-20	.28
LRPS	16	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	20	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	24	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	32	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

Dimensions in inches.

**VIEW A - A**

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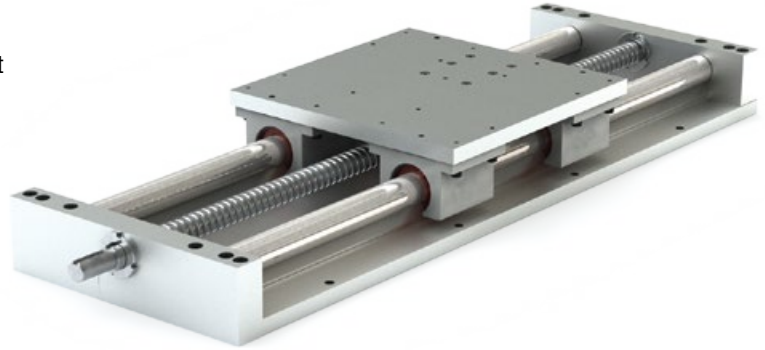
Simplicity® Linear Slides Low Profile Ball Screw

RAIL MOUNTED & PLATE BALL SCREW DRIVEN – 2LRPS

LOW PROFILE – SUPPORTED ON BOTH ENDS

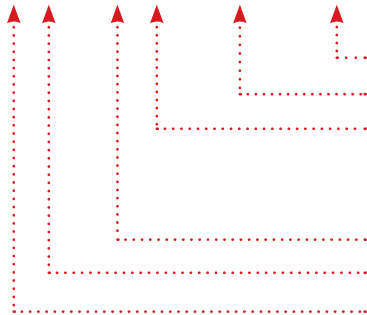
Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft, 28" rail length, .200" right hand select ball screw - specify part number, 2LRPS-1000-028.000-AA7R.



PART NUMBER

Series			Size			L	Lead
2LRPS	X	XXX	-	08	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	10	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	12	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	16	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	20	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	24	XX	- XXX.XXX	- YYYY
2LRPS	X	XXX	-	32	XX	- XXX.XXX	- YYYY



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

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

CC = Ceramic Coated

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

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes							
08	AAXR	AAXL						
10	AAXR	AAXL						
12	AAXR	AAXL						
16			ABXR	ABXL	ACXR	ADXR		
20			ABXR	ABXL	ACXR	ADXR		
24			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR
32			ABXR	ABXL	ACXR	ADXR	ADXL	AEXR

AAXR = .200 Right Hand
AAXL = .200 Left Hand
ABXR = .250 Right Hand
ABXL = .250 Left Hand
ACXR = .500 Right Hand
ADXR = 1.000 Right Hand
ADXL = 1.000 Left Hand
AEXR = 1.875 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes							
08	AA7R	AA7L						
10	AA7R	AA7L						
12	AA7R	AA7L						
16			AB7R	AB7L	AC7R	AD7R		
20			AB7R	AB7L	AC7R	AD7R		
24			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R
32			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R

AA7R = .200 Right Hand
AA7L = .200 Left Hand
AB7R = .250 Right Hand
AB7L = .250 Left Hand
AC7R = .500 Right Hand
AD7R = 1.000 Right Hand
AD7L = 1.000 Left Hand
AE7R = 1.875 Right Hand

STANDARD LENGTH TABLE

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 or non-standard lengths.

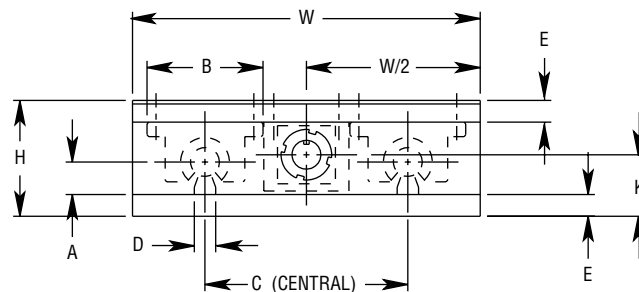
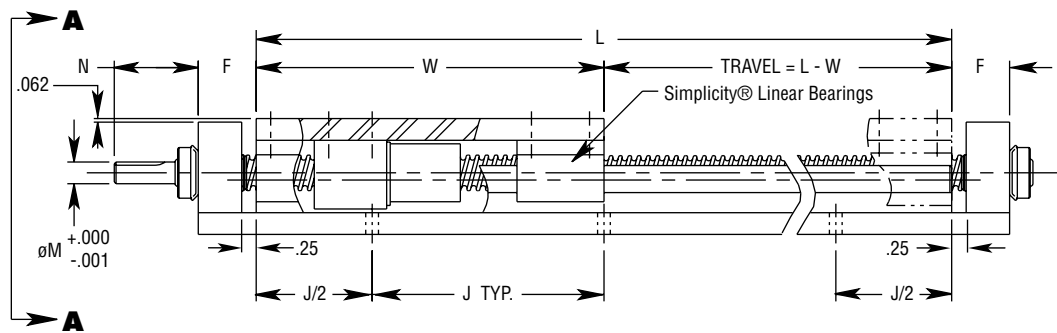
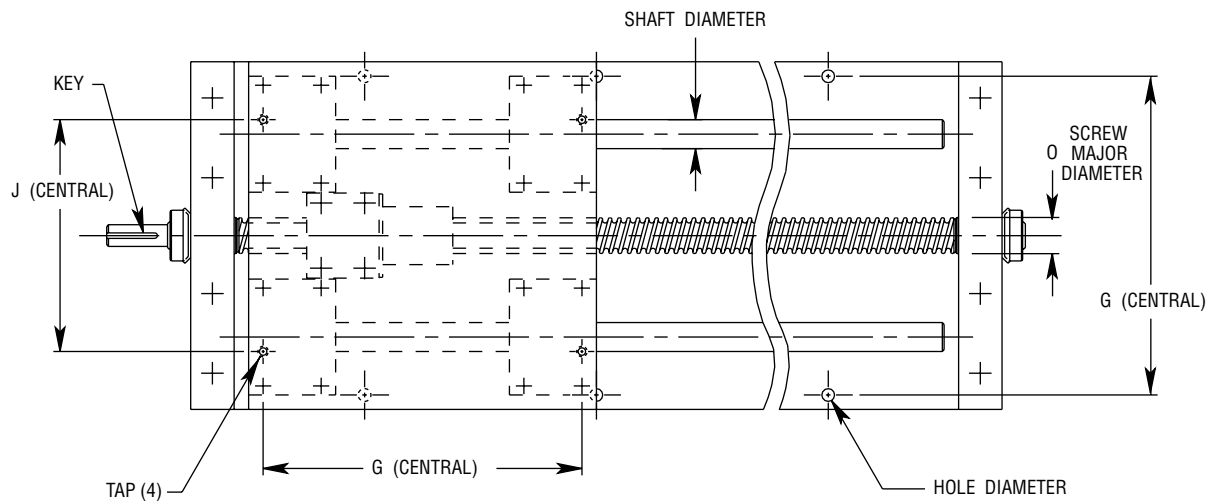


Low Profile Ball Screw **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Tap	Hole Dia.	Key
2LRPS	08	.500	6.000	2.000	.563	2.00	3.500	.37	.375	1.00	5.500	4.000	1.000	.375	1.45	.63	10-24	.22	3/32 sq x 5/8 lg
2LRPS	10	.625	7.000	2.313	.688	2.50	4.000	.45	.375	1.00	6.312	4.000	1.156	.375	1.45	.63	1/4-20	.28	3/32 sq x 5/8 lg
2LRPS	12	.750	8.000	2.688	.750	2.75	4.500	.51	.500	1.25	7.125	6.000	1.344	.375	1.45	.63	1/4-20	.28	3/32 sq x 5/8 lg
2LRPS	16	1.000	9.000	3.188	1.000	3.25	5.500	.69	.500	1.25	8.312	6.000	1.594	.625	1.76	1.00	1/4-20	.28	3/16 sq x 1" lg
2LRPS	20	1.250	11.000	4.188	1.188	4.00	6.500	.78	.750	1.50	10.000	6.000	2.094	.625	1.76	1.00	5/16-18	.34	3/16 sq x 1" lg
2LRPS	24	1.500	13.000	4.625	1.375	4.75	8.000	.93	.750	1.50	12.000	8.000	2.312	.875	2.31	1.50	5/16-18	.34	1/4 sq x 1.62 lg
2LRPS	32	2.000	18.000	5.875	1.750	6.00	10.000	1.18	1.000	1.75	15.875	8.000	2.937	.875	2.31	1.50	3/8-16	.41	1/4 sq x 1.62 lg

Dimensions in inches.



VIEW A - A



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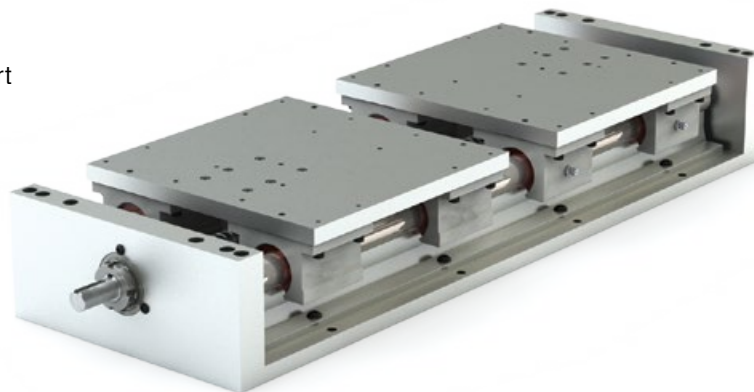


Simplicity® Linear Slides Self Centering

SELF-CENTERING SLIDE ASSEMBLY – SC2RPS

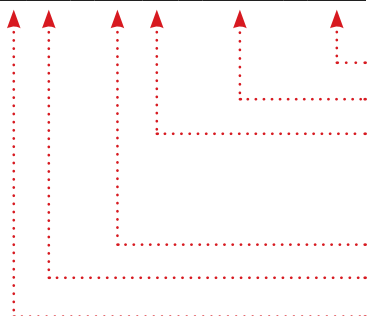
Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft, 56" rail length, .200" right hand select lead screw - specify part number, SC2RPS-1000-056.000-AA7LR.



PART NUMBER

Series			Size			L	Lead
SC2RPS	X	XXX	-	08	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	10	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	12	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	16	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	20	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	24	XX	-	XXX.XXX - YYYY
SC2RPS	X	XXX	-	32	XX	-	XXX.XXX - YYYY



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

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

Shafting material:

00 = Alloy Steel (Standard)

SS = 440 Stainless Steel

Note: Ball bearings not suitable with chrome plated 303 sst

or ceramic coated shafting

CC = Ceramic Coated

XX = Chrome Plated 303 SST

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

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes		
08	AAXLR		
10	AAXLR		
12	AAXLR		
16		ABXLR	
20		ABXLR	
24		ABXLR	ADXLR
32		ABXLR	ADXLR

AAXLR = .200 Leads
ABXLR = .250 Leads
ADXLR = 1.000 Leads

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

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes		
08	AA7LR		
10	AA7LR		
12	AA7LR		
16		AB7LR	
20		AB7LR	
24		AB7LR	AD7LR
32		AB7LR	AD7LR

AA7LR = .200 Leads
AB7LR = .250 Leads
AD7LR = 1.000 Leads

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

STANDARD LENGTH TABLE

Size	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
10	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080	084
12		018		024		030		036		042		048		054		060		066		072		078		084
16				024		030		036		042		048		054		060		066		072		078		084
20				024		030		036		042		048		054		060		066		072		078		084
24							032		040			048			056		064			072			080	
32									040			048			056		064			072			080	

*Contact manufacturer for longer or non-standard lengths.

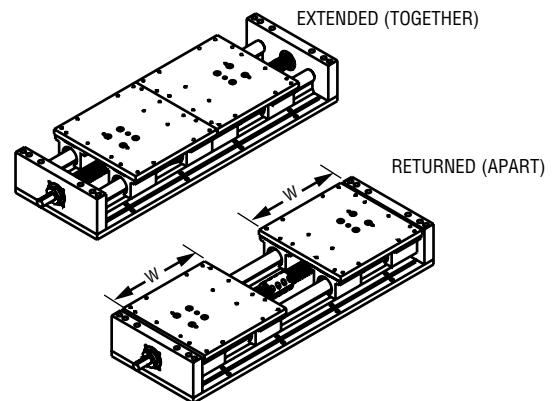
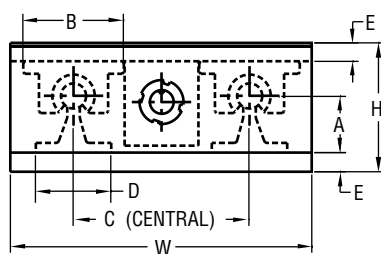
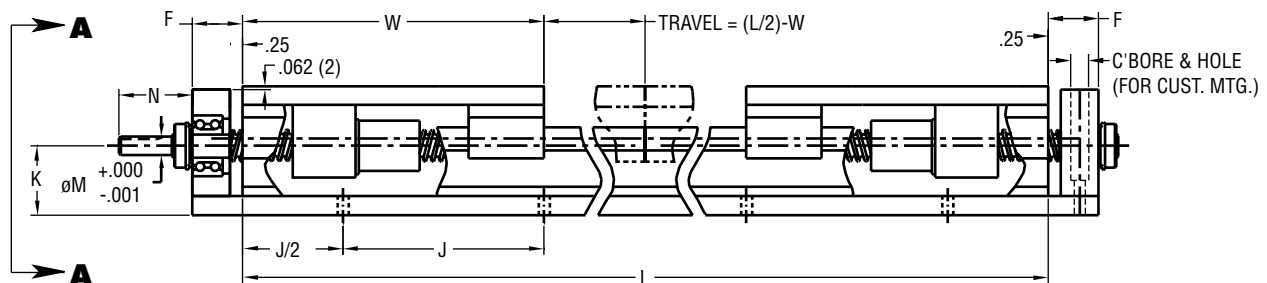
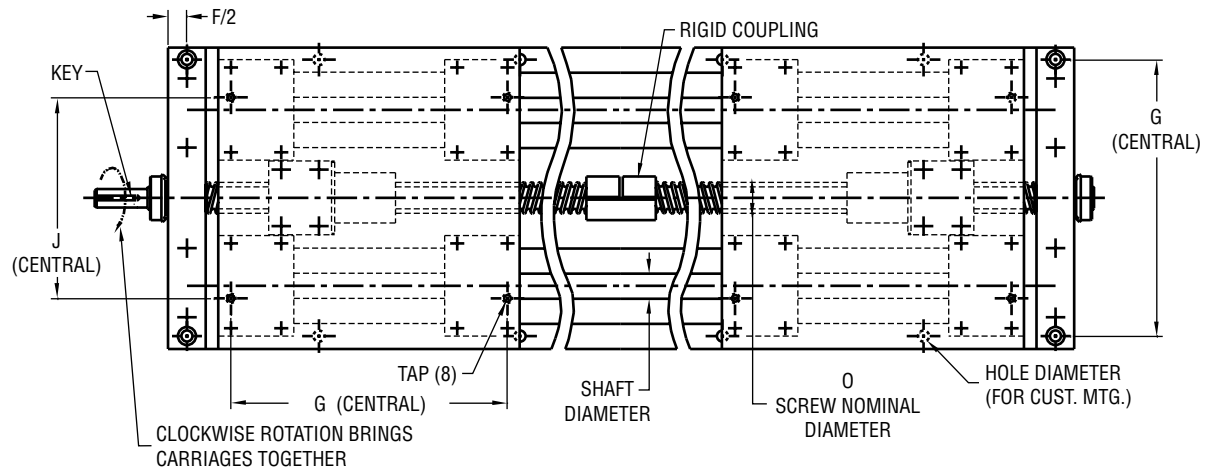


Self Centering **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Tap	Hole Dia.	Key
SC2RPS	08	.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
SC2RPS	10	.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
SC2RPS	12	.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
SC2RPS	16	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
SC2RPS	20	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
SC2RPS	24	1.500	13.000	5.750	2.500	4.75	8.000	3.000	.750	1.50	12.000	8.000	2.875	.875	2.31	1.50	5/16-18	.34	1/4 sq x 1.62 lg
SC2RPS	32	2.000	18.000	7.375	3.250	6.00	10.000	3.750	1.000	1.75	15.875	8.000	3.875	.875	2.31	1.50	3/8-16	.41	1/4 sq x 1.62 lg

Dimensions in inches.



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VIEW A - A

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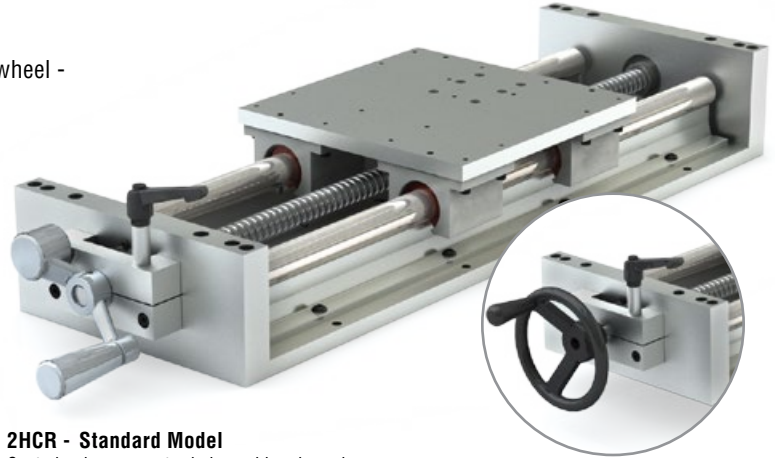


Simplicity® Linear Slides Handcrank & Wheel

SLIDE ASSEMBLY WITH HANDCRANK & BALL SCREW ROTATIONAL LOCK – 2HCR & 2HWL

Ordering Example:

To order a slide with a 0.625 diameter alloy steel linear shaft, 28" rail length, .200" right hand select ball screw and a hand wheel - specify part number, 2HWL-1000-028.000-AA7R.



2HCR - Standard Model

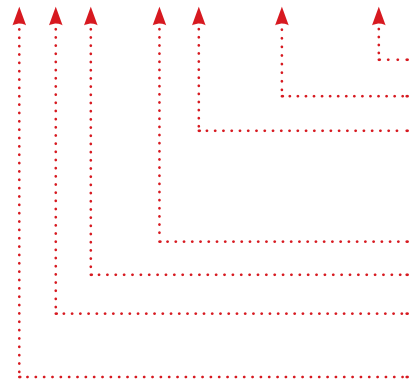
Cast aluminum counter balanced hand crank.
24 and 32 (only) spoked cast iron hand wheel
with rigid, revolving crank handle.

2HWL - Deluxe Model

Aluminum hand wheel with
fold-away composite handle.

PART NUMBER

Series				Size				L		Lead
2HXX	X	XXX	-	08	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	10	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	12	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	16	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	20	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	24	XX	-	XXX.XXX	-	YYYY	
2HXX	X	XXX	-	32	XX	-	XXX.XXX	-	YYYY	



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

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

Handle Type: **CR** = Standard Model **WL** = Deluxe Model
(See table below)

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes							
08	AAXR	AAXL						
10	AAXR	AAXL						
12	AAXR	AAXL						
16			ABXR	ABXL	ACXR	ADX		
20			ABXR	ABXL	ACXR	ADX		
24			ABXR	ABXL	ACXR	ADX	ADXL	AEXR
32			ABXR	ABXL	ACXR	ADX	ADXL	AEXR

AAXR = .200 Right Hand
AAXL = .200 Left Hand
ABXR = .250 Right Hand
ABXL = .250 Left Hand
ACXR = .500 Right Hand
ADX = 1.000 Right Hand
ADXL = 1.000 Left Hand
AEXR = 1.875 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes							
08	AA7R	AA7L						
10	AA7R	AA7L						
12	AA7R	AA7L						
16			AB7R	AB7L	AC7R	AD7R		
20			AB7R	AB7L	AC7R	AD7R		
24			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R
32			AB7R	AB7L	AC7R	AD7R	AD7L	AE7R

AA7R = .200 Right Hand
AA7L = .200 Left Hand
AB7R = .250 Right Hand
AB7L = .250 Left Hand
AC7R = .500 Right Hand
AD7R = 1.000 Right Hand
AD7L = 1.000 Left Hand
AE7R = 1.875 Right Hand

STANDARD LENGTH TABLE

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 or non-standard lengths.

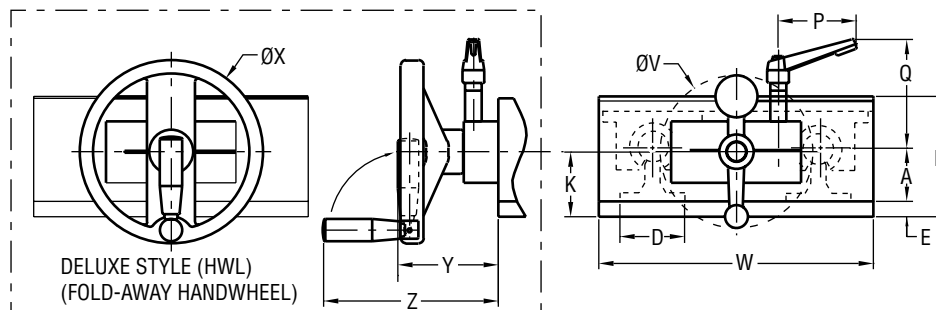
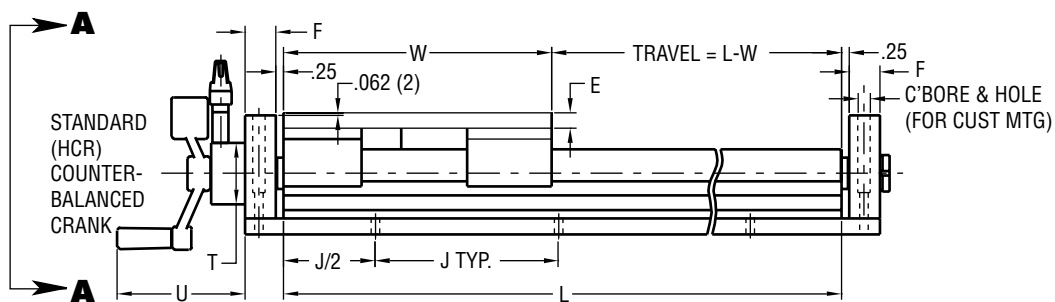
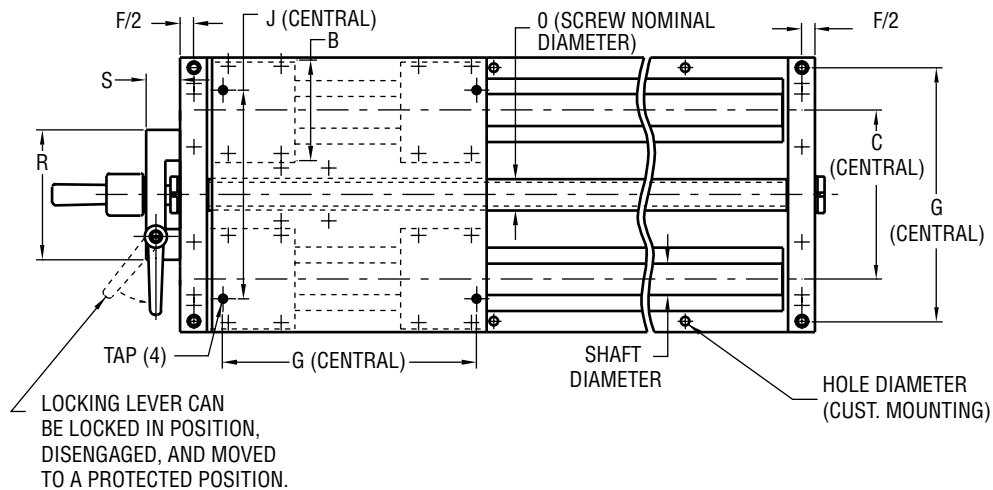


Handcrank & Wheel **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	O	P	Q	R	S	T	U	V	X	Y	Z	Tap	Hole Dia.
2HXX	08	.500	6.00	2.562	1.125	2.00	3.50	1.500	.375	.75	5.500	4.00	1.375	.631	2.56	3.85	3.00	.875	1.312	4.00	4.00	4.00	2.655	4.855	10-24	.22
2HXX	10	.625	7.00	2.750	1.125	2.50	4.00	1.625	.375	.75	6.312	4.00	1.375	.631	2.56	3.85	3.00	.875	1.312	4.00	4.00	4.00	2.655	4.855	1/4-20	.28
2HXX	12	.750	8.00	3.438	1.500	2.75	4.50	1.750	.500	1.00	7.125	6.00	1.500	.631	2.56	3.85	3.00	.875	1.312	4.00	4.00	4.00	2.655	4.855	1/4-20	.28
2HXX	16	1.000	9.00	3.938	1.750	3.25	5.50	2.125	.500	1.00	8.312	6.00	2.125	1.000	2.56	3.69	4.25	1.125	2.000	4.25	5.00	6.00	3.185	5.745	1/4-20	.28
2HXX	20	1.250	11.00	5.125	2.125	4.00	6.50	2.500	.750	1.25	10.000	6.00	2.375	1.000	2.56	3.69	4.25	1.125	2.000	4.25	5.00	6.00	3.185	5.745	5/16-18	.34
2HXX	24	1.500	13.00	5.750	2.500	4.75	8.00	3.000	.750	1.25	12.000	8.00	2.875	1.500	3.15	5.81	6.50	1.500	3.000	6.90	8.00	8.00	4.310	7.460	5/16-18	.34
2HXX	32	2.000	18.00	7.375	3.250	6.00	10.00	3.750	1.000	1.50	15.875	8.00	3.875	1.500	3.15	5.81	6.50	1.500	3.000	6.90	8.00	8.00	4.310	7.460	3/8-16	.41

Dimensions in inches.



VIEW A - A



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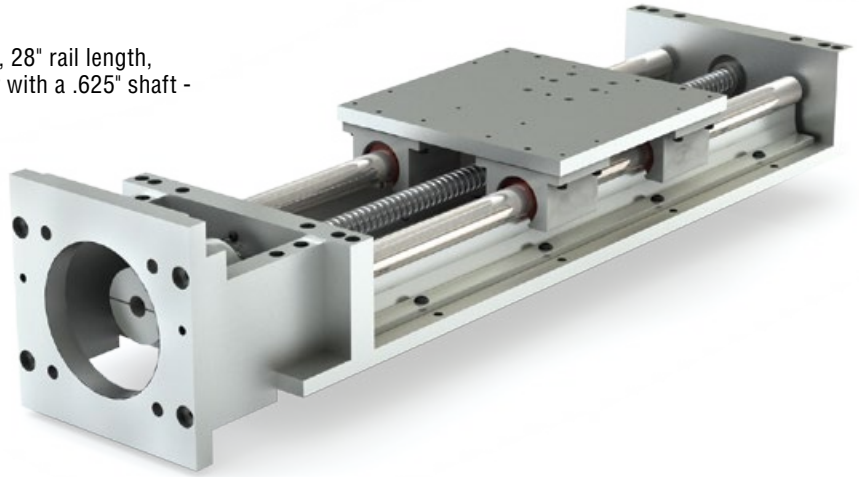


Simplicity® Linear Slides Nema Drive Kit

SLIDE ASSEMBLY & NEMA DRIVE KIT – 2N42, 56, 143

Ordering Example:

To order a slide with a 1" diameter alloy steel linear shaft, 28" rail length, .250" right hand select ball screw, and a NEMA 56 motor with a .625" shaft - specify part number, 2N56-1600-028.000-AB7R.



PART NUMBER

Series			Size		L	Lead
2NXX	X	XXX	-	16	XX	- XXX.XXX - YYYY
2NXX	X	XXX	-	20	XX	- XXX.XXX - YYYY
2NXX	X	XXX	-	24	XX	- XXX.XXX - YYYY
2NXX	X	XXX	-	32	XX	- XXX.XXX - YYYY

- Substitute standard or select lead code from table for "YYYY"
- 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
B = Ball Bearing **E** = Simplicity Frelon® J
- Bearing Type: **Blank** = Simplicity Frelon GOLD®
B = Ball Bearing
- Motor Mounting Dimensions: See table below

STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes					
16	ABXR	ABXL	ACXR	ADXR		
20	ABXR	ABXL	ACXR	ADXR		
24	ABXR	ABXL	ACXR	ADXR	ADXL	AEXR
32	ABXR	ABXL	ACXR	ADXR	ADXL	AEXR

ABXR = .250 Right Hand
 ABXL = .250 Left Hand
 ACXR = .500 Right Hand
 ADXR = 1.000 Right Hand
 ADXL = 1.000 Left Hand
 AEXR = 1.875 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes					
16	AB7R	AB7L	AC7R	AD7R		
20	AB7R	AB7L	AC7R	AD7R		
24	AB7R	AB7L	AC7R	AD7R	AD7L	AE7R
32	AB7R	AB7L	AC7R	AD7R	AD7L	AE7R

AB7R = .250 Right Hand
 AB7L = .250 Left Hand
 AC7R = .500 Right Hand
 AD7R = 1.000 Right Hand
 AD7L = 1.000 Left Hand
 AE7R = 1.875 Right Hand

MOTOR MOUNTING DIMENSIONS

Coupling Max* Torque Dynamic Capacity = 200 in.-lbs.

Size	Drive	R	S	V	X	Y	Z
42A	NEMA 32	3.000	.375	5.000	.28	3.750	2.652
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. *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.

STANDARD LENGTH TABLE

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

*Contact manufacturer for longer or non-standard lengths.

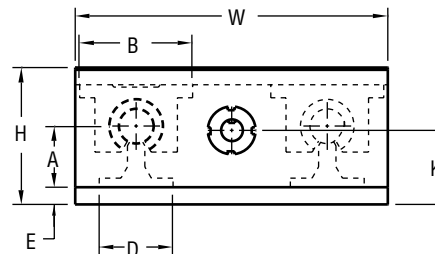
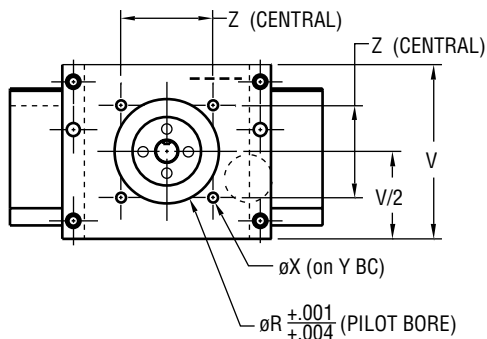
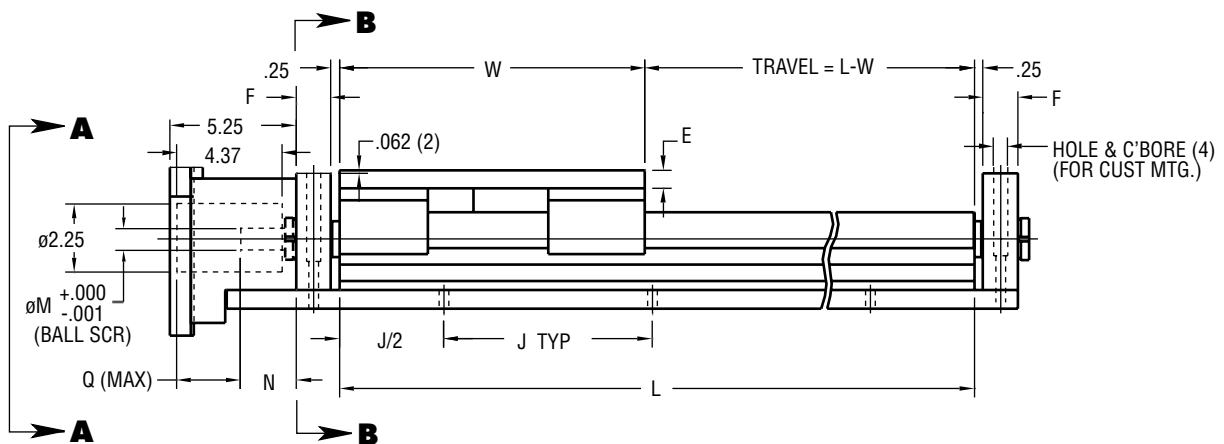
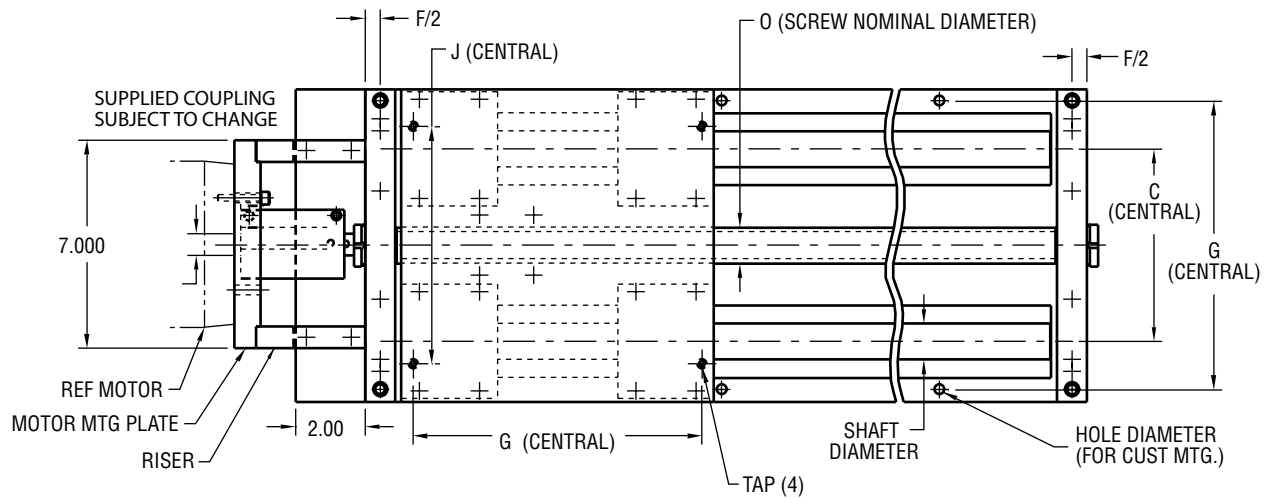


Nema Drive Kit **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Q	Tap	Hole Dia.
2NXX	16	1.00	9.000	3.938	1.750	3.25	5.50	2.12	.500	1.00	8.312	6.00	2.125	.625	1.76	1.000	3.00	1/4-20	.28
2NXX	20	1.25	11.000	5.125	2.125	4.00	6.50	2.50	.750	1.25	10.000	6.00	2.375	.625	1.76	1.000	3.00	5/16-18	.34
2NXX	24	1.50	13.000	5.750	2.500	4.75	8.00	3.00	.750	1.25	12.000	8.00	2.875	.875	2.31	1.500	2.62	5/16-18	.34
2NXX	32	2.00	7.375	3.250	6.000	10.00	3.75	1.00	1.000	1.50	15.875	8.00	3.875	.875	2.31	1.500	2.62	3/8-16	.41

Dimensions in inches.



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VIEW A - A

VIEW B - B

INCH

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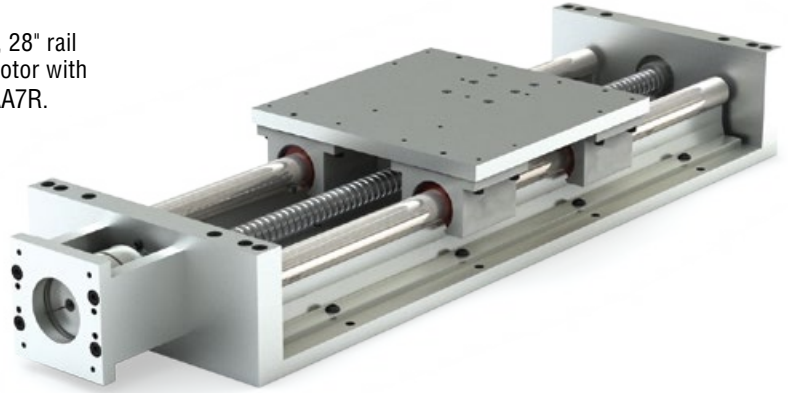


Simplicity® Linear Slides Nema Drive Kit

SLIDE ASSEMBLY & NEMA DRIVE KIT – 2N23 & 2N34

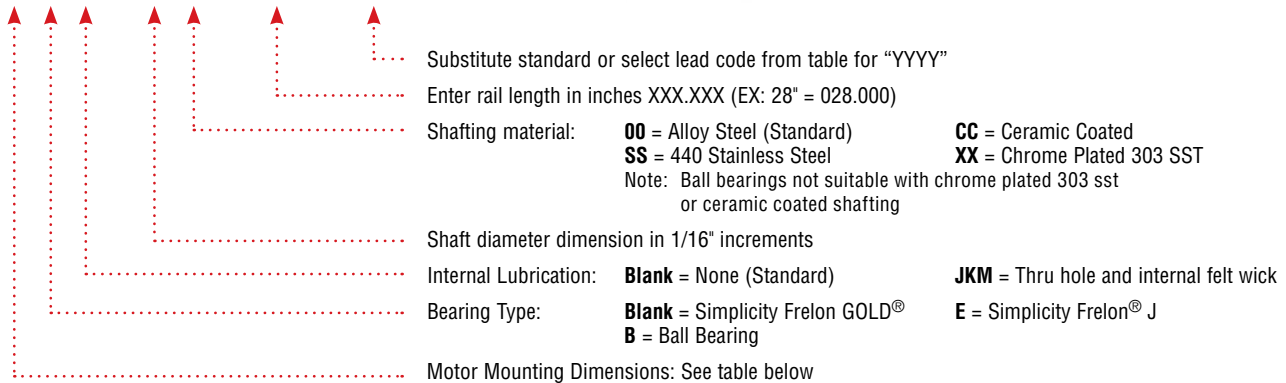
Ordering Example:

To order a slide with a .625" diameter alloy steel linear shaft, 28" rail length, .200" right hand select ball screw, and a NEMA 23 motor with a .250" shaft - specify part number, 2N23A-1000-028.000-AA7R.



PART NUMBER

Series			Size		L	Lead
2NXX	X	XXX	- 08	XX	- XXX.XXX	- YYYY
2NXX	X	XXX	- 10	XX	- XXX.XXX	- YYYY
2NXX	X	XXX	- 12	XX	- XXX.XXX	- YYYY
2NXX	X	XXX	- 16	XX	- XXX.XXX	- YYYY
2NXX	X	XXX	- 20	XX	- XXX.XXX	- YYYY



STANDARD LEAD TABLE

Accurate to less than .007" per foot accumulative

Size	Available Lead Codes					
08	AAXR	AAXL				
10	AAXR	AAXL				
12	AAXR	AAXL				
16			ABXR	ABXL	ACXR	ADXR
20			ABXR	ABXL	ACXR	ADXR

AAXR = .200 Right Hand
 AAXL = .200 Left Hand
 ABXR = .250 Right Hand
 ABXL = .250 Left Hand
 ACXR = .500 Right Hand
 ADXR = 1.000 Right Hand

SELECT LEAD TABLE

Accurate to less than .003" per foot accumulative

Size	Available Lead Codes					
08	AA7R	AA7L				
10	AA7R	AA7L				
12	AA7R	AA7L				
16			AB7R	AB7L	AC7R	AD7R
20			AB7R	AB7L	AC7R	AD7R

AA7R = .200 Right Hand
 AA7L = .200 Left Hand
 AB7R = .250 Right Hand
 AB7L = .250 Left Hand
 AC7R = .500 Right Hand
 AD7R = 1.000 Right Hand

MOTOR MOUNTING DIMENSIONS

Coupling Max* Torque
 Dynamic Capacity = 50 in.-lbs.

Size	Drive	R	S	V	X	Y	Z
23A	NEMA 23	1.502	.250	2.500	10-32	2.625	1.856
23B	NEMA 23	1.502	.375	2.500	10-32	2.625	1.856
34A	NEMA 34	2.875	.375	3.500	10-32	3.875	2.740
34B	NEMA 34	2.875	.500	3.500	10-32	3.875	2.740

Note: Contact manufacturer for international drives and low profile slide assembly availability. *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 without consulting manufacturer.

STANDARD LENGTH TABLE

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

*Contact manufacturer for longer or non-standard lengths.

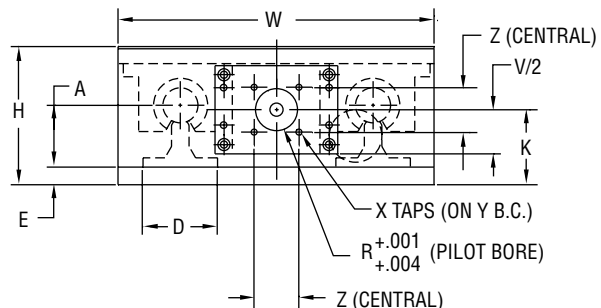
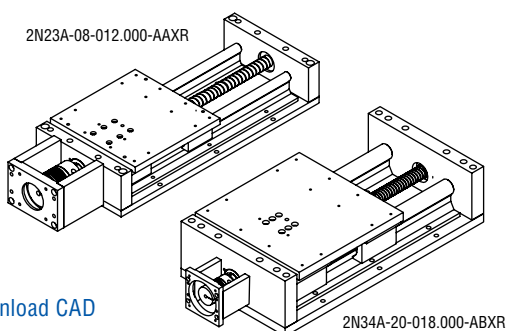
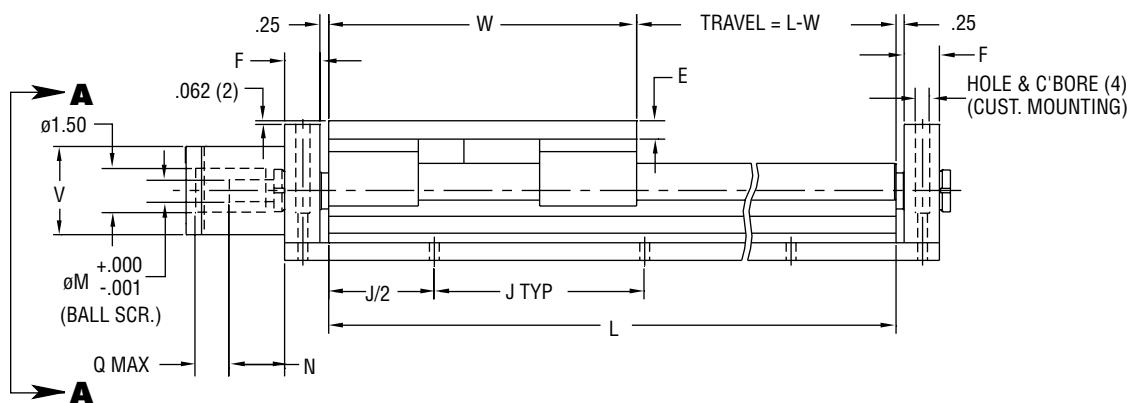
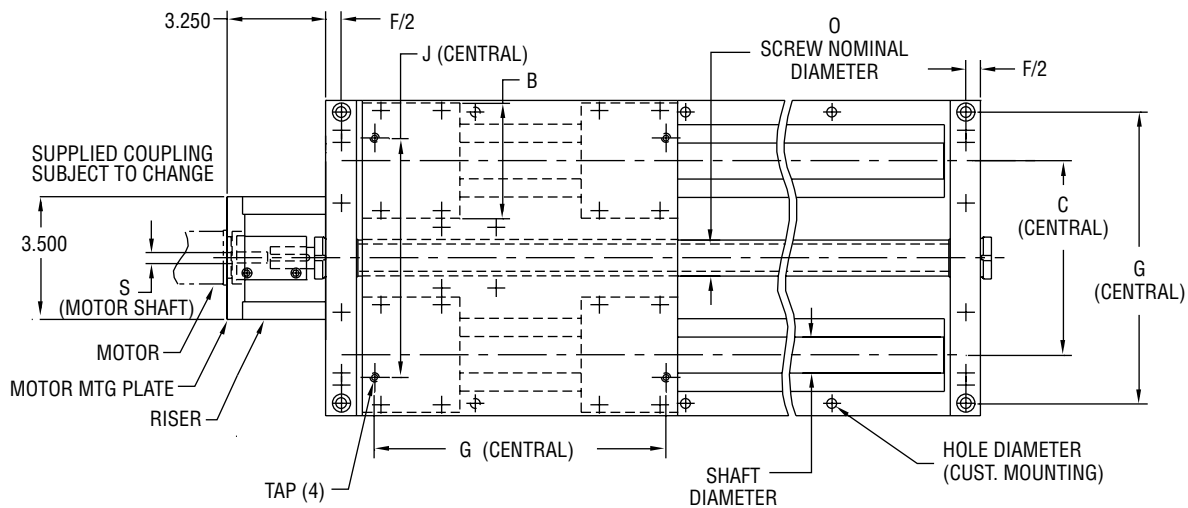


Nema Drive Kit **Simplicity®** Linear Slides

DIMENSIONAL INFORMATION

Series	Size	Linear Shaft Dia.	W	H	A	B	C	D	E	F	G	J	K	M	N	O	Q	Tap	Hole Dia.
2NXX	08	.500	6.00	2.562	1.125	2.00	3.50	1.500	.375	.75	5.500	4.00	1.375	.375	1.45	.631	1.31	10-24	.22
2NXX	10	.625	7.00	2.750	1.125	2.50	4.00	1.625	.375	.75	6.312	4.00	1.375	.375	1.45	.631	1.31	1/4-20	.28
2NXX	12	.750	8.00	3.438	1.500	2.75	4.50	1.750	.500	1.00	7.125	6.00	1.500	.375	1.45	.631	1.31	1/4-20	.28
2NXX	16	1.000	9.00	3.938	1.750	3.25	5.50	2.125	.500	1.00	8.312	6.00	2.125	.625	1.76	1.000	1.19	1/4-20	.28
2NXX	20	1.250	11.00	5.125	2.125	4.00	6.50	2.500	.750	1.25	10.000	6.00	2.375	.625	1.76	1.000	1.19	5/16-18	.34

Dimensions in inches.



VIEW A - A



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Simplicity® Linear Slides Column Load Chart

COMPRESSION (COLUMN) LOAD

Compression-column load is 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.

Note: Applies primarily to vertical applications.

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.)

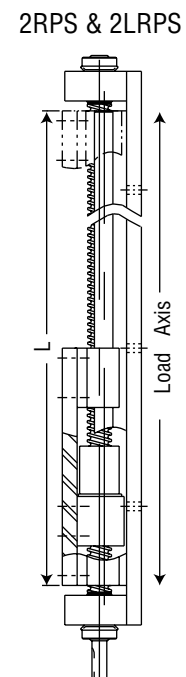
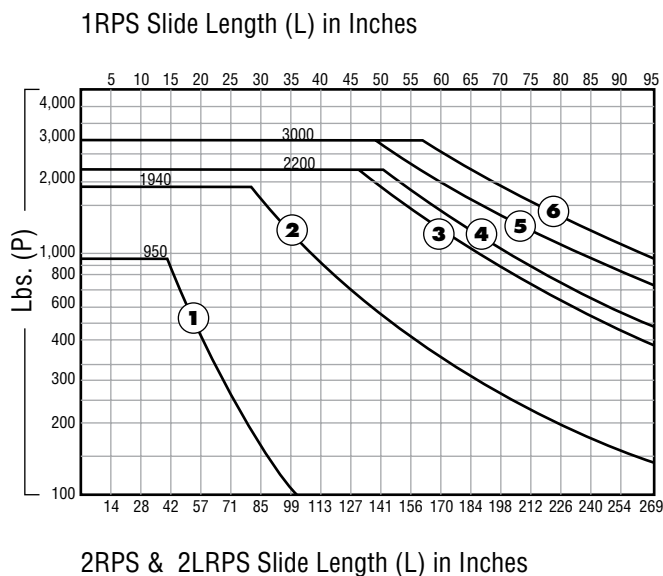
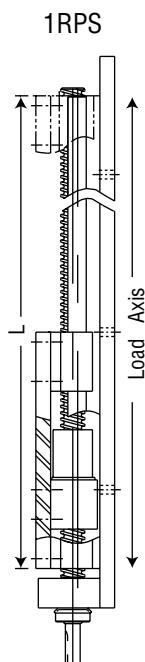
C_C = End fixity factor

C_C = .25 for 1RPS

C_C = 2.0 for 2RPS & 2LRPS

Note: Chart figures at 80% of actual load. Do not exceed these figures.

Curve #	Slide Series	Lead	D (in.)
①	1 & 2RPS-08 2LRPS-08	AAxx	.500
	1 & 2RPS-10 2LRPS-10		
	1 & 2RPS-12 2LRPS-12		
②	1 & 2RPS-16 2LRPS-16	ABxx	.840
	1 & 2RPS-20 2LRPS-20		
	1 & 2RPS-16 2LRPS-16	ADxx	
	1 & 2RPS-20 2LRPS-20		
	1 & 2RPS-16 2LRPS-16	ACxx	.870
	1 & 2RPS-20 2LRPS-20		
③	1 & 2RPS-24 2LRPS-24	ADxx	1.140
	1 & 2RPS-32- 2LRPS-32		
④	1 & 2RPS-24 2LRPS-24	AExx	1.190
	1 & 2RPS-32 2LRPS-32		
⑤	1 & 2RPS-24 2LRPS-24	ACxx	1.260
	1 & 2RPS-32 2LRPS-32		
⑥	1 & 2RPS-24 2LRPS-24	ABxx	1.375
	1 & 2RPS-32 2LRPS-32		





Critical Speed Chart **Simplicity® Linear Slides**

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 the screw, rigidity of the 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.

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 (See chart)

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

L = Slide length (in.)

C_s = End fixity factor

C_s = 0.36 for 1RPS

C_s = 1.47 for 2RPS & 2LRPS

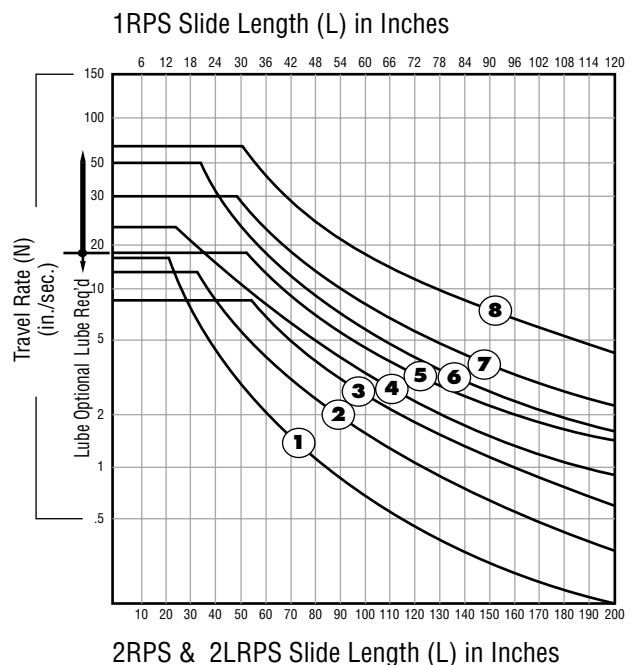
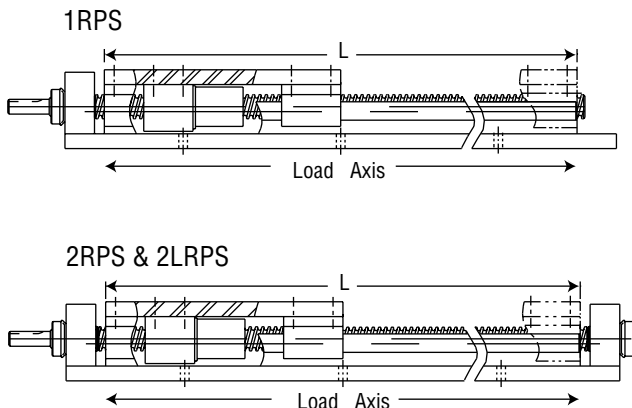
Note: Chart figures at 80% of actual load. Do not exceed these figures.

Curve #	Slide Series		Lead	D (in.)	H (in.)
①	1 & 2RPS-08	2LRPS-08	AAxx	.500	.200
	1 & 2RPS-10	2LRPS-10			
	1 & 2RPS-12	2LRPS-12			
②	1 & 2RPS-16	2LRPS-16	ABxx	.840	.250
	1 & 2RPS-20	2LRPS-20			
③	1 & 2RPS-24	2LRPS-24	ABxx	1.375	.250
	1 & 2RPS-32	2LRPS-32			
④	1 & 2RPS-16	2LRPS-16	ACxx	.870	.500
	1 & 2RPS-20	2LRPS-20			
⑤	1 & 2RPS-24	2LRPS-24	ACxx	1.260	.500
	1 & 2RPS-32	2LRPS-32			
⑥	1 & 2RPS-16	2LRPS-16	ADxx	.840	1.000
	1 & 2RPS-20	2LRPS-20			
⑦	1 & 2RPS-24	2LRPS-24	ADxx	1.140	1.000
	1 & 2RPS-32	2LRPS-32			
⑧	1 & 2RPS-24	2LRPS-24	AExx	1.190	1.875
	1 & 2RPS-32	2LRPS-32			

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Round Shaft Technology Technical

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Simplicity® Linear Plain Bearings

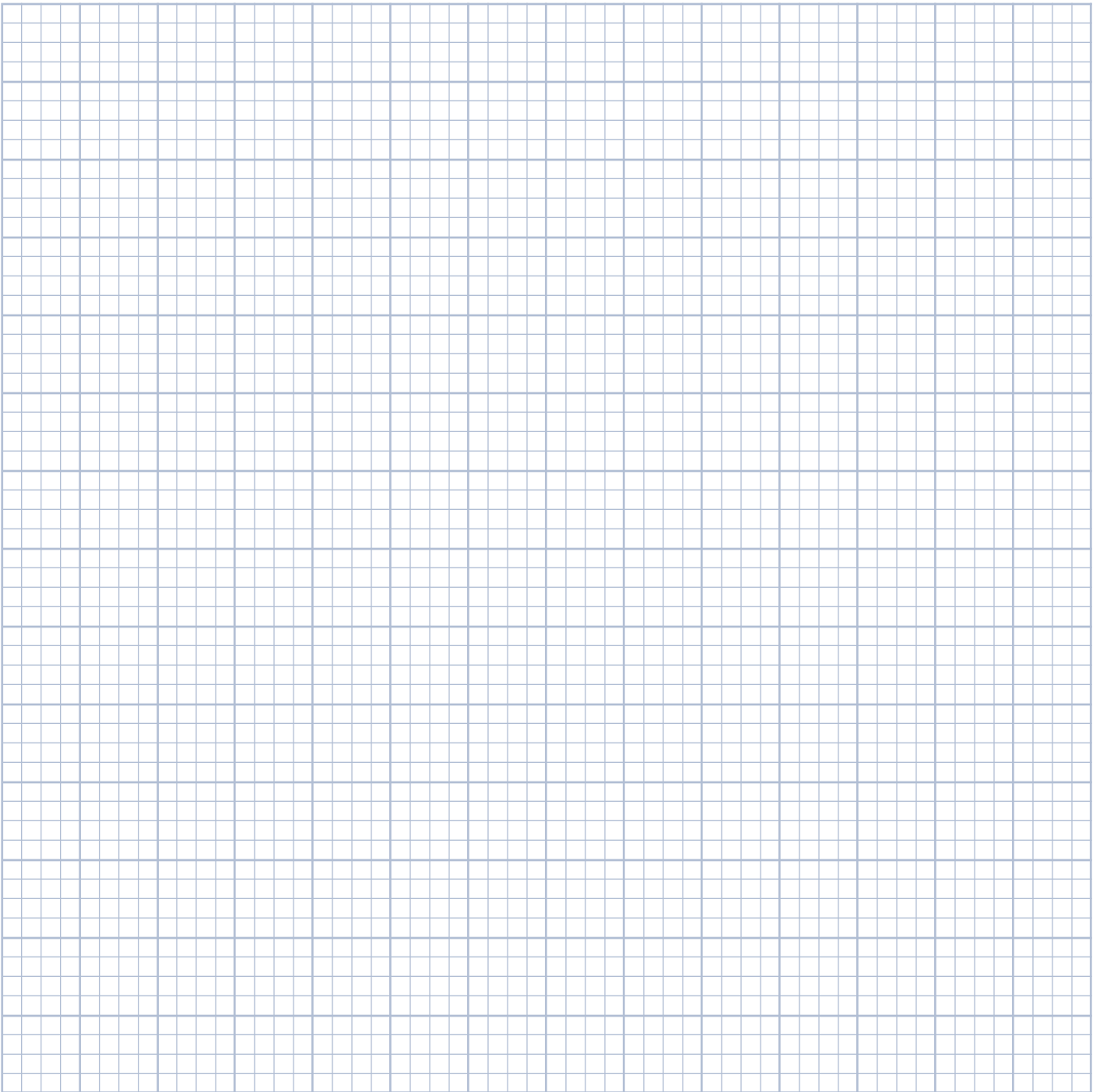
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Email an Application Engineer





Simplicity® Plain Bearings **Ratings**

CLASSES OF PLAIN BEARINGS

Simplicity bearings are in a class of bearings known as Plain bearings, which means that they have no rolling elements. There are three classes of Plain 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 Plain bearings and are self-lubricating.

RATING A PLAIN BEARING

Plain bearing performance capacity is rated by PV.

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

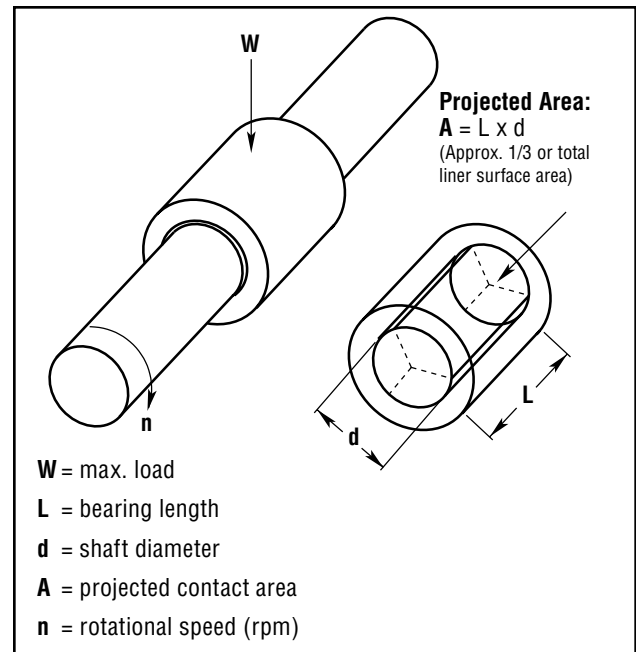
V = Velocity or surface speed in feet per minute (fpm or sfm) or meters per minute (m/min.).

PV = Pressure velocity value. (Pressure x Velocity)

SIMPLICITY MAXIMUM PERIMETER

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

Note: All 3 parameters must be met by an application for the bearing to perform 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):

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

PV EQUIVALENTS

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



Types & Effects of Lubrication Simplicity® Plain Bearings

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. WD40™ is a registered trademark of the WD40 Corporation.

Recommended Lubricants:

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

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.



Simplicity® Plain Bearings **Load Capacity**

LOAD CAPACITY (Pressure)

Depending upon the material used, a plain 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 Plain 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 Plain 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

Plain bearings are rated by the wear rate of the bearing material. Wear is greatly dependent upon the proper application of the bearing and material used.

- Proper mating of shaft and liner materials.
- Surface finish 8-16 Ra (.20-.40 mm) 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.
- **Lubrication** - proper lubrication can greatly improve the wear rate of a bearing. At the same time, improper lubrication can increase wear and failure.
- **Load & Wear Relationship** - Wear rate is proportional to load to the third power. (wear rate $\propto$ (load)³).

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

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

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



Wear Rate Simplicity® Plain Bearings

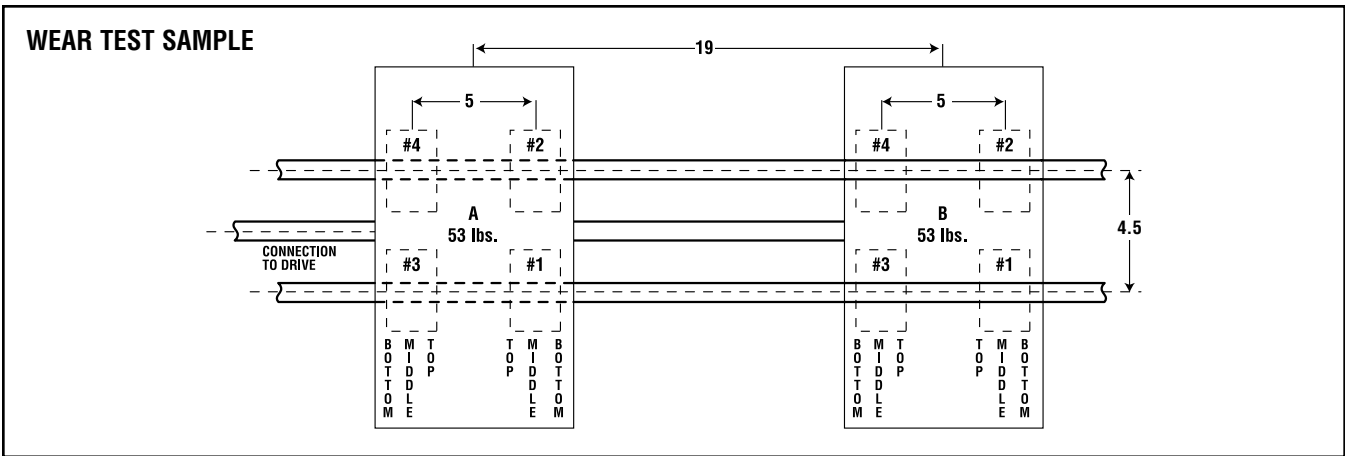
WEAR RATE VS. LIFE EXPECTANCY

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.

Plain 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 Ra

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

STROKE: 12"

LOAD: 10.87 psi (53 lbs.)

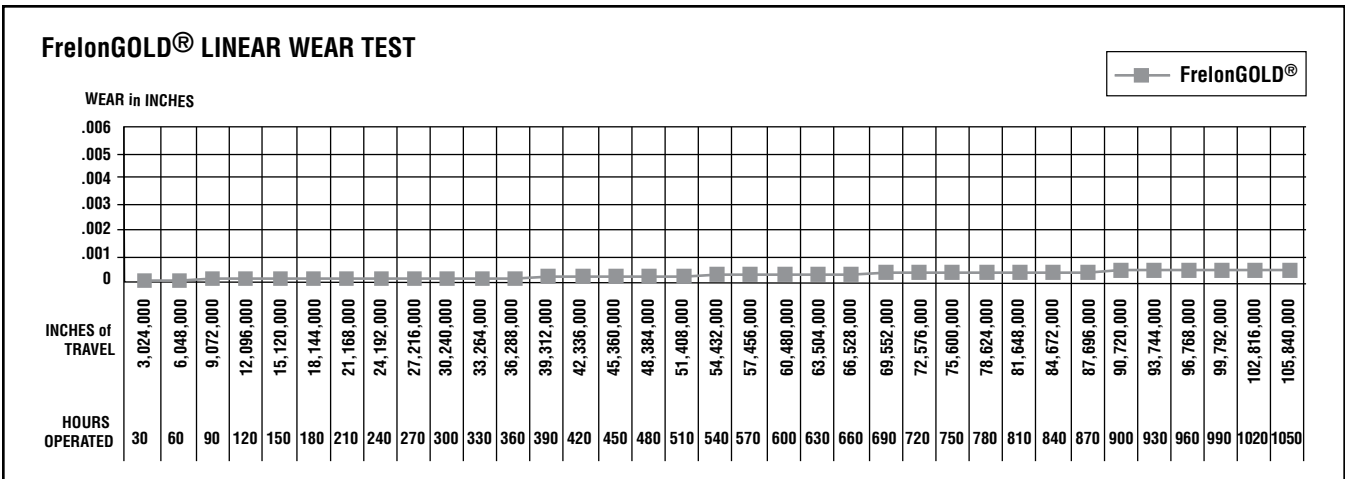
BEARINGS USED: FLN12 (3/4" open style bearings)

LUBRICATION: None

TOTAL WEAR TO BEARING MATERIAL:
Frelon GOLD® = .00042"

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

TECHNICAL



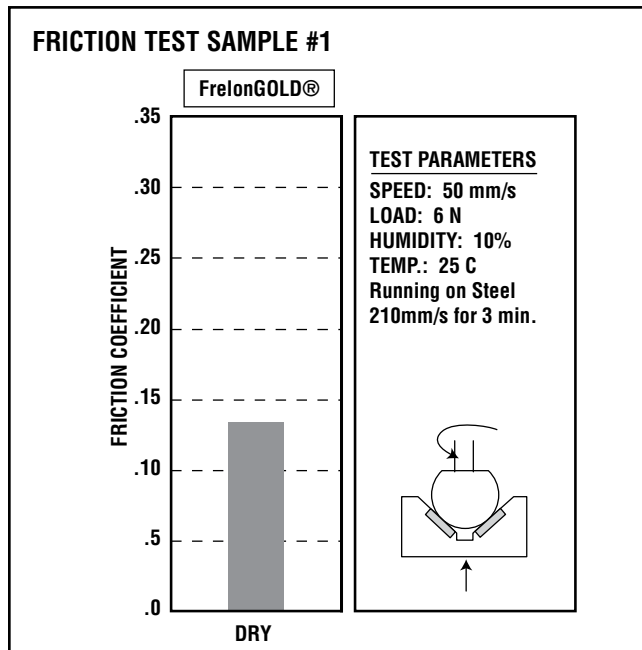


Simplicity® Plain Bearings **Coefficient of Friction**

COEFFICIENT OF FRICTION

A frequent misconception of Plain 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.



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 Ra

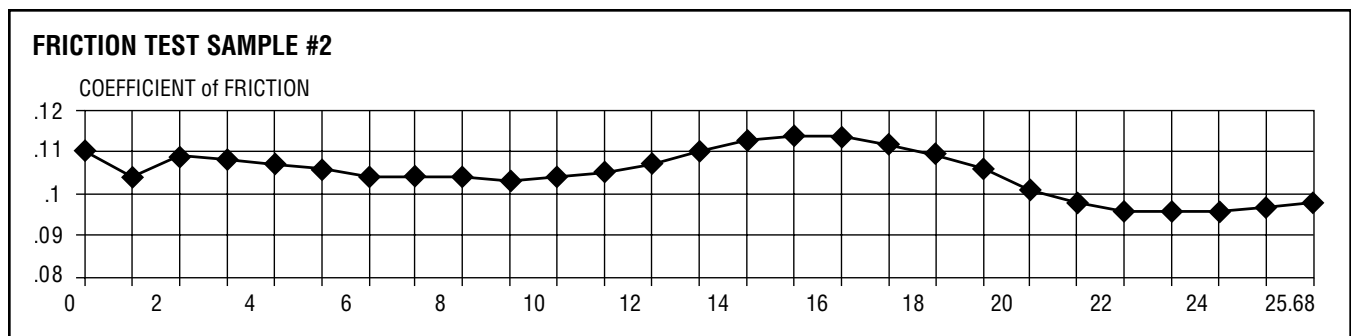
SPEED: 50 mm/sec

LOAD: 6 N

TEMPERATURE: 25° C

LUBRICATION: None

AVERAGE COEFFICIENT OF FRICTION:
Frelon GOLD® = .125



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 Ra

AVERAGE COF: 0.10

MAX. COF: 0.15

MIN. COF: 0.08

AVERAGE RUNNING TEMPERATURE: 95.40° F



Cantilevered Loads Simplicity® Plain Bearings

CANTILEVERED LOADS

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

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

Caution: Binding will occur if the 2:1 ratio is exceeded!!

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

Working through the following equation will explain why this is a product of friction:

P = force being applied

L = distance out from shaft that P is being applied

s = center to center spacing of bearings

f = resultant force on bearings by shaft

F = friction force on each bearing

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

Balance the moments: $f * s = L * P$

$$L / s = f / P$$

Compute friction force: $F = f * \mu$

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

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

Substitute for P:

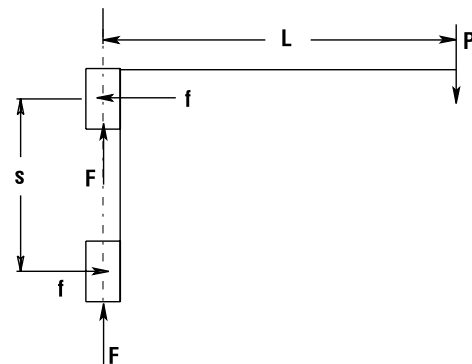
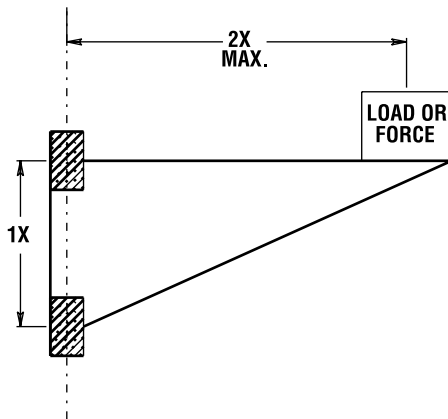
$$L / s = f / (2 * f * \mu) = 1 / (2 * \mu) \Rightarrow L / s = 1 / (2 * \mu)$$

Note: The forces drop out of the equation

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

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

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





Simplicity® Plain Bearings **Cantilevered Loads**

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: $M * Y = W * Z$

Note: To avoid problems when running without mass:

$$(M) Z = 1-1/2 s$$

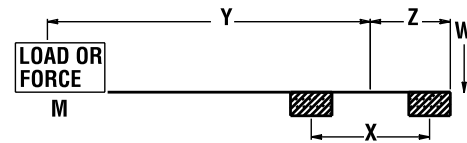
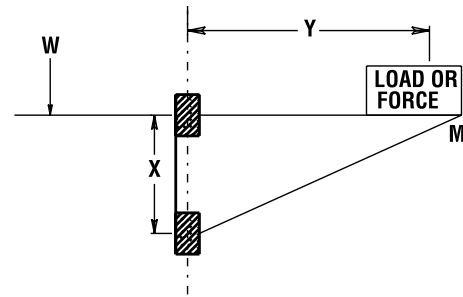
- W can be calculated. Load on bearing will be:

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

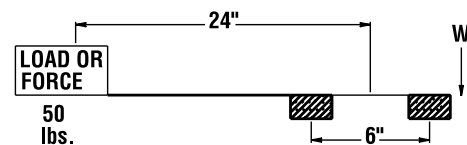
Example: $50 * 24 = W * Z$ ($Z = 1-1/2 * 6 = 9$)

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

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



EXAMPLE:



Cantilever Loads and Drive Force Location without Counterbalance

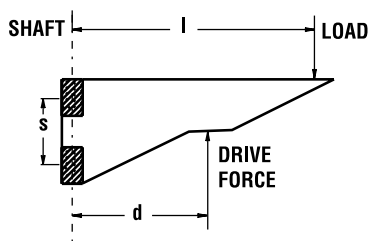
d = distance from shaft to Drive Force

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.)

$L = l / s = \text{Load Force Ratio}$

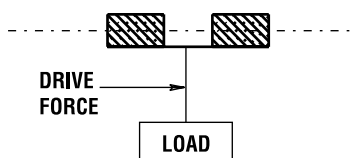
$D = d / s = \text{Drive Force Ratio}$



Hanging or "Top Heavy" Horizontal Applications with High Acceleration Rates:

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

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



General Rules:

1. 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.
2. 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.
3. 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:

1. 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.
2. 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.

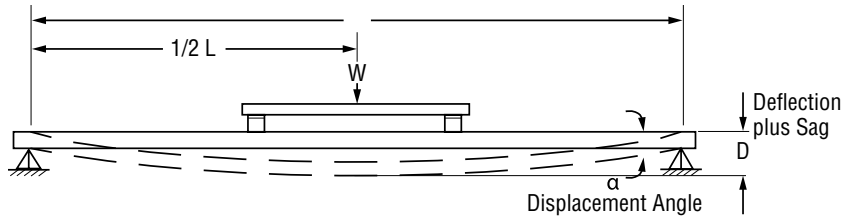


Shaft Deflection

SINGLE POINT 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.

Deflection at Center



FORMULA FOR INCH AND METRIC SHAFTING DEFLECTION

Total shaft deflection in horizontal applications:

$$\text{Total Deflection} = \text{Def} + \text{Sag}$$

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

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

Deflection = 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 ($D = 48 \times E \times I$)

S = Sag coefficient ($S = E \times I \times 384 / (5 \times sw)$)

α = Displacement angle

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)

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

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

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

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

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

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

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

INCH SHAFTING

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

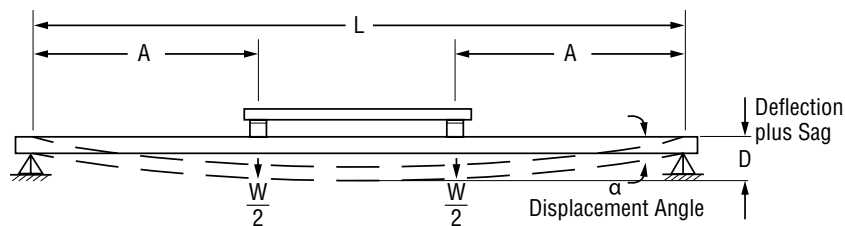
METRIC SHAFTING

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



Shaft Deflection

DUAL POINT SHAFT DEFLECTION



$$D = \frac{WA(3L^2 - 4A^2)}{48EI} + \frac{5SL^4}{384EI}$$

- D** = Deflection coefficient
L = Distance between the shaft support (in)
E = Modulus of elasticity (lb/in²) (30 x 10⁶)
I = Shaft moment of inertia (in⁴)
S = Sag coefficient
W = Load applied (including carriage weight) (lbf)
A = Distance to end (in)
α = Displacement angle

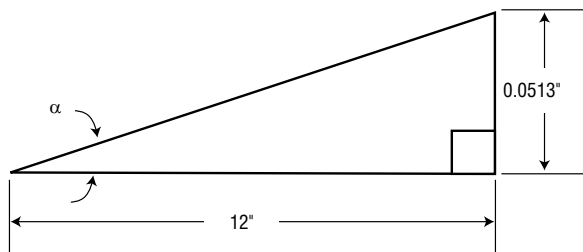
INCH SHAFTING

STEEL SHAFT		
SHAFT DIAMETER	EI (lbf/in ²)	S (lbf/in)
1/4"	5.75 x 10 ³	0.014
3/8"	2.91 x 10 ⁴	0.031
1/2"	9.20 x 10 ⁴	0.055
5/8"	2.25 x 10 ⁵	0.086
3/4"	4.66 x 10 ⁵	0.125
7/8"	8.63 x 10 ⁵	0.170
1"	1.47 x 10 ⁶	0.222
1-1/8"	2.36 x 10 ⁶	0.281
1-1/4"	3.60 x 10 ⁶	0.348
1-3/8"	5.26 x 10 ⁶	0.420
1-1/2"	7.46 x 10 ⁶	0.500
1-3/4"	1.38 x 10 ⁷	0.681
2"	2.36 x 10 ⁷	0.890
3"	1.19 x 10 ⁸	2.003

METRIC SHAFTING

STEEL SHAFT		
SHAFT DIAMETER	EI	S
8	1.45 x 10 ⁴	0.022
12	7.34 x 10 ⁴	0.050
16	2.32 x 10 ⁵	0.088
20	5.66 x 10 ⁵	0.138
25	1.38 x 10 ⁶	0.216
30	2.87 x 10 ⁶	0.311
40	9.06 x 10 ⁶	0.552
50	2.21 x 10 ⁷	0.863

DISPLACEMENT ANGLE



$$\pm = \tan^{-1} \frac{0}{12}$$

$$\pm = \tan^{-1} \frac{0.0513 \text{ in.}}{12 \text{ in.}}$$

$$\pm = 0.2449^\circ \text{ Displacement Angle}$$

$$0.2449^\circ < 1/2^\circ \text{ Allowable} = \text{Good Design}$$



Installation Simplicity® Linear Plain Bearings

INSTALLING SIMPLICITY® BEARINGS

Applies to standard linear bearing series.

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

STRAIGHT BORE HOUSING – PRESS FIT BEARING

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

It does NOT allow for any misalignment or shaft deflection.

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

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

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

Example: FLC24, FMC30, FJC30

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

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

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	INCHES	INCHES
FLC03	0.3729	0.3737
FLC04	0.4978	0.4986
FLC06	0.6228	0.6236
FLC08	0.8725	0.8734
FLC10	1.1224	1.1234
FLC12	1.2474	1.2484
FLC16	1.5596	1.5607
FLC20	1.9970	1.9981
FLC24	2.3717	2.3729
FLC32	2.9965	2.9977
FLC40	3.7461	3.7473
FLC48	4.4953	4.4966
FLC64	5.9949	5.9963

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FMC05	11.972	11.995
FMC08	15.954	15.972
FMC10	18.948	18.969
FMC12	21.944	21.965
FMC16	25.944	25.965
FMC20	31.940	31.961
FMC25	39.932	39.957
FMC30	46.932	46.957
FMC40	61.917	61.947
FMC50	74.917	74.947
FMC60	89.906	89.936
FMC80	119.886	119.921

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FMTC06	11.954	11.972
FMTC08	14.954	14.972
FMTC10	16.954	16.972
FMTC12	18.948	18.969
FMTC14	20.944	20.965
FMTC16	23.944	23.965
FMTC20	27.944	27.965
FMTC25	34.940	34.961
FMTC30	39.932	39.957
FMTC40	51.932	51.957
FMTC50	61.917	61.947

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FGC06	11.952	11.970
FGC08	14.952	14.970
FGC10	16.952	16.970
FGC12	21.945	21.966
FGC15	24.945	24.966
FGC16	25.945	25.966
FGC18	27.945	27.966
FGC20	31.945	31.966
FGC25	39.937	39.962
FGC30	44.937	44.962
FGC35	51.937	51.962
FGC40	59.927	59.957
FGC50	74.927	74.957

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FJC06	11.961	11.979
FJHC08	14.961	14.979
FJC08	14.961	14.979
FJC10	18.952	18.973
FJC12	20.952	20.997
FJC13	22.952	22.973
FJC16	27.952	27.973
FJC20	31.950	31.971
FJC25	39.941	39.966
FJC30	44.941	44.966
FJC35	51.938	51.963
FJC38	56.938	56.963
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



Simplicity® Linear Plain Bearings **Installation**

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.
	INCHES	INCHES
FL03	0.3755	0.3764
FL04	0.5006	0.5017
FL06	0.6256	0.6267
FL08	0.8758	0.8771
FL10	1.1258	1.1271
FL12	1.2510	1.2525
FL16	1.5635	1.5650
FL20	2.0012	2.0030
FL24	2.3762	2.3780
FL32	3.0012	3.0030
FL40	3.7514	3.7535
FL48	4.5014	4.5035
FL64	6.0017	6.0042

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FM05	12.016	12.043
FM08	16.016	16.043
FM10	19.020	19.053
FM12	22.020	22.053
FM16	26.020	26.053
FM20	32.025	32.064
FM25	40.025	40.064
FM30	47.025	47.064
FM40	62.030	60.076
FM50	75.030	75.076
FM60	90.036	90.090
FM80	120.036	120.090

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FMT06	12.016	12.043
FMT08	15.016	15.043
FMT10	17.016	17.043
FMT12	19.020	19.053
FMT14	21.020	21.053
FMT16	24.020	24.053
FMT20	28.020	28.053
FMT25	35.025	35.064
FMT30	40.025	40.064
FMT40	52.030	52.076
FMT50	62.030	62.076

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FG06	12.016	12.043
FG08	15.016	15.043
FG10	17.016	17.043
FG12	22.020	22.053
FG15	25.020	25.053
FG16	26.020	26.053
FG18	28.020	28.053
FG20	32.025	32.064
FG25	40.025	40.064
FG30	45.025	45.064
FG35	52.030	52.076
FG40	60.030	60.076
FG50	75.030	75.076

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FJ06	12.016	12.043
FJH08	15.016	15.043
FJ08	15.016	15.043
FJ10	19.020	19.053
FJ12	21.020	21.053
FJ13	23.020	23.053
FJ16	28.020	28.053
FJ20	32.025	32.064
FJ25	40.025	40.064
FJ30	45.025	45.064
FJ35	52.030	52.076
FJ38	57.030	57.076
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 Simplicity® Linear Plain Bearings

STRAIGHT BORE HOUSING – SLIP FIT BEARING

2. STANDARD APPLICATIONS WITH AVERAGE MISALIGNMENT

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

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

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	INCHES	INCHES
FLA03	0.3755	0.3764
FLA04	0.5006	0.5017
FLA06	0.6256	0.6267
FLA08	0.8758	0.8771
FLA10	1.1258	1.1271
FLA12	1.2510	1.2525
FLA16	1.5635	1.5650
FLA20	2.0012	2.0030
FLA24	2.3762	2.3780
FLA32	3.0012	3.0030
FLA40	3.7514	3.7535
FLA48	4.5014	4.5035
FLA64	6.0017	6.0042

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FMA05	12.016	12.043
FMA08	16.016	16.043
FMA10	19.020	19.053
FMA12	22.020	22.053
FMA16	26.020	26.053
FMA20	32.025	32.064
FMA25	40.025	40.064
FMA30	47.025	47.064
FMA40	62.030	60.076
FMA50	75.030	75.076
FMA60	90.036	90.090
FMA80	120.036	120.090

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FMT06	N/A	N/A
FMT08	N/A	N/A
FMT10	N/A	N/A
FMT12	N/A	N/A
FMT14	N/A	N/A
FMT16	N/A	N/A
FMT20	N/A	N/A
FMT25	N/A	N/A
FMT30	N/A	N/A
FMT40	N/A	N/A
FMT50	N/A	N/A

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FG06	N/A	N/A
FG08	N/A	N/A
FG10	N/A	N/A
FG12	N/A	N/A
FG15	N/A	N/A
FG16	N/A	N/A
FG18	N/A	N/A
FG20	N/A	N/A
FG25	N/A	N/A
FG30	N/A	N/A
FG35	N/A	N/A
FG40	N/A	N/A
FG50	N/A	N/A

PART NO.	MIN. HOUSING I.D.	MAX. HOUSING I.D.
	MM	MM
FJA06	12.016	12.043
FJHA08	15.016	15.043
FJA08	15.016	15.043
FJA10	19.020	19.053
FJA12	21.020	21.053
FJA13	23.020	23.053
FJA16	28.020	28.053
FJA20	32.025	32.064
FJA25	40.025	40.064
FJA30	45.025	45.064
FJA35	52.030	52.076
FJA38	57.030	57.076
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



Simplicity® Linear Plain Bearings Installation

STRAIGHT BORE HOUSING – SLIP FIT BEARING

3. SEVERE MISALIGNMENT

POSSIBLE SOLUTIONS for use with Standard “FL”:

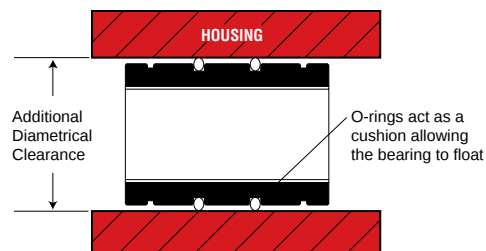
1. Undersize the bearing O.D. (see chart) and install o-rings.
2. Oversize the housing I.D. (see chart) and install the standard bearing with o-rings.

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.

The recommended method of retention for this mounting is a snap ring at each end. Accessories, including o-rings can be found on [page 17](#).

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



PART NO.	MAX. ADDITIONAL CLEARANCE
	INCHES
FL03	0.0070
FL04	0.0080
FL06	0.0080
FL08	0.0080
FL10	0.0100
FL12	0.0100
FL16	0.0120
FL20	0.0120
FL24	0.0120
FL32	0.0120
FL40	0.0160
FL48	0.0160
FL64	0.0200

PART NO.	MAX. ADDITIONAL CLEARANCE
	MM
FM05	0.203
FM08	0.203
FM10	0.203
FM12	0.203
FM16	0.254
FM20	0.254
FM25	0.305
FM30	0.305
FM40	0.305
FM50	0.305
FM60	0.406
FM80	0.508

PART NO.	MAX. ADDITIONAL CLEARANCE
	MM
FMT06	0.203
FMT08	0.203
FMT10	0.203
FMT12	0.203
FMT14	0.203
FMT16	0.254
FMT20	0.254
FMT25	0.254
FMT30	0.305
FMT40	0.305
FMT50	0.305

PART NO.	MAX. ADDITIONAL CLEARANCE
	MM
FG06	0.203
FG08	0.203
FG10	0.203
FG12	0.203
FG15	0.254
FG16	0.254
FG18	0.254
FG20	0.254
FG25	0.305
FG30	0.305
FG35	0.305
FG40	0.305
FG50	0.305

PART NO.	MAX. ADDITIONAL CLEARANCE
	MM
FJ06	0.203
FJH08	0.203
FJ08	0.203
FJ10	0.203
FJ12	0.203
FJ13	0.203
FJ16	0.254
FJ20	0.254
FJ25	0.305
FJ30	0.305
FJ35	0.305
FJ38	0.305
FJ40	0.305
FJ50	0.406
FJ60	0.406
FJ80	0.508
FJ100	0.610
FJ120	0.610
FJ150	0.610



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



Technical Information **Linear Ball Bearings**

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:

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

- L:** Rated life (km)
C: Basic dynamic load rating (N/lbf)
P: Working load (N/lbf)
f_W: Load coefficient
f_H: Hardness factor
f_T: Temperature coefficient
f_C: Contact coefficient

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:

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

- L_h:** Lifespan (hr)
L: Rated life (km)
s: Stroke length (m)
n₁: Number of strokes per minute (cpm)
50: Constant base line (km)

RELATION BETWEEN BALL CIRCUITS AND LOAD RATING

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 table shows the increased value by the number of ball circuits in such cases.

Notes: 3 track bearing is equal.

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

Number of Rows	4	5	6
C_o Load Rating Specified on the Tables			
C_{o max} Maximum Load Rating			
Load Ratio C _{o max} /C _o	1.414	1.463	1.280

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:

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

2. Select the ball bearing type by satisfying the following conditions:

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

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.



Load Rating & Rating Life Linear Ball Bearings

LOAD RATING

Basic Dynamic Load Rating (C) –

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

Allowable Static Moment (M) –

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

Static Safety Factor (fs) –

This factor is used based on the application condition.

STATIC SAFETY FACTORS Table 1

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

Basic Static Load Rating (Co) –

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

RATING LIFE

Rating Life of the Linear System

As long as the linear system reciprocates while being loaded, continuous stress can cause flaking on the rolling bodies and planes due to material fatigue. The system's distance of travel until the first flaking occurs is called the life of the system. The life of the system varies even when similar conditions are used – dimensions, structure, material, heat treatment and processing method. The material fatigue causes the essential variations. 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:

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)

ℓs: Stroke length (m)

L: Rating life (km)

n₁: No. of strokes per minute (cpm)

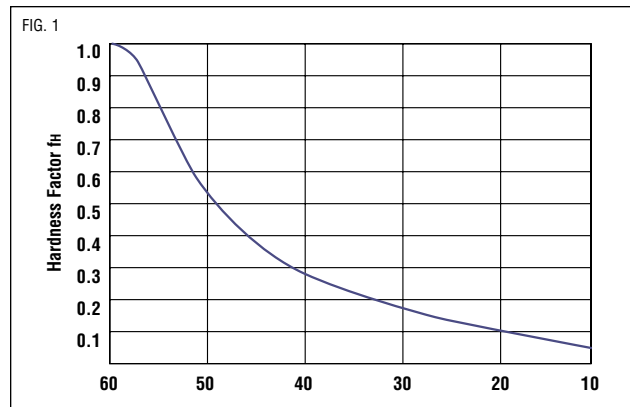


Linear Ball Bearings **Rating Life**

RATING LIFE

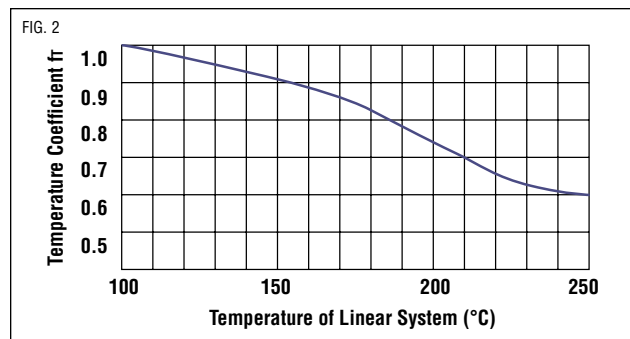
Hardness Factor (fH)

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 (fT)

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 (fc)

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

CONTACT COEFFICIENT Table 2

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

Load Coefficient (fw)

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

LOAD COEFFICIENT Table 3

OPERATING CONDITIONS	FW
Operation at low speed (15m/min.or less) without impulsive shock from outside	1.0 to 1.5
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



Clearance & Mounting Linear Ball Bearings

FRICTIONAL RESISTANCE

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

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

F : Frictional resistance μ : Coefficient of friction

W : Load weight f : Sealing resistance

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

COEFFICIENT OF LINEAR SYSTEM FRICTIONS (μ) Table 5

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

AMBIENT WORKING TEMPERATURE

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

Temperature conversion equation:

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

AMBIENT WORKING TEMPERATURE Table 6

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. Systems, therefore, require appropriate lubrication. For lubrication, PBC Linear recommends turbine oil conforming to ISO Standards G32 to G68 or lithium base soap grease

No.2. Some systems from PBC Linear are sealed to block dust out and seal lubricant in. If used in a harsh or corrosive environment a protective cover should be used.



Linear Ball Bearings **Clearance & Mounting**

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.

RECOMMENDED FIT OF LINEAR BALL BEARINGS

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 linear ball bearings 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 Ra 8-10.

2. Shaft hardness should be HRC 60 to 64. Hardness less than HRC 60 will decrease the life/load.
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.

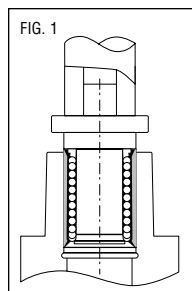
Housing

There are a wide variety of housings differing in design, machining, and mounting. See mounting requirements below.

MOUNTING

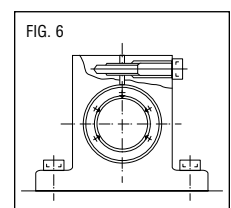
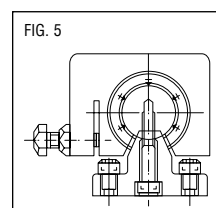
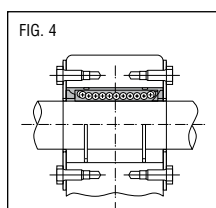
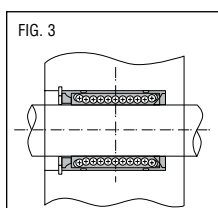
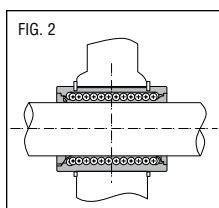
When inserting the linear ball bearing into the housing, do not hit the linear ball bearing on the end-retaining ring, but apply pressure either by hand or arbor on the linear ball bearing sleeve (See Fig.1) To insert the shaft into the mounted linear ball bearing, make sure the shaft is chamfered and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





Round Shaft Technology Modified Standards



simplicity®

A SOLUTION BUILT FOR ALL EXTREMES

Temperature extremes, heavy particulate, wash-down/submersion and shock vibration are all common obstacles that cause failing ball bearings.

PBC Linear designed the Simplicity® linear bearing as the solution. With no rolling elements to cause stick-slip, the maintenance-free Simplicity® bearing CANNOT catastrophically fail and ensures a long wear life – even in the most demanding environments.

No additional lubrication required; the Simplicity® bearing is a clean, green and widely applicable linear motion solution.

Simplicity® is available in a host of linear motion components—pillow block assemblies, flange mounts, precision bushings—and in ISO and Japanese metric sizes. Simplicity® technology can be implemented into almost any application to improve performance, extend wear life and save on cost.

MODIFIED STANDARDS

Need a special adjustment to an existing product? PBC Linear is up to the task. We can specially modify, integrate or adjust our products to custom-fit your application. From additional tap holes, lengths and mounting to fully optimized bearing solutions.

Custom bearings and bearing assemblies can be designed (or re-designed) to solve specific application problems, lengthen service intervals, improve equipment performance or save energy. PBC Linear welcomes the opportunity to explore how a new design, or an existing updated design, can result in lower cost, longer bearing life, and better system performance.

MODIFIED STANDARDS

CUSTOM ID, OD AND LENGTHS

- Inside diameter lengths ranging from 1 mm - 400 mm
- Outside diameter lengths ranging from 3 mm - 500 mm
- Cut-to-length products made to order



FLANGE, SPLIT AND PILLOWBLOCK CONFIGURATIONS

- Full assortment of size interchangeable flange, die set, sleeve, and pillow block housing assemblies
- Customized for ensured application fit
- Capable of tight tolerances

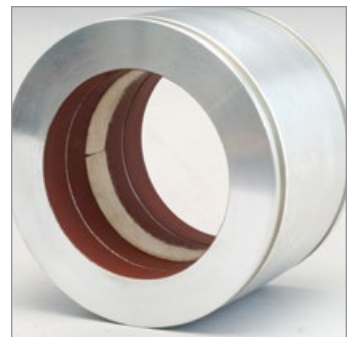
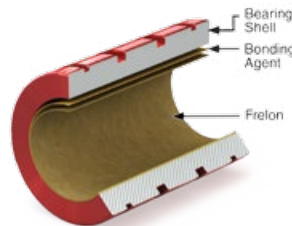


MILLING, TURNING & MACHINING

- Limitless mounting, tap hole and dowel options provide superior assembly and installation

FRELON® LINER SURFACE MODIFICATION

- Improved machine performance with Simplicity® technology
- Custom milled oil reservoirs and chevrons enhance Frelon's self-lubrication and life



ACCESSORIES (SEALS, O-RINGS ETC.)

- Complete stock of seals, scrapers, o-rings, zerk fittings and felt wicks to optimize application performance

LEARN MORE ABOUT PBC LINEAR CUSTOM SOLUTIONS



Consult Factory • 800-962-8979



Email an Application Engineer



Optimized Solutions **Round Shaft Technology**

OPTIMIZED SOLUTIONS

How about a fully optimized bearing assembly? Put our engineering team and in-house manufacturing resources to the test. PBC Linear can work with you to create a solution that simplifies assembly, improves performance and reduces cost.

PBC Linear's engineers come from a wide range of disciplines in R&D, product design, and application specific engineering. PBC Linear's engineers are experienced in linear motion applications across the board and take a problem solving approach to every project—seeking innovative ideas and solutions to meet your design requirements and deadlines.

OPTIMIZED SOLUTIONS



CASE 1: Simplicity® Doctor Bearing for Paper Mill

Problem: A paper mill's rolling element doctor bearings were pre-maturely failing; causing high replacement costs and unplanned machine downtime on a monthly basis.

Optimized Solution:

- Custom doctor bearings with Frelon® liner
- Specially milled oil reservoirs for product longevity
- Double-lip seals contain lubrication

Result: The paper mill noticed immediate and long-term improvement in running performance. 16 years later, the bearing was still operating at full capacity.



[Link to Custom Bearings Video](#)



CASE 2: Simplified Specialty Bearing Assembly

Problem: A linear bearing assembly containing numerous components was costing a specialty equipment manufacturer thousands of dollars in annual parts and labor costs.

Optimized Solution:

- PBC Engineers worked with manufacturer to simplify design
- Custom bearing assembly eliminated mounting components and alignment steps
- Integrated Frelon® liner provides smooth performance

Result: The complex assembly process was reduced down to a single step, single component installation to decrease labor costs and enhance application fit.

CASE 3: Roller Bearing vs. Custom Plain Bearing on Wood Sander

Problem: Misalignment and heavy shock loads led to failed roller bearings, unplanned downtime and constant replacement costs for the wood-working manufacturer.

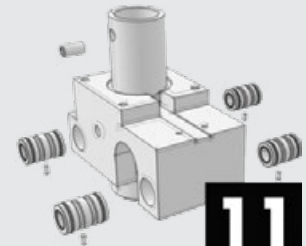
Optimized Solution:

- Custom mounting clamps eliminate misalignment
- Simplicity Frelon liner absorbs shock and tolerates extreme heat
- Specially milled oil reservoirs ensure long operation under continuous use

Result: The wood sander's operational lifetime was increased from 1 week to 1 year under continuous use, saving the manufacturer \$15,000.00 in parts and labor.



PROBLEM



Application:

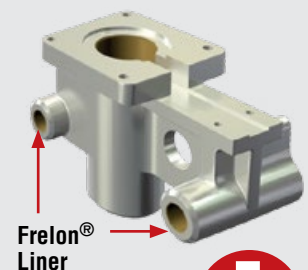
A manufacturer of precision engraving equipment developed a new design for simplified assembly and dramatically reduced costs.

Initial Design Problems:

- Numerous parts
- Multiple complex machining operations
- Complex assembly
- Several vendors

vs.

SOLUTION



Design on a Diet Solution

1
COMPONENT

- One-piece, multi-axis casting
- Frelon® bonded liner allows for high load capacity, low wear, and no maintenance
- Reduced part count
- Collaborative engineered design
- Reduced assembly time
- **40% cost savings**



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