



ROCKFORD BALL SCREW
PRODUCT CATALOG





WE MAKE THE MOTION
THAT MAKES THE WORLD MOVE.

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OUR CUSTOMERS COME FIRST



Ian McBain founded the Rockford Ball Screw Company in 1973 with three goals in mind:

- 1 Provide the customer with a quality product**
- 2 Provide the customer with a competitive price**
- 3 Provide the product on time**



Today, the Rockford Ball Screw Company continues as a family owned and operated business, and Ian's three goals endure as the backbone of our growth and commitment to our customers needs.

Rockford Ball Screw products are built to the highest performance design standards. Extensive engineering expertise and a state-of-the-art manufacturing facility ensure top performance and reliability in our products. Our ball screw and ACME screw product lines feature over 80 standard models and one of the largest inventories in the industry.

Rockford Ball Screw is an ISO 9001 Certified company committed to continuous improvement and dedication to total customer satisfaction. Call us today and see for yourself what "service" really means!

High-Quality Products

Rockford Ball Screw offers mature product line, built to the highest performance design standards. Our extensive engineering expertise and state-of-the-art manufacturing facility ensure top performance and reliability in our products.

We offer one of the largest inventories of ball screw and ACME screw product lines in the industry and our offerings are continually growing and evolving. Our extensive product lines include catalogued, non-catalogued, standard, and non-standard offerings. If you don't see what you're looking for, all you have to do is ask.

Value-Add Customization Services

Have you been told, "It can't be done"?
Call Rockford Ball Screw.

When customers bring us their ideas, we don't say, "No," or push them toward our standard offerings. Rather, we act as a trusted partner and seek to cooperatively find solutions through implementation of services such as:

- Feasibility assessments
- Formal engineering analyses including stress/strain, structural load response, structural dynamics, and transient modal analysis

We take variable concepts all the way through implementation including production, including custom design, development, production, assembly work, and installation.

Additional Resources

- Visit Rockford Ball Screw's website for more information www.rockfordballscrew.com
- A full product catalogue is available as a downloadable PDF on the site
- Or call **(800) 475-9532** to request a hard copy of the product catalogue
- Our website offers an **interactive design module**
- Contact our technical staff at **(800) 475-9532** to discuss your specific application

Customers Come First

Rockford Ball Screw customers receive the highest level of quality, service, and engineering expertise. Our specially trained staff and state-of-the-art manufacturing facility and equipment work in concert to effectively fulfill customer needs - whether they require standard or custom offerings.

We offer one of the highest services-to-client ratio in the industry. Our customers have direct access to RBS personnel - including sales, development, engineering, etc. - as needed to support their requirements.

We believe in and are committed to partnering with our customers at the front end of projects to put a program in place for success across the entire lifecycle - from prototyping through production.

Rockford Ball Screw supports every major CAD software program - incompatibility is never an issue!

ABOUT BALL SCREWS

A ball bearing screw is just that: a screw which runs on ball bearings. The screw and nut have matching helical grooves or races, and the ball bearings recirculate in these races. There is no physical contact between the screw and the nut. As the screw or nut rotates, and the rolling balls reach the trailing end of the nut, they are deflected or guided from this “pitch” contact by means of a return tube and returned to the leading end of the circuit. There, the cycle resumes and the balls recirculate continuously.



Major Diameter (Land Diameter) The outside diameter of the screw thread.

Minor Diameter (Root Diameter) The diameter of the screw shaft as measured at the bottom of the ball thread track. This diameter is used in column load and critical speed calculations. Minor diameter also is a consideration in support bearing selection.

Ball Pitch Diameter (Ball Circle Diameter) The theoretical cylinder passing through the center of the balls when they are in contact with the ball screw and ball nut races.

Lead The axial distance the screw or nut travels in one revolution.

Lead Error (Accuracy) The difference between the actual distance traveled compared to the theoretical travel based on the lead of the screw. The lead error for a standard screw will not exceed ± 0.007 ” per foot and a premium grade screw will not exceed ± 0.003 ” per foot. Lead error is cumulative based on the actual length of the ballscrew thread. Ref. Class 7-8 ANSI B5.48-1977. Lead charts describing incremental lead deviation offsets can be supplied (upon request). These incremental offsets can be input into motion controllers for lead error compensation.

Matched Leads (Synchronous Screws) Used when multiple screws are being driven by a single drive in order to keep the screws in sync. Basically the lead errors are matched at the factory in order to minimize misalignments during the stroke. Consult factory for additional information on matched leads.

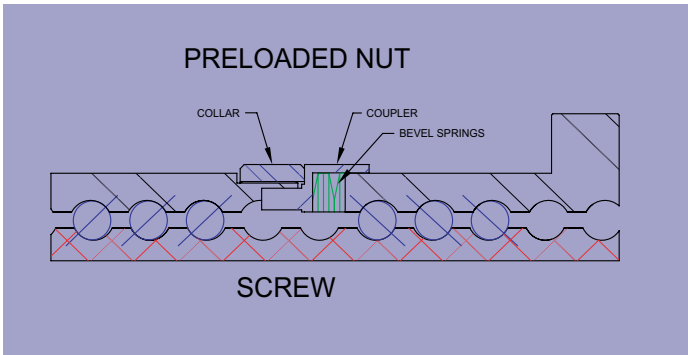
Pitch The distance from one thread on the screw to a corresponding point on the next thread parallel to the screw axis. Pitch is equal to the lead on single start screws.

Screw Starts The number of independent threads on the screw shaft. The lead of the screw is calculated by dividing the threads per inch by the number of starts.

Backlash The axial free motion between the nut and the screw. It determines the amount of lost motion between the nut and screw on a horizontal application. Backlash on standard nuts range from .005 to .015, depending on the size of the screw.

Selective Fit The process of selecting a unique ball size for reducing backlash to as little as .001 inches.

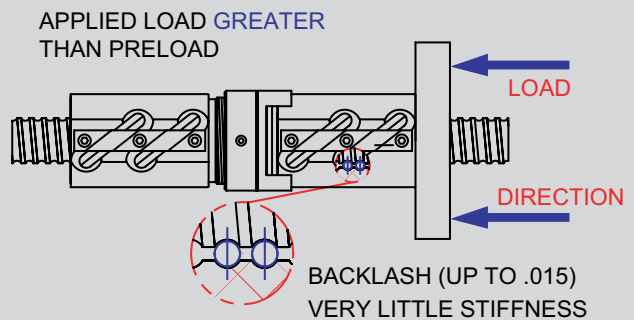
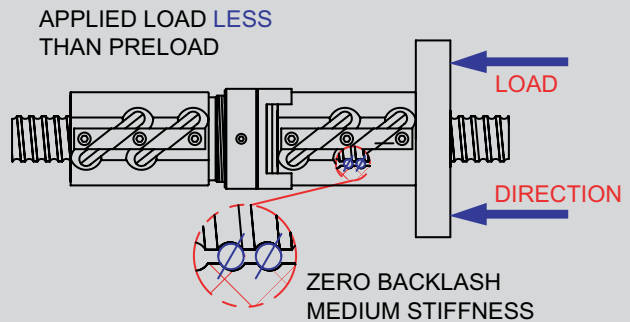
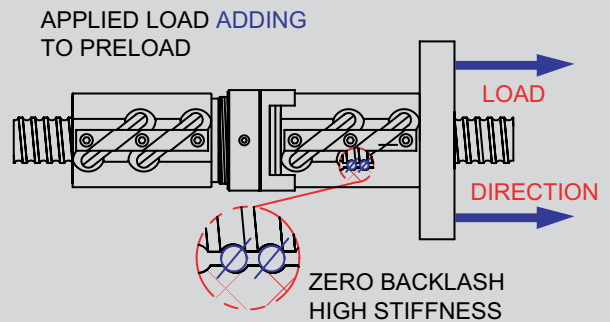
Preloading Method of eliminating backlash in a ball screw assembly. This is accomplished by the use of one group of ball grooves in opposition to another to eliminate backlash. Preloading increases stiffness (resistance to deflection) and provides for accurate positioning with very little increase in applied torque or decrease in load capacity.



Rockford Ball Screw preloaded ballscrew assemblies consist of two standard ballnuts joined by an adjustable preload package containing a collar, coupler and bevel or wave springs. The preload package has been designed to exert an axial separating force between the adjacent ballnuts thereby generating the requisite preload. Preloaded ball screw assemblies are required when positioning accuracy and repeatability must be maintained.

The adjustable preload can be set in a range between 10% (recommended) and 30% (maximum) of the dynamic load rating. While staying within this range, the assemblies demonstrate little loss of load carrying capacity or life.

The three preload examples below illustrate the effects of load size and direction on preloaded units. The examples are important in selecting the size of preload and amount of preload force needed. The direction of loading effects ball screw stiffness and potential backlash.



ABOUT BALL SCREWS

Efficiency Expressed as a percentage and is the ability of a ball screw assembly to convert torque to thrust with minimal mechanical loss. Rockford Ball Screws operate in excess of 90% efficiency.

Dynamic Load The maximum thrust load under which a ball screw assembly will achieve a minimum of 1,000,000 inches of travel before first signs of fatigue are present.

Static Load The maximum non-operating load capacity above which permanent damage of the ball track occurs.

Tension Load A load that tends to stretch the ball screw. This is the preferred mode of attaching the load since column loading limitations would not effect the screw.

Compression Load A load which would tend to compress or buckle the screw shaft. Use column load calculations to determine safe compression loads.

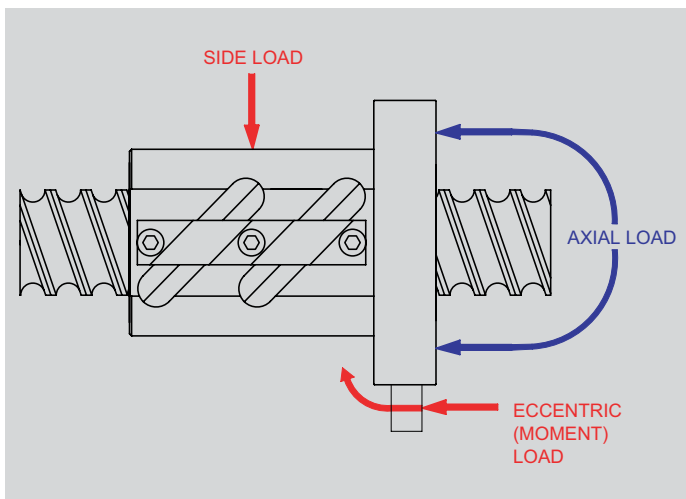
Axial Loading The recommended method of attaching the load to the ballnut. This load should be parallel to the centerline of the screw shaft and equally distributed around the mounting surface.

Eccentric (Moment Loading) A load tending to cock the ballnut on the screw and therefore reducing the rated life.

Side Loading (Radial Loading) A load that is applied perpendicular to the screw shaft. This type of loading will also reduce the rated life of the ball screw assembly.

Ball Screw Life (Life Expectancy) Expressed as total accumulated inches of travel under a constant rated thrust load (with proper lubrication and clean environment) before first evidence of fatigue develops (1,000,000 inches under stated rated loads). Ball screw life is rated similar to ball bearings (L10). The L10 life rating states that 90% of a similar group of screws will achieve this life. Although 10% will not achieve the life, 50% could exceed life by 5 times.

Applied Dynamic Loading Each unique application needs to be evaluated such that ALL force components are realized and accounted for. The force components might include: weight of the sliding mechanism (if vertical), weight of the sliding mechanism multiplied by the coefficient of sliding friction (if horizontal), any direct forces resisting the linear motion (such as tool cutting loads), and any other applicable force components.



$$P = Wf * \mu + Fp$$

- P = Applied Dynamic Load (LBS)
- Wf = Weight of Sliding Load (LBS)
- μ = Coefficient of sliding friction
(=1 if load orientation is vertical)
- Fp = Force component pushing directly against the sliding mechanism

Coefficient of sliding friction for non-vertical loading applications

Steel on Steel	~.58
Steel on Steel (greased)	~.15
Aluminum on Steel	~.45
Gibb Ways	~.50
Dove Tail Slides	~.20
Linear Bearing (Ball Bushings)	<.001

Frictional coefficients are included for reference purposes only and may vary in accordance with actual operating conditions.

Equivalent Load This calculation is used in applications where the load is not constant throughout the entire stroke. This equivalent load can be used in life calculations. In cases where there is only minor variation in loading, use greatest load for conservative life calculation. Please note that the drive torques and horsepower requirements should always be based on the greatest thrust load encountered.

$$P_e = \sqrt[3]{\frac{\% (P_1)^3 + \% (P_2)^3 + \% (P_3)^3 + \% (P_n)^3}{100}}$$

Pe = Equivalent Load (lbs)
Pn = Each Increment at Different Load (lbs)
%n = Percentage of stroke at load increment

Example: 450 lb. load for 25% of stroke
 760 lb. load for 50% of stroke
 200 lb. load for 25% of stroke

$$P_e = \sqrt[3]{\frac{25(450)^3 + 50(760)^3 + 25(200)^3}{100}}$$

Equivalent Load (Pe) = 625 lbs.

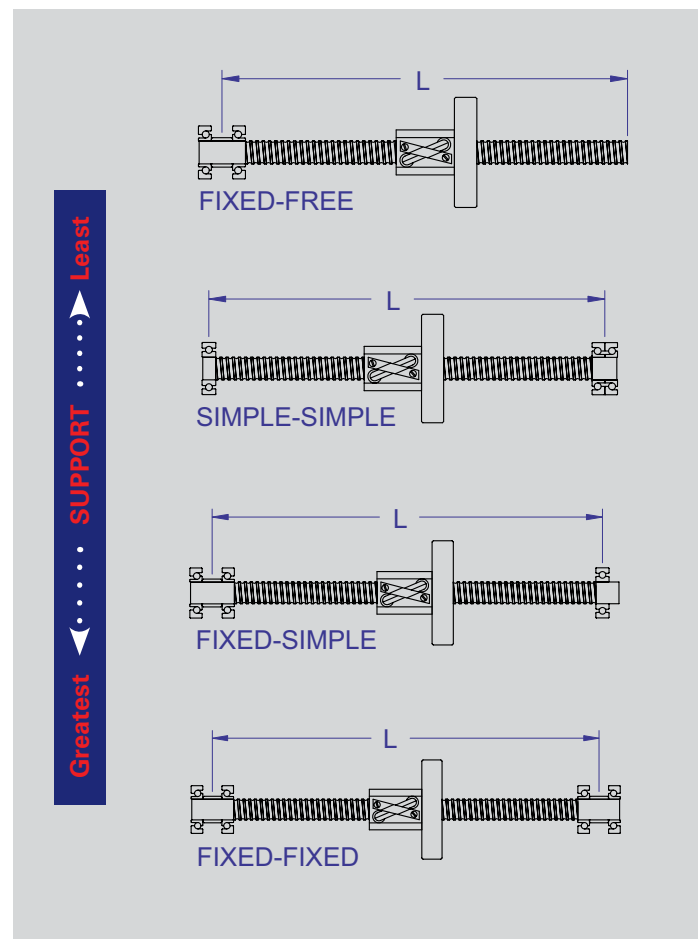
Life At Loads (Other than Rated) Based on the inverse cube ratio in that by operating at 1/2 the rated load you will get 8 times the life or operating at twice the rated load you will get 1/8 the life.

$$(Rated\ Load / Actual\ Load)^3 * 10^6 = \frac{LIFE\ ASSEMBLY\ UNDER}{ACTUAL\ LOAD}$$

Design Life Objective Design Life Objective is the number of inches that a ball screw will travel during the desired life of the machine. Generally it is ultimately stated in terms of years of life but we need to compare inches of travel to inches of calculated life.

Length of stroke = 6 inches
 Cycle rate of machine = 20 Strokes/hr.
 Hours of operation /day = 16 hours
 Number of working days per year = 250 days
 Number of years machine is designed for = 5 years
 6 * 20 * 16 * 250 * 5 = 2,400,000 inches of life

End Fixity End Fixity (Bearing Mount Support Configuration) refers to the method by which the ends of the screws are supported. The end fixity basically describes the bearing configuration being used to support the rotational axis of the screw. The end fixity combinations are determined as a result of critical speed, column loading and system stiffness calculations. There are three basic end fixity styles that can be used in four combinations. The ends styles are "free" (no support), "Simple" (single point support) and "Fixed" (spaced support points).



ABOUT BALL SCREWS

Critical Speed Critical Speed is the theoretical linear velocity (inches per min.) which excites the natural frequency of the screw. As the speed of the screw approaches the natural frequency (critical speed), the screw shaft begins to resonate which leads to excessive vibration. The resulting resonance can occur regardless of whether the screw or nut rotates or regardless of screw orientation. R/B/S recommends limiting the maximum linear velocity to 80% of the calculated critical speed value.

$$Cs = \frac{Fe * 4.76 * 10^6 * Dmin * SL * Fs}{L^2}$$

Cs = Critical Speed (Inches/min.)
Dmin = Minor Diameter (root) of Screw (In.)
SL = Screw Lead (In.)
L = Distance between bearing supports
Fe = End Fixity Variable
= .36 for Fixed-Free Support Configuration
= 1.00 for Simple-Simple Configuration
= 1.47 for Fixed-Simple Configuration
= 2.23 for Fixed-Fixed Configuration
Fs = Factor of Safety (80% recommended)

Column Load Strength Column Load Strength is the ability of the screw shaft to withstand compressive forces. The fundamental limit occurs when a compressive load exceeds the elastic stability of the screw shaft. Exceeding the column load will result in bending and buckling of the screw. This mode of failure can only occur when the screw shaft is in compression and never in tension. R/B/S recommends limiting the maximum compressive load to 80% of the calculated column load strength.

$$Pc = \frac{Fe * 14.03 * 10^6 * Dmin^4 * Fs}{L^2}$$

Pc = Maximum Column Load (lbs.)
Dmin = Minor Diameter (root) of Screw (In.)
L = Distance (max.) between load and bearing in compression (inches)
Fe = End Fixity Variable
= .25 for Fixed-Free Support Configuration
= 1.00 for Simple-Simple Configuration
= 2.00 for Fixed-Simple Configuration
= 4.00 for Fixed-Fixed Configuration
Fs = Factor of Safety (80% recommended)

Critical Ball Speed (DN Value) is the critical ball velocity within the ball nut. Exceeding this value can have a detrimental effect on the life of the ball screw assembly.

$$DN = (3000/Screw Nominal Diameter) * Lead (inches / revolution)$$

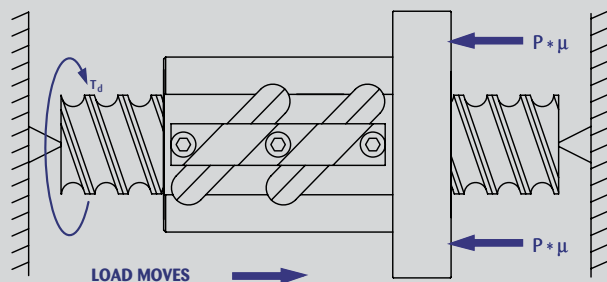
Drive Torque Drive Torque is the amount of torque (inch pound) required by the ball screw to move the load. This torque does not take into account any inertial loading required for acceleration.

$$T_d = \frac{S_L * (P * \mu)}{2\pi \text{Eff}} = .177 * S_L * (P * \mu)$$

Td = Drive Torque (Inch pounds)
P = Applied Dynamic Load (LBS)
SL = Lead of Screw (Inches)
μ = Coefficient of Sliding Friction
 (=1 if load orientation is vertical)
Eff = Ball Screw Efficiency (90%)

Coefficient of sliding friction for non-vertical loading applications

Steel on Steel	~.58
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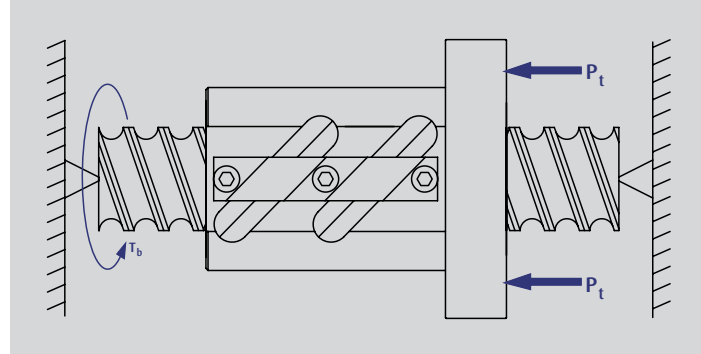


Frictional coefficients are included for reference purposes only and may vary in accordance with actual operating conditions.

Back Drive Torque The torque produced through the screw shaft by a thrust load on the ball nut. Ball screws can coast or backdrive due to the high efficiency of the mechanism (90%). If back driving is not acceptable, a method to resist the overturning backdriving systemic torque, such as a brake, will be required to hold the load. If backdriving is desired, the lead of the screw should be at least 1/3 of the screw diameter. Ideally the lead should be equal to the screw diameter. This calculated torque is the minimum amount of braking torque to hold the load in position.

$$T_b = \frac{S_L * P_t * \text{Eff}}{2\pi} = .143 * S_L * P_t$$

Tb = Backdrive Torque (Inch pounds)
Pt = Thrust Load applied to Nut (LBS)
SL = Lead of Screw (Inches)
Eff = Ball Screw Efficiency (90%)



Preload Torque The additional torque required to overcome the frictional components of the preload force. This additional torque (inch pounds) needs to be added to the drive torque in order to calculate the required torque for constant velocity.

$$T_p = \frac{S_L * Ppl * .2}{2\pi} = .032 * S_L * Ppl$$

Tp = Preload Torque (Inch pounds)
Ppl = Preload Setting (LBS)
SL = Lead of Screw (Inches)

ABOUT BALL SCREWS

Power Requirements The power (HP) to drive a ball screw assembly is a function of required drive torque and motor R.P.M. Horsepower should be calculated based on the maximum torque required during the stroke or cycle. The highest torques generally are during acceleration due to inertial loading.

$$RPM = \frac{\text{Velocity (inches / min.)}}{\text{Lead (inches / rev.)}}$$

$$\text{Horsepower} = \frac{RPM * \text{Drive Torque (in.lbs)}}{63,000}$$

Materials and Hardness Most screws and nuts are made from alloy steel and case hardened to Rc 56 minimum. Our stainless steel models are made of 17-4ph precipitation hardenable stainless steel with a surface hardness of Rc 38 minimum. Specialty materials can be supplied, contact factory.

Screw Straightness Screw straightness is extremely important in minimizing screw vibration. Our ball screw stock is straight to .010" per foot not to exceed .025" over the entire length. We can hold straightness on machined screws to as little as .002"/foot (screw diameter and length dependent).

Temperature Range Temperature range for our ball screws is between -65°F. (-54°C) and 300°F. (149°C) with suitable lubricants.

Lubrication Lubrication is required to achieve optimum life for a ball screw assembly. Ball screws that are not lubricated can experience up to a 90% reduction in calculated life. In general, standard lubrication practices for anti-friction rolling element bearings apply. Grease, oil or dry film lubrication can be used. Many ball nuts are equipped with a 1/8-27NPT lube port machined into the nut body. For models that do not have a factory lube port, contact factory for recommendations regarding application of lubrication.

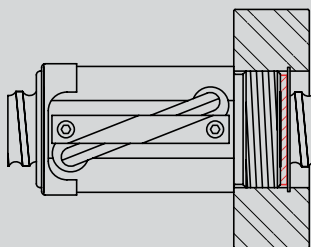
See page 18 for Rockford Ball Screw Grease. This lubricant is specially formulated for use with ball screws as well as ACME screws and bearing mount assemblies. Rockford Ball Screw Grease is packaged in convenient 14 oz. grease cartridges.

Ball Screw Finish Ball Screw Finish is a black oxide coating to help prevent corrosion during shipping and brief storage. Long term corrosion resistance is accomplished by the rust inhibiting properties of the screw lubricant. In applications subject to extreme environments, additional coatings such as nickel, hard chrome, zinc or others can be applied. Contact Rockford Ball Screw for detailed specifications.

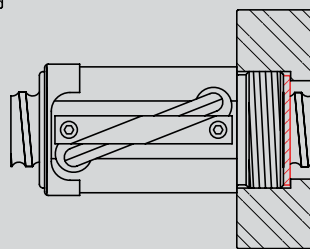


Wiper Kits Wiper kits are available for all standard ball screw models. The nylon brush wiper is designed to keep large particulates from entering the ball nut. However for harsh environments, the use of boots or bellows to enclose the screw is recommended. Contact Rockford Ball Screw for further information on enclosures.

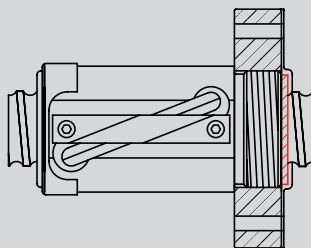
Our product pages detail the type of wiper mounting arrangement for each ball nut model. Brush wipers may require customer supplied retention primarily on the V-thread end of the ball nut (on models that do not have internal wipers and snap rings). A stamped flange retainer is available for many models that do not have internal snap rings for wiper retention (see data pages for available sizes).



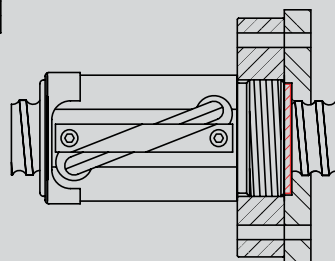
SNAP RING RETAINER IN MATING PART



THREADED & C'BORED MATING PART

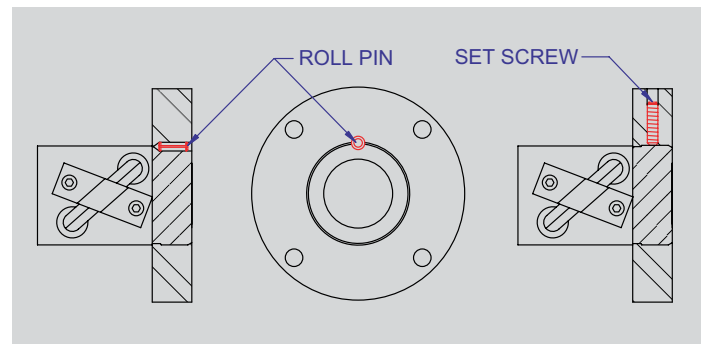


STAMPED FLANGE WIPER PLATE

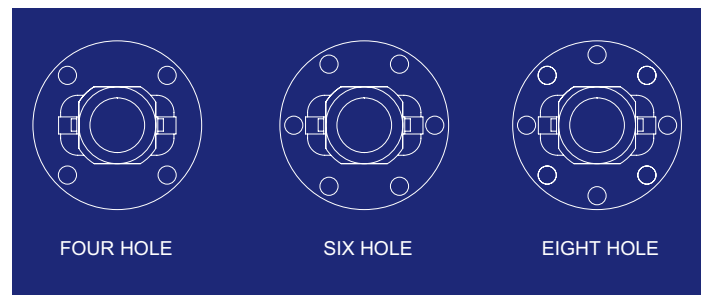


C'BORED WORKPIECE FOR FLANGE ATTACHMENT

Mounting Flanges If a mounting flange is used instead of the standard v-thread on the ball nut body, it must be permanently attached to prevent disengagement during operation. The two standard methods of retaining the flange is pinning and retaining with a set screw. Commercial thread locking adhesives may also be used (light loads only). It is always recommended that the flange pinning be performed at the factory to assure no metal chips are present after drilling.



Flange Orientation The orientation of the flange bolt holes to the return tube components varies with the number of holes in the flange. Unless otherwise specified, the following illustrations represent the standard orientations.



ABOUT BALL SCREWS

Safety Springs The safety spring is a coiled spring installed in the inactive part of the ball nut and conforms to the ball screw thread. The spring is inactive during normal operation and does not contact the screw. In the rare event that the balls are lost from the ball nut, the safety spring will assume the load and prevent the nut from “free falling” down the screw. The spring is not designed to maintain normal operation and the ball screw assembly should be taken out of service after first engagement of spring. Safety springs are available for all ball screw models. The safety spring is mandatory if the screw is being used to lift, support or otherwise transport people. Please inform our customer representative that you require the safety spring for your particular application.



Free Wheeling Ball Screws In addition to our full line of recirculating ball screws, we also offer a free-wheeling ball screw assembly (pages 70-73). The free wheeling screw (also referred to as planetary or epicyclic ball screws) is different from a standard ball screw in that it utilizes a ball cage (retainer) inside the nut. As the cage contacts the stop pins in the screw at the ends of the stroke, the ball nut will stop linear movement but the screw will continue to rotate (free-wheel). When the screw rotation reverses, linear motion occurs away from the stop pin and will travel until the cage contacts the pin at the other end of the stroke.

The advantage of the free wheeling screw is that limit switches or other types of stops are not necessary. This eliminates the possibility of over travel which can cause problems with many applications. The controlled stroke feature is used in many applications such as bed or chair actuations, trim tab actuators and electrical switching devices.

The free wheeling screw operates with the same efficiency (>90%) as a standard ball screw. Due to the planetary slipping of the nut in relation to the screw, there is an effective lead that is different than the actual lead of the screw. The effective lead is always less than the actual lead and varies with the direction and magnitude of the load (see pages 70-73). Since the lead is a variable, this device is not recommended for applications that rely on rotation of the screw for position feedback.





> Custom precision end machining is available for any specification.

Machined Ends Rockford Ball Screw offers full service machining capabilities to supply screw assemblies that are ready for installation. We offer standard end machining that can accommodate our line of bearing mounts or we can machine ends to your specifications. See pages 106-111 for our standard end machining designs. Screws can also be supplied cut to length. However, it is recommended to have the screw ends factory annealed to assist subsequent machining

Custom Products/Retrofits Rockford Ball Screw has many years of experience in adapting and retrofitting ball and ACME screws into a wide array of applications. We offer engineering expertise to help with your application from inception through installation. Although we showcase numerous "standard" products in the following pages, we do many modifications and supply "specials" on a regular basis. Please feel free to contact our customer service or engineering personnel to discuss your requirements.



Custom Designed Integral Ball Screw Assembly for High Speed Application Utilizing Ceramic Bearing Balls.



CHARACTERISTICS | INVENTORY

EFFECT OF CHANGE IN PARAMETER

INCREASE IN	EFFECTS	HOW
Screw Length	Critical Speed Column Load	Decreases Decreases
Screw Diameter	Critical Speed Inertia Stiffness Spring Rate Load Capacity Column Load	Increases Increases Increases Increases Increases Increases
Lead	Torque Input Load Capacity Positioning Accuracy Angular Velocity Ball Diameter	Increases Increases Decreases Decreases Increases
Angular Velocity	Critical Speed	Decreases
Mounting Rigidity	Critical Speed System Stiffness	Increases Increases
Load	Life	Decreases
Nut Length (7 1/2 Turn Max)	Load Capacity Stiffness	Increases Increases
Number of Balls	System Stiffness Load Capacity	Increases Increases
Preload	Positioning Accuracy System Stiffness Drag-Torque	Increases Increases Increases
Ball Diameter	Life Stiffness Load Capacity	Increases Increases Increases

INVENTORY



Rockford Ball Screw has been manufacturing ball screws, ACME screws and linear motion components since 1972. We pride ourselves in being able to respond to our customers' needs by maintaining one of the largest inventories of product which are made completely in the USA.

We stock in excess of 56 ball screw models, over 25 ACME screws sizes, many types of bearing mounts and other linear motion products. Many products are stocked in a variety of materials such as high and low carbon alloy steels and various grades of stainless steel.

We are equipped to supply your ball and ACME screw requirements with second to none service and delivery times. In addition to our "Standard" inventory lines, we take pride in our specialty and custom designs.

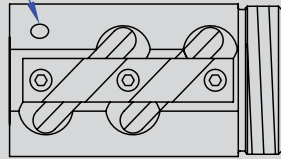
Call us today and see for yourself what "service" really means.

BALL NUT LUBRICATION OPTIONS

Lubrication of the ball screw assembly is extremely important to maintaining optimum efficiency and life. The ideal access point of introducing the lubrication is directly into the ballnut. Below we have illustrated a number of methods that have been utilized to ease the process of lubricating the ballnut. Should none of the methods apply to your application, please consult factory.

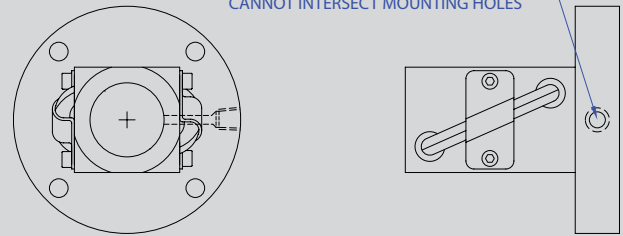
LUBE PORT INCLUDED ON BALLNUT

1/8-27 NPT LUBE PORT
MOST NUTS OVER
1 1/2" DIAMETER



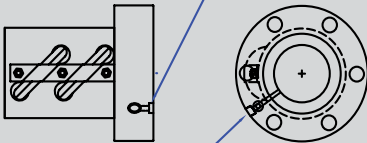
LUBE PORT INSTALLED IN FLANGE

LUBE PORT INSTALLED INTO FLANGE
CAN BE ANYWHERE AROUND THE PERIPHERY.
CANNOT INTERSECT MOUNTING HOLES



LUBE PORT IN FACE OF FLANGE

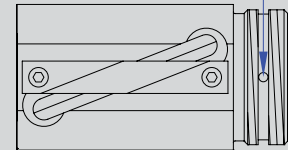
COUNTER BORE FOR O-RING SEAL



LUBE ACCESS THROUGH THE FACE OF THE FLANGE.
CROSS HOLE DRILLED, TAPPED AND PLUGGED WITH
SET SCREW.

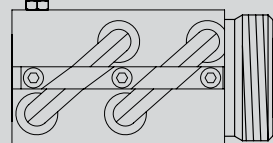
LUBE ACCESS HOLE IN GROOVE OF MOUNTING THREAD

GROOVE TURNED IN MOUNTING THREADS,
LUBE ACCESS HOLE DRILLED INTO BALLNUT.
MATING COMPONENT TO HAVE LUBE PORT IN
SAME LINEAR POSITION AS GROOVE. LUBE PORT
DOES NOT NEED TO BE DIRECTLY OVER DRILLED HOLE



ZERK FITTING INSTALLED IN SIDE OF NUT

ZERK FITTING
LOCATION DEPENDING
ON MODEL.
CONTACT FACTORY



BALL NUT LUBRICATION



R/B/S MULTI-PURPOSE SYNTHETIC GREASE

AVAILABLE IN 14 OZ. CARTRIDGES

NOTE: To achieve optimal grease performance, it is recommended that the machine components should be kept in careful alignment, the operating environment should be kept clean, and the assembly should be periodically inspected for proper lubrication quantity and integrity.

Advantages Proper lubrication along with reducing/eliminating foreign contamination are essential for preventing premature catastrophic failure. The R/B/S multi-purpose PTFE fortified synthetic grease has been specifically formulated with extreme pressure and anti-wear additives to reduce rolling element friction, wear, and provide noise damping characteristics. The excellent mechanical stability allows for compatibility with ferrous metals, non-ferrous metals, and most engineering plastics.

Consult the factory for specific material interactions. R/B/S recommends this grease be used for ballscrew, ACME screws, bearing mount, and other applications requiring excellent hydrodynamic lubrication.

Data Multi-Purpose Grease Specifications:

NLGI Grade:	2
Temperature Range:	-40°F(-40°C) to 300°F(135°C)
Base Fluid	
Viscosity (cSt):	75 @ 40°C 12 @ 100°C
Worked Penetration:	291 (ASTM D1403)

HOW TO SIZE A BALL SCREW

Ball Screw Selection Example:

Specification:

Equipment: Transfer Table
 Screw Orientation: **Horizontal**
 Load Supported on Dove Tail Ways: **.20** Coefficient of friction
 Load is **2500** lbs. Max (combined weight of product and table)
 Stroke Length: **38"**
 Travel rate: **600** inches per minute (Max.)
 Input RPM: **2400**
 Duty Cycle: **20** cycles per hour, **16** hours per day, **250** days per year
 Required Life: **5** years

Given Specification in GOLD
Resultant Calculation in RED
Catalog Product Data in PURPLE

Specifications to be used to select proper ball screw assembly

Steps:

1 Determine Required Life (Inches):

$$38"/\text{stroke} * 2 \text{ strokes/cycle} * 20 \text{ cycles/hr} * 16 \text{ hrs/day} * 250 \text{ days/year} * 5 \text{ years} = 30,400,000 \text{ inches}$$

2 Determine Thrust Load on Ball Screw – Multiply the thrust load by the coefficient of sliding friction (for horizontal application):

$$2500 \text{ lbs.} * .20 \text{ Coefficient of Friction} = 500 \text{ lbs.}$$

Use this load for life calculations. (If load varies during the stroke or cycle, an equivalent load calculation can be utilized page 9)

3 Determine Required Ball Screw Dynamic Axial Loading to Achieve Required Life:

Using formula on page 9, input the **500** lbs. thrust load (Or equivalent load) and the required life.

$$\left(\frac{\text{Rated Load } (P_r)}{\text{Actual Load } (P_t)} \right)^3 * 1,000,000 \text{ in.} = \text{Life of assembly under actual load}$$

$$\rightarrow \left(\frac{P_r}{500 \text{ lbs}} \right)^3 * 1,000,000 \text{ in.} = 30,400,000 \text{ inches}$$

The result is the minimum rated load for a ball screw to achieve the required life.

$$\rightarrow \frac{P_r^3}{500^3} = \frac{30,400,000}{1,000,000} \rightarrow P_r = \sqrt[3]{30.4 * (500)^3} = 1561 \text{ (lbs)}$$

4 Determine Lead of the Screw:

Travel Rate (pg 12):

$$RPM = \frac{\text{Velocity (inches/min.)}}{\text{Lead (inches/rev.)}}$$

$$\rightarrow \frac{600"/\text{min Travel Rate}}{2400 \text{ RPM}} = .250" \text{ per revolution (Lead)}$$

USE THIS QUICK REFERENCE CHART TO SELECT APPROPRIATE BALL SCREW MODEL

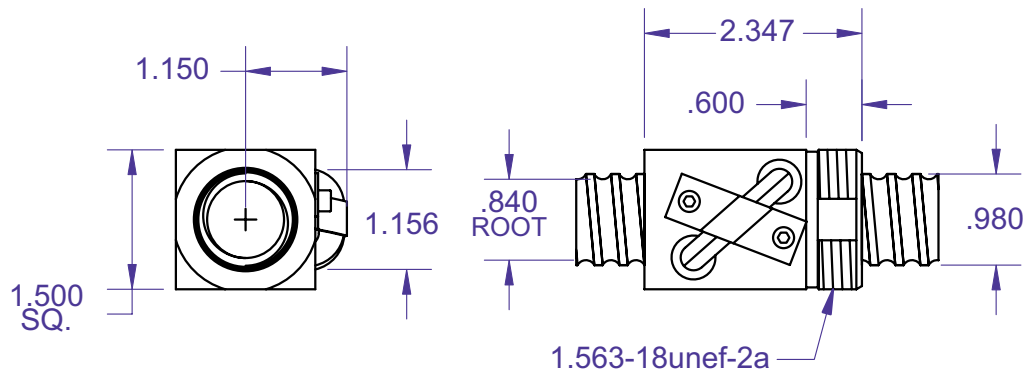
MODEL	SCREW DIA. X LEAD	SCREW RATED LOAD	SCREW MINOR DIA.	CATALOG PAGE NUMBER	MODEL	SCREW DIA. X LEAD	SCREW RATED LOAD	SCREW MINOR DIA.	CATALOG PAGE NUMBER
R10	.375x.125	150	0.300	26	R43	1.000x.250	4,250	0.870	46
R11	.375x.125	300	0.300	28	R44	1.000x1.00	2,300	0.840	47
R12	.375x.125	170	0.295	27	R45, 47	1.150x.200	2,450	1.020	48
R15*	.375x.125	25	0.300	26	R46*	1.150x.200	490	1.020	48
R16*	.375x.125	50	0.300	28	R48	1.063x.625	3,300	0.925	49
R20, 23	.500x.500	850	0.400	29, 30	R50	1.500x.500	9,050	1.260	50
R21*, 22*	.500x.500	140	0.400	29, 30	R50A, 51A	1.500x.500	12,900	1.260	51
R30, 31	.631x.200	825	0.500	31	R53, 54	1.500x.250	4,250	1.375	52
R30A, 31A	.631x.200	1,650	0.500	32	R53A, 54A	1.500x.250	6,400	1.375	53
R30RFW, 31LFW	.631x.200	825	0.500	33	R55, 56	1.500x1.00	8,000	1.140	54
R32*	.631x.200	170	0.500	31	R57	1.500x.4737	10,050	1.140	55
R34, 34A	.750x.200	1,900	0.650	34, 35	R58, 58A	1.500x1.875	7,350	1.190	56, 57
R35, 35A	.750x.200	950	0.650	36, 37	R60, 63	2.250x.500	19,800	1.860	60
R36	.750x.200	160	0.630	36	R60A	2.250x.500	29,700	1.860	61
R37	.750x.500	3,400	0.630	38	R61	2.000x.1.00	22,500	1.730	58
R38*	.750x.500	600	0.630	38	R62	2.000x.500	18,000	1.730	59
R40, 41	1.000x.250	1,625	0.840	39	R70	2.500x.500	22,000	2.220	62
R40C, 41C	1.000x.250	1,625	0.840	43	R71	2.500x1.00	26,500	2.220	63
R40A, 40AR	1.000x.250	3,250	0.840	40, 44	R74	2.500x.250	6,300	2.320	64
R40RF, 41LF	1.000x.250	3,250	0.840	42	R75	2.500x1.50	32,500	2.100	65
R40B	1.000x.250	4,500	0.840	41	R80, 80A, 81A	3.000x.660	42,000	2.480	66, 67
R42	1.000x.250	3,450	0.870	45	R90, 91	4.000x1.00	85,000	3.338	68

*Denotes Stainless Steel Models



Ball Screw Selection:

Load Rating: Requires Ball Screw Operating Load Capacity of **1,561** lbs. Minimum
 Smallest diameter screw with **1,561** lbs. (min.) Operating load and a **.250"** lead is the R40 (page 39)



5 Calculate Length Between Bearing Supports:

Length between bearings = Stroke length + ballnut length + Desired over-travel

38" stroke + **2.347** nut length (page 39) + **1"** over-travel = **41.347"** between bearings
 (use this length for column load and critical speed calculations)

HOW TO SIZE A BALL SCREW

6 Calculate End Fixity Based on Critical Speed Limits (page 9-10):

Using formula for Critical Speed, rearrange to solve for Fe (End Fixity Variable)

$$Cs = Fe * 4,760,000 * Fs * \left(\frac{Dmin * Sl}{L^2} \right)$$

Cs = Critical Speed (Inches/min.) = **600 in./min.**

Dmin= Minor Diameter (root) of Screw (In.) = **.840** (pg 39) (STEP #4)

Sl = Lead of Screw (In.) = **.250 Lead** (pg 39) (STEP #4)

L = Distance between bearing supports = **41.347"** (STEP #5)

Fe = End Fixity Variable (Maximum Value)

= .36 for Fixed-Free Support Configuration

= 1.00 for Simple-Simple Configuration

= 1.47 for Fixed-Simple Configuration

= 2.23 for Fixed-Fixed Configuration

Fs = Factor of Safety (80% recommended)

Equations below will solve for the minimum end fixity factor based on Travel Rate (**600 in/min.**)

$$600 \text{ in/min.} = Fe(min) * 4,760,000 * .80 * \left(\frac{.840 * .250}{41.347^2} \right)$$

$$Fe(min.) = \frac{600 * 41.347^2}{4,760,000 * .8 * .840 * .250} = 1.28 \quad \text{Select End Fixity Factor larger than } 1.28$$



Thus a Fixed-Simple (**Fe = 1.47**) is the proper selection

7 Actual Calculated Critical Speed:

This calculated critical speed is based on the Fixed-Simple end fixity arrangement. It is the maximum safe linear speed with this mounting arrangement, screw model and between bearing supports distance. If greater speed is required, a Fixed-Fixed arrangement can be used, recalculate maximum speed based on a fixed-fixed end fixity configuration (Fe=2.23).

$$Cs = 1.47 * 4,760,000 * .8 * \left(\frac{.840 * .250}{41.347^2} \right) = 687 \text{ in/minute} \quad \text{(maximum attainable safe linear speed)}$$

8 Calculate Critical Ball Speed (DN) (page 10):

Critical ball speed is the maximum safe linear speed of this model regardless of screw length. In this example DN should not be less than 687" per minute.

$$DN = (3000/\text{Ball Screw Diameter}) * \text{Lead}$$

$$DN = (3000/1.00) * .250 = 750" \text{ per minute safer linear speed}$$

9 Calculate Column Load Limit (page 10):

This calculated column load is the maximum safe compression load allowable based on mounting arrangement, screw model and distance between bearings. In this example the calculated column loading should be greater than **500 lbs. (Step#2)**.

$$P_c = F_e * 14,030,000 * F_s * \left(\frac{D_{min}^4}{L^2} \right)$$

P_c = Maximum Compressive Column Load (lbs.) allowable for the given length

D_{min} = Minor Diameter (root) of Screw (In.) = .840" (Step #4)

L = Maximum unsupported length in compression (inches) = **41.347"** (Step #5)

F_e = End Fixity Variable

= .25 for Fixed-Free Support Configuration

= 1.00 for Simple-Simple Support Configuration

= **2.00 for Fixed-Simple Support Configuration**

= 4.00 for Fixed-Fixed Support Configuration

F_s = Factor of Safety (80% recommended)

$$P_c = 2.00 * 14,030,000 * .8 * \left(\frac{.840^4}{41.347^2} \right) = 6,537 \text{ LBS (max)}$$

10 Calculate Drive Torque (page 11):

$$T_d = \frac{S_l * (P_t)}{2\pi E_{ff}} = .177 * S_l * (P_t)$$



$$.177 * 500 * .250 = 23 \text{ in. lbs torque at constant velocity}$$

T_d = Drive torque (in. lbs)

S_l = Lead of screw in inches = .250"

P_t = Thrust Load (lbs.) = 500 lbs.

E_{ff} = Efficiency 90% (min.)

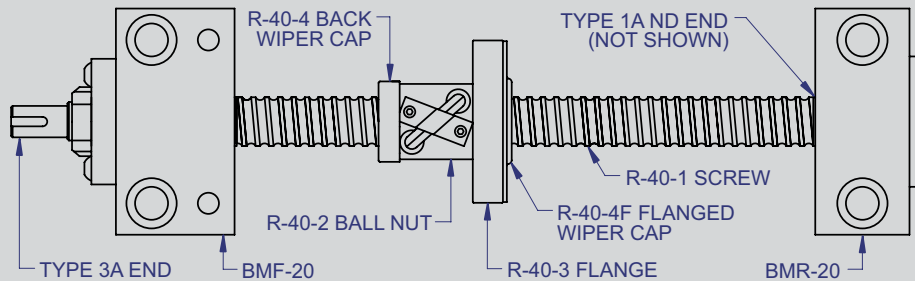
HOW TO SIZE A BALL SCREW

11 Calculate H.P. Required at Constant Velocity (page 12):

$$\text{Horsepower} = \frac{\text{RPM} * \text{Drive Torque (in.lbs.)}}{63,000} \rightarrow \frac{2400 \text{ (RPM)} * 23 \text{ (in.lbs.)}}{63,000} = .88 \text{ H.P. min.}$$

12 Specifying Proper Ball Screw Assembly (page 39):

Screw Overall Length = **41.347** between bearings + **1.070 (Type 1A)** + **5.050" (Type 3A)** = **47.467" OAL**



Model Size: **R40** Ballnut #: **R40-2** Mounting Flange #: **R40-3**

Wiper Kit #: **R40-4, R40-4F** (w/flange wiper cap)

Bearing Mount Part #: **BMR-20** (Radial simple support) non-drive end

BMF-20 (Fixed support) drive end

Ball Screw Machined Ends: **Type 1A** one end and **Type 3A** other End

13 Go to website to get 2D & 3D downloadable drawings: www.rockfordballscrew.com



BALL SCREWS

BALL SCREWS

- Ball Screws
- Preloaded Ball Screws
- Mounting Flanges
- Wiper Kits

KEYWAY BALL NUTS

FREE WHEELING



R10/R15

.375 diameter x .125 lead

STANDARD BALL SCREW

Ball Screw Part #	R-10-1	R-15-1*
Ball Nut Part #	R-10-2	R-15-2*
Dynamic Load (lbs) for 1,000,000 (in)	150	25
Max. Static Load (lbs)	1,300	230
Ballnut Weight (lbs)	0.08	0.08
Ballscrew Weight (lbs/ft)	0.31	0.31

*Stainless Steel

PRELOADED BALL SCREW

Preload Screw Part #	RP-10-1	RP-15-1*
Preload Ballnut Part #	RP-10-2	RP-15-2*
Dynamic Load (lbs)** for 1,000,000 (in)	135	23
Max. Static Load (lbs)**	1,285	228
Recommended Preload	15	3
Maximum Preload	45	8
Ballnut Weight (lbs)	0.16	0.16

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-10-3	R-15-3*
Wiper Kit Part #	R-10-4	R-15-4

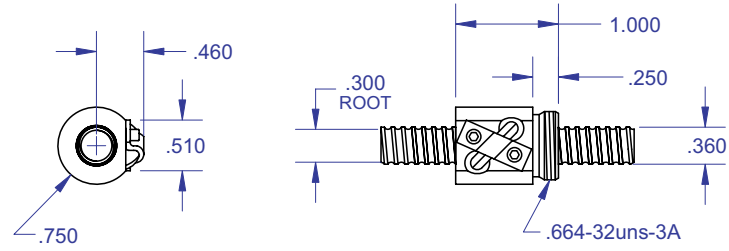
TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

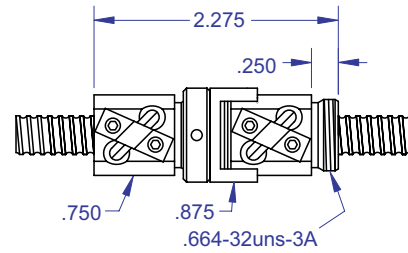
BALL SCREWS

Standard Ball Screw

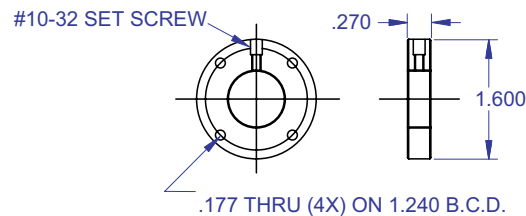


Ball bearing nominal diameter 1/16". Average ball quantity per nut is 62.

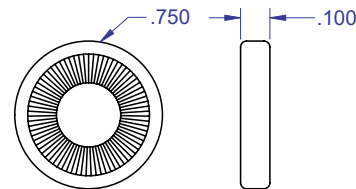
Preloaded Ball Screw



Mounting Flange



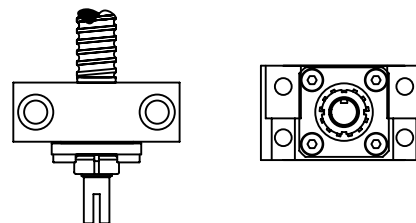
Wiper Kit (2 brush wipers)



Bearing Mount

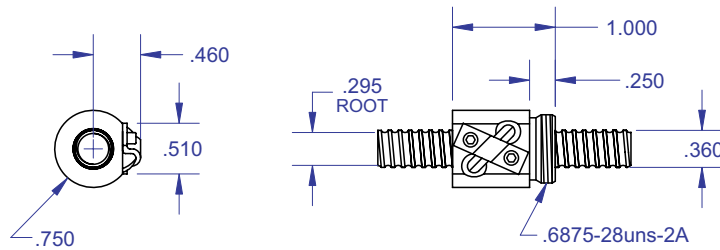
Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



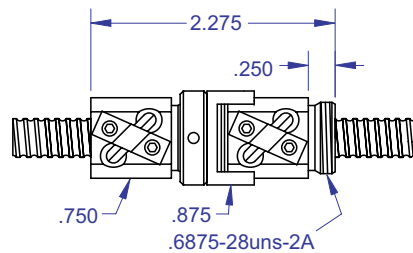
BALL SCREWS

Standard Ball Screw

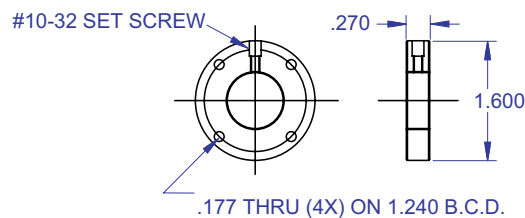


Ball bearing nominal diameter 2 mm. Average ball quantity per nut is 49.

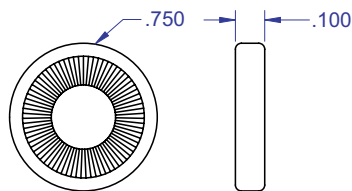
Preloaded Ball Screw



Mounting Flange



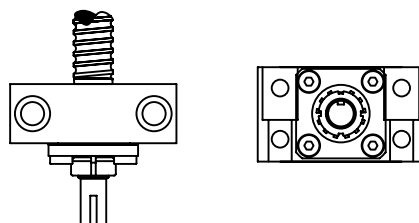
Wiper Kit (2 brush wipers)



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R12

.375 diameter x .125 lead

STANDARD BALL SCREW

Ball Screw Part #	R-12-1
Ball Nut Part #	R-12-2
Dynamic Load (lbs) for 1,000,000 (in)	170
Max. Static Load (lbs)	1,600
Ballnut Weight (lbs)	0.08
Ballscrew Weight (lbs/ft)	0.31

PRELOADED BALL SCREW

Preload Screw Part #	RP-12-1
Preload Ballnut Part #	RP-12-2
Dynamic Load (lbs)** for 1,000,000 (in)	153
Max. Static Load (lbs)**	1,583
Recommended Preload	17
Maximum Preload	51
Ballnut Weight (lbs)	0.16

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-12-3
Wiper Kit Part #	R-12-4

TECHNICAL INFO

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R11/R16

BALL SCREWS

.375 diameter x .125 lead

STANDARD BALL SCREW

Ball Screw Part #	R-11-1	R-16-1*
Ball Nut Part #	R-11-2	R-16-2*
Dynamic Load (lbs) for 1,000,000 (in)	300	50
Max. Static Load (lbs)	2,600	460
Ballnut Weight (lbs)	0.15	0.15
Ballscrew Weight (lbs/ft)	0.31	0.31

*Stainless Steel

PRELOADED BALL SCREW

Preload Screw Part #	RP-11-1	RP-16-1*
Preload Ballnut Part #	RP-11-2	RP-16-2*
Dynamic Load (lbs)** for 1,000,000 (in)	270	45
Max. Static Load (lbs)**	2,570	455
Recommended Preload	30	5
Maximum Preload	90	15
Ballnut Weight (lbs)	0.30	0.30

**Based on recommended Preload.

ACCESSORIES

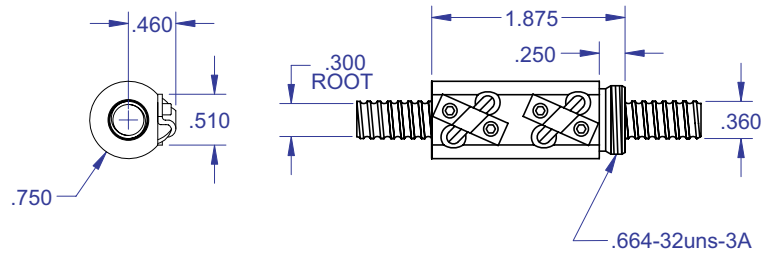
Mounting Flange Part #	R-11-3	R-16-3*
Wiper Kit Part #	R-11-4	R-16-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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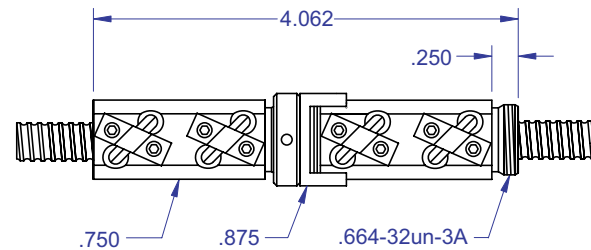
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

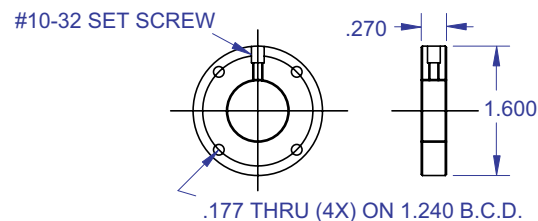


Ball bearing nominal diameter 1/16". Average ball quantity per nut is 124.

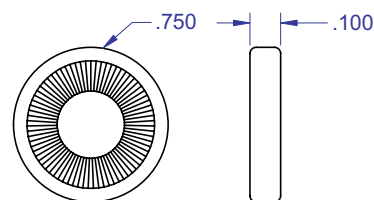
Preloaded Ball Screw



Mounting Flange



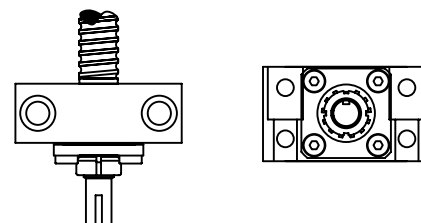
Wiper Kit



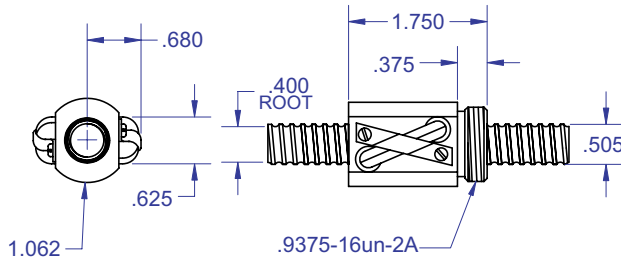
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

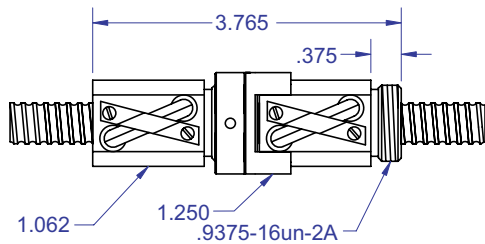


Standard Ball Screw

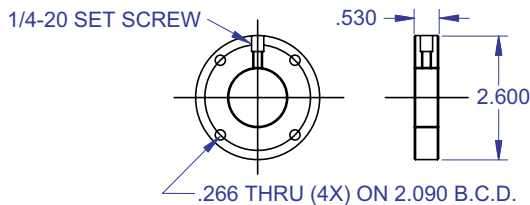


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 70.

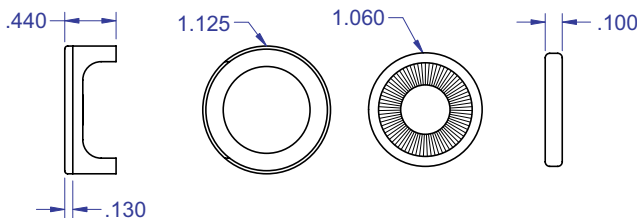
Preloaded Ball Screw



Mounting Flange



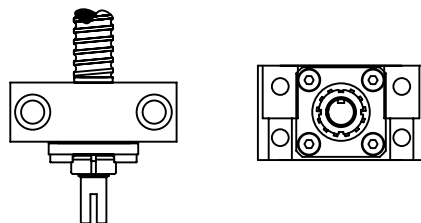
Wiper Kit (2 wipers and rear end cap)



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



.500 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-20-1	R-21-1*
Ball Nut Part #	R-20-2	R-21-2*
Dynamic Load (lbs) for 1,000,000 (in)	850	140
Max. Static Load (lbs)	4,150	750
Ballnut Weight (lbs)	0.25	0.25
Ballscrew Weight (lbs/ft)	0.58	0.58

*Stainless Steel

PRELOADED BALL SCREW

Preload Screw Part #	RP-20-1	RP-21-1*
Preload Ballnut Part #	RP-20-2	RP-21-2*
Dynamic Load (lbs)** for 1,000,000 (in)	765	126
Max. Static Load (lbs)**	4,065	736
Recommended Preload	85	14
Maximum Preload	255	42
Ballnut Weight (lbs)	0.50	0.50

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-20-3	R-21-3*
Wiper Kit Part #	R-20-4	R-21-4
Flange Wiper Cap Part#	R-20-4F	R-21-4F

TECHNICAL INFO

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R22/R23

.500 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-22-1*	R-23-1
Ball Nut Part #	R-22-2*	R-23-2
Dynamic Load (lbs) for 1,000,000 (in)	140	850
Max. Static Load (lbs)	750	4,150
Ballnut Weight (lbs)	0.30	0.30
Ballscrew Weight (lbs/ft)	0.58	0.58

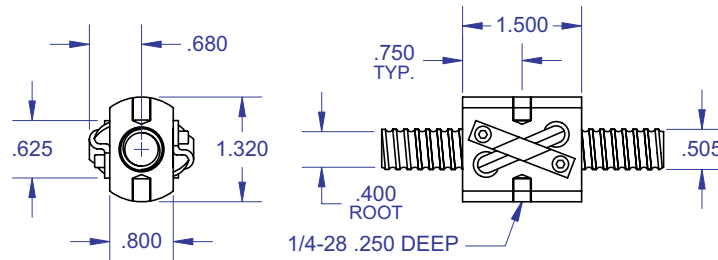
*Stainless Steel

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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Standard Ball Screw

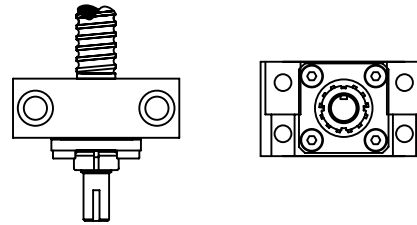


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 70.

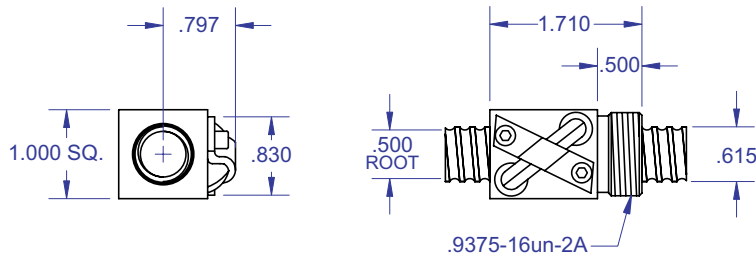
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

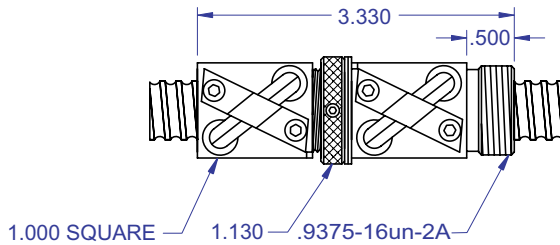


Standard Ball Screw

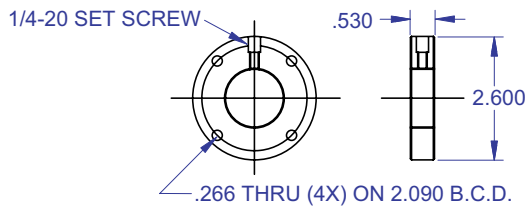


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 67.

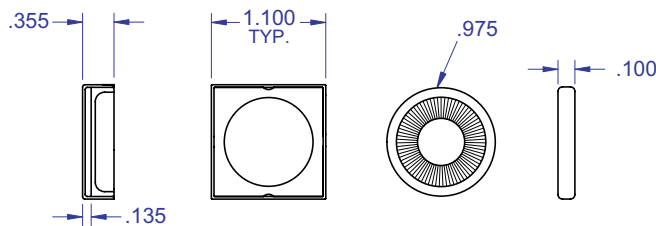
Preloaded Ball Screw



Mounting Flange



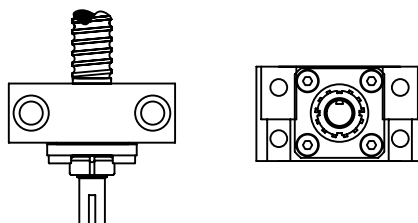
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



.631 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-30-1	R-32-1*
Ball Screw Part # LH	R-31-1	
Ball Nut Part # RH	R-30-2	R-32-2*
Ball Nut Part # LH	R-31-2	
Dynamic Load (lbs) for 1,000,000 (in)	825	170
Max. Static Load (lbs)	6,250	1,250
Ballnut Weight (lbs)	0.26	0.26
Ballscrew Weight (lbs/ft)	0.83	0.83

*Stainless Steel

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-30-1	RP-32-1*
Preload Screw Part # LH	RP-31-1	
Preload Ballnut Part # RH	RP-30-2	RP-32-2*
Preload Nut Part # LH	RP-31-2	
Dynamic Load (lbs)** for 1,000,000 (in)	742	153
Max. Static Load (lbs)**	6,167	1,233
Recommended Preload	83	17
Maximum Preload	249	51
Ballnut Weight (lbs)	0.52	0.52

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part # RH	R-30-3	R-32-3*
Mounting Flange Part # LH	R-31-3	
Wiper Kit Part # RH	R-30-4	R-32-4
	R-31-4	
Flange Wiper Cap Part#	R-30-4F	R-32-4F
	R-31-4F	

TECHNICAL INFO

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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R30A/R31A

BALL SCREWS

.631 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-30A-1	
Ball Screw Part # LH		R-31A-1
Ball Nut Part #RH	R-30A-2	
Ball Nut Part #LH		R-31A-2
Dynamic Load (lbs)		
for 1,000,000 (in)	1,650	1,650
Max. Static Load (lbs)	9,000	9,000
Ballnut Weight (lbs)	0.51	0.51
Ballscrew Weight (lbs/ft)	0.83	0.83

PRELOADED BALL SCREW

Preload Screw Part #RH	RP-30A-1	
Preload Screw Part #LH		RP-31A-1
Preload Ballnut Part # RH	RP-30A-2	
Preload Ballnut Part # LH		RP-31A-2
Dynamic Load (lbs)**		
for 1,000,000 (in)	1,485	1,485
Max. Static Load (lbs)**	8,835	8,835
Recommended Preload	165	165
Maximum Preload	495	495
Ballnut Weight (lbs)	1.02	1.02

**Based on recommended Preload.

ACCESSORIES

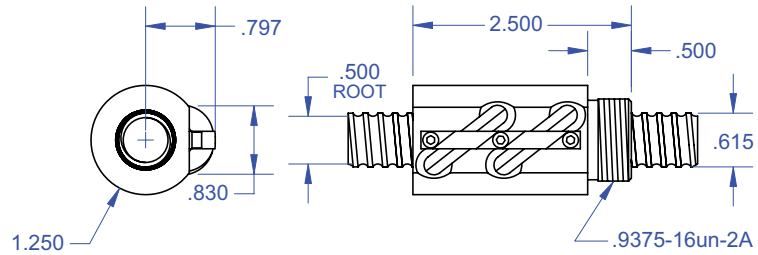
Mounting Flange Part #	R-30A-3	R-31A-3
Wiper Kit Part #	R-30A-4	R-31A-4
Flange Wiper Cap Part#	R-30A-4F	R-31A-4F

TECHNICAL INFO

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Lubrication information	page 17-18

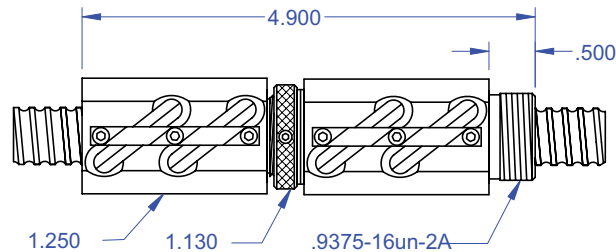
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

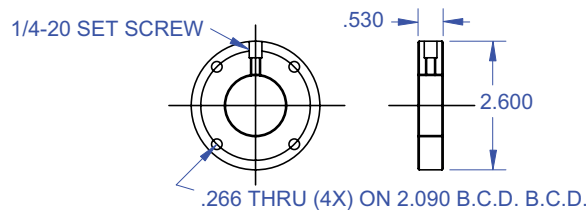


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 134.

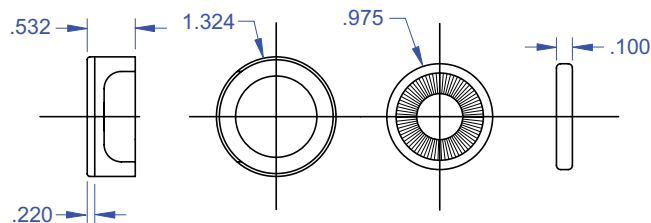
Preloaded Ball Screw



Mounting Flange



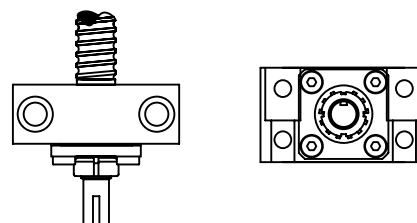
Wiper Kit



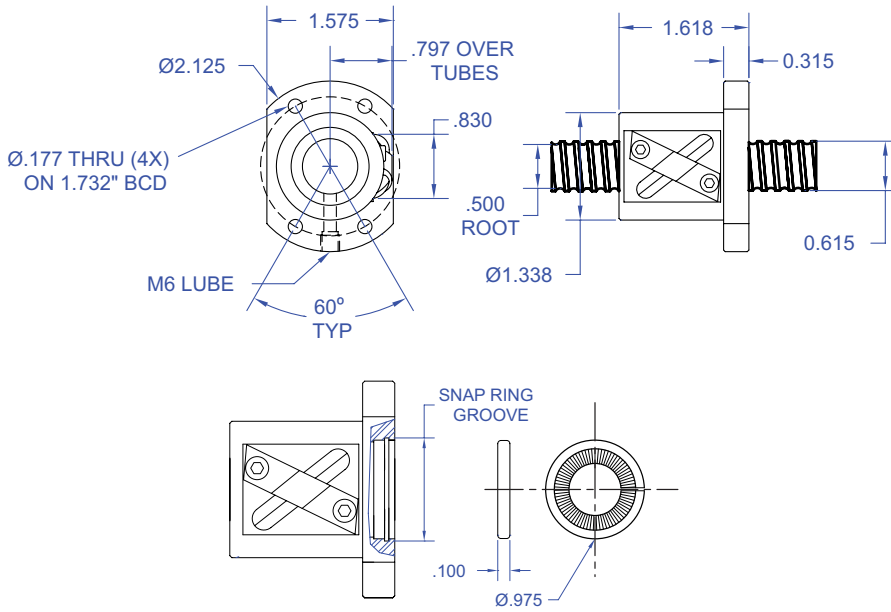
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



Standard Ball Screw



Ball bearing nominal diameter 1/8". Average ball quantity per nut is 67.

R30RFW/ R31LFW

**.631 diameter x
.200 lead**

STANDARD BALL SCREW

Ball Screw Part # RH	R-30RFW-1	
Ball Screw Part # LH		R-31LFW-1
Ball Nut Part # RH	R-30RFW-2	
Ball Nut Part # LH		R-31LFW-2
Dynamic Load (lbs) for 1,000,000 (in)	825	825
Max. Static Load (lbs)	6,250	6,250
Ballnut Weight (lbs)	0.91	0.91
Ballscrew Weight (lbs/ft)	0.83	0.83

ACCESSORIES

Wiper Kit Part # RH	R-30RFW-4	
Wiper Kit Part # LH		R-31LFW-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

.750 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part #	R-34-1
Ball Nut Part #	R-34-2
Dynamic Load (lbs) for 1,000,000 (in)	1,900
Max. Static Load (lbs)	17,800
Ballnut Weight (lbs)	0.53
Ball screw Weight (lbs/ft)	1.35

PRELOADED BALL SCREW

Preload Screw Part #	RP-34-1
Preload Ballnut Part #	RP-34-2
Dynamic Load (lbs)** for 1,000,000 (in)	1,710
Max. Static Load (lbs)**	17,610
Recommended Preload	190
Maximum Preload	570
Ballnut Weight (lbs)	1.06

**Based on recommended Preload.

ACCESSORIES

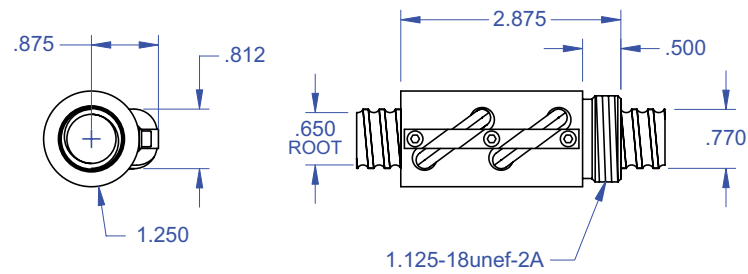
Mounting Flange Part #	R-34-3
Wiper Kit Part #	R-34-4
Flange Wiper Cap Part#	R-34-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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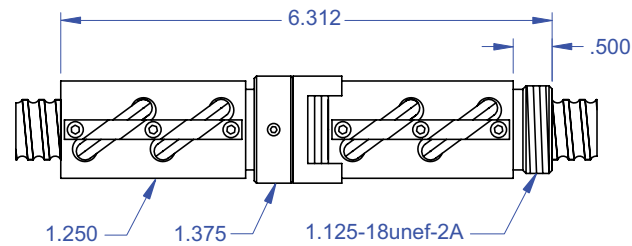
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

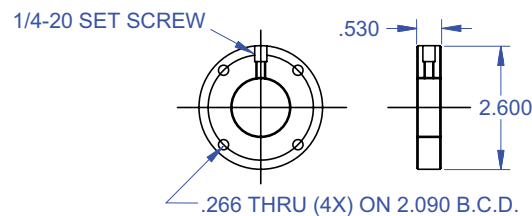


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 168.

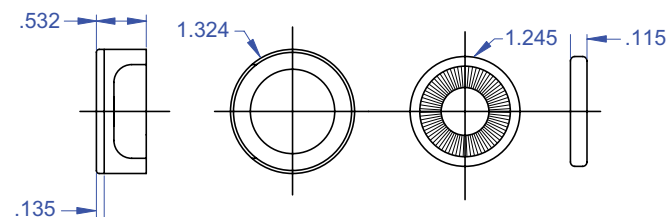
Preloaded Ball Screw



Mounting Flange



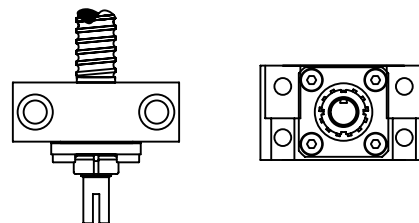
Wiper Kit



Bearing Mount

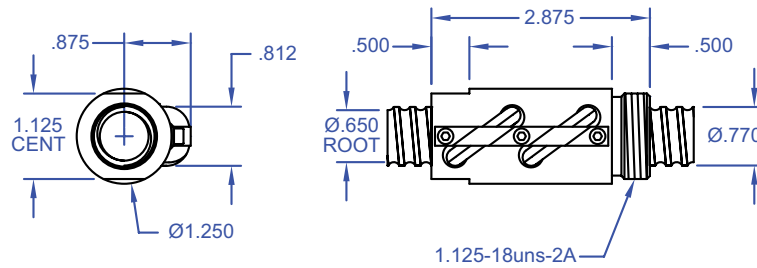
Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



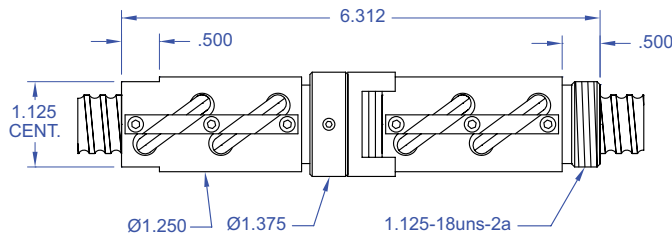
R34A

Standard Ball Screw

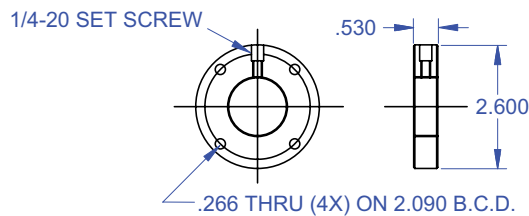


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 168.

Preloaded Ball Screw



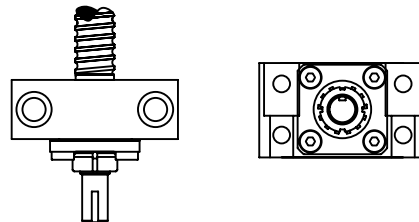
Mounting Flange



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



.750 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part #	R-34A-1
Ball Nut Part #	R-34A-2
Dynamic Load (lbs)	
for 1,000,000 (in)	1,900
Max. Static Load (lbs)	17,800
Ballnut Weight (lbs)	0.53
Ballscrew Weight (lbs/ft)	1.35

PRELOADED BALL SCREW

Preload Screw Part #	RP-34A-1
Preload Ballnut Part #	RP-34A-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	1,710
Max. Static Load (lbs)**	17,610
Recommended Preload	190
Maximum Preload	570
Ballnut Weight (lbs)	1.06

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-34A-3
Wiper Kit Part #	R-34A-4

TECHNICAL INFO

Bearing Mounts and	
Machined Ends	page 106-111
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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R35/R36

BALL SCREWS

.750 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part #	R-35-1	R-36-1*
Ball Nut Part #	R-35-2	R-36-2*
Dynamic Load (lbs) for 1,000,000 (in)	950	160
Max. Static Load (lbs)	8,900	1,350
Ballnut Weight (lbs)	0.33	0.33
Ballscrew Weight (lbs/ft)	1.35	1.35

*Stainless Steel

PRELOADED BALL SCREW

Preload Screw Part #	RP-35-1	RP-36-1*
Preload Ballnut Part #	RP-35-2	RP-36-2*
Dynamic Load (lbs)** for 1,000,000 (in)	855	144
Max. Static Load (lbs)**	8,805	1,334
Recommended Preload	95	16
Maximum Preload	285	48
Ballnut Weight (lbs)	0.66	0.66

**Based on recommended Preload.

ACCESSORIES

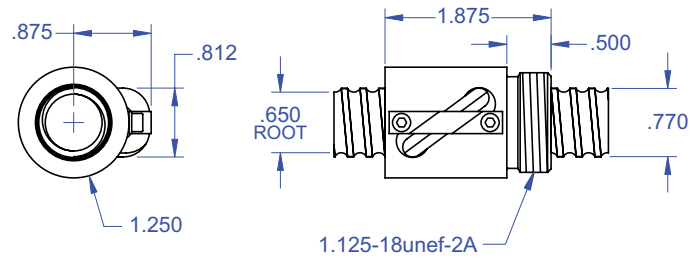
Mounting Flange Part #	R-35-3	R-36-3*
Wiper Kit Part #	R-35-4	R-36-4
Flange Wiper Cap Part#	R-35-4F	R-36-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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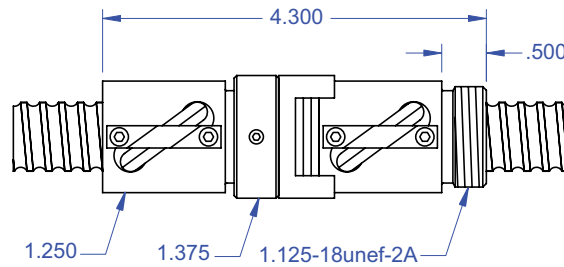
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

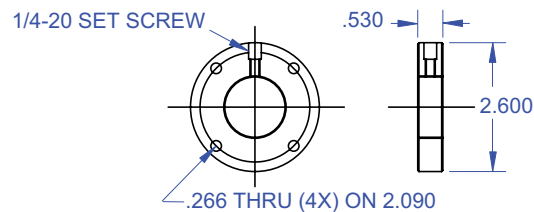


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 84.

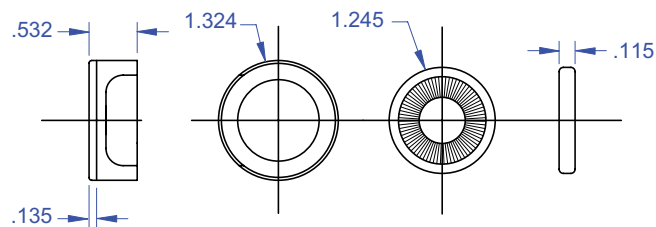
Preloaded Ball Screw



Mounting Flange



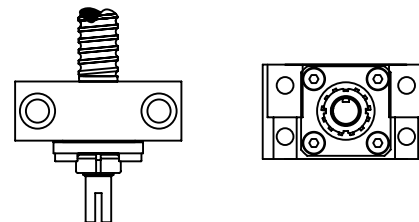
Wiper Kit



Bearing Mount

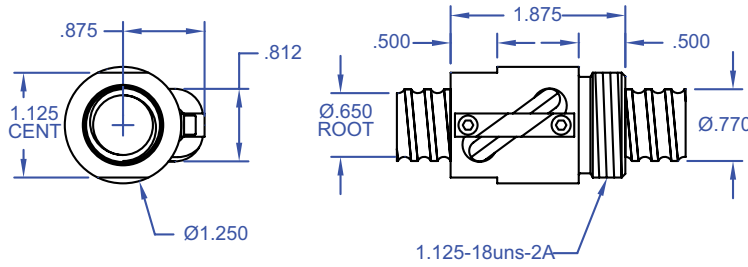
Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R35A

Standard Ball Screw



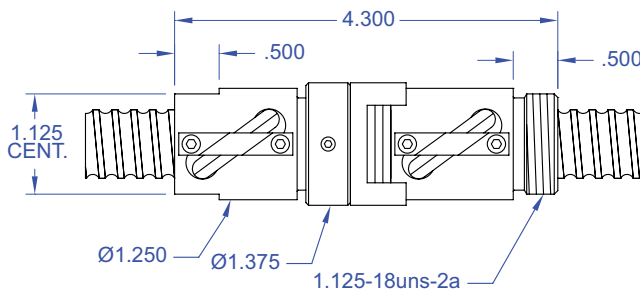
Ball bearing nominal diameter 1/8". Average ball quantity per nut is 84.

.750 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part #	R-35A-1
Ball Nut Part #	R-35A-2
Dynamic Load (lbs) for 1,000,000 (in)	950
Max. Static Load (lbs)	8,900
Ballnut Weight (lbs)	0.33
Ballscrew Weight (lbs/ft)	1.35

Preloaded Ball Screw

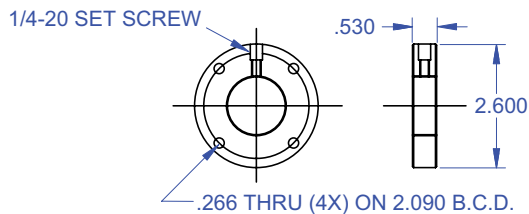


PRELOADED BALL SCREW

Preload Screw Part #	RP-35A-1
Preload Ballnut Part #	RP-35A-2
Dynamic Load (lbs)** for 1,000,000 (in)	855
Max. Static Load (lbs)**	8,805
Recommended Preload	95
Maximum Preload	285
Ballnut Weight (lbs)	0.66

**Based on recommended Preload.

Mounting Flange



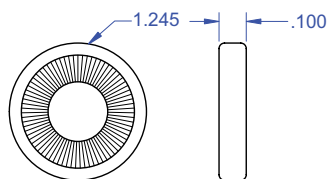
ACCESSORIES

Mounting Flange Part #	R-35A-3
Wiper Kit Part #	R-35A-4
Flange Wiper Cap Part#	R-35A-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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Wiper Kit

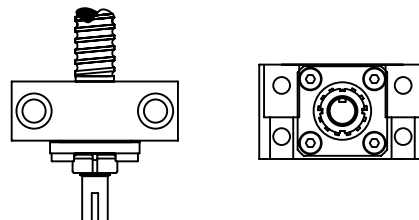


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Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R37/R38

BALL SCREWS

.750 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-37-1	R-38-1*
Ball Nut Part #	R-37-2	R-38-2*
Dynamic Load (lbs) for 1,000,000 (in)	3,400	600
Max. Static Load (lbs)	21,000	3,900
Ballnut Weight (lbs)	0.68	0.68
Ballscrew Weight (lbs/ft)	1.35	1.35
*Stainless Steel		

PRELOADED BALL SCREW

Preload Screw Part #	RP-37-1	RP-38-1*
Preload Ballnut Part #	RP-37-2	RP-38-2*
Dynamic Load (lbs)** for 1,000,000 (in)	3,060	540
Max. Static Load (lbs)**	20,660	3,840
Recommended Preload	340	60
Maximum Preload	1,020	180
Ballnut Weight (lbs)	1.36	1.36
**Based on recommended Preload.		

ACCESSORIES

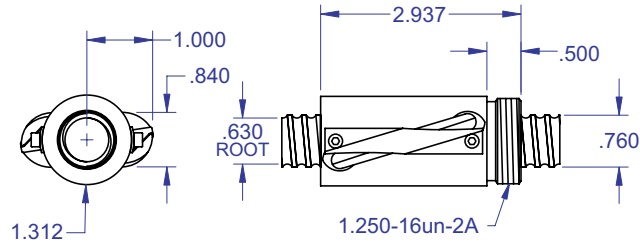
Mounting Flange Part #	R-37-3	R-38-3*
Wiper Kit Part #	R-37-4	R-38-4
Flange Wiper Cap Part#	R-37-4F	R-38-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

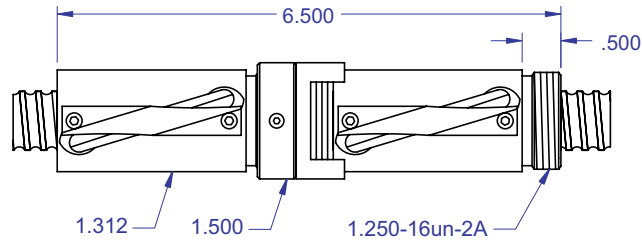
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

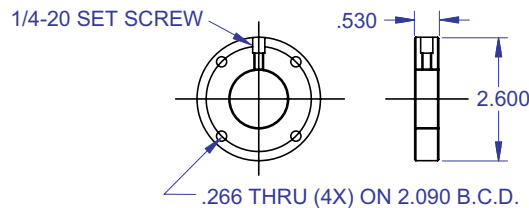


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 150.

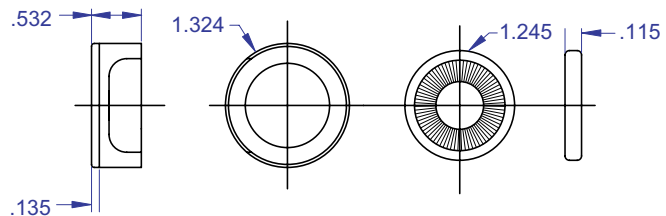
Preloaded Ball Screw



Mounting Flange



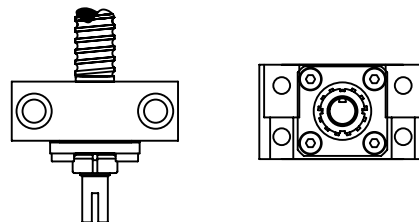
Wiper Kit



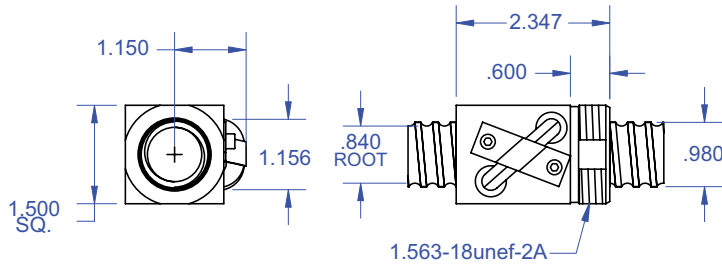
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

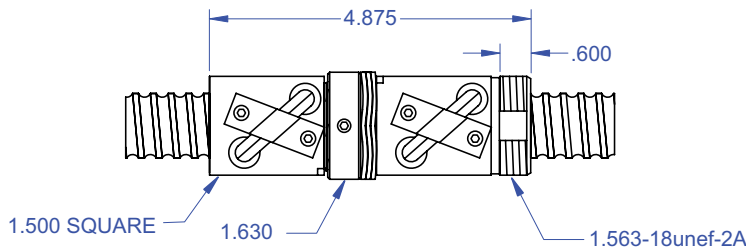


Standard Ball Screw

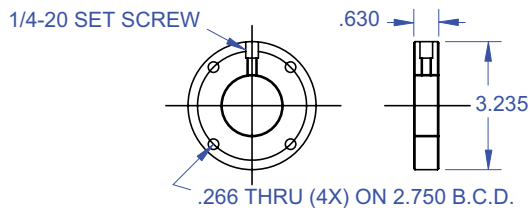


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 85.

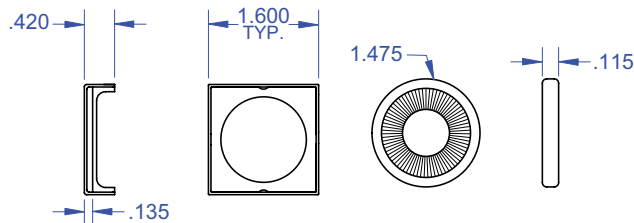
Preloaded Ball Screw



Mounting Flange



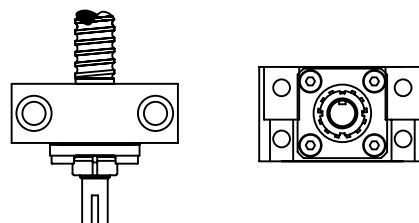
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-40-1	
Ball Screw Part # LH		R-41-1
Ball Nut Part # RH	R-40-2	
Ball Nut Part # LH		R-41-2
Dynamic Load (lbs)		
for 1,000,000 (in)	1,625	1,625
Max. Static Load (lbs)	13,000	13,000
Ballnut Weight (lbs)	0.83	0.83
Ballscrew Weight (lbs/ft)	2.18	2.18

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-40-1	
Preload Screw Part # LH		RP-41-1
Preload Ballnut Part # RH	RP-40-2	
Preload Ballnut Part # LH		RP-41-2
Dynamic Load (lbs)**		
for 1,000,000 (in)	1,462	1,462
Max. Static Load (lbs)**	12,837	12,837
Recommended Preload	163	163
Maximum Preload	489	489
Ballnut Weight (lbs)	1.66	1.66

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-40-3	R-41-3
Wiper Kit Part #	R-40-4	R-41-4
Flange Wiper Cap Part#	R-40-4F	R-41-4F

*Based on recommended Preload.

TECHNICAL INFO

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R40A

BALL SCREWS

1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part #	R-40A-1
Ball Nut Part #	R-40A-2
Dynamic Load (lbs) for 1,000,000 (in)	3,250
Max. Static Load (lbs)	26,000
Ballnut Weight (lbs)	1.12
Ballscrew Weight (lbs/ft)	2.18

PRELOADED BALL SCREW

Preload Screw Part #	RP-40A-1
Preload Ballnut Part #	RP-40A-2
Dynamic Load (lbs)** for 1,000,000 (in)	2,925
Max. Static Load (lbs)**	25,675
Recommended Preload	325
Maximum Preload	975
Ballnut Weight (lbs)	2.24

**Based on recommended Preload.

ACCESSORIES

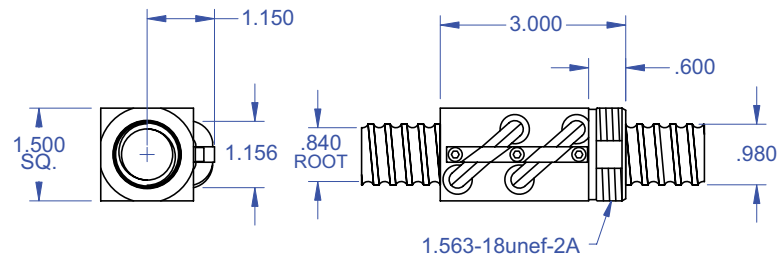
Mounting Flange Part #	R-40A-3
Wiper Kit Part #	R-40A-4
Flange Wiper Cap Part#	R-40A-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

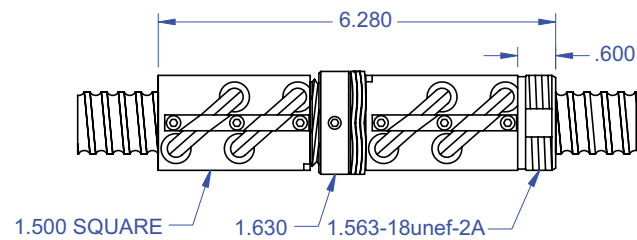
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

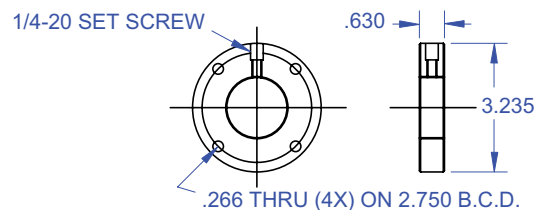


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 170.

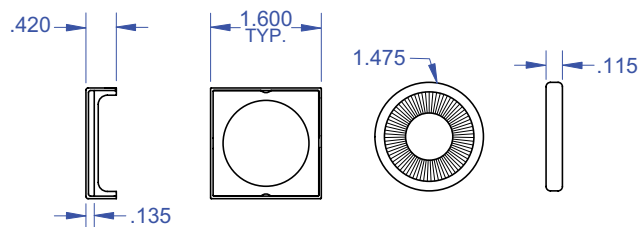
Preloaded Ball Screw



Mounting Flange



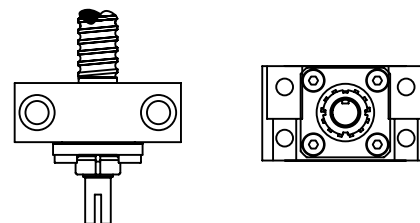
Wiper Kit



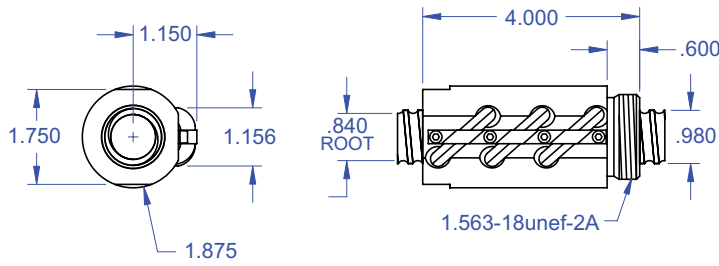
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

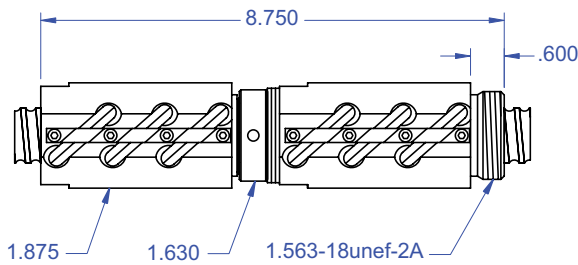


Standard Ball Screw

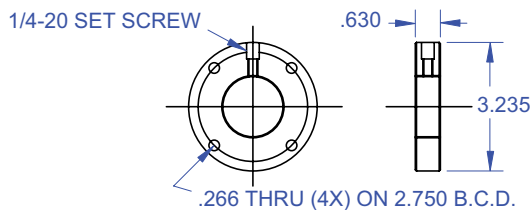


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 255.

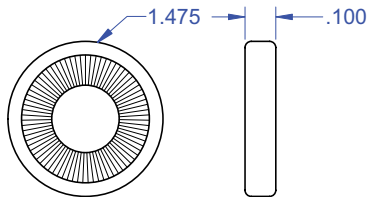
Preloaded Ball Screw



Mounting Flange



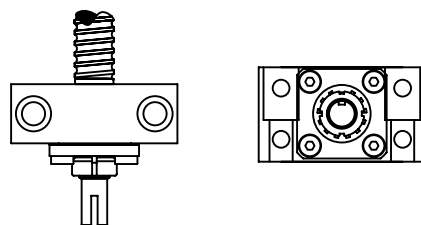
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R40B

1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part #	R-40B-1
Ball Nut Part #	R-40B-2
Dynamic Load (lbs) for 1,000,000 (in)	4,500
Max. Static Load (lbs)	39,000
Ballnut Weight (lbs)	1.92
Ballscrew Weight (lbs/ft)	2.18

PRELOADED BALL SCREW

Preload Screw Part #	RP-40B-1
Preload Ballnut Part #	RP-40B-2
Dynamic Load (lbs)** for 1,000,000 (in)	4,050
Max. Static Load (lbs)**	38,550
Recommended Preload	450
Maximum Preload	1,350
Ballnut Weight (lbs)	3.84

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-40B-3
Wiper Kit Part #	R-40B-4
Flange Wiper Cap Part#	R-40B-4F

TECHNICAL INFO

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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R40RF/ R41LF

1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-40RF-1	
Ball Screw Part # LH		R-41LF-1
Ball Nut Part # RH	R-40RF-2	
Ball Nut Part # LH		R-41LF-2

Dynamic Load (lbs)		
for 1,000,000 (in)	3,250	3,250
Max. Static Load (lbs)	26,000	26,000
Ballnut Weight (lbs)	1.54	1.54
Ball screw Weight (lbs/ft)	2.18	2.18

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-40RF-1	
Preload Screw Part # LH		RP-41LF-1
Preload Ballnut Part # RH	RP-40RF-2	
Preload Ballnut Part # LH		RP-41LF-2

Dynamic Load (lbs)**		
for 1,000,000 (in)	2,925	2,925
Max. Static Load (lbs)**	25,675	25,675
Recommended Preload	325	325
Maximum Preload	975	975
Ballnut Weight (lbs)	3.08	3.08

**Based on recommended Preload.

ACCESSORIES

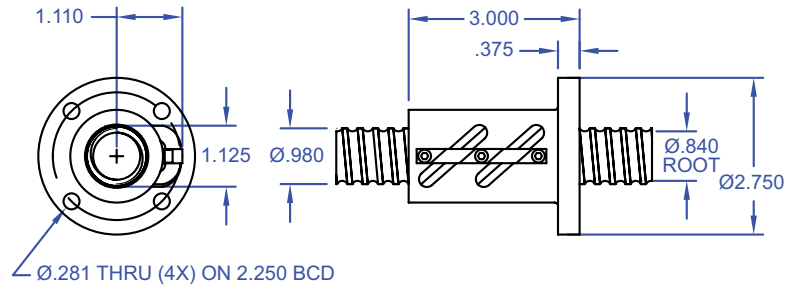
Wiper Kit Part #	R-40B-4
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TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

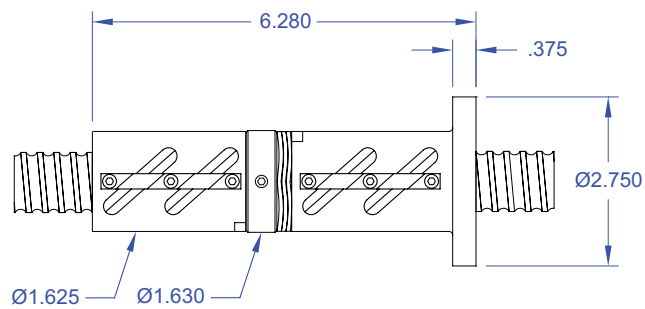
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

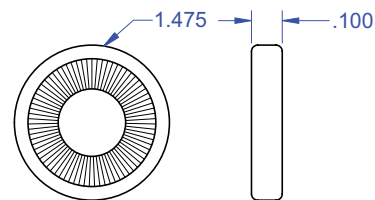


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 170.

Preloaded Ball Screw



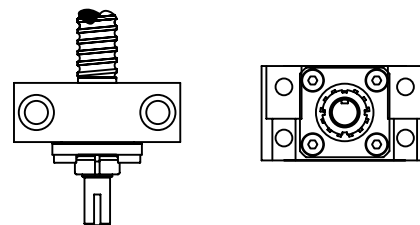
Wiper Kit



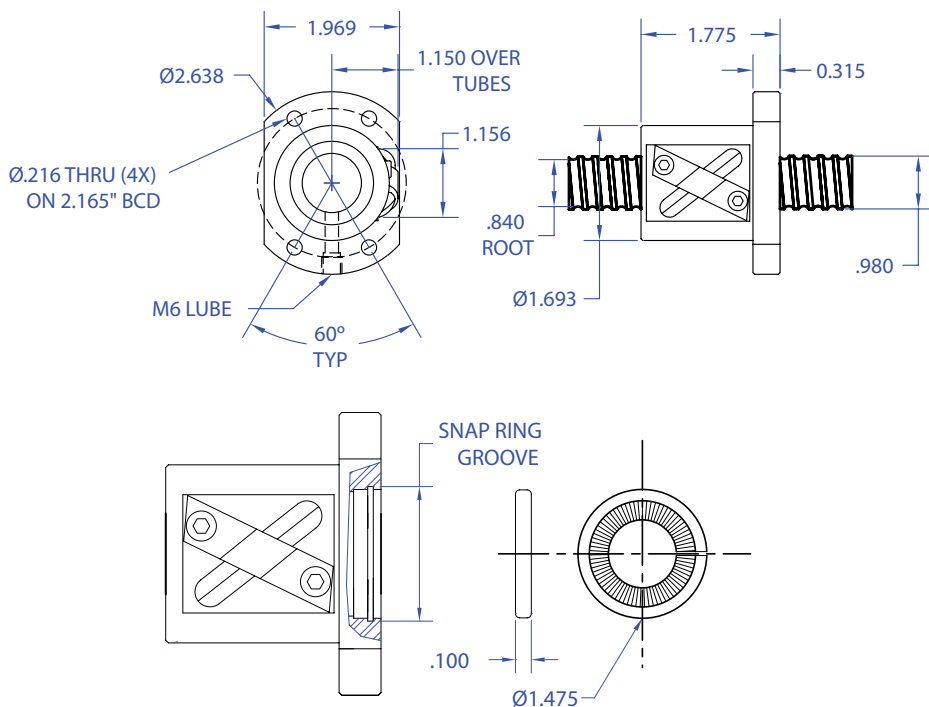
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



Standard Ball Screw



Ball bearing nominal diameter 5/32". Average ball quantity per nut is 85.

R40C/R41C

1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-40C-1	
Ball Screw Part # LH		R-41C-1
Ball Nut Part # RH	R-40C-2	
Ball Nut Part # RH		R-41C-2
Dynamic Load (lbs) for 1,000,000 (in)	1,625	1,625
Max. Static Load (lbs)	13,000	13,000
Ballnut Weight (lbs)	1.90	1.90
Ballscrew Weight (lbs/ft)	2.18	2.18

ACCESSORIES

Wiper Kit Part # RH	R-40C-4	
Wiper Kit Part # RH		R-41C-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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R40AR

BALL SCREWS

1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-40AR-1
Ball Nut Part # RH	R-40AR-2
Dynamic Load (lbs) for 1,000,000 (in)	3,250
Max. Static Load (lbs)	26,000
Ballnut Weight (lbs)	1.12
Ball screw Weight (lbs/ft)	2.18

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-40AR-1
Preload Ballnut Part # RH	RP-40AR-2
Dynamic Load (lbs)** for 1,000,000 (in)	2,925
Max. Static Load (lbs)**	25,675
Recommended Preload	325
Maximum Preload	975
Ballnut Weight (lbs)	2.24

**Based on recommended Preload.

ACCESSORIES

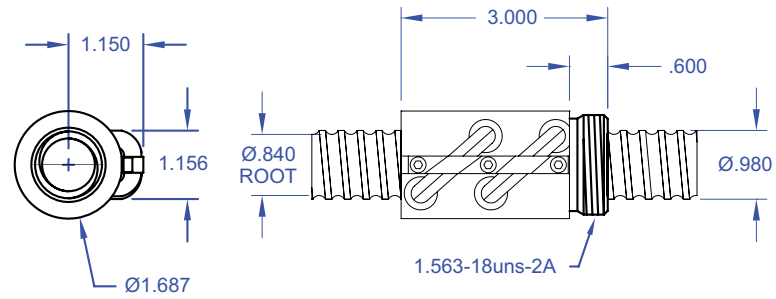
Mounting Flange Part #	R-40AR-3
Wiper Kit Part #	R-40AR-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

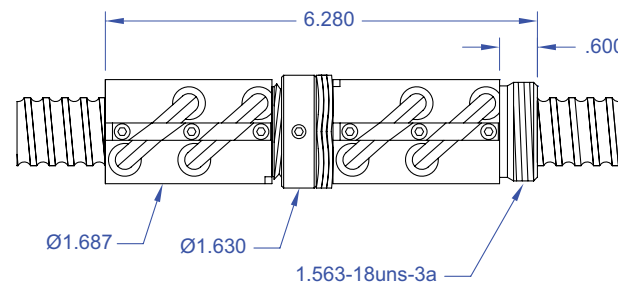
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

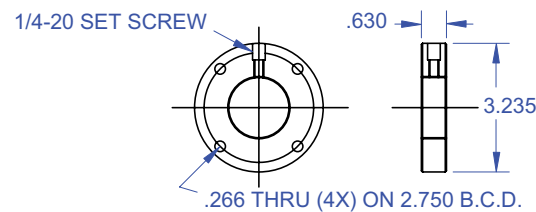


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 170.

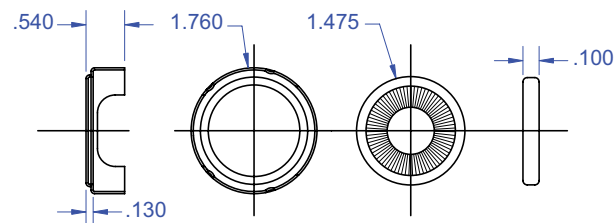
Preloaded Ball Screw



Mounting Flange



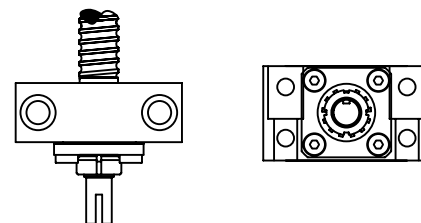
Wiper Kit



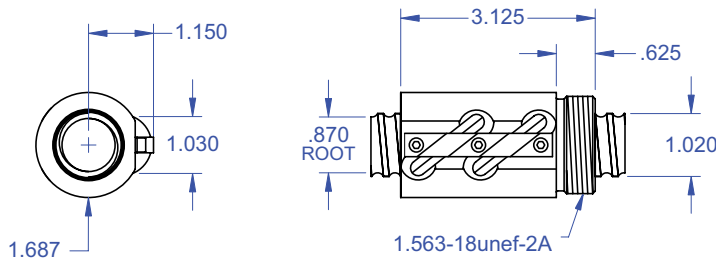
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

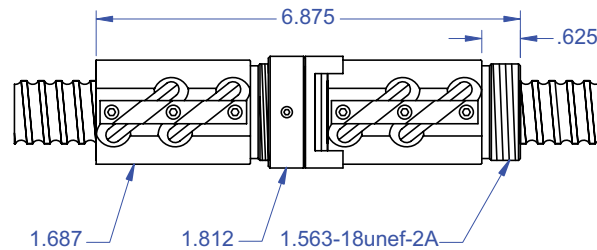


Standard Ball Screw

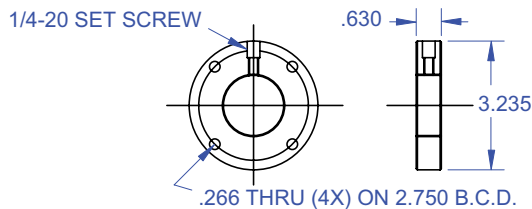


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 178.

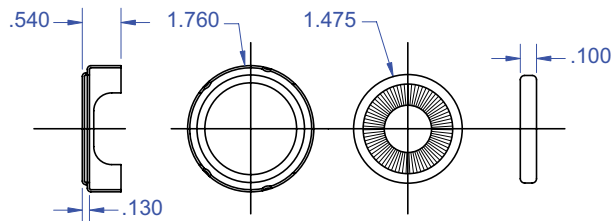
Preloaded Ball Screw



Mounting Flange



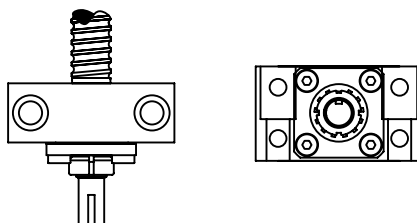
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



1.000 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part #	R-42-1
Ball Nut Part #	R-42-2
Dynamic Load (lbs)	
for 1,000,000 (in)	3,450
Max. Static Load (lbs)	30,000
Ballnut Weight (lbs)	1.06
Ballscrew Weight (lbs/ft)	2.40

PRELOADED BALL SCREW

Preload Screw Part #	RP-42-1
Preload Ballnut Part #	RP-42-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	3,105
Max. Static Load (lbs)**	29,655
Recommended Preload	345
Maximum Preload	1,035
Ballnut Weight (lbs)	2.12

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-42-3
Wiper Kit Part #	R-42-4
Flange Wiper Cap Part#	R-42-4F

TECHNICAL INFO

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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

1.000 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-43-1
Ball Nut Part #	R-43-2
Dynamic Load (lbs) for 1,000,000 (in)	4,250
Max. Static Load (lbs)	30,000
Ballnut Weight (lbs)	1.06
Ballscrew Weight (lbs/ft)	2.41

PRELOADED BALL SCREW

Preload Screw Part #	RP-43-1
Preload Ballnut Part #	RP-43-2
Dynamic Load (lbs)** for 1,000,000 (in)	3,825
Max. Static Load (lbs)**	29,575
Recommended Preload	425
Maximum Preload	1,275
Ballnut Weight (lbs)	2.12

**Based on recommended Preload.

ACCESSORIES

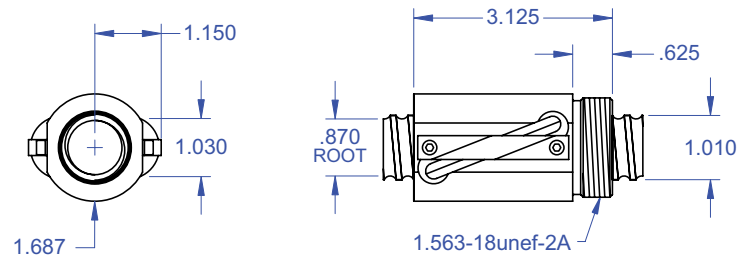
Mounting Flange Part #	R-43-3
Wiper Kit Part #	R-43-4
Flange Wiper Cap Part#	R-43-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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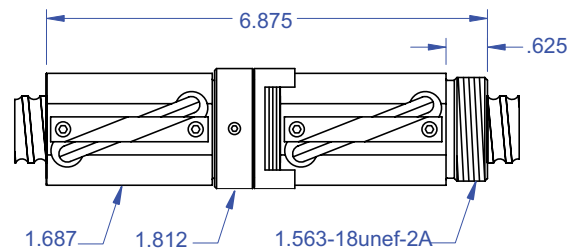
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

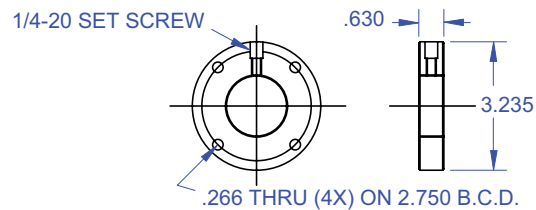


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 186.

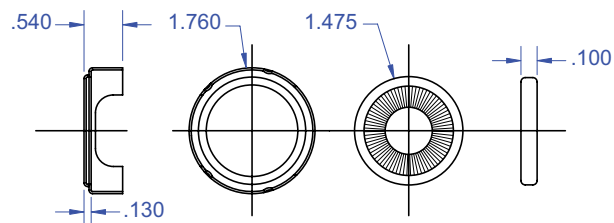
Preloaded Ball Screw



Mounting Flange



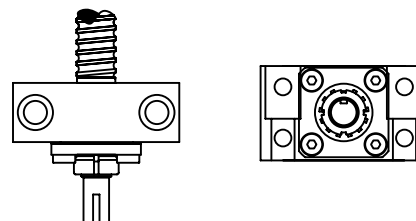
Wiper Kit



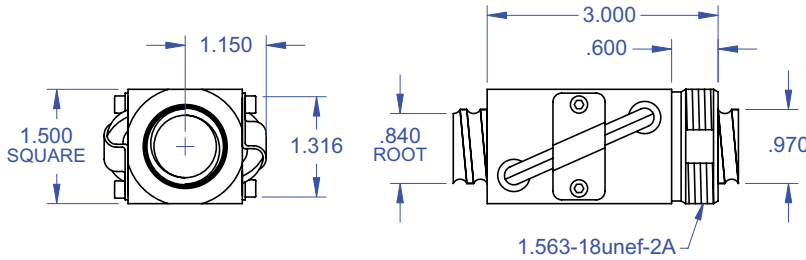
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



Standard Ball Screw



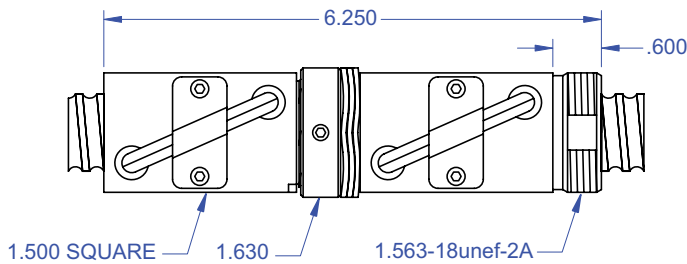
Ball bearing nominal diameter 5/32". Average ball quantity per nut is 98.

1.000 diameter x 1.000 lead

STANDARD BALL SCREW

Ball Screw Part #	R-44-1
Ball Nut Part #	R-44-2
Dynamic Load (lbs) for 1,000,000 (in)	2,300
Max. Static Load (lbs)	11,500
Ballnut Weight (lbs)	1.12
Ballscrew Weight (lbs/ft)	2.17

Preloaded Ball Screw

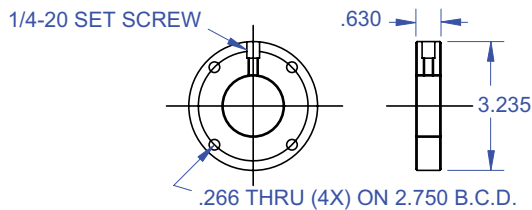


PRELOADED BALL SCREW

Preload Screw Part #	RP-44-1
Preload Ballnut Part #	RP-44-2
Dynamic Load (lbs)** for 1,000,000 (in)	2,070
Max. Static Load (lbs)**	11,270
Recommended Preload	230
Maximum Preload	690
Ballnut Weight (lbs)	2.24

**Based on recommended Preload.

Mounting Flange



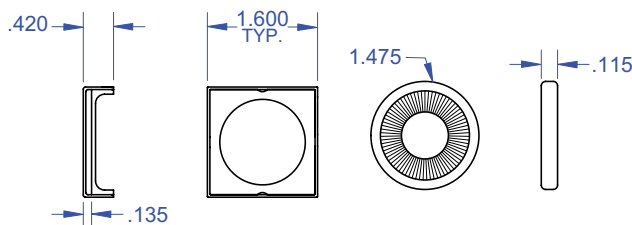
ACCESSORIES

Mounting Flange Part #	R-44-3
Wiper Kit Part #	R-44-4
Flange Wiper Cap Part#	R-44-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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Wiper Kit

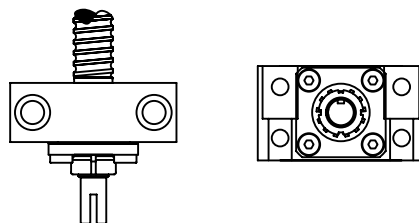


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Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R45/R46/R47

BALL SCREWS

1.150 diameter x .200 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-45-1	R-46-1*
Ball Screw Part # LH	R-47-1	
Ball Nut Part # RH	R-45-2	R-46-2*
Ball Nut Part # LH	R-47-2	
Dynamic Load (lbs)		
for 1,000,000 (in)	2,450	490
Max. Static Load (lbs)	24,500	4,600
Ballnut Weight (lbs)	0.81	0.81
Ballscrew Weight (lbs/ft)	3.10	3.10
*Stainless Steel		

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-45-1	RP-46-1*
Preload Screw Part # LH	RP-47-1	
Preload Ballnut Part # RH	RP-45-2	RP-46-2*
Preload Ballnut Part # LH	RP-47-2	
Dynamic Load (lbs)**		
for 1,000,000 (in)	2,205	441
Max. Static Load (lbs)**	24,255	4,453
Recommended Preload	245	49
Maximum Preload	735	145
Ballnut Weight (lbs)	1.62	1.62
**Based on recommended Preload.		

ACCESSORIES

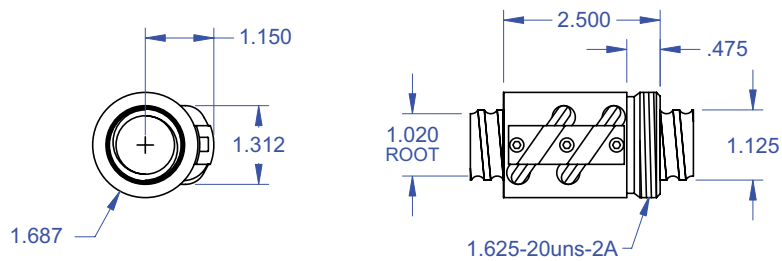
Mounting Flange Part # RH	R-45-3	R-46-3*
Mounting Flange Part # LH	R-47-3	
Wiper Kit Part # RH	R-45-4	R-46-4
Wiper Kit Part # LH	R-47-4	
Flange Wiper Cap Part# RH	R-45-4F	R-46-4F
Flange Wiper Cap Part# LH	R-47-4F	

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

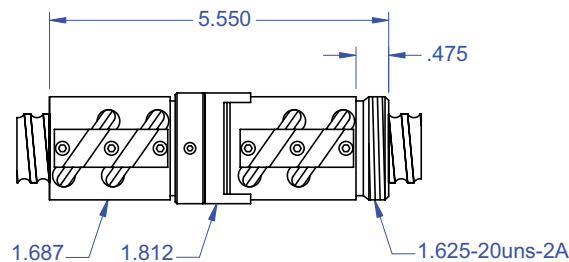
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

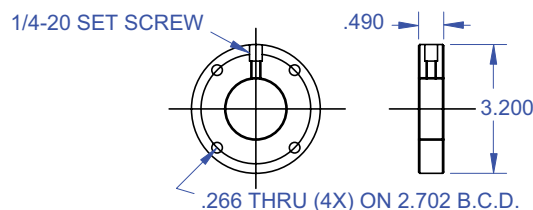


Ball bearing nominal diameter 1/8". Average ball quantity per nut is 244.

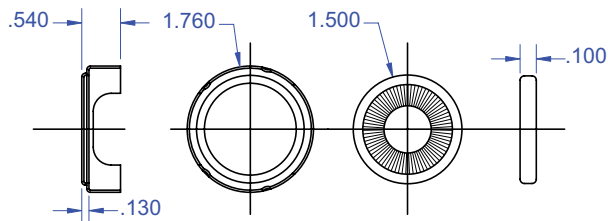
Preloaded Ball Screw



Mounting Flange



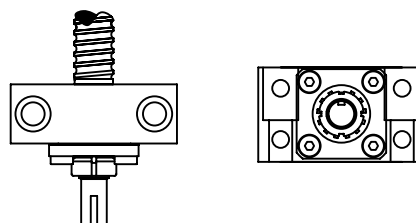
Wiper Kit



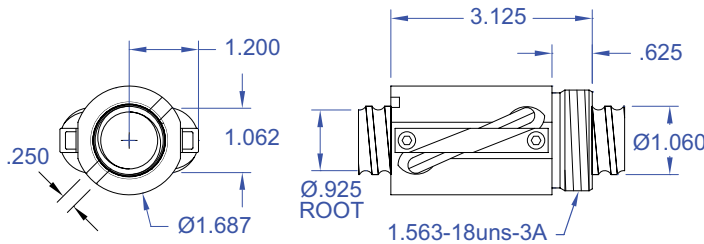
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

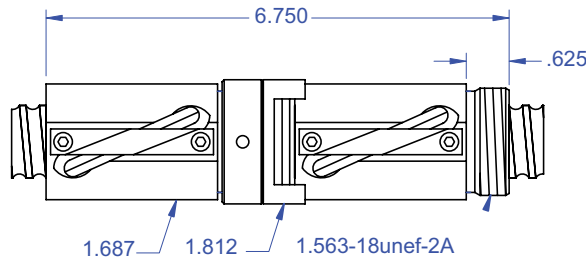


Standard Ball Screw

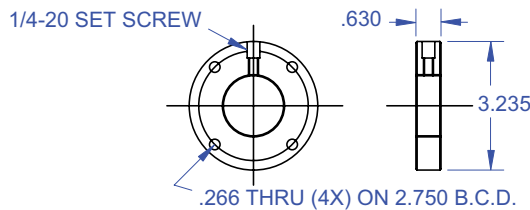


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 154.

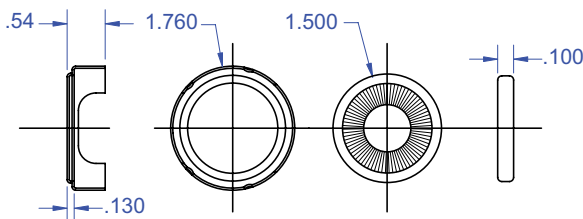
Preloaded Ball Screw



Mounting Flange



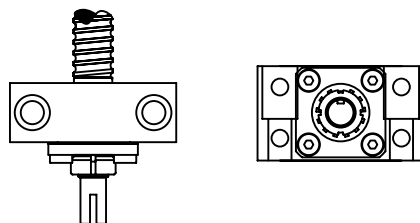
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R48

1.063 diameter x .625 lead

STANDARD BALL SCREW

Ball Screw Part #	R-48-1
Ball Nut Part #	R-48-2
Dynamic Load (lbs) for 1,000,000 (in)	3,300
Max. Static Load (lbs)	21,000
Ballnut Weight (lbs)	1.06
Ballscrew Weight (lbs/ft)	2.85

PRELOADED BALL SCREW

Preload Screw Part #	RP-48-1
Preload Ballnut Part #	RP-48-2
Dynamic Load (lbs)** for 1,000,000 (in)	2,970
Max. Static Load (lbs)**	20,670
Recommended Preload	330
Maximum Preload	990
Ballnut Weight (lbs)	2.12

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-48-3
Wiper Kit Part #	R-48-4
Flange Wiper Cap Part#	R-48-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R50

BALL SCREWS

1.500 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-50-1
Ball Nut Part #	R-50-2
Dynamic Load (lbs) for 1,000,000 (in)	9,050
Max. Static Load (lbs)	55,000
Ballnut Weight (lbs)	4.18
Ball screw Weight (lbs/ft)	5.34

PRELOADED BALL SCREW

Preload Screw Part #	RP-50-1
Preload Ballnut Part #	RP-50-2
Dynamic Load (lbs)** for 1,000,000 (in)	8,145
Max. Static Load (lbs)**	54,095
Recommended Preload	905
Maximum Preload	2,715
Ballnut Weight (lbs)	8.36

**Based on recommended Preload.

ACCESSORIES

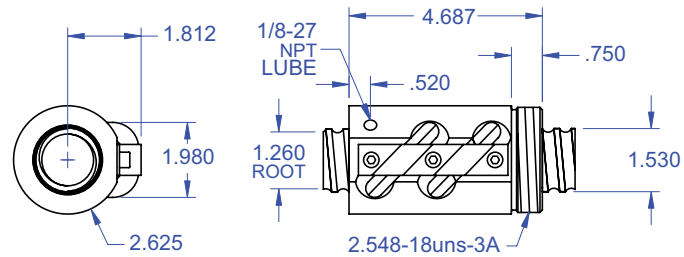
Standard Mounting Flange Part #	R-50-3
Alternate Mounting Flange Part #	R-50W-3
Wiper Kit Part #	R-50-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

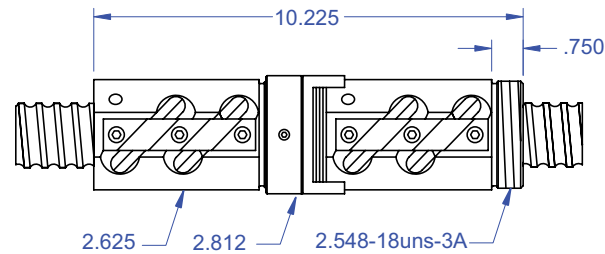
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

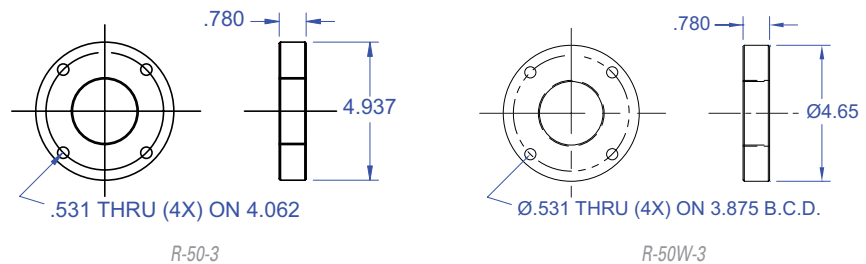


Ball bearing nominal diameter 5/16". Average ball quantity per nut is 102.

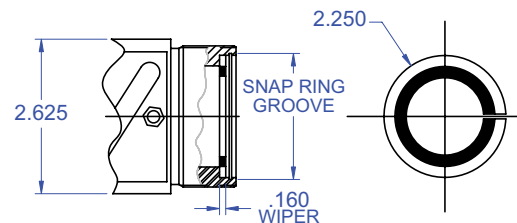
Preloaded Ball Screw



Mounting Flange



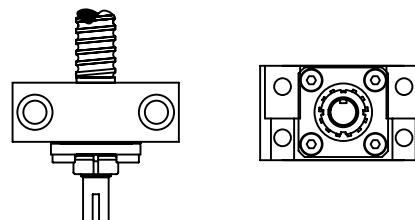
Wiper Kit



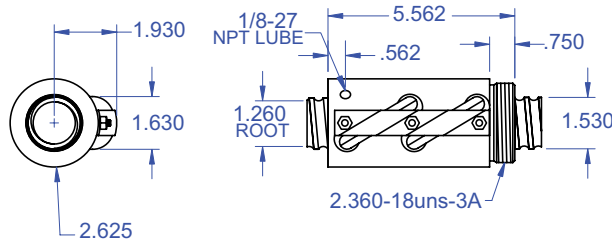
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

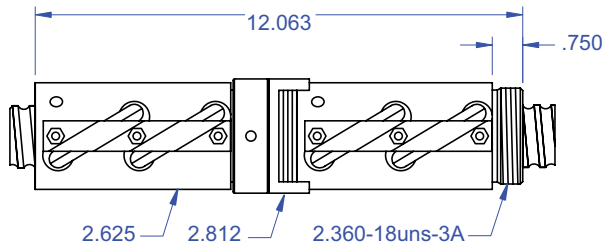


Standard Ball Screw

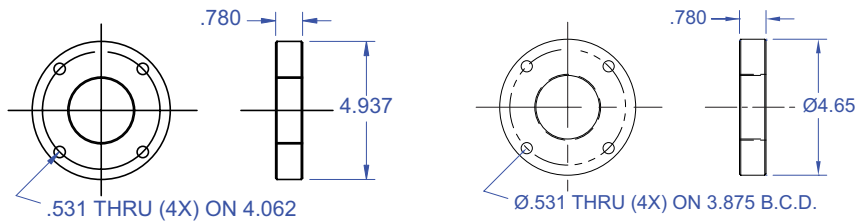


Ball bearing nominal diameter 5/16". Average ball quantity per nut is 140.

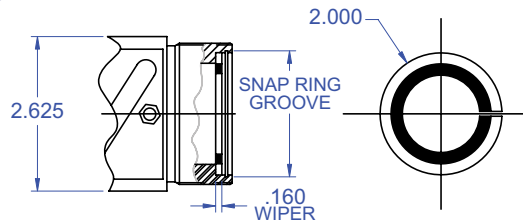
Preloaded Ball Screw



Mounting Flange



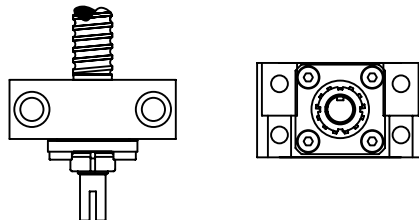
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



1.500 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-50A-1	
Ball Screw Part # LH		R-51A-1
Ball Nut Part # RH	R-50A-2	
Ball Nut Part # LH		R-51A-2
Dynamic Load (lbs) for 1,000,000 (in)	12,900	12,900
Max. Static Load (lbs)	94,000	94,000
Ballnut Weight (lbs)	4.99	4.99
Ballscrew Weight (lbs/ft)	5.34	5.34

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-50A-1	
Preload Screw Part # LH		RP-51A-1
Preload Ballnut Part # RH	RP-50A-2	
Preload Ballnut Part # LH		RP-51A-2
Dynamic Load (lbs)** for 1,000,000 (in)	11,610	11,610
Max. Static Load (lbs)**	92,710	92,710
Recommended Preload	1,290	1,290
Maximum Preload	3,870	3,870
Ballnut Weight (lbs)	9.98	9.98

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-50A-3	R-51A-3
Alternate Flange Part #	R-50AW-3	R-51AW-3
Wiper Kit Part #	R-50A-4	R-51A-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R53/R54

1.500 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part # LH	R-53-1
Ball Screw Part # RH	R-54-1
Ball Nut Part # LH	R-53-2
Ball Nut Part # RH	R-54-2
Dynamic Load (lbs) for 1,000,000 (in)	4,250
Max. Static Load (lbs)	44,800
Ballnut Weight (lbs)	1.23
Ballscrew Weight (lbs/ft)	5.60

PRELOADED BALL SCREW

Preload Screw Part # LH	RP-53-1	RP-53S-1
Preload Screw Part # RH	RP-54-1	RP-54S-1
Preload Ballnut Part # LH	RP-53-2	RP-53S-2
Preload Ballnut Part # RH	RP-54-2	RP-54S-2
Dynamic Load (lbs)**		
for 1,000,000 (in)	3,825	3,825
Max. Static Load (lbs)**	44,375	44,375
Recommended Preload	425	425
Maximum Preload	1,275	1,275
Ballnut Weight (lbs)	2.46	2.46

**Based on recommended Preload.

ACCESSORIES

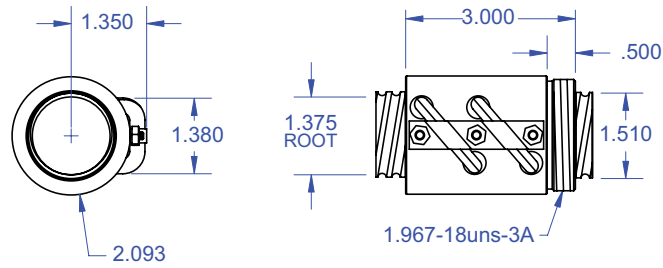
Mounting Flange Part #	R-53-3	R-54-3
Wiper Kit Part #	R-53-4	R-54-4
Flange Wiper Cap Part#	R-53-4F	R-54-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

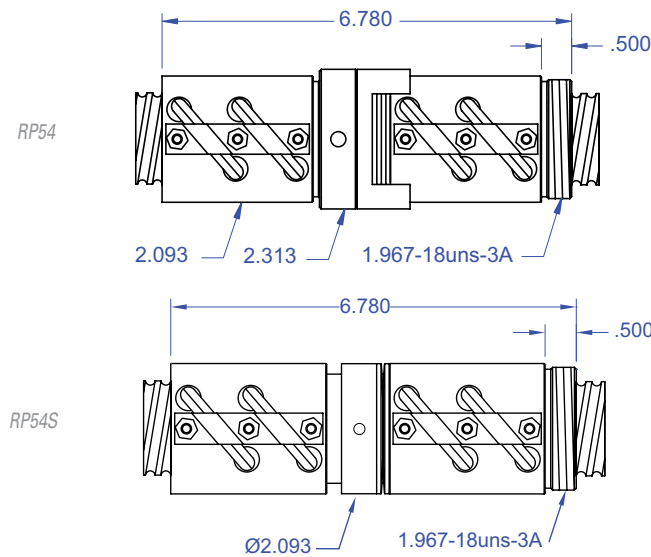
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

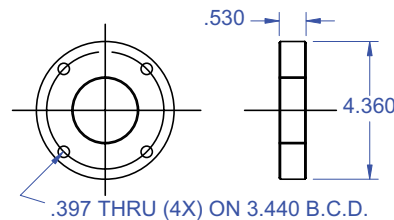


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 260.

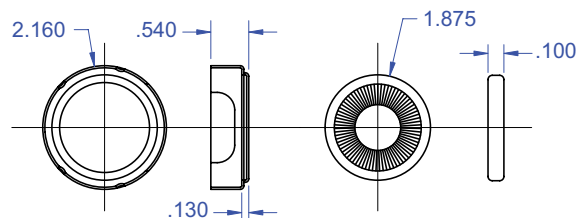
Preloaded Ball Screw



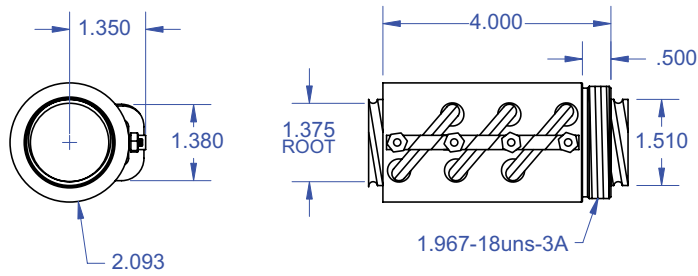
Mounting Flange



Wiper Kit

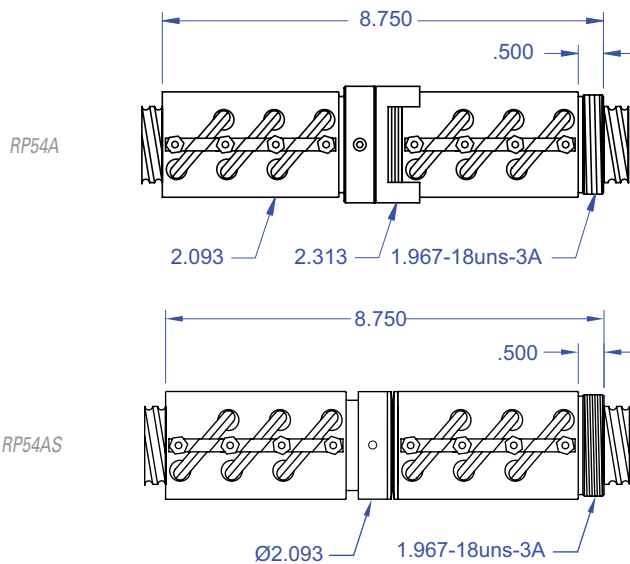


Standard Ball Screw

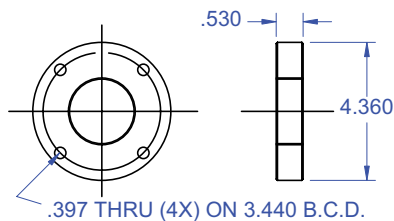


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 390.

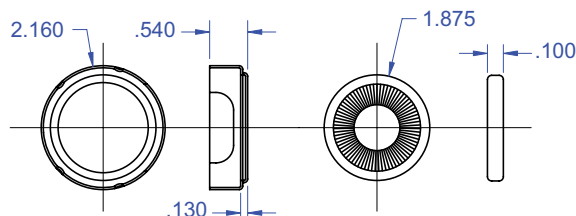
Preloaded Ball Screw



Mounting Flange



Wiper Kit



1.500 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part RH#	R-54A-1
Ball Screw Part LH#	R-53A-1
Ball Nut Part RH#	R-54A-2
Ball Nut Part LH#	R-53A-2
Dynamic Load (lbs) for 1,000,000 (in)	6,400
Max. Static Load (lbs)	67,200
Ballnut Weight (lbs)	1.64
Ballscrew Weight (lbs/ft)	5.60

PRELOADED BALL SCREW

Preload Screw Part RH#	RP-54A-1	RP-54AS-1
Preload Screw Part LH#	RP-53A-1	RP-53AS-1
Preload Ballnut Part RH#	RP-54A-2	RP-54AS-2
Preload Ballnut Part LH#	RP-53A-2	RP-53AS-2
Dynamic Load (lbs)** for 1,000,000 (in)	5,760	5,760
Max. Static Load (lbs)**	66,560	66,560
Recommended Preload	640	640
Maximum Preload	1,920	1,920
Ballnut Weight (lbs)	3.28	3.28

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-54A-3
Wiper Kit Part #	R-54A-4
Flange Wiper Cap Part#	R-54A-4F

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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R55/R56

BALL SCREWS

1.500 diameter x 1.000 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-55-1	
Ball Screw Part # LH		R-56-1
Ball Nut Part # RH	R-55-2	
Ball Nut Part # LH		R-56-2
Dynamic Load (lbs)		
for 1,000,000 (in)	8,000	8,000
Max. Static Load (lbs)	34,500	34,500
Ballnut Weight (lbs)	2.64	2.64
Ballscrew Weight (lbs/ft)	4.52	4.52

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-55-1	
Preload Screw Part # LH		RP-56-1
Preload Ballnut Part # RH	RP-55-2	
Preload Ballnut Part # LH		RP-56-2
Dynamic Load (lbs)**		
for 1,000,000 (in)	7,200	7,200
Max. Static Load (lbs)**	33,700	33,700
Recommended Preload	800	800
Maximum Preload	2,400	2,400
Ballnut Weight (lbs)	5.28	5.28

**Based on recommended Preload.

ACCESSORIES

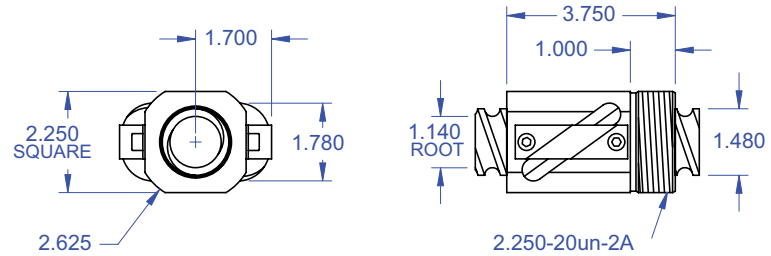
Mounting Flange Part #	R-55-3	R-56-3
Wiper Kit Part #	R-55-4	R-56-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

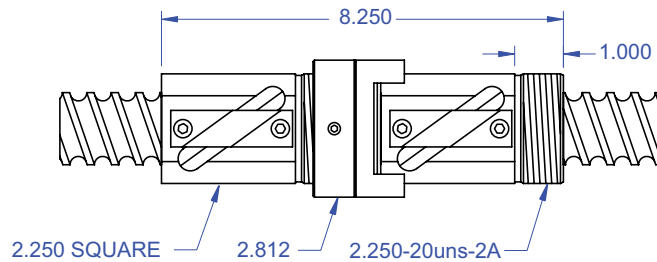
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

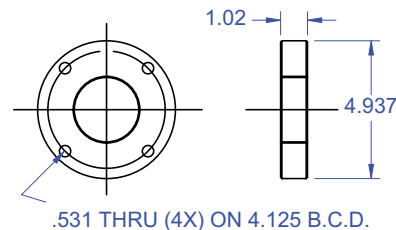


Ball bearing nominal diameter 11/32". Average ball quantity per nut is 64.

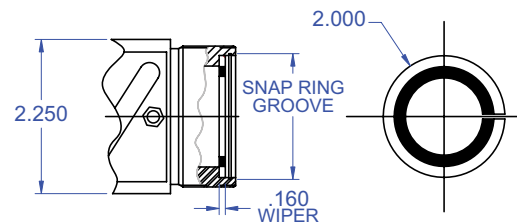
Preloaded Ball Screw



Mounting Flange



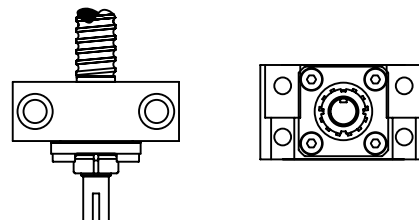
Wiper Kit



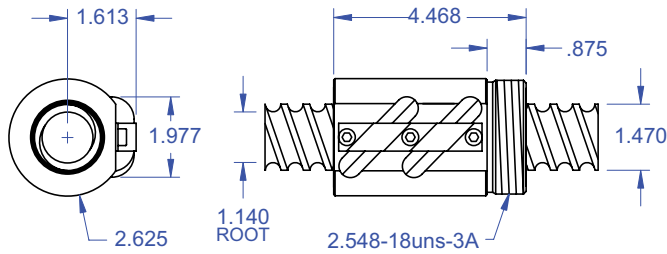
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

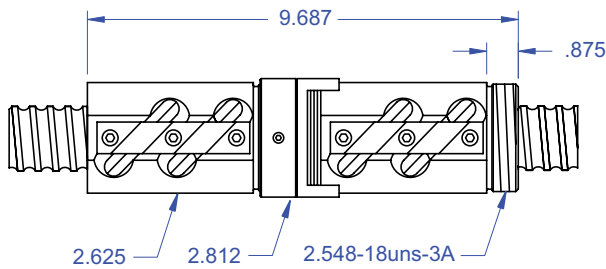


Standard Ball Screw

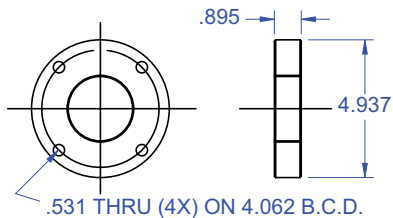


Ball bearing nominal diameter 11/32". Average ball quantity per nut is 86.

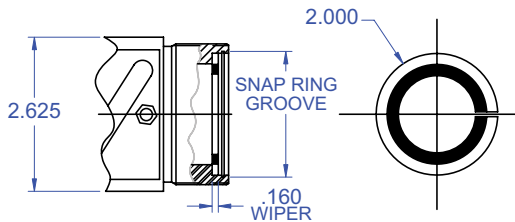
Preloaded Ball Screw



Mounting Flange



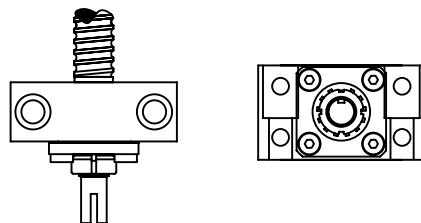
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



1.500 diameter x .4737 lead

STANDARD BALL SCREW

Ball Screw Part #	R-57-1
Ball Nut Part #	R-57-2
Dynamic Load (lbs)	
for 1,000,000 (in)	10,050
Max. Static Load (lbs)	57,700
Ballnut Weight (lbs)	3.80
Ballscrew Weight (lbs/ft)	4.56

PRELOADED BALL SCREW

Preload Screw Part #	RP-57-1
Preload Ballnut Part #	RP-57-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	9,045
Max. Static Load (lbs)**	56,695
Recommended Preload	1,005
Maximum Preload	3,015
Ballnut Weight (lbs)	7.60

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-57-3
Wiper Kit Part #	R-57-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R58

1.500 diameter x 1.875 lead

STANDARD BALL SCREW

Ball Screw Part #	R-58-1
Ball Nut Part #	R-58-2
Dynamic Load (lbs) for 1,000,000 (in)	7,350
Max. Static Load (lbs)	30,000
Ballnut Weight (lbs)	3.90
Ball screw Weight (lbs/ft)	4.83

PRELOADED BALL SCREW

Preload Screw Part #	RP-58-1
Preload Ballnut Part #	RP-58-2
Dynamic Load (lbs)** for 1,000,000 (in)	6,615
Max. Static Load (lbs)**	29,265
Recommended Preload	735
Maximum Preload	2,205
Ballnut Weight (lbs)	7.80

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-58-3
Wiper Kit Part #	R-58-4

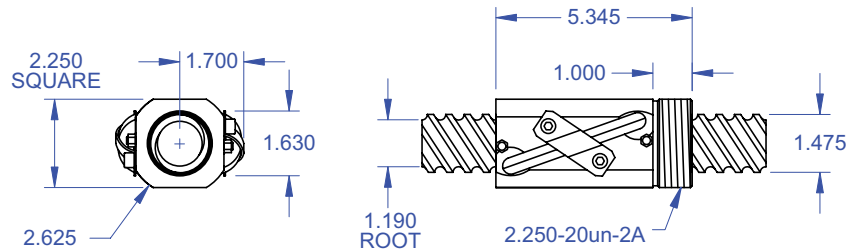
TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

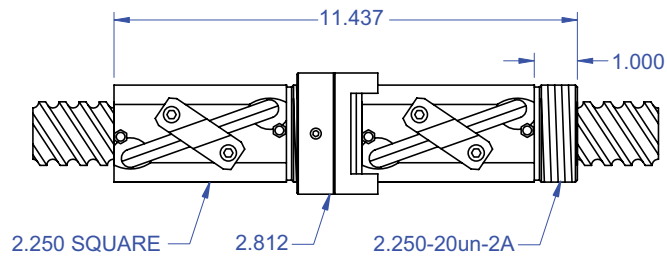
BALL SCREWS

Standard Ball Screw

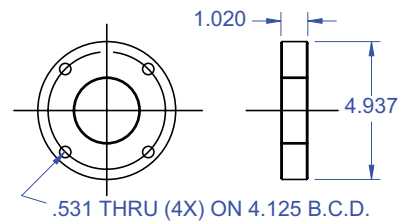


Ball bearing nominal diameter 9/32". Average ball quantity per nut is 90.

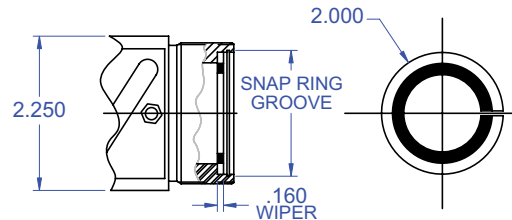
Preloaded Ball Screw



Mounting Flange



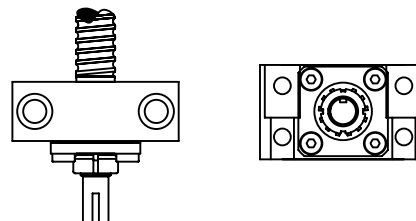
Wiper Kit



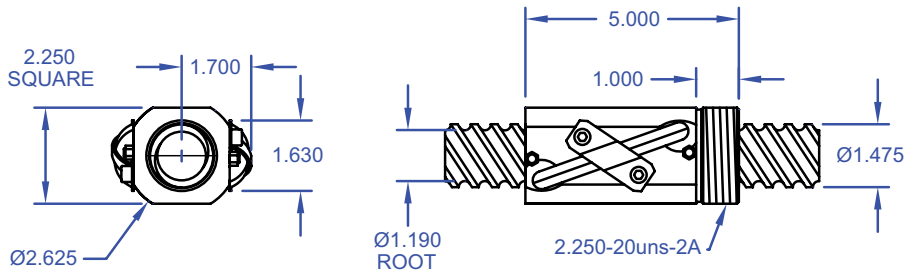
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

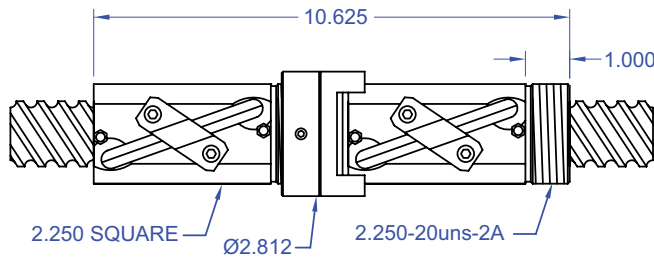


Standard Ball Screw

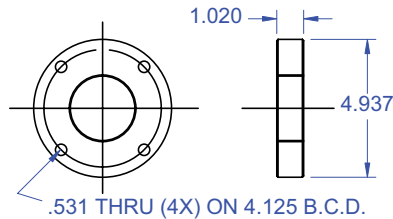


Ball bearing nominal diameter 9/32". Average ball quantity per nut is 90.

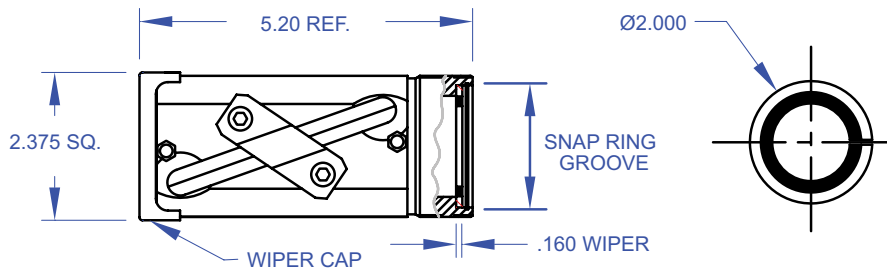
Preloaded Ball Screw



Mounting Flange



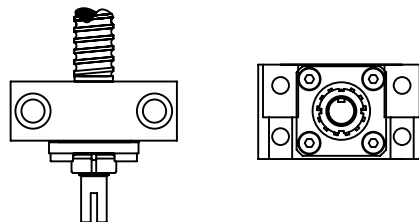
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R58A

1.500 diameter x 1.875 lead

STANDARD BALL SCREW

Ball Screw Part #	R-58A-1
Ball Nut Part #	R-58A-2
Dynamic Load (lbs) for 1,000,000 (in)	7,350
Max. Static Load (lbs)	30,000
Ballnut Weight (lbs)	3.90
Ballscrew Weight (lbs/ft)	4.83

PRELOADED BALL SCREW

Preload Screw Part #	RP-58A-1
Preload Ballnut Part #	RP-58A-2
Dynamic Load (lbs)** for 1,000,000 (in)	6,615
Max. Static Load (lbs)**	29,265
Recommended Preload	735
Maximum Preload	2,205
Ballnut Weight (lbs)	7.80

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-58A-3
Wiper Kit Part #	R-58A-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R61

BALL SCREWS

2.000 diameter x 1.000 lead

STANDARD BALL SCREW

Ball Screw Part #	R-61-1
Ball Nut Part #	R-61-2
Dynamic Load (lbs)	
for 1,000,000 (in)	22,500
Max. Static Load (lbs)	130,000
Ballnut Weight (lbs)	7.90
Ball screw Weight (lbs/ft)	9.30

PRELOADED BALL SCREW

Preload Screw Part #	RP-61-1
Preload Ballnut Part #	RP-61-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	20,250
Max. Static Load (lbs)**	127,750
Recommended Preload	2,250
Maximum Preload	6,750
Ballnut Weight (lbs)	15.8

**Based on recommended Preload.

ACCESSORIES

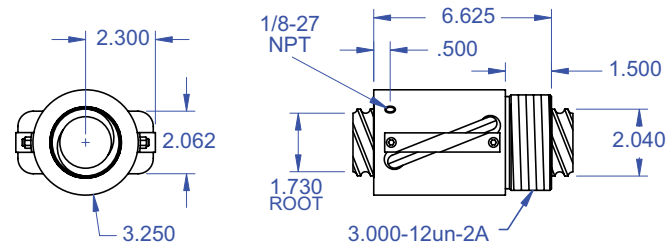
Mounting Flange Part #	R-61-3
Wiper Kit Part #	R-61-4

TECHNICAL INFO

Bearing Mounts and	
Machined Ends	page 106-111
Lubrication information	page 17-18

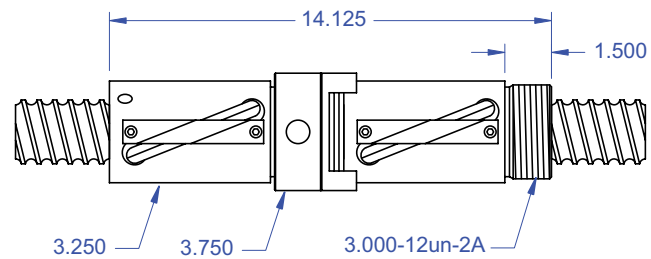
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

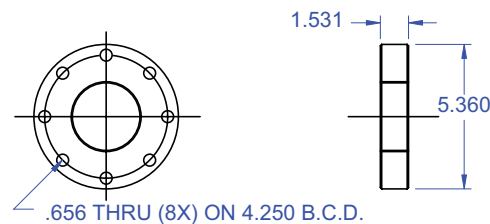


Ball bearing nominal diameter 3/8". Average ball quantity per nut is 160.

Preloaded Ball Screw

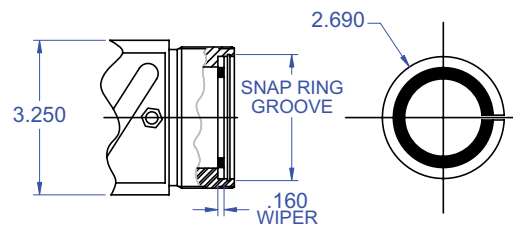


Mounting Flange



.656 THRU (8X) ON 4.250 B.C.D.

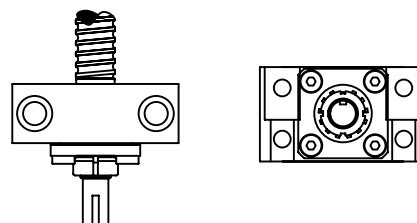
Wiper Kit



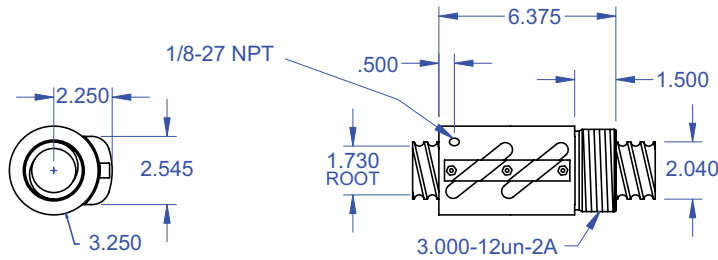
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

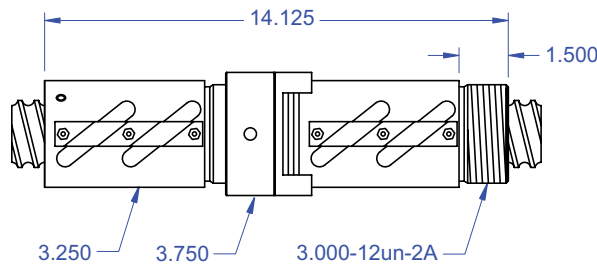


Standard Ball Screw

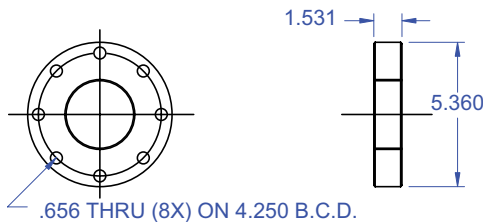


Ball bearing nominal diameter 3/8". Average ball quantity per nut is 152.

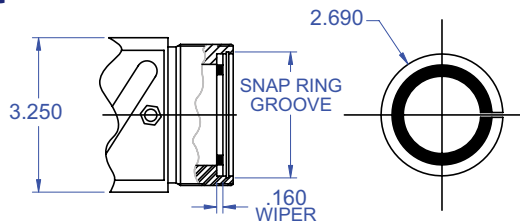
Preloaded Ball Screw



Mounting Flange



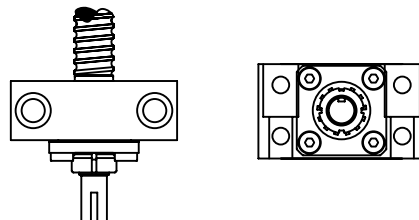
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R62

2.000 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-62-1
Ball Nut Part #	R-62-2
Dynamic Load (lbs) for 1,000,000 (in)	18,000
Max. Static Load (lbs)	130,000
Ballnut Weight (lbs)	8.15
Ballscrew Weight (lbs/ft)	9.36

PRELOADED BALL SCREW

Preload Screw Part #	RP-62-1
Preload Ballnut Part #	RP-62-2
Dynamic Load (lbs)** for 1,000,000 (in)	16,200
Max. Static Load (lbs)**	128,200
Recommended Preload	1,800
Maximum Preload	5,400
Ballnut Weight (lbs)	16.30

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-62-3
Wiper Kit Part #	R-62-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R60/R63

2.250 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-60-1	
Ball Screw Part # LH	R-63-1	
Ball Nut Part # RH	R-60-2	
Ball Nut Part # LH	R-63-2	
Dynamic Load (lbs)		
for 1,000,000 (in)	19,800	19,800
Max. Static Load (lbs)	142,500	142,500
Ballnut Weight (lbs)	8.25	8.25
Ballscrew Weight (lbs/ft)	10.92	10.92

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-60-1	
Preload Screw Part # LH	RP-63-1	
Preload Ballnut Part # RH	RP-60-2	
Preload Ballnut Part # LH	RP-63-2	
Dynamic Load (lbs)**		
for 1,000,000 (in)	17,820	17,820
Max. Static Load (lbs)**	140,520	140,520
Recommended Preload	1,980	1,980
Maximum Preload	5,940	5,940
Ballnut Weight (lbs)	16.50	16.50

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-60-3	R-63-3
Wiper Kit Part #	R-60-4	R-63-4

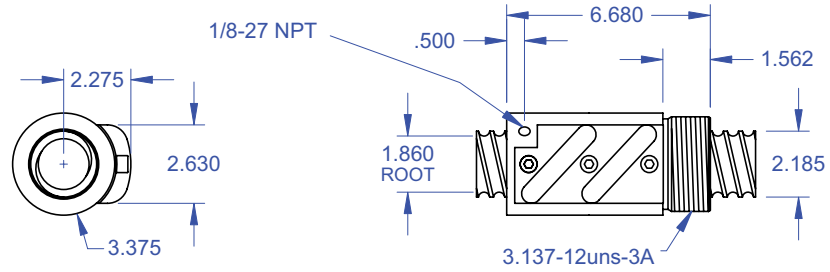
**Based on recommended Preload.

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

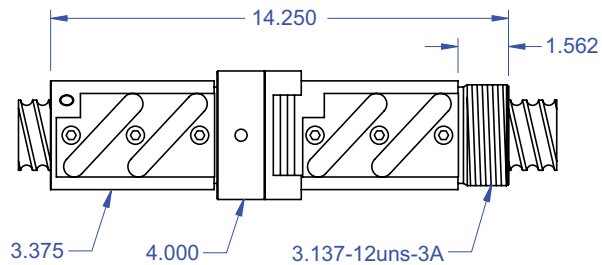
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

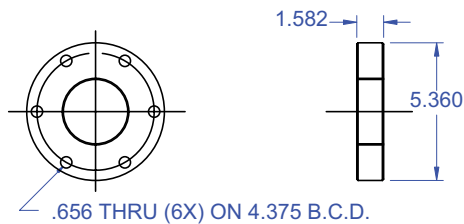


Ball bearing nominal diameter 3/8". Average ball quantity per nut is 154.

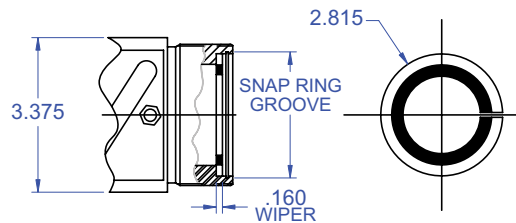
Preloaded Ball Screw



Mounting Flange



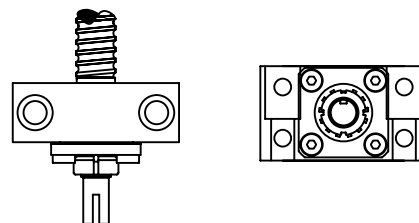
Wiper Kit



Bearing Mount

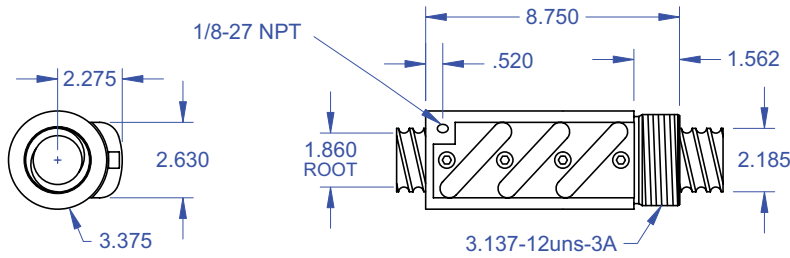
Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R60A

Standard Ball Screw



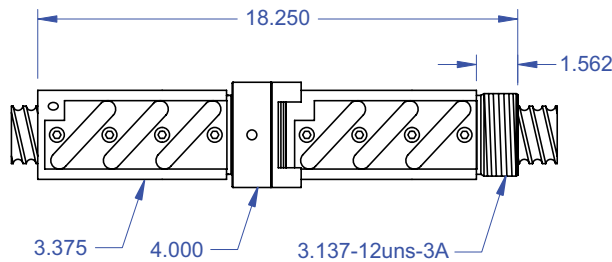
Ball bearing nominal diameter 3/8". Average ball quantity per nut is 237.

2.250 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-60A-1
Ball Nut Part #	R-60A-2
Dynamic Load (lbs)	
for 1,000,000 (in)	29,700
Max. Static Load (lbs)	213,000
Ballnut Weight (lbs)	11.22
Ballscrew Weight (lbs/ft)	11.30

Preloaded Ball Screw

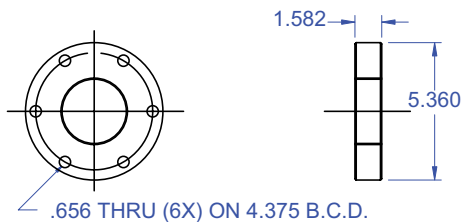


PRELOADED BALL SCREW

Preload Screw Part #	RP-60A-1
Preload Ballnut Part #	RP-60A-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	26,730
Max. Static Load (lbs)**	210,030
Recommended Preload	2,970
Maximum Preload	8,910
Ballnut Weight (lbs)	22.60

**Based on recommended Preload.

Mounting Flange



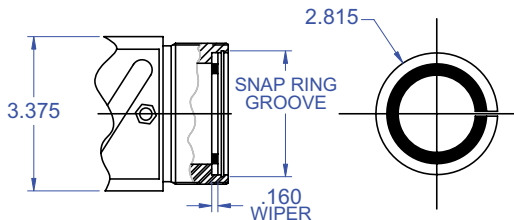
ACCESSORIES

Mounting Flange Part #	R-60A-3
Wiper Kit Part #	R-60A-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

Wiper Kit

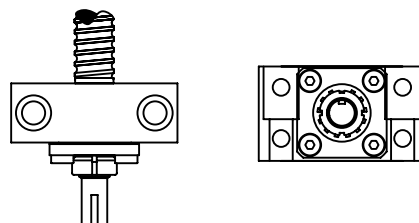


The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R70

2.500 diameter x .500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-70-1
Ball Nut Part #	R-70-2
Dynamic Load (lbs) for 1,000,000	22,000
Max. Static Load (lbf)	155,500
Ballnut Weight (lbs)	12.09
Ballscrew Weight (lbs/ft)	14.98

PRELOADED BALL SCREW

Preload Screw Part #	RP-70-1
Preload Ballnut Part #	RP-70-2
Dynamic Load (lbs)* for 1,000,000 (in)	19,800
Max. Static Load (lbs)	152,800
Recommended Preload	2,200
Maximum Preload	6,600
Ballnut Weight (lbs)	24.18

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-70-3
Wiper Kit Part #	R-70-4

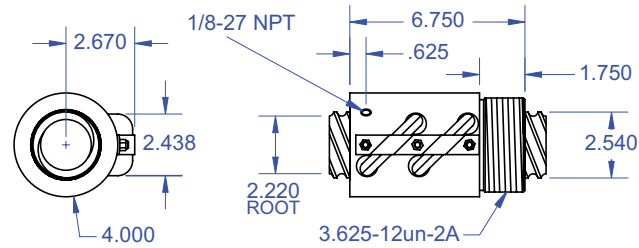
TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

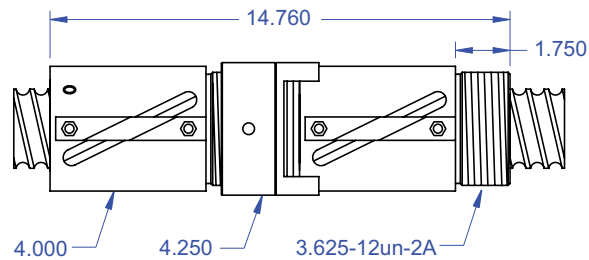
BALL SCREWS

Standard Ball Screw

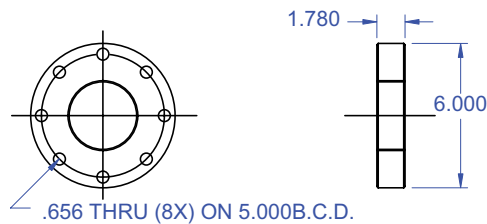


Ball bearing nominal diameter 3/8". Average ball quantity per nut is 186.

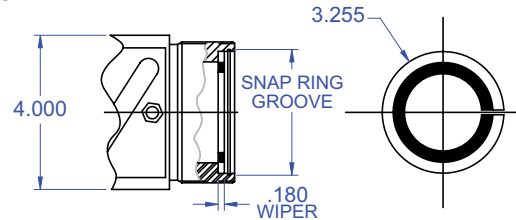
Preloaded Ball Screw



Mounting Flange



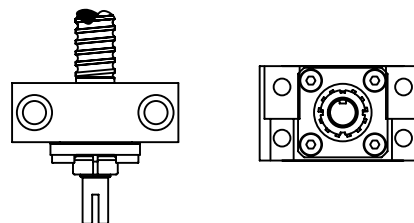
Wiper Kit



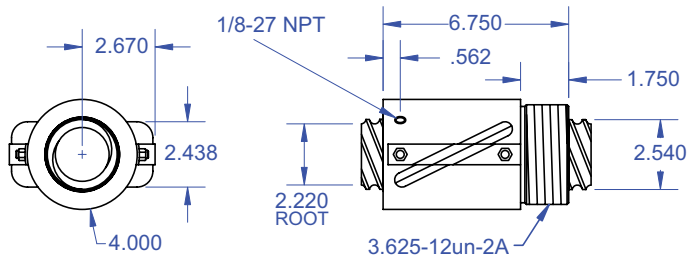
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

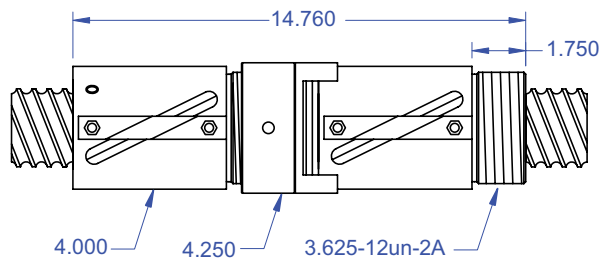


Standard Ball Screw

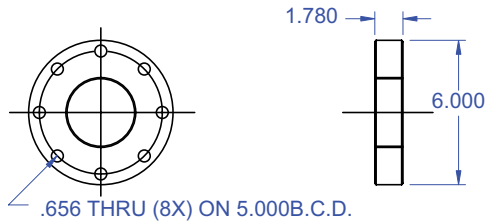


Ball bearing nominal diameter 3/8". Average ball quantity per nut is 194.

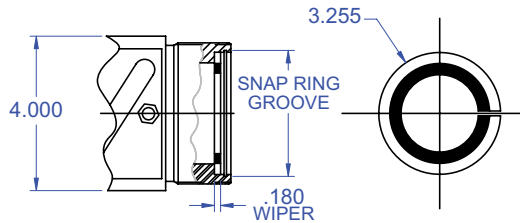
Preloaded Ball Screw



Mounting Flange



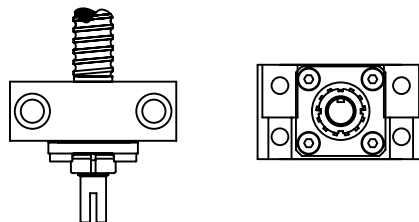
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



2.500 diameter x 1.000 lead

STANDARD BALL SCREW

Ball Screw Part #	R-71-1
Ball Nut Part #	R-71-2
Dynamic Load (lbs)	
for 1,000,000 (in)	26,500
Max. Static Load (lbs)	155,000
Ballnut Weight (lbs)	12.26
Ballscrew Weight (lbs/ft)	14.95

PRELOADED BALL SCREW

Preload Screw Part #	RP-71-1
Preload Ballnut Part #	RP-71-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	23,850
Max. Static Load (lbs)**	152,350
Recommended Preload	2,650
Maximum Preload	7,950
Ballnut Weight (lbs)	24.52

**Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-71-3
Wiper Kit Part #	R-71-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
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The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R74

2.500 diameter x .250 lead

STANDARD BALL SCREW

Ball Screw Part #	R-74-1
Ball Nut Part #	R-74-2
Dynamic Load (lbs) for 1,000,000 (in)	6,300
Max. Static Load (lbs)	78,800
Ballnut Weight (lbs)	3.91
Ball screw Weight (lbs/ft)	15.50

PRELOADED BALL SCREW

Preload Screw Part #	RP-74-1
Preload Ballnut Part #	RP-74-2
Dynamic Load (lbs)** for 1,000,000 (in)	5,670
Max. Static Load (lbs)**	77,370
Recommended Preload	630
Maximum Preload	1,890
Ballnut Weight (lbs)	7.82

**Based on recommended Preload.

ACCESSORIES

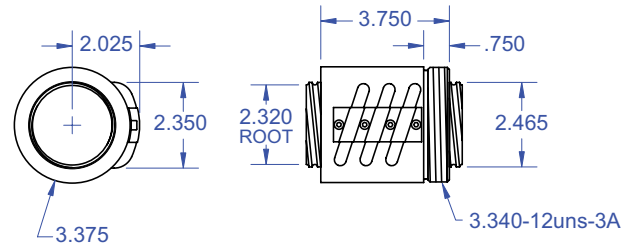
Mounting Flange Part #	R-74-3
Wiper Kit Part #	R-74-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

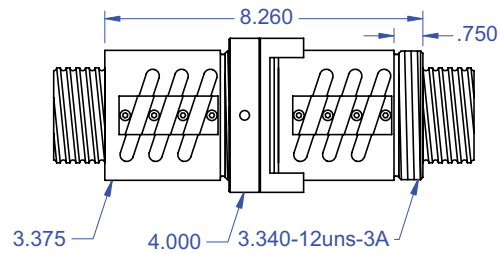
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

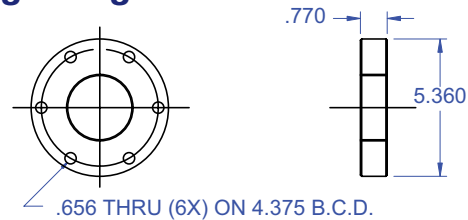


Ball bearing nominal diameter 5/32". Average ball quantity per nut is 477.

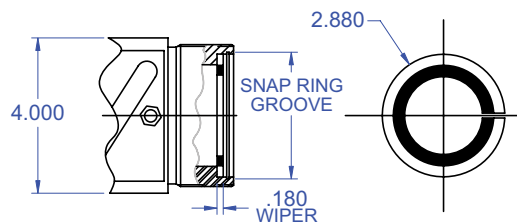
Preloaded Ball Screw



Mounting Flange



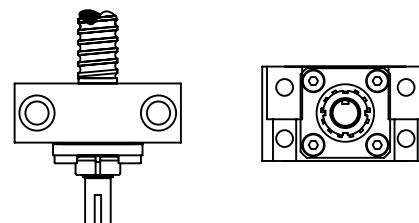
Wiper Kit



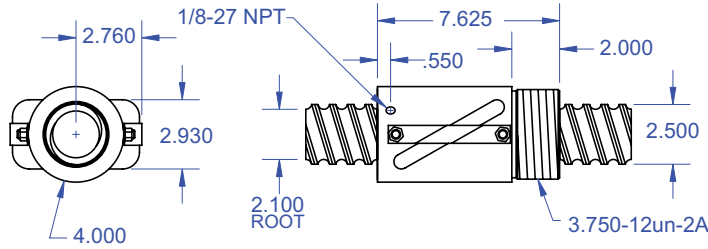
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



Standard Ball Screw



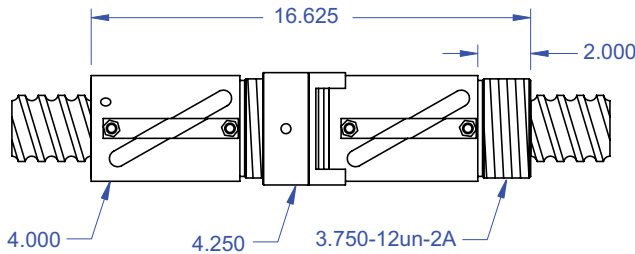
Ball bearing nominal diameter 1/2". Average ball quantity per nut is 112.

2.500 diameter x 1.500 lead

STANDARD BALL SCREW

Ball Screw Part #	R-75-1
Ball Nut Part #	R-75-2
Dynamic Load (lbs)	
for 1,000,000 (in)	32,500
Max. Static Load (lbs)	175,000
Ballnut Weight (lbs)	14.40
Ballscrew Weight (lbs/ft)	14.93

Preloaded Ball Screw

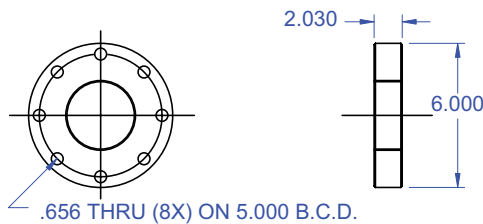


PRELOADED BALL SCREW

Preload Screw Part #	RP-75-1
Preload Ballnut Part #	RP-75-2
Dynamic Load (lbs)**	
for 1,000,000 (in)	29,250
Max. Static Load (lbs)**	171,750
Recommended Preload	3,250
Maximum Preload	9,750
Ballnut Weight (lbs)	28.80

**Based on recommended Preload.

Mounting Flange



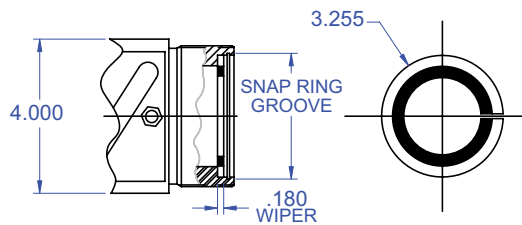
ACCESSORIES

Mounting Flange Part #	R-75-3
Wiper Kit Part #	R-75-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

Wiper Kit

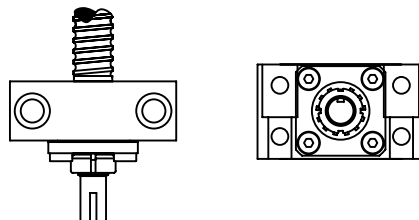


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Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



R80

BALL SCREWS

3.000 diameter x .660 lead

STANDARD BALL SCREW

Ball Screw Part #	R-80-1
Ball Nut Part #	R-80-2
Dynamic Load (lbs) for 1,000,000 (in)	42,000
Max. Static Load (lbs)	260,000
Ballnut Weight (lbs)	25.02
Ball screw Weight (lbs/ft)	19.43

PRELOADED BALL SCREW

Preload Screw Part #	RP-80-1
Preload Ballnut Part #	RP-80-2
Dynamic Load (lbs)** for 1,000,000 (in)	37,800
Max. Static Load (lbs)**	255,800
Recommended Preload	4,200
Maximum Preload	12,600
Ballnut Weight (lbs)	50.04

*Based on recommended Preload.

ACCESSORIES

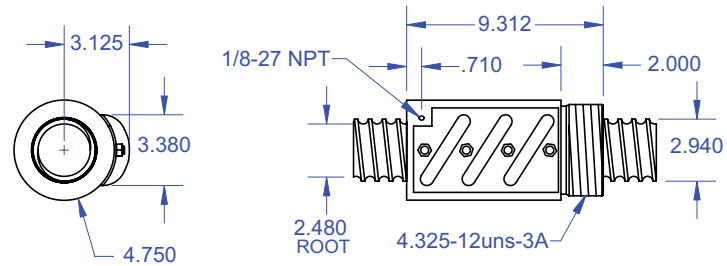
Mounting Flange Part #	R-80-3
Wiper Kit Part #	R-80-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

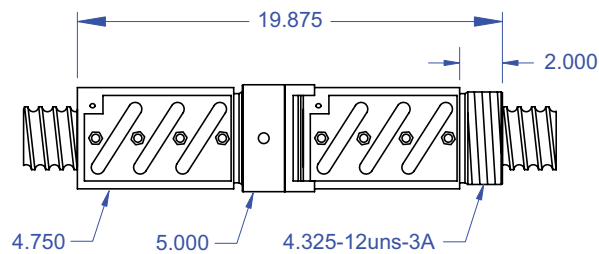
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

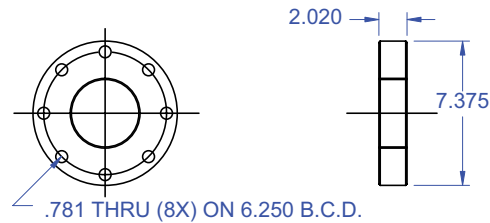


Ball bearing nominal diameter 1/2". Average ball quantity per nut is 177.

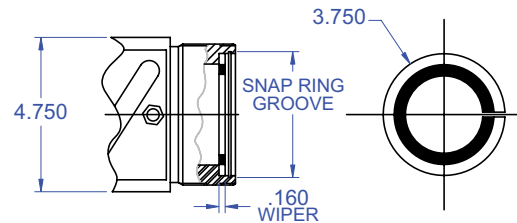
Preloaded Ball Screw



Mounting Flange



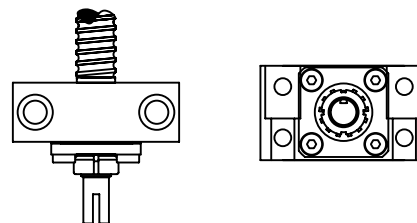
Wiper Kit



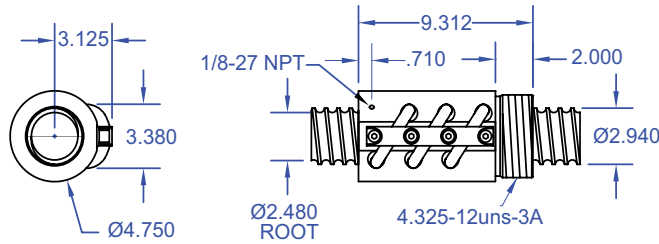
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

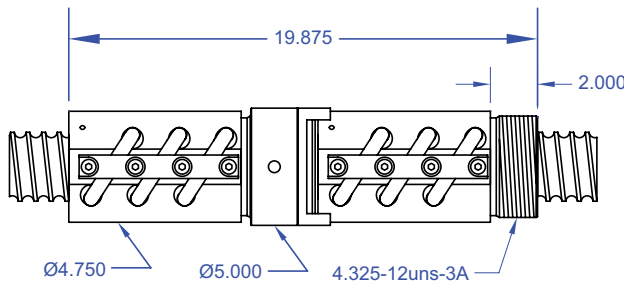


Standard Ball Screw

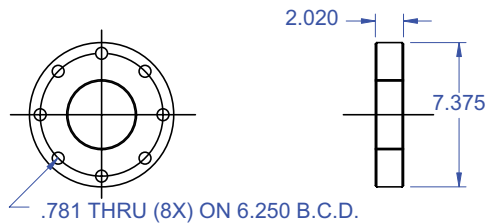


Ball bearing nominal diameter 1/2". Average ball quantity per nut is 177.

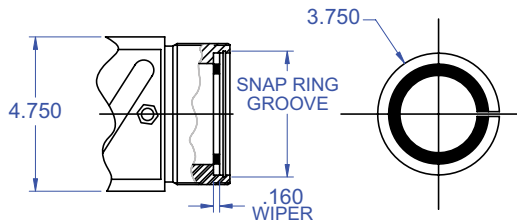
Preloaded Ball Screw



Mounting Flange



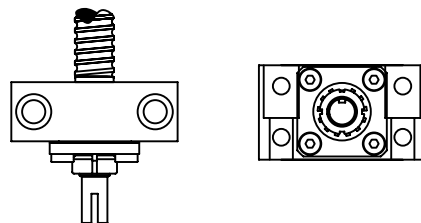
Wiper Kit



Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



3.000 diameter x .660 lead

STANDARD BALL SCREW

Ball Screw Part #RH	R-80A-1	
Ball Screw Part #LH		R-81A-1
Ball Nut Part #RH	R-80A-2	
Ball Nut Part #LH		R-81A-2
Dynamic Load (lbs)		
for 1,000,000 (in)	42,000	42,000
Max. Static Load (lbs)	260,000	260,000
Ballnut Weight (lbs)	25.02	25.02
Ballscrew Weight (lbs/ft)	19.43	19.43

PRELOADED BALL SCREW

Preload Screw Part #RH RP-80A-1		
Preload Screw Part #LH		RP-81A-1
Preload Ballnut Part #RH RP-80A-2		
Preload Ballnut Part #LH		RP-81A-2
Dynamic Load (lbs)**		
for 1,000,000 (in)	37,800	37,800
Max. Static Load (lbs)**	255,800	255,800
Recommended Preload	4,200	4,200
Maximum Preload	12,600	12,600
Ballnut Weight (lbs)	50.04	50.04

*Based on recommended Preload.

ACCESSORIES

Mounting Flange Part #	R-80A-3	R-81A-3
Wiper Kit Part #	R-80A-4	R-81A-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

R90/R91

BALL SCREWS

4.000 diameter x 1.000 lead

STANDARD BALL SCREW

Ball Screw Part # RH	R-90-1	
Ball Screw Part # LH		R-91-1
Ball Nut Part # RH	R-90-2	
Ball Nut Part # LH		R-91-2
Dynamic Load (lbs) for 1,000,000 (in)	85,000	85,000
Max. Static Load (lbs)	476,950	476,950
Ballnut Weight (lbs)	41.07	41.07
Ballscrew Weight (lbs/ft)	31.90	31.90

PRELOADED BALL SCREW

Preload Screw Part # RH	RP-90-1	
Preload Screw Part # LH		RP-91-1
Preload Ballnut Part # RH	RP-90-2	
Preload Ballnut Part # LH		RP-91-2
Dynamic Load (lbs)** for 1,000,000 (in)	76,500	76,500
Max. Static Load (lbs)**	468,450	468,450
Recommended Preload	8,500	8,500
Maximum Preload	25,500	25,500
Ballnut Weight (lbs)	82.14	82.14

**Based on recommended Preload.

ACCESSORIES

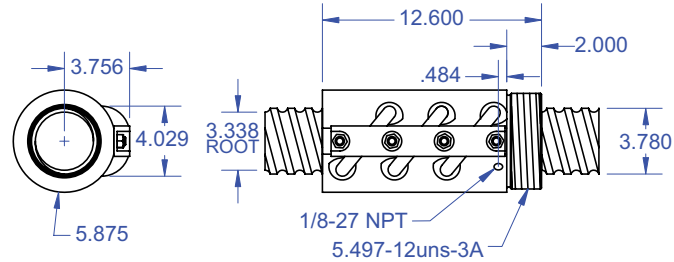
Mounting Flange Part #	R-90-3	R-91-3
Wiper Kit Part #	R-90-4	R-91-4

TECHNICAL INFO

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

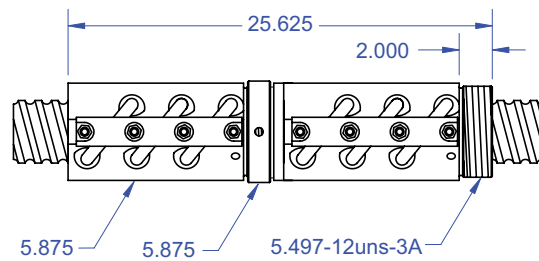
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

Standard Ball Screw

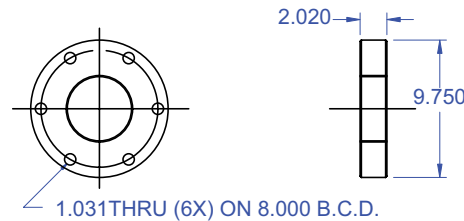


Ball bearing nominal diameter 5/8". Average ball quantity per nut is 186.

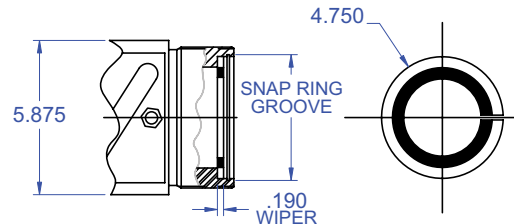
Preloaded Ball Screw



Mounting Flange



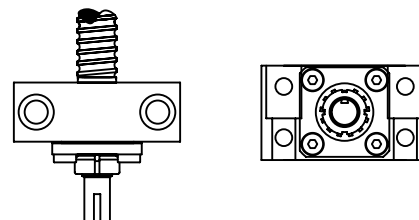
Wiper Kit



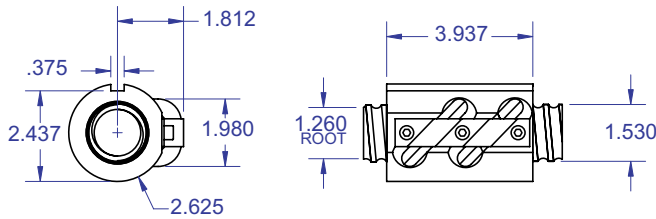
Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.

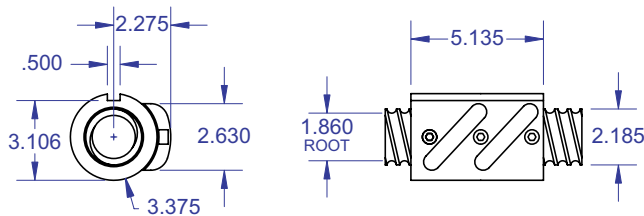


R50 Keyway Ball Screw



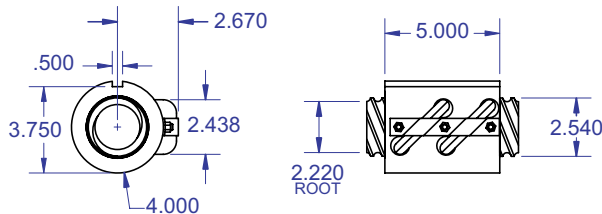
Ball bearing nominal diameter 5/16". Average ball quantity per nut is 102.

R60 Keyway Ball Screw



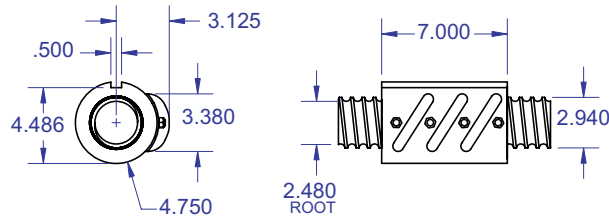
Ball bearing nominal diameter 3/8". Average ball quantity per nut is 154.

R70 Keyway Ball Screw



Ball bearing nominal diameter 3/8". Average ball quantity per nut is 186.

R80 Keyway Ball Screw

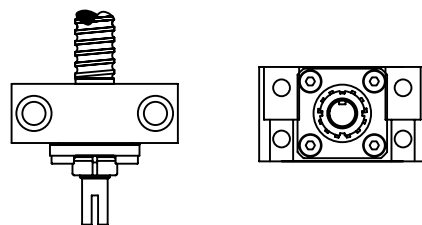


Ball bearing nominal diameter 1/2". Average ball quantity per nut is 177.

Bearing Mount

Please Note

Technical drawings, information, and availability can vary depending on which Bearing Mount is desired. See pages 106-111 for details.



KEYWAYS

Keyway Nuts

R50 KEYWAY BALL SCREW

Ball Screw Part #	R-50-1
Ball Nut Part #	R-50-2KW
Dynamic Load (lbs)	
for 1,000,000 (in)	9,050
Max. Static Load (lbs)	55,000
Ballnut Weight (lbs)	4.18
Ballscrew Weight (lbs/ft)	5.34
Dimension Info	1.500 x .500

R60 KEYWAY BALL SCREW

Ball Screw Part # RH	R-60-1
Ball Nut Part # RH	R-60-2KW
Dynamic Load (lbs)	
for 1,000,000 (in)	19,800
Max. Static Load (lbs)	142,500
Ballnut Weight (lbs)	8.25
Ballscrew Weight (lbs/ft)	10.92
Dimension Info	2.250 x .500

R70 KEYWAY BALL SCREW

Ball Screw Part #	R-70-1
Ball Nut Part #	R-70-2KW
Dynamic Load (lbs)	
for 1,000,000	22,000
Max. Static Load (lbf)	155,500
Ballnut Weight (lbs)	12.09
Ballscrew Weight (lbs/ft)	14.98
Dimension Info	2.500 x .500

R80 KEYWAY BALL SCREW

Ball Screw Part #	R-80-1
Ball Nut Part #	R-80-2KW
Dynamic Load (lbs)	
for 1,000,000 (in)	42,000
Max. Static Load (lbs)	260,000
Ballnut Weight (lbs)	25.02
Ballscrew Weight (lbs/ft)	19.43
Dimension Info	3.000 x .660

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FREE WHEELING BALL SCREWS

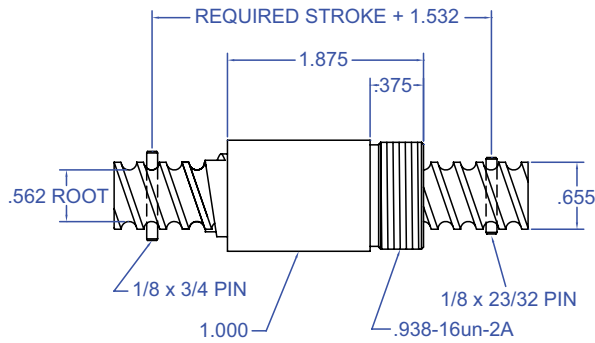
In addition to our full line of recirculating ball screws, we also offer a free-wheeling ball screw assembly (pages 70-73). The free wheeling screw (also referred to as planetary or epicyclic ball screws) is different from a standard ball screw in that it utilizes a ball cage (retainer) inside the nut. As the cage contacts the stop pins in the screw at the ends of the stroke, the ball nut will stop linear movement but the screw will continue to rotate (free-wheel). When the screw rotation reverses, linear motion occurs away from the stop pin and will travel until the cage contacts the pin at the other end of the stroke.

The advantage of the free wheeling screw is that limit switches or other types of stops are not necessary. This eliminates the possibility of over travel which can cause problems with many applications. The controlled stroke feature is used in many applications such as bed or chair actuations, trim tab actuators and electrical switching devices.

The free wheeling screw operates with the same efficiency (>90%) as a standard ball screw. Due to the planetary slipping of the nut in relation to the screw, there is an effective lead that is different than the actual lead of the screw. The effective lead is always less than the actual lead and varies with the direction and magnitude of the load (see pages 70-73). Since the lead is a variable, this device is not recommended for applications that rely on rotation of the screw for position feedback.

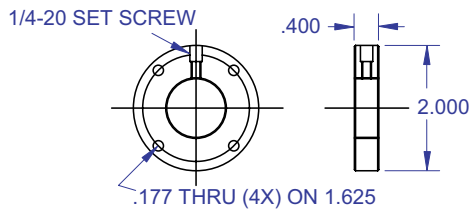


R1 Freewheeling Ball Screw

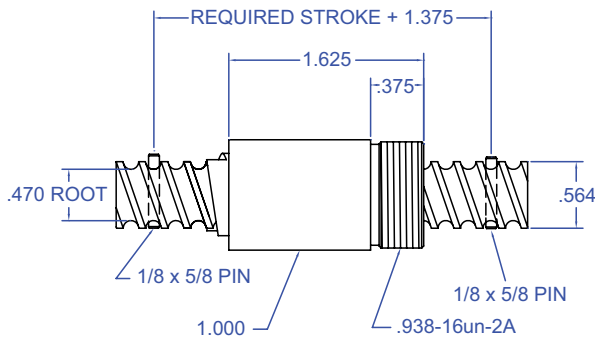


Ball bearing nominal diameter 1/8". Ball quantity per nut is 12.

R1 Mounting Flange

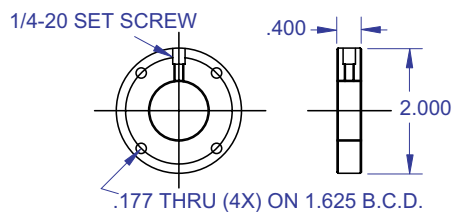


R2 Freewheeling Ball Screw



Ball bearing nominal diameter 1/8". Ball quantity per nut is 6.

R2 Mounting Flange



R1

5/8 diameter x .188 effective lead

FREEWHEELING BALL SCREW

Ball Screw Part #	R01-1
Ball Nut Part #	R01-2
Dynamic Load (lbs) for 1,000,000 (in)	300

ACCESSORIES

Mounting Flange Part #	R01-3
Bearing Mount Part #	see pages 106-111

R2

9/16 diameter x .083 effective lead

FREEWHEELING BALL SCREW

Ball Screw Part #	R02-1
Ball Nut Part #	R02-2
Dynamic Load (lbs) for 1,000,000 (in)	150

ACCESSORIES

Mounting Flange Part #	R02-3
Bearing Mount Part #	see pages 106-111

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R3

5/8 diameter x .094 effective lead

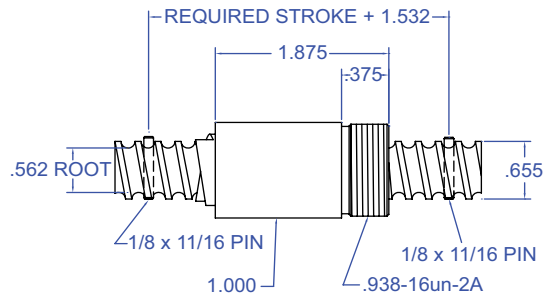
FREEWHEELING BALL SCREW

Ball Screw Part #	R03-1
Ball Nut Part #	R03-2
Dynamic Load (lbs) for 1,000,000 (in)	150

ACCESSORIES

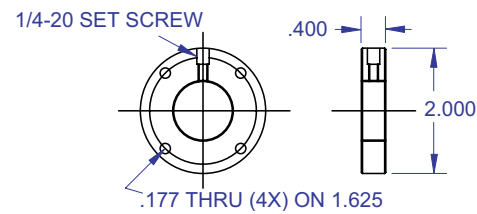
Mounting Flange Part #	R03-3
Bearing Mount Part #	see pages 106-111

R3 Freewheeling Ball Screw

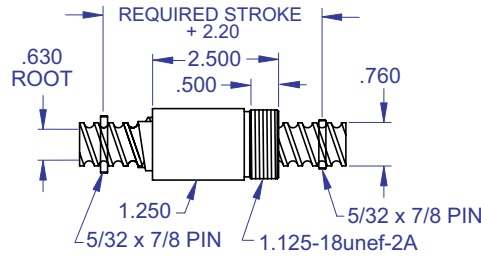


Ball bearing nominal diameter 1/8". Ball quantity per nut is 6.

R3 Mounting Flange

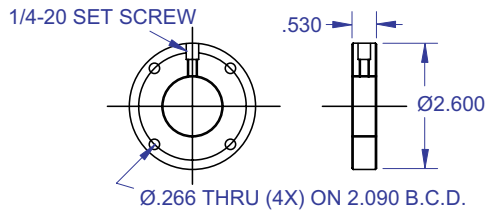


R4 Freewheeling Ball Screw



Ball bearing nominal diameter 5/32". Ball quantity per nut is 12.

R4 Mounting Flange



R4

3/4 diameter x .274 effective lead

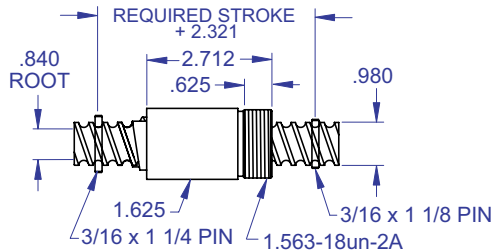
FREEWHEELING BALL SCREW

Ball Screw Part #	R04-1
Ball Nut Part #	R04-2
Dynamic Load (lbs) for 1,000,000 (in)	450

ACCESSORIES

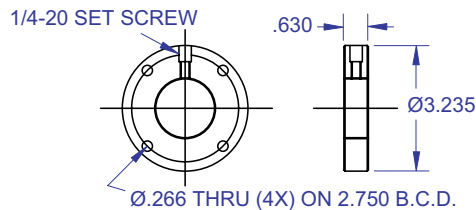
Mounting Flange Part #	R04-3
Bearing Mount Part #	see pages 106-111

R6 Freewheeling Ball Screw



Ball bearing nominal diameter 3/16". Ball quantity per nut is 12.

R6 Mounting Flange



R6

1.00 diameter x .274 effective lead

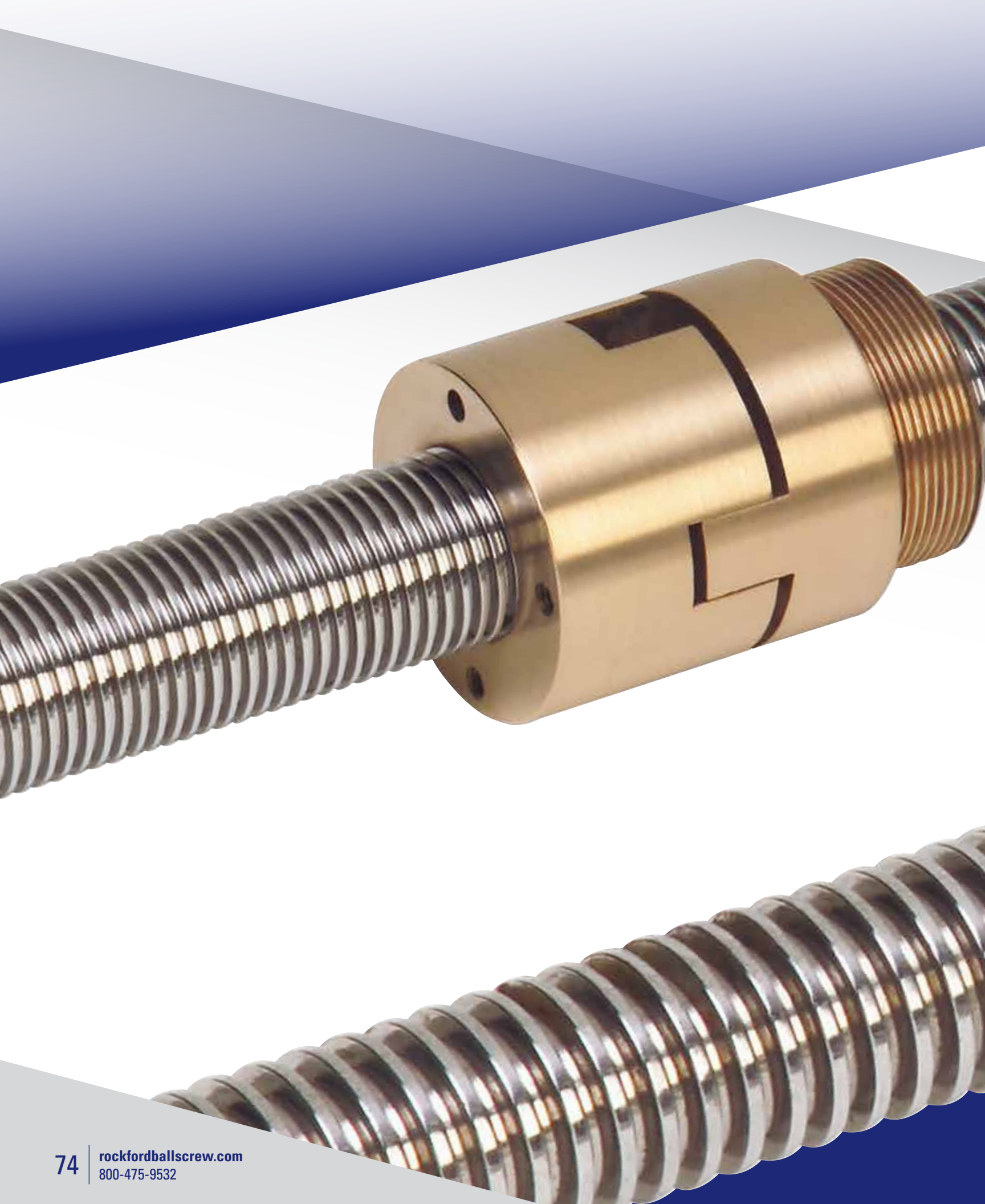
FREEWHEELING BALL SCREW

Ball Screw Part #	R06-1
Ball Nut Part #	R06-2
Dynamic Load (lbs) for 1,000,000 (in)	900

ACCESSORIES

Mounting Flange Part #	R06-3
Bearing Mount Part #	see pages 106-111

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ACME SCREWS

ACME TECHNICAL INFORMATION

ACME SCREWS

- ACME Screws
- ACME Nuts
- ACME Flanges

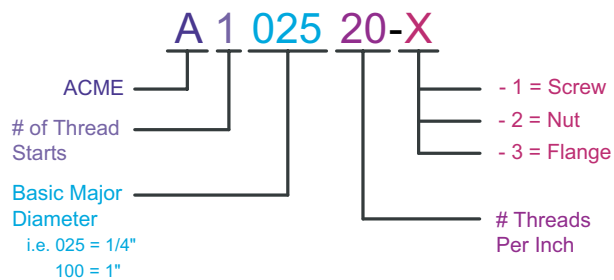


ACME SCREW TECHNICAL INFORMATION

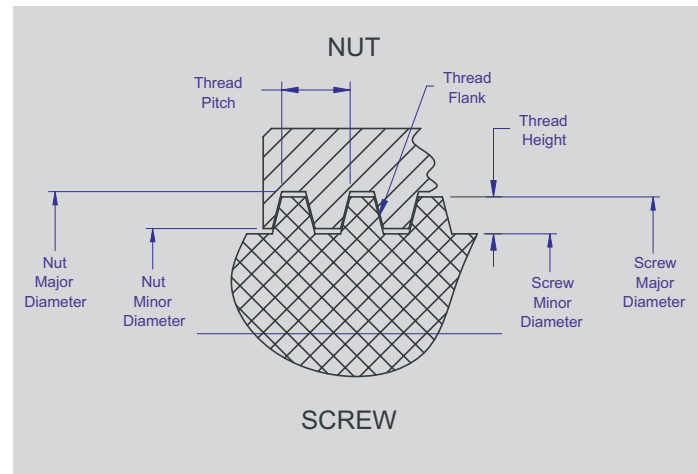
The R/B/S line of ACME screw products has been designed and manufactured to provide an economical means for converting angular/rotational motion to linear/translational motion. The R/B/S standard line of ACME screws are produced to General Purpose-2G tolerances from excellent quality materials. The following technical information section will start by describing R/B/S ACME nomenclature, followed by illustrating and defining basic ACME thread terminology, and finish with technical design definitions, constraint parameters, and mechanical equations that govern safe screw operation and selection.



Nomenclature The following section describes the part number nomenclature for ordering ACME products.



Terminology The following illustration visually depicts and augments the subsequent definitions.



Major Diameter the diameter described by a cylinder formed by the crests of the screw.

Minor Diameter the diameter of a cylinder formed by the roots of the threads. Also known as the **ROOT DIAMETER**.

Pitch Diameter the theoretical diameter described dimensionally by the mean value of the major and minor diameters.

Thread Height half the difference between the major and minor diameters. The basic thread height is equal to one half of the thread pitch. The basic thread height is also equal to the thread thickness at the pitch diameter.

Thread Lead the nominal translational distance produced by one turn of the thread. The lead is equal to the **SCREW PITCH x THE NUMBER OF STARTS**. Therefore, the lead = pitch for single start threads.

Thread Pitch nominal distance between the same points on adjacent thread forms as measured parallel to the rotational axis. The pitch is equal to the **SCREW LEAD / THE NUMBER OF STARTS**.

Threads Per Inch equal to the reciprocal of the pitch.

Thread Starts the number of uniquely independent threads contained either on the screw or the nut.

Thread Flank the area of contact between the nut thread and the screw thread.

End Fixity and Bearing Mounts

Four basic combinations of end fixity are commonly utilized. The fixity basically describes the bearing configuration being used to support the rotational axis of the screw. The four typical combinations of end fixity include: fixed-free, both ends simple, one end fixed and the other end simple, and both ends fixed.

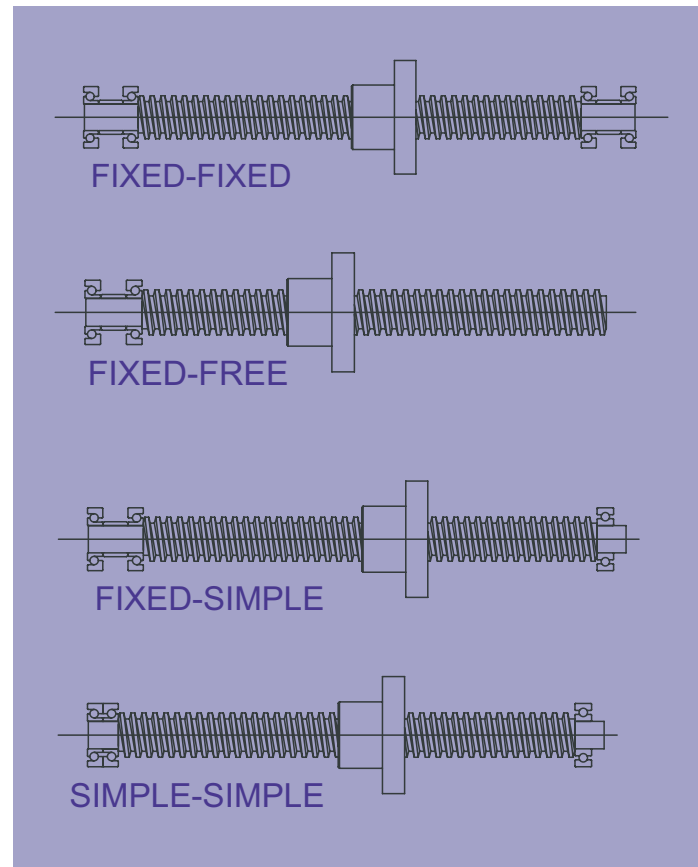
FREE = the free end does not support the rotational axis of the screw.

SIMPLE RADIAL = this end fixity only supports radial loads and not axial loads

SIMPLE ANGULAR = this end fixity supports both radial loads and axial loads

FIXED = this end fixity supports both radial loads and axial loads while distributing any moment loading over a greater distance and increasing the resultant column load strength & critical speed.

See pages 106-111 for more end fixity and bearing mount details.



ACME SCREW TECHNICAL INFORMATION

Technical Engineering Information & Terminology

This section has been compiled to present crucial information, definitions, constraint parameters, and mechanical equations that are necessary for selecting the appropriate product for a given set of application variables. Some of these systemic constraints and variables would include items such as: critical speed, compressive column loading, the dynamic motion profile, applied dynamic loading, driving torque, angular acceleration, systemic efficiency, end fixity restraint, and others. These topics and others as applicable will be discussed further in the following text.

Note: The following calculations assume a well lubricated screw and nut and also a clean operational environment. Substantial increases in driving torque can occur if lubricant is insufficient

Applied Dynamic Loading Each unique application needs to be evaluated such that ALL force components are realized and accounted for. The force components might include: weight of the sliding mechanism (if vertical), weight of the sliding mechanism multiplied by the coefficient of sliding friction (if horizontal), any direct forces resisting the linear motion, and any other applicable force components. It is important to understand that ACME screws are only intended to be subjected to compressive and/or tensile loads being applied parallel and concentric to the rotational axis of the screw. Moment and side loading of the nut need to be avoided as wedging of the nut on the screw can occur.

$$Pd = Wf * \mu + Fp$$

Pd = Applied Dynamic Load (LBS)
Wf = Weight of Sliding Load (LBS)
μ = Coefficient of Sliding Friction
 (=1 if load orientation is vertical)
Fp = Force component pushing directly against the sliding mechanism

Screw RPM at Maximum Velocity NOTE for below: Compare the calculated screw RPM to the critical speed value to determine if the below RPM is attainable.

$$Ns = \frac{Vmax}{Sl}$$

Ns = Screw RPM at Maximum Velocity
Vmax = Maximum Velocity (INCHES/MINUTE)
Sl = Screw Lead (INCHES/REVOLUTION)

Critical Speed By definition, critical speed is the theoretical angular velocity, in revolutions per minute, which excites the natural frequency of the screw. As the critical speed approaches the screw's natural frequency, the screw shaft begins to resonate which leads to excessive systemic vibration. The resulting resonance occurs regardless of screw orientation. R/B/S recommends limiting the maximum recommended angular velocity to 80% of the calculated critical speed value.

$$Cs = \frac{Fe * 4.76 * 10^6 * Dmin * SL * Fs}{L^2}$$

Cs = Critical Speed (Inches/Min.)
Dmin = Minor Diameter of the Screw (INCHES)
SL = Screw Lead (In.)
L = Distance between Bearing Supports (INCHES)
Fe = End Fixity Variable
 = .36 for One End Being Fixed and the Other End Being Free
 = 1.00 for Both Ends Having Simple Supports
 = 1.47 for One End Being Fixed and the Other End Being Simple
 = 2.23 for Both Ends Having Fixed Supports
Fs = Factor of Safety (80% recommended)

Column Load Strength The ability of the screw to withstand compressive forces is determined by the following column load strength calculation. The fundamental limit occurs when a compressive load exceeds the elastic stability of the screw shaft. The subsequent failure is caused by the resultant bending or buckling. The column load strength needs to be evaluated in concert with the screws slenderness ratio. The column load strength parameter only applies to compressive loading and not to tensile loading (based on Euler's formula).

$$Pc = \frac{Fe * 14.03 * 10^6 * Dmin^4 * Fs}{L^2}$$

- Pc** = Maximum Compression Column Load (LBS)
- Dmin** = Minor Diameter of the Screw (INCHES)
- L** = Distance between Bearing Supports (INCHES)
- Fe** = End Fixity Variable
 - = .25 for One End Being Fixed and the Other End Being Free
 - = 1.00 for Both Ends Having Simple Supports
 - = 2.00 for One End Being Fixed and the Other End Being Simple
 - = 4.00 for Both Ends Having Fixed Supports
- Fs** = Factor of Safety (80% recommended)

$$Sr = \frac{L}{Dmin}$$

- Dmin** = Minor Diameter of the Screw (INCHES)
- L** = Distance between Bearing Supports (INCHES)
- Sr** = Slenderness Ratio Limits for End Fixity
 - = 25 for One End Being Fixed and the Other End Being Free
 - = 50 for Both Ends Having Simple Supports
 - = 70 for One End Being Fixed and the Other End Being Simple
 - = 100 for Both Ends Having Fixed Supports

Torque for Motion at Constant Velocity

The equation below only determines the required torque to maintain a constant velocity for the applied load as reflected to the drive end of the screw. The peak system torque would need to account for all of the pertinent torque required to accelerate the load, the constant torque value, any mechanical gearing ratios, angular inertias, and other specific characteristics of each unique application. CONSULT FACTORY ENGINEERING FOR SPECIFIC APPLICATION CONCERNS.

$$Tcv = \frac{Pd * Sl}{2 * \pi * Eff}$$

- Tcv** = Torque required to move the load at constant velocity (INCH*LBS)
- Pd** = Force of total applied load (LBS)
- Sl** = Screw lead (INCHES/REVOLUTION)
- Eff** = Forward Driving Efficiency
(See Product Specifications for Efficiencies)

1/4 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1/4-20
# of Starts	1
Lead	0.050
Threads Per Inch	20
Min. Root Diameter	0.175
Weight (lbs/ft)	0.130
Screw Material	#304SS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	300
Static Capacity (lbs)	1,000
Torque to raise 1 lb. (in-lbs)	0.027
Forward Driving Efficiency	30%
Thread Class	2G

PART NUMBERS

Screw	A102520-1
Nut	A102520-2
Flange	A102520-3

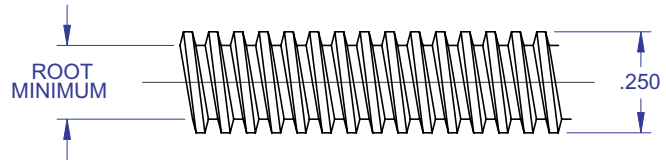
TECHNICAL INFO:

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

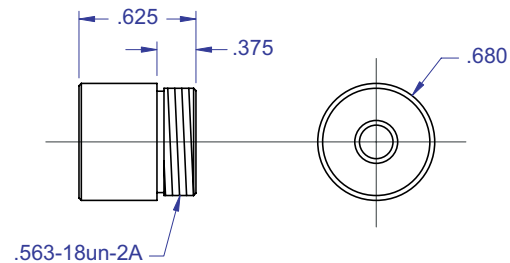
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

ACME SCREWS

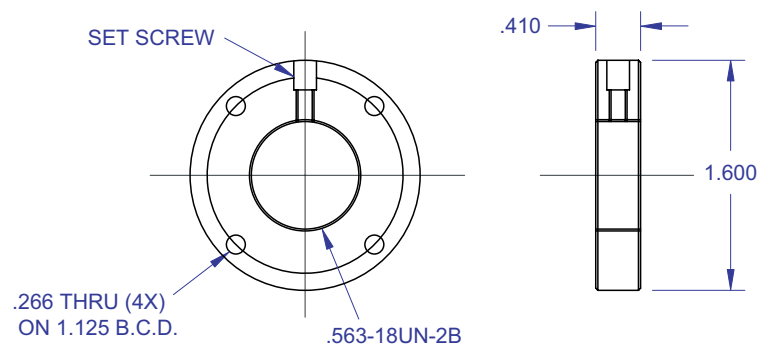
Standard ACME Screw



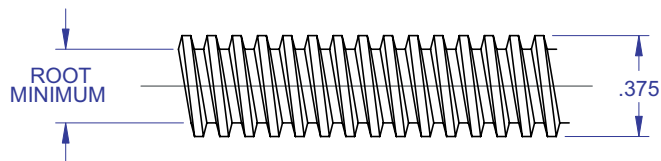
Standard ACME Nut



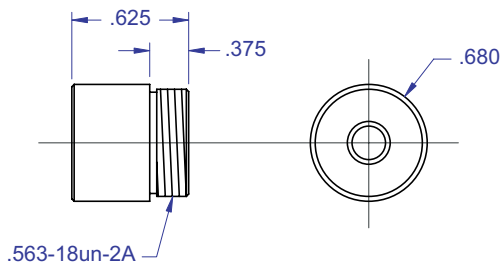
Standard ACME Flange



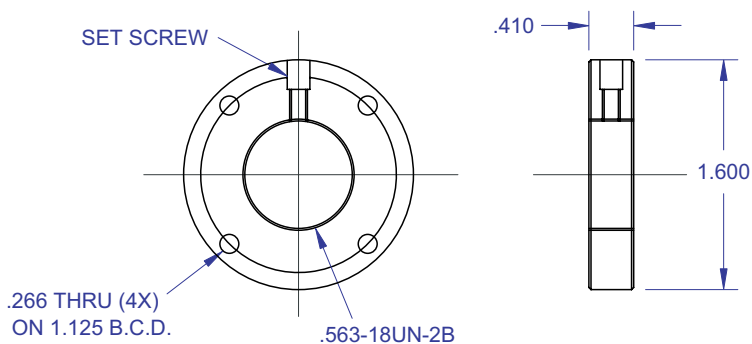
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



3/8 INCH
diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	3/8-12
# of Starts	1
Lead	0.083
Threads Per Inch	12
Min. Root Diameter	0.263
Weight (lbs/ft)	0.290
Screw Material	#304SS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	700
Static Capacity (lbs)	2,250
Torque to raise 1 lb. (in-lbs)	0.041
Forward Driving Efficiency	32%
Thread Class	2G

PART NUMBERS

Screw	A103712-1
Nut	A103712-2
Flange	A103712-3

TECHNICAL INFO:

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1/2 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1/2-8	1/2-8
# of Starts	1	2
Lead	0.125	0.250
Threads Per Inch	8	8
Min. Root Diameter	0.332	0.332
Weight (lbs/ft)	0.380	0.380
Screw Material	#304SS	#304SS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	1,250	1,250
Static Capacity (lbs)	4,000	4,000
Torque to raise 1 lb. (in-lbs)	0.051	0.075
Forward Driving Efficiency	31%	53%
Thread Class	2G	2G

PART NUMBERS

Screw	A105008-1	A205008-1
Nut	A105008-2	A205008-2
Flange	A105008-3	A205008-3

TECHNICAL INFO:

Bearing Mounts and

Machined Ends

page 106-111

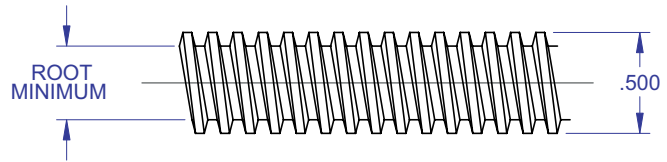
Lubrication information

page 17-18

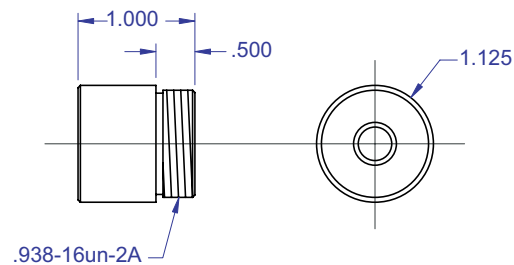
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ACME SCREWS

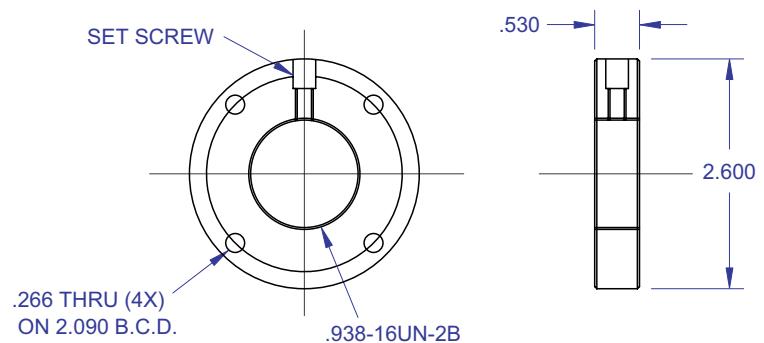
Standard ACME Screw



Standard ACME Nut

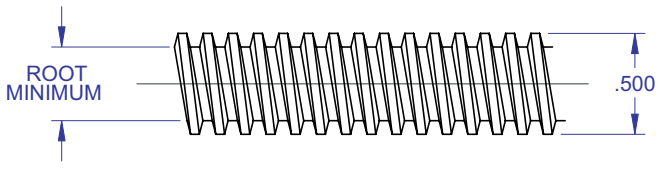


Standard ACME Flange

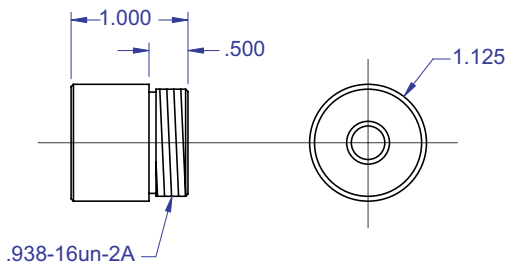


ACME SCREWS

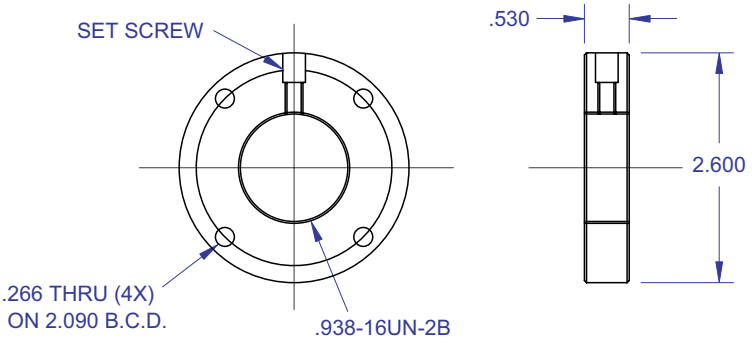
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



1/2 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1/2-10	1/2-10
# of Starts	1	2
Lead	0.100	0.200
Threads Per Inch	10	10
Min. Root Diameter	0.359	0.359
Weight (lbs/ft)	0.520	0.380
Screw Material	#304SS	#304SS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	1,250	1,250
Static Capacity (lbs)	4,000	4,000
Torque to raise 1 lb. (in-lbs)	0.054	0.068
Forward Driving Efficiency	30%	47%
Thread Class	2G	2G

PART NUMBERS

Screw	A105010-1	A205010-1
Nut	A105010-2	A205010-2
Flange	A105010-3	A205010-3

TECHNICAL INFO:

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5/8 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	5/8-6	5/8-10	5/8-10
# of Starts	1	1	2
Lead	0.167	0.100	0.200
Threads Per Inch	6	10	10
Min. Root Dia.	0.413	0.483	0.483
Weight (lbs/ft)	0.84	0.82	0.84
Screw Material	1018CRS	1018CRS	1018CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	1,250	1,900	1,900
Static Capacity (lbs)	4,000	6,250	6,250
Torque to raise 1 lb. (in-lbs)	0.070	0.064	0.077
Forward Driving Efficiency	38%	25%	42%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A106206-1	A106210-1	A206210-1
Nut	A106206-2	A106210-2	A206210-2
Flange	A106206-3	A106210-3	A206210-3

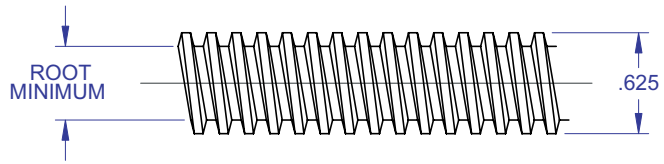
TECHNICAL INFO:

Bearing Mounts and Machined Ends **page 106-111**
 Lubrication information **page 17-18**

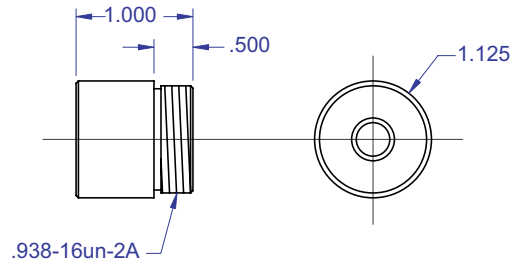
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

ACME SCREWS

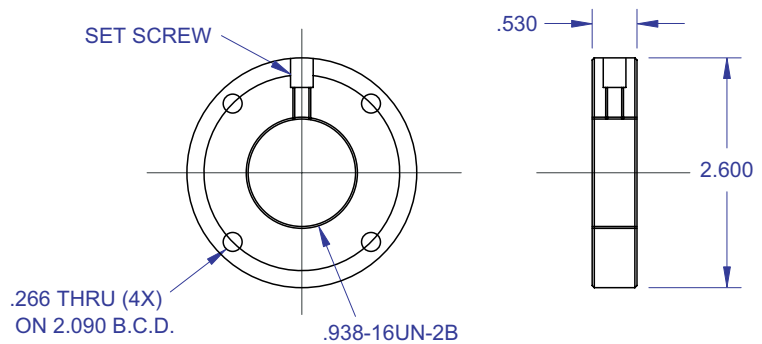
Standard ACME Screw



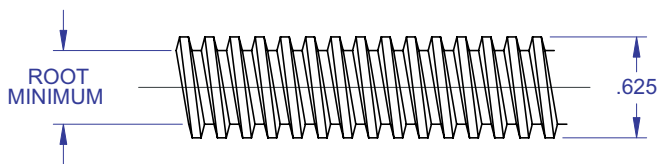
Standard ACME Nut



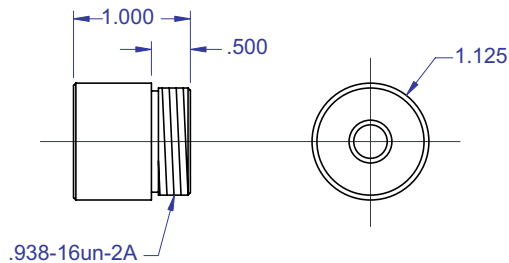
Standard ACME Flange



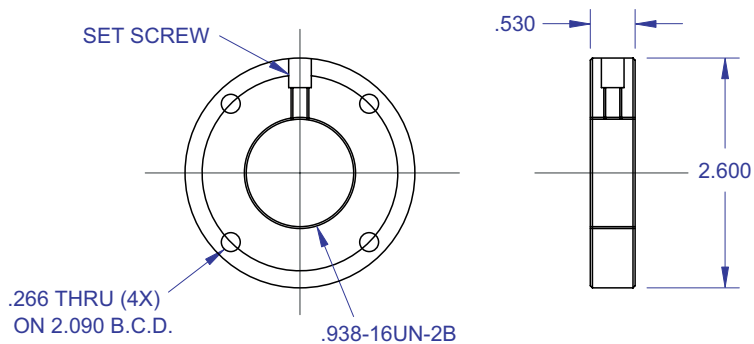
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



5/8 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	5/8-8	5/8-8	5/8-8
# of Starts	1	2	3
Lead	0.125	0.250	0.375
Threads Per Inch	8	8	8
Min. Root Dia.	0.457	0.457	0.457
Weight (lbs/ft)	0.850	0.840	0.840
Screw Material	1018CRS	1018CRS	1144CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic	1,900	1,900	1,900
Capacity (lbs)			
Static Capacity (lbs)	6,250	6,250	6,250
Torque to raise 1 lb. (in-lbs)	0.067	0.085	0.107
Forward Driving Efficiency	30%	47%	56%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A106208-1	A206208-1	A306208-1
Nut	A106208-2	A206208-2	A306208-2
Flange	A106208-3	A206208-3	A306208-3

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3/4 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	3/4-5	3/4-6	3/4-10
# of Starts	1	1	1
Lead	0.200	0.167	0.100
Threads Per Inch	5	6	10
Min. Root Dia.	0.502	0.537	0.608
Weight (lbs/ft)	1.20	1.22	1.30
Screw Material	1018CRS	1018CRS	1018CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	2,800	2,800	2,800
Static Capacity (lbs)	9,000	9,000	9,000
Torque to raise 1 lb. (in-lbs)	0.087	0.083	0.074
Forward Driving Efficiency	37%	32%	22%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A107505-1	A107506-1	A107510-1
Nut	A107505-2	A107506-2	A107510-2
Flange	A107505-3	A107506-3	A107510-3

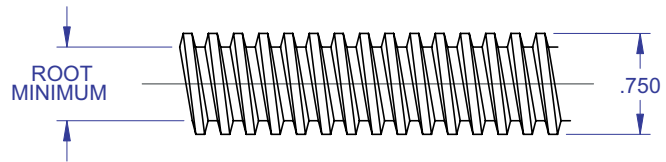
TECHNICAL INFO:

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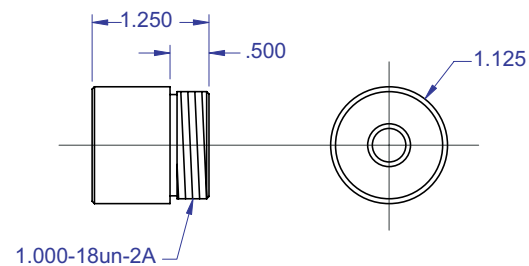
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ACME SCREWS

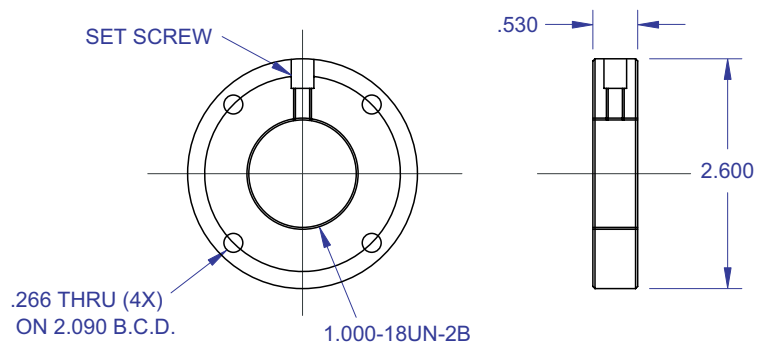
Standard ACME Screw



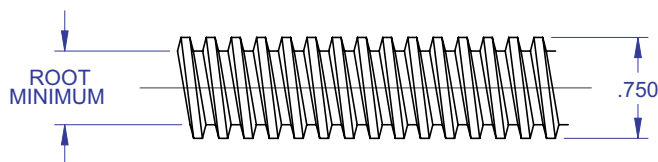
Standard ACME Nut



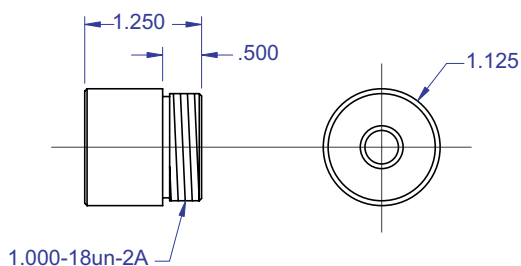
Standard ACME Flange



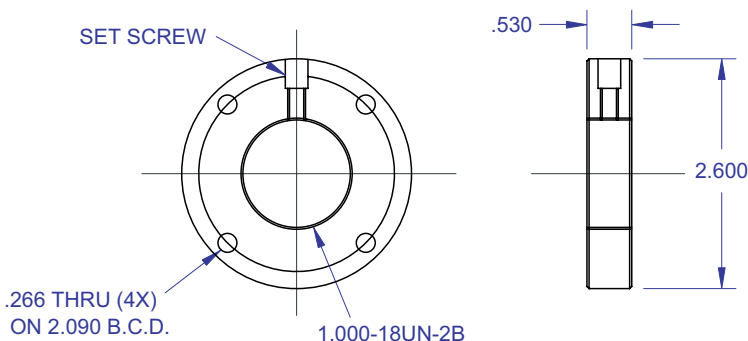
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



3/4 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	3/4-8	3/4-8	3/4-8
# of Starts	1	2	4
Lead	0.125	0.250	0.500
Threads Per Inch	8	8	8
Min. Root Dia.	0.581	0.581	0.581
Weight (lbs/ft)	1.22	1.22	1.22
Screw Material	1018CRS	1018CRS	1018CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	2,800	2,800	2,800
Static Capacity (lbs)	9,000	9,000	9,000
Torque to raise 1 lb. (in-lbs)	0.076	0.094	0.139
Forward Driving Efficiency	30%	42%	57%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A107508-1	A207508-1	A407508-1
Nut	A107508-2	A207508-2	A407508-2
Flange	A107508-3	A207508-3	A407508-3

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7/8 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	7/8-5	7/8-6
# of Starts	1	1
Lead	0.200	0.166
Threads Per Inch	5	6
Min. Root Diameter	0.626	0.662
Weight (lbs/ft)	1.63	1.67
Screw Material	1018CRS	1018CRS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	3,800	3,800
Static Capacity (lbs)	12,250	12,250
Torque to raise 1 lb. (in-lbs)	0.097	0.093
Forward Driving Efficiency	33%	29%
Thread Class	2G	2G

PART NUMBERS

Screw	A108705-1	A108706-1
Nut	A108705-2	A108706-2
Flange	A108705-3	A108706-3

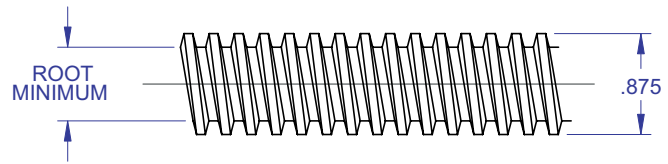
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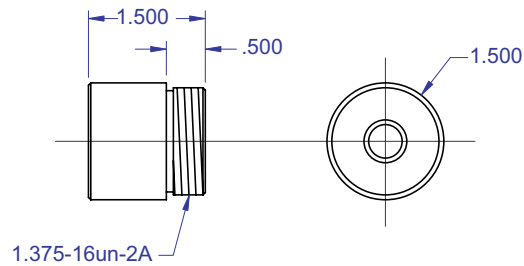
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ACME SCREWS

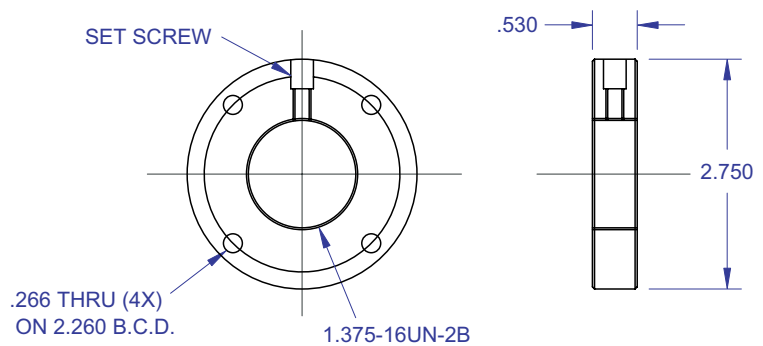
Standard ACME Screw



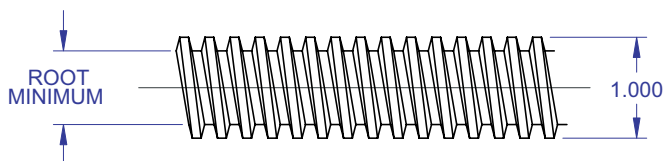
Standard ACME Nut



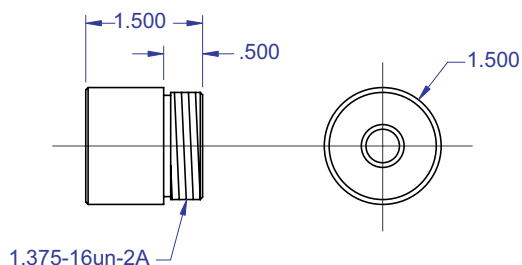
Standard ACME Flange



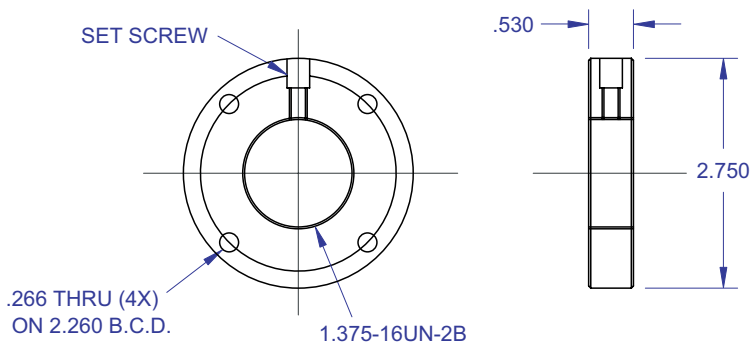
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



1 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1-4	1-5	1-10
# of Starts	1	1	1
Lead	0.250	0.200	0.100
Threads Per Inch	4	5	10
Min. Root Dia.	0.700	0.750	0.857
Weight (lbs/ft)	2.14	2.16	2.20
Screw Material	1018CRS	1018CRS	1018CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	5,000	5,000	5,000
Static Capacity (lbs)	16,000	16,000	16,000
Torque to raise 1 lb. (in-lbs)	0.114	0.107	0.095
Forward Driving Efficiency	35%	30%	18%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A110004-1	A110005-1	A110010-1
Nut	A110004-2	A110005-2	A110010-2
Flange	A110004-3	A110005-3	A110010-3

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1 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1-4	1-6	1-8
# of Starts	2	1	2
Lead	0.500	0.167	0.250
Threads Per Inch	4	6	8
Min. Root Dia.	0.700	0.786	0.825
Weight (lbs/ft)	2.14	2.16	2.28
Screw Material	1018CRS	1018CRS	1018CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	5,000	5,000	5,000
Static Capacity (lbs)	16,000	16,000	16,000
Torque to raise 1 lb. (in-lbs)	0.151	0.098	0.113
Forward Driving Efficiency	52%	27%	53%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A210004-1	A110006-1	A210008-1
Nut	A210004-2	A110006-2	A210008-2
Flange	A210004-3	A110006-3	A210008-3

TECHNICAL INFO:

Bearing Mounts and

Machined Ends

page 106-111

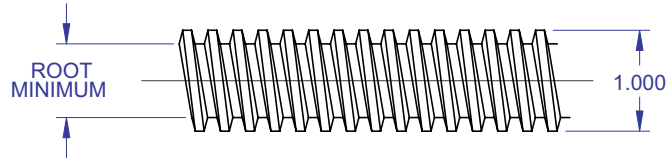
Lubrication information

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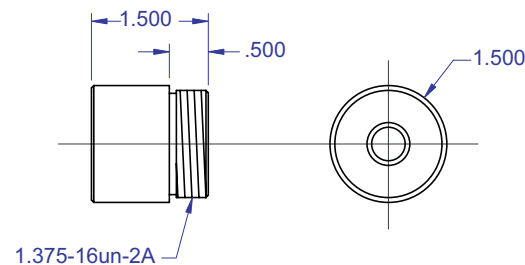
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ACME SCREWS

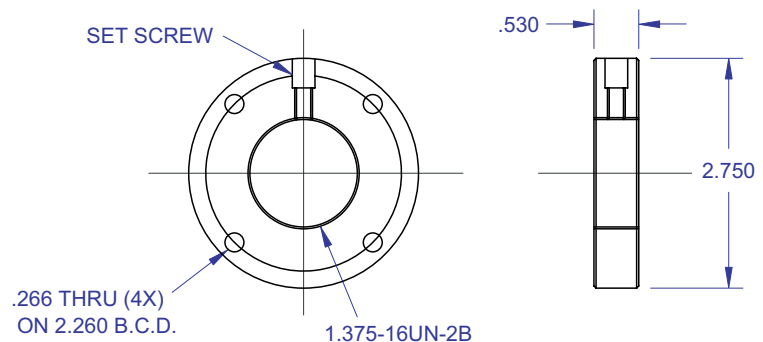
Standard ACME Screw



Standard ACME Nut

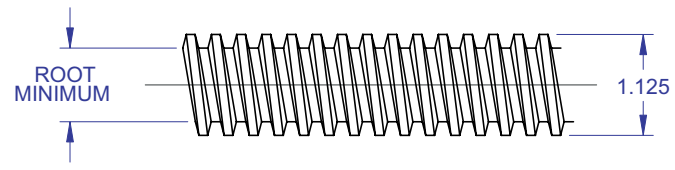


Standard ACME Flange

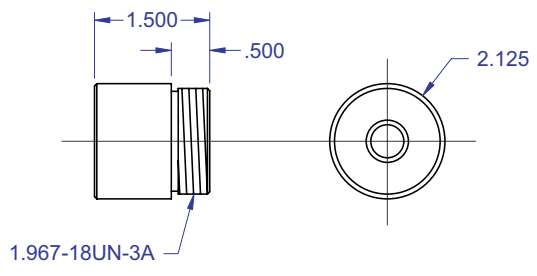


ACME SCREWS

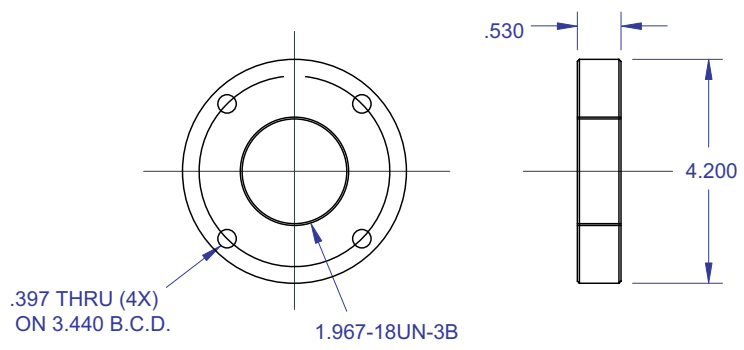
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



1 1/8 INCH diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1 1/8-5
# of Starts	1
Lead	0.200
Threads Per Inch	5
Min. Root Diameter	0.875
Weight (lbs/ft)	2.80
Screw Material	1018CRS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	6,200
Static Capacity (lbs)	20,000
Torque to raise 1 lb. (in-lbs)	0.118
Forward Driving Efficiency	27%
Thread Class	2G

PART NUMBERS

Screw	A111205-1
Nut	A111205-2
Flange	A111205-3

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1 1/4 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1 1/4-4	1 1/4-5
# of Starts	1	1
Lead	0.250	0.200
Threads Per Inch	4	5
Min. Root Diameter	0.947	0.999
Weight (lbs/ft)	3.38	3.49
Screw Material	1018CRS	1018CRS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	7,800	7,800
Static Capacity (lbs)	25,000	25,000
Torque to raise 1 lb. (in-lbs)	0.134	0.121
Forward Driving Efficiency	30%	26%
Thread Class	2G	2G

PART NUMBERS

Screw	A112504-1	A112505-1
Nut	A112504-2	A112505-2
Flange	A112504-3	A112505-3

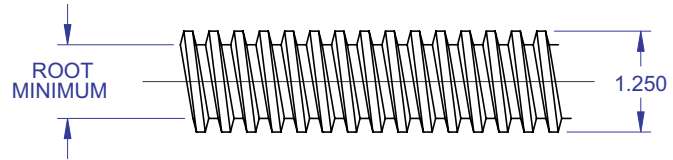
TECHNICAL INFO:

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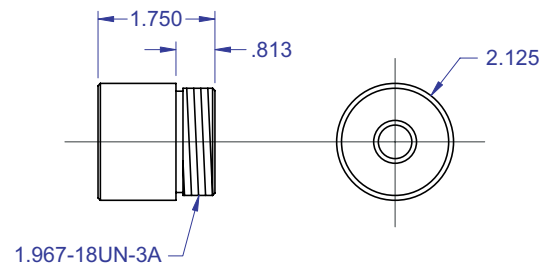
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ACME SCREWS

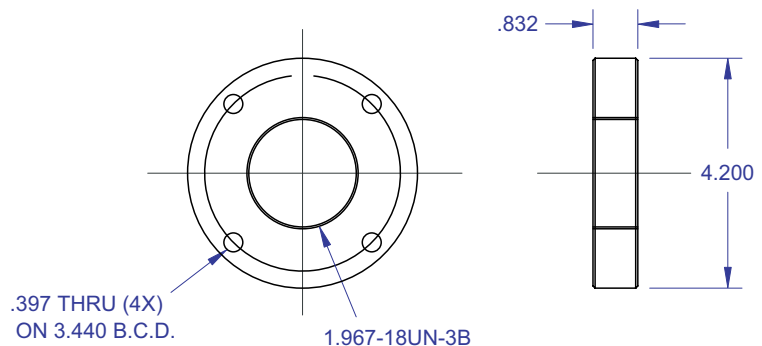
Standard ACME Screw



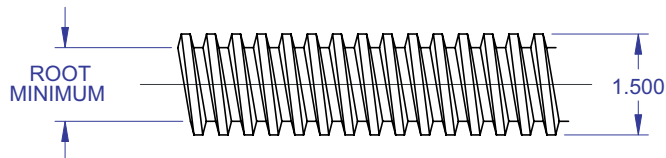
Standard ACME Nut



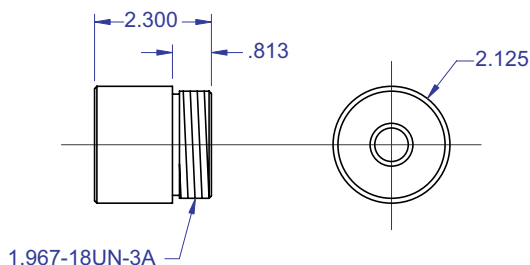
Standard ACME Flange



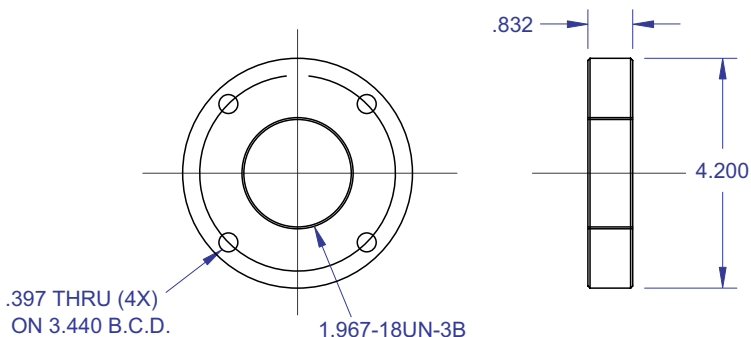
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



1 1/2 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1 1/2-4	1 1/2-4	1 1/2-5
# of Starts	1	2	1
Lead	0.250	0.500	0.200
Threads Per Inch	4	4	5
Min. Root Diameter	1.196	1.196	1.245
Weight (lbs/ft)	5.04	4.95	4.90
Screw Material	1018CRS	1018CRS	1045CRS
Nut Material	#660	#660	#660
	Bronze	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	11,300	11,300	11,300
Static Capacity (lbs)	36,000	36,000	36,000
Torque to raise 1 lb. (in-lbs)	.155	.189	.141
Forward Driving Efficiency	26%	42%	23%
Thread Class	2G	2G	2G

PART NUMBERS

Screw	A115004-1	A215004-1	A115005-1
Nut	A115004-2	A215004-2	A115005-2
Flange	A115004-3	A215004-3	A115005-3

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1 3/4 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	1 3/4-4
# of Starts	1
Lead	0.250
Threads Per Inch	4
Min. Root Diameter	1.446
Weight (lbs/ft)	7.04
Screw Material	1018CRS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	15,300
Static Capacity (lbs)	49,900
Torque to raise 1 lb. (in-lbs)	0.175
Forward Driving Efficiency	23%
Thread Class	2G

PART NUMBERS

Screw	A117504-1
Nut	A117504-2
Flange	A117504-3

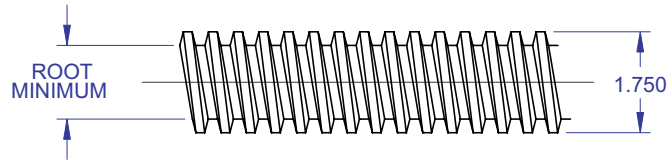
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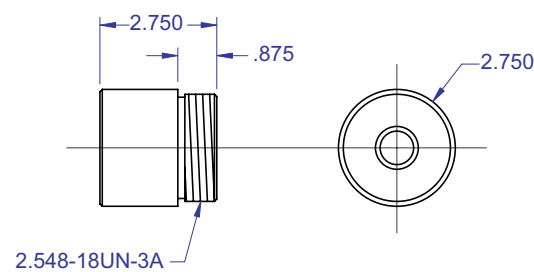
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ACME SCREWS

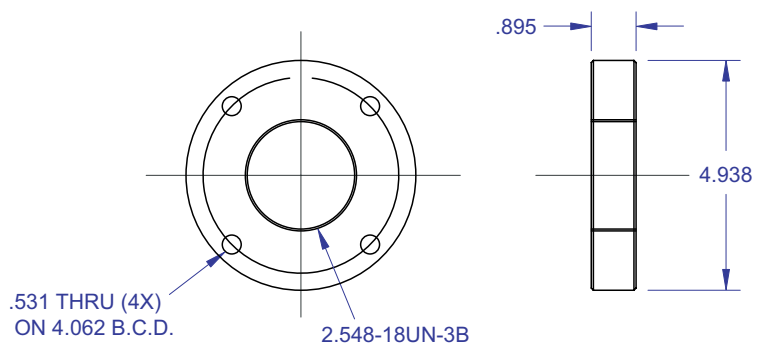
Standard ACME Screw



Standard ACME Nut

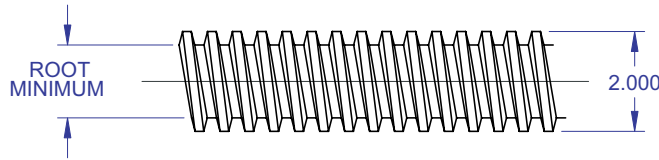


Standard ACME Flange

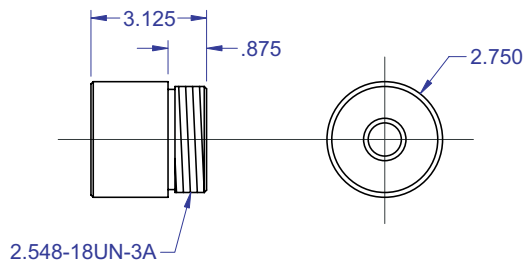


ACME SCREWS

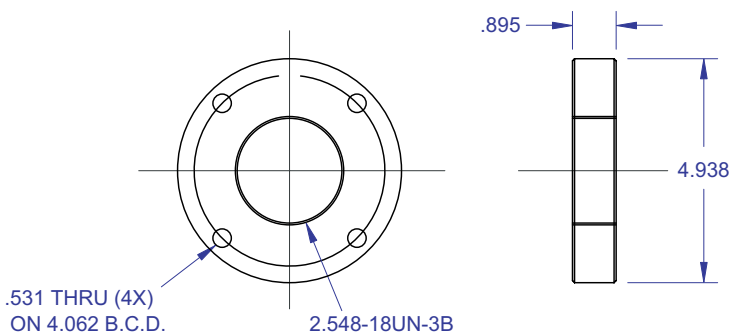
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



2 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	2-4	2-4
# of Starts	1	2
Lead	0.250	0.500
Threads Per Inch	4	4
Min. Root Diameter	1.694	1.698
Weight (lbs/ft)	9.22	9.22
Screw Material	1045CRS	1045CRS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	20,000	20,000
Static Capacity (lbs)	64,000	64,000
Torque to raise 1 lb. (in-lbs)	0.166	0.227
Forward Driving Efficiency	24%	35%
Thread Class	2G	2C

PART NUMBERS

Screw	A120004-1	A220004-1
Nut	A120004-2	A220004-2
Flange	A120004-3	A220004-3

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2 1/2 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	2 1/2-2	2 1/2-4
# of Starts	1	1
Lead	0.500	0.250
Threads Per Inch	2	4
Min. Root Diameter	1.930	1.944
Weight (lbs/ft)	13.41	14.89
Screw Material	1045CRS	1045CRS
Nut Material	#660	#660
	Bronze	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	31,000	31,000
Static Capacity (lbs)	100,000	100,000
Torque to raise 1 lb. (in-lbs)	0.256	0.225
Forward Driving Efficiency	31%	18%
Thread Class	2G	2G

PART NUMBERS

Screw	A125002-1	A125004-1
Nut	A125002-2	A125004-2
Flange	A125002-3	A125004-3

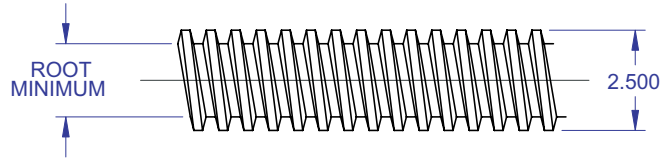
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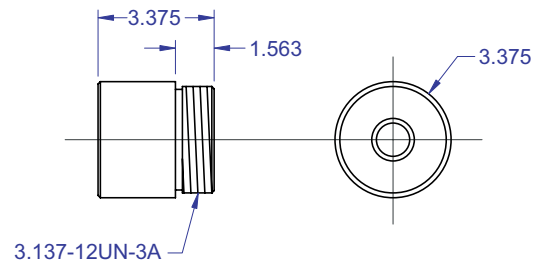
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ACME SCREWS

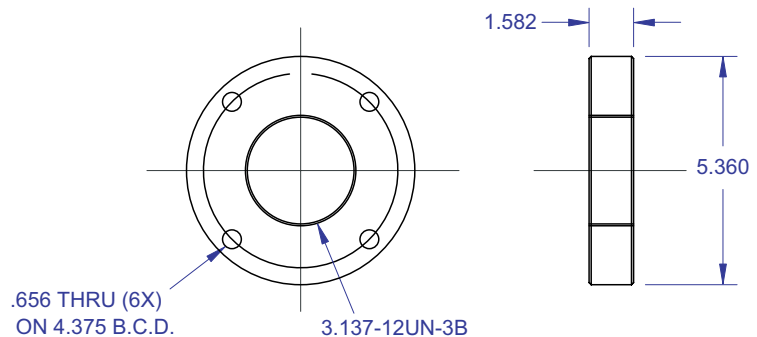
Standard ACME Screw



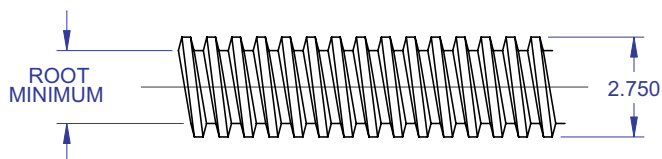
Standard ACME Nut



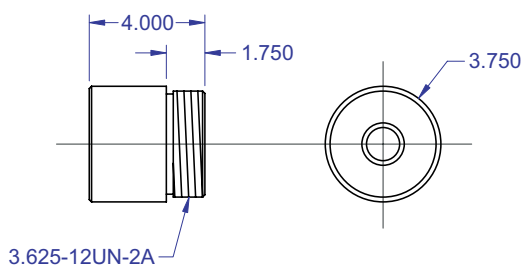
Standard ACME Flange



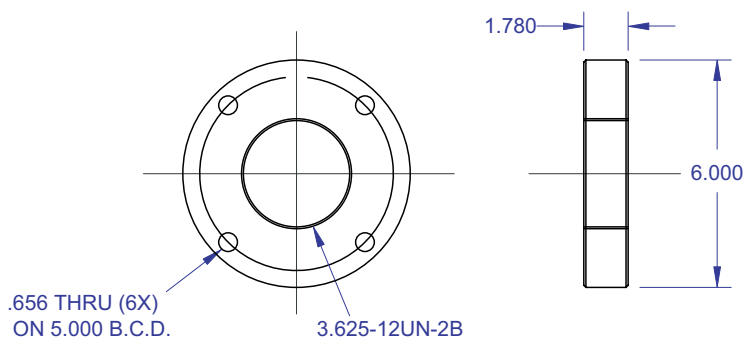
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



**2 3/4 INCH
diameter**

DIMENSIONAL SPECIFICATIONS

Screw Size	2 3/4-4
# of Starts	2
Lead	0.500
Threads Per Inch	4
Min. Root Diameter	2.443
Weight (lbs/ft)	18.4
Screw Material	1045CRS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	41,000
Static Capacity (lbs)	125,000
Torque to raise 1 lb. (in-lbs)	0.286
Forward Driving Efficiency	28%
Thread Class	2C

PART NUMBERS

Screw	A227504-1
Nut	A227504-2
Flange	A227504-3

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3 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	3-2
# of Starts	1
Lead	0.500
Threads Per Inch	2
Min. Root Diameter	2.456
Weight (lbs/ft)	19.96
Screw Material	1045CRS
Nut Material	#660 Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	45,000
Static Capacity (lbs)	144,000
Torque to raise 1 lb. (in-lbs)	0.294
Forward Driving Efficiency	27%
Thread Class	2G

PART NUMBERS

Screw	A130002-1
Nut	A130002-2
Flange	A130002-3

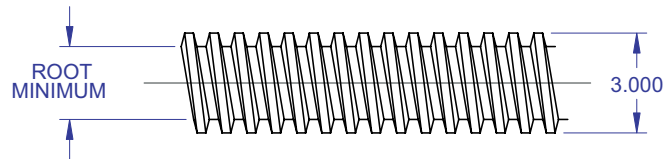
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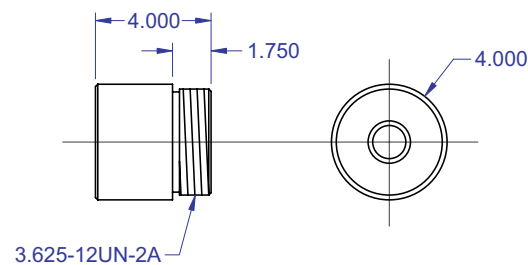
The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.

ACME SCREWS

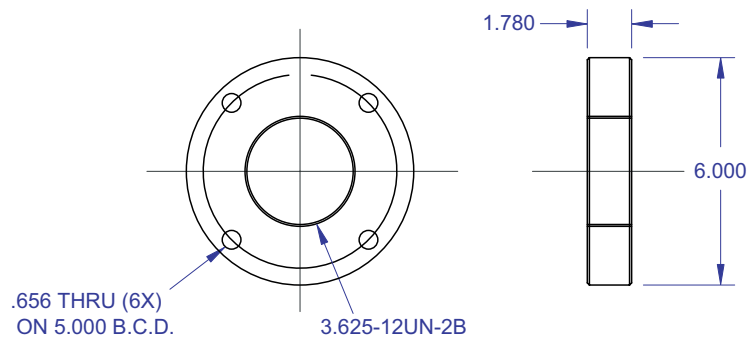
Standard ACME Screw



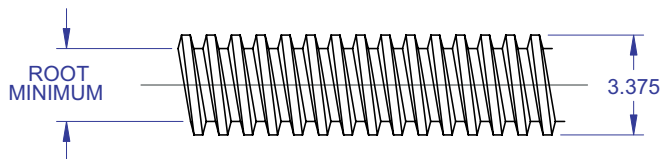
Standard ACME Nut



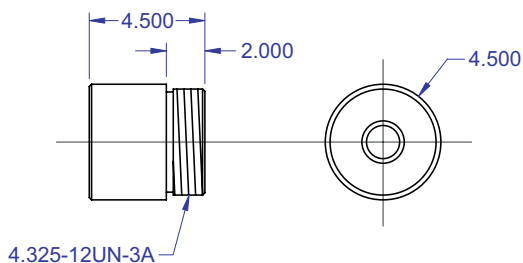
Standard ACME Flange



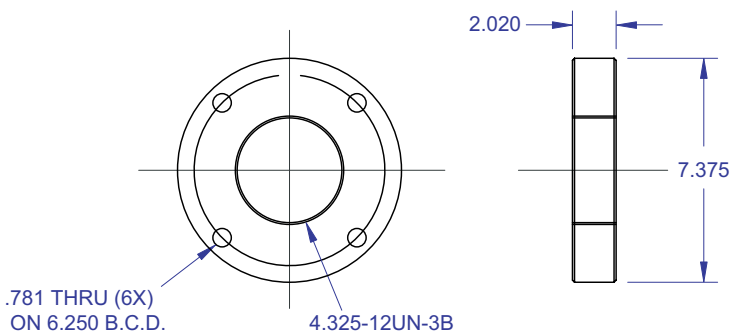
Standard ACME Screw



Standard ACME Nut



Standard ACME Flange



3 3/8 INCH

diameter

DIMENSIONAL SPECIFICATIONS

Screw Size	3 3/8-1-1/2
# of Starts	1
Lead	0.667
Threads Per Inch	1.5
Min. Root Diameter	2.920
Weight (lbs/ft)	20.15
Screw Material	1045CRS
Nut Material	#660
	Bronze

PERFORMANCE SPECIFICATIONS

Dynamic Capacity (lbs)	47,500
Static Capacity (lbs)	147,000
Torque to raise 1 lb. (in-lbs)	0.312
Forward Driving Efficiency	34%
Thread Class	2G Stub

PART NUMBERS

Screw	A133807-1
Nut	A133807-2
Flange	A133807-3

TECHNICAL INFO:

Bearing Mounts and Machined Ends	page 106-111
Lubrication information	page 17-18

The specifications and data in this publication are deemed to be accurate and reliable and are subject to change without notice.



R/B/S MULTI-PURPOSE SYNTHETIC GREASE

AVAILABLE IN 14 OZ. CARTRIDGES

NOTE: To achieve optimal grease performance, it is recommended that the machine components should be kept in careful alignment, the operating environment should be kept clean, and the assembly should be periodically inspected for proper lubrication quantity and integrity.

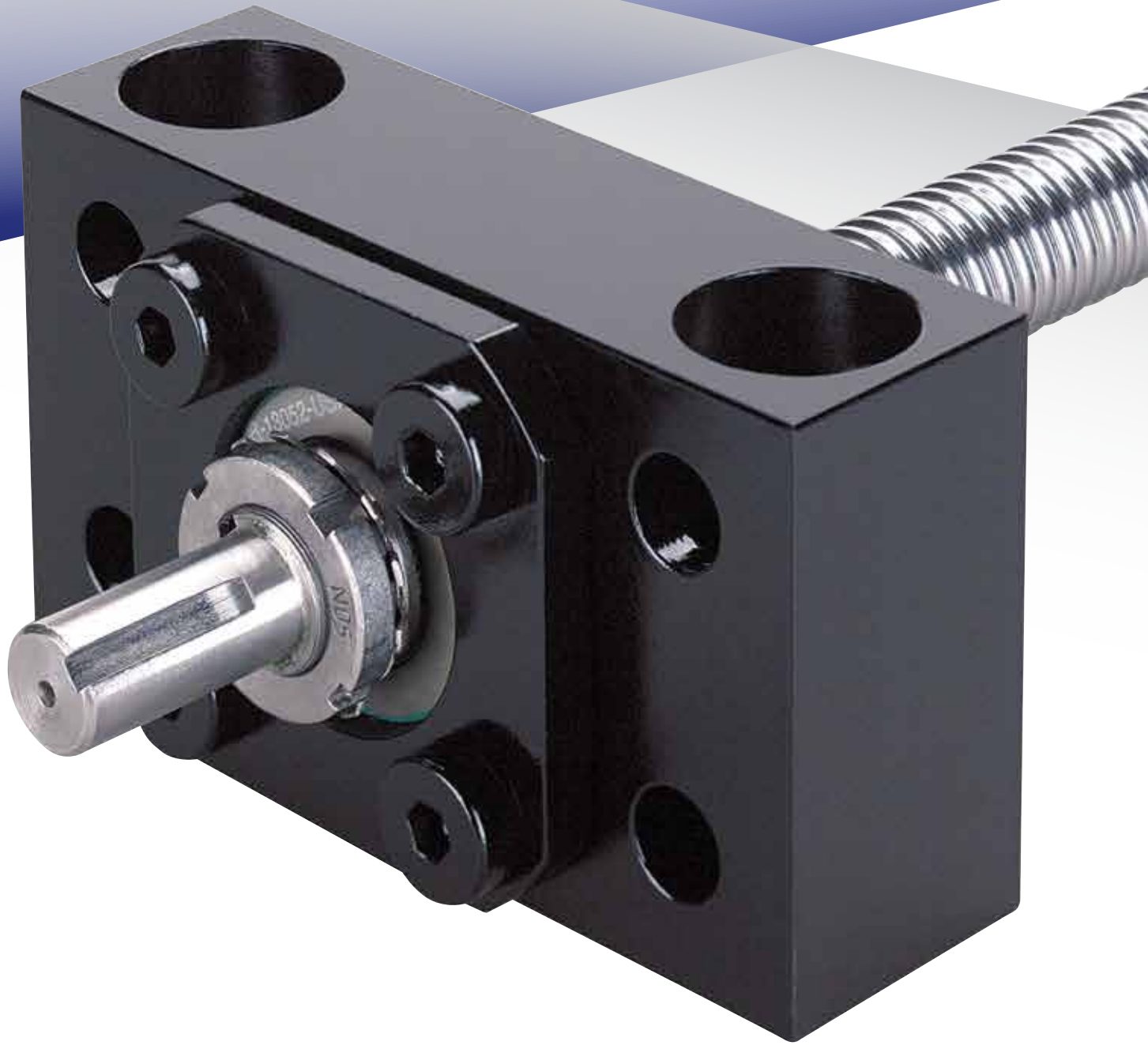
Advantages Proper lubrication along with reducing/eliminating foreign contamination are essential for preventing premature catastrophic failure. The R/B/S multi-purpose PTFE fortified synthetic grease has been specifically formulated with extreme pressure and anti-wear additives to reduce rolling element friction, wear, and provide noise damping characteristics. The excellent mechanical stability allows for compatibility with ferrous metals, non-ferrous metals, and most engineering plastics.

Consult the factory for specific material interactions. R/B/S recommends this grease be used for ballscrew, ACME screws, bearing mount, and other applications requiring excellent hydrodynamic lubrication.

Data Multi-Purpose Grease Specifications:

NLGI Grade:	2
Temperature Range:	-40°F(-40°C) to 300°F(135°C)
Base Fluid	
Viscosity (cSt):	75 @ 40°C 12 @ 100°C
Worked Penetration:	291 (ASTM D1403)

NOTES



BEARING MOUNTS

END MACHINING

BMR SERIES

- Simple Radial Bearing Mounts
- End Machining

BM SERIES

- Simple Angular Bearing Mounts
- End Machining

BMF SERIES

- Fixed Angular Bearing Mounts
- End Machining



BEARING SUPPORTS

Every screw assembly functionally requires a means of supporting the rotational axis of the screw and absorbing the radial and axial force components, e.g.

- Bearing support utilizing rolling element bearings
- Sleeve and rolling element bearing combination
- Static screw mounted into a structure with a rotating nut

It is recommended that only axial force vectors be transmitted directly into the axis of the ball screw to obtain optimal and in some instances functional performance & longevity.

All of our bearing mounts are furnished sealed and greased from the factory.

- Bearing mounts can be shipped loose for customer installation or preassembled to the screw at our factory.
- If shipped loose for customer installation, please note that the bearings have an interference fit to the shaft and that installation procedures in accordance with those recommended by rolling element bearing manufacturers need to be implemented. Please consult our factory for additional detail.

Types of Standard Bearing Mounts

Rockford Ball Screw offers standard bearing mounts in three (3) available configurations:

- Simple radial – R/B/S model BMR
- Simple angular – R/B/S model BM
- Fixed angular – R/B/S model BMF

For those applications where standard bearing mounts can not be applied, please contact Rockford Ball Screw for a custom solution.



BMR uses a deep groove radial ball bearing.

The BMR mount is well suited for high duty cycle conditions where frictional forces may cause a thermal transfer of energy into the screw assembly. The resulting thermal migration will cause the screw to expand axially and occasionally can lead to catastrophic failure.

Overview of BMR:

- Considered “simple” support
- Float of the bearing in the housing allows for shaft expansion
- Standard end machining available
- Predrilled for face or foot mounting

BMF uses a set of spaced angular contact bearings.

- Able to achieve greater compressive column strength by decreasing the effective length in the column buckling equations
- Increases the angular dynamic systemic stiffness, thereby increasing the first order harmonic frequency and increasing the critical speed capability
- Standard end machining available
- Standard bearing support includes a two (2) bearing configuration
- Available with up to four (4) bearings for more demanding applications; contact us for alternative bearing configurations
- Predrilled for foot mount only
- Predrilled for taper pin reaming to suit final assembly location

BM uses a set of angular contact bearings.

- Can support a combination of radial and axial loads
- Considered “simple” support
- Standard end machining available
- Predrilled for face or foot mounting
- Industry standard interchangeability
- Contact us for bearing support capacities

Custom Bearing Supports

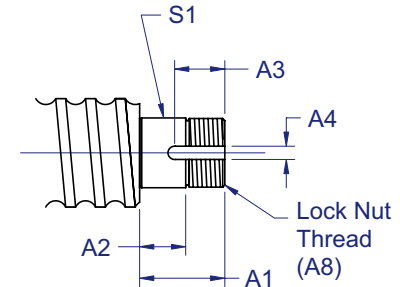
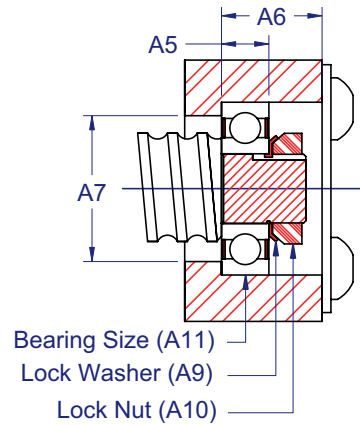
Rockford Ball Screw works closely with our customers to design, engineer, and manufacture customer bearing supports for unique applications. Custom bearing support examples:

- Tapered roller bearing
- Thrust bearing arrangements
- Spherical roller bearings
- Multiple angular contact bearing stacks
- Contact Rockford Ball Screw to request a thorough review of your application

BMR BEARING MOUNTS

The BMR series bearing mounts are **SIMPLE RADIAL** supports utilizing shielded Radial ball bearings for supporting radial load components. These bearing mounts are **NOT** intended to support axial load components of force. Consult engineering for application assistance if required.

NOTE: Dimensions shown for screws without corresponding bearing mounts are for reference only.



**END MACHINING
SHAFT END TYPE "1A"**

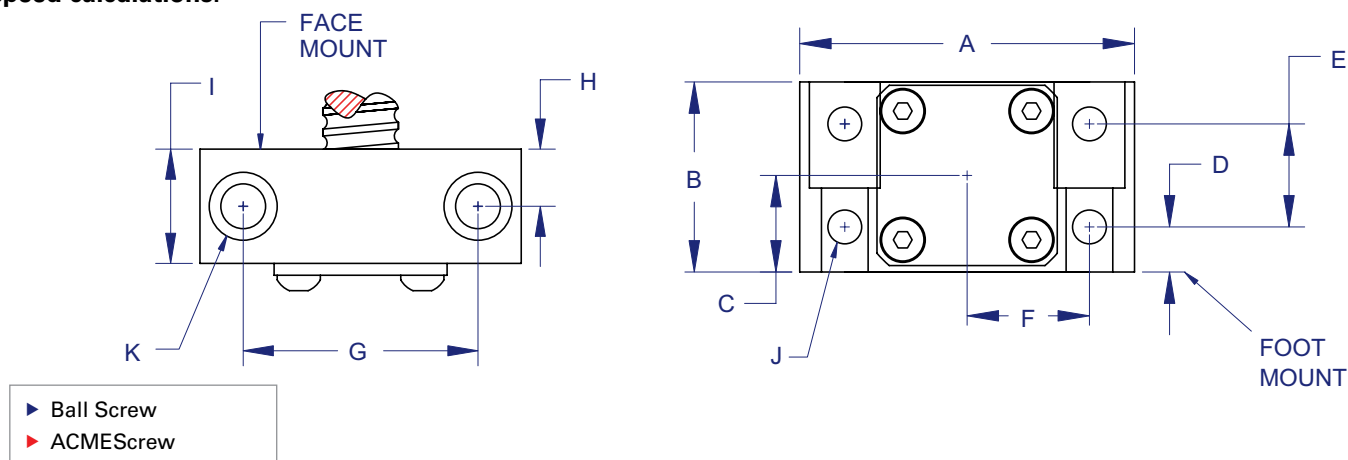
- ▶ Ball Screw
- ▶ ACME Screw

SCREW NUMBER	PART NUMBER	S1	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
▶ R-10, 11, 12, 15, 16		.2757 .2754	.670	.250	N/A	N/A	.276	.800	.75	1/4-28	N/A	N/A	627
▶ 1/2-10		.3544 .3541	.750	.290	N/A	N/A	.315	.875	.88	5/16-24	N/A	N/A	629
▶ R-02, 20, 21, 22, 23	BMR-10	.3940 .3936	.650	.330	.41	1/8	.354	.800	1.00	.391-32	W-00	N-00	6200
▶ 5/8-8, 5/8-6													
▶ R-1, 03, 30, 31, 32, 30A,	BMR-12	.4726 .4723	.890	.450	.53	1/8	.472	1.029	1.25	.469-32	W-01	N-01	6301
▶ 30RFV, 31LFV, 5/8-10, 3/4-5,													
▶ 3/4-6, 3/4-8													
▶ R-04, 34, 35, 36, 37, 38	BMR-15	.5908 .5905	.930	.490	.53	1/8	.512	1.094	1.38	.586-32	W-02	N-02	6302
▶ 3/4-10, 7/8-5, 7/8-6,													
▶ 1-4, 1-5, 1-6													
▶ R-06, 40, 40A, 40B, 40RF, 40C,	BMR-20	.7877 .7873	1.070	.570	.59	3/16	.590	1.305	1.75	.781-32	W-04	N-04	6304
▶ 41C, R-41, 41LF, 42, 43, 44, 48,													
▶ 1-8, 1-10, 1 1/8-5, 1 1/4-4													
▶ R-45, 46, 47,	BMR-25	.9846 .9842	1.190	.650	.67	3/16	.669	1.420	2.06	.969-32	W-05	N-05	6305
▶ R-55, 56, 57, 58													
▶ 1 1/4-5, 1 1/2-4													
▶ R-50, 50A, 51A, 53A,	BMR-30	1.1814 1.1810	1.275	.720	.68	1/4	.748	1.587	2.43	1.173-18	W-06	N-06	6306
▶ R-53, 54, 54A													
▶ 1 1/2-5, 1 3/4-4													
▶ R-61, 62		1.5752 1.5747	1.470	.880	.72	5/16	.906	1.875	3.10	1.563-18	W-08	N-08	6308
▶ R-60, 60A, 63	BMR-45	1.7721 1.7716	1.550	.960	.75	5/16	.984	2.488	3.50	1.767-18	W-09	N-09	6309
▶ 2 1/2-2, 2 1/2-4													
▶ R-75		1.9689 1.9684	1.690	1.040	.81	5/16	1.063	2.125	3.88	1.967-18	W-10	N-10	6310
▶ R-70, 71, 74		2.1659 2.1653	1.770	1.120	.81	5/16	1.142	2.250	4.13	2.157-18	W-11	N-11	6311
▶ R-80, 81		2.3627 2.3622	1.880	1.195	.84	5/16	1.220	2.375	4.50	2.360-18	W-12	N-12	6312
▶ R-90, 91		3.1501 3.1495	2.270	1.510	1.01	3/8	1.535	2.750	6.00	3.137-12	W-16	N-16	6316

Note: Bearing mounts are supplied factory lubricated

BEARING MOUNTS

1. The BMR series bearing mounts are universally precision machined to allow either foot or face mounting.
2. The BMR series bearing mounts are to be considered as "SIMPLE" support for column loading and critical speed calculations.



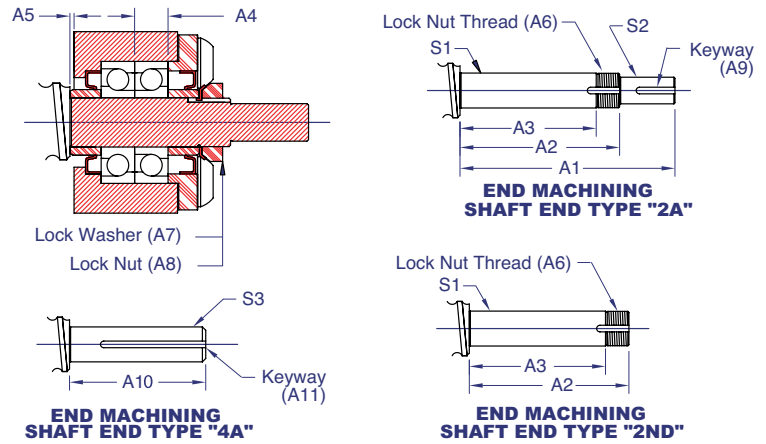
SCREW NUMBER	PART NUMBER	A	B	C	D	E	F	G	H	I	J	K
▶ R-10, 11, 12, 15, 16												
▶ 1/2-10												
▶ R-02, 20, 21, 22, 23	BMR-10	3.000	1.875	1.000	.375	1.125	1.125	2.250	.672	1.344	.281 (4x)	.406 Thru .625 C'bore .875 Deep
▶ 5/8-8, 5/8-6												
▶ R-01, 03, 30, 31, 32, 30A,	BMR-12	3.000	1.875	1.000	.375	1.125	1.125	2.250	.672	1.344	.281 (4x)	.406 Thru .625 C'bore .875 Deep
▶ 30RFW, 31LFW, 5/8-10, 3/4-5,												
▶ 3/4-6, 3/4-8												
▶ R-04, 34, 35, 36, 37, 38	BMR-15	3.500	2.125	1.125	.375	1.375	1.250	2.500	.813	1.625	.281 (4x)	.406 Thru .625 C'bore .875 Deep
▶ 3/4-10, 7/8-5, 7/8-6,												
▶ 1-4, 1-5												
▶ R-6, 40, 40A, 40B, 40RF, 40C,	BMR-20	4.500	2.750	1.438	.500	1.750	1.625	3.250	.938	1.875	.500 (4x)	.656 Thru 1.000 C'bore 1.312 Deep
▶ 41C, R-41, 41LF, 42, 43, 44, 48,												
▶ 1-8, 1-10, 1 1/8-5, 1 1/4-4												
▶ R-45, 46, 47,	BMR-25	6.500	3.690	1.875	.875	2.000	2.375	4.750	.970	1.940	.688 (4x)	.906 Thru 1.375 C'bore 1.750 Deep
▶ R-55, 56, 57, 58												
▶ 1 1/2-4												
▶ R-50, 50A, 51A, 53A	BMR-30	6.500	3.690	1.875	.875	2.000	2.375	4.750	1.156	2.312	.688 (4x)	.906 Thru 1.375 C'bore 2.060 Deep
▶ R-53, 54, 54A												
▶ 1 1/2-5, 1 3/4-4												
▶ R-61, 62												
▶ R-60, 60A, 63	BMR-45	8.500	5.625	2.813	1.000	3.625	3.313	6.625	.873	3.468	.813 (6X)	1.013 Thru 1.563 C'bore 3.500 Deep
▶ 2 1/2-2, 2 1/2-4												
▶ R-75												
▶ R-70, 71, 74												
▶ R-80, 81												
▶ R-90, 91												

BM BEARING MOUNTS

The BM series bearing mounts are **SIMPLE** supports that utilize a set of Angular Contact ball bearings mounted back to back. These bearing mounts are designed to support radial and axial load components of force. Consult engineering for application assistance if required.

NOTE: Dimensions shown for screws without corresponding bearing mounts are for reference only.

- ▶ Ball Screw
- ▶ ACME Screw

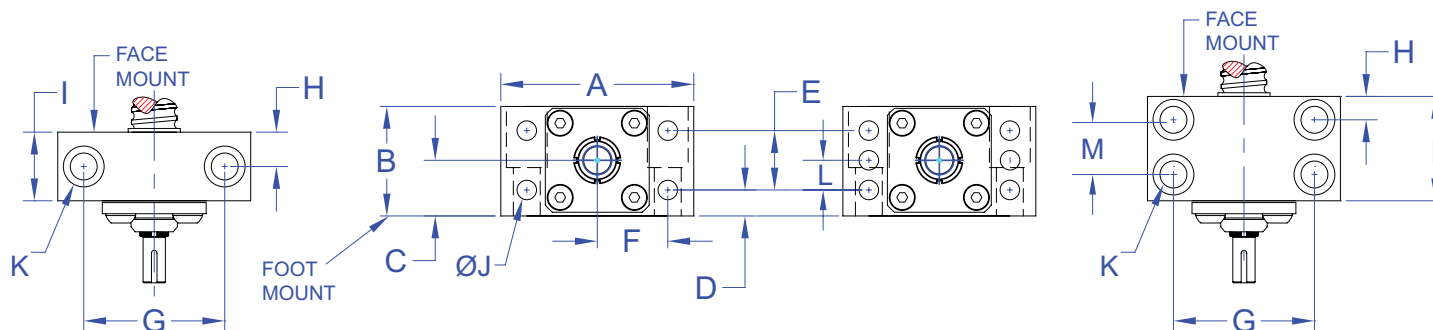


SCREW NUMBER	PART #	OS1	OS2	OS3	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
▶ R-10, 11, 12, 15, 16		.2757 .2754	.187 .186	.2500 .2495	2.15	1.70	1.240	.276	.035	1/4-28	N/A	N/A	1/16x3/8	1.38	1/16x3/4
▶ 1/2-10		.3544 .3541	.250 .249	.2500 .2495	2.45	1.82	1.320	.315	.035	5/16-24	N/A	N/A	3/32x1/2	1.38	1/16x3/4
▶ R-02, 20, 21, 22, 23 ▶ 5/8-8	BM-10	.3940 .3936	.312 .311	.3750 .3745	2.84	2.09	1.700	.354	.000	.391-32	W-00	N-00	1/8x1/2	1.75	1/8x7/8
▶ R-01, 03, 30, 31, 32, 30A, ▶ 30RFW, 31LFW, 5/8-10, 3/4-5, 3/4-6	BM-12	.4726 .4723	.406 .405	.5000 .4995	3.29	2.00	1.566	.472	.000	.469-32	W-01	N-01	1/8x5/8	2.25	1/8x1 5/8
▶ R-04, 34, 35, 36, 37, 38 ▶ 3/4-10, 7/8-5, 7/8-6, 1-4, 1-5, 1-6	BM-15	.5908 .5905	.500 .499	.5000 .4995	3.59	2.59	2.145	.512	.040	.586-32	W-02	N-02	1/8x5/8	2.25	1/8x1 5/8
▶ R-06, 40, 40A, 40B, 40RF, ▶ 40C, 41C, R-41, 41LF, 42, 43, 44, 48, 1-8, 1-10, 1 1/8-5, 1 1/4-4	BM-20	.7877 .7873	.625 .624	.7500 .7495	4.00	2.88	2.378	.590	.040	.781-32	W-04	N-04	3/16x5/8	2.87	3/16x1 1/2
▶ R-45, 46, 47, ▶ R-55, 56, 57, 58 1 1/4-5, 1 1/2-4	BM-25	.9846 .9842	.750 .749	1.0000 .9995	4.45	2.89	2.328	.669	.000	.969-32	W-05	N-05	3/16x1	2.87	1/4x1 3/4
▶ R-50, 50A, 51A, 53A ▶ R-53, 54, R-54A 1 3/4-4	BM-30	1.1814 1.1810	1.000 .999	1.1875 1.1870	5.33	3.60	3.047	.748	.063	1.173-18	W-06	N-06	1/4x1	4.12	1/4x2
▶ R-61, 62		1.5752 1.5747	1.375 1.374	1.5000 1.4995	6.93	4.43	3.800	.906	.063	1.563-18	W-08	N-08	5/16x1 1/2	4.94	3/8x3
▶ R-60, 60A, 63 ▶ 2 1/2-2, 2 1/2-4	BM-45	1.7721 1.7716	1.375 1.374	1.7500 1.7495	6.68	4.49	3.875	.984	.050	1.767-18	W-09	N-09	5/16x1 1/2	4.94	3/8x3
▶ R-75		1.9689 1.9684	1.750 1.749	2.0000 1.9995	7.75	4.87	4.200	1.063	.063	1.967-18	W-10	N-10	3/8x1 1/2	5.19	1/2x3 1/4
▶ R-70, 71, 74		2.1659 2.1653	1.875 1.874	2.0000 1.9995	8.40	5.40	4.700	1.142	.063	2.157-18	W-11	N-11	1/2x1 1/2	6.37	1/2x3 1/4
▶ R-80, 81		2.3627 2.3622	2.250 2.249	2.4375 2.4365	9.22	5.54	4.832	1.220	.063	2.360-18	W-12	N-12	1/2x2	7.25	5/8x4 7/8
▶ R-90, 91		3.1501 3.1495	3.000 2.998	3.0000 2.9990	11.52	6.87	6.070	1.535	.063	3.137-12	W-16	N-16	3/4x3	7.56	3/4x5

Note: Bearing mounts are supplied factory lubricated

BEARING MOUNTS

1. The BM series bearing mounts are universally precision machined to allow either foot or face mounting.
2. The BM series bearing mounts are to be considered as "SIMPLE" support for column loading and critical speed calculations.



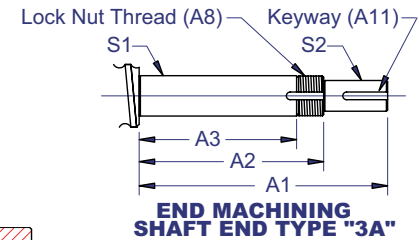
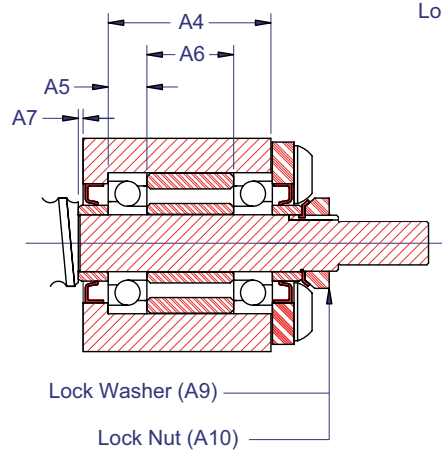
- ▶ Ball Screw
- ▶ ACME Screw

SCREW NUMBER	PART NUMBER	A	B	C	D	E	F	G	H	I	J	K	L	M
▶ R-10, 11, 12, 15, 16														
▶ 1/2-10														
▶ R-02, 20, 21, 22, 23	BM-10	3.000	1.875	1.000	.375	1.125	1.125	2.250	.672	1.344	.281 (4x)	.406 Thru .625 C'bore .875 Deep	N/A	N/A
▶ R-01, 03, 30, 31, 32, 30A, 30RFV, 31LFW, 5/8-10, 3/4-5, 3/4-6, 3/4-8	BM-12	3.000	1.875	1.000	.375	1.125	1.125	2.250	.672	1.344	.281 (4x)	.406 Thru .625 C'bore .875 Deep	N/A	N/A
▶ R-04, 34, 35, 36, 37, 38	BM-15	3.500	2.125	1.125	.375	1.375	1.250	2.500	.813	1.625	.281 (4x)	.406 Thru .625 C'bore 1.000 Deep	N/A	N/A
▶ R-06, 40, 40A, 40B, 40RF, 40C, 41C, R-41, 41LF, 42, 43, 44, 48, 1-8, 1-10, 1 1/8-5, 1 1/4-4	BM-20	4.500	2.750	1.438	.500	1.750	1.625	3.250	.938	1.875	.469 (4x)	.656 Thru 1.000 C'bore 1.312 Deep	N/A	N/A
▶ R-45, 46, 47, R-55, 56, 57, 58	BM-25	6.500	3.690	1.875	.875	2.000	2.375	4.750	.970	1.940	.656 (4x)	.906 Thru 1.375 C'bore 1.750 Deep	N/A	N/A
▶ R-50, 50A, 51A, 53A, R-53, 54, 54A	BM-30	6.500	3.690	1.875	.875	2.000	2.375	4.750	1.156	2.312	.656 (4x)	.906 Thru 1.375 C'bore 2.060 Deep	N/A	N/A
▶ R-61, 62														
▶ R-60, 60A, 63	BM-45	8.500	5.625	2.813	1.000	3.625	3.313	6.625	.873	3.468	.813 (6x)	1.013 Thru 1.563 C'bore 3.500 Deep	1.813	1.720
▶ R-75														
▶ R-70, 71, 74														
▶ R-80, 81														
▶ R-90, 91														

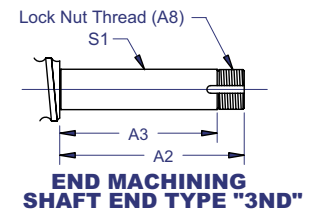
BMF BEARING MOUNTS

The BMF series bearing mounts are **FIXED RIGID** supports that utilize a set of spaced **Angular Contact ball bearings**. These bearing mounts are designed to support both radial and axial load components of force. Consult engineering for application assistance if required.

NOTE: Dimensions shown for screws without corresponding bearing mounts are for reference only.



**END MACHINING
SHAFT END TYPE "3A"**



**END MACHINING
SHAFT END TYPE "3ND"**

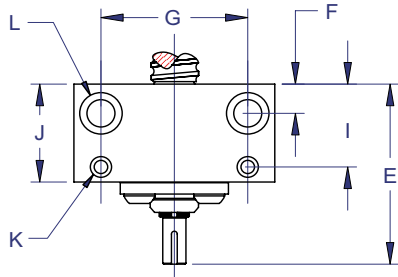
- ▶ Ball Screw
- ▶ ACME Screw

SCREW NUMBER	PART NUMBER	S1	S2	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
▶ R-10, 11, 12, 15, 16		.2757 .2754	.187 .186	2.85	2.35	1.82	1.084	.276	0.550	0.035	1/4-28	N/A	N/A	1/16x3/8
▶ 1/2-10		.3544 .3541	.250 .249	3.23	2.60	1.98	1.240	.315	0.630	0.035	5/16-24	N/A	N/A	3/32x1/2
▶ R-02, 20, 21, 22, 23	BMF-10	.3940 .3936	.312 .311	3.50	2.75	2.25	1.515	.354	0.825	0.050	.391-32	W-00	N-00	1/8x1/2
▶ R-01, 03, 30, 31, 32, 30A,	BMF-12	.4726 .4723	.406 .405	4.30	3.00	2.35	1.850	.472	0.923	0.038	.469-32	W-01	N-01	1/8x5/8
▶ 30RFW, 31LFW, 5/8-10, 3/4-5, 3/4-6, 3/4-8														
▶ R-04, 34, 35, 36, 37, 38	BMF-15	.5908 .5905	.500 .499	4.62	3.31	2.73	2.000	.512	0.995	0.035	.586-32	W-02	N-02	1/8x5/8
▶ 3/4-10, 7/8-5, 7/8-6, 1-4, 1-5, 1-6														
▶ R-06, 40, 40A, 40B, 40RF,	BMF-20	.7877 .7873	.625 .624	5.05	3.80	3.10	2.375	.590	1.217	0.035	.781-32	W-04	N-04	3/16x5/8
▶ 40C, 41C, R-41, 41LF, 42, 43, 44, 48, 1-8, 1-10, 1 1/8- 5, 1 1/4-4														
▶ R-45, 46, 47, R-55, 56, 57, 58	BMF-25	.9846 .9842	.750 .749	6.06	4.50	3.75	2.815	.669	1.500	0.083	.969-32	W-05	N-05	3/16x1
▶ 1 1/4-5, 1 1/2-4														
▶ R-50, 50A, 51A, 53A, R-53, 54, R-54A	BMF-30	1.1814 1.1810	1.000 .999	6.67	4.92	4.20	3.300	.748	1.828	0.075	1.173-18	W-06	N-06	1/4x1
▶ 1 3/4-4														
▶ R-61, 62		1.5752 1.5747	.1375 .1374	8.15	5.90	5.13	4.236	.906	2.450	0.035	1.563-18	W-08	N-08	5/16x1 1/2
▶ R-60, 60A, 63		1.7721 1.7716	.1375 .1374	8.62	6.37	5.60	4.694	.984	2.750	0.035	1.767-18	W-09	N-09	5/16x1 1/2
▶ 2 1/2-2, 2 1/2-4														
▶ R-75		1.9689 1.9684	.1750 .1749	9.68	6.80	5.95	5.050	1.063	2.950	0.035	1.967-18	W-10	N-10	3/8x1 1/2
▶ R-70, 71, 74		2.1659 2.1653	.1875 .1874	10.10	7.35	6.50	5.608	1.142	3.350	0.035	2.157-18	W-11	N-11	1/2x1 1/2
▶ R-80, 81		2.3627 2.3622	2.250 2.249	11.56	8.06	7.15	6.035	1.220	3.620	0.062	2.360-18	W-12	N-12	1/2x2
▶ R-90, 91		3.1501 3.1495	3.000 2.998	14.50	9.95	8.95	7.845	1.535	4.800	0.062	3.137-12	W-16	N-16	3/4x3

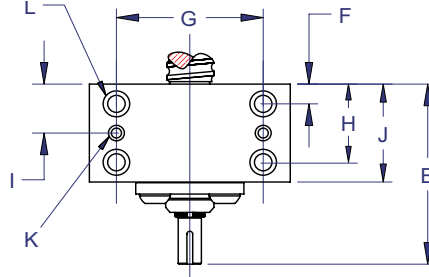
Note: Bearing mounts are supplied factory lubricated

BEARING MOUNTS

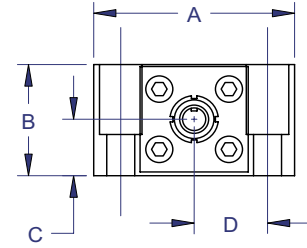
1. The BMF series bearing mounts are precision machined for foot mounting and pre-drilled for taper pins
2. The BMF series bearing mounts are to be considered as "FIXED" support for column loading and critical speed calculations.



PLAN VIEW FOR
BMF-20, 25, & 30



PLAN VIEW FOR
BMF-10, 12, & 15



- ▶ Ball Screw
- ▶ ACME Screw

SCREW NUMBER	PART NUMBER	A	B	C	D	E	F	G	H	I	J	K	L
▶ R-10, 11, 12, 15, 16													
▶ 1/2-10													
▶ R-02, 20, 21, 22, 23	BMF-10	3.000	1.875	1.000	1.125	3.450	.375	2.250	1.500	.938	1.875	.250 Thru .375 C'bore #5 Taper Pin	406 Thru .625 C'bore 1.130 Deep
▶ R-01, 03, 30, 31, 32, 30A,	BMF-12	3.000	1.875	1.000	1.125	4.262	.438	2.250	1.688	1.063	2.125	.250 Thru .375 C'bore #5 Taper Pin	406 Thru .625 C'bore 1.130 Deep
▶ R-04, 34, 35, 36, 37, 38	BMF-15	3.500	2.125	1.125	1.250	4.585	.500	2.500	1.875	1.188	2.375	.250 Thru .375 C'bore #5 Taper Pin	406 Thru .625 C'bore 1.130 Deep
▶ R-6, 40, 40A, 40B, 40RF,	BMF-20	4.500	2.750	1.438	1.625	5.015	.937	3.250	N/A	2.125	2.750	.437 Thru .687 C'bore #8 Taper Pin	.688 Thru 1.000 C'bore 1.625 Deep
▶ R-45, 46, 47,	BMF-25	6.500	3.690	1.875	2.375	5.977	.970	4.750	N/A	2.750	3.250	.437 Thru .687 C'bore #8 Taper Pin	.937 Thru 1.375 C'bore 2.250 Deep
▶ R-50, 50A, 51A, 53A,	BMF-30	6.500	3.690	1.875	2.375	6.595	1.156	4.750	N/A	3.225	3.725	.437 Thru .687 C'bore #8 Taper Pin	.937 Thru 1.375 C'bore 2.250 Deep
▶ R-61, 62													
▶ R-60, 60A, 63													
▶ R-75													
▶ R-70, 71, 74													
▶ R-80, 81													
▶ R-90, 91													



PRELOADED BALL SCREWS FOR SERIES | BRIDGEPORT MILLS

CLONE MILL RETROFIT KITS

available for following mills*:

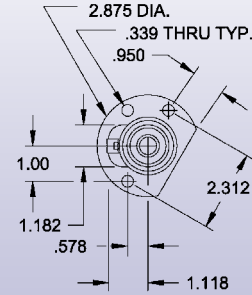
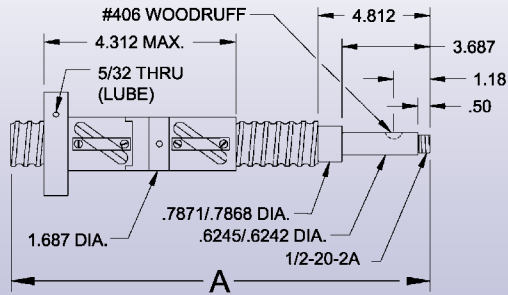
- ACER MILL
- ALLIANT MILL
- ATRUMP MILL
- CLAUSING KONDISA MILL
- CLEVELAND MILL
- ENCO MILL
- INDEX MILL
- KENT MILL
- LAGUN FTV 1,2,3
- MILLPORT MILL
- PARTNER O MILL
- PRATT & WHITNEY MILL
- SHARP MILL
- SIEBER HEGNER
- SOUTH BEND MILL
- SUPERMAX MILL
- VICTOR MILL
- WEBB MILL

**Consult factory on other mills not listed.*

These Tough, Bridgeport Retrofit Kits Offer Many Convenient Features:

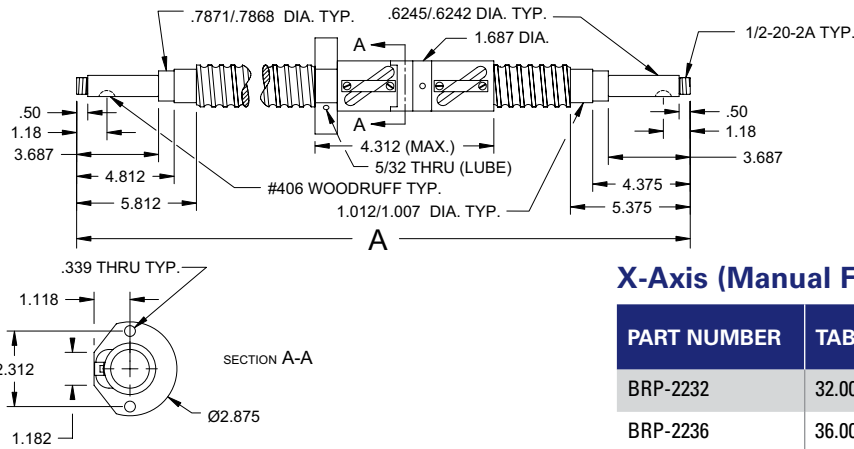
- **High-Capacity, Long-Life:** Each ball nut assembly of the Rockford preloaded unit has one circuit of 3 1/2 turns of ball bearings. It will provide a load life expectancy of 50 million inches of travel at an operating load of 400 pounds. The screw and nut assemblies are made of hardened steel.
- **Precision-Rolled Ball Screws:** Lead accuracy is guaranteed to be within .003 inches per foot accumulative. Lead charts for programming lead error on n/c applications are available.
- **Preloaded Ball Nuts:** Each ball nut is preloaded to eliminate lost motion. This system stiffness provides faster response from a control command. This added stiffness also allows heavier cuts and climb milling thus increasing productivity. The Rockford preload is adjustable. This feature permits readjustment for wear and reduces the need for repair or replacement at some time in the future.
- **Brush-Type Wipers:** Brush-type wipers, at the ends of each preloaded ball nut assembly prevents entry of dirt and metal chips.
- **Easy-Access Lubrication:** Lubrication of ball nuts made easy through 5/32" holes in the flanges. These holes provide for attachment of existing lube tubing.
- **High-Strength Housing:** The high-strength support housing reduces lost motion. The ductile iron housing reduces cross-slide deflection to less than 50% of the original installation. The housing is fully machined and ready to bolt in.
- **Easy Installation:** Installation procedure is simple and typical installation time is 1–2 hours.
- **Kits in Stock:** for any Table Size (Manual or Power Feed). Clone Mill Kits are made to order.
- **Angular Contact Bearings:** Angular contact bearings and spacer sets for replacement of original radial bearings (reduce backlash and increase rigidity). PART NUMBER BRP-7204

PRELOADED BRIDGEPORT RETROFIT KITS



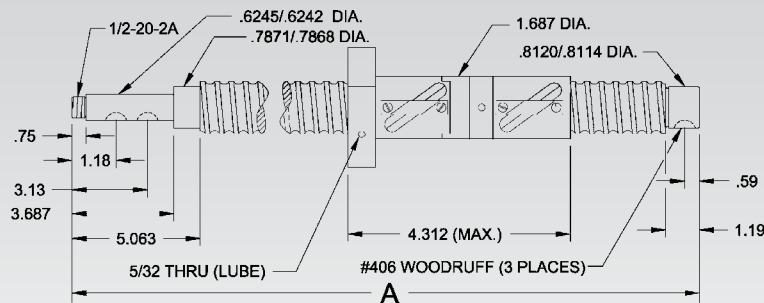
PART NUMBER	TABLE STROKE	A DIM.	LEAD
BRP-2209	9.000	21.00	.200 LH

PART NUMBER	TABLE STROKE	A DIM.	LEAD
BRP-2212	12.00	24.00	.200 LH



X-Axis (Manual Feed)

PART NUMBER	TABLE SIZE	A DIM.	LEAD
BRP-2232	32.00	42.00	.200 RH
BRP-2236	36.00	46.00	.200 RH
BRP-2242	42.00	52.00	.200 RH
BRP-2248	48.00	58.00	.200 RH



PART NUMBER	TABLE SIZE	A DIM.	LEAD
BRP-2232PF	32.00	36.25	.200 RH
BRP-2236PF	36.00	40.25	.200 RH

PART NUMBER	TABLE SIZE	A DIM.	LEAD
BRP-2242PF	42.00	46.25	.200 RH
BRP-2248PF	48.00	52.25	.200 RH

Note: Most makes of power feed units are made to fit on a standard manual feed screw (see above). Ball Nut Dimension same as x-axis above. Gear Box Power Feed Screws also available (not shown).

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