ActionJac™ Worm Gear Screw Jacks

ActionJac™
WORM GEAR SCREW JACKS

NOOK INDUSTRIES™
...THE LINEAR MOTION PEOPLE

ACTIONJAC™ JACKS

ActionJac™ Worm Gear Screw Jack systems are ruggedly designed and produced in standard models with load handling capacities from 1/4 ton to 100 tons.

They may be used individually or in multiple arrangements. There are no “standard” travel lengths and each Worm Gear Screw Jack is built to specification.

MACHINE SCREW JACKS

The worm gear driven Machine Screw Jack incorporates an alloy steel worm which drives a high strength bronze worm gear (drive sleeve). The worm shaft is supported on anti-friction tapered roller bearings with external seals provided to prevent loss of lubrication (sealed radial bearings on the 1/2 and 1 ton units). The drive sleeve is supported on anti-friction tapered roller or ball thrust bearings. Rotation of the drive sleeve causes the acme thread lifting screw to translate or rotate, depending upon jack configuration.

The jack housing is made of ductile iron (MJ models have aluminum housings, aluminum optional on one ton models) and proportioned to support the rated capacity of the unit. The lifting screw is made of alloy steel with a minimum tensile strength of 95,000 psi. The threads are precision formed, typically using Class 2-C (Centralizing) tolerances. Jack lift shaft lead tolerance is approximately 0.004" per foot.

BALL SCREW JACKS

The ActionJac™ Ball Screw Jacks use the same worm gear set arrangement as machine screw jacks. The addition of a high efficiency ball screw and nut reduces the required input torque to approximately one-third the torque required for the Machine Screw Jack.

The Ball Screw Jack housing is made of ductile iron (1/2 BSJ and 1/2 HL-BSJ jacks have aluminum housings, aluminum optional on one ton models) and designed to support the rated capacity of the unit. The ball screw and nut are made from hardened alloy steel with hardened bearing balls carrying the load between nut and screw. This rolling action reduces friction between the nut and the screw permitting smooth and efficient movement of the load. Because of the greater efficiency and rolling action, the ball screw can operate at higher speeds or increased duty cycle when compared with the Machine Screw Jack. When a Ball Screw Jack is motorized, less horsepower is required than an equivalent size Machine Screw Jack.

STAINLESS STEEL SCREW JACKS

ActionJac™ Stainless Steel Machine Screw Jacks are ideal for use in demanding environments where corrosion resistance is required. All external components are manufactured from 300 Series Stainless Steel materials. These jacks use a stainless steel worm with a high strength bronze drive sleeve. The worm and drive sleeve are supported by tapered roller bearings and sealed to prevent loss of lubrication and to resist contamination. The stainless steel lifting screw threads are precision formed to Class 2-C (centralizing) thread profiles.

Load capacities for Stainless Steel Machine Screw Jacks range from 1,300 to 23,000 pounds. For increased capacity, a 17-4PH hardened worm is available.

METRIC BALL SCREW JACKS

With over twenty-five years of experience manufacturing precision worm gear screw jacks, Nook Industries has expanded the ActionJac™ offering to include metric models providing design engineers a globally accepted product. All the efficiency advantages that come with ball screw technology are available in ActionJac™ Metric Ball Screw Jacks. A full line of IEC motor mounts are available.

TRAPEZOIDAL SCREW JACKS

The ActionJac™ Trapezoid Screw Jacks utilize the same rugged design as the ActionJac™ Machine Screw Jacks. These true metric jacks include a lift shaft with a special trapezoidal thread form. This thread form has been created to stay within ISO standards yet retains the centralizing feature of our 2C acme threads. These jacks may be assembled with IEC motor mounts.

ACCESSORIES

Accessories such as motors, motor mounts, encoders, hand wheels, counters, couplings, miter gear boxes, boots, limit switches, top plates and clevises are available.

NOTE: Units are not to be used as personnel support or movement.

GLOSSARY & TERMS

JACK CONFIGURATIONS

Worm gear screw jacks can be assembled in a number of different configurations. The first major configuration divides the jacks into translators and rotators.

TRANSLATING JACKS

A translating jack has a lifting shaft that moves through the gear box. A nut is integrated with the worm gear such that the worm gear and nut rotate together. When the lift shaft is held to prevent rotation, the lift shaft will move linearly through the gear box to move the load.

ROTATING JACKS

A rotating jack has a lift shaft that turns moving a nut. The lift shaft is fixed to the worm gear. This causes the load, which is attached to the travel nut, to move along the lift shaft. **(SEE FIG. 1)**

Both rotators and translators have an upright and inverted configuration. **(SEE FIG. 1)**

ANTI-BACKLASH JACKS

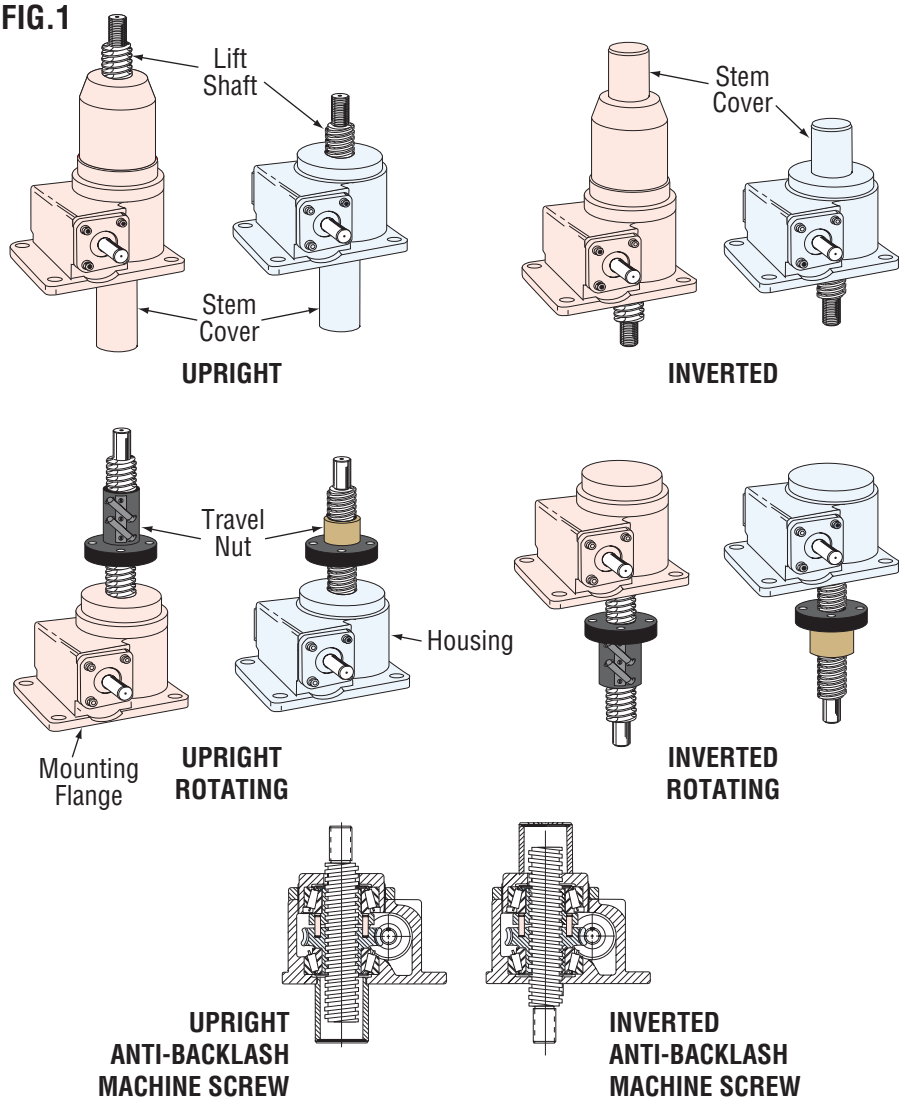
Anti-backlash Machine Screw Jacks are used wherever reversible load conditions require precision positioning control. Adjustable backlash Machine Screw Jack models are available to reduce backlash to approximately 0.003".

An Anti-backlash Machine Screw Jack allows the lash between the drive sleeve thread and the lifting screw thread to be accurately controlled by adjusting the top cover of the jack. The anti-backlash jack design has an upper drive sleeve and a lower drive sleeve. Adjustment of the cover changes the relative distance between the drive sleeves. This change in distance compensates for any lash.

Anti-backlash Machine Screw Jacks minimize backlash, but should not be used to completely eliminate backlash. While it may be desirable to totally eliminate backlash, the result would be a lock-up of lifting shaft and drive sleeve.

Ball Screw Jacks can be factory adjusted to reduce backlash by selecting bearing ball size in the ball nut. This selective fit technique can be used to achieve a lash between the ball nut and ball screw of 0.003"-0.005". Precision ball screws with preloaded ball nuts can be supplied to achieve zero lift shaft backlash. **(SEE FIG. 1)**

FIG.1



KEYED JACKS

The lift shaft of a translating style jack must be attached to something which prevents the lift shaft from rotating. If it is not, the lift shaft (and the load!) will turn and not translate.

A feature can be added to a machine screw jack to prevent lift shaft rotation. This type of jack is referred to as a “keyed jack” and is available in upright and inverted models.

A keyed jack has a keyway machined along the length of the lifting screw. A matching key is fastened to the cover of the jack which will eliminate lift shaft rotation.

The keyway in the screw causes greater than normal wear on the internal drive sleeve threads, somewhat reducing jack life.

Ball Screw Jacks can also be supplied with a device that prevents rotation of the lift shaft. Anti-rotation is accomplished by a square guide attached to the screw translating inside a square stem cover attached to the jack. The square stem tube is supplied with lube fittings.

The illustrations show the different configurations of keyed screw jacks. **(SEE FIG. 2)**

DOUBLE CLEVIS JACKS

Double Clevis Jacks are used when it is necessary to move a load through an arc, such as tracking antennas, hinged doors and air dampers.

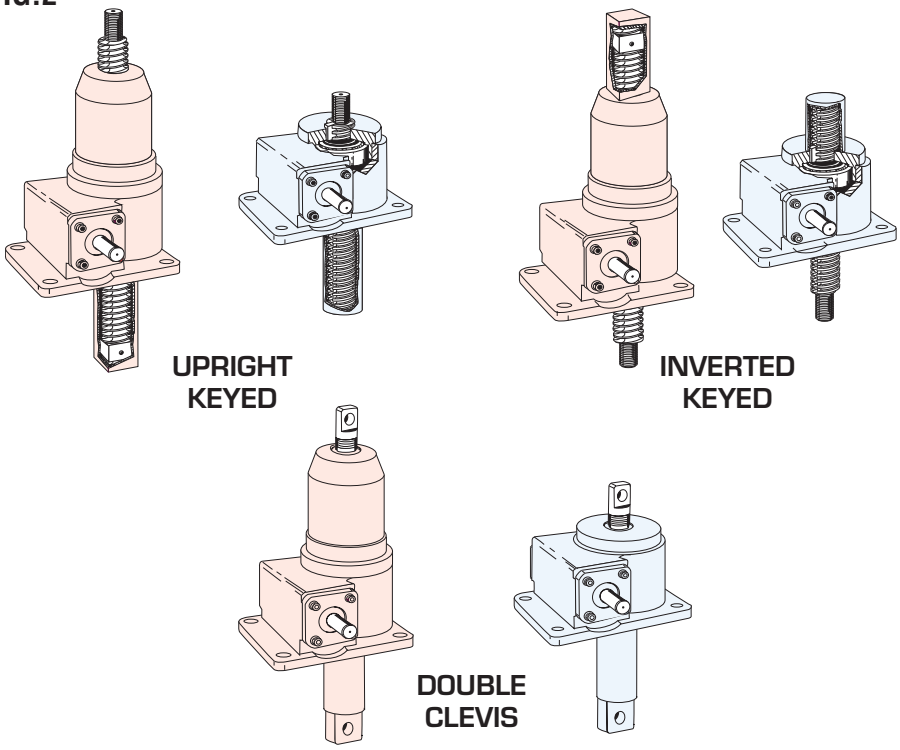
Machine Screw and Ball Screw Jacks from 1-ton to 15-ton capacities can be supplied with double clevis mounts. One clevis is mounted on the end of the lift shaft and the other clevis is welded to a heavy duty stem cover which is welded to the housing.

Double clevis designs are available with optional accessories such as boots, motor mounts, right-angle reducers, motors, encoders and rotary limit switches.

To check column strength limitations for each application use the extended pin to pin dimension and the column strength chart on page 294, 316, 335, 346 and 357. For greater column strength consider ActionJac™ Electric Cylinders, pages 365-407.

NOTE: Mounting hardware for double clevis jacks should be specified as heat treated alloy steel clevis pins with at least 100,000 psi ultimate tensile strength. **(SEE FIG. 2)**

FIG.2



TRAVEL LENGTH

As a manufacturer of lead screws, Nook Industries stocks a broad selection of inch and metric ball, acme and trapezoid screws in long lengths. Jacks are not pre-assembled or stocked with standard length screws. Each jack is made to order based on travel length.

Nook Industries has the capability to manufacture long screws for special applications, limited only by the availability of raw materials. Rotating screw jacks may be assembled with a larger diameter lift screw for greater column strength. Jacks can be supplied with special pitch lift screws to change the jack operating speed.

TWIN LEAD SCREWS

Jacks can also be assembled with twin lead screws if required by the application. Contact the engineers at Nook Industries for availability.

TRAVEL VS. INPUT REVOLUTIONS

The number of turns of the worm required to move one inch is a function of the worm gear ratio and the lead of the screw. The charts at the front of each section give the number of “turns of worm for 1" raise” for each jack. The motor speed divided by this number is the linear speed of the jack lift shaft or travel nut. Conversely, the desired travel rate multiplied by the “turns of worm for 1" raise” equals the input rpm required.

LEAD ACCURACY AND MATCHED LEAD

Lead accuracy is the difference between the actual distance traveled versus the theoretical distance traveled based on lead. For example: A screw with a 0.5 inch lead and ±0.004" per foot lead accuracy rotated 24 times theoretically moves the nut 12 inches.

24 Revolutions X .500 inches per revolution = 12.000 inches of travel with a Lead accuracy of ±0.004" per foot, actual travel could be from 11.996 to 12.004 inches.

The rolled thread ball screw, as employed in ActionJac™ products, is held within ±0.004" per foot lead error. The rolled acme thread screws used in our machine screw jacks have a typical lead accuracy of ±0.004" per foot.

When multiple jacks are used to move a load with precise synchronicity, lift shafts of similar lead accuracy can be factory selected and supplied as sets. Consult factory for matched lead set tolerances.

INPUT TORQUE

The input torque is the rotary force required at the input of the jack to generate an output force at the lift shaft. The product specification pages show the torque necessary to raise one pound. This number multiplied by the load is the required input torque.

Due to static friction, starting or "breakaway" torque can be as much as two to three times running torque. If the load is moved horizontally, the force required to move the load will be lessened in proportion to the coefficient of friction of the surface along which the load is moved. In addition, the force needed to start, stop and hold the load (inertia loading) is provided by the jack. Jack sizing should consider all these forces.

If an application calls for several jacks to be driven together in series, input torque values should be limited to the three times the rated value of the first jack. For multiple high lead ball screw jacks or belt/chain driven jacks contact Nook Industries for allowable input torque values. Multiple jacks driven in a series may require operation at reduced load.

TARE DRAG TORQUE

The gear box components (bearings, seals and grease) in a jack add "tare drag". The product specification pages show the tare drag torque. When loading ActionJac™ Worm Gear Screw Jacks with loads less than 25% of their rated capacity, tare drag torque needs to be added to the torque requirement.

INPUT SPEED

ActionJac™ Worm Gear Screw Jacks are rated for up to 3,000 rpm input speed, provided horsepower and temperature ratings are not exceeded. Contact Nook Industries engineers if higher input speeds are required.

DUTY CYCLE

Duty cycle is the ratio of run time to total cycle time. Some of the mechanical energy input to a worm gear screw jack is converted into heat caused by friction. The duty cycle is limited by the ability of the worm gear screw jack to dissipate heat. An increase in temperature can affect the properties of some components resulting in accelerated wear, damage and possible unexpected failure.

Maximum allowable horsepower ratings (see product specification pages) are based on intermittent operation. The approximate allowable duty cycles are:

Ball Screw Jacks= 35%
Machine Screw Jacks= 25%

HOUSING TEMPERATURE

Housing temperature should be monitored and kept below 200°F maximum. Continuous or heavy-duty operation is possible by de-rating the jack capacity, external cooling of the unit or through the use of a recirculating lubrication system.

SELF-LOCKING AND BRAKES

Self-locking occurs when system efficiencies are low enough that the force on the lifting shaft cannot cause the drive system to reverse direction. Machine Screw Jacks having gear ratios between 20:1 and 32:1, are self-locking and, in the absence of vibration, will hold loads without backdriving. All other ratios may require a brake to prevent backdriving.

All Ball Screw Jacks can backdrive and require some means of holding the load, such as a brake on the motor. The product specification pages show holding torque values. Holding torque represents the amount of input torque required to restrain the load.

In addition to back driving, system inertia usually results in some over travel when the motor is switched off. The inertia of the system should be considered when determining the brake size required to stop a dynamic load.

TEMPERATURE

All Actionjac™ Worm Gear Screw Jacks are suitable for operation within the specified limits provided that the housing temperature is not lower than -20°F or higher than +200°F. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges contact Nook Industries.

TRAVEL STOPS

Travel stops are not standard. A limit switch and a brake should be used to stop the motor. Mechanical stops can cause damage to the jacks because most electric motors will deliver stall torques much higher than their rated torques and motor inertia can cause severe shock loads. For hand operation, mechanical stops can be provided.

DESIGN CONSIDERATIONS

BALL SCREW VS. MACHINE SCREW JACK

The decision to use a ball screw jack or a machine screw jack is based on the application. For many applications, a ball screw model is the best choice. Ball screw jacks are more efficient and therefore require less power than a machine screw jack in the same application.

For low duty cycle applications, for hand-operated applications, or if backdriving is not acceptable consider a machine screw jack.

Actionjac™ Ball Screw Jacks are preferred for:

- Long travel lengths
- Long, predictable life
- High duty cycles
- Oscillating motion

Actionjac™ Machine Screw Jacks are preferred for:

- Resistance to backdriving
- Vibration environments
- Manual operation
- High static loads

LOAD CAPACITY

All anticipated loads should be within the rated capacity of the jack. Loads on the jack in most applications include: static loads, dynamic or moving loads, cutting forces or other reaction forces and acceleration/deceleration loads.

For shock loads, the peak load must not exceed the rated capacity of the jack, and an appropriate design factor should be applied commensurate with the severity of the shock.

For accidental overloads not anticipated in the design of the system, jacks can sustain without damage the following overload conditions: 10% for dynamic loads, 30% for static loads.

For multiple jack systems, load distribution should be considered. System stiffness, center of gravity, drive shaft windup and lead variation in the lift shafts may result in unequal load distribution. Jacks of varying capacity with equal “turns of worm for 1" travel” may be used to accommodate unequal loading.

HORSEPOWER RATINGS

Maximum horsepower ratings are based on intermittent operation. The approximate duty cycles are:

Ball Screw Jacks= 35%
Machine Screw Jacks= 25%

Horsepower is calculated by using the following formula:

$$\text{Horsepower per jack} = \frac{\text{Torque to raise one pound} \times \text{Number of pounds to be raised} \times \text{rpm}}{63{,}025}$$

The product specification pages show the “torque to raise one pound” value for each jack. Add tare drag torque if operating under 25% rated load.

Horsepower values are influenced by many application specific variables including mounting, environment, duty cycle and lubrication. The best way to determine whether performance is within horsepower limits is to measure the jack temperature. The temperature of the housing near the worm must not exceed 200°F.

Do not exceed the maximum allowable input horsepower for a jack. Many models cannot lift the full rated load at 1,800 rpm. If the horsepower required exceeds the maximum value for the jack selected, several solutions are possible.

- Use a larger jack model to increase the maximum allowable horsepower
- Use a Ball Screw Jack to reduce the power required to do the same work
- Operate at a lower input speed
- Use a right angle reducer to bring the power requirement within acceptable limits

Contact Nook Industries for additional assistance.

COLUMN STRENGTH

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength can be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the acme screw and ball screw technical sections for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

Charts are provided in each section to determine the required jack size in applications where the lift shaft is loaded in compression. To use the charts (pages 266, 294, 316, 335, 346, 357) :

Find a point at which the maximum length “L” intersects the maximum load. Be sure the jack selected is above and to the right of that point.

CAUTION: chart does not include a design factor.

The charts assume proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw.

JACK SIZING DATA

Jacks are limited by two constraints: load capacity and horsepower. The load capacity of the jack is limited by the physical constraints of its components (drive sleeve, lift shaft, bearings, etc.). The horsepower limit of the jack is a result of the ability to dissipate the heat generated from the inefficiencies of its components.

To size a screw jack for these constraints, application information must be collected. The data required is:

1) Total Load – The total load includes static loads, dynamic loads and inertia loads from acceleration and deceleration. Also consider reaction forces received from the load such as drilling or cutting forces when using a jack to move a machine tool.

2) Number of Jacks – The number of jacks used depends on physical size and design of the equipment. Stiffness of the equipment structure and guide system will determine the appropriate number of jacks required. Fewer jacks are easier to drive, align and synchronize.

3) Maximum Length – The maximum length includes travel, housing length, starting/stopping distance, extra length for boots and length to accommodate attachment of the load.

4) Travel Rate – Establishing a travel rate allows for evaluation of critical speed and horsepower limits. Acceleration/deceleration time needs to be considered when determining maximum required travel rate.

5) Duty Cycle – The duty cycle is the ratio of run time to the total cycle time. Long travel jacks may be limited by maximum temperature and not duty cycle.

6) Type of Guidance – Linear motion systems require both thrust and guidance. Jacks are designed to provide thrust only, not to guide the load. Guidance is based on application requirements. The guidance system must be designed to absorb all loads other than thrust.

JACK SELECTION

Once the jack sizing data is collected, a preliminary jack selection can be made and then verified. The steps are:

1) Select a size and type of jack, Selection should be complete with the configuration (upright, inverted, rotating, etc.), ratio, travel or "L" dimension, boots, lift shaft attachment, motor adapters or reducers.

2) Load Per Jack – Verify that the dynamic and static loads do not exceed the rated capacity of the jack. For multiple jack applications, check the distribution of the load based on the stiffness of the structure and potential uneven loading.

3) Horsepower – Calculate the maximum input horsepower required for each jack. This should not exceed the maximum input horsepower for the model and ratio selected.

For multiple jack arrangements, total horsepower required depends on horsepower per jack, number of jacks, the efficiency of the gear box(es) and the efficiency of the arrangement. Two typical arrangements are: **(SEE FIG. 3)**

The efficiency of the arrangement based on the number of jacks is:

Two jacks = 95%
Three jacks = 90%
Four jacks = 85%
Six to eight jacks = 80%

The efficiency of each miter gearbox is 90%.

Therefore, motor horsepower requirement for the arrangement:

$$\text{Horsepower Arrangement} = \frac{\text{horsepower per jack} \times \text{Number of jacks}}{\text{Arrangement} \times \text{Efficiency of Each Gearbox}}$$

If the horsepower required exceeds the maximum value for the jack selected, several solutions are possible.

- Use a larger jack model to increase the maximum allowable horsepower
- Use a Ball Screw Jack to reduce the power required to do the same work
- Operate at a lower input speed
- Use a right angle reducer to bring the power requirement within acceptable limits

4) Column Strength – If it is at all possible for the lift shaft to be loaded in compression, check the column strength. Consider cases where a shaft normally loaded in tension may be compressively loaded if it meets an obstruction. Check horizontal applications for compressive loading due to acceleration or deceleration.

If column strength is exceeded for the jack selected, consider the following options:

- Change the jack configuration to put the lift shaft in tension
- Increase size of jack
- For rotating jacks add a bearing mount (like the EZZE-MOUNT™)
- Change the lift shaft mounting condition (e.g. from clevis to top plate)

5) Brakemotor Sizing – Safety is the most important consideration. A brakemotor is recommended for all ActionJac™ products where there is a possibility of injury. Only 20:1 or greater ratio Machine Screw Jacks can be considered self-locking in the absence of vibration.

The horsepower requirements determine the size of the motor. Upon selecting a brake motor, verify that the standard brake has sufficient torque to both hold the load and stop the load.

Caution: High lead ball screw jacks may require larger non-standard brakes to stop the load.

An appropriately sized brake will insure against excessive "drift" when stopping for both the Ball Screw and Machine Screw Jacks.

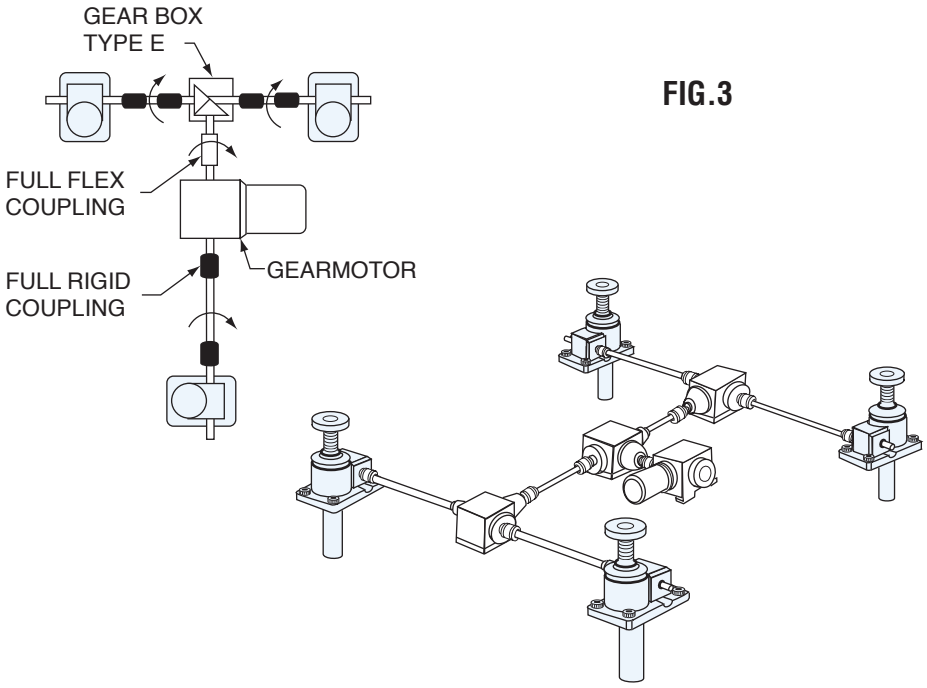


FIG.3

6) Cycle Time – Verify the duty cycle for the selected jack. Recommended duty cycles are:

- Ball screw jacks = 35%
- Machine screw jacks = 25%.

The ability of the jack to dissipate the heat that builds during operation determines duty cycle. Anything that reduces the amount of heat generated or increases heat dissipation will allow higher duty cycles. Jacks may be limited by maximum temperature (200°F) and not duty cycle. Contact Nook Industries for assistance with these applications.

7) Life – For Ball Screw Jacks, verify ball screw life expectancy using the life charts.

Note: Ball screw life charts are located at the beginning of each ball screw jack section. (Page 295 & 347)

INSTALLATION

Alignment of the jack (or jacks) directly affects service life. Jacks must be properly aligned in all planes so that the main drive shaft can be turned without evidence of binding. The following steps are suggested but may not always be applicable when installing jacks. It is the responsibility of the end user to determine specific installation procedures.

1) The mounting flange of the jack is a precision-machined surface. The worm shaft and lift shaft bearing bores are machined in tight relationship to the mounting flange. Better mounting surfaces will make it easier to align the jack to the load.

The surface(s) to which the jacks are mounted should be flat, smooth and perpendicular to the guides. **Note:** for rotating worm gear screw jacks, also ensure that the lift shaft is parallel to the guides.

2) Start with the load temporarily supported in a position closest to the jack housing(s). Locate the jack by putting the jack in place with the fasteners loosely assembled.

3) Level the jacks if necessary. For some applications, a piece of compliant material such as the rubber used for machine isolation bases will help compensate for potential misalignment.

4) Check the level of the load, then, actuate the jacks bringing the lift shaft or travel nut nearly in contact with the load. Adjust the position of the jacks so that the jack attachment points are centered on the load mounting points. Tighten the jack mounting screws. If a compliant material is installed, make sure that the fasteners do not compress the material and that there is clearance around the fasteners.

5) Rotate the worms to adjust the timing of the lift shafts as necessary to equally distribute the load. Assemble the load mounting hardware and tighten.

6) Cycle the jacks from closest to farthest point. For rotating jacks with a lift shaft bearing support, loosen the bearing support fasteners and re-tighten to ensure that the lift shaft is parallel to the guide system. Failure to do this could result in lift shaft stress fracture.

7) Cycle the jacks again and verify that no binding occurs. Check the lubrication levels, check the limit switch settings (note: rotary limit switches are not factory set), check the tightness of all fasteners and put the jacks in service.

MAINTENANCE

ActionJac™ Worm Gear Screw Jacks require minimum maintenance. In addition to maintaining lubrication levels in the gearbox, the following items should be checked:

Lifting screws must be kept free of contaminants and should be lubricated. Refer to the lubrication section below for appropriate lubrications. If possible, screws should be booted or returned to retracted position when not in use.

For Machine Screw Jacks, lash between the lift shaft and travel nut (or drive sleeve) greater than 1/4 the screw pitch indicates the need for replacement of the jack lift shaft drive components.

For Ball Screw Jacks, the ball screw should be checked periodically for spalling of the raceway. In normal operation, ball screw lash does not change significantly over the life of the ball screw.

For all jacks, check the backlash between the worm and worm gear. Lash in excess of 30° for ratios 5:1 to 8:1 and 60° for ratios 20:1 and 32:1 indicates the need to replace the worm and worm gear.

LUBRICATION

ActionJac™ Worm Gear Screw Jacks require lubrication to operate efficiently and with maximum life. Standard lubrication is NLGI #1 grease. Lubricants are available for both high and low temperature application. If operating conditions exceed 200° F. or -20° F., contact Nook Industries for alternative lubricants.

The jack gear boxes are shipped pre-greased unless otherwise specified. Before operating any unit, check the lubricant level. All jack housings are furnished with a grease fitting. Most have a pipe plug opposite the grease fitting. When adding grease to the housing, remove the pipe plug and fill the unit until grease exits the pipe plug opening. Over filling the jack may result in grease leakage from the worm shaft seals.

In normal operation, jack lubricant levels should be checked once per month. Application conditions may dictate a more or less frequent lubrication cycle. In extreme conditions, automatic lubrication may be desired.

Lubricants containing additives such as molydisulfide or graphite should not be used.

Ball Screw models need only a light film of lubricant on the lift shaft for most applications. Nook E-900 Ball Screw Lubricant may be applied with a cloth or spray. Operating a Ball Screw Jack lift shaft without lubrication will result in a ninety percent reduction in life.

E-900 BALL SCREW LUBRICANT

page 95

E-100 & PAG-1 LEAD SCREW LUBRICANT

page 14

APPLICATION EXAMPLES

Application #1 – EXTRUDER SYSTEM

A manufacturer of candy is retrofitting an extruding machine. The machine presently uses a hydraulic ram attached to a plunger to push a thick candy mixture through a dispensing tube into a mold. The manufacturer is concerned with contamination from leaking hydraulics and would like more consistency in the dispensing rate and volume.

SPECIFICATIONS:

- Force to push the candy is 5400 pounds (no load on retraction)
- Force is vertical and will put the jack lift shaft in compression
- Minimum speed is 2.25 inch per second
- Actuation cycle: 50 times/hour, 8 hours/day, 200 days/year
- Desired design life is two years
- Mechanism must be mounted overhead
- Maximum stroke is 15 inches
- Food processing plant requires cleanliness

ANALYSIS:

Configuration: Speed, duty cycle and orientation of the operation dictates the use of an inverted ball screw jack. The plunger mechanism will be attached to the travel nut of a rotating jack.

Column Strength: Using the application data, 5,400 pound load, 15 inch travel with an "L" dimension of 21 inches, assume mounting condition "A," the column strength chart shows that the a five ton or larger jack will handle the compressive load.

Speed and Horsepower: The 0.473 inch lead lift shaft in a 5 ton ball screw jack will provide the proper speed:

2.25 inches per second X 60 seconds per minute x 12.66 "turns of worm for 1" raise" = 1709 input rpm.

Horsepower required (Torque to raise one pound (from chart) X Load (lbs) X Worm Speed (rpm)/63,025 = (.0183 X 5,400 pounds X 1,750) /63,025 = 2.74 Horsepower

2.74 Horsepower is below the three horsepower limit for this jack. Use a brake motor rated for 3 hp at 1750 rpm for this application.

Life: The life, based on the Ball Screw Life Expectancy chart on page 295, is at least 8,121,000 inches of travel for a standard inverted rotating 5 ton jack with a 5,400 lbs load.

Calculated life is 15 loaded inches per cycle X 50 cycles per hour X 8 hours per day X 200 days per year = 1,200,000 inches per year or 6.7 years of life (= 8.1/1.2).

SELECTION:

Reference Number: From page 296, put together a reference number for the following: 5 ton ball screw jack, inverted rotating configuration, 6:1 worm gear ratio, motor mount with 3 hp 3 phase motor on the input shaft, standard extension for the output shaft, flange base, travel nut orientation "A", "L" dimension of 21" for a 15" travel. Lastly the jack will be modified to include food grade grease and epoxy paint.

5-BSJ-IR 6:1/30BT-1/SSE-2/FA/21/M

M= Modified (food grade grease and epoxy paint)

Application #2 – MACHINE TOOL FIXTURE LOADER

A manufacturer is building a system to position a machine tool table horizontally inside the machine.

SPECIFICATIONS:

- The table is well guided and weighs 4,000 pounds
- The fixture needs accurate and repeatable positioning
- The table moves only a few times per shift.
- Stroke length is 30 inches maximum
- Desired design life is two years
- Thrust can only be applied at two corners
- No specific speed requirements

ANALYSIS:

Configuration: Infrequent operation suggests a machine screw jack. Application arrangement, available clearance and good guidance allow the use of upright translating jacks. The jacks must have an adjustable anti-backlash feature to assure accurate bidirectional positioning. Two manually operated jacks will be used, connected with a common driveshaft.

Column Strength: Even though the unit is horizontal, column strength must still be considered. Using the application data (4000 pound load, 30 inch travel, assume mounting condition "C") with the column strength chart shows that a 2 ton upright jack with 1" diameter screw will handle the potential compressive load of 2000 lb per jack.

Input Torque: This is a horizontal, manually operated system. The force required to move the load is the actual load times the coefficient of friction of the guide system. For example, if linear bearings were used, the force required to move the load would be equal to 4000 pounds times .002 or 8 pounds. The torque required to move 8 pounds with a 6:1 ratio jack is 0.0250 times 8 or .2 in-lbs. This could easily be supplied by an operator turning a handwheel.

SELECTION:

Reference Number: From page 289, put together a reference number for the following: 2 ton anti-backlash machine screw jack, upright translating configuration, 6:1 worm gear ratio, standard shaft extensions for the worm shaft input and output, Flange base, clevis end on the lift shaft with 30" travel. An interconnecting shaft will be installed between the jacks at assembly to drive the jacks from a common handwheel.

2AB-MSJ-U 6:1/SSE-1/SSE-2/FC/30/S

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

REQUIRED APPLICATION DATA FORM

LOAD

Total Maximum Thrust Load on Jack(s): _____ pounds force Number of Jacks: _____

Maximum Thrust Load on any one Jack: _____ pounds force
(Note: load can rarely be assumed to be equal on all jacks)

TRAVEL

Inches: _____ Orientation: ❑ vertical ❑ horizontal ❑ other (arc, diagonal, etc)

TRAVEL RATE

Optimal Speed: _____ inches/minute

Minimum Acceptable Speed: _____ inches/minute

Maximum Acceptable Speed: _____ inches/minute

DUTY CYCLE

Distance per cycle: _____ inches (One cycle = extend and retract)

Number of cycles per time period: _____ cycles per _____

Maximum Distance Traveled in any Year: _____ inches

Life Desired: _____

(Important: If load varies significantly, please explain below.)

OPERATION

Jack Screws are Loaded in: ❑ Tension ❑ Compression ❑ Both

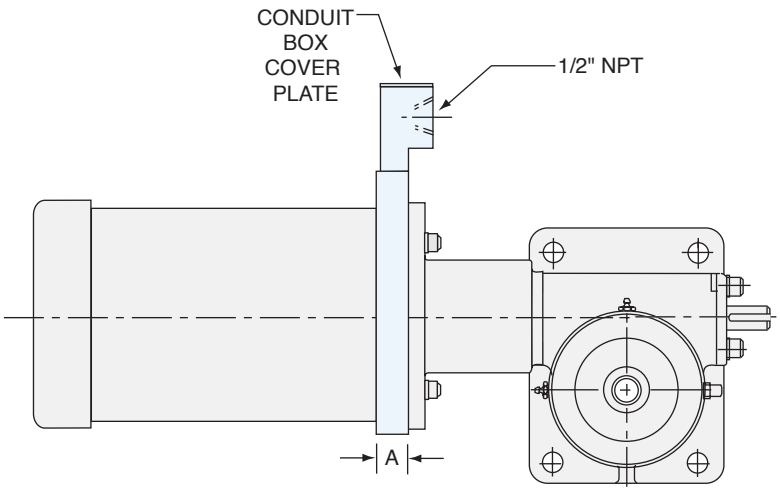
Jack will be Driven by: ❑ Hand ❑ AC Induction motor ❑ Other Type of motor (describe)

APPLICATION EXPLANATION

Please briefly describe the application. State type of machine, function of jack(s), load guidance system and environment (shock or impact loading, vibration, temperature extremes, corrosive, dirty, or other extreme operating conditions). Attach any sketches and other relevant information. Also, if a tentative selection has been made, please give the reference number or model and description below.

IN-LINE ENCODER

IN-LINE ENCODER IS INSTALLED BETWEEN THE MOTOR ADAPTER AND MOTOR.



For precise position sensing at the input shaft, an ActionJac™ in-line encoder option may be factory installed between the motor and motor adapter or Right-Angle Reducer. This low-cost option requires minimal space, leaving the extension shaft side of the jack free for clearance, for a rotary limit switch, or for coupling to another jack.

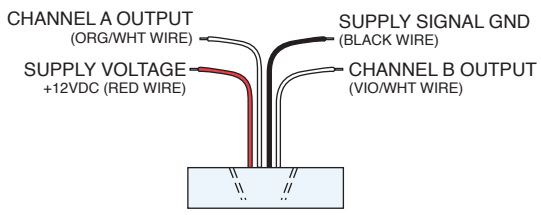
The in-line encoder's quadrature output design allows detection of both speed and direction of shaft rotation.

The ActionJac™ in-line encoder option requires an optional motor mount or Right-Angle Reducer.

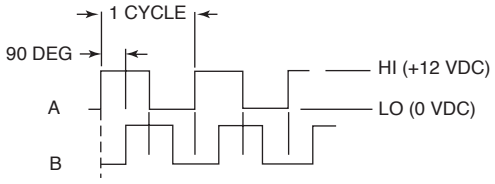
Sensing speed range:	0 -10,000 rpm
Pulse Output:	60 Pulses per revolution
Supply voltage:	+12 Volts DC +/-5%
Supply current:	60 mA typical, 115 mA maximum
Output drive capability:	250 mA per channel continuous
Maximum load:	50 ohms per channel

The encoder is face mounted between the motor and motor mount and will offset the length of the motor .61 inches for NEMA 56 and 140 frames and .88 inches for NEMA 180 and 210 frames.

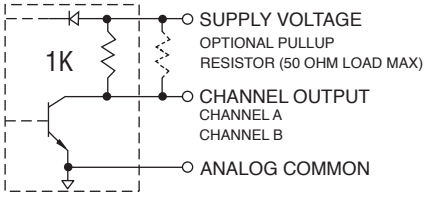
FRAME SIZE	56C/140TC	180TC/210TC
OFFSET A	.61	.88



ELECTRICAL CONNECTIONS



OUTPUT CHANNEL WAVEFORMS



OUTPUT CHANNEL SCHEMATIC (CHANNELS A & B)

HOW TO ORDER AN IN-LINE ENCODER:

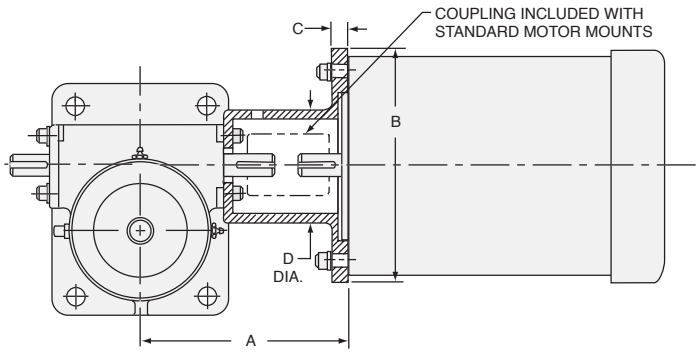
Specify the Worm Gear Screw Jack reference number, using the system described on page 296, 317, 336, 345 and 358.

EXAMPLE:

2.5-MSJ-U 6:1 / 10BT-1 / 2CA-4E / FT / 24.5 / **SE**

"E" anywhere in this field indicates Encoder

MOTOR MOUNTS WITH AND WITHOUT BRAKEMOTORS



STANDARD MOTOR MOUNT SIZES & DIMENSIONS						
JACK SIZE (TONS)	NEMA FRAME SIZE	ORDER CODE WITHOUT MOTOR	DIMENSIONS			
			A	B	C	D
2.5	56C	X05	6.25	6.63	.63	3.50
	140TC	X14	6.25	6.63	.63	3.50
5	56C	X05	7.25	6.75	.56	3.75
	140TC	X14	7.25	6.75	.56	3.75
	180TC	X18	8.00	9.25	.75	3.75
10, 15	56C	X05	8.25	6.75	.50	4.38
	140TC	X14	8.25	6.75	.50	4.38
	180TC	X18	9.00	9.25	.75	4.38
20	56C	X05	8.66	6.75	.50	3.75
	140TC	X14	8.66	6.75	.50	3.75
	180TC	X18	9.00	9.25	.63	5.19
	213TC	X21	9.68	8.88	.88	5.69

ActionJac™ motor mount assemblies are designed for standard motors and include jaw type couplings. These assemblies are stocked for jack sizes 2.5, 5,10, 15 and 20 and are available for the jack sizes listed in the table. Non-standard motor mounts can be designed for special requirements including, special couplings, small NEMA frame motors, DIN standard motors, stepper motor and servomotor designs. See page 290 for Servo Jack motor mount examples, contact Nook Industries for additional information.

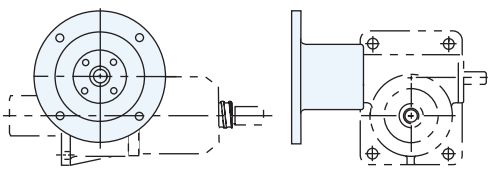
Actionjac™ Worm Gear Screw Jacks can be ordered with industrial quality induction motors. Motors with internally and externally wired brake motors are available. Brake motors utilize an integral, spring actuated brake. Standard motors are 3-phase, 230-460 VAC, 60hz, 1725 rpm. Single-phase motors are 115-130 VAC, 60hz, 1725 rpm. All motors are rated for continuous duty. Specific duty motors, as wash down extended duty, may be supplied upon request.

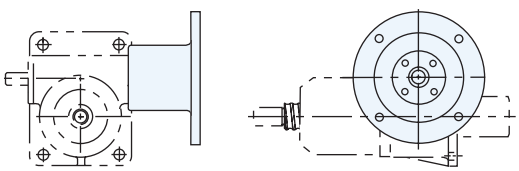
See charts for order codes and motor mount dimensions. Additional motor mounts can be custom manufactured for other jack sizes, please contact Nook engineering.

CAUTION: Ball Screw Jacks are self-lowering. A brake of sufficient torque is required to hold the load with a ball screw jack. Be sure to verify that the brakemotor selected has sufficient brake torque for your application.

MOTOR MOUNT POSITIONS

POSITION 1





POSITION 2

HOW TO ORDER A MOTOR ADAPTER WITH OR WITHOUT A BRAKEMOTOR

EXAMPLE WITHOUT MOTOR:

2.5-BSJ-U 6:1 / **X05-1** / SSE-2 / FT / 12.0 / S

Mounting Position (see above)

No Motor Order Code (from chart above)

EXAMPLE WITH MOTOR:

2.5-BSJ-U 6:1 / **10BT-1** / SSE-2 / FT / 12.0 / S

Mounting Position (see above & for Right Angle Reducer see page 278)

Motor Order Code (see page 276)

MOTOR REFERENCE AND BRAKEMOTOR WIRING

ActionJac Worm Gear Screw jacks can be supplied with industrial quality. Brake motors include a spring actuated, electrically released braking mechanism which will hold a load when the power is off. In normal operation, power is applied and removed to the motor windings and brake release simultaneously.

If it is desired to operate the brake separately, as when used with a speed control, the brake needs to be wired externally. Standard for Reliance motors, special order for Baldor motors.

Standard motors are: 3 phase, 208-230 / 460 VAC, 60 Hz. 1725 rpm. Also available are single phase motors at: 115 / 230 VAC, 60 Hz. 1725 rpm. All motors are rated by continuous duty. Note: for inverter duty motors or additional options, contact Nook Industries.

For HOW TO ORDER see page 275.

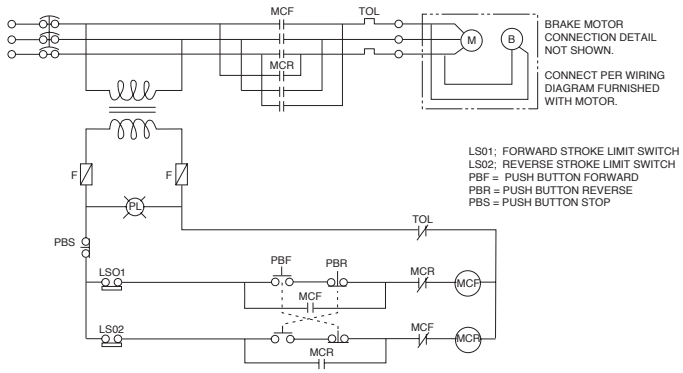
BALDOR: INTERNALLY WIRED BRAKE MOTOR ORDER CODE

MOTOR HP	STD. MOTOR 208-230/460 3PH	SINGLE PHASE 115/230 1PH	XT EXTRA TUFF 208-230/460 3PH	WASH DOWN MOTOR IP55 208-230/460 3PH	EXPLOSION PROOF • DIVISION 1 • CLASS 1,2 • GROUP F & G • 208/230/460 • 3PH
1/4	02BT	02BS	02BX	02BW	02BE
1/3	03BT	03BS	03BX	03BW	03BE
1/2	05BT	05BS	05BX	05BW	05BE
3/4	07BT	07BS	07BX	07BW	07BE
1	10BT	10BS	10BX	10BW	10BE
1-1/2	15BT	–	15BX	15BW	15BE
2	20BT	–	20BX	20BW	20BE
3	30BT	–	30BX	30BW	30BE
5	50BT	–	50BX	50BW	50BE
7-1/2	75BT	–	75BX	75BW	–

RELIANCE: EXTERNALLY WIRED BRAKE MOTOR ORDER CODE

MOTOR HP	STD. MOTOR 208-230/460 3PH	SINGLE PHASE 115/230 1PH	XT EXTRA TUFF 208-230/460 3PH	WASH DOWN MOTOR IP55 208-230/460 3PH	EXPLOSION PROOF • DIVISION 1 • CLASS 1,2 • GROUP F & G • 208/230/460 • 3PH
1/4	02RT	02RS	02RX	02RW	02RE
1/3	03RT	03RS	03RX	03RW	03RE
1/2	05RT	05RS	05RX	05RW	05RE
3/4	07RT	07RS	07RX	07RW	07RE
1	10RT	10RS	10RX	10RW	10RE
1-1/2	15RT	–	15RX	15RW	15RE
2	20RT	–	20RX	20RW	20RE
3	30RT	–	30RX	30RW	30RE
5	50RT	–	50RX	50RW	50RE
7-1/2	75RT	–	75RX	75RW	75RE

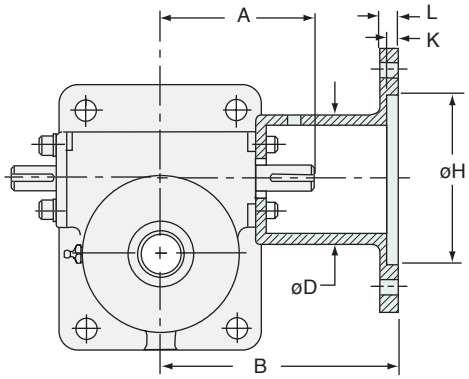
BRAKE MOTOR WIRING

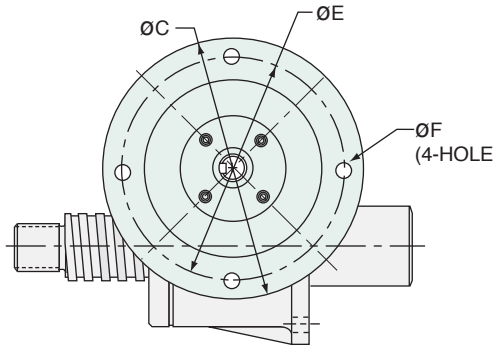


A typical wiring drawing is shown here, for a three-phase brake motor.

This example is for reference only, the correct wiring will vary for each application.

METRIC MOTOR MOUNTS





Other IEC Frame Motor Sizes available upon request, please contact factory

MODEL	IEC FRAME MOTOR SIZE	PART NUMBER	A REF	B	ØC	ØD	ØE	ØF	ØH	K	L
EM05-BSJ EM05-MSJ	56B5	8026-01-00	57.5	100	120	64	100	8.5	80	3.5	7
	56B14	8020-01-00	57.5	100	80	64	65	6	50	3.0	6
EM1-BSJ EM1-MSJ	63B5	7825-01-00	76	114	140	70	115	9	95	4	8
	63B14	7826-01-00	76	114	90	70	75	6	60	3.5	8
	71B5	7821-01-00	76	120	160	85	130	9	110	4.5	10
	71B14	7822-01-00	76	120	105	85	85	7	70	4	10
EM2.5-BSJ EM2.5-MSJ	71B5	7785-01-00	90	135	160	85	130	9	110	4.5	10
	71B14	7773-01-00	90	135	105	85	85	7	70	4	10
	80B5	7787-01-00	90	145	200	85	165	11	130	4.5	12
	80B14	7774-01-00	90	145	120	85	100	7	80	4.5	12
EM5-BSJ EM5-MSJ	80B5	7795-01-00	115	180	200	98	165	11	130	4.5	12
	80B14	7791-01-00	115	170	120	96	100	7	80	4.5	12
	90B5	7790-01-00	115	180	200	96	165	11	130	4.5	12
	90B14	7796-01-00	115	180	140	96	115	9	95	4.5	12
EM10-BSJ EM10-MSJ	90B5	7798-01-00	140	207	200	116	165	11	130	4.5	12
	90B14	7799-01-00	140	207	140	116	115	9	95	4.5	12
	100B5	7802-01-00	140	217	250	116	215	13	180	5	14
	100B14	7803-01-00	140	217	160	116	130	9	110	5	14
EM20-BSJ EM-20-MSJ	100B5	7809-01-00	150	230	250	134	215	13	180	5	14
	100B14	7811-01-00	150	230	160	134	130	9	110	5	14

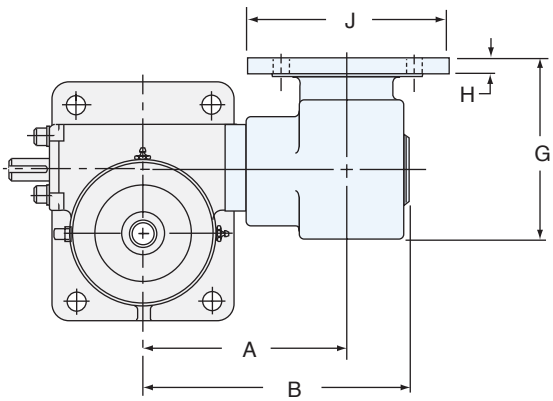
RIGHT ANGLE REDUCERS

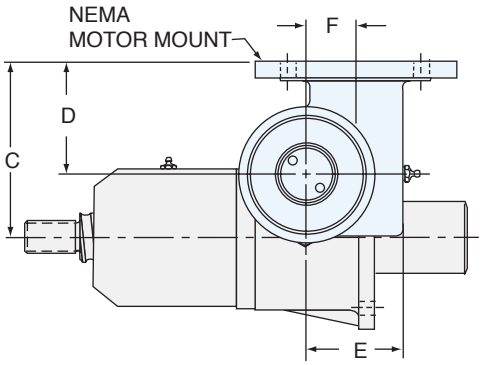
The Right-Angle Reducer is a compact, high quality worm gear reducer enclosed in a ductile iron housing. The reducer mounts directly to the input side of the jack. Motors mount quill-style to a standard NEMA C-face.

The right angle reducer is a secondary worm gear reducer that reduces speed and increases torque to the input of the jack. If motor clearance is an issue, a right angle reducer may be added to most jacks to optimize motor orientation.

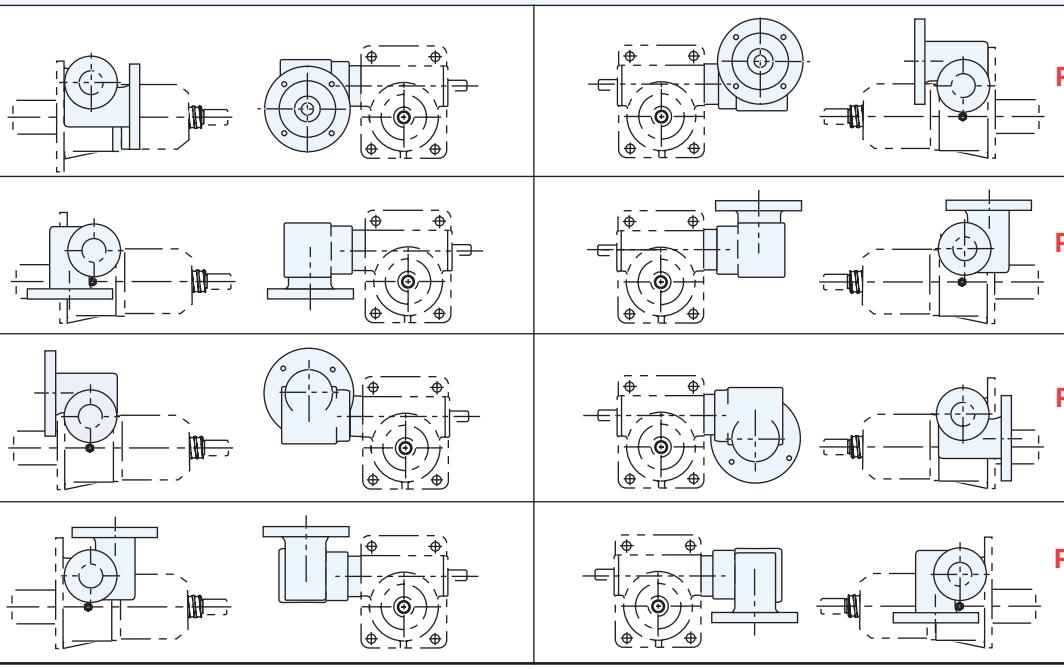
Right Angle Reducers may be ordered installed on the standard ActionJac™ Machine Screw and Ball Screw Jacks listed below and are available with or without brakemotors.

Consult the data charts for jack capacity when a Right-Angle Reducer is used. Ratings given on the chart may differ when a Right-Angle Reducer is installed on Keyed or Anti-Backlash Machine Screw Jack models. Special consideration must be given when installing onto a Double-Clevis Jack due to the additional weight of the reducer.





RIGHT-ANGLE REDUCER POSITIONS



RIGHT-ANGLE REDUCERS FOR BALL SCREW JACKS

JACK MODEL-RATIO	REDUCER RATIO	TRAVEL RATE IN/MIN. @ 1725 RPM	BRAKE MOTOR HP	DYNAMIC CAPACITY* (LBS.)	ORDER CODE**			MOTOR SIZE	REDUCER DIMENSIONS								
					W/1-PH MOTOR	W/3-PH MOTOR	WITHOUT MOTOR		A	B	C	D	E	F	G	H	J
2.5-BSJ-6:1	6:1	12.0	1/2	5,000	05BSR6	05BTR6	X05R6	56C	5.63	7.44	5.44	3.69	3.31	1.750	5.88	.50	6.69
	12:1	5.99	1/3	5,000	03BSR12	03BTR12	X05R12										
2.5-BSJ-24:1	6:1	2.99	1/4	5,000	02BSR6	02BTR6	X05R6										
	12:1	1.48	1/4	5,000	02BSR12	02BTR12	X05R12										
2.5HL-BSJ-6:1	6:1	47.9	1	2,370	10BSR6	10BTR6	X05R6										
	12:1	24.0	1	4,870	10BSR12	10BTR12	X05R12										
5-BSJ-6:1	6:1	22.7	1	6,300	10BSR6	10BTR6	X05R6	56C	6.50	8.50	5.88	3.69	3.31	1.750	5.88	.50	6.69
	12:1	11.3	1	10,000	10BSR12	10BTR12	X05R12										
5-BSJ-24:1	6:1	5.67	1	10,000	10BSR6	10BTR6	X05R6										
	12:1	2.83	1/2	10,000	05BSR12	05BTR12	X05R12										
5HL-BSJ-6:1	6:1	47.9	1	3,000	10BSR6	10BTR6	X05R6										
5HL-BSJ-24:1	6:1	12.0	1	7,400	10BSR6	10BTR6	X05R6										
10-BSJ-8:1	6:1	17.0	1	7,700	10BSR6	10BTR6	X05R6	56C	7.25	9.25	6.29	3.69	3.31	1.750	5.88	.50	6.69
	12:1	8.50	1	13,000	10BSR12	10BTR12	X05R12										
10-BSJ-24:1	6:1	5.67	1	15,000	10BSR6	10BTR6	X05R6										
	12:1	2.83	1	20,000	10BSR12	10BTR12	X05R12										
10HL-BSJ-8:1	6:1	35.9	1	3,600	10BSR6	10BTR6	X05R6										
20-BSJ-8:1	8:1	13.5	3	40,000	N/A	30BTR8	X18R8	180TC	9.00	11.75	9.00	6.12	5.38	2.875	9.00	.88	9.12
20-BSJ-24:1	8:1	4.49	2	40,000	N/A	20BTR8	X18R8										
20HL-BSJ8:1	8:1	26.9	5	40,000	N/A	50BTR8	X18R8										
20HLBSJ-24:1	8:1	8.98	3	40,000	N/A	30BTR8	X18R8										

RIGHT-ANGLE REDUCERS FOR MACHINE SCREW JACKS

JACK MODEL-RATIO	REDUCER RATIO	TRAVEL RATE IN/MIN. @ 1725 RPM	BRAKE MOTOR HP	DYNAMIC CAPACITY* (LBS.)	ORDER CODE			MOTOR SIZE	REDUCER DIMENSIONS								
					W/1-PH MOTOR	W/3-PH MOTOR	WITHOUT MOTOR		A	B	C	D	E	F	G	H	J
2.5-MSJ-6:1	6:1	12.0	1	4,610	10BSR6	10BTR6	X05R6	56C	5.63	7.44	5.44	3.69	3.31	1.750	5.88	.50	6.69
	12:1	5.99	3/4	5,000	07BSR12	07BTR12	X05R12										
2.5-MSJ-24:1	6:1	2.99	1/2	5,000	05BSR6	05BTR6	X05R6										
	12:1	1.48	1/3	5,000	03BSR12	03BTR12	X05R12										
5-MSJ-6:1	6:1	18.0	1	3,000	10BSR6	10BTR6	X05R6	56C	6.50	8.50	5.88	3.69	3.31	1.750	5.88	.50	6.69
	12:1	8.98	1	5,000	10BSR12	10BTR12	X05R12										
5-MSJ-24:1	6:1	4.49	1	6,000	10BSR6	10BTR6	X05R6										
	12:1	2.25	1	10,000	10BSR12	10BTR12	X05R12										
10-MSJ-8:1	6:1	18.0	1	3,000	10BSR6	10BTR6	X05R6	56C	7.25	9.25	6.29	3.69	3.31	1.750	5.88	.50	6.69
	12:1	8.98	1	5,000	10BSR12	10BTR12	X05R12										
10-MSJ-24:1	6:1	5.99	1	6,000	10BSR6	10BTR6	X05R6										
	12:1	2.99	1	10,000	10BSR12	10BTR12	X05R12										
20-MSJ-8:1	8:1	13.5	7 1/2	40,000	N/A	75BTR8	X21R8	210TC	9.00	11.75	9.00	6.12	5.38	2.875	9.00	.88	9.12
	8:1	13.5	5	22,500	N/A	50BTR8	X18R8	180TC									
20MSJ-24:1	8:1	4.49	3	35,500	N/A	30BTR8	X18R8										

*Full nominal static capacity of jack is retained

**Motor specified is internally wired brake motor, for additional motor options see page 276

HOW TO ORDER A RIGHT-ANGLE REDUCER:

Right-Angle Reducer ratio, mounting position and brakemotor size and type must be specified. The data chart above gives order codes for Right-Angle Reducers with and without brakemotors. Insert the order code and mounting position as shown on page 296, 317, 336, 345 and 358.

EXAMPLE: 2.5-BSJ-U 6:1 / **05BTR6 - 2** / 2CA-2 / FT / 24.5 / S

Mounting Position (see page 278)

Order Code (see chart above)

BELLOWS BOOTS

STANDARD AND SPECIAL BELLOWS BOOTS

Bellows boots are available for all sizes and configurations of ActionJac™ Worm Gear Screw Jacks. A boot protects the lifting shaft from contamination and helps retain lubricant to ensure long jack life.

Standard boots are sewn from black neoprene-covered nylon fabric for oil, water and weather resistance and are acceptable for use in -60° to +220° F environments. Optional materials are available for specific operating conditions (see chart).

Guides are recommended for all horizontal applications where travel exceeds 24 inches or if the boot needs to remain centered around the screw. The recommended number of guides is one guide for each 24 inches of travel length.

EXAMPLES: 12 inches of travel = no guides, 24 inches of travel = one guide, 47 inches of travel = one guide, 48 inches of travel = two guides, etc.).

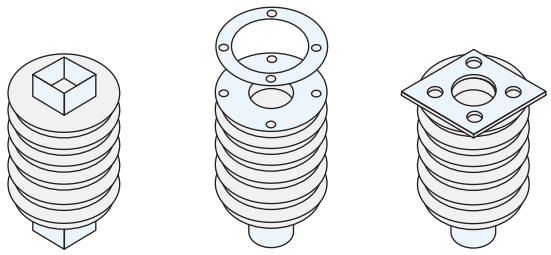
Standard boots are furnished with tie straps for jacks with greater than 65 inches travel. Tie straps are attached from convolution to convolution and help the boot extend uniformly.

SPECIAL BOOT MATERIALS

DESCRIPTION	TEMPERATURE RANGE	APPLICATION COMMENTS
HYPALON-COATED NYLON	-60° TO +300° F	CHEMICAL RESISTANCE, WASH DOWN
SILICONE COATED FIBERGLASS	-100° TO +550° F	HIGH TEMPERATURE
ALUMINUM-COATED FIBERGLASS	-100° TO +550° F	HIGH TEMPERATURE, HOT CHIPS, WELDING SPLATTER

Note: Retracted boot length may increase with some special materials.

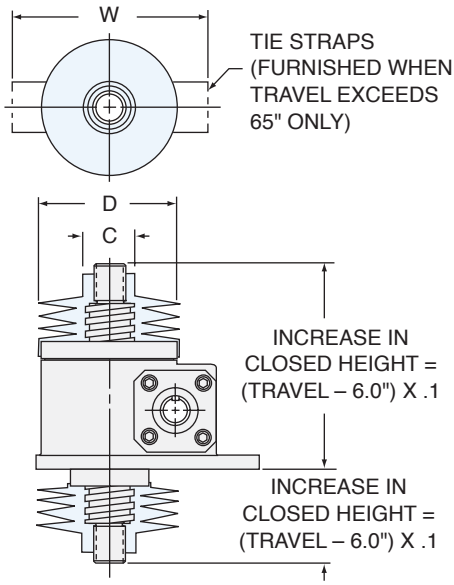
SPECIAL END CONFIGURATIONS



SQUARE CUFF | FLANGE END | SQUARE FLANGE

BELLOWS BOOTS TRANSLATING SCREW JACKS

The end cuff is designed to fit standard end fittings, the top plate and the clevis end. When jack travel is greater than 6 inches, lift screw closed height increases to accommodate the length of the collapsed boot convolutions. For standard boots the increase in closed height is calculated using the formula shown.

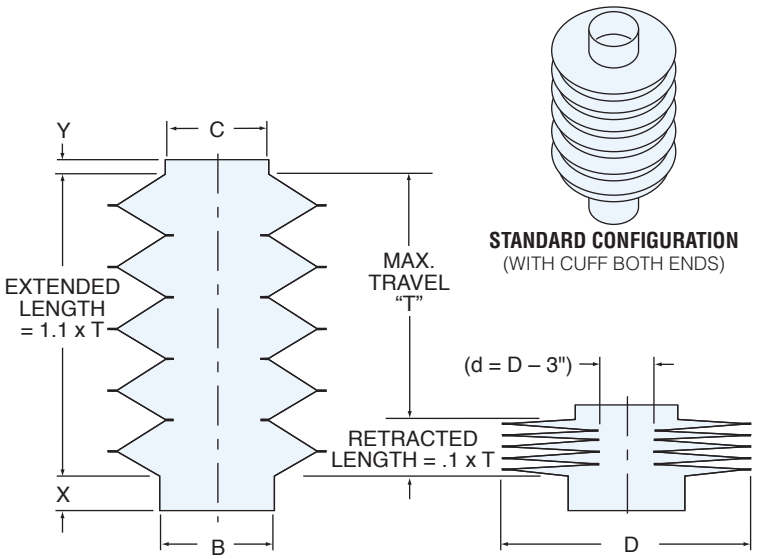


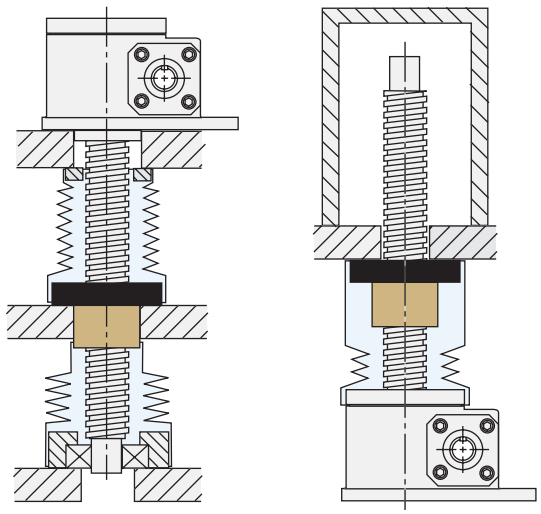
JACK MODEL		C DIA	D DIA	W	MAX. SCREW DIA (REF.)
BALL SCREW	MACHINE SCREW				
0.5-BSJ	ALL MJ	1.00*	4.00*	5.50	0.63
1-BSJ	1-MSJ	1.25	4.25	5.75	0.75
2, 2.5 & 3-BSJ	2, 2.5-MSJ	1.50	4.50	6.00	1.16
5, 10-BSJ	5-MSJ	2.00	5.00	6.50	1.50
—	10-MSJ	2.50	5.50	7.00	2.00
—	15-MSJ	2.75	5.75	7.25	2.25
20-BSJ	20-MSJ	3.00	6.00	7.50	2.50
30-BSJ	30-MSJ	4.50	7.50	8.00	3.38
—	35-MSJ	5.00	8.00	9.50	3.75
50, 75 & 100-BSJ	—	6.00	9.00	10.50	4.00
—	50-MSJ	6.50	9.50	11.00	4.50
—	75-MSJ	7.00	10.00	11.50	5.00
—	100-MSJ	8.00	11.00	12.50	6.00

(*BOOT w/GUIDES: C=1.25/D=4.25)

BELLOWS BOOTS FOR ROTATING SCREW JACK

Installation arrangements for rotating worm gear screw jacks vary, therefore boots for rotating jacks must be specified by the customer. The following figures show typical installations for rotating screw jacks, standard dimensions and custom end configurations.





Typical rotating screw jack installations.

HOW TO ORDER BOOTS FOR A TRANSLATING AND ROTATING SCREW JACK

Boots may be ordered using the reference number system as shown on pages 296, 317, 336, 345 and 358. For special material boots add "M" to the reference number and add the description.

EXAMPLE:

5-MSJ-U 6:1 / SSE-1 / SSE-2 / FT / 36.0 / **BGS**

B = Standard Boot

G = with Optional Guide(s)

Boots for upright rotating and inverted rotating jacks are ordered as separate line items.

Typical rotating jack applications require two boots, one between the housing and the travel nut and one from the travel nut to the end of the lift shaft. Each boot for a rotating screw jack is ordered as a separate line item. To order boots for a rotating screw jack, select the outside diameter "D" from the chart on the facing page and specify cuff dimensions and travel per the diagram using the reference number as shown below.

EXAMPLE:

BB / 7.50 / 4.00 x 2.0 / 3.00 x 1.50 / 72.00 / G

Bellows Boot

Outside Diameter "D"

1st Cuff = 4.00" I.D. x 2.0" long

With Guides

Maximum Travel = 72"

2nd Cuff = 3.00" I.D. x 1.5" long

ROTARY LIMIT SWITCH

Every motorized Worm Gear Screw Jack must be controlled so that power to the motor is turned off and the brake engaged before the limits of mechanical travel are reached.

The ActionJac™ rotary limit switch senses extension shaft rotation and provides switch contact closures that can be used to control motors.

This sturdy, durable assembly is available with two or four circuits or two circuits and a potentiometer. Each circuit has a separate rotating cam that actuates a high quality switch. The switch actuation may be individually and infinitely adjusted anywhere within the travel of the jack.

These assemblies contain gear reducers with ratios that vary according to the model and travel of the jack. Nook selects ratios that result in maximum cam rotation for best accuracy, repeatability and minimum hysteresis. In most cases, with full travel of the actuator, the cam will rotate 3/8 to 7/8 of a revolution to actuate a switch. In the event that the cam continues to rotate, the switch returns to its original state after approximately 25° of rotation, with no damage to the limit switch assembly.

The 2-circuit switch assembly is useful for limiting the maximum and minimum extension. The 4-circuit assembly gives the possibility of additional signals for other user purposes. The potentiometer version is used to provide an analog signal for sensing jack position.

Single Pole Double Throw (SPDT) switches are standard and Double Pole Double Throw (DPDT) switches are optional. These assemblies are dust protected and meet NEMA 4 and 5 standards for oil and water tightness.

The ActionJac™ rotary limit switch assembly is mounted to the extension shaft side of the ActionJac™ Worm Gear Screw Jack opposite the input.

The rotary limit switch is available for ActionJac™ Worm Gear Screw Jack sizes 2 tons and larger. Most jack models have close and extended mounts to provide clearance around the switch housing. See the following chart for dimensions.

Switches are factory installed to assure proper assembly in the correct orientation for the specified mounting position.

CAUTION: Limit switches are not adjusted at the factory. Switches should be set during installation.

HOW TO ORDER ROTARY LIMIT SWITCH:

SPECIFY:
- Limit Switch code (see table to right)
- Mounting Position (1 through 8 see page 283)
- Close or Extended Mount (C or E)

Insert the correct designation in the ActionJac™ Worm Gear Screw Jack reference number (see page 296 and 317 for more information on jack reference numbers).

EXAMPLE: 2.5-MSJ-U 6:1 / 103-1 / **2CA-4E** / FT / 24.5 / S

Extension shaft designation

CODE	NUMBER OF CIRCUITS	SWITCH TYPE	POTENTIOMETER
2CA	2	SPDT	NO
2CC	2	DPDT	NO
4CA	4	SPDT	NO
4CE	4	DPDT	NO
PTA	2	SPDT	YES
PTC	2	DPDT	YES

Examples of rotary limit switch designations:

2CA-4C = Rotary Limit Switch, 2-circuit, SPDT, position 4, close mount

4CE-1E = Rotary Limit Switch, 4-circuit, DPDT, position 1, extended mount

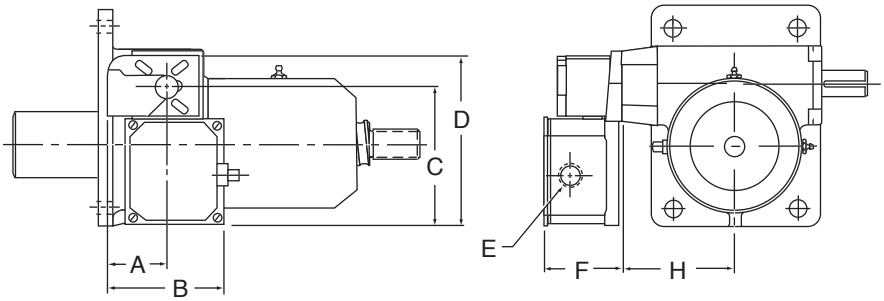
PTA-8C = Rotary Limit Switch with potentiometer, 2 SPDT's, position 8, close mount

C = Close mount on E = Extended mount (see following page)

"dash" number designates mounting position

IMPORTANT: These designation numbers are not complete part numbers. These assemblies contain gear reducers with ratios that vary according to the model and travel of the jack. If you are ordering a replacement switch assembly, complete information on the jack is required.

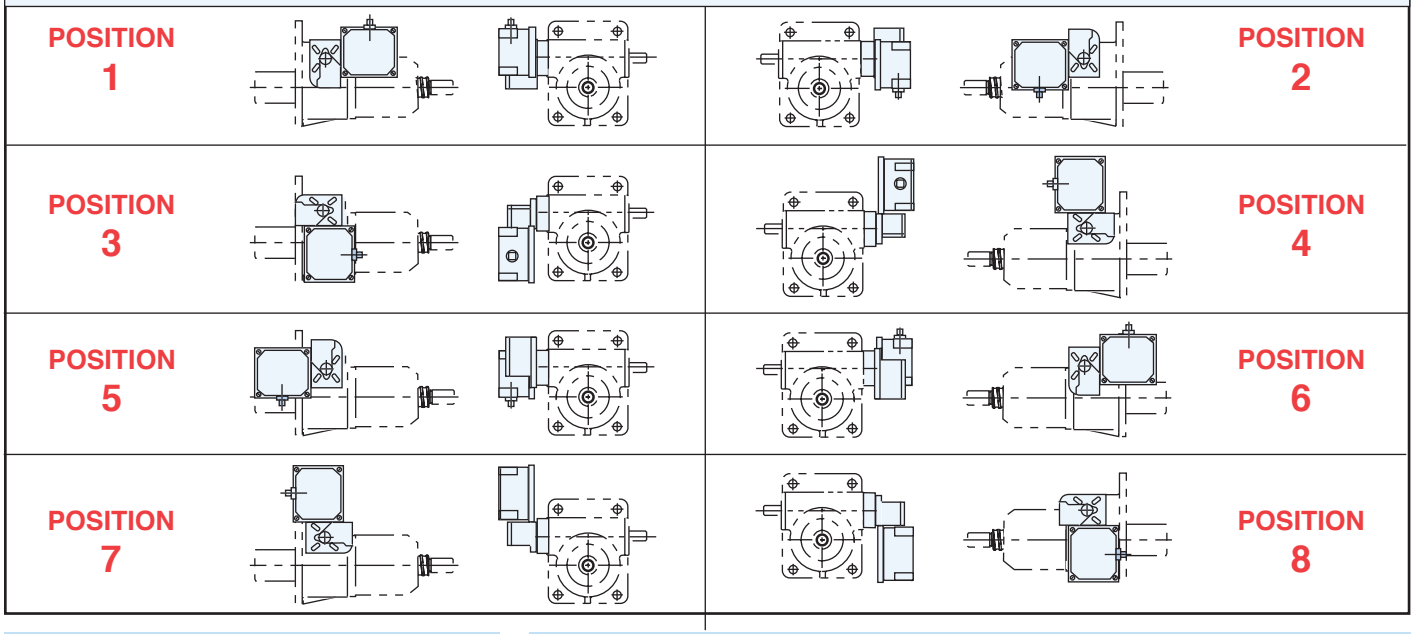
ROTARY LIMIT SWITCH



CIRCUITS	DIMENSIONS					
	A	B	C	D	E	F
LS-2C 2 CIRCUIT	2.46	5.25	6.24	7.62	3/4-NPT	3.25
LS-4C 4 CIRCUIT	2.46	5.25	8.24	9.62	1-NPT	3.88
LS-2PT 2 CIRCUIT WITH POTENTIOMETER	2.46	5.25	8.24	9.62	1-NPT	3.88

MODEL	DIM.H CLOSE MOUNT	DIM.H EXT. MOUNT	CLOSE MOUNT POSITIONS
2-BSJ & MSJ	N/A	3.56	ALL
2R, 2.5-BSJ & MSJ	2.75	3.56	ALL
3-BSJ	N/A	3.56	ALL
5-BSJ & MSJ	3.56	4.56	ALL
5R-BSJ & MSJ	4	5.06	ALL
10, 15-BSJ & MSJ	3.88	5.56	ALL
20-BSJ & MSJ	4.41	5.81	ALL
30, 35-MSJ	5.25	7.06	ALL
50-BSJ & MSJ	6.25	11.06	1,2,4,7
75-BSJ & MSJ	7.25	12.06	ALL
100-BSJ & MSJ	8.25	12	1,2,4,7

ROTARY LIMIT SWITCH POSITIONS



ELECTRICAL RATINGS:

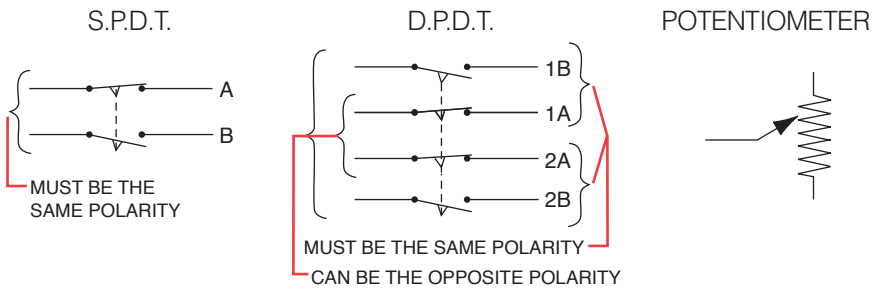
SWITCHES:

DC Current — 115 Volts SPDT, .50 amps
DPDT, .80 amps
AC Current — 115 Volts SPDT, 15 amps
DPDT, 10 amps

10-TURN POTENTIOMETER:

0-500 OHM, 2 Watt

WIRING DIAGRAMS:



NOTE: While the 10-turn potentiometer is rated for 0-500 Ohms, as implemented in the rotary limit switch assembly, it can not and should not operate over its full range. Minimum and maximum resistance values can not be known until the unit is installed and final travel limit adjustments have been made, therefore, the device connected to the potentiometer should include provisions for trimming to compensate for these values.

FLEXIBLE COUPLINGS

Jacks used alone or in multiple arrangements require couplings to transmit power to the input shaft. Nook Industries provides jaw type and flex type couplings for use with jacks. The selection process for couplings includes the following steps:

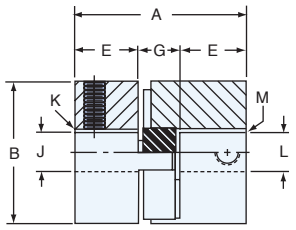
1) Refer to the jack specification tables to determine torque requirements per jack for your application.

2) Determine total coupling capacity required by multiplying the torque required per jack by the number of jacks to be driven by the coupling.

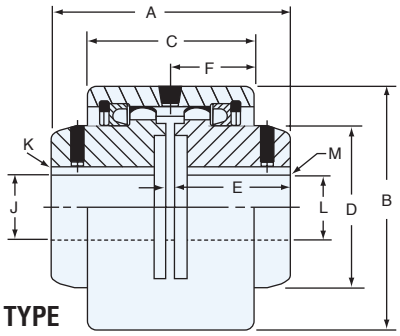
3) Check the torque required against maximum torque rating as shown in the table. Select a coupling with a maximum torque greater than the application torque.

4) If using flex type couplings, full-flex couplings should be used for close coupled arrangements. For floating shaft applications, use two Flex-Rigid couplings. The rigid half should be mounted on the floating shaft.

All jacks, shafts, couplings and motor should be carefully aligned for maximum performance. Couplings with bores other than those specified are available upon request.



JAW TYPE



FLEX TYPE

JACK PART NO.	MAX. TORQUE RATING IN.-LBS.	APPROX. WT. LBS.	COUPLING DIMENSIONS							BORE SIZES			
JAW TYPE			A	B	C	D	E	F	G	J	KEYWAY K	L	KEYWAY M
C-2020-01	38.5	.25	1.66	1.06	—	—	.56	—	.53	.376	—	.376	—
C-2025-01	126	.75	25/32	1.75	—	—	13/16	—	.53	.5005 .5000	1/8 X 1/16	.5005 .5000	1/8 X 1/16
C-2025-05	126	.75	25/32	1.75	—	—	13/16	—	.53	.5005 .5000	1/8 X 1/16	.6255 .6250	1/8 X 1/16
C-2025-02	126	.75	25/32	1.75	—	—	13/16	—	.53	.5005 .5000	1/8 X 1/16	.7505 .7500	3/16 X 3/32
C-2025-03	126	.75	25/32	1.75	—	—	13/16	—	.53	.6255 .6250	1/8 X 1/16	.6255 .6250	1/8 X 1/16
C-2025-04	126	.75	25/32	1.75	—	—	13/16	—	.53	.6255 .6250	1/8 X 1/16	.7505 .7500	3/16 X 3/32
C-2025-06	126	.75	25/32	1.75	—	—	13/16	—	.53	.7505 .7500	3/16 X 3/32	.7505 .7500	3/16 X 3/32

JACK PART NO.		MAX. TORQUE RATING IN.-LBS.	APPROX. WT. LBS.	COUPLING DIMENSIONS							BORE SIZES			
FULL FLEX	FLEX-RIGID			A	B	C	D	E	F	G	J	KEYWAY K	L	KEYWAY M
C-1800-04	C-1805-04	2500	5	31/8	35/16	2	2	11/2	1	1/8	.4995 .4990	1/8 X 1/16	.7495 .7490	3/16 X 3/32
C-1800-01	C-1805-01	2500	5	31/8	35/16	2	2	11/2	1	1/8	.4995 .4990	1/8 X 1/16	.9995 .9990	1/4 X 1/8
C-1800-05	C-1805-05	2500	5	31/8	35/16	2	2	11/2	1	1/8	.7495 .7490	3/16 X 3/32	.7495 .7490	3/16 X 3/32
C-1800-02	C-1805-02	2500	5	31/8	35/16	2	2	11/2	1	1/8	.7495 .7490	3/16 X 3/32	.9995 .9990	1/4 X 1/8
C-1800-03	C-1805-03	2500	5	31/8	35/16	2	2	11/2	1	1/8	.9995 .9990	1/4 X 1/8	.9995 .9990	1/4 X 1/8
C-1810-01	C-1815-01	7500	8	33/4	33/4	217/32	23/8	113/16	117/64	1/8	1.2495 1.2490	1/4 X 1/8	1.2495 1.2490	1/4 X 1/8
C-1810-02	C-1815-02	7500	8	33/4	33/4	217/32	23/8	113/16	117/64	1/8	1.3745 1.3740	5/16 X 5/32	1.2495 1.2490	1/4 X 1/8
C-1810-03	C-1815-03	7500	8	33/4	33/4	217/32	23/8	113/16	117/64	1/8	1.4995 1.4990	3/8 X 3/16	1.2495 1.2490	1/4 X 1/8

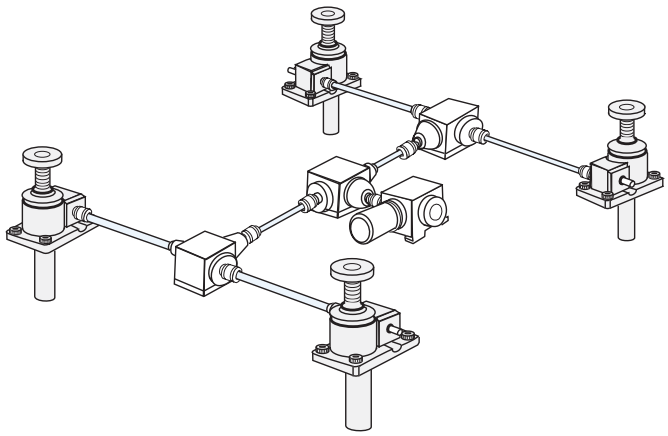
ActionJac WORM GEAR SCREW JACKS

2D/3D CAD

POWERSHAFT™ LINK SHAFTING

ActionJac™ LinkJac™ Line Shafting is used to interconnect the input shafts of ActionJac™ Worm Gear Screw Jacks used in a multiple arrangement. The shafts transfer the torque from the motor to the jack or from jack to jack.

Nook Industries LinkJac™ Line Shafting is made from steel and is available in standard lengths up to 144". Custom end machining and other diameters are available, contact Nook Industries for information.



SELECTION:

There are two major concerns when selecting interconnect shaft:

- Critical Speed: How fast will the shaft be turning?
- Torque: How much load will the shafts be carrying?

The two characteristics of a LinkJac™ Line Shaft which can be varied to accommodate these requirements are:

- Length of the shaft
- Diameter of the shaft

When selecting a LinkJac™ Line Shaft, use the largest diameter or shortest length which satisfies both of the following equations.

If you know the length and operating speed of the shaft:

$$\frac{L^2 \times N}{4.76 \times 10^6} =$$ Minimum Diameter of the LinkJac™ Shaft in inches

WHERE:
L = length of unsupported shaft in inches
N = operating speed in revolutions per minute

If you know the torque to be transmitted and the length of the shaft:

$$(T \times L \times 51 \times 10^{-6})^{.25} =$$ Minimum Diameter of the LinkJac™ Shaft in inches

WHERE:
T = torque in inch-pounds
L = total length of shaft in inches

DESIGN INFORMATION:

- The length used in the Speed-Length-Diameter Calculation is the supported length of the shaft. If support bearings are used on the shaft, the length is the longest unsupported length between bearings.
- The formulas above give a theoretical value of critical speed. Alignment, straightness and stiffness of the system all contribute to determining the actual value.
- The formula used for finding minimum diameter when torque and length are known is based on an allowable twist of 1°. Restricting the twist allows for better synchronization of ActionJac™ motion.
- The torque in the system is also limited by the torque capacity of the coupling.
- Allow 1/8 inch spacing between the jack input shaft and the LinkJac™ shaft inside the coupling.
- For some combinations of couplings and jacks, the radius of the suggested coupling is larger than the distance from the center of the worm shaft to the base.
- Nook Industries offers a range of couplings for use with LinkJac™ and ActionJac™ products in both floating shaft and supported shaft applications. See page 284 for more information.

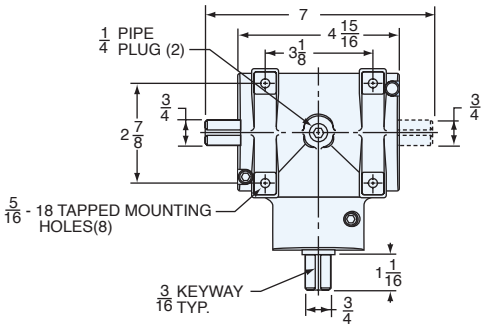
LINKJAC™ SHAFT PART NUMBER	NOMINAL DIAMETER	KEYWAY	COUPLING SERIES	
			C-1800 / C-1805	C-1810 / 1815
LJ-8	1/2	1/8 x 1/16	●	
LJ-12	3/4	3/16 x 3/32	●	
LJ-16	1	1/4 x 1/8	●	
LJ-24	1 1/2	3/8 x 3/16		●

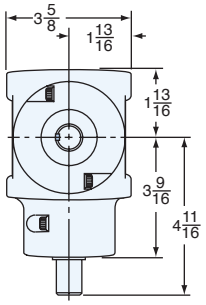
STANDARD MITER GEAR ASSEMBLIES GEAR RATIO 1:1

Jacks may be used in multiple arrangements by connecting shafting, couplings and gear boxes to simultaneously transmit power to the input shafts of the jacks. Nook Industries provides gearboxes for use with jacks. Make certain that the total torque and horsepower required by the arrangement does not exceed the ratings of the box. Miter gear boxes can be operated up to 900 rpm. Higher speeds are permissible at lower torque ratings. Noise levels may increase at higher speeds. The operating efficiency of a miter gear box is 90%.

MODEL	RATED LOAD AT 900 RPM	ESTIMATED WT.
GB210	666 IN. LBS. @ 900 (9.52 H.P.)	6 1/4 LBS.

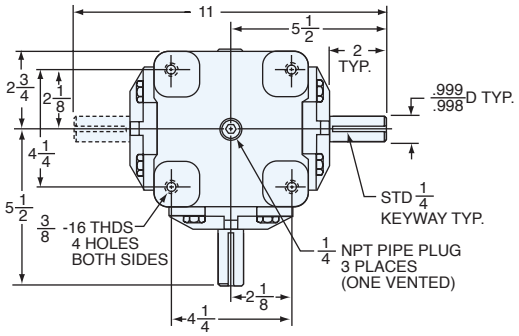
LUBRICATION:
GB 210
Filled with EP-90
Gear lubricant at
time of shipment

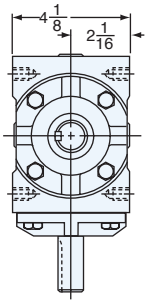




MODEL	RATED LOAD AT 900 RPM	ESTIMATED WT.
GB15	1094 IN. LBS. @ 900 (15.62 H.P.)	26 LBS.

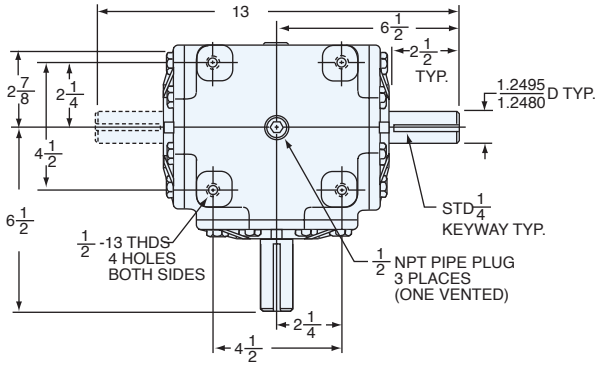
LUBRICATION:
GB 15
Shipped dry
Fill with EP-90
Gear lubricant
Capacity 1 qt.

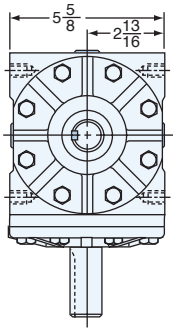


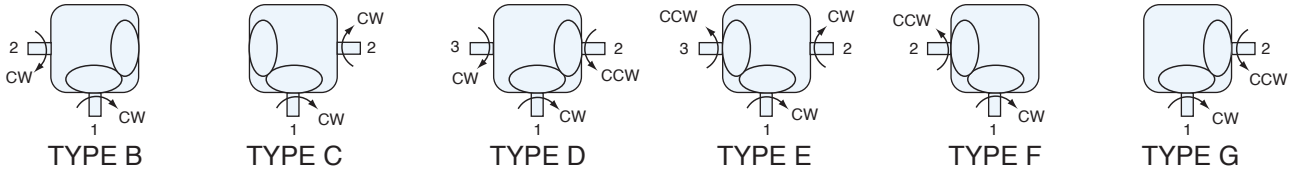


MODEL	RATED LOAD AT 900 RPM	ESTIMATED WT.
GB12	2712 IN. LBS. @ 900 (38.72 H.P.)	39 LBS.

LUBRICATION:
GB 12
Shipped dry
Fill with EP-90
Gear lubricant
Capacity 1 qt.





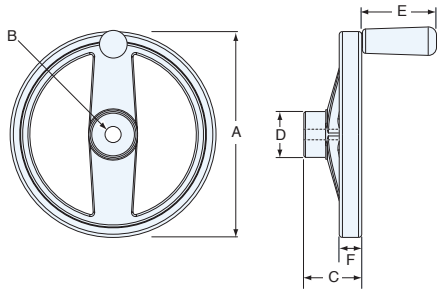


Gears are forged alloy steel. Shafts are stressproof steel ground and polished. Clockwise (CW) and counterclockwise (CCW) notations indicate direction of shaft rotation when facing outer end of shaft. All shaft arrangements will operate opposite direction for that shown. To order specify model number and desired shaft arrangement.

HANDWHEELS

A handwheel is a convenient solution for manually operating a jack when using machine screw jacks in intermittent positioning applications. Handwheels are available in a range of diameters from 4 to 10 inches and can be adapted for use on jacks from the MJ series up to the 20 ton capacity model.

NOTE: Handwheels do not include a brake. Handwheels are not recommended for use with ball screw jacks. When using handwheels with a jack that can back-drive (12:1 and lower) an additional locking mechanism may be required to prevent "creep".



HANDWHEEL SPECIFICATIONS measurements in inches

JACK SIZE	A	B	C	D	E	F	PART # METAL
MJ	4	.375	1 1/2	1 3/16	1 5/8	5/8	H043
1-MSJ	4	.50	1 1/2	1 3/16	1 5/8	5/8	H044
	6	.50	2	1 9/16	2 9/16	3/4	H064
2-MSJ	4	.50	1 1/2	1 3/16	1 5/8	5/8	H044
	6	.50	2	1 9/16	2 9/16	3/4	H064
2.5-MSJ	4	.50	1 1/2	1 3/16	1 5/8	5/8	H044
	6	.50	2	1 9/16	2 9/16	3/4	H064
5-MSJ	6	.75	2	1 9/16	2 9/16	3/4	H066
	8	.75	2 1/4	1 25/32	2 15/16	7/8	H086
	10	.75	3	2 1/4	3 15/16	1	H106
10-MSJ	8	1	2 1/4	1 25/32	2 15/16	7/8	H088
	10	1	3	2 1/4	3 15/16	1	H108
15-MSJ	8	1	2 1/4	1 25/32	2 15/16	7/8	H088
	10	1	3	2 1/4	3 15/16	1	H108
20-MSJ	8	1	2 1/4	1 25/32	2 15/16	7/8	H088
	10	1	3	2 1/4	3 15/16	1	H108

HOW TO ORDER A JACK WITH A HANDWHEEL

EXAMPLE:

2.5-MSJ-U 24:1 / **H064-1** / SSE-2 / FT / 12.0 / S

Mounting Position (see page 317)

Part Number (from chart above)

COUNTERS

For precise position display, a range of digital position indicators are available for use with ActionJac™ Worm Gear Screw Jacks. These indicators measure the rotation of the input shaft and display a corresponding position in a counter window. The display value per input shaft revolution is variable and is achieved through a series of gear reductions configured to accommodate different jack ratios, lift shaft leads and travel distances. Contact Nook Industries to determine actual readout scaling available for your application.

HOW TO ORDER COUNTER:

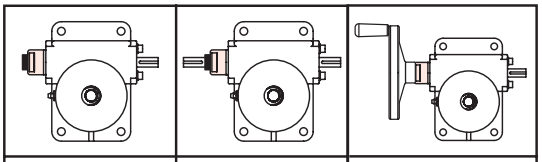
SPECIFY: • Determine Mounting Position
• Count Increase or Decreases with Extension of Shaft

EXAMPLE: 2.5-MSJ-U 6:1 / SSE-1 / **CTI-2** / FT / 24.5 / S

Extension shaft designation

Examples of counter designations:

CTI-2 = Counter, which increases with extension of the Lift Shaft, position 2
Dash number designates mounting position

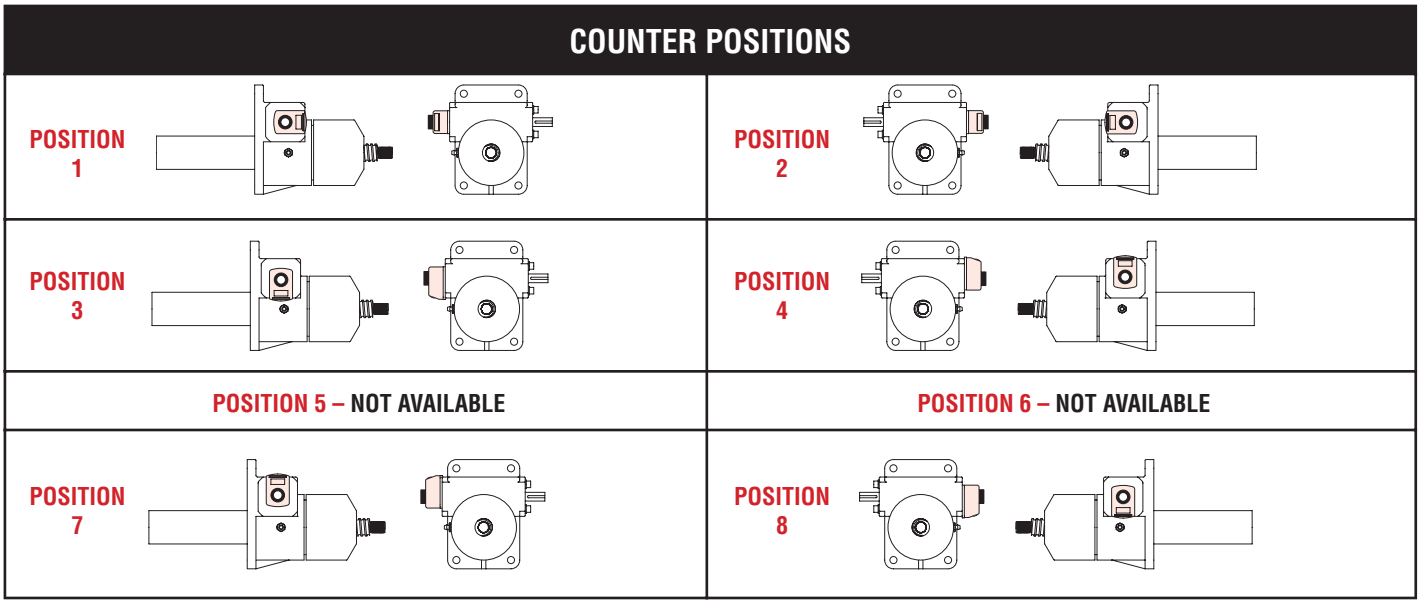


CEI	CTI	C_I*
CED	CTD	C_D*

CEI = Counts **INCREASE** with extension of travel, without shaft extension
CED = Counts **DECREASES** with extension of travel, without shaft extension
CTI = Counts **INCREASE** with extension of travel, with worm shaft extension
CTD = Counts **DECREASES** with extension of travel, with worm shaft extension
CAI = Counts **INCREASE** with extension of travel, with 4" handwheel*
CAD = Counts **DECREASES** with extension of travel, with 4" handwheel*
CBI = Counts **INCREASE** with extension of travel, with 6" handwheel*
CBD = Counts **DECREASES** with extension of travel, with 6" handwheel*
CCI = Counts **INCREASE** with extension of travel, with 8" handwheel*
CCD = Counts **DECREASES** with extension of travel, with 8" handwheel*
CDI = Counts **INCREASE** with extension of travel, with 10" handwheel*
CDD = Counts **DECREASES** with extension of travel, with 10" handwheel*

*See handwheel page 287 to select the correct size for jack model

COUNTER POSITIONS



TRUNNION ADAPTERS

Nook ActionJac™ Trunnion adapter plates allow for easy installation in applications where the jack moves through an arc during operation. These jacks are typically configured with motor mounts or right angle reducers.

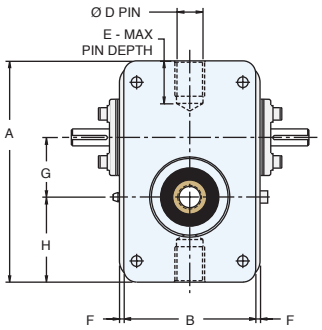
Trunnion adapter plates bolt to the jack flange and have precision bores for trunnion pins.

Design Information

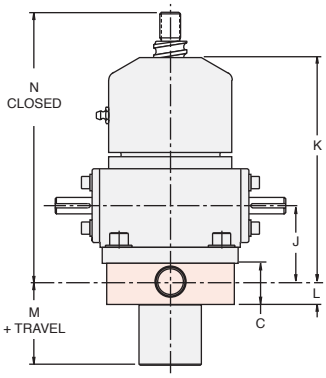
The trunnion pins should be supported to within 1/16 inch of the trunnion adapter plate. See the “A” dimension in the table for the width of the mounting plate. The maximum distance between the trunnion pin support mounting surfaces should be less than or equal to the “A” dimension plus 0.13 inches.

The trunnion pins should be ground to the “D” diameters shown in the table. The trunnion pins should be made from steel with a hardness greater than 30 HRC and a yield strength greater than 60,000 psi.

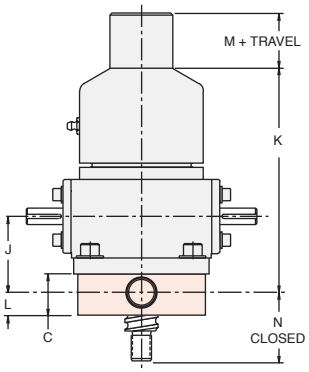
BSJ and MSJ Trunnion Bottom View



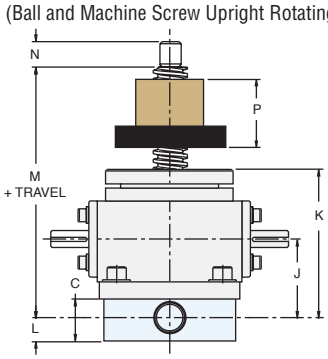
BSJ-U
(Ball Screw Upright)



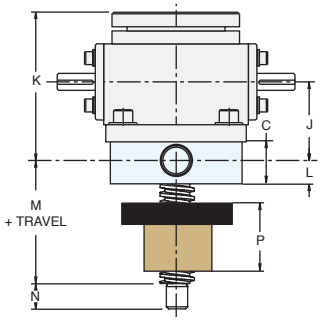
BSJ-I
(Ball Screw Inverted)



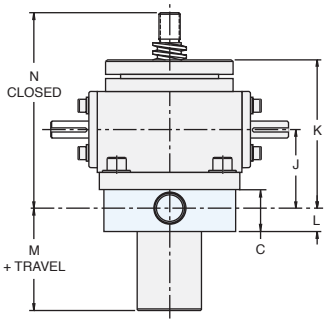
BSJ-UR and MSJ-UR
(Ball and Machine Screw Upright Rotating)



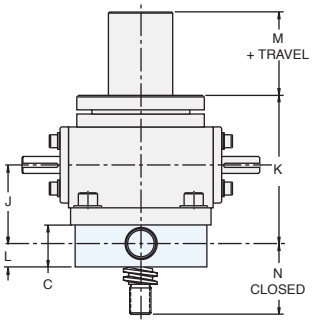
BSJ-IR and MSJ-IR
(Ball and Machine Screw Inverted Rotating)



MSJ-U
(Machine Screw Upright)



MSJ-I
(Machine Screw Inverted)



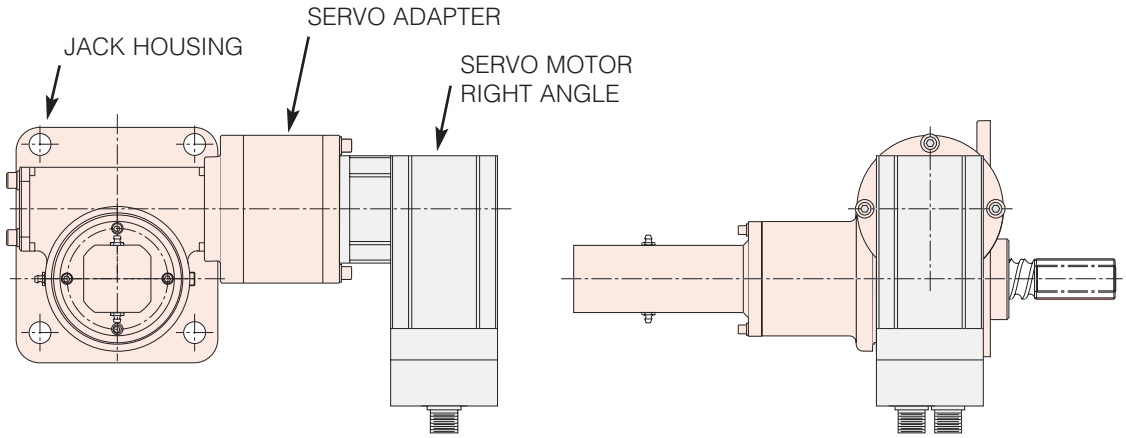
JACK MODEL	COMMON DIMENSIONS FOR U, I , UR & IR										UPRIGHT			INVERTED			UPRIGHT ROTATING				INVERTED ROTATING			
TRUNNION PART #	A	B	C	D	E	F	G	H	J	L	K	M	N	K	M	N	K	M	N	P	K	M	N	P
2.5-MSJ TA-0025	6.50	3.88	1.25	.7491 / .7479	1.25	.13	1.750	2.50	2.32	.69	4.38	1.38	5.75	4.38	.69	2.06	4.38	7.38	.75	2.00	4.38	3.69	.75	2.00
5-MSJ TA-0050	8.25	5.75	1.50	.9991 / .9979	1.50	.13	2.188	3.13	2.94	.81	5.44	1.44	7.69	5.44	.63	3.06	5.44	9.44	1.00	3.00	5.44	4.81	1.00	3.00
10-MSJ TA-0100	9.00	7.00	1.97	1.2488 / 1.2472	1.38	.13	2.600	3.00	3.13	1.09	5.75	1.72	7.75	5.75	.63	3.12	5.75	9.75	2.00	3.00	5.75	5.12	2.00	3.00
20-MSJ TA-0200	11.25	8.00	2.22	1.4988 / 1.4972	1.75	.13	2.875	4.25	4.25	1.22	7.75	1.84	10.25	7.75	.63	3.75	7.75	12.25	2.50	3.50	7.75	5.75	2.50	3.50
2.5-BSJ TA-0025	6.50	3.88	1.25	.7491 / .7479	1.25	.13	1.750	2.50	2.32	.69	6.81	2.31	8.19	6.81	1.63	2.06	4.38	7.75	1.13	2.38	4.38	4.06	1.13	2.38
5-BSJ TA-0050	8.25	5.75	1.50	.9991 / .9979	1.50	.13	2.188	3.13	2.94	.81	10.00	2.31	11.88	10.00	1.75	3.06	5.44	10.75	1.50	4.31	5.44	6.13	1.50	4.31
10-BSJ TA-0100	9.00	7.25	2.00	1.2488 / 1.2472	1.50	.13	2.600	3.00	3.13	1.12	10.00	2.75	12.25	10.00	1.63	3.37	5.75	11.06	1.50	4.31	5.75	6.44	1.50	4.31
20-BSJ TA-0200	11.25	8.00	2.25	1.4988 / 1.4972	1.75	.13	2.875	4.25	4.25	1.25	15.75	3.63	18.25	15.75	2.38	3.75	7.75	15.50	2.75	6.75	7.75	9.00	2.75	6.75

SERVO JACKS

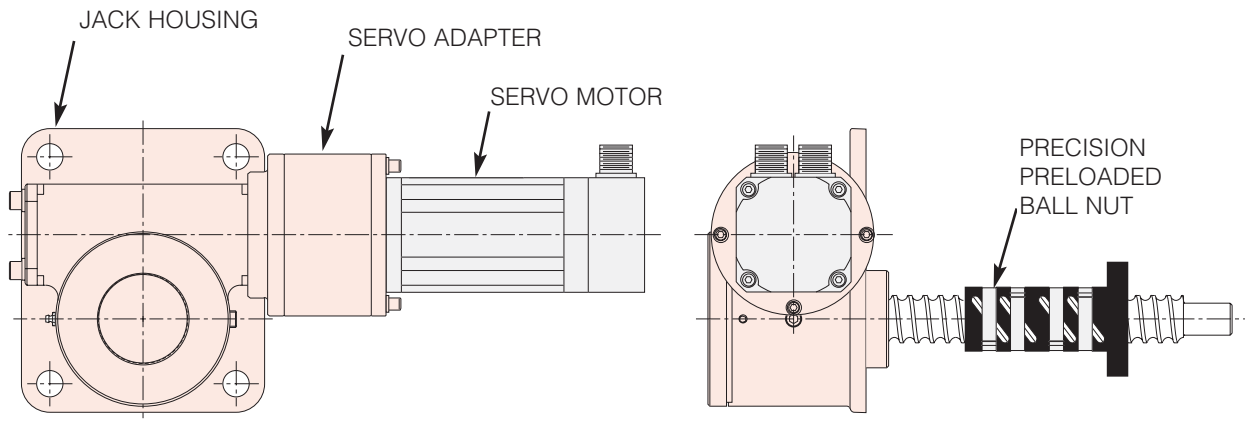
ActionJac™ Servo Jacks offer the ability to attach a servo motor to a ball screw or machine screw jack. Using an ActionJac™ Worm Gear Screw Jack with a servo motor increases control of acceleration, de-acceleration, travel rate and positioning accuracy compared with standard NEMA framed motors.

Illustrated below are two examples of jacks with servo motor adaptors manufactured by Nook Industries. Custom Servo Motor Adaptors are designed to accommodate any specified coupling and servo motor. Servo Jacks can be delivered as a complete assembly, including a vendor specified servo motor. Contact Nook Industries for further assistance with jack applications requiring servo motors.

KEYED INVERTED BALL SCREW SERVO JACK



INVERTED ROTATING BALL SCREW SERVO JACK



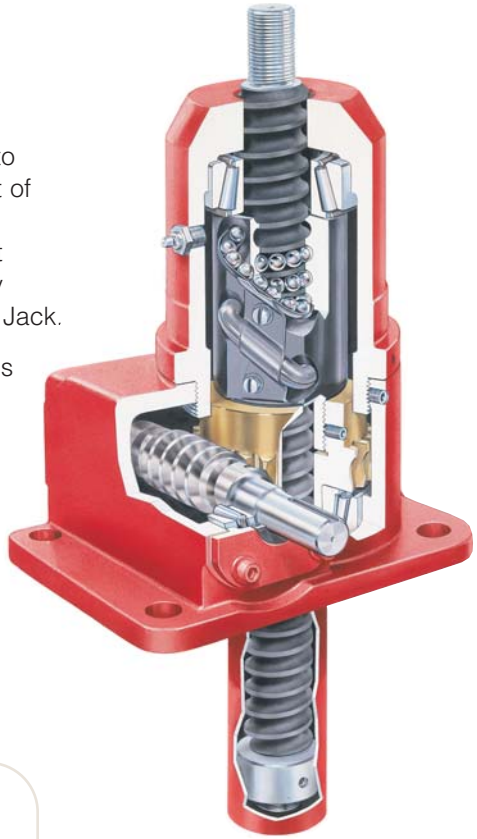
ActionJac WORM GEAR SCREW JACKS

2D/3D CAD

BALL SCREW JACKS

ActionJac™ Ball Screw Jacks have been designed to produce rated output forces with a minimum amount of input torque. Ball screw jacks use a worm gear set arrangement with an efficient ball screw and nut that reduces the amount of input torque to approximately one-third the torque required for the Machine Screw Jack.

See the technical introduction at the beginning of this section for additional Ball Screw Jack features and comparison to Machine Screw Jacks.



Download Accurate Moveable Assembly 3D Models and 2D Drawings

For ActionJac™ Worm Gear Screw Jacks:

- **Configure** specific requirements for your Worm Gear Screw Jack application in a simple interface, including motor adapter, right angle reducer, bellows boots and limit switch accessories.
- **View** complete assemblies on-line with zoom, pan and rotate capabilities.
- **Download** true assembly models with full range of motion in native AutoCAD®, SolidWorks®, Pro/E®, CATIA®, ParaSolids®, SAT® and many other formats.
- **Order** complete jack assemblies with generated part number.

Download 3D Models

ActionJac WORM GEAR SCREW JACKS

www.nookindustries.com

QUICK REFERENCE: INCH BALL SCREW JACKS

JACK SIZES					JACK SELECTION									
MODEL*	Capacity (tons)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	BackDrive Holding Torque (ft.-lb.)	Page Ref
0.5-BSJ	1/2	5/8	.200	.500	5:1	25	9.5	1/3	1800	1000	.0095	1	1.0	297
					20:1	100	4.0	1/6	1800	1000	.0040	1	.25	297
0.5HL-BSJ	1/2	5/8	.500	.500	5:1	10	24.2	1/3	868	496	.0242	1	2	297
					20:1	40	10.2	1/6	1030	588	.0102	1	1	297
1-BSJ	1	3/4	.200	.602	5:1	25	19	1/2	1660	1895	.0095	3	1.5	298
					20:1	100	9	1/4	1750	2000	.0045	3	.50	298
1HL-BSJ	1	3/4	.500	.602	5:1	10	48.2	1/2	654	747	.0241	3	3.5	299
					20:1	40	9	1/4	691	790	.0114	3	1.5	299
2-BSJ	2	1	.250	.820	6:1	24	40	2	1800	4000	.0100	4	3	300
					12:1	48	26	1 1/2	1800	4000	.0064	4	1.5	300
					24:1	96	17	1/2	1800	4000	.0043	4	1	300
2R-BSJ	2	1	.250	.820	6:1	24	40	2	1800	4000	.0100	4	3	301
					12:1	48	26	1 1/2	1800	4000	.0064	4	1.5	301
					24:1	96	17	1/2	1800	4000	.0043	4	1	301
2.5-BSJ	2 1/2	1	.250	.820	6:1	24	51	2	1800	5000	.0102	5	4	302
					12:1	48	31	1 1/2	1800	5000	.0061	5	2	302
					24:1	96	21	1/2	1500	4287	.0042	5	1.5	302
2.5HL-BSJ	2 1/2	1	1.00	.820	6:1	6	202	2	624	1783	.0404	5	14	303
					12:1	12	122	1 1/2	775	2214	.0244	5	6	303
					24:1	24	85	1/2	371	1059	.0170	5	5	303
3-BSJ	3	1 11/64	.413	.870	6:1	14.53	100	2	1260	4313	.0167	6	6	304
					24:1	58.10	42	1/2	750	2572	.0070	6	2	304

* Measurements listed are for non-keyed units. See individual jack pages for keyed jack info.

NOTES:

1) The recommended maximum speed is 3000 rpm provided that the recommended horsepower and temperature are not exceeded.

2) Input torque is shown as torque to lift one pound of load. Starting Torque is 100% greater than torque shown. For loads less than 25% of rated loads add tare drag torque.

3) Maximum allowable horsepower ratings are based on a 35% duty cycle. For operation at higher duty cycles or repeated use over any segment of the total travel, temperature must be monitored and remain less than 200°F.

4) Overload capacity of the Ball Screw Jack is as follows: 10% for dynamic loads, 30% for static loads.

5) All Ball Screw Jacks can backdrive and require some means of holding the load, such as a brake on the motor. The product specification pages show holding torque values. Holding torque represents the amount of input torque required to restrain the load and does not indicate recommended brake size to bring the dynamic load to a stop.

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

QUICK REFERENCE: INCH BALL SCREW JACKS

JACK SIZES					JACK SELECTION									
MODEL*	Capacity (tons)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	BackDrive Holding Torque (ft.-lb.)	Page Ref
5-BSJ	5	1 1/2	.473	1.140	6:1	12.66	183	3	1033	5904	.0183	10	14	305
					24:1	50.66	73	3/4	647	3700	.0073	10	5	305
5HL-BSJ	5	1 1/2	1.00	1.140	6:1	6	387	3	488	2792	.0387	10	30	305
					24:1	24	153	3/4	308	1765	.0153	10	10	305
10-BSJ	10	1 1/2	.473	1.140	8:1	16.88	302	5	1043	11925	.0151	20	13	306
					24:1	50.66	153	1 1/2	618	7016	.0077	20	4	306
10HL-BSJ	10	1 1/2	1.00	1.140	8:1	8	638	5	494	5645	.0319	20	26	306
					24:1	24	323	1 1/2	293	3335	.0162	20	6	306
20-BSJ	20	2 1/4	.50	1.850	8:1	16	626	7 1/2	755	17204	.0157	40	27	307
					24:1	48	314	2 1/2	501	11397	.0079	40	7	307
20HL-BSJ	20	2 1/4	1.00	1.850	8:1	8	1253	7 1/2	377	8629	.0313	40	54	307
					24:1	24	628	2 1/2	251	5737	.0157	40	13	307
30-BSJ	30	3	.66	2.480	10 2/3:1	16.16	969	11	715	24515	.0162	60	21	308
					32:1	48.48	503	3 1/2	438	15006	.0084	60	5	308
30HL-BSJ	30	3	1.5	2.480	10 2/3:1	7.11	2292	11	315	10794	.0367	60	67	308
					32:1	21.33	1144	3 1/2	193	6600	.0191	60	15	308
50-BSJ	50	4	1.0	3.338	10 2/3:1	10.66	2560	16	394	22509	.0256	90	40	309
					32:1	32	1390	5	227	12954	.0139	90	10	309
75-BSJ	75	4	1.0	3.338	10 2/3:1	10.66	3660	28	482	41328	.0244	155	110	310
					32:1	32	1680	9	338	28970	.0112	155	25	310
100-BSJ	100	4	1.0	3.338	10 2/3:1	10.66	4880	32	413	47232	.0244	205	152	311
					32:1	32	2760	12 1/2	285	32621	.0138	205	25	311

* Measurements listed are for non-keyed units. See individual jack pages for keyed jack info.

NOTES:

6) All units are suitable for intermittent operation providing that the housing temperature including ambient is not lower than -20°F or higher than +200°F. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges consult Nook Industries.

7) Accessories such as boots, limit switches, top plates and clevises are available.

8) Catalog dimensions are representative only and are subject to change without notice. For construction, use only certified prints.

9) Units are not to be used as personnel support or movement.

10) End-of-travel stops are not provided.

* Tare drag torque need only be added if operating under 25% rated load.

$$\text{Horsepower per jack} = \frac{\text{Torque to raise one pound} \times \text{Number of pounds to be raised} \times \text{rpm}}{63{,}025}$$

Starting Torque is 100% greater than torque shown.

COLUMN STRENGTH: INCH BALL SCREW JACKS

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the ball screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

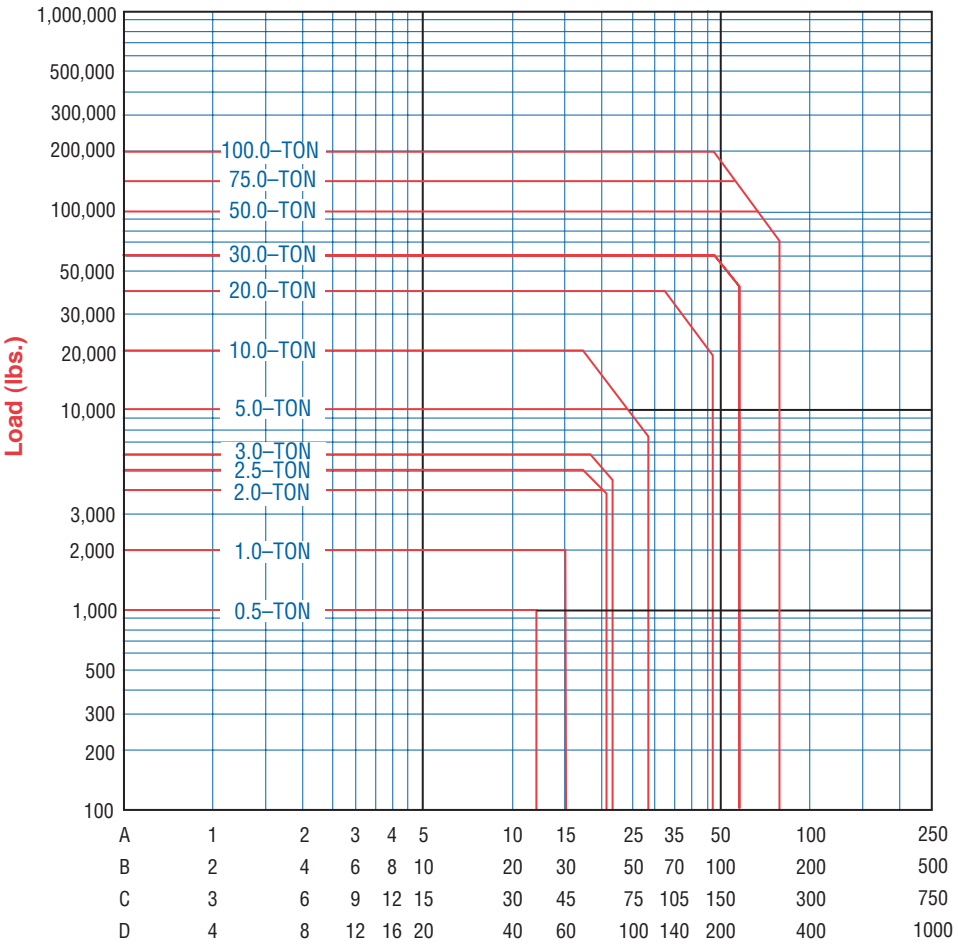
The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

To use this chart:

Find a point at which the maximum length "L" intersects the maximum load. Be sure the jack selected is above and to the right of that point.

CAUTION: chart does not include a design factor.

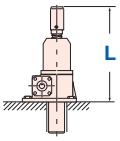
The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries, Inc. if side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.



MOUNTING CONDITIONS

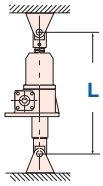
A

ONE END FIXED
ONE END FREE



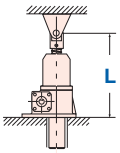
B

BOTH ENDS SUPPORTED BY CLEVIS ENDS

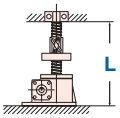


C

ONE END FIXED, ONE END SUPPORTED (CLEVIS ATTACHED TO GUIDE STRUCTURE)

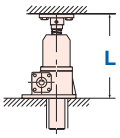


ONE END FIXED, ONE END SUPPORTED (RADIAL BEARING))



D

BOTH ENDS FIXED (TOP PLATE ATTACHED TO GUIDED STRUCTURE)



AVAILABLE LIFT SCREW LENGTHS

As a major manufacturer of industrial lead screws, Nook Industries stocks a wide selection of ball screws. Nook Industries has the capacity to make long ball screws for special applications. Rotating screw jacks can be built with a larger diameter lift screw for greater column strength, or a different lead to change the jack operating speed.

ActionJac WORM GEAR SCREW JACKS

2D/3D CAD

LIFE EXPECTANCY: INCH BALL SCREW JACKS

The following chart provides the minimum life expectancy in total inches of travel for the ball screws.

MODEL	Operating Load (lbs)	MINIMUM INCHES OF TRAVEL (in. x 10^3)				Page Number
		UPRIGHT & INVERTED		UPRIGHT & INVERTED ROTATING		
		Standard (in)	High-Lead (in)	Standard (in)	High-Lead (in)	
0.5-BSJ 0.5HL-BSJ	1,000	377	708	471	885	297
	750	893	1,678	116	2,097	
	500	3,014	5,662	3,767	7,078	
	250	24,111	45,299	56,623	56,623	
1-BSJ 1HL-BSJ	2,000	133	2,019	166	2,524	298-299
	1,500	316	4,785.9	394	5,982	
	1,000	1,065	16,152	1,331	20,190	
	500	8,518	129,218	10,648	161,523	
2-BSJ 2R-BSJ	5,000	52	—	66	—	300-301
	3,750	124	—	155	—	
	2,500	419	—	524	—	
	1,250	3,351	—	4,189	—	
2.5-BSJ 2.5HL-BSJ	5,000	27	63	34	79	302-303
	3,750	64	149	79	186	
	2,500	215	503	268	629	
	1,250	1,716	4,026	2,145	5,031	
3-BSJ	6,000	219	—	273	—	304
	4,500	518	—	648	—	
	3,000	1,750	—	2,187	—	
	1,500	13,996	—	17,495	—	
5-BSJ 5HL-BSJ	10,000	812	346	1,015	432	305
	7,500	1,925	819	2,406	1,024	
	5,000	6,497	2,765	8,121	1,024	
	2,500	51,972	22,123	64,965	27,653	
10-BSJ 10HL-BSJ	20,000	102	43	127	54	306
	15,000	241	103	301	128	
	10,000	812	346	1,015	432	
	5,000	6,497	2,765	8,121	3,457	
20-BSJ 20HL-BSJ	40,000	121	234	151	292	307
	30,000	287	554	358	692	
	20,000	967	1,869	1,209	2,336	
	10,000	7,737	14,952	9,672	18,690	
30-BSJ 30HL-BSJ	60,000	323	572	403	715	308
	45,000	764	1,355	955	1,694	
	30,000	2,579	4,574	3,223	5,718	
	15,000	20,630	36,596	25,787	45,744	
50-BSJ	100,000	505	—	631	—	309
	75,000	1,196	—	1,495	—	
	50,000	4,037	—	5,046	—	
	25,000	32,292	—	40,365	—	
75-BSJ	150,000	150	—	187	—	310
	112,500	354	—	443	—	
	75,000	1,196	—	1,495	—	
	37,500	9,568	—	11,960	—	
100-BSJ	200,000	63	—	79	—	311
	150,000	150	—	187	—	
	100,000	505	—	631	—	
	50,000	4,037	—	5,046	—	

LEAD ACCURACY

The rolled thread ball screw, as employed in ActionJac™ products, is held within ±0.004" per foot cumulative from nominal dimension. Lift Shafts can be matched to within ±0.002" per foot when ordered as matched sets. Special ground threads having lead accuracies of ±0.0005" per foot can be provided.

BACKLASH

Axial backlash ranges from 0.005" to 0.012". Specify optional selective fit lift shaft for 0.003" to 0.005" backlash.

MATERIAL HARDNESS

Ball screws have a race hardness of Rockwell C 58 minimum. Core hardness will run from Rc 20 to 35.

NOTES:

- Refer to Lubrication Instructions in order to obtain maximum life from ball screw assemblies.
- These values may be greatly reduced if the units are subjected to misalignment, shock loads, side thrust, contamination or lack of proper lubrication and maintenance.

www.nookindustries.ru (499) 703 35 98 sell@nookindustries.ru

REFERENCE NUMBER SYSTEM: INCH BALL SCREW JACKS

2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

2.5-BSJ-U 6:1 / 10BT-1 / 2CA / FT / 24.5 / SB

BALL SCREW MODEL

Ton	Model #	Ton	Model #	Ton	Model #
1/2	0.5-BSJ	2.5	2.5HL-BSJ	20	20HL-BSJ
1/2	0.5HL-BSJ	3	3-BSJ	30	30-BSJ
1	1-BSJ	5	5-BSJ	30	30HL-BSJ
1	1HL-BSJ	5	5HL-BSJ	50	50-BSJ
2	2-BSJ	10	10-BSJ	75	75-BSJ
2	2R-BSJ	10	10HL-BSJ	100	100-BSJ
2.5	2.5-BSJ	20	20-BSJ		

CONFIGURATION

U = Upright
I = Inverted
UR = Upright Rotating
IR = Inverted Rotating
DC = Double Clevis
UK = Upright Keyed
IK = Inverted Keyed

GEAR RATIO

Refer to product pages for available ratios.

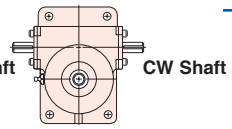
SHAFT ORDER CODE

CCW Position 1, 3, 5 & 7
CW Position 2, 4, 6 & 8

ORDER CODES (Must Include A Position)

NO ACCESSORY

SSE-_ = Standard Shaft Extension, Position 1 or 2
000-_ = Delete Shaft Extension, Position 1 or 2
SPC-_ = Special Modified Shaft Extension, Position 1 or 2



Motor Mounts Without Motor

(Position 1 or 2)

Used on 2.5 to 20 Ton Jacks.

see page 275 for standard motor mount order codes

EXAMPLE:

X05-1 = 56C NEMA frame in Position 1
X14-2 = 140TC NEMA frame in Position 2

Motor Mounts With Motors

(Position 1 or 2)

Used on 2.5 to 20 Ton Jacks.

see page 275 & 276 for available motors

EXAMPLE:

10BT-1 = 1 Hp-3 ph internally wired standard Brake Motor in Position 1

Right Angle Reducer

(Position 1 through 8)

Used on 2.5 to 20 Ton Jacks.

see page 278 and 279 for available Right Angle Reducers

NOTE: A Right Angle Reducer must be accompanied with a motor mount or motor order code.

EXAMPLE:

X05R6-1 = 56C Motor Mount with a 6:1 Reducer in Position 1
10BSR12-4 = 1 Hp- 3 ph Brake Motor with a 12:1 Right Angle Reducer in Position 4

Rotary Limit Switch

(Position 1 C or E through 8 C or E)

Used on 2 to 100 Ton Jacks.

see page 282 and 283 for available rotary limit switches

NOTE: A Limit Switch must include a close or extended mount.

EXAMPLE:

4CA-6E = 4 Circuit Limit Switch, SPDT with an extended mount in Position 6

NOTE: Both Shaft Extensions Must Be Specified

HOUSING CONFIGURATION

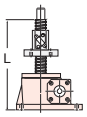
F = Standard Flange Base
C = Clevis Base
T = Trunnion Base

SCREW CONFIGURATION

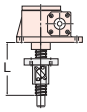
TRANSLATING - U and I MODELS
T = Standard Threaded End
C = Clevis End
P = Top Plate

ROTATING - UR and IR MODELS
A = Travel Nut Position "A"
B = Travel Nut Position "B"

UR - Upright Rotating **IR -** Inverted Rotating



Travel Nuts shown in position "A"



TRAVEL

For Translating Screw Models (U and I) use actual Travel in inches. For Rotating Screw Models (UR and IR) use "L" Dimension in Inches.

MODIFIER LIST

S or M Required
S = Standard. no additional description required
M = Modified, additional description required

E and/or B Optional
E = In-Line Encoder (motor or motor mount required)
B = Bellows Boots (must calculate retracted and extended boot length, see page 280-281)

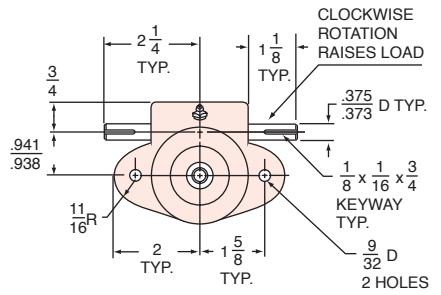
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

0.5-BSJ & 0.5HL-BSJ

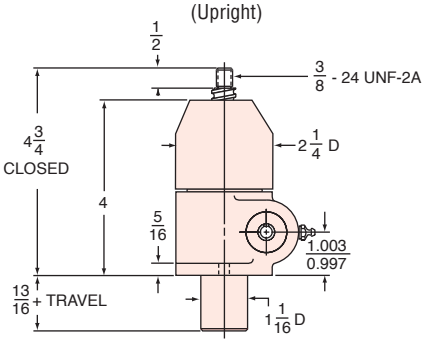
INCH BALL SCREW JACKS

0.5-BSJ and 0.5HL-BSJ Housing Top View



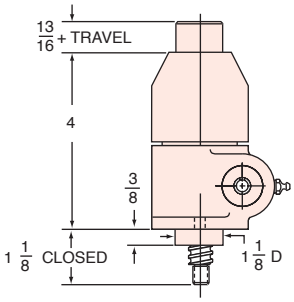
0.5-BSJ-U and 0.5HL-BSJ-U

(Upright)



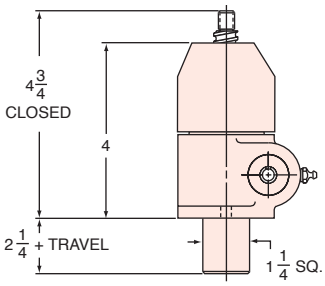
0.5-BSJ-I and 0.5HL-BSJ-I

(Inverted)



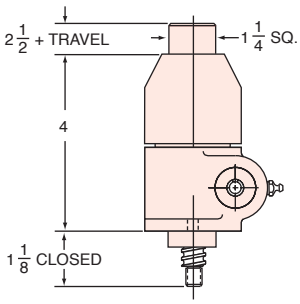
0.5-BSJ-UK and 0.5HL-BSJ-UK

(Upright Keyed)

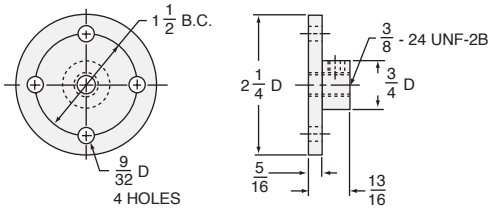


0.5-BSJ-IK and 0.5HL-BSJ-IK

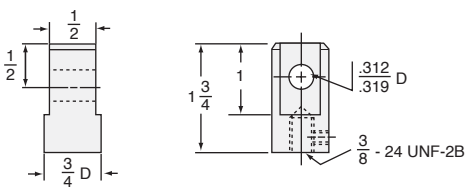
(Inverted Keyed)



TOP PLATE (optional): B9000-00-12

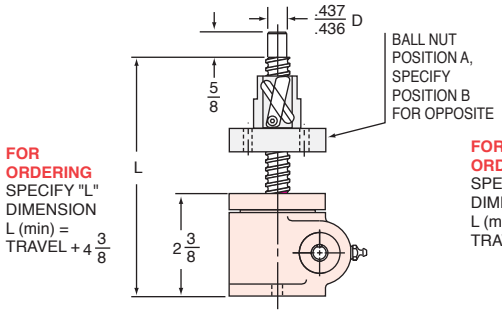


CLEVIS END (optional): B9001-00-12



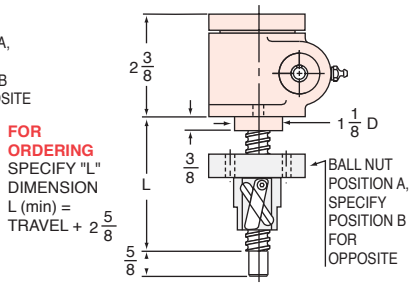
0.5-BSJ-UR and 0.5HL-BSJ-UR

(Upright Rotating)



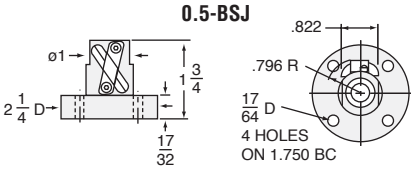
0.5-BSJ-IR and 0.5HL-BSJ-IR

(Inverted Rotating)

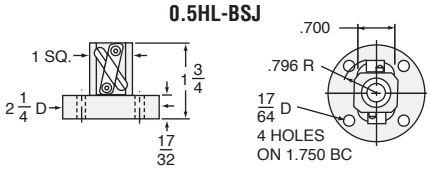


BALL NUT & FLANGE DIMENSIONS

0.5-BSJ



0.5HL-BSJ



0.5-BSJ and 0.5HL-BSJ SCREW

SCREW (5-BSJ): 0631-0200
(5HL-BSJ): 0631-0500
ROOT DIAMETER: 0.500
DRAG TORQUE: 1 IN.-LB.
START TORQUE: 2 x Running Torque
WEIGHT (Approx. in Pounds)
"0" TRAVEL: 3
PER INCH TRAVEL: .03
GREASE: .3

	RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
0.5-BSJ	5:1	25	.0095 in.-lbs.	.0105 in.-lbs.	1/3	1800 rpm	1800 rpm	1000 lbs.	1000 lbs.
0.5-BSJ	20:1	100	.0040 in.-lbs.	.0044 in.-lbs.	1/6	1800 rpm	1800 rpm	1000 lbs.	1000 lbs.
0.5HL-BSJ	5:1	10	.0242 in.-lbs.	.0266 in.-lbs.	1/3	868 rpm	790 rpm	496 lbs.	450 lbs.
0.5HL-BSJ	20:1	40	.0102 in.-lbs.	.0112 in.-lbs.	1/6	1030 rpm	936 rpm	588 lbs.	534 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

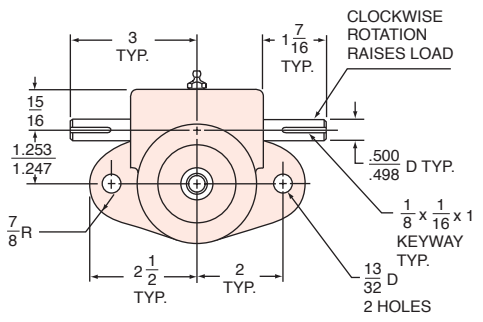
INCH BALL SCREW JACKS

1-BSJ

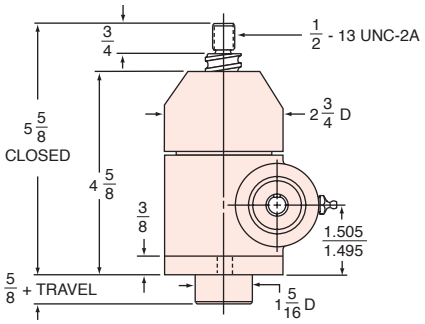
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

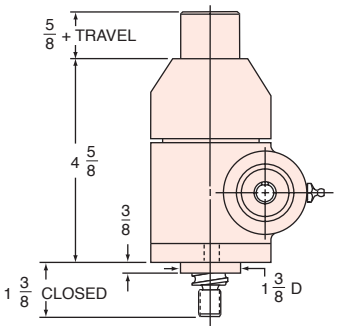
1-BSJ Housing Top View



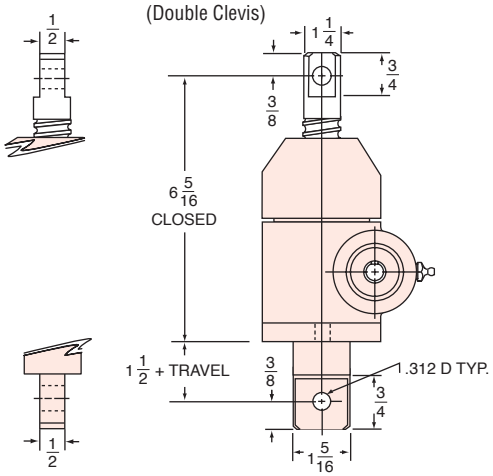
1-BSJ-U (Upright)



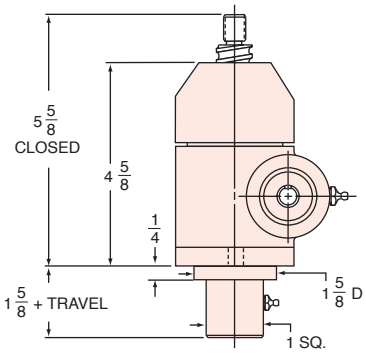
1-BSJ-I (Inverted)



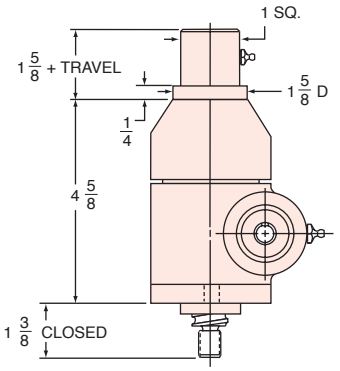
1-BSJ-DC (Double Clevis)



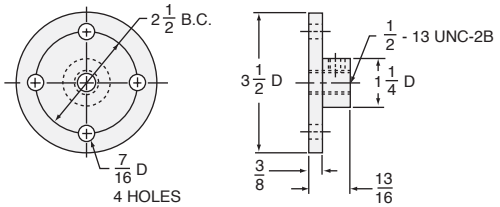
1-BSJ-UK (Upright Keyed)



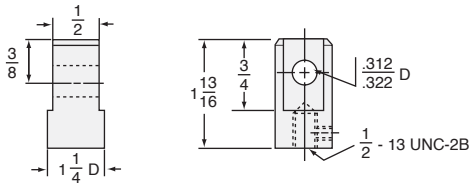
1-BSJ-IK (Inverted Keyed)



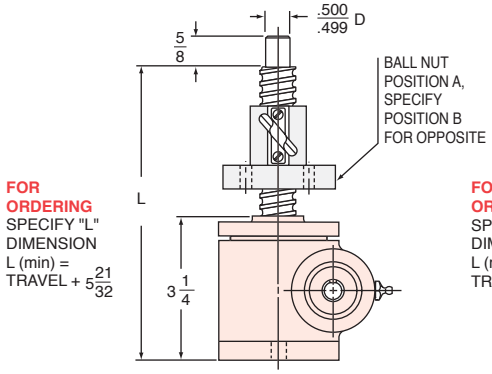
TOP PLATE (optional): B9000-00-11



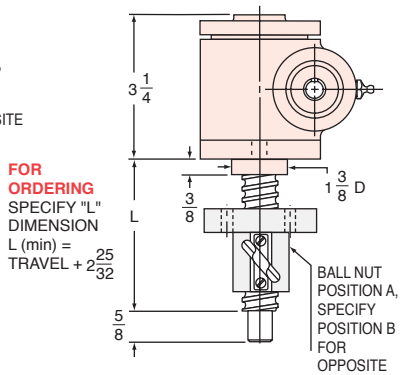
CLEVIS END (optional): B9001-00-11



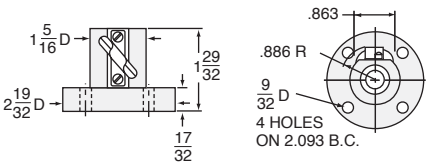
1-BSJ-UR (Upright Rotating)



1-BSJ-IR (Inverted Rotating)



BALL NUT & FLANGE DIMENSIONS



1-BSJ STANDARD SCREW

SCREW:	0750-0200
ROOT DIAMETER:	0.602
DRAG TORQUE:	3 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	8
PER INCH TRAVEL:	.04
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
5:1	25	.0095 in.-lbs.	.0104 in.-lbs.	1/2	1660 rpm	1515 rpm	1895 lbs.	1731 lbs.
20:1	100	.0045 in.-lbs.	.0049 in.-lbs.	1/4	1750 rpm	1608 rpm	2000 lbs.	1837 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

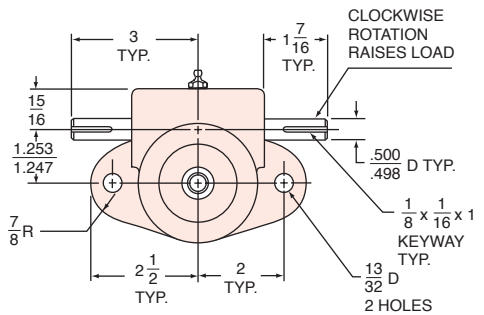
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

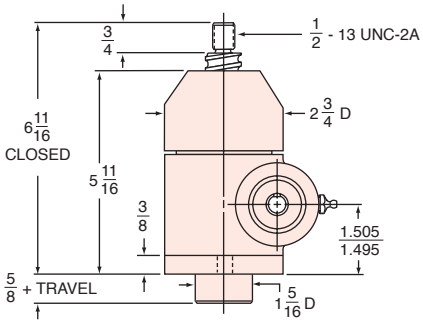
1HL-BSJ

INCH BALL SCREW JACKS

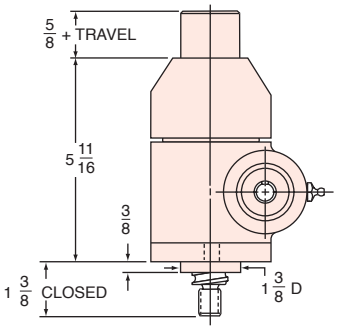
1HL-BSJ Housing Top View



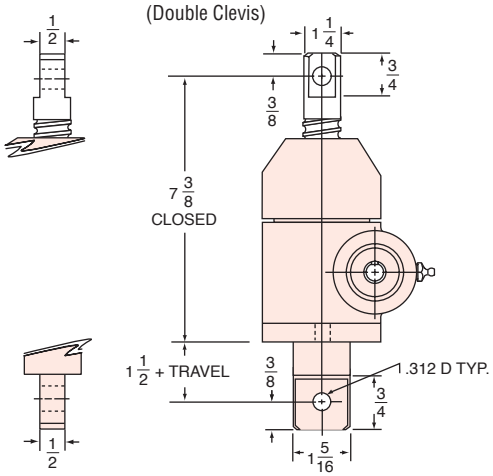
1HL-BSJ-U
(Upright)



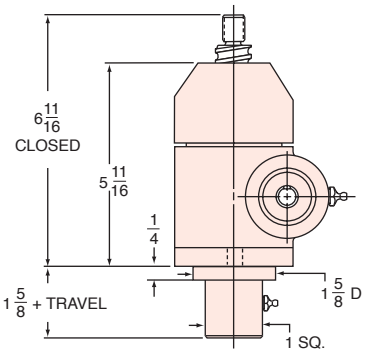
1HL-BSJ-I
(Inverted)



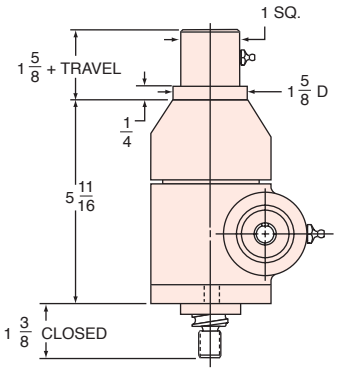
1HL-BSJ-DC
(Double Clevis)



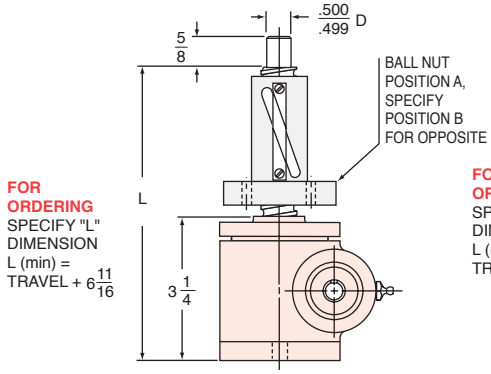
1HL-BSJ-UK
(Upright Keyed)



1HL-BSJ-IK
(Inverted Keyed)

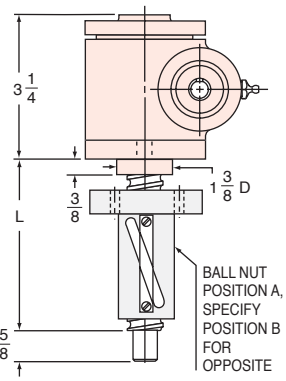


1HL-BSJ-UR
(Upright Rotating)



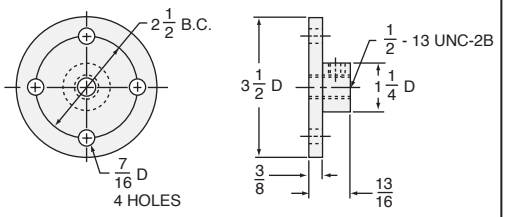
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6 11/16

1HL-BSJ-IR
(Inverted Rotating)

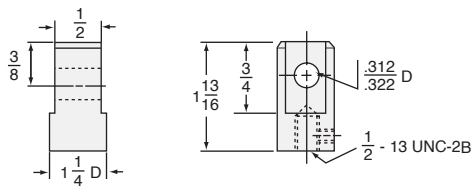


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 3 13/16

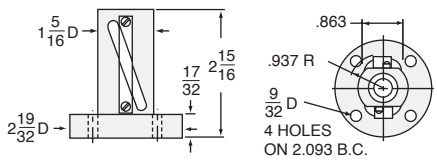
TOP PLATE (optional): B9000-00-11



CLEVIS END (optional): B9001-00-11



BALL NUT & FLANGE DIMENSIONS



1HL-BSJ STANDARD SCREW

SCREW:	0750-0500
ROOT DIAMETER:	0.602
DRAG TORQUE:	3 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	8
PER INCH TRAVEL:	.04
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
5:1	10	.0241 in.-lbs.	.0265 in.-lbs.	1/2	654 rpm	595 rpm	747 lbs.	680 lbs.
20:1	40	.0114 in.-lbs.	.0125 in.-lbs.	1/4	691 rpm	628 rpm	790 lbs.	718 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

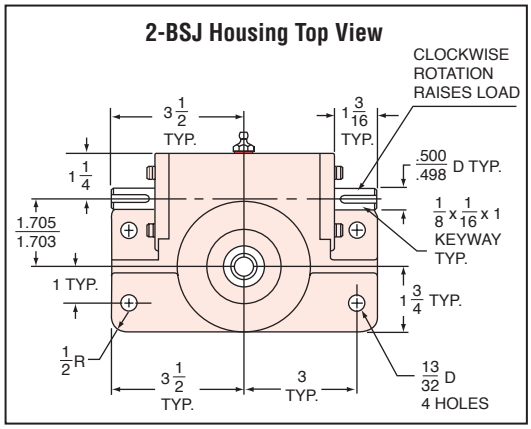
INCH BALL SCREW JACKS

2-BSJ

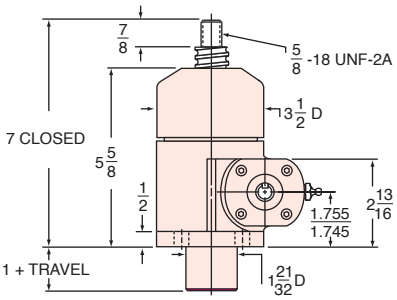
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

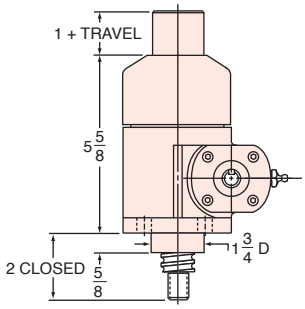
2-BSJ Housing Top View



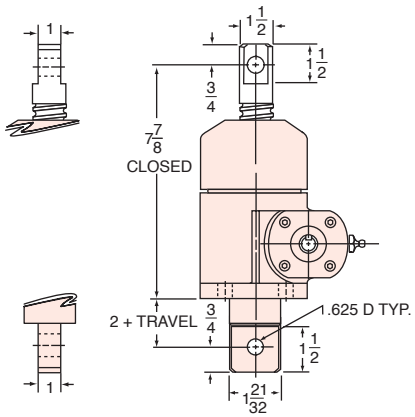
2-BSJ-U
(Upright)



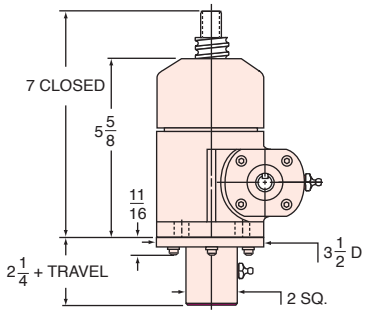
2-BSJ-I
(Inverted)



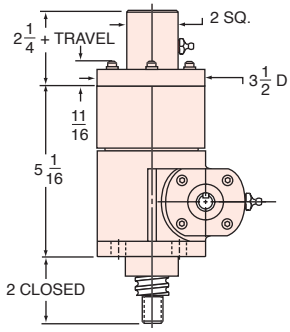
2-BSJ-DC
(Double Clevis)



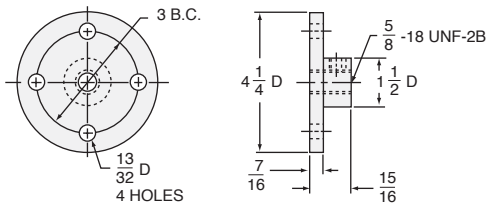
2-BSJ-UK
(Upright Keyed)



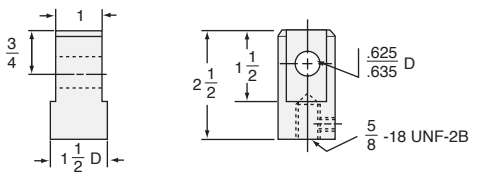
2-BSJ-IK
(Inverted Keyed)



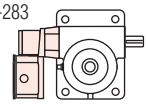
TOP PLATE (optional): B9000-00-01



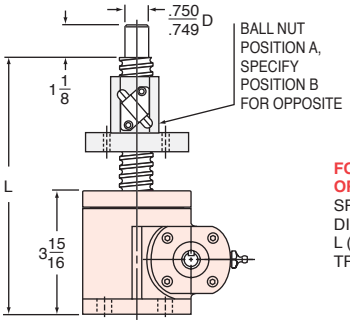
CLEVIS END (optional): B9001-00-01



ROTARY LIMIT SWITCH
see page 282-283

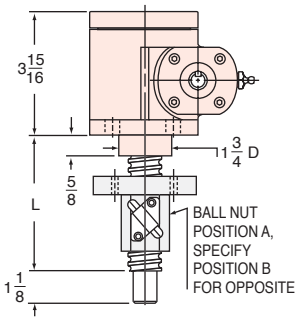


2-BSJ-UR
(Upright Rotating)



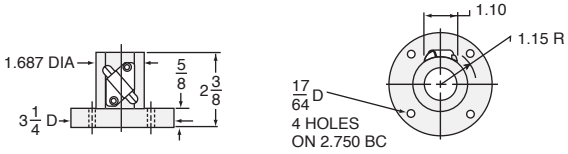
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 7 5/16

2-BSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4

BALL NUT & FLANGE DIMENSIONS



2-BSJ STANDARD SCREW

SCREW:	1000-0250
ROOT DIAMETER:	0.820
DRAG TORQUE:	4 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	18
PER INCH TRAVEL:	.6
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	24	.0100 in.-lbs.	.0110 in.-lbs.	2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.
12:1	48	.0064 in.-lbs.	.0070 in.-lbs.	1 1/2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.
24:1	96	.0043 in.-lbs.	.0047 in.-lbs.	1/2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

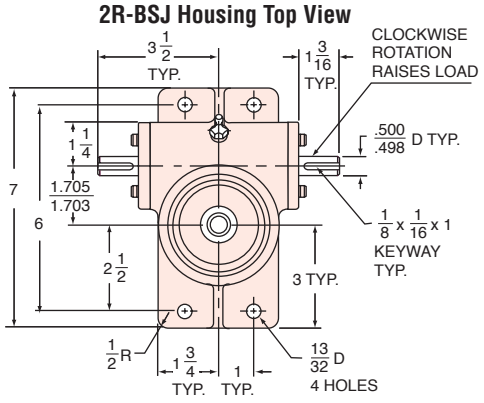
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

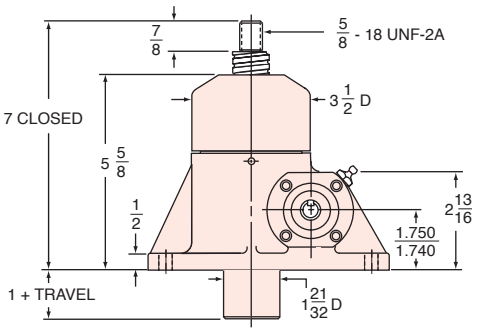
2R-BSJ

INCH BALL SCREW JACKS

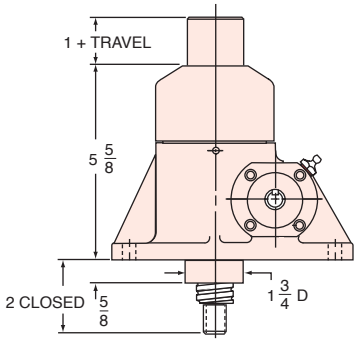
2R-BSJ Housing Top View



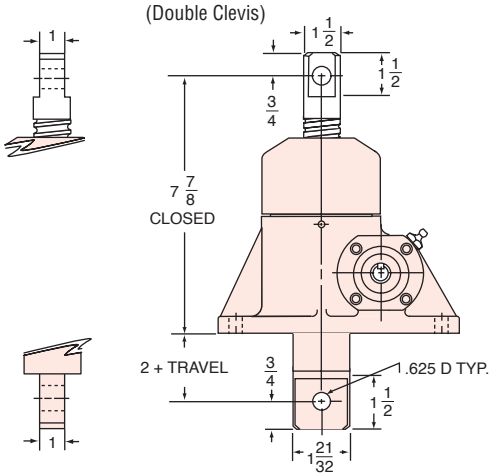
2R-BSJ-U (Upright)



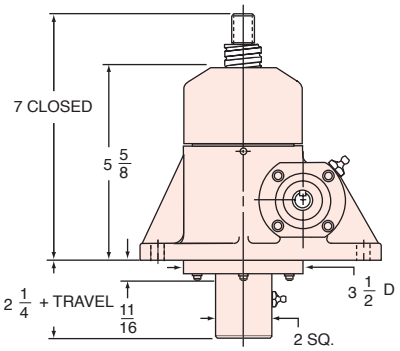
2R-BSJ-I (Inverted)



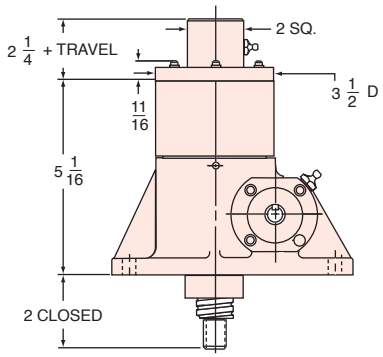
2R-BSJ-DC (Double Clevis)



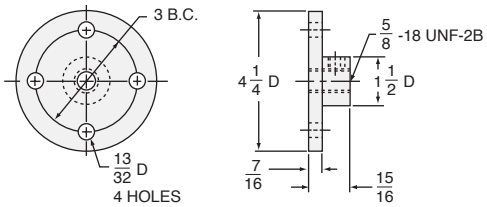
2R-BSJ-UK (Upright Keyed)



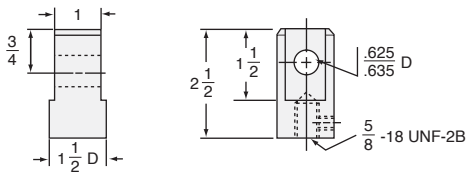
2R-BSJ-IK (Inverted Keyed)



TOP PLATE (optional): B9000-00-01

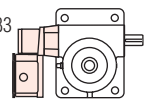


CLEVIS END (optional): B9001-00-01

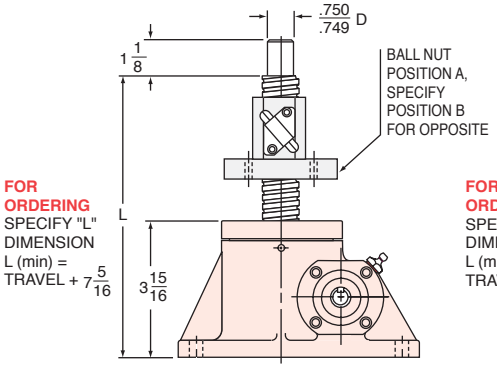


ROTARY LIMIT SWITCH

see page 282-283

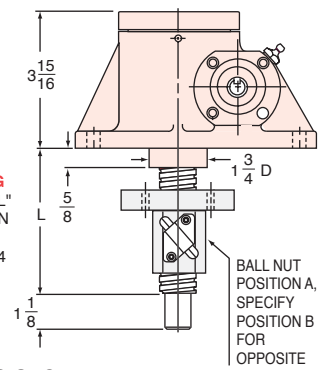


2R-BSJ-UR (Upright Rotating)



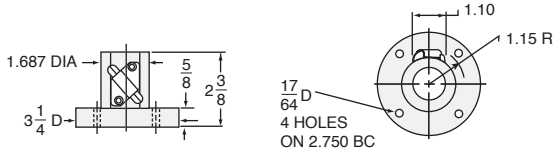
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 7 5/16

2R-BSJ-IR (Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4

BALL NUT & FLANGE DIMENSIONS



2R-BSJ STANDARD SCREW

SCREW:	1000-0250
ROOT DIAMETER:	0.820
DRAG TORQUE:	4 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	18
PER INCH TRAVEL:	.6
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	24	.0100 in.-lbs.	.0110 in.-lbs.	2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.
12:1	48	.0064 in.-lbs.	.0070 in.-lbs.	1 1/2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.
24:1	96	.0043 in.-lbs.	.0047 in.-lbs.	1/2	1800 rpm	1636 rpm	4000 lbs.	3740 lbs.

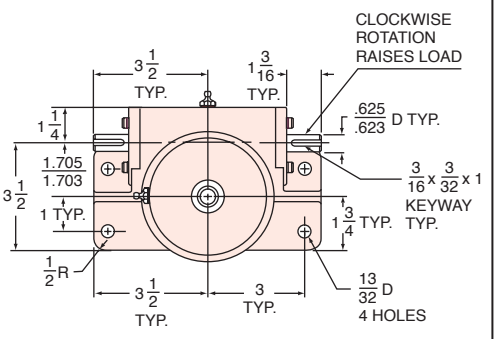
CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

3-BSJ

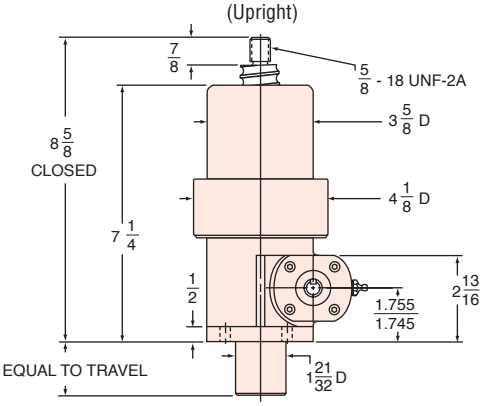
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

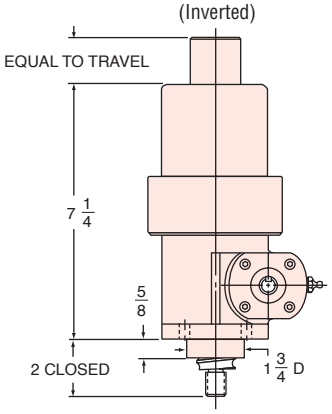
3-BSJ Housing Top View



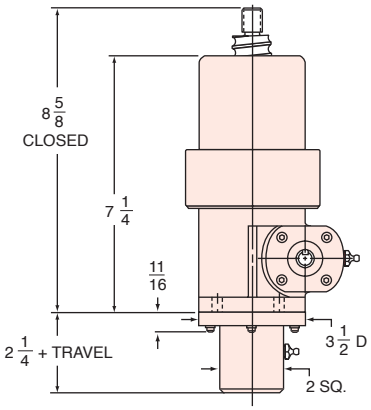
3-BSJ-U (Upright)



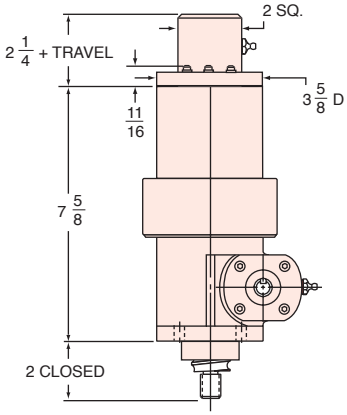
3-BSJ-I (Inverted)



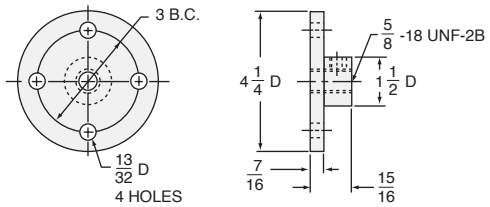
3-BSJ-UK (Upright Keyed)



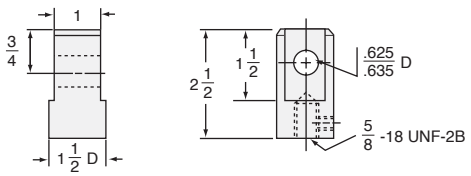
3-BSJ-IK (Inverted Keyed)



TOP PLATE (optional): B9000-00-01

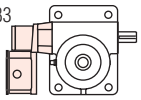


CLEVIS END (optional): B9001-00-01

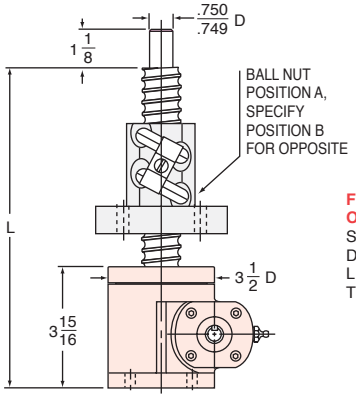


ROTARY LIMIT SWITCH

see page 282-283

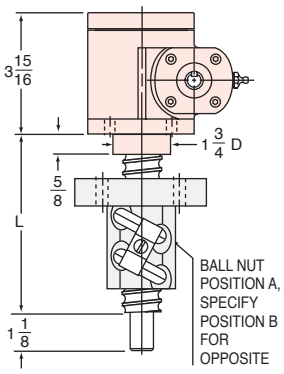


3-BSJ-UR (Upright Rotating)



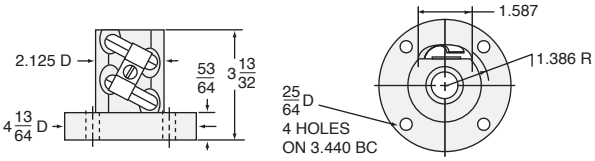
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $8\frac{11}{32}$

3-BSJ-IR (Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $5\frac{1}{32}$

BALL NUT & FLANGE DIMENSIONS



3-BSJ STANDARD SCREW

SCREW:	1171-0413
ROOT DIAMETER:	0.870
DRAG TORQUE:	6 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	18.5
PER INCH TRAVEL:	.6
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	14.53	.0167 in.-lbs.	.0184 in.-lbs.	2	1260 rpm	1142 rpm	4313 lbs.	3914 lbs.
24:1	58.10	.0070 in.-lbs.	.0077 in.-lbs.	1/2	750 rpm	682 rpm	2572 lbs.	2338 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

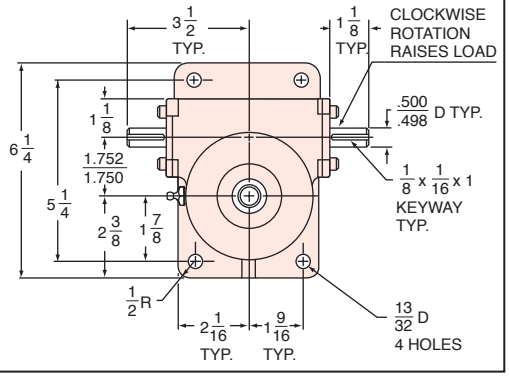
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

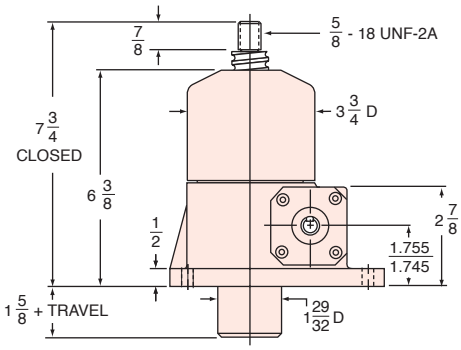
2.5HL-BSJ

INCH BALL SCREW JACKS

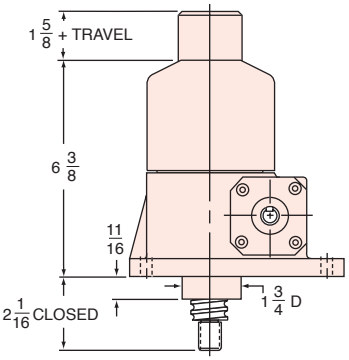
2.5HL-BSJ Housing Top View



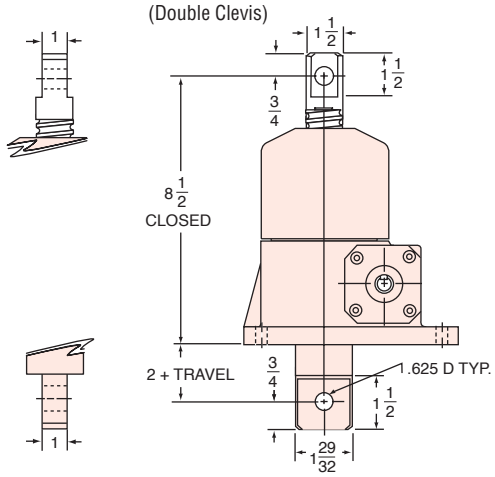
2.5HL-BSJ-U (Upright)



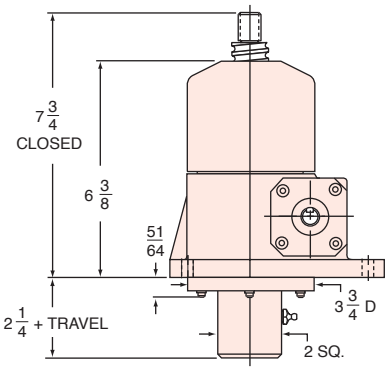
2.5HL-BSJ-I (Inverted)



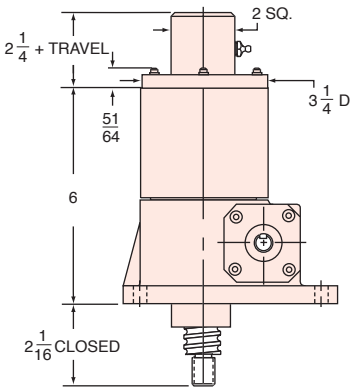
2.5HL-BSJ-DC (Double Clevis)



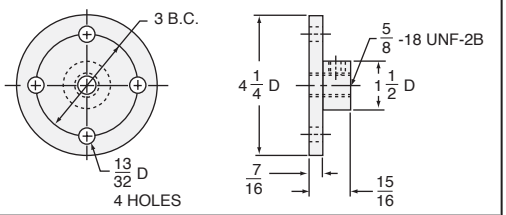
2.5HL-BSJ-UK (Upright Keyed)



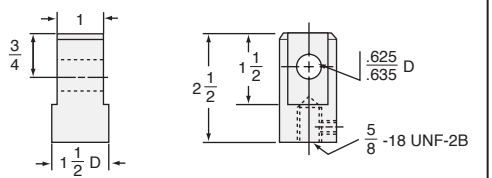
2.5HL-BSJ-IK (Inverted Keyed)



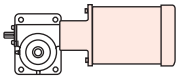
TOP PLATE (optional): B9000-00-01



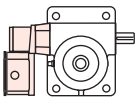
CLEVIS END (optional): B9001-00-01



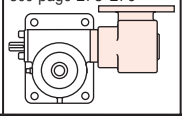
MOTORS see page 276
MOTOR MOUNTS see page 275



ROTARY LIMIT SWITCH see page 282-283

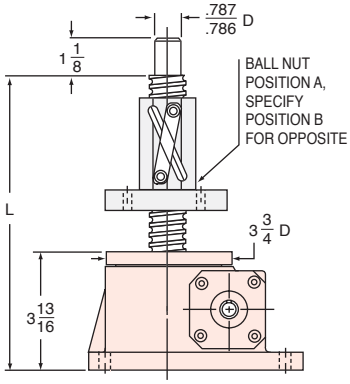


SECONDARY REDUCER see page 278-279



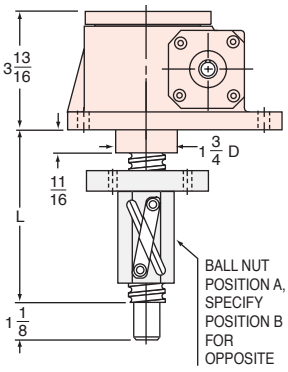
2.5HL-BSJ-UR (Upright Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 7 27/32

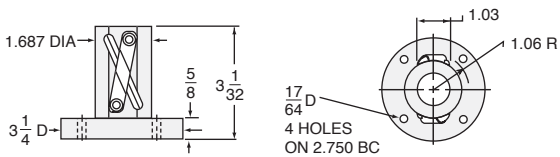


2.5HL-BSJ-IR (Inverted Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4 23/32



BALL NUT & FLANGE DIMENSIONS



2.5HL-BSJ STANDARD SCREW

SCREW:	1000-1000
ROOT DIAMETER:	0.820
DRAG TORQUE:	5 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	17
PER INCH TRAVEL:	.6
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	6	.0404 in.-lbs.	.0444 in.-lbs.	2	624 rpm	567 rpm	1783 lbs.	1620 lbs.
12:1	12	.0244 in.-lbs.	.0268 in.-lbs.	1 1/2	775 rpm	705 rpm	2214 lbs.	2013 lbs.
24:1	24	.0170 in.-lbs.	.0187 in.-lbs.	1/2	371 rpm	337 rpm	1059 lbs.	964 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

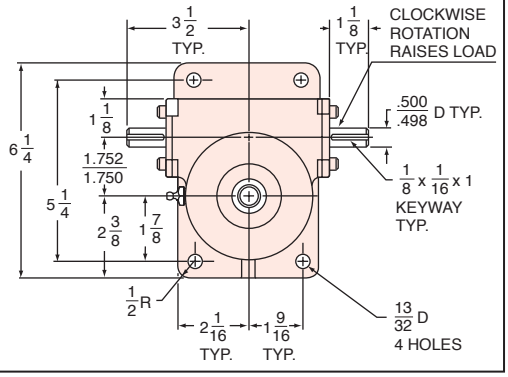
INCH BALL SCREW JACKS

2.5-BSJ

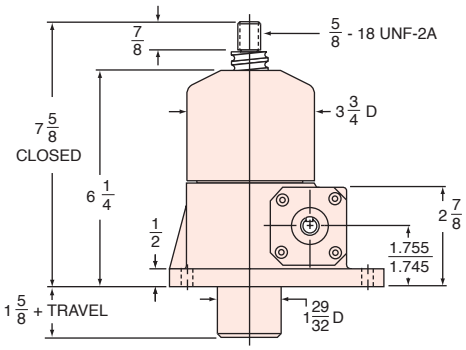
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

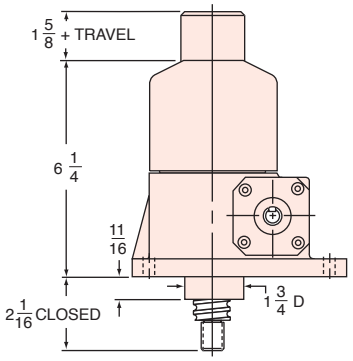
2.5 BSJ Housing Top View



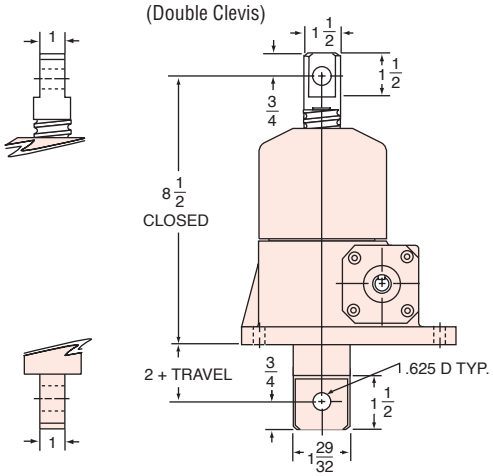
2.5-BSJ-U
(Upright)



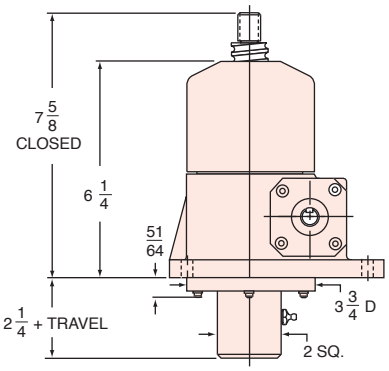
2.5-BSJ-I
(Inverted)



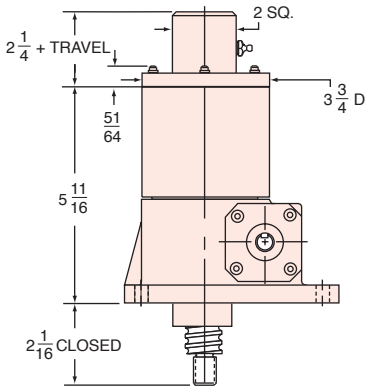
2.5-BSJ-DC
(Double Clevis)



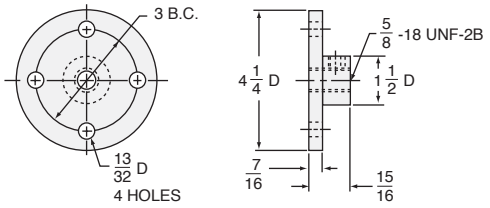
2.5-BSJ-UK
(Upright Keyed)



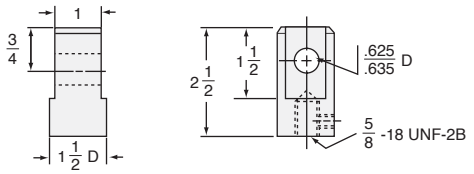
2.5-BSJ-IK
(Inverted Keyed)



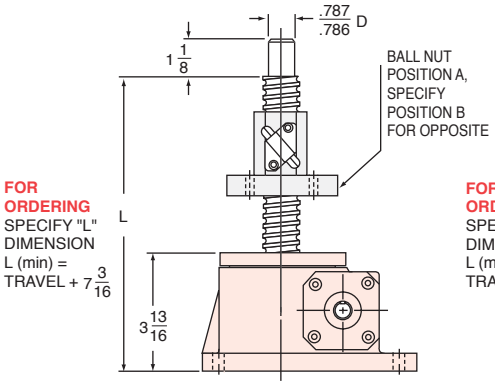
TOP PLATE (optional): B9000-00-01



CLEVIS END (optional): B9001-00-01

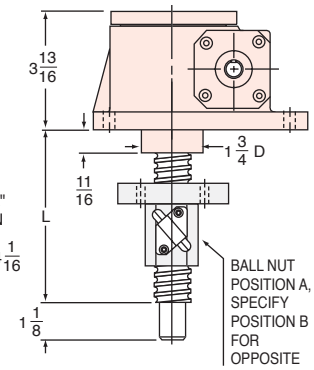


2.5-BSJ-UR
(Upright Rotating)



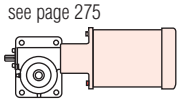
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 7 3/16

2.5-BSJ-IR
(Inverted Rotating)

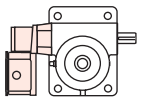


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4 1/16

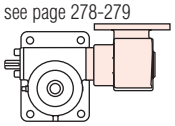
MOTORS
see page 276
MOTOR MOUNTS
see page 275



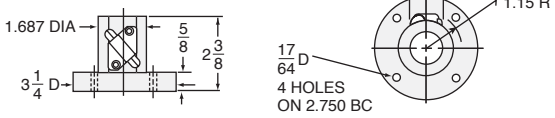
ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279



BALL NUT & FLANGE DIMENSIONS



2.5-BSJ STANDARD SCREW

SCREW:	1000-0250
ROOT DIAMETER:	0.820
DRAG TORQUE:	5 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	17
PER INCH TRAVEL:	0.6
GREASE:	0.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	24	.0102 in.-lbs.	.0112 in.-lbs.	2	1800 rpm	1636 rpm	5000 lbs.	4674 lbs.
12:1	48	.0061 in.-lbs.	.0067 in/-lbs.	1 1/2	1800 rpm	1636 rpm	5000 lbs.	4674 lbs.
24:1	96	.0042 in.-lbs.	.0046 in.-lbs.	1/2	1500 rpm	1370 rpm	4287 lbs.	3914 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

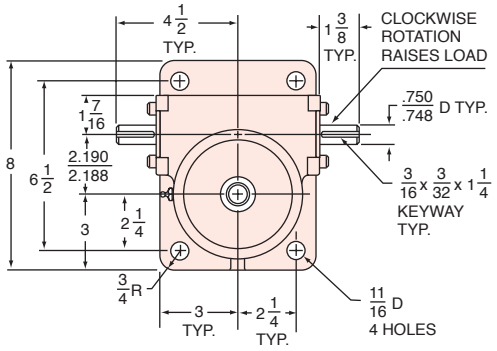
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

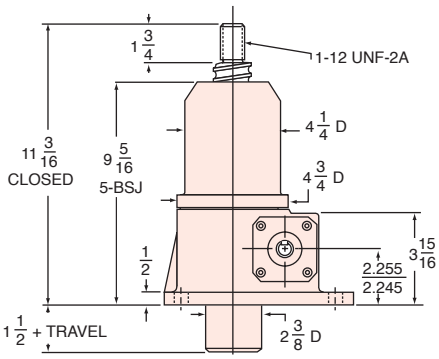
5-BSJ & 5HL-BSJ

INCH BALL SCREW JACKS

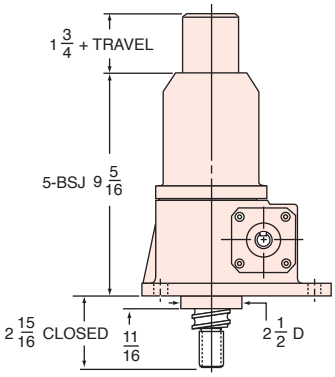
5-BSJ and 5HL-BSJ Housing Top View



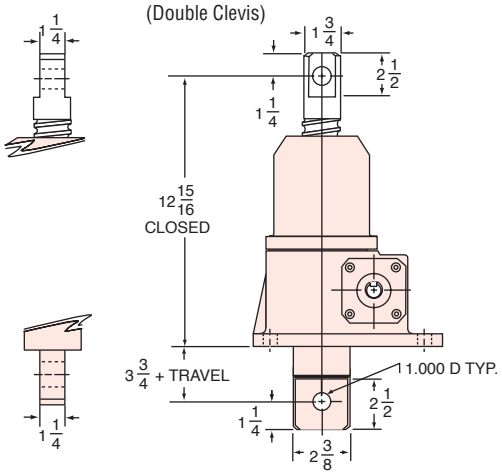
5-BSJ-U and 5HL-BSJ-U
(Upright)



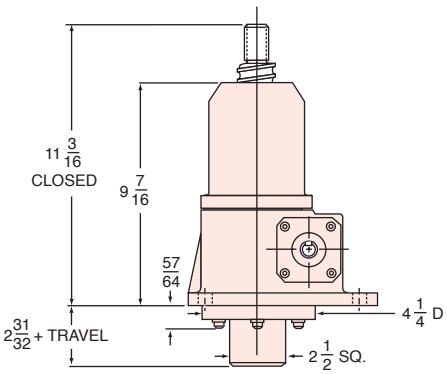
5-BSJ-I and 5HL-BSJ-I
(Inverted)



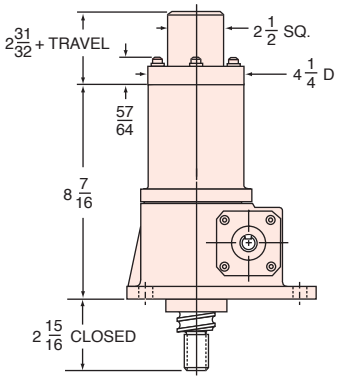
5-BSJ-DC and 5HL-BSJ-DC
(Double Clevis)



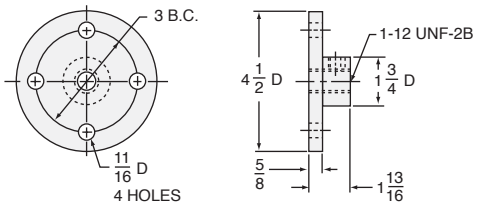
5-BSJ-UK and 5HL-BSJ-UK
(Upright Keyed)



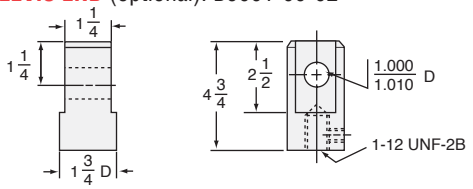
5-BSJ-IK and 5HL-BSJ-IK
(Inverted Keyed)



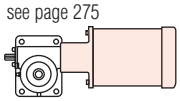
TOP PLATE (optional): B9000-00-02



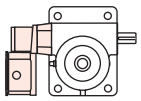
CLEVIS END (optional): B9001-00-02



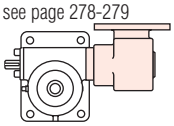
MOTORS see page 276
MOTOR MOUNTS see page 275



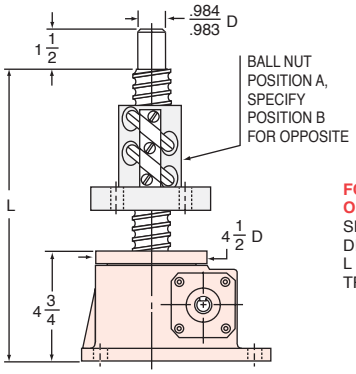
ROTARY LIMIT SWITCH see page 282-283



SECONDARY REDUCER see page 278-279

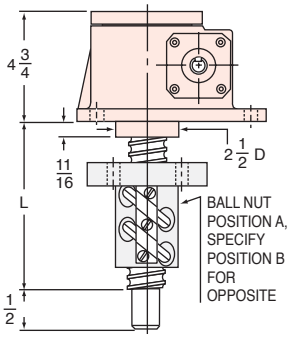


5-BSJ-UR and 5HL-BSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 10 1/16

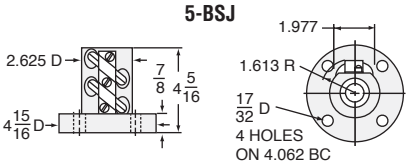
5-BSJ-IR and 5HL-BSJ-IR
(Inverted Rotating)



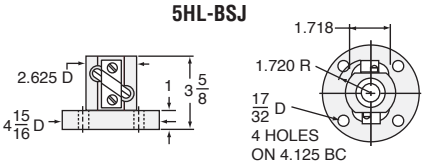
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6

BALL NUT & FLANGE DIMENSIONS

5-BSJ



5HL-BSJ



5-BSJ and 5HL-BSJ SCREW

SCREW (5-BSJ):	1500-0473
(5HL-BSJ):	1500-1000
ROOT DIAMETER:	1.140
DRAG TORQUE:	10 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	35
PER INCH TRAVEL:	.6
GREASE:	1

	RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
5-BSJ	6:1	12.66	.0183 in.-lbs.	.0201 in.-lbs.	3	1033 rpm	941 rpm	5904 lbs.	5375 lbs.
5-BSJ	24:1	50.66	.0073 in.-lbs.	.0080 in.-lbs.	3/4	647 rpm	590 rpm	3700 lbs.	3376 lbs.
5HL-BSJ	6:1	6	.0387 in.-lbs.	.0426 in-lbs.	3	488 rpm	444 rpm	2792 lbs.	2537 lbs.
5HL-BSJ	24:1	24	.0153 in.-lbs.	.0168 in.-lbs.	3/4	308 rpm	280 rpm	1765 lbs.	1600 lbs.

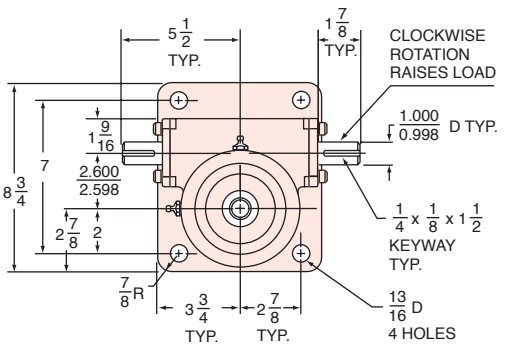
CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

10-BSJ & 10HL-BSJ

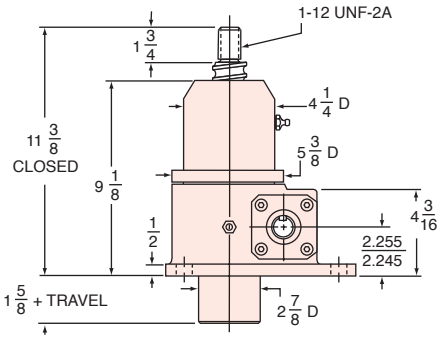
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

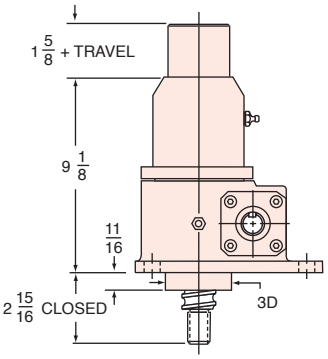
10-BSJ and 10HL-BSJ Housing Top View



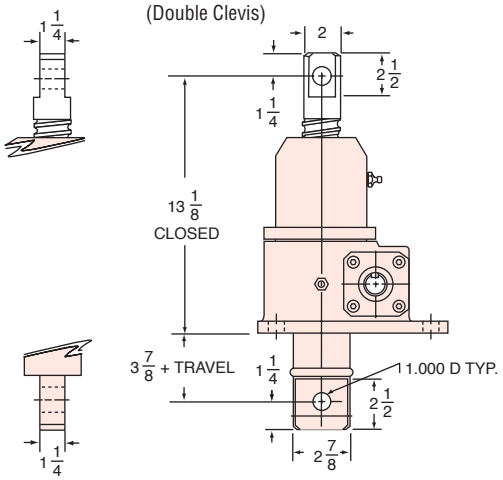
10-BSJ-U and 10HL-BSJ-U (Upright)



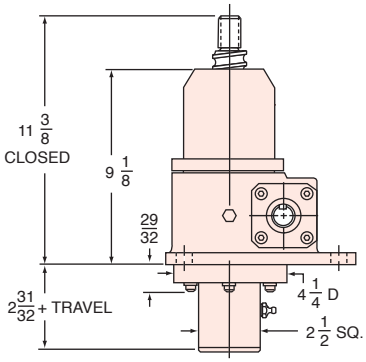
10-BSJ-I and 10HL-BSJ-I (Inverted)



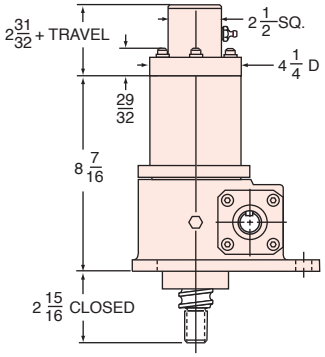
10-BSJ-DC and 10HL-BSJ-DC (Double Clevis)



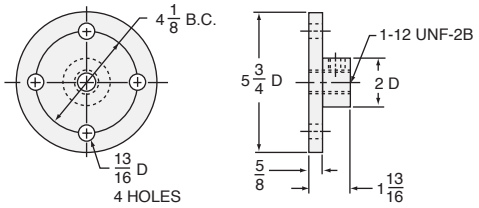
10-BSJ-UK and 10HL-BSJ-UK (Upright Keyed)



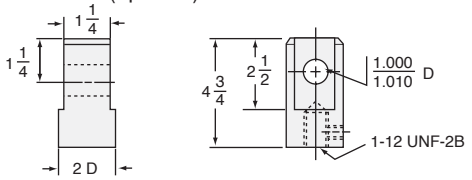
10-BSJ-IK and 10HL-BSJ-IK (Inverted Keyed)



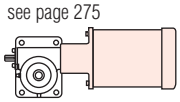
TOP PLATE (optional): B9000-00-04



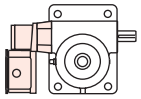
CLEVIS END (optional): B9001-00-04



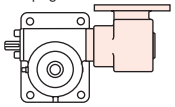
MOTORS see page 276
MOTOR MOUNTS see page 275



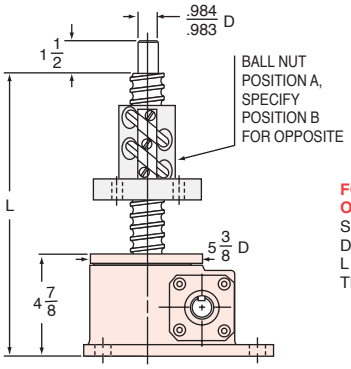
ROTARY LIMIT SWITCH see page 282-283



SECONDARY REDUCER see page 278-279

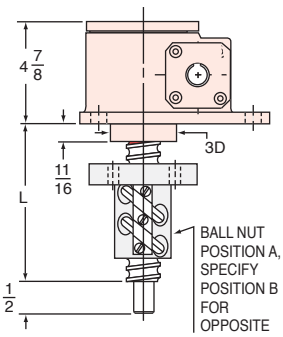


10-BSJ-UR and 10HL-BSJ-UR (Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 10 3/16

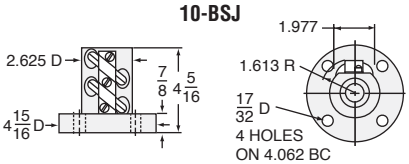
10-BSJ-IR and 10HL-BSJ-IR (Inverted Rotating)



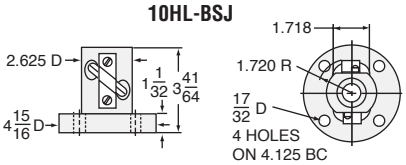
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6

BALL NUT & FLANGE DIMENSIONS

10-BSJ



10HL-BSJ



10-BSJ and 10HL-BSJ SCREW

SCREW (10-BSJ):	1500-0473
(10HL-BSJ):	1500-1000
ROOT DIAMETER:	1.140
DRAG TORQUE:	20 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	50
PER INCH TRAVEL:	.8
GREASE:	1.5

	RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
10-BSJ	8:1	16.88	.0151 in.-lbs.	.0166 in.-lbs.	5	1043 rpm	949 rpm	11925 lbs.	10847 lbs.
10-BSJ	24:1	50.66	.0077 in.-lbs.	.0085 in.-lbs.	1½	618 rpm	556 rpm	7016 lbs.	6355 lbs.
10HL-BSJ	8:1	8	.0319 in.-lbs.	.0351 in.-lbs.	5	494 rpm	449 rpm	5645 lbs.	5132 lbs.
10HL-BSJ	24:1	24	.0162 in.-lbs.	.0178 in.-lbs.	1½	293 rpm	266 rpm	3334 lbs.	3044 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

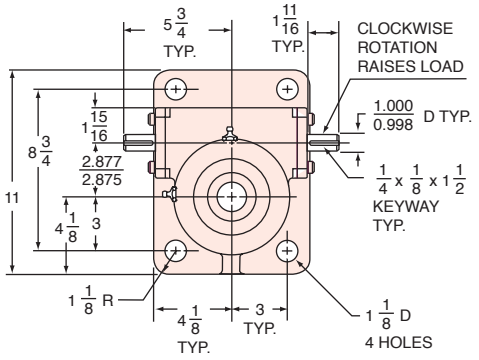
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

20-BSJ & 20HL-BSJ

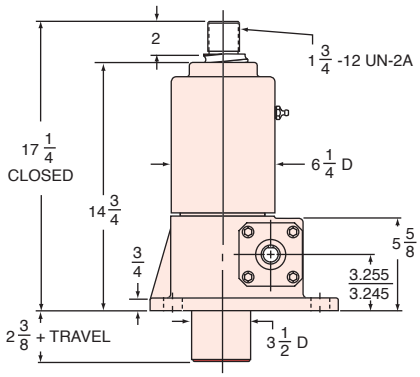
INCH BALL SCREW JACKS

20-BSJ and 20HL-BSJ Housing Top View



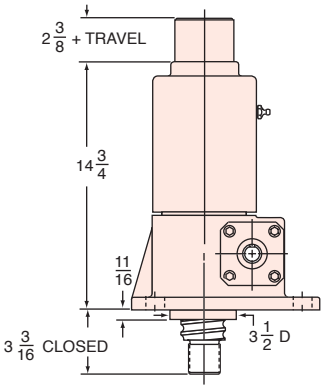
20-BSJ-U and 20HL-BSJ-U

(Upright)



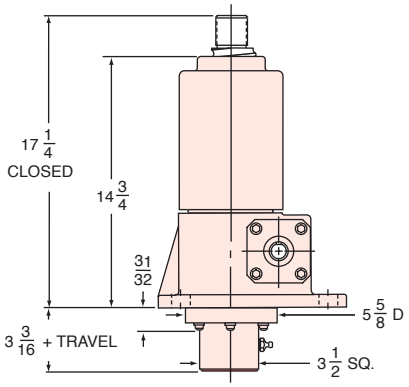
20-BSJ-I and 20HL-BSJ-I

(Inverted)



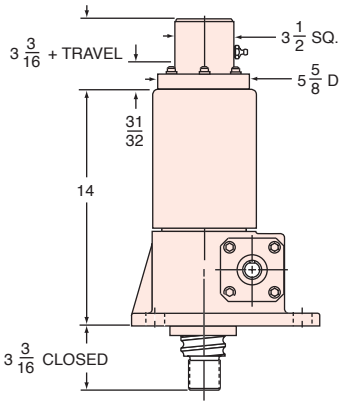
20-BSJ-UK and 20HL-BSJ-UK

(Upright Keyed)

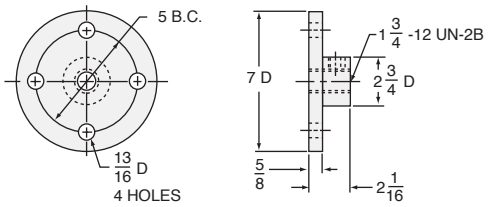


20-BSJ-IK and 20HL-BSJ-IK

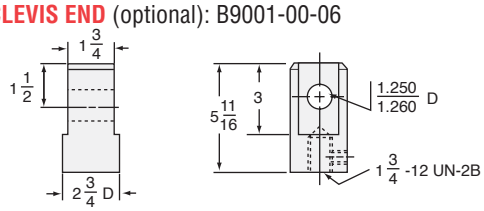
(Inverted Keyed)



TOP PLATE (optional): B9000-00-06

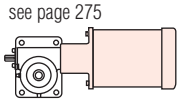


CLEVIS END (optional): B9001-00-06

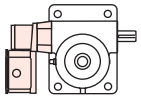


MOTORS see page 276

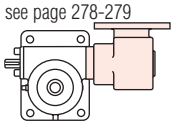
MOTOR MOUNTS see page 275



ROTARY LIMIT SWITCH see page 282-283

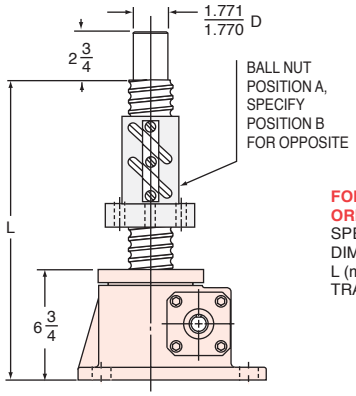


SECONDARY REDUCER see page 278-279



20-BSJ-UR and 20HL-BSJ-UR

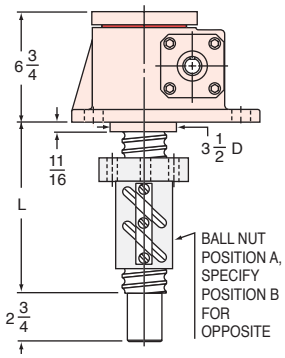
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 14 1/2

20-BSJ-IR and 20HL-BSJ-IR

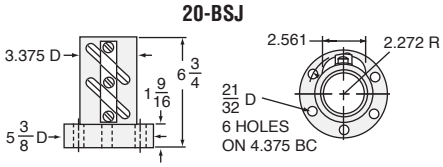
(Inverted Rotating)



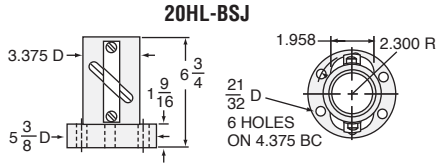
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 8 7/16

BALL NUT & FLANGE DIMENSIONS

20-BSJ



20HL-BSJ



20-BSJ and 20HL-BSJ SCREW

SCREW (20-BSJ):	2250-0500
(20HL-BSJ):	2250-1000
ROOT DIAMETER:	1.850
DRAG TORQUE:	40 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	85
PER INCH TRAVEL:	1.5
GREASE:	2.2

RATIO		TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
20-BSJ	8:1	16	.0157 in.-lbs.	.0173 in.-lbs.	7½	755 rpm	683 rpm	17204 lbs.	15613 lbs.
	24:1	48	.0079 in.-lbs.	.0087 in.-lbs.	2½	501 rpm	453 rpm	11397 lbs.	10349 lbs.
20HL-BSJ	8:1	8	.0313 in.-lbs.	.0344 in.-lbs.	7½	377 rpm	343 rpm	8629 lbs.	7840 lbs.
	24:1	24	.0157 in.-lbs.	.0173 in.-lbs.	2½	251 rpm	228 rpm	5737 lbs.	5211 lbs.

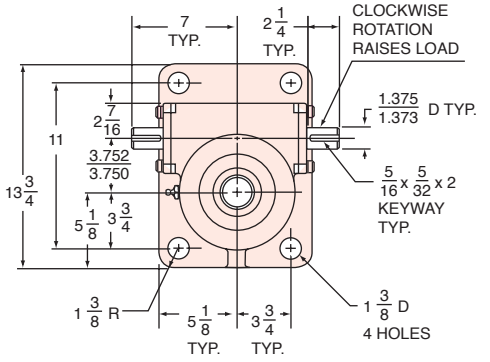
CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

30-BSJ & 30HL-BSJ

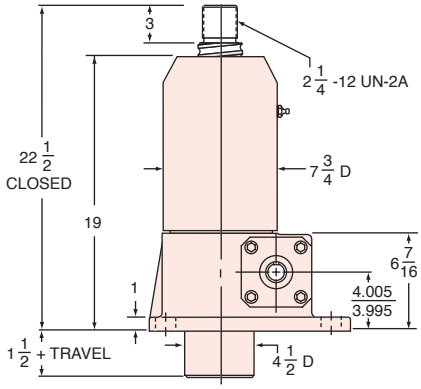
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

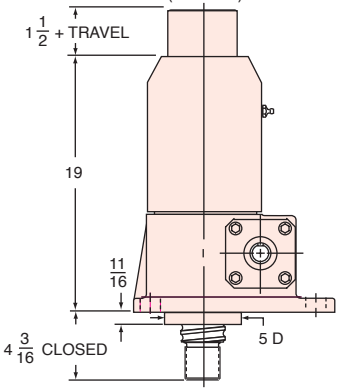
30-BSJ and 30HL-BSJ Housing Top View



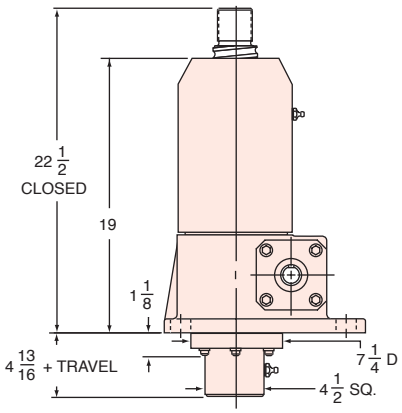
30-BSJ-U and 30HL-BSJ-U
(Upright)



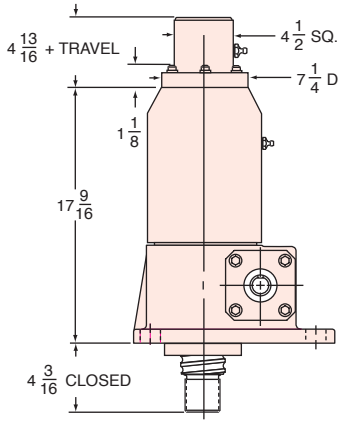
30-BSJ-I and 30HL-BSJ-I
(Inverted)



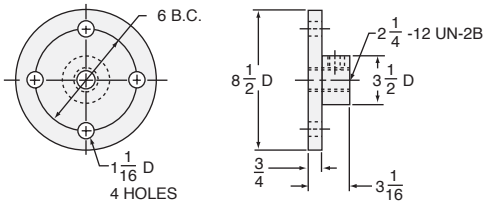
30-BSJ-UK and 30HL-BSJ-UK
(Upright Keyed)



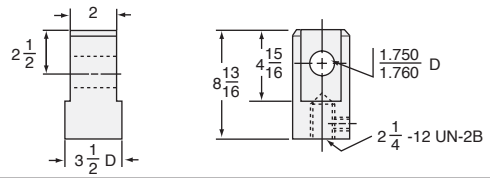
30-BSJ-IK and 30HL-BSJ-IK
(Inverted Keyed)



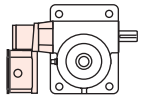
TOP PLATE (optional): B9000-00-08



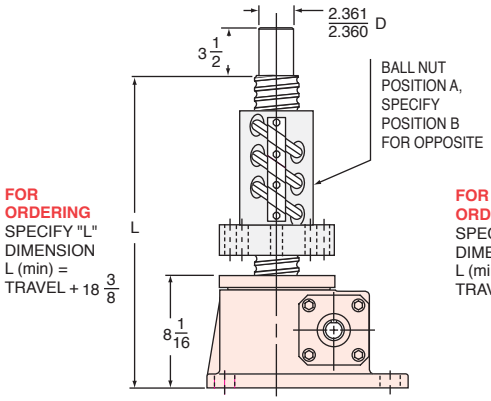
CLEVIS END (optional): B9001-00-07



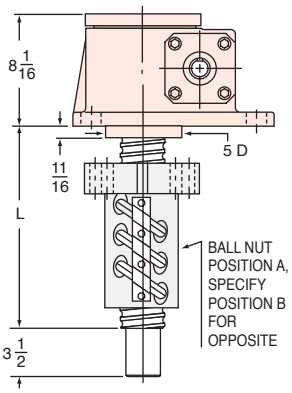
ROTARY LIMIT SWITCH
see page 282-283



30-BSJ-UR and 30HL-BSJ-UR
(Upright Rotating)

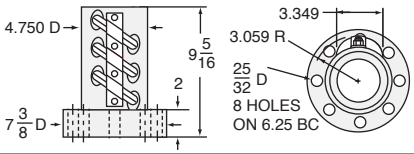


30-BSJ-IR and 30HL-BSJ-IR
(Inverted Rotating)

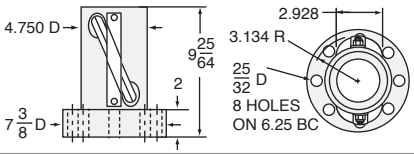


BALL NUT & FLANGE DIMENSIONS

30-BSJ



30HL-BSJ



30-BSJ and 30HL-BSJ SCREW

SCREW (30-BSJ):	3000-0660
(30HL-BSJ):	3000-1500
ROOT DIAMETER:	2.480
DRAG TORQUE:	60 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	220
PER INCH TRAVEL:	2.4
GREASE:	3.5

	RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
30-BSJ	10 2/3:1	16.16	.0162 in.-lbs.	.0178 in.-lbs.	11	715 rpm	649 rpm	24515 lbs.	22250 lbs.
30-BSJ	32:1	48.48	.0084 in.-lbs.	.0092 in.-lbs.	3 1/2	438 rpm	399 rpm	15006 lbs.	13680 lbs.
30HL-BSJ	10 2/3:1	7.11	.0367 in.-lbs.	.0404 in.-lbs.	11	315 rpm	286 rpm	10794 lbs.	9805 lbs.
30HL-BSJ	32:1	21.33	.0191 in.-lbs.	.0210 in.-lbs.	3 1/2	193 rpm	175 rpm	6600 lbs.	6000 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

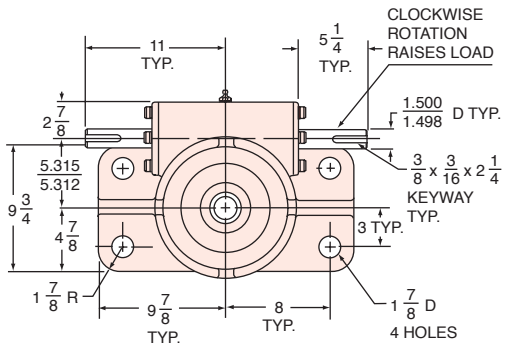
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

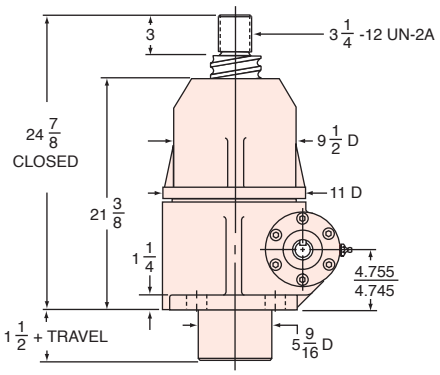
50-BSJ

INCH BALL SCREW JACKS

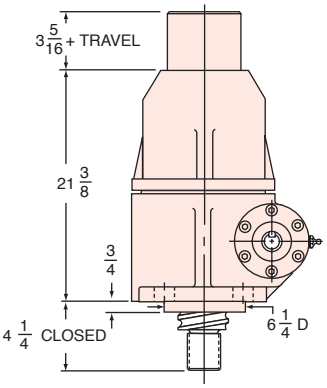
50-BSJ Housing Top View



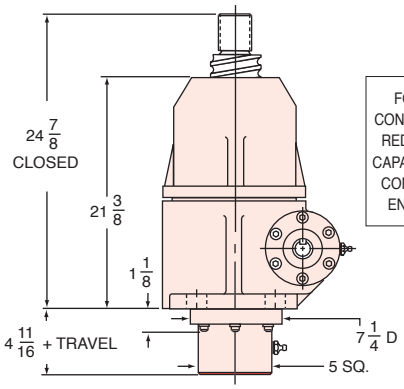
50-BSJ-U (Upright)



50-BSJ-I (Inverted)

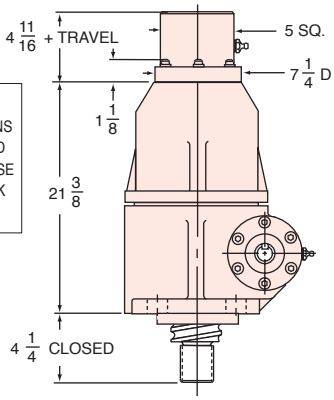


50-BSJ-UK (Upright Keyed)

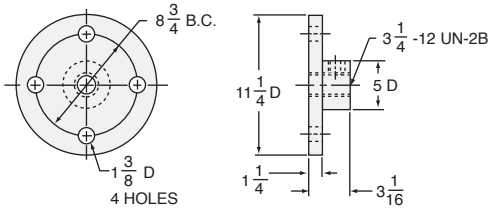


FOR KEYED CONFIGURATIONS REDUCED LOAD CAPACITY, PLEASE CONTACT NOOK ENGINEERING

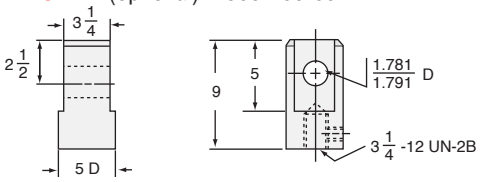
50-BSJ-IK (Inverted Keyed)



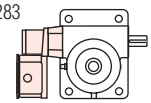
TOP PLATE (optional): B9000-00-09



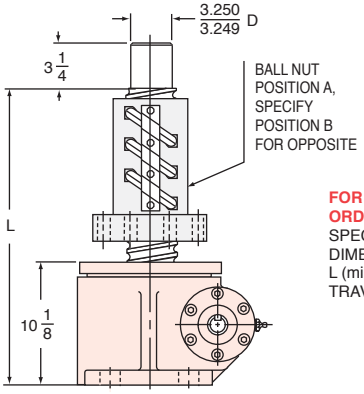
CLEVIS END (optional): B9001-00-09



ROTARY LIMIT SWITCH
see page 282-283

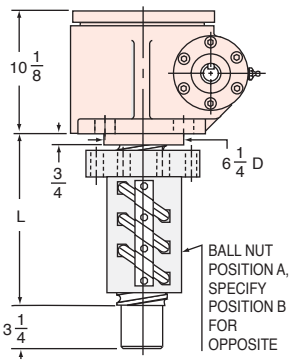


50-BSJ-UR (Upright Rotating)



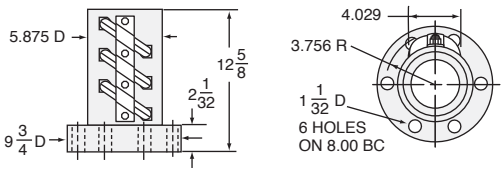
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 24 1/2

50-BSJ-IR (Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 14 3/8

BALL NUT & FLANGE DIMENSIONS



50-BSJ STANDARD SCREW

SCREW:	4000-1000
ROOT DIAMETER:	3.338
DRAG TORQUE:	90 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	490
PER INCH TRAVEL:	5.0
GREASE:	5.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	10.66	.0256 in.-lbs.	.0281 in.-lbs.	16	394 rpm	359 rpm	22509 lbs.	20506 lbs.
32:1	32	.0139 in.-lbs.	.0152 in.-lbs.	5	227 rpm	207 rpm	12955 lbs.	11847 lbs.

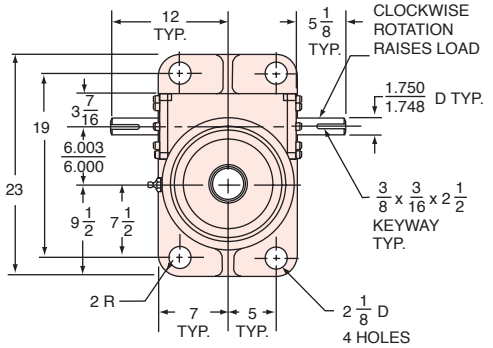
CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

75-BSJ

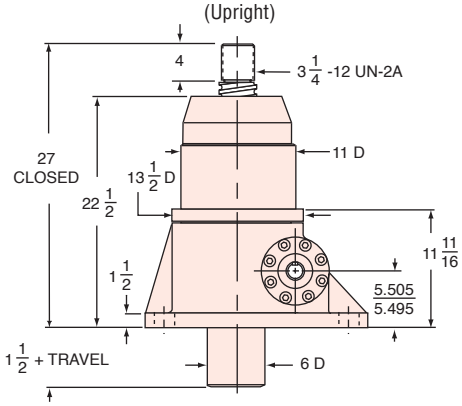
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

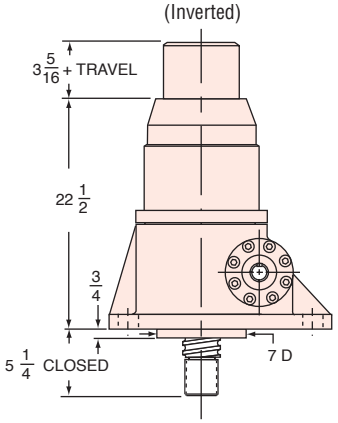
75-BSJ Housing Top View



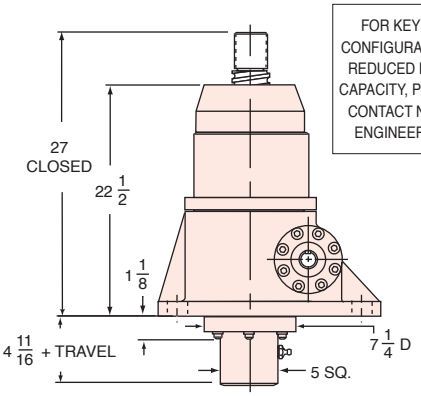
75-BSJ-U (Upright)



75-BSJ-I (Inverted)

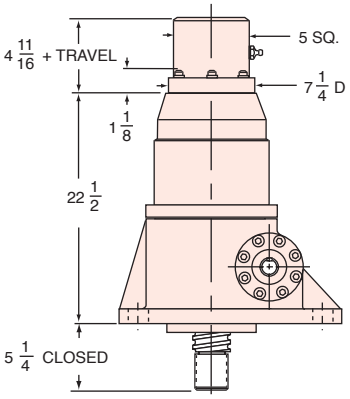


75-BSJ-UK (Upright Keyed)

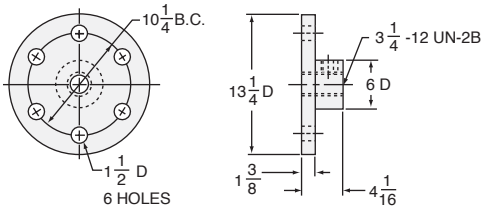


FOR KEYED CONFIGURATIONS REDUCED LOAD CAPACITY, PLEASE CONTACT NOOK ENGINEERING

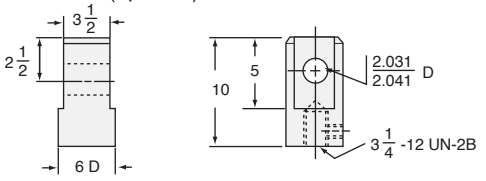
75-BSJ-IK (Inverted Keyed)



TOP PLATE (optional): B9000-00-18

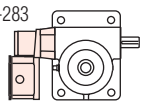


CLEVIS END (optional): B9001-00-18

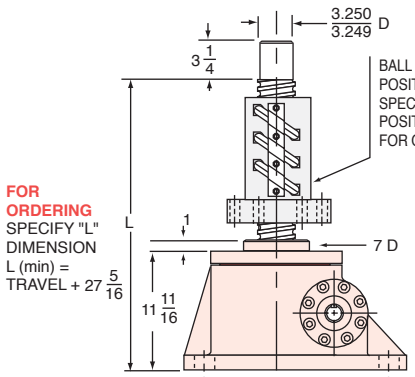


ROTARY LIMIT SWITCH

see page 282-283

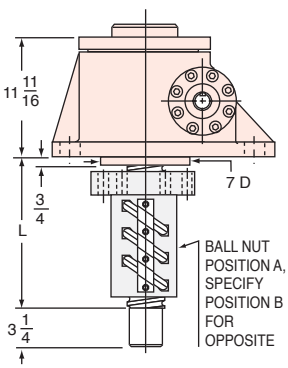


75-BSJ-UR (Upright Rotating)



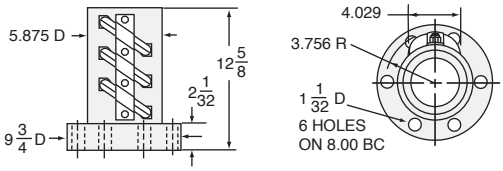
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 27 5/16

75-BSJ-IR (Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 15 3/8

BALL NUT & FLANGE DIMENSIONS



75-BSJ STANDARD SCREW

SCREW:	4000-1000
ROOT DIAMETER:	3.338
DRAG TORQUE:	155 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	650
PER INCH TRAVEL:	5.0
GREASE:	9.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	10.66	.0244 in.-lbs.	.0268 in.-lbs.	28	482 rpm	439 rpm	41326 lbs.	37627 lbs.
32:1	32	.0112 in.-lbs.	.0123 in.-lbs.	9	338 rpm	307 rpm	28970 lbs.	26352 lbs.

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

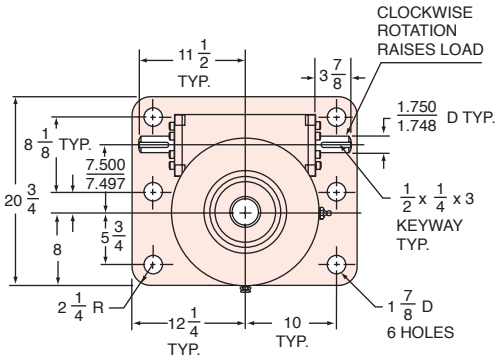
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

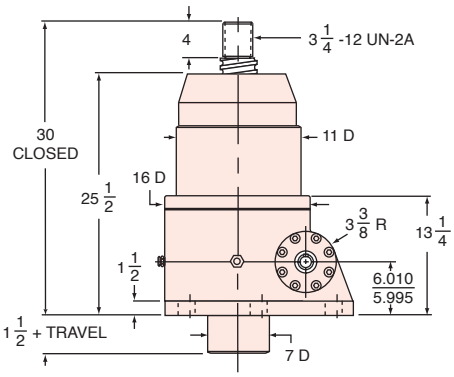
100-BSJ

INCH BALL SCREW JACKS

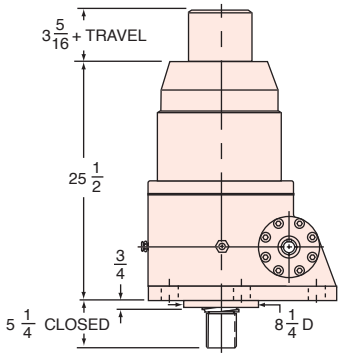
100-BSJ Housing Top View



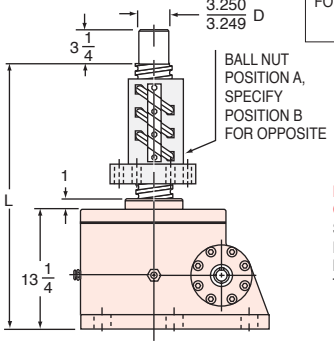
100-BSJ-U (Upright)



100-BSJ-I (Inverted)



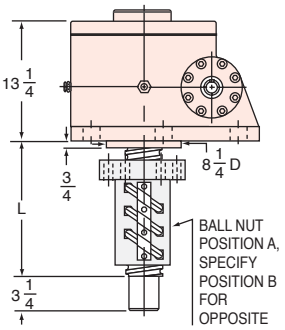
100-BSJ-UR (Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 29 3/8

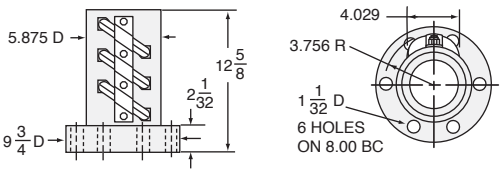
OPTIONAL 6" BALL SCREW AVAILABLE FOR "UR" AND "IR" MODELS

100-BSJ-IR (Inverted Rotating)

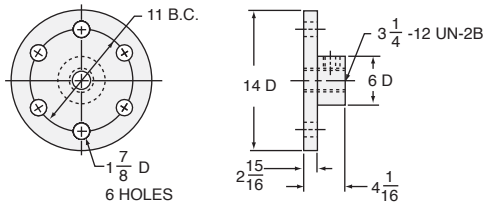


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 15 7/8

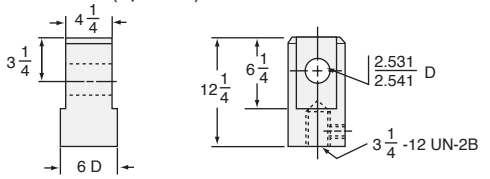
BALL NUT & FLANGE DIMENSIONS



TOP PLATE (optional): B9000-00-19

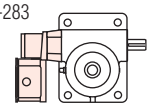


CLEVIS END (optional): B9001-00-19



ROTARY LIMIT SWITCH

see page 282-283



100-BSJ STANDARD SCREW

SCREW:	4000-1000
ROOT DIAMETER:	3.338
DRAG TORQUE:	205 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	1,100
PER INCH TRAVEL:	5.0
GREASE:	16.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	10.66	.0244 in.-lbs.	—	32	413 rpm	—	47232 lbs.	—
32:1	32	.0138 in.-lbs.	—	12 1/2	285 rpm	—	32621 lbs.	—

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

Download Accurate Moveable Assembly 3D Models and 2D Drawings

For ActionJac™ Worm Gear Screw Jacks:

- **Configure** specific requirements for your Worm Gear Screw Jack application in a simple interface, including motor adapter, right angle reducer, bellows boots and limit switch accessories.
- **View** complete assemblies on-line with zoom, pan and rotate capabilities.
- **Download** true assembly models with full range of motion in native AutoCAD®, SolidWorks®, Pro/E®, CATIA®, ParaSolids®, SAT® and many other formats.
- **Order** complete jack assemblies with generated part number.

Download 3D Models

Actionjac WORM GEAR SCREW JACKS

www.nookindustries.com

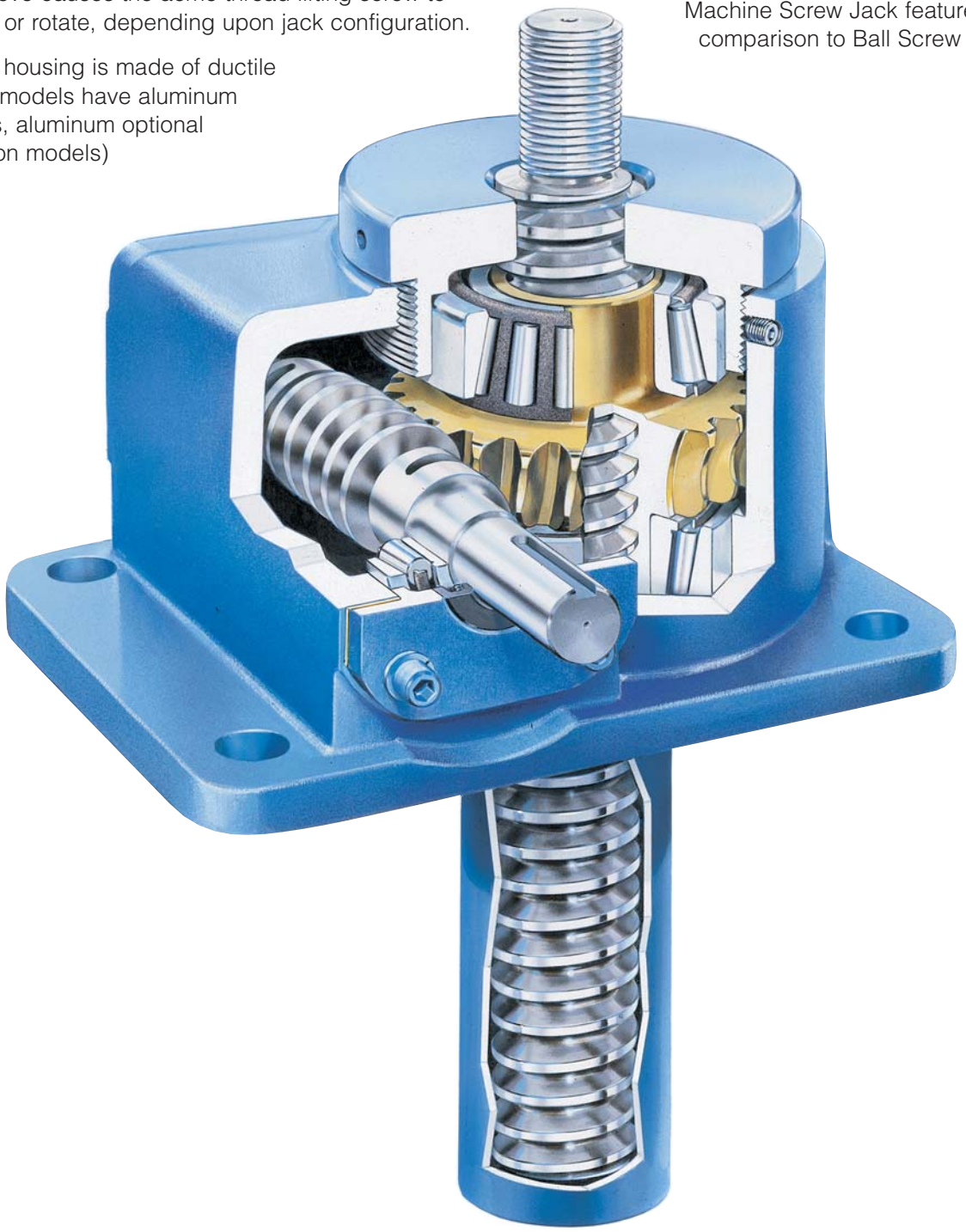
MACHINE SCREW JACKS

The worm gear driven Machine Screw Jack incorporates an alloy steel worm which drives a high strength bronze worm gear (drive sleeve). The worm shaft is supported on anti-friction tapered roller bearings with external seals provided to prevent loss of lubrication (sealed radial bearings on the 1/2 and 1 ton units). The drive sleeve is supported on anti-friction tapered roller or ball thrust bearings. Rotation of the drive sleeve causes the acme thread lifting screw to translate or rotate, depending upon jack configuration.

The jack housing is made of ductile iron (MJ models have aluminum housings, aluminum optional on one ton models)

and proportioned to support the rated capacity of the unit. The lifting screw is made of alloy steel with a minimum tensile strength of 95,000 psi. The threads are precision formed, typically using Class 2-C (Centralizing) tolerances. Jack lift shaft lead tolerance is approximately ±0.004" per foot.

See the technical introduction at the beginning of this section for additional Machine Screw Jack features and comparison to Ball Screw Jacks.



QUICK REFERENCE: INCH MACHINE SCREW JACKS

JACK SIZES					JACK SELECTION								
MODEL	Capacity (tons)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	Page Ref
MJ-20	.5	1/2	.250	.332	5:1	20	19	1/3	1090	631	.019	—	319
MJ-25	.5	5/8	.200	.377	5:1	25	21	1/3	1040	571	.021	—	319
MJ-40	.5	5/8	.125	.457	5:1	40	17	1/3	1260	706	.017	—	319
MJ-50	.5	1/2	.100	.359	5:1	50	14	1/3	1560	857	.014	—	319
MJ-80	.5	1/2	.250	.332	20:1	80	8	1/6	1310	750	.008	—	319
MJ-100	.5	5/8	.200	.377	20:1	100	9	1/6	1210	667	.009	—	319
MJ-160	.5	5/8	.125	.457	20:1	160	7	1/6	1500	857	.007	—	319
MJ-200	.5	1/2	.100	.359	20:1	200	6	1/6	1800	1000	.006	—	319
1-MSJ	1	3/4	.200	.502	5:1	25	45	1/2	700	800	.0225	3	320
					20:1	100	21	1/4	750	857	.0105	3	320
2-MSJ	2	1	.250	.698	6:1	24	100	2	1260	2881	.0250	4	321
					12:1	48	62	1 1/2	1525	3456	.0154	4	321
					24:1	96	42	1/2	750	1715	.0105	4	321
2R-MSJ	2	1	.250	.698	6:1	24	100	2	1260	2881	.0250	4	322
					12:1	48	62	1 1/2	1525	3486	.0154	4	322
					24:1	96	42	1/2	750	1715	.0105	4	322
2.5-MSJ	2 1/2	1	.250	.698	6:1	24	126	2	1000	2858	.0252	5	323
					12:1	48	74	1 1/2	1277	3650	.0148	5	323
					24:1	96	53	1/2	594	1699	.0106	5	323

* Measurements listed are for non-keyed units. See individual jack pages for keyed jack info.

NOTES:

1) The recommended maximum speed is 1800 rpm provided that the recommended horsepower and temperature are not exceeded.

2) Input torque is shown as torque to lift one pound of load. Starting Torque is 100% greater than torque shown. For loads less than 25% of rated loads add tare drag torque.

3) Maximum allowable horsepower ratings are based on a 25% duty cycle. For operation at higher duty cycles or repeated use over any segment of the total travel, temperature must be monitored and remain less than 200°F.

4) Overload capacity of the Machine Screw Jack is as follows: 10% for dynamic loads, 30% for static loads.

5) Machine Screw Jacks having gear ratios between 20:1 and 32:1, are self-locking and will hold loads without backdriving in the absence of vibrations. All other ratios may require a brake to prevent backdriving.

6) All units are suitable for intermittent operation providing that the housing temperature including ambient is not lower than -20°F. or higher than +200°F. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges consult Nook Industries, Inc.

7) Accessories such as boots, limit switches, top plates and clevises are available.

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

QUICK REFERENCE: INCH MACHINE SCREW JACKS

JACK SIZES					JACK SELECTION								
MODEL	Capacity (tons)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	Page Ref
5-MSJ	5	1 1/2	.375	1.066	6:1	16	376	3	500	2873	.0376	10	324
					24:1	64	144	3/4	330	1875	.0144	10	324
10-MSJ	10	2	.500	1.410	8:1	16	753	5	418	4766	.0377	20	325
					24:1	48	384	1 1/2	246	2813	.0192	20	325
15-MSJ	15	2 1/4	.500	1.684	8:1	16	1221	5	258	4424	.0407	20/29	326
					24:1	48	654	1 1/2	144	2478	.0218	20/29	326
20-MSJ	20	2 1/2	.500	1.908	8:1	16	1740	7 1/2	272	6209	.0435	40	327
					24:1	48	873	2 1/2	180	4130	.0218	40	327
30-MSJ	30	3 3/8	.667	2.652	10 2/3:1	16	2710	11	256	8764	.0452	50	328
					32:1	48	1411	3 1/2	156	5364	.0235	50	328
35-MSJ	35	3 3/4	.667	3.009	10 2/3:1	16	3450	11	200	8035	.0493	50	329
					32:1	48	1800	3 1/2	122	4904	.0257	50	329
50-MSJ	50	4 1/2	.667	3.782	10 2/3:1	16	5555	16	181	10382	.0555	100	330
					32:1	48	3014	5	104	5982	.0301	100	330
75-MSJ	75	5	.667	4.286	10 2/3:1	16	8236	28	214	18368	.0549	155	331
					32:1	48	3780	9	150	12862	.0252	155	331
100-MSJ	100	6	.667	5.254	10 2/3:1	16	13166	32	153	17330	.0665	205	332
					32:1	48	7460	12 1/2	106	11941	.0377	205	332

* Measurements listed are for non-keyed units. See individual jack pages for keyed jack info.

NOTES:

8) Catalog dimensions are representative only and are subject to change without notice. For construction, use only certified prints.

9) Units are not to be used as personnel support or movement.

10) End-of-travel stops are not provided.

$$\text{Horsepower per jack} = \frac{\text{Torque to raise one pound} \times \text{Number of pounds to be raised} \times \text{rpm}}{63{,}025}$$

* Tare drag torque need only be added if operating under 25% rated load.

Starting Torque is 100% greater than torque shown.

COLUMN STRENGTH: INCH MACHINE SCREW JACKS

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the acme screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

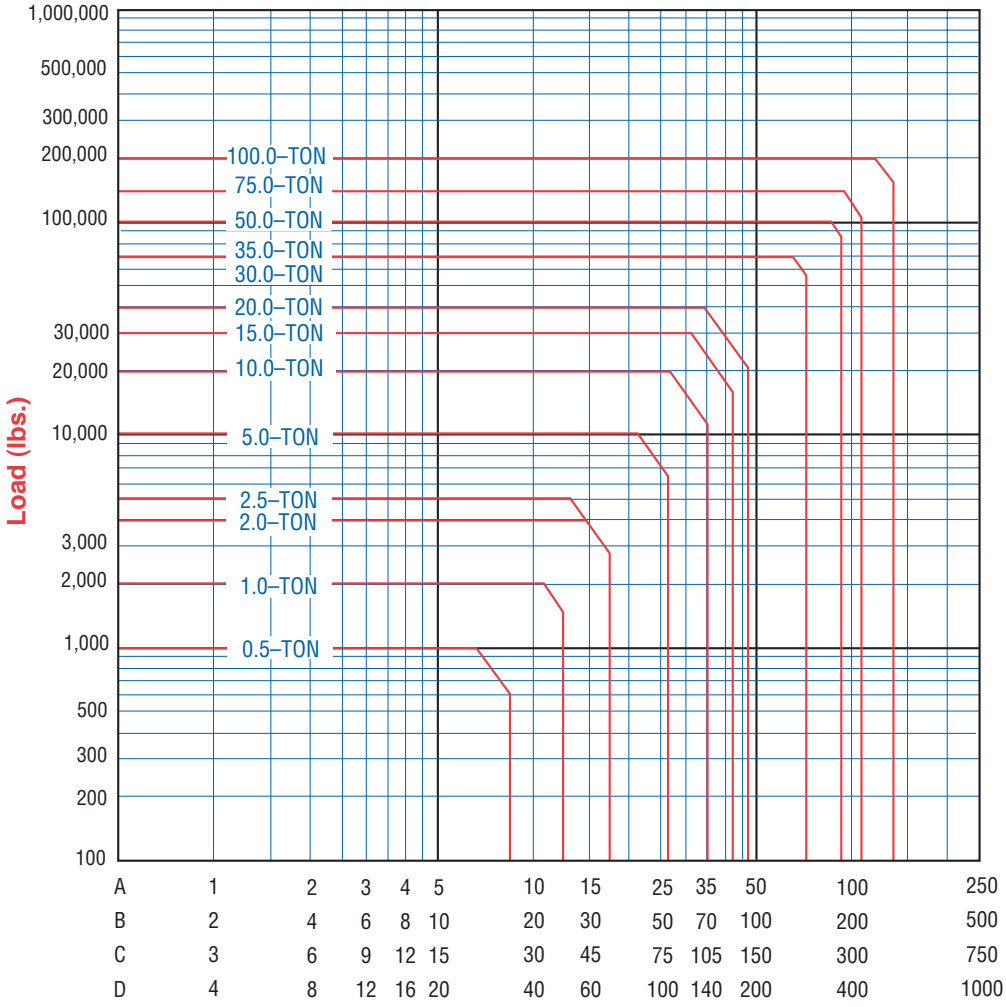
The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

To use this chart:

Find a point at which the maximum length "L" intersects the maximum load. Be sure the jack selected is above and to the right of that point.

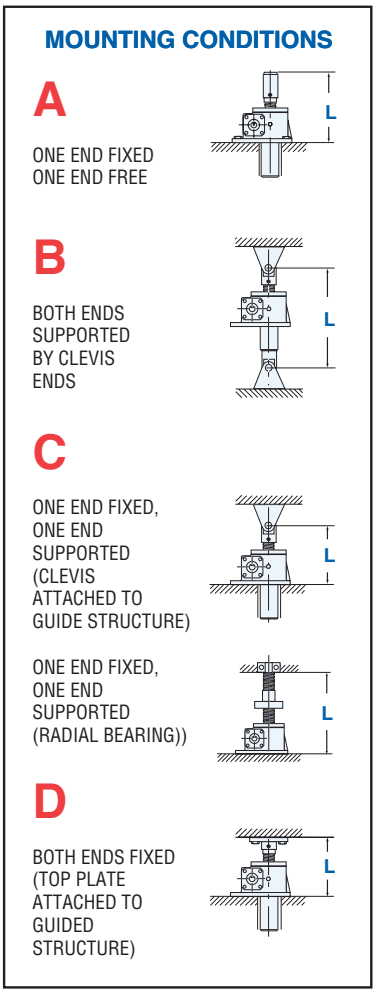
CAUTION: chart does not include a design factor.

The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries. If side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.



"L" (inches)
Inch Machine Screw Jack

MOUNTING CONDITIONS



AVAILABLE LIFT SCREW LENGTHS

As a major manufacturer of industrial lead screws, Nook Industries stocks a broad selection of acme screws. Nook Industries has the capacity to make long acme screws for special applications. Rotating screw jacks can be built with a larger diameter lift screw for greater column strength, or a different lead to change the jack operating speed.

2.5-MSJ- U 6:1 / 10BT-1 / 2CA-4C / FT / 24.5 / SB

MACHINE SCREW MODEL

Ton	Model #	Ton	Model #	Ton	Model #	Ton	Model #
1/2	MJ-20	1	1-MSJ	5	5-MSJ	30	30-MSJ
1/2	MJ-25	1	1AB-MSJ	5	5AB-MSJ	30	30AB-MSJ
1/2	MJ-40	2	2-MSJ	10	10-MSJ	35	35-MSJ
1/2	MJ-50	2	2AB-MSJ	10	10AB-MSJ	35	35AB-MSJ
1/2	MJ-80	2	2R-MSJ	15	15-MSJ	50	50-MSJ
1/2	MJ-100	2	2RAB-MSJ	15	15AB-MSJ	50	50AB-MSJ
1/2	MJ-160	2.5	2.5-MSJ	20	20-BSJ	75	75-MSJ
1/2	MJ-200	2.5	2.5AB-MSJ	20	20AB-MSJ	75	75AB-MSJ
						100	100-MSJ

CONFIGURATION

U = Upright
I = Inverted
UR = Upright Rotating
IR = Inverted Rotating
DC = Double Clevis
UK = Upright Keyed
IK = Inverted Keyed

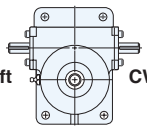
GEAR RATIO

Refer to product pages for available ratios.

SHAFT ORDER CODE

CCW Position 1, 3, 5 & 7
CW Position 2, 4, 6 & 8

ORDER CODES (Must Include A Position)



NO ACCESSORY

SSE-_ = Standard Shaft Extension, Position 1 or 2
000-_ = Delete Shaft Extension, Position 1 or 2
SPC-_ = Special Modified Shaft Extension, Position 1 or 2

Motor Mounts Without Motor

(Position 1 or 2)

Used on 2.5 to 20 Ton Jacks.
see page 275 for standard motor mount order codes

EXAMPLE:
X05-1 = 56C NEMA frame in Position 1
X14-2 = 140TC NEMA frame in Position 2

Motor Mounts With Motors

(Position 1 or 2)

Used on 2.5 to 20 Ton Jacks.
see page 275 & 276 for available motors

EXAMPLE:
10BT-1 = 1 Hp-3 ph internally wired standard Brake Motor in Position 1

Right Angle Reducer

(Position 1 through 8)

Used on 2.5 to 20 Ton Jacks.

see page 278 and 279 for available Right Angle Reducers

NOTE: A Right Angle Reducer must be accompanied with a motor mount or motor order code.

EXAMPLE:
X05R6-1 = 56C Motor Mount with a 6:1 Reducer, Position 1
10BTR12-4 = 1 Hp- 3 ph Brake Motor with a 12:1 Right Angle Reducer in Position 4

Rotary Limit Switch

(Position 1 C or E through 8 C or E)

Used on 2 to 100 Ton Jacks.

see page 282 and 283 for available rotary limit switches

NOTE: A Limit Switch must include a close or extended mount.

EXAMPLE:
4CA-6E = 4 Circuit Limit Switch, SPDT with an extended mount in Position 6

Hand Wheel

Used on MJ to 20 Ton Jacks.

see page 287 for available Hand Wheels

EXAMPLE:
H044-1 = 4" Handwheel in Position 1
H064-2 = 6" Handwheel in Position 2

Counters

Used on MJ to 20 Ton Jacks.

see page 288 for available Counters

EXAMPLE:
CEI-1 = Count Increases no shaft extension in Position 1

NOTE: Both Shaft Extensions Must Be Specified

HOUSING CONFIGURATION

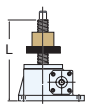
F = Standard Flange Base
C = Clevis Base

SCREW CONFIGURATION

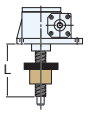
TRANSLATING - U and I MODELS
T = Standard Threaded End
C = Clevis End
P = Top Plate

ROTATING - UR and IR MODELS
A = Travel Nut Position "A"
B = Travel Nut Position "B"

UR - Upright Rotating **IR -** Inverted Rotating



Travel Nuts shown in position "A"



TRAVEL

For Translating Screw Models (U and I) use actual Travel in inches. For Rotating Screw Models (UR and IR) use "L" Dimension in Inches.

MODIFIER LIST

S or M Required
S = Standard. no additional description required
M = Modified, additional description required

E and/or B Optional
E = In-Line Encoder (motor or motor mount required)
B = Bellows Boots (must calculate retracted and extended boot length, see page 280-281)

NUMERIC RATIO

ActionJac™ Anti-backlash Machine Screw Jacks may be ordered with worm gear sets and lift shafts specifically designed to provide 0.01 inch of travel for each revolution of the input shaft. Referred to as “Numeric Ratio” jack, these units are usually manually operated to precisely position machine components such as end stops or calender rolls.

These jacks can be supplied with handwheels and counters (see ActionJac™ accessories section) to provide immediate positional feed-back to an operator. ActionJac™ Numeric Ratio Anti-backlash Machine Screw Jacks retain all the performance characteristics of standard machine screw jacks.

NUMERIC RATIO JACKS

JACK SIZES					JACK SELECTION								
MODEL	Capacity (lbs.)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	Page Ref
MJAB-100	1,000	0.625	0.200	0.377	20:1	100	8.7	0.17	1210	690	0.009	1.0	319
1AB-MSJ	2,000	0.750	0.200	0.502	20:1	100	21	0.26	750	855	0.011	3.0	320
2AB-MSJ	4,000	1.000	0.250	0.698	25:1	100	41	0.51	780	1780	0.010	4.0	321
2.5AB-MSJ	5,000	1.000	0.250	0.698	25:1	100	51	0.51	625	1785	0.010	5.0	323
5AB-MSJ	10,000	1.500	0.250	1.196	25:1	100	116	0.67	365	2085	0.012	10.0	324
10AB-MSJ	20,000	2.000	0.250	1.694	25:1	100	309	1.38	282	3225	0.015	20.0	325
15AB-MSJ	30,000	2.250	0.250	1.944	25:1	100	505	1.33	165	2835	0.017	20.0	326
20AB-MSJ	40,000	2.500	0.250	2.193	25:1	100	712	2.32	205	4690	0.018	40.0	327

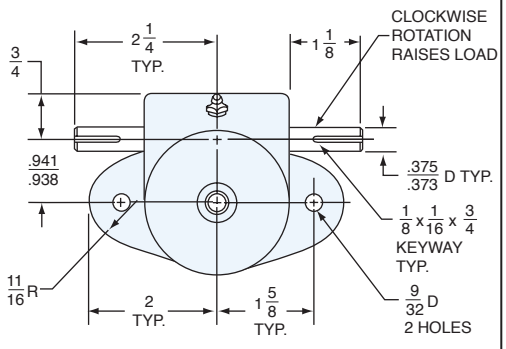
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

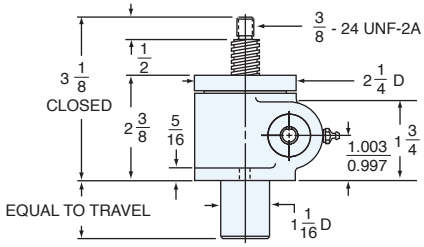
MINI JACKS

INCH MACHINE SCREW JACKS

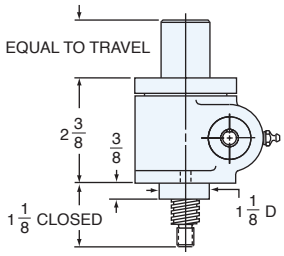
MJ Housing Top View



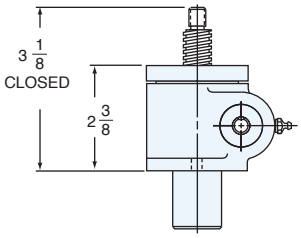
MJ-xx-U
(Upright)



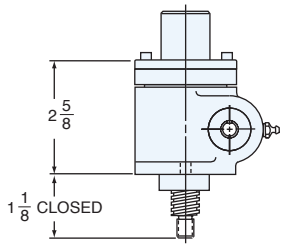
MJ-xx-I
(Inverted)



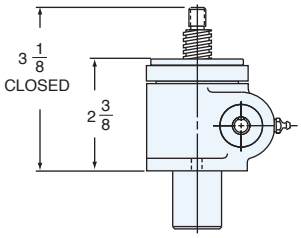
MJ-xx-UK
(Upright Keyed)



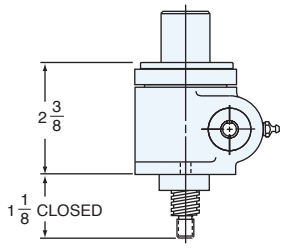
MJ-xx-IK
(Inverted Keyed)



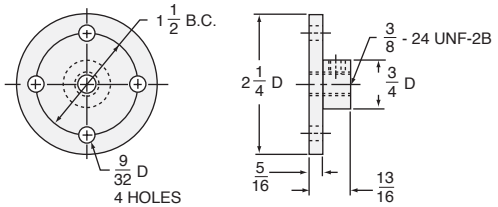
MJAB-xx-U
(Upright Anti-Backlash)



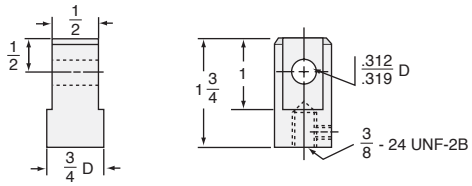
MJAB-xx-I
(Inverted Anti-Backlash)



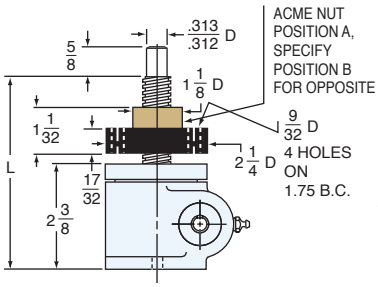
TOP PLATE (optional): B9000-00-12



CLEVIS END (optional): B9001-00-12

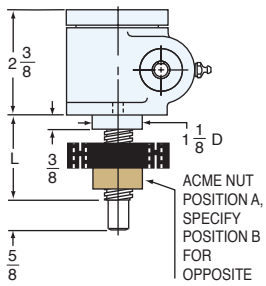


MJ-xx-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $3\frac{21}{32}$

MJ-xx-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $1\frac{21}{32}$

MODEL NO.	GEAR RATIO	TURNS OF WORM PER INCH TRAVEL	*RATING AT 1750 rpm INPUT SPEED		MAX. HP	TORQUE TO RAISE 1 LB. (in.-lb.)		SCREW SIZE	TORQUE AT 1000 LB. LOAD (in.-lb.)	MAX. rpm AT 1000 lb. LOAD		**COMPRESSION LOADING MAX TRAVEL	
			LOAD (lbs.)	LIFT RATE (in./min.)		NON-KEYED	KEYED			NON-KEYED	KEYED	at 1000 lb.	at ANY LOAD
MJ-20	5:1	20	600	90.0	1/3	.019	.022	1/2-4	19.3	1090	950	7.2	8.75
MJ-25	5:1	25	560	72.0	1/3	.021	.024	5/8-5	20.7	1040	900	8.3	9.38
MJ-40	5:1	40	700	45.0	1/3	.017	.020	5/8-8	16.7	1260	1100	11.88	11.88
MJ-50	5:1	50	860	36.0	1/3	.014	.016	1/2-10	13.5	1560	1350	8.3	9.38
MJ-80	20:1	80	720	22.5	1/6	.008	.009	1/2-4	8.0	1310	1140	7.2	8.75
MJ-100	20:1	100	670	18.0	1/6	.009	.010	5/8-5	8.7	1210	1050	8.3	9.38
MJ-160	20:1	160	830	11.2	1/6	.007	.008	5/8-8	7.0	1500	1300	11.88	11.88
MJ-200	20:1	200	1000	9.0	1/6	.006	.007	1/2-10	5.7	1800	1560	8.3	9.38

MJ STANDARD
WEIGHT (Approx. in Pounds)
"0" TRAVEL: 2.5
PER INCH TRAVEL: 0.2
GREASE: 0.5

* Load may be increased to a maximum of 1000 lbs. if the input speed is correspondingly reduced such that the maximum allowable hp is not exceeded.
** Travel is based on one end fixed and the other end free. For both ends supported mulitpy by 2, for one end fixed, the other end supported multiply by 3, for both ends fixed multiply by 4. See page 316 for mounting conditions.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

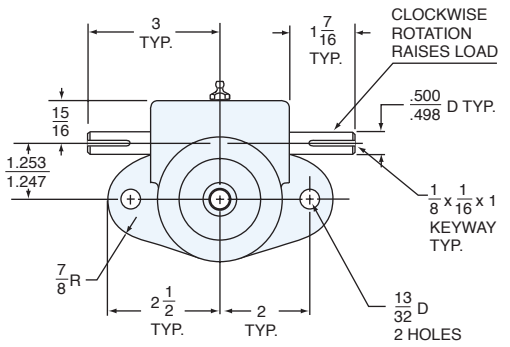
INCH MACHINE SCREW JACKS

1-MSJ

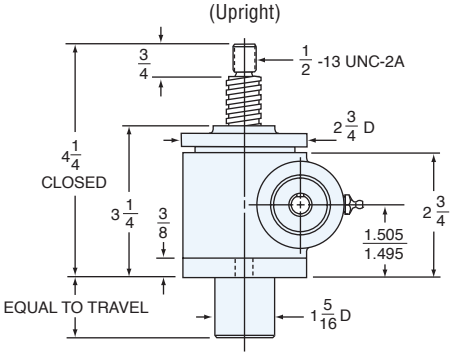
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

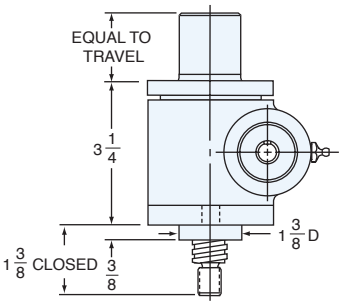
1-MSJ Housing Top View



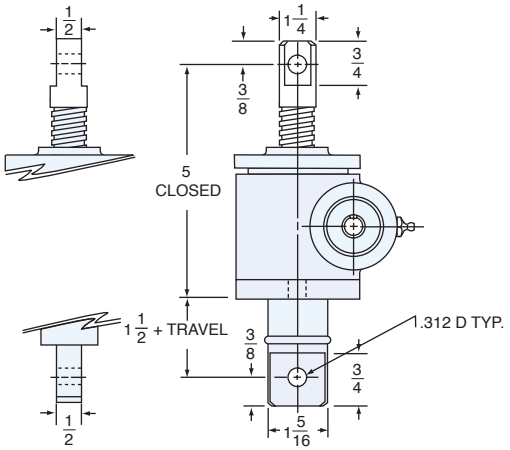
1-MSJ-U
(Upright)



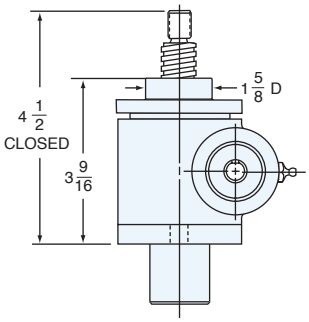
1-MSJ-I
(Inverted)



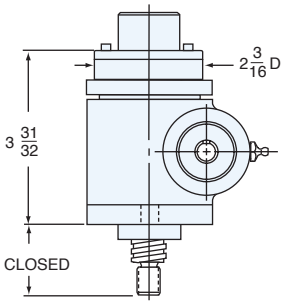
1-MSJ-DC
(Double Clevis)



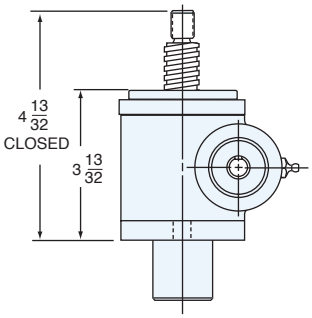
1-MSJ-UK
(Upright Keyed)



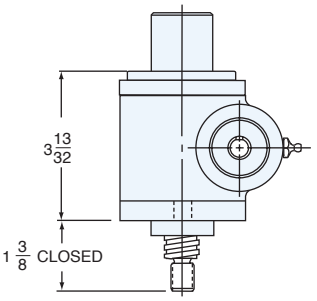
1-MSJ-IK
(Inverted Keyed)



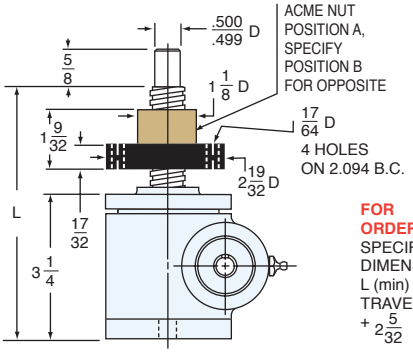
1AB-MSJ-U
(Upright Anti-Backlash)



1AB-MSJ-I
(Inverted Anti-Backlash)

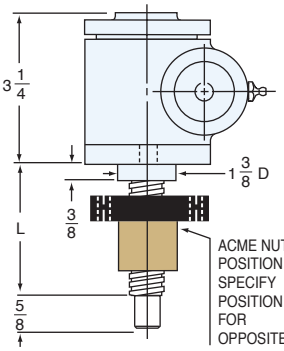


1-MSJ-UR
(Upright Rotating)



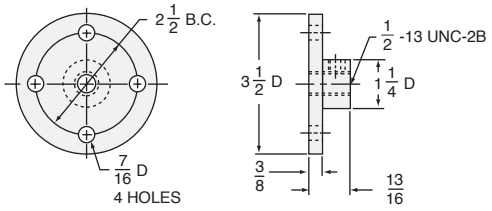
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 5 1/32

1-MSJ-IR
(Inverted Rotating)

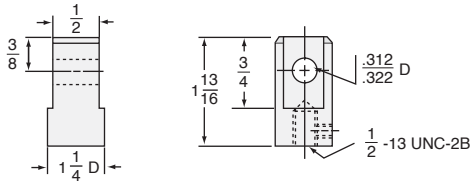


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 2 5/32

TOP PLATE (optional): B9000-00-11



CLEVIS END (optional): B9001-00-11



1-MSJ STANDARD SCREW

SCREW:	3/4 - 5
ROOT DIAMETER:	0.502
DRAG TORQUE:	3 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	5.5
PER INCH TRAVEL:	0.3
GREASE:	0.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
5:1	25	.0225 in.-lbs.	.0259 in.-lbs.	1/2	700 rpm	608 rpm	800 lbs.	695 lbs.
20:1	100	.0105 in.-lbs.	.0121 in.-lbs.	1/4	750 rpm	651 rpm	857 lbs.	744 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

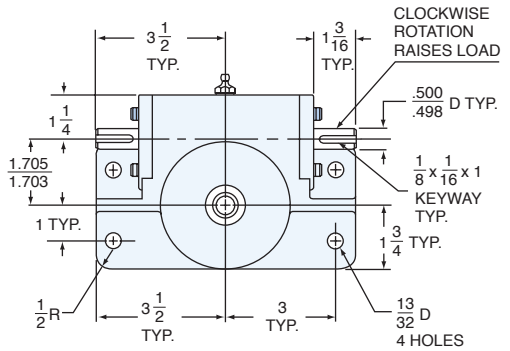
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

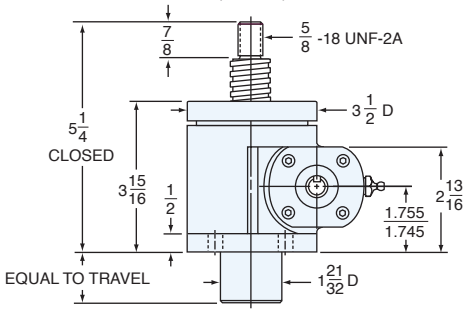
2-MSJ

INCH MACHINE SCREW JACKS

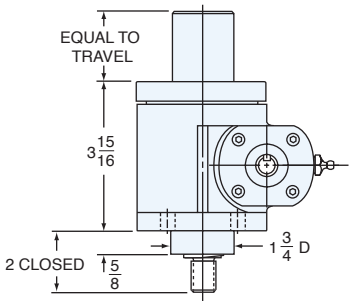
2-MSJ Housing Top View



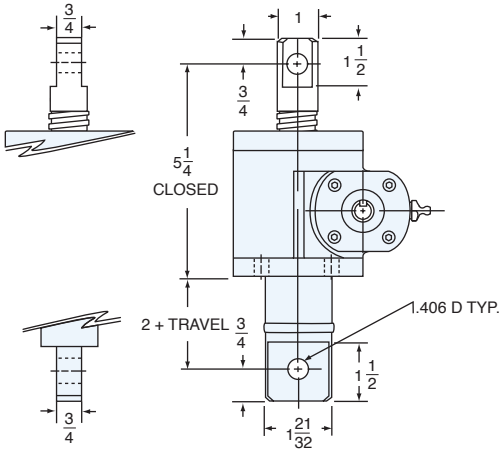
2-MSJ-U
(Upright)



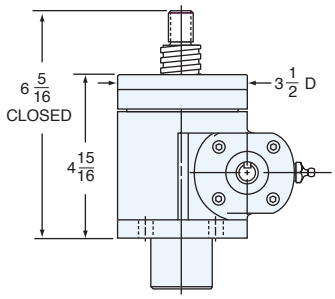
2-MSJ-I
(Inverted)



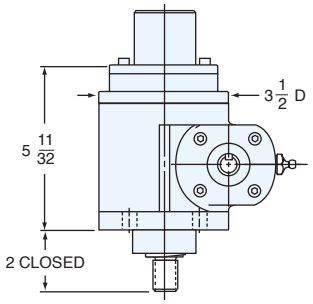
2-MSJ-DC
(Double Clevis)



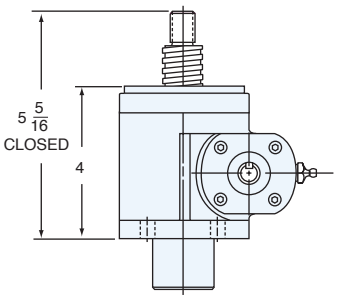
2-MSJ-UK
(Upright Keyed)



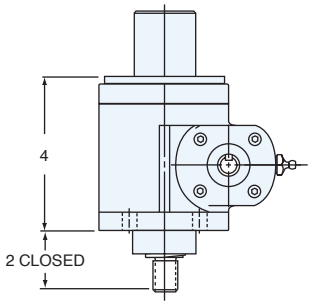
2-MSJ-IK
(Inverted Keyed)



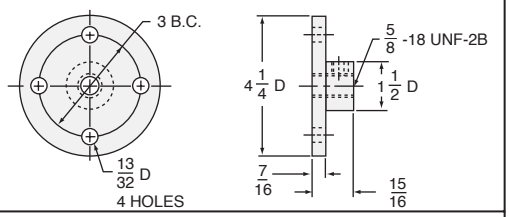
2AB-MSJ-U
(Upright Anti-Backlash)



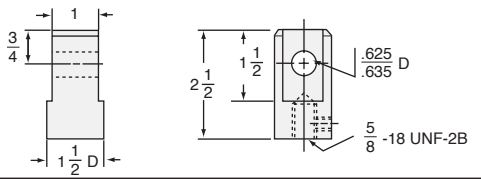
2AB-MSJ-I
(Inverted Anti-Backlash)



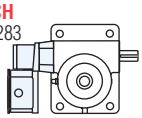
TOP PLATE (optional): B9000-00-01



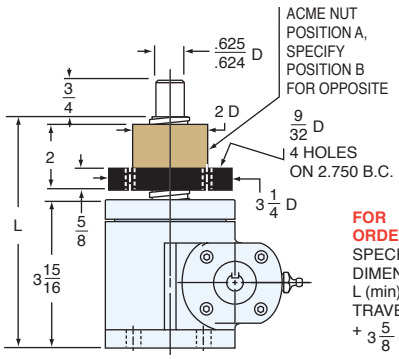
CLEVIS END (optional): B9001-00-01



ROTARY LIMIT SWITCH
see page 282-283

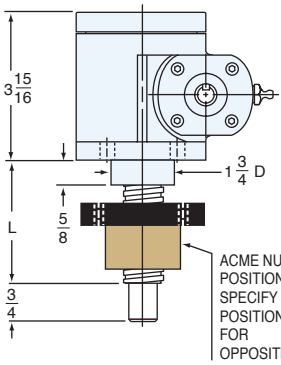


2-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $6\frac{15}{16}$

2-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $3\frac{5}{8}$

2-MSJ STANDARD SCREW

SCREW:	1 - 4
ROOT DIAMETER:	0.698
DRAG TORQUE:	4 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	15.0
PER INCH TRAVEL:	0.45
GREASE:	0.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB. NON-KEYED	TORQUE TO RAISE ONE LB. KEYED	MAX. HP	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. WORM SPEED AT RATED LOAD KEYED	MAX. LOAD AT 1750 RPM NON-KEYED	MAX. LOAD AT 1750 RPM KEYED
6:1	24	.0250 in.-lbs.	.0288 in.-lbs.	2	1260 rpm	1096 rpm	2881 lbs.	2505 lbs.
12:1	48	.0154 in.-lbs.	.0177 in.-lbs.	1 1/2	1525 rpm	1326 rpm	3486 lbs.	3031 lbs.
24:1	96	.0105 in-lbs.	.0121in.-lbs.	1/2	750 rpm	651 rpm	1715 lbs.	1488 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

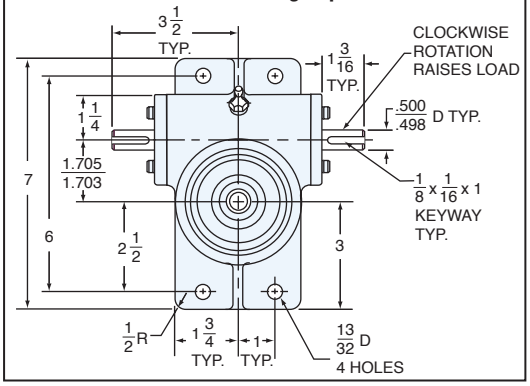
INCH MACHINE SCREW JACKS

2R-MSJ

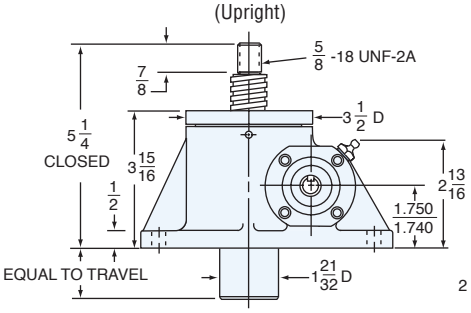
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

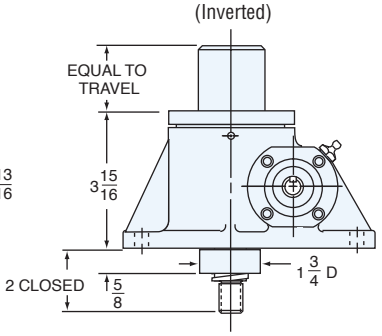
2R-MSJ Housing Top View



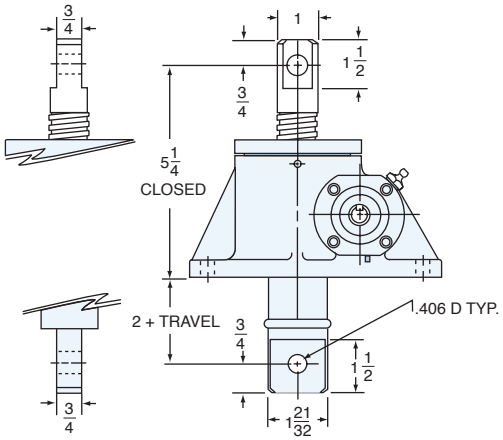
2R-MSJ-U (Upright)



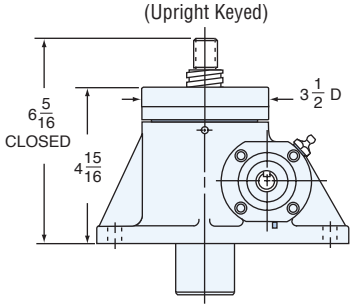
2R-MSJ-I (Inverted)



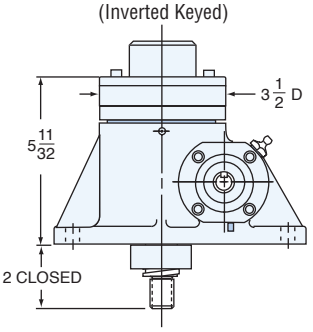
2R-MSJ-DC (Double Clevis)



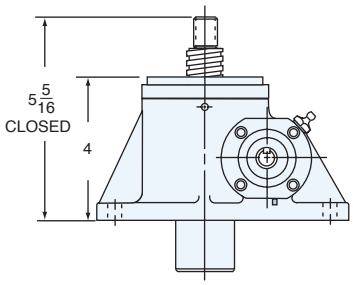
2R-MSJ-UK (Upright Keyed)



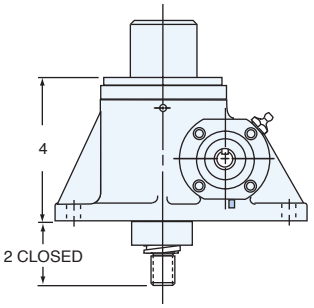
2R-MSJ-IK (Inverted Keyed)



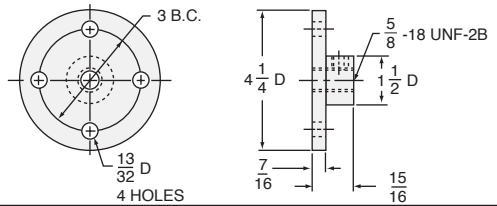
2RAB-MSJ-U (Upright Anti-Backlash)



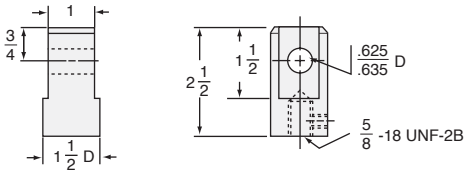
2RAB-MSJ-I (Inverted Anti-Backlash)



TOP PLATE (optional): B9000-00-01

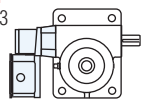


CLEVIS END (optional): B9001-00-01

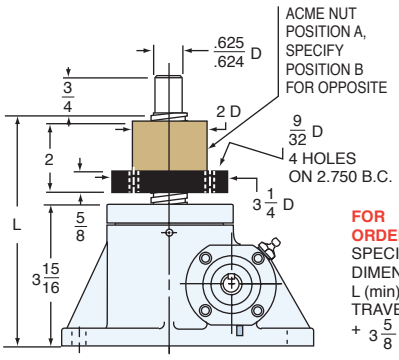


ROTARY LIMIT SWITCH

see page 282-283

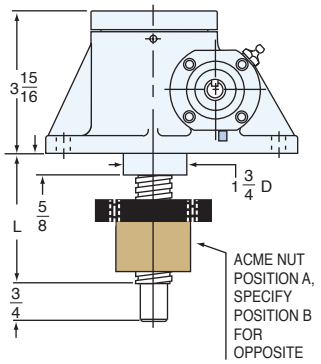


2R-MSJ-UR (Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6 15/16

2R-MSJ-IR (Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 3 5/8

2R-MSJ STANDARD SCREW

SCREW:	1 - 4
ROOT DIAMETER:	0.698
DRAG TORQUE:	4 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	15.0
PER INCH TRAVEL:	0.45
GREASE:	0.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	24	.0250 in.-lbs.	.0288 in.-lbs.	2	1260 rpm	1096 rpm	2881 lbs.	2505 lbs.
12:1	48	.0154 in.-lbs.	.0177 in.-lbs.	1 1/2	1525 rpm	1326 rpm	3486 lbs.	3031 lbs.
24:1	96	.0105 in-lbs.	.0121in.-lbs.	1/2	750 rpm	651 rpm	1715 lbs.	1488 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

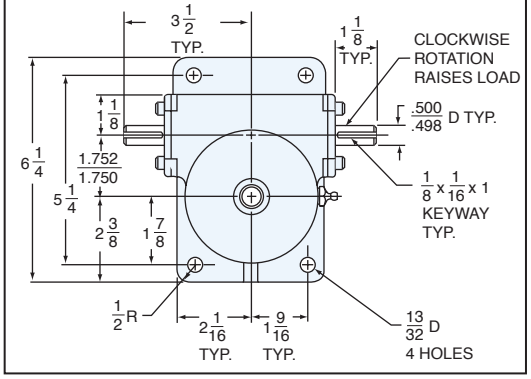
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

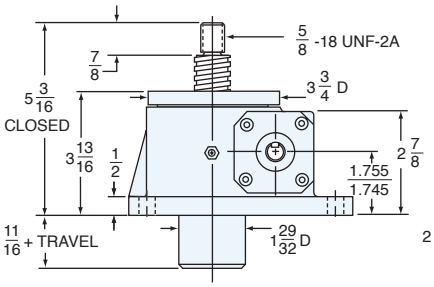
2.5-MSJ

INCH MACHINE SCREW JACKS

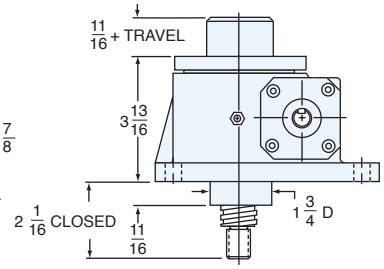
2.5-MSJ Housing Top View



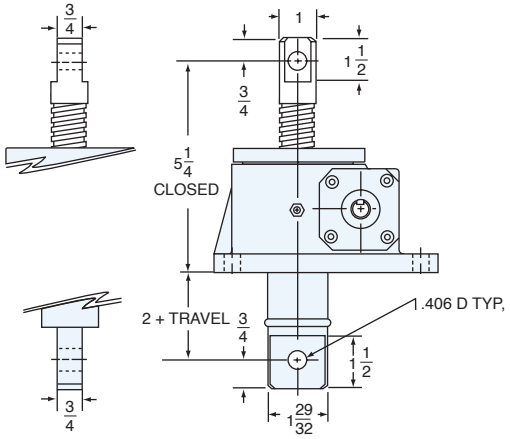
2.5-MSJ-U
(Upright)



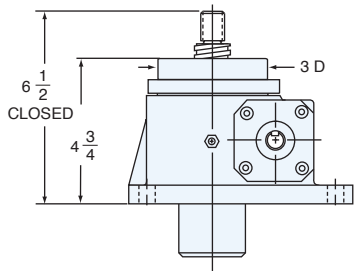
2.5-MSJ-I
(Inverted)



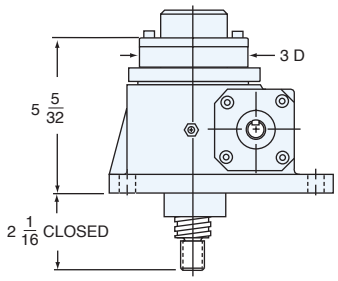
2.5-MSJ-DC
(Double Clevis)



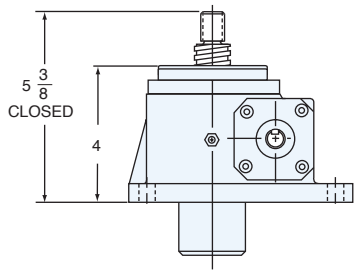
2.5-MSJ-UK
(Upright Keyed)



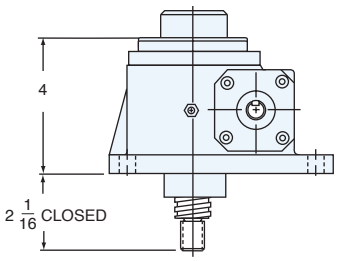
2.5-MSJ-IK
(Inverted Keyed)



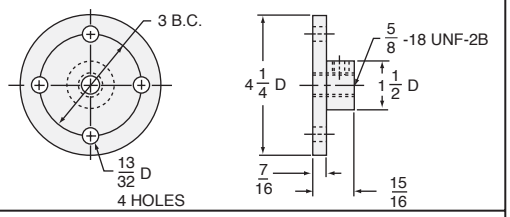
2.5AB-MSJ-U
(Upright Anti-Backlash)



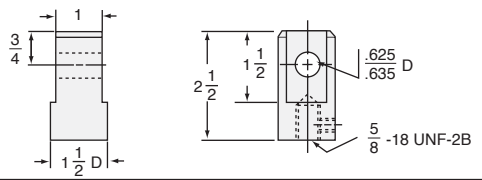
2.5AB-MSJ-I
(Inverted Anti-Backlash)



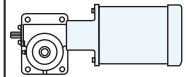
TOP PLATE (optional): B9000-00-01



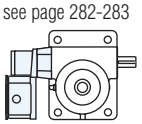
CLEVIS END (optional): B9001-00-01



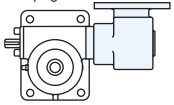
MOTORS
see page 276
MOTOR MOUNTS
see page 275



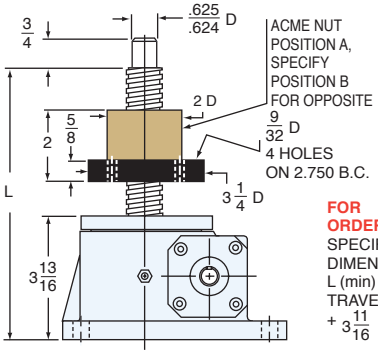
ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279

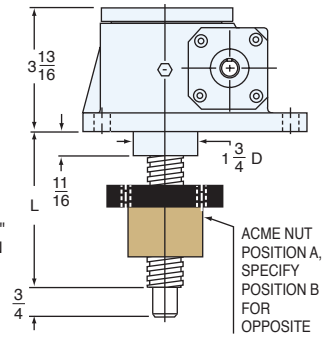


2.5-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6 13/16

2.5-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 3 11/16

2.5-MSJ STANDARD SCREW

SCREW:	1 - 4
ROOT DIAMETER:	0.698
DRAG TORQUE:	5 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	17.0
PER INCH TRAVEL:	0.45
GREASE:	0.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	24	.0252 in.-lbs.	.0290 in.-lbs.	2	1000 rpm	869 rpm	2858 lbs.	2483 lbs.
12:1	48	.0148 in.-lbs.	.0170 in.-lbs.	1 1/2	1277 rpm	1110 rpm	3650 lbs.	3174 lbs.
24:1	96	.0106 in.-lbs.	.0122 in.-lbs.	1/2	594 rpm	516 rpm	1699 lbs.	1476 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

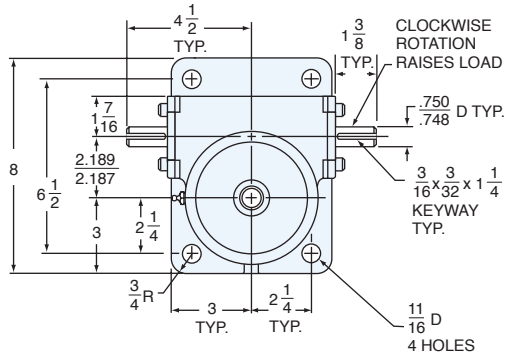
INCH MACHINE SCREW JACKS

5-MSJ

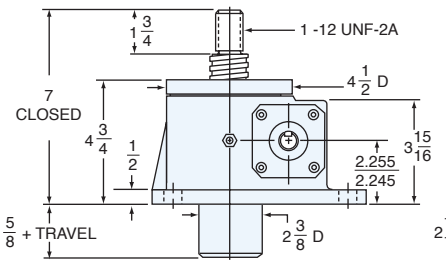
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

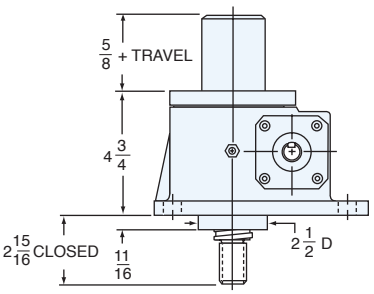
5-MSJ Housing Top View



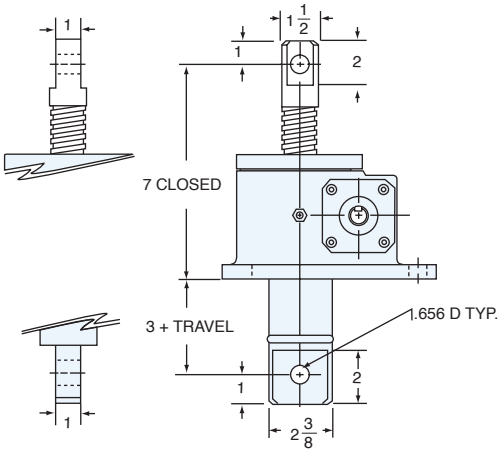
5-MSJ-U
(Upright)



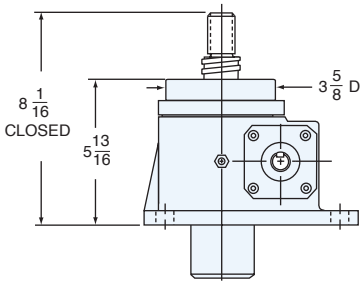
5-MSJ-I
(Inverted)



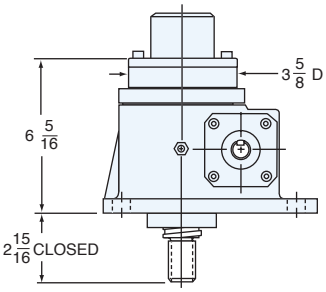
5-MSJ-DC
(Double Clevis)



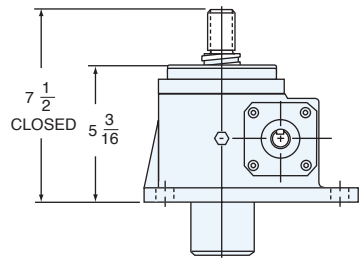
5-MSJ-UK
(Upright Keyed)



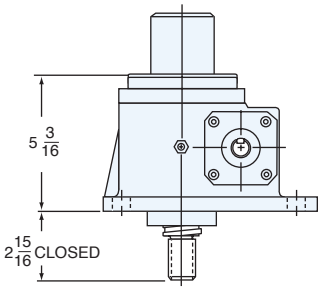
5-MSJ-IK
(Inverted Keyed)



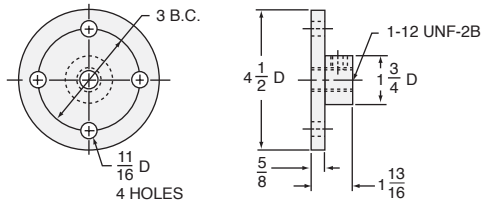
5AB-MSJ-U
(Upright Anti-Backlash)



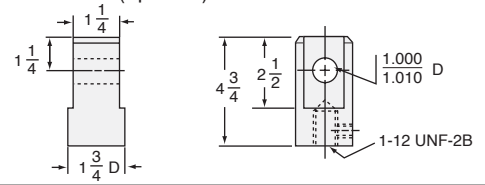
5AB-MSJ-I
(Inverted Anti-Backlash)



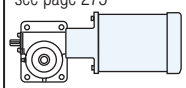
TOP PLATE (optional): B9000-00-02



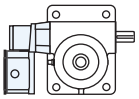
CLEVIS END (optional): B9001-00-02



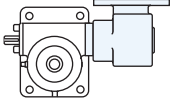
MOTORS
see page 276
MOTOR MOUNTS
see page 275



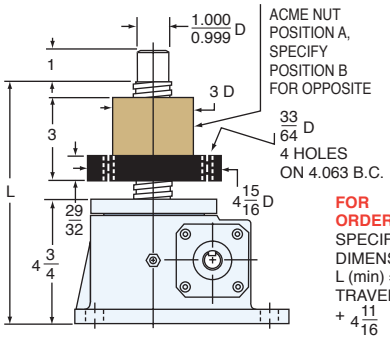
ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279

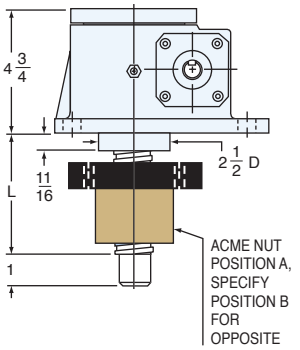


5-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $8\frac{3}{4}$

5-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $4\frac{11}{16}$

5-MSJ STANDARD SCREW

SCREW: 1 1/2 - 2 2/3
ROOT DIAMETER: 1.066
DRAG TORQUE: 10 IN.-LB.
START TORQUE: 2 x Running Torque
WEIGHT (Approx. in Pounds)
"0" TRAVEL: 30.0
PER INCH TRAVEL: 0.7
GREASE: 1.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
6:1	16	.0376 in.-lbs.	.0432 in.-lbs.	3	500 rpm	437 rpm	2873 lbs.	2501 lbs.
24:1	64	.0144 in.-lbs.	.0166 in.-lbs.	3/4	330 rpm	287 rpm	1875 lbs.	1627 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

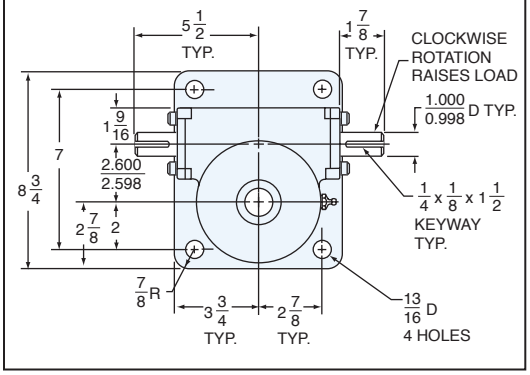
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

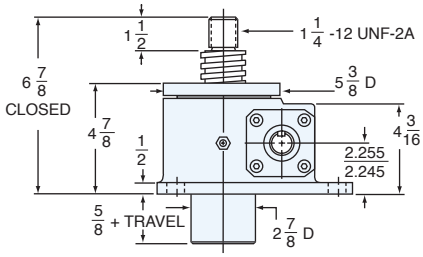
10-MSJ

INCH MACHINE SCREW JACKS

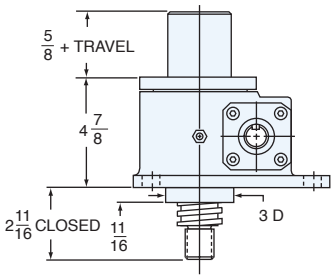
10-MSJ Housing Top View



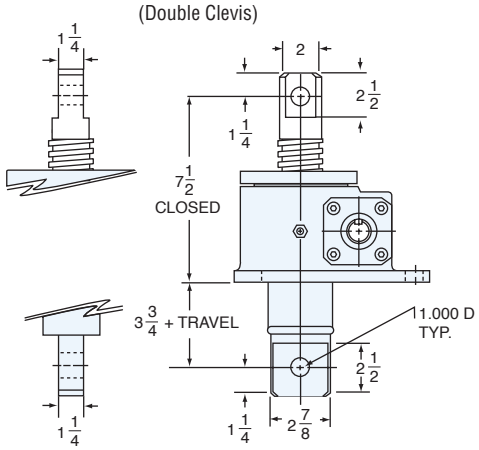
10-MSJ-U
(Upright)



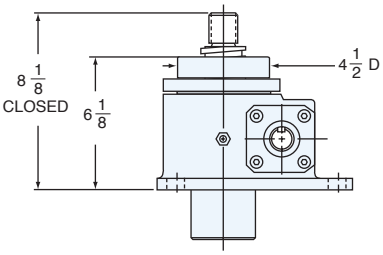
10-MSJ-I
(Inverted)



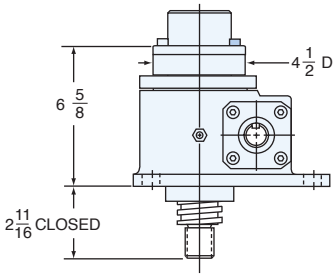
10-MSJ-DC
(Double Clevis)



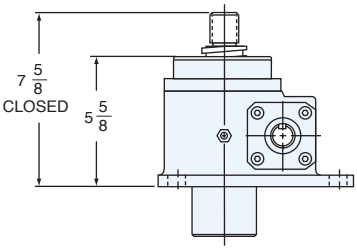
10-MSJ-UK
(Upright Keyed)



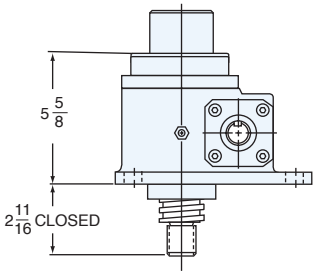
10-MSJ-IK
(Inverted Keyed)



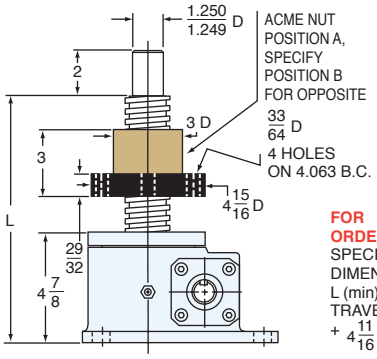
10AB-MSJ-U
(Upright Anti-Backlash)



10AB-MSJ-I
(Inverted Anti-Backlash)

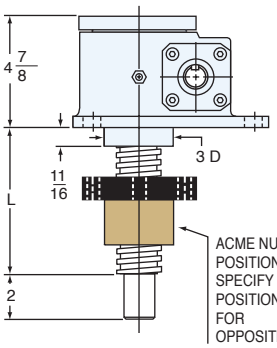


10-MSJ-UR
(Upright Rotating)



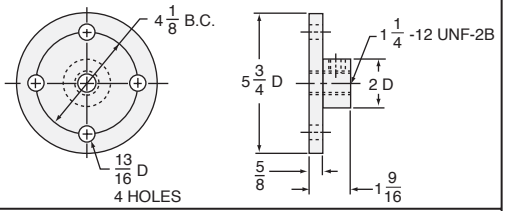
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 8 7/8

10-MSJ-IR
(Inverted Rotating)

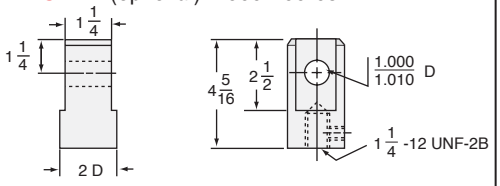


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4 11/16

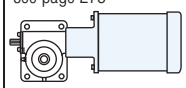
TOP PLATE (optional): B9000-00-03



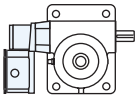
CLEVIS END (optional): B9001-00-03



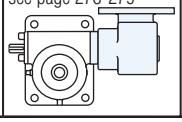
MOTORS
see page 276
MOTOR MOUNTS
see page 275



ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279



10-MSJ STANDARD SCREW

SCREW:	2 - 2
ROOT DIAMETER:	1.410
DRAG TORQUE:	20 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	45.0
PER INCH TRAVEL:	1.2
GREASE:	1.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
8:1	16	.0377 in.-lbs.	.0434 in.-lbs.	5	418 rpm	363 rpm	4776 lbs.	4149 lbs.
24:1	48	.0192 in.-lbs.	.0221 in.-lbs.	1½	246 rpm	214 rpm	2813 lbs.	2444 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

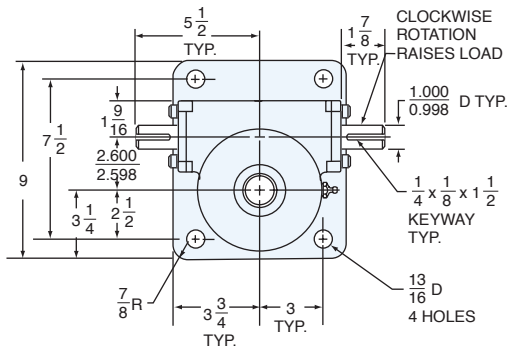
INCH MACHINE SCREW JACKS

15-MSJ

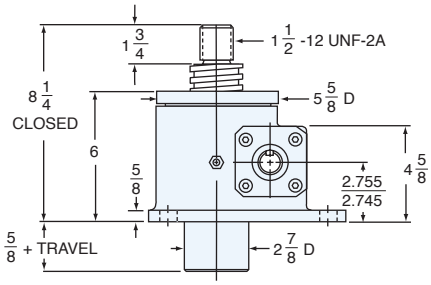
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

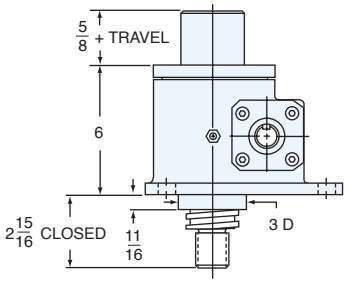
15-MSJ Housing Top View



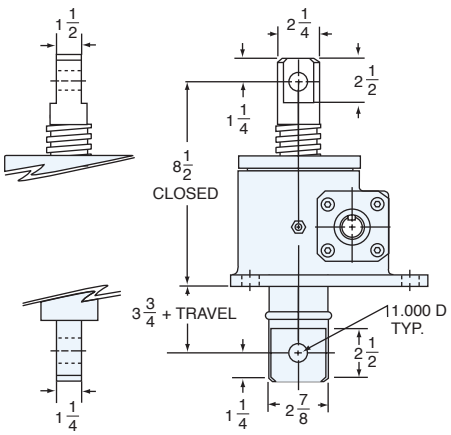
15-MSJ-U
(Upright)



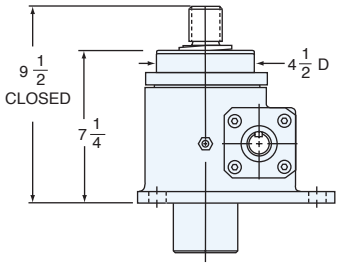
15-MSJ-I
(Inverted)



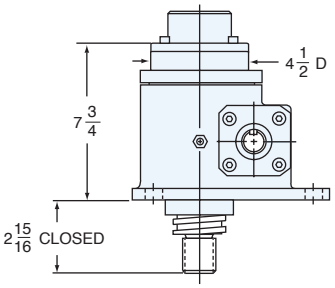
15-MSJ-DC
(Double Clevis)



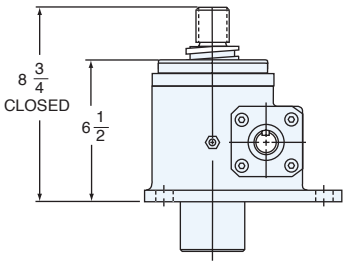
15-MSJ-UK
(Upright Keyed)



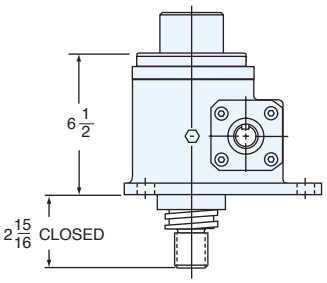
15-MSJ-IK
(Inverted Keyed)



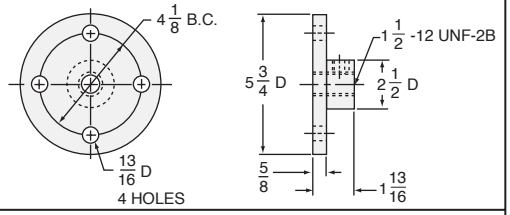
15AB-MSJ-U
(Upright Anti-Backlash)



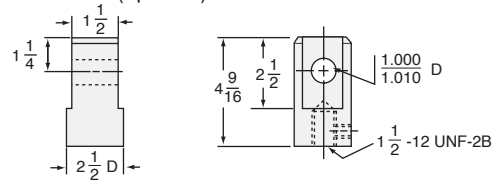
15AB-MSJ-I
(Inverted Anti-Backlash)



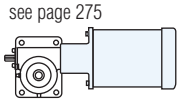
TOP PLATE (optional): B9000-00-05



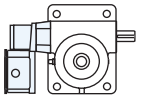
CLEVIS END (optional): B9001-00-05



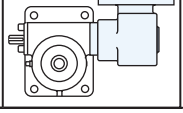
MOTORS
see page 276
MOTOR MOUNTS
see page 275



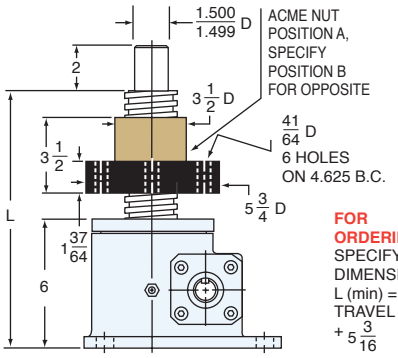
ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279

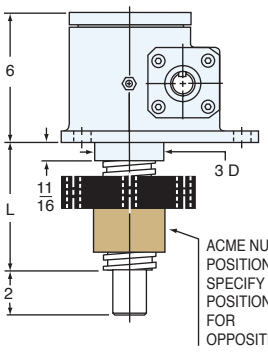


15-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $10\frac{1}{2}$

15-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $5\frac{3}{16}$

15-MSJ STANDARD SCREW

SCREW:	2 1/4 - 2
ROOT DIAMETER:	1.684
DRAG TORQUE:	20 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	55.0
PER INCH TRAVEL:	1.4
GREASE:	1.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
8:1	16	.0407 in.-lbs.	.0468 in.-lbs.	5	258 rpm	224 rpm	4424 lbs.	3847 lbs.
24:1	48	.0218 in.-lbs.	.0251 in.-lbs.	1½	144 rpm	125 rpm	2478 lbs.	2152 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

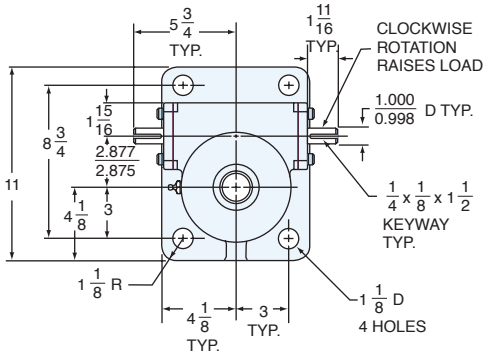
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

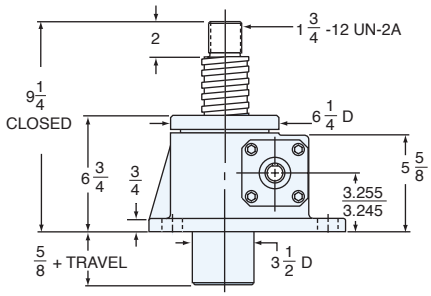
20-MSJ

INCH MACHINE SCREW JACKS

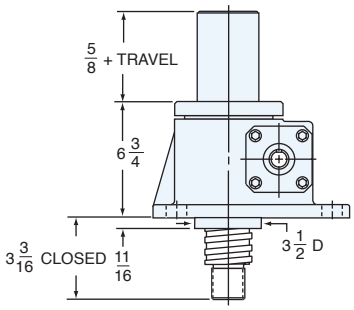
20-MSJ Housing Top View



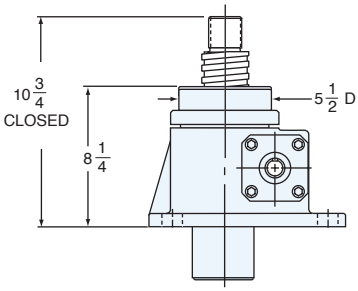
20-MSJ-U
(Upright)



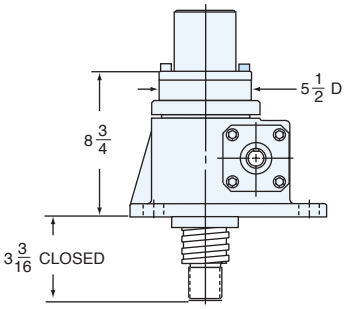
20-MSJ-I
(Inverted)



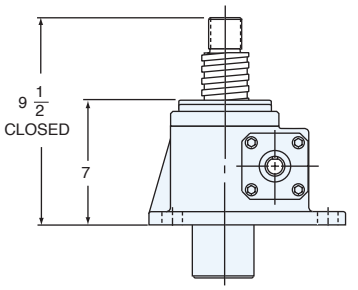
20-MSJ-UK
(Upright Keyed)



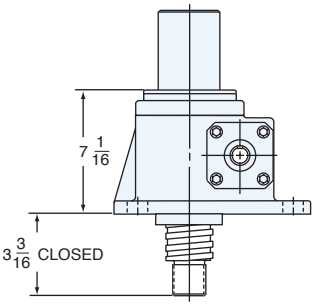
20-MSJ-IK
(Inverted Keyed)



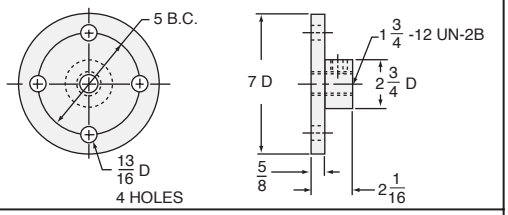
20AB-MSJ-U
(Upright Anti-Backlash)



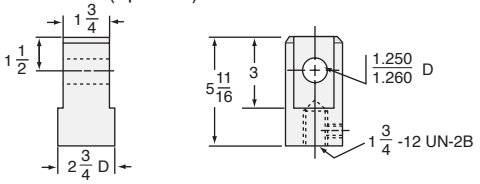
20AB-MSJ-I
(Inverted Anti-Backlash)



TOP PLATE (optional): B9000-00-06

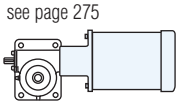


CLEVIS END (optional): B9001-00-06

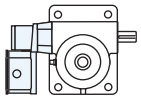


MOTORS
see page 276

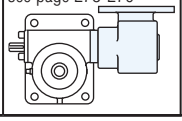
MOTOR MOUNTS
see page 275



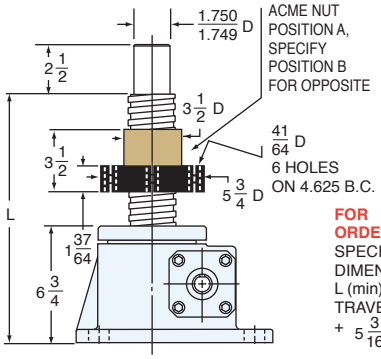
ROTARY LIMIT SWITCH
see page 282-283



SECONDARY REDUCER
see page 278-279

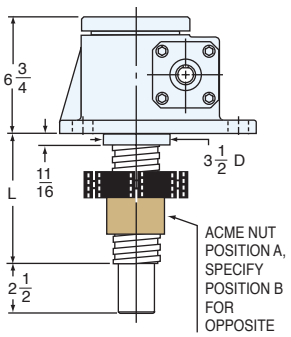


20-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 11 1/4

20-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 5 3/16

20-MSJ STANDARD SCREW

SCREW:	2 1/2 - 2
ROOT DIAMETER:	1.908
DRAG TORQUE:	40 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	80.0
PER INCH TRAVEL:	1.8
GREASE:	2.25

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
8:1	16	.0435 in.-lbs.	.0500 in.-lbs.	7½	272 rpm	236 rpm	6209 lbs.	5402 lbs.
24:1	48	.0218 in.-lbs.	.0251 in.-lbs.	2½	180 rpm	157 rpm	4130 lbs.	3587 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

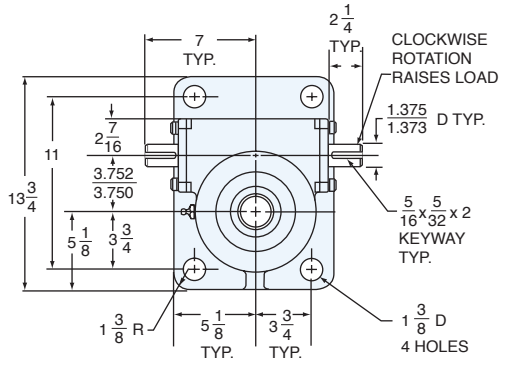
INCH MACHINE SCREW JACKS

30-MSJ

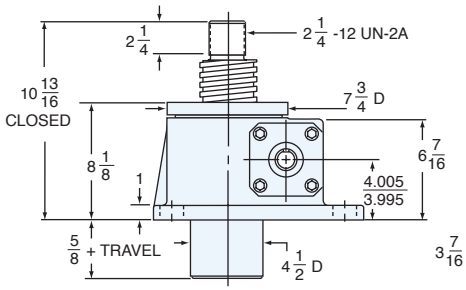
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

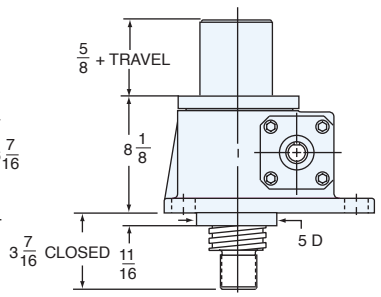
30-MSJ Housing Top View



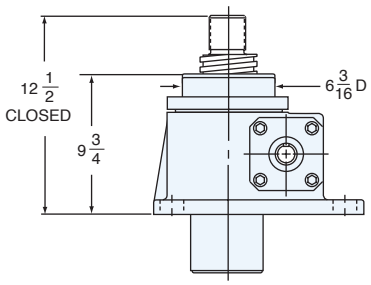
30-MSJ-U
(Upright)



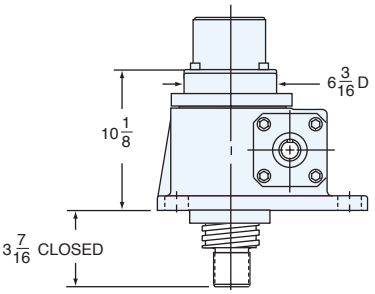
30-MSJ-I
(Inverted)



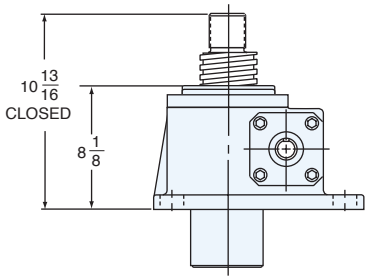
30-MSJ-UK
(Upright Keyed)



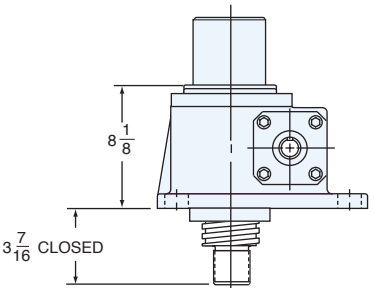
30-MSJ-IK
(Inverted Keyed)



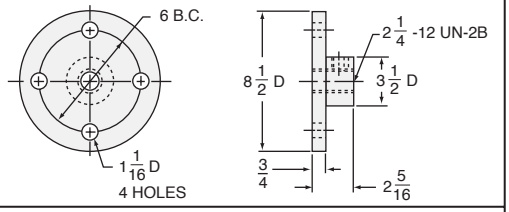
30AB-MSJ-U
(Upright Anti-Backlash)



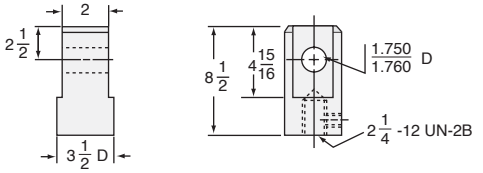
30AB-MSJ-I
(Inverted Anti-Backlash)



TOP PLATE (optional): B9000-00-07

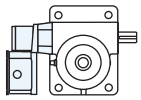


CLEVIS END (optional): B9001-00-08

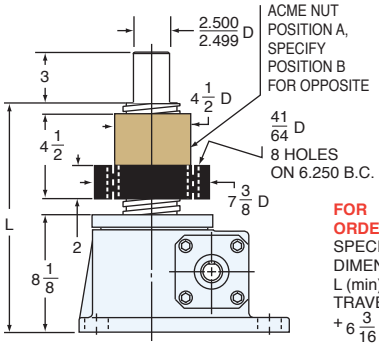


ROTARY LIMIT SWITCH

see page 282-283

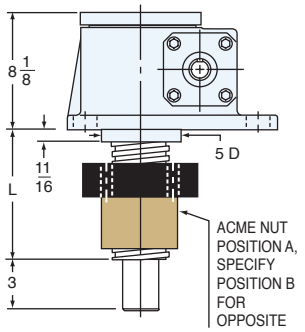


30-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 13 9/16

30-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6 3/16

30-MSJ STANDARD SCREW

SCREW:	3 3/8 - 1 1/2
ROOT DIAMETER:	2.652
DRAG TORQUE:	40 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	145.0
PER INCH TRAVEL:	2.9
GREASE:	3.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	16	.0452 in.-lbs.	.0520 in.-lbs.	11	256 rpm	222 rpm	8764 lbs.	7618 lbs.
32:1	48	.0235 in.-lbs.	.0270 in.-lbs.	3 1/2	156 rpm	136 rpm	5364 lbs.	4668 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

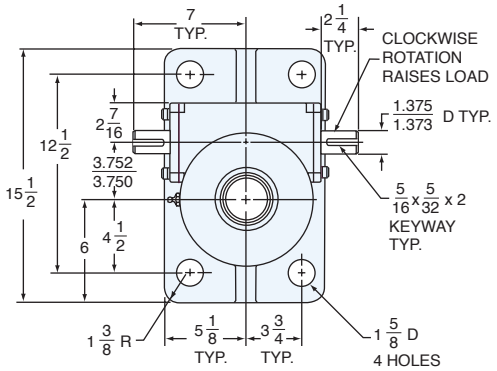
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

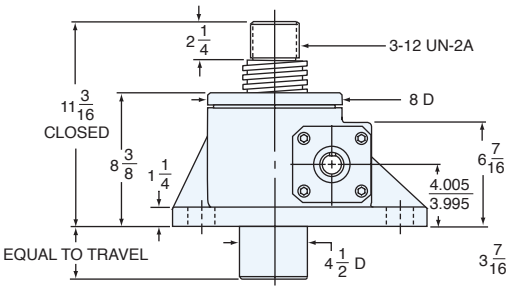
35-MSJ

INCH MACHINE SCREW JACKS

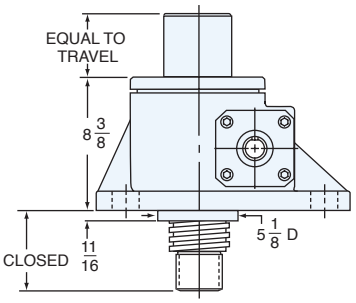
35-MSJ Housing Top View



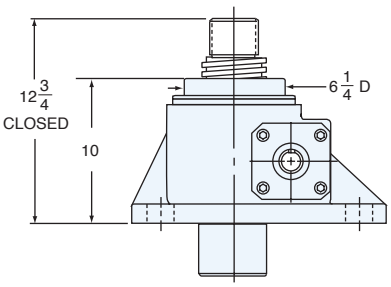
35-MSJ-U
(Upright)



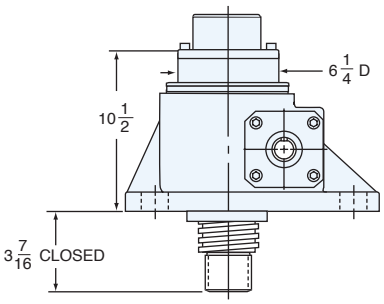
35-MSJ-I
(Inverted)



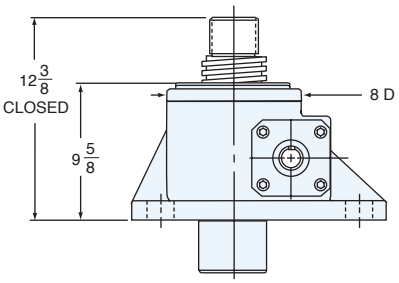
35-MSJ-UK
(Upright Keyed)



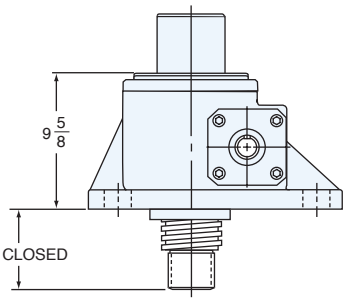
35-MSJ-IK
(Inverted Keyed)



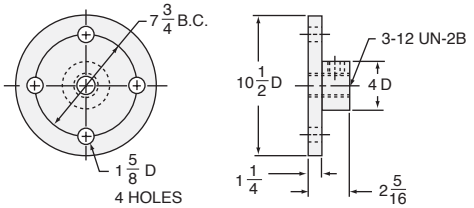
35AB-MSJ-U
(Upright Anti-Backlash)



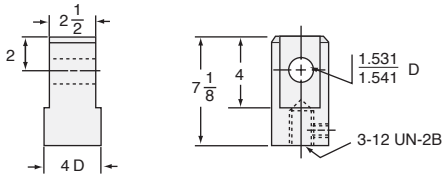
35AB-MSJ-I
(Inverted Anti-Backlash)



TOP PLATE (optional): B9000-00-13

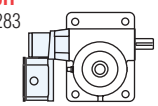


CLEVIS END (optional): B9001-00-16

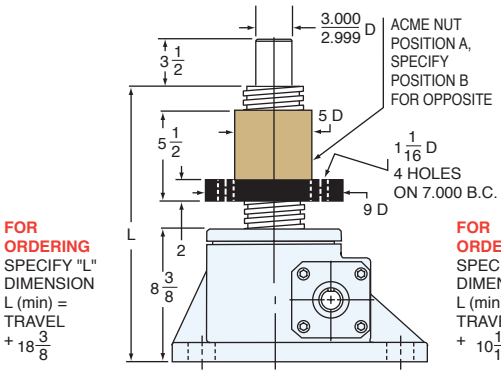


ROTARY LIMIT SWITCH

see page 282-283

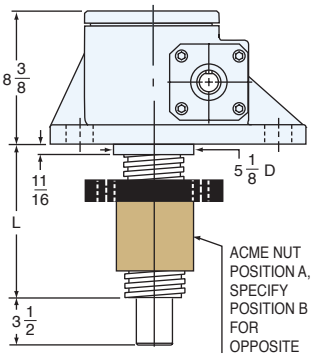


35-MSJ-UR
(Upright Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $18\frac{3}{8}$

35-MSJ-IR
(Inverted Rotating)



FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $10\frac{11}{16}$

35-MSJ STANDARD SCREW

SCREW:	3 3/4 - 1 1/2
ROOT DIAMETER:	3.009
DRAG TORQUE:	50 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	145.0
PER INCH TRAVEL:	3.4
GREASE:	3.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10⅔:1	16	.0493 in.-lbs.	.0570 in.-lbs.	11	200 rpm	174 rpm	8035 lbs.	6950 lbs.
32:1	48	.0257 in.-lbs.	.0295 in.-lbs.	3½	122 rpm	107 rpm	4904 lbs.	4273 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

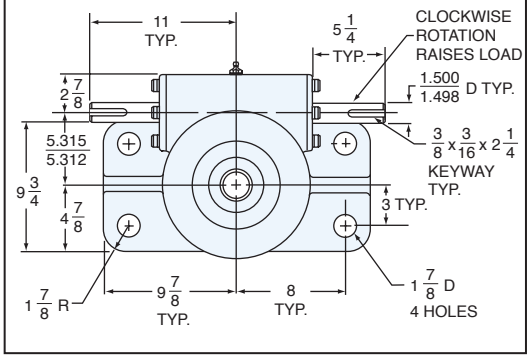
INCH MACHINE SCREW JACKS

50-MSJ

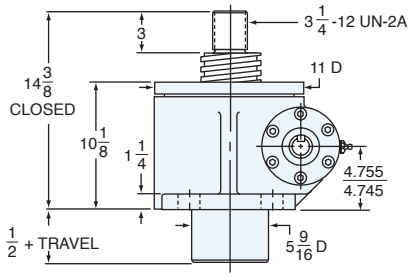
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

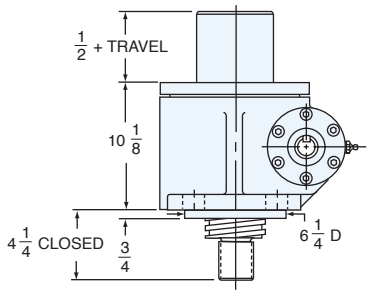
50-MSJ Housing Top View



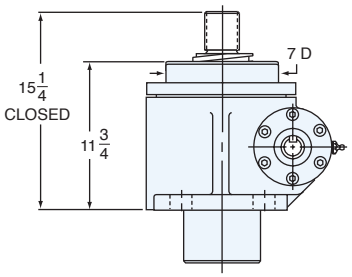
50-MSJ-U
(Upright)



50-MSJ-I
(Inverted)

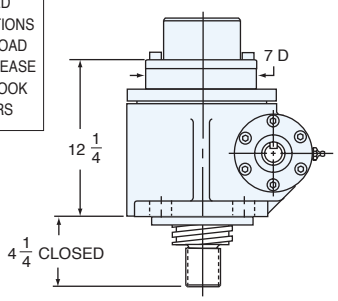


50-MSJ-UK
(Upright Keyed)

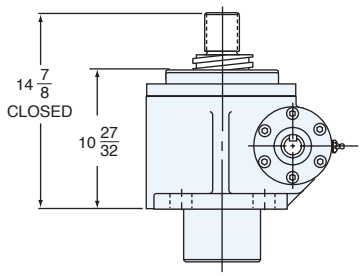


FOR KEYED CONFIGURATIONS REDUCED LOAD CAPACITY, PLEASE CONTACT NOOK ENGINEERS

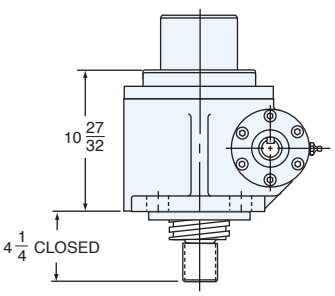
50-MSJ-IK
(Inverted Keyed)



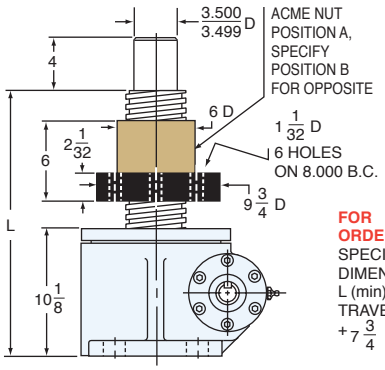
50AB-MSJ-U
(Upright Anti-Backlash)



50AB-MSJ-I
(Inverted Anti-Backlash)

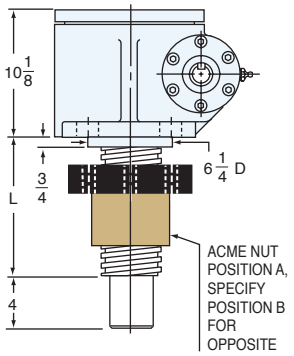


50-MSJ-UR
(Upright Rotating)



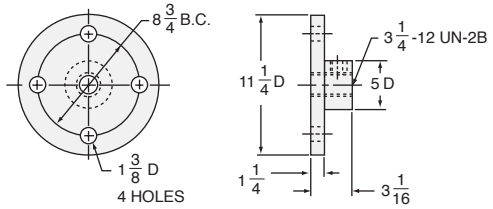
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 17 7/8

50-MSJ-IR
(Inverted Rotating)

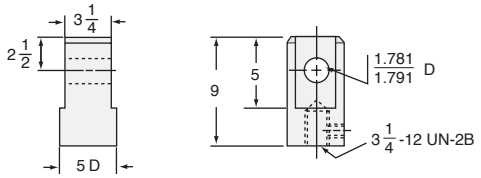


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 7 3/4

TOP PLATE (optional): B9000-00-09

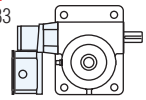


CLEVIS END (optional): B9001-00-09



ROTARY LIMIT SWITCH

see page 282-283



50-MSJ STANDARD SCREW

SCREW:	4 1/2 - 1 1/2
ROOT DIAMETER:	3.782
DRAG TORQUE:	100 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	280.0
PER INCH TRAVEL:	5.0
GREASE:	5.8

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	16	.0555 in.-lbs.	.0638 in.-lbs.	16	181 rpm	158 rpm	10382 lbs.	9032 lbs.
32:1	48	.0301 in.-lbs.	.0346 in.-lbs.	5	104 rpm	91 rpm	5982 lbs.	5204 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

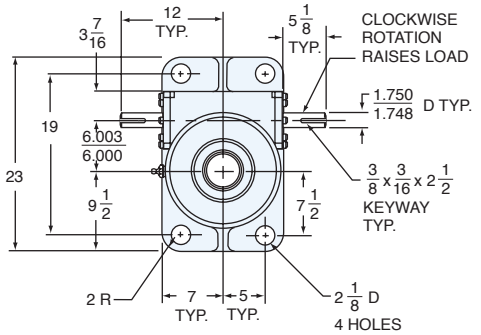
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

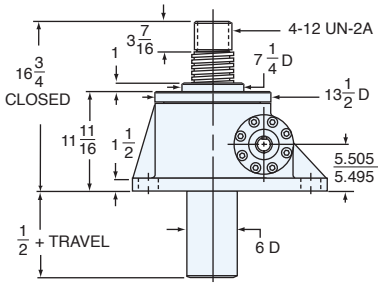
75-MSJ

INCH MACHINE SCREW JACKS

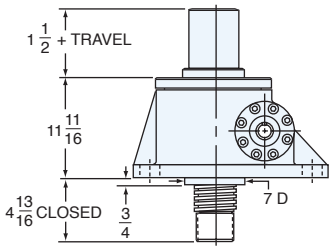
75-MSJ Housing Top View



75-MSJ-U (Upright)

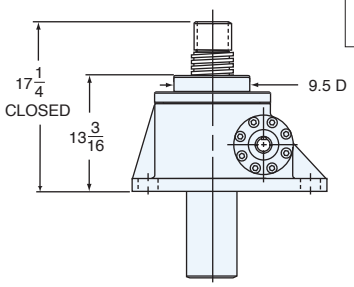


75-MSJ-I (Inverted)

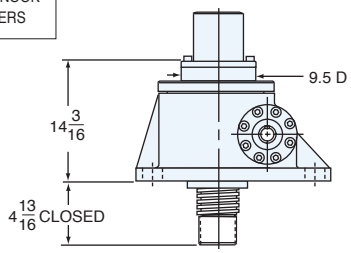


FOR KEYED CONFIGURATIONS REDUCED LOAD CAPACITY, PLEASE CONTACT NOOK ENGINEERS

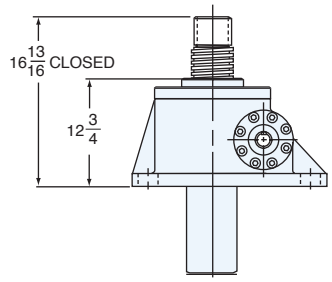
75-MSJ-UK (Upright Keyed)



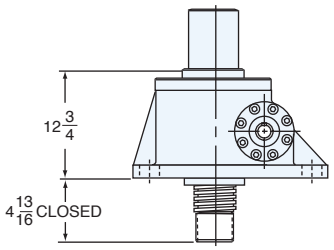
75-MSJ-IK (Inverted Keyed)



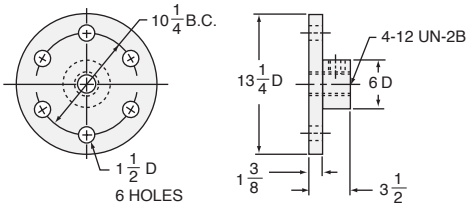
75AB-MSJ-U (Upright Anti-Backlash)



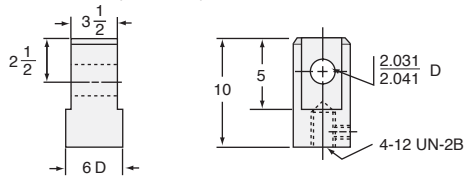
75AB-MSJ-I (Inverted Anti-Backlash)



TOP PLATE (optional): B9000-00-20

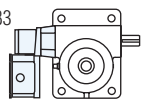


CLEVIS END (optional): B9001-00-20



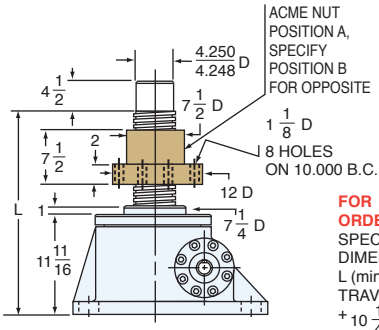
ROTARY LIMIT SWITCH

see page 282-283



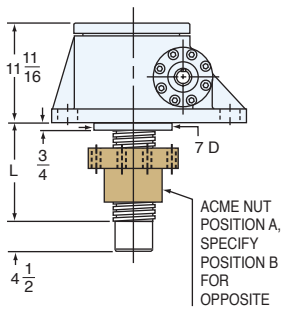
75-MSJ-UR (Upright Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 22 3/16



75-MSJ-IR (Inverted Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 10 1/4



75-MSJ STANDARD SCREW

SCREW:	5 - 1 1/2
ROOT DIAMETER:	4.286
DRAG TORQUE:	155 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	610.0
PER INCH TRAVEL:	6.5
GREASE:	9.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	16	.0549 in.-lbs.	.0631 in.-lbs.	28	214 rpm	186 rpm	18368 lbs.	15950 lbs.
32:1	48	.0252 in.-lbs.	.0290 in.-lbs.	9	150 rpm	130 rpm	12862 lbs.	11180 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

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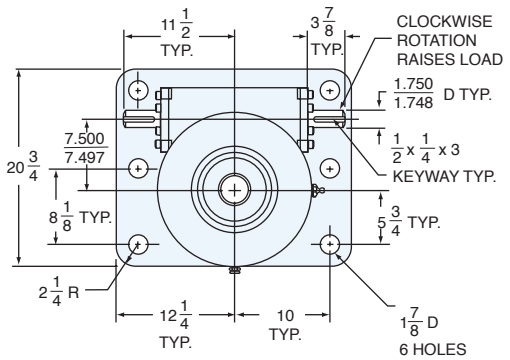
INCH MACHINE SCREW JACKS

100-MSJ

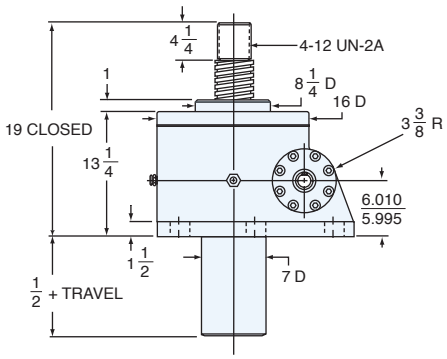
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

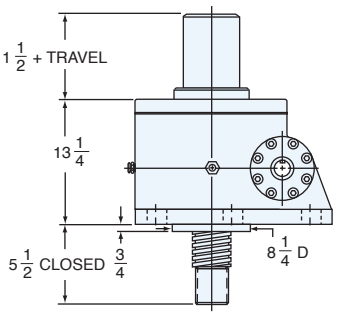
100-MSJ Housing Top View



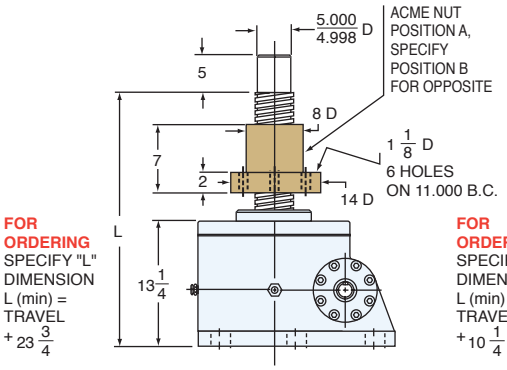
100-MSJ-U
(Upright)



100-MSJ-I
(Inverted)



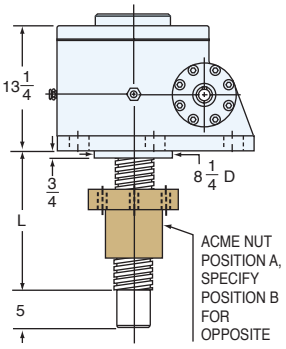
100-MSJ-UR
(Upright Rotating)



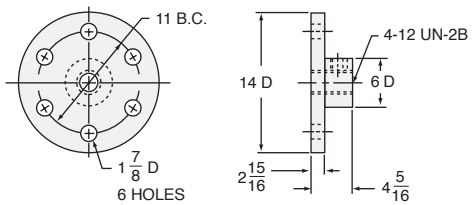
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 23 3/4

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 10 1/4

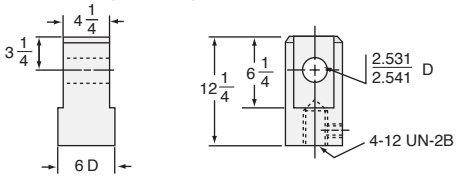
100-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): B9000-00-21

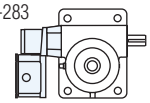


CLEVIS END (optional): B9001-00-21



ROTARY LIMIT SWITCH

see page 282-283

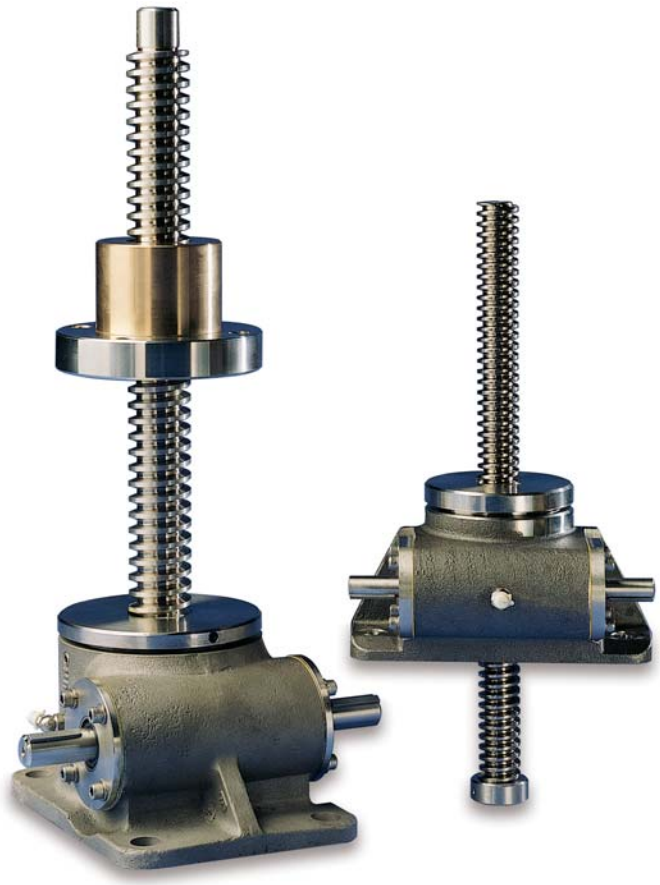


100-MSJ STANDARD SCREW

SCREW:	6 - 1 1/2
ROOT DIAMETER:	5.254
DRAG TORQUE:	205 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	975
PER INCH TRAVEL:	8.5
GREASE:	16.0

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.		MAX. HP	MAX. WORM SPEED AT RATED LOAD		MAX. LOAD AT 1750 RPM	
		NON-KEYED	KEYED		NON-KEYED	KEYED	NON-KEYED	KEYED
10 2/3:1	16	.0665 in.-lbs.	—	32	153 rpm	—	17330 lbs.	—
32:1	48	.0377 in.-lbs.	—	12 1/2	106 rpm	—	11941 lbs.	—

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.



STAINLESS STEEL MACHINE SCREW JACKS

ActionJac™ Stainless Steel Machine Screw Jacks are ideal for use in demanding environments where corrosion resistance is required. All external components are manufactured from 300 series Stainless Steel materials. These jacks use a stainless steel worm with a high strength bronze drive sleeve. The worm and drive sleeve are supported by tapered roller bearings and sealed to prevent loss of lubrication and to resist contamination. The stainless steel lifting screw threads are precision formed to Class 2-C (centralizing) thread profiles.

Load capacities for Stainless Steel Machine Screw Jacks range from 1,300 to 23,000 pounds. A 17-4PH hardened worm is available for a 300% increase in capacity.

See the technical introduction at the beginning of this section for a description of Stainless Steel Machine Screw Jack features.

Download Accurate Moveable Assembly 3D Models and 2D Drawings

For ActionJac™ Worm Gear Screw Jacks:

- **Configure** specific requirements for your Worm Gear Screw Jack application in a simple interface, including motor adapter, right angle reducer, bellows boots and limit switch accessories.
- **View** complete assemblies on-line with zoom, pan and rotate capabilities.
- **Download** true assembly models with full range of motion in native AutoCAD®, SolidWorks®, Pro/E®, CATIA®, ParaSolids®, SAT® and many other formats.
- **Order** complete jack assemblies with generated part number.

Download 3D Models

ActionJac WORM GEAR SCREW JACKS

www.nookindustries.com

QUICK REFERENCE: INCH STAINLESS STEEL JACKS

2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

JACK SIZES					JACK SELECTION								
MODEL	Capacity (tons)	Lifting Screw Dia. (in)	Screw Lead (in)	Root Dia. (in)	Gear Ratio	Turns of Worm for 1" Travel	Maximum Input Torque (in.-lb.)	Maximum Allowable Input (hp)	Maximum Worm Speed at Rated Load	Maximum Load at 1750 RPM	Torque to Raise 1 lb. (in.-lb.)	Tare Drag Torque (in.-lb.)	Page Ref
2SS-MSJ	0.66	1	.250	.698	6:1	24	33	2	1800	1330	.0250	4	337
					24:1	96	14	1/2	1800	1320	.0150	4	337
5SS-MSJ	1.67	1 1/2	.375	1.066	6:1	16	125	3	1510	2873	.0376	10	338
					24:1	64	48	3/4	985	1875	.0144	10	338
10SS-MSJ	3.33	2	.500	1.410	8:1	16	251	5	1255	4775	.0377	20	339
					24:1	48	128	1 1/2	739	2813	.0192	20	339
15SS-MSJ	5.00	2 1/4	.500	1.684	8:1	16	407	5	774	4424	.0407	20	340
					24:1	48	218	1 1/2	434	2478	.0218	20	340
20SS-MSJ	6.66	2 1/2	.500	1.908	8:1	16	580	5	540	4140	.0435	40	341
					24:1	48	291	1 1/2	325	2478	.0218	40	341
25SS-MSJ	8.30	3	.667	2.287	10 2/3:1	16	903	11	768	8764	.0452	50	342
					32:1	48	471	3 1/2	468	5364	.0235	50	342
35SS-MSJ	11.66	3 3/4	.667	3.083	10 2/3:1	16	1150	11	603	8035	.0493	50	343
					32:1	48	600	3 1/2	368	5022	.0251	50	343

* Measurements listed are for non-keyed units. See individual jack pages for keyed jack info.

NOTES:

1) The recommended maximum speed is 1800 rpm provided that the recommended horsepower and temperature are not exceeded.

2) Input torque is shown as torque to lift one pound of load. Starting Torque is 100% greater than torque shown. Tare drag torque should be added for all loads.

3) Maximum allowable horsepower ratings are based on a 25% duty cycle. For operation at higher duty cycles or repeated use over any segment of the total travel, temperature must be monitored and remain less than 200°F.

4) Overload capacity of the Stainless Steel Machine Screw Jack is as follows: 10% for dynamic loads, 30% for static loads.

5) Stainless Steel Machine Screw Jacks having gear ratios between 20:1 and 32:1, are self-locking and will hold loads without backdriving in the absence of vibration. All other ratios may require a brake to prevent backdriving.

6) All units are suitable for intermittent operation providing that the housing temperature including ambient is not lower than -20°F. or higher than +200°F. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges consult Nook Industries.

7) Accessories such as boots, top plates and clevises are available.

8) Catalog dimensions are representative only and are subject to change without notice. For construction, use only certified prints.

9) Units are not to be used as personnel support or movement.

10) End-of-travel stops are not provided.

‡ For greater capacity, specify a 17-4PH hardened worm.

* Tare drag torque need only be added if operating under 25% rated load.

$$\text{Horsepower per jack} = \frac{\text{Torque to raise one pound} \times \text{Number of pounds to be raised} \times \text{rpm}}{63{,}025}$$

Starting Torque is 100% greater than torque shown.

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

COLUMN STRENGTH: INCH STAINLESS STEEL JACKS

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the acme screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

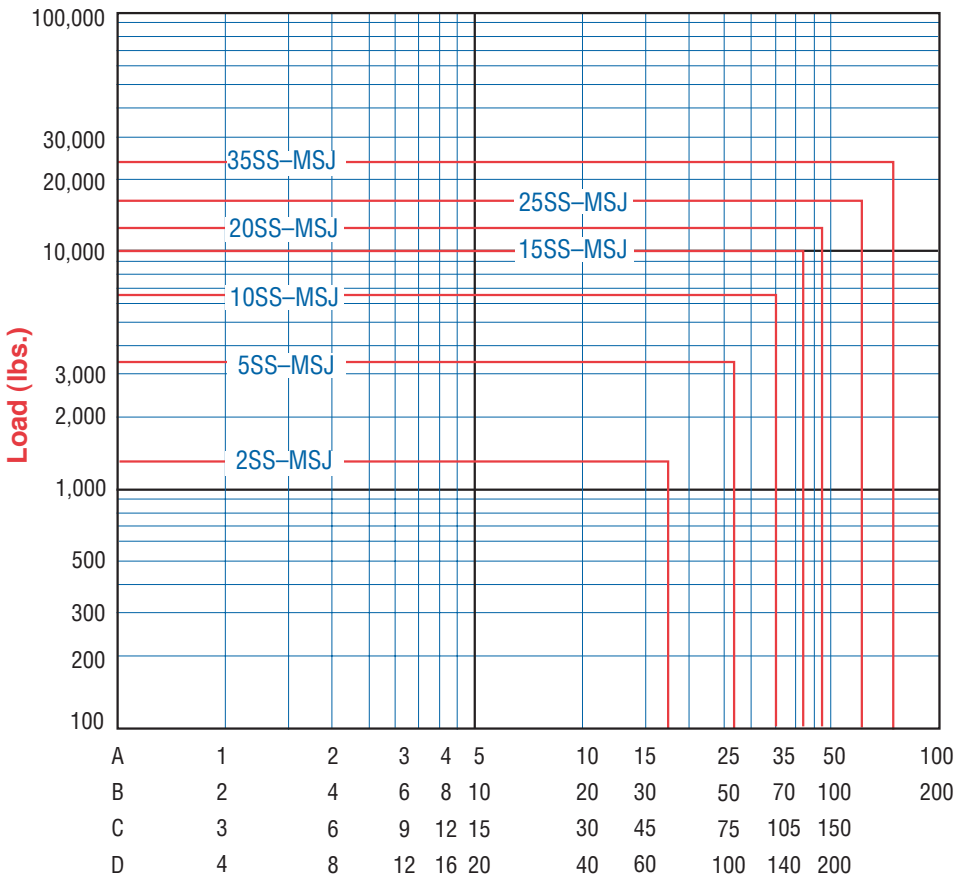
To use this chart:

Find a point at which the maximum length "L" intersects the maximum load. Be sure the jack selected is above and to the right of that point.

CAUTION: chart does not include a design factor.

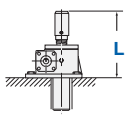
The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries, Inc. if side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.

IF 17-4PH WORM IS ORDERED, REFER TO PAGE 316 FOR COLUMN STRENGTH

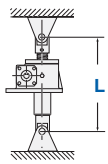


MOUNTING CONDITIONS

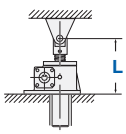
A
ONE END FIXED
ONE END FREE



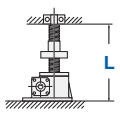
B
BOTH ENDS SUPPORTED BY CLEVIS ENDS



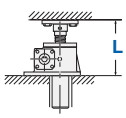
C
ONE END FIXED, ONE END SUPPORTED (CLEVIS ATTACHED TO GUIDE STRUCTURE)



ONE END FIXED, ONE END SUPPORTED (RADIAL BEARING))



D
BOTH ENDS FIXED (TOP PLATE ATTACHED TO GUIDED STRUCTURE)



AVAILABLE LIFT SCREW LENGTHS

As a major manufacturer of industrial lead screws, Nook Industries stocks a broad selection of stainless acme screws. Nook Industries has the capacity to make long acme screws for special applications. Rotating screw jacks can be built with a larger diameter lift screw for greater column strength, or a different lead to change the jack operating speed.

REFERENCE NUMBER SYSTEM: INCH STAINLESS STEEL JACKS

2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

2SS-MSJ- U 6:1 / SSE-1 / 000-2 / FT / 24.5 / SB

SS MACHINE SCREW MODEL

Ton	Model #
0.66	= 2SS-MSJ
1.67	= 5SS-MSJ
3.33	= 10SS-MSJ
5.00	= 15SS-MSJ
6.66	= 20SS-MSJ
8.30	= 25SS-MSJ
11.66	= 35SS-MSJ

CONFIGURATION

U = Upright
I = Inverted
UR = Upright Rotating
IR = Inverted Rotating

GEAR RATIO

Refer to product pages for available ratios.

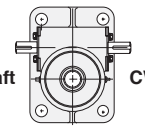
SHAFT ORDER CODE

CCW Position 1
CW Position 2

ORDER CODES (Must Include A Position)

NO ACCESSORY

SSE-_ = Standard Shaft Extension, Position 1 or 2
000-_ = Delete Shaft Extension, Position 1 or 2
SPC-_ = Special Modified Shaft Extension, Position 1 or 2



NOTE: Both Shaft Extensions Must Be Specified

HOUSING CONFIGURATION

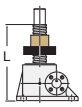
F = Standard Flange Base

SCREW CONFIGURATION

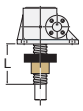
TRANSLATING - U and I MODELS
T = Standard Threaded End
C = Clevis End
P = Top Plate

ROTATING - UR and IR MODELS
A = Travel Nut Position "A"
B = Travel Nut Position "B"

UR - Upright Rotating **IR -** Inverted Rotating



Travel Nuts shown in position "A"



TRAVEL

TRANSLATING - U and I MODELS use actual Travel in inches.

ROTATING - UR and IR MODELS use "L" Dimension in Inches.

MODIFIER LIST

S or M Required
S = Standard. no additional description required
M = Modified, additional description required

E, B and/or H Optional
E = In-Line Encoder (motor or motor mount required)
B = Bellows Boots (must calculate retracted and extended boot length, see page 280-281)
H = Hardened Worm

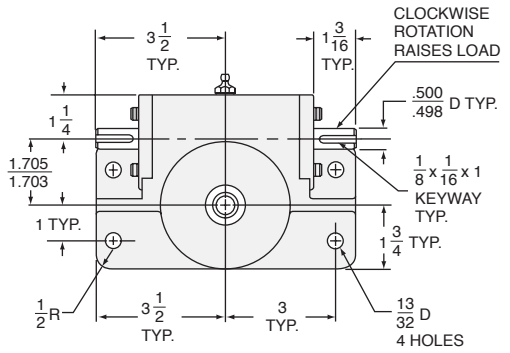
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

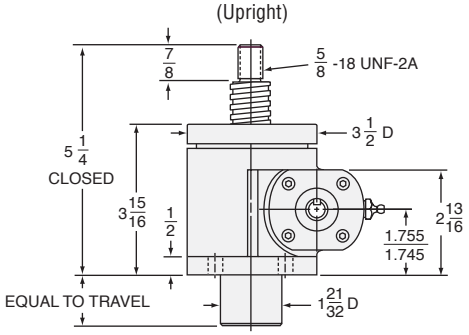
2SS-MSJ

STAINLESS SCREW JACKS

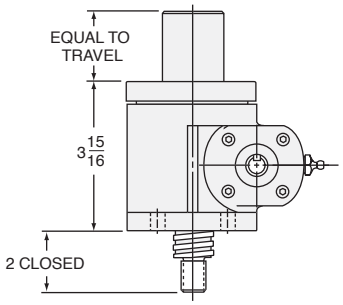
2SS MSJ Housing Top View



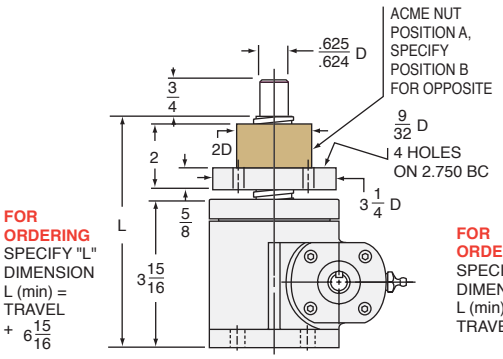
2SS-MSJ-U (Upright)



2SS-MSJ-I (Inverted)

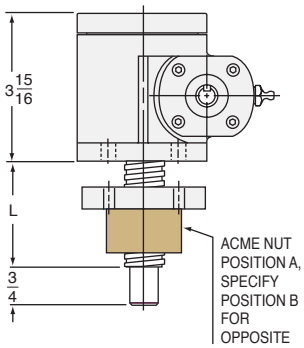


2SS-MSJ-UR (Upright Rotating)



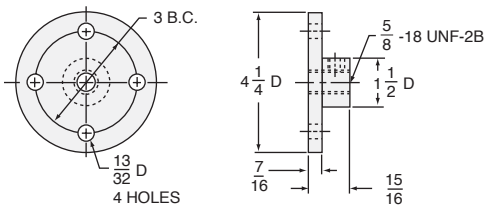
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 6 15/16

2SS-MSJ-IR (Inverted Rotating)

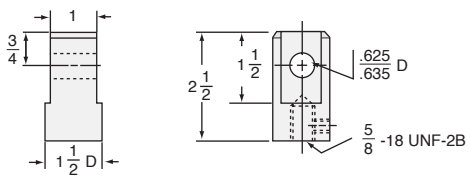


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 3

TOP PLATE (optional): B9000-SS-01



CLEVIS END (optional): B9001-SS-01



2SS-MSJ STANDARD SCREW

SCREW:	1 - 4
ROOT DIAMETER:	0.698
DRAG TORQUE:	4 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	17
PER INCH TRAVEL:	.5
GREASE:	.5

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
6:1	24	.0250 in.-lbs.	2	1800 rpm	1330 lbs.
24:1	96	.0105 in.-lbs.	1/2	1800 rpm	1330 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

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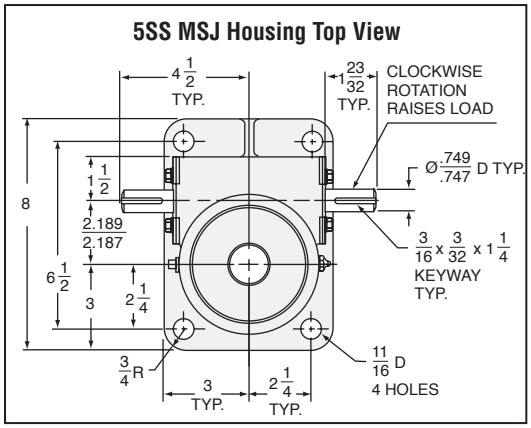
STAINLESS SCREW JACKS

5SS-MSJ

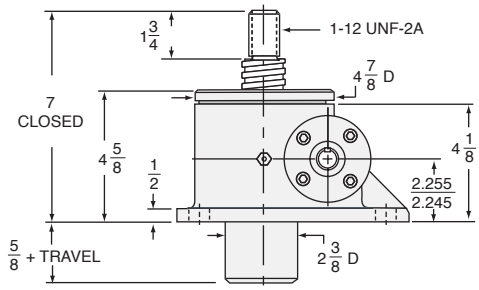
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

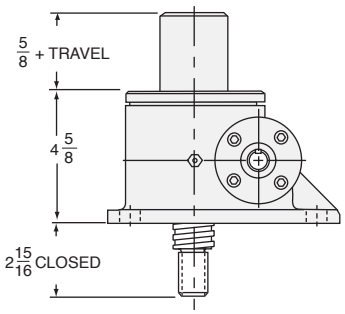
5SS MSJ Housing Top View



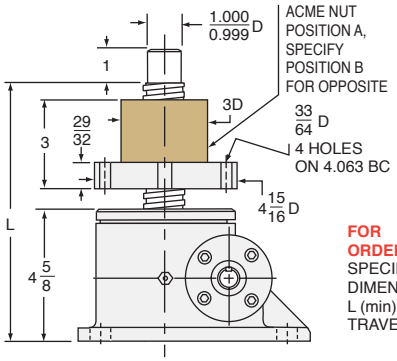
5SS-MSJ-U
(Upright)



5SS-MSJ-I
(Inverted)

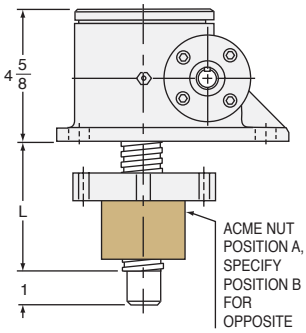


5SS-MSJ-UR
(Upright Rotating)



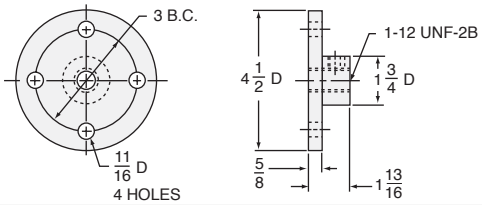
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 8 5/8

5SS-MSJ-IR
(Inverted Rotating)

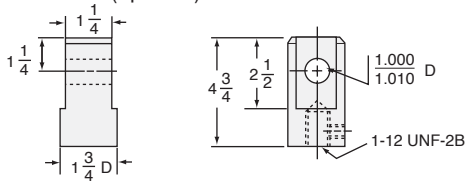


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4

TOP PLATE (optional): B9000-SS-02



CLEVIS END (optional): B9001-SS-02



5SS-MSJ STANDARD SCREW

SCREW:	1 1/2 - 2 2/3
ROOT DIAMETER:	1.066
DRAG TORQUE:	10 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	32
PER INCH TRAVEL:	.7
GREASE:	1.00

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
6:1	16	.0376 in.-lbs.	3	1510 rpm	2873 lbs.
24:1	64	.0144 in.-lbs.	3/4	985 rpm	1875 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

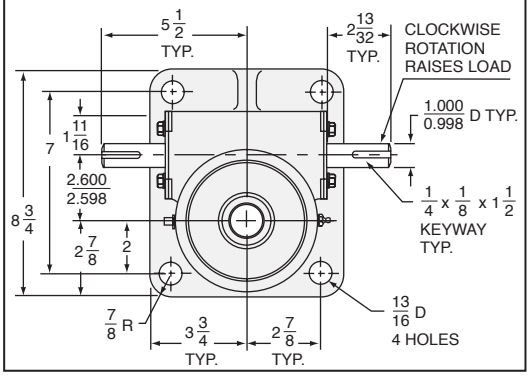
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

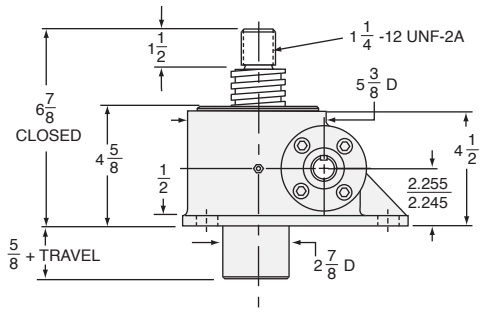
10SS-MSJ

STAINLESS SCREW JACKS

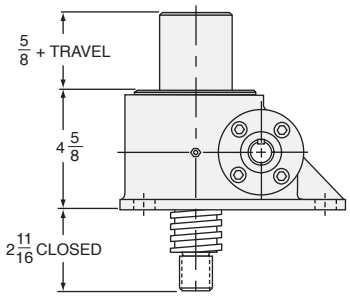
10SS MSJ Housing Top View



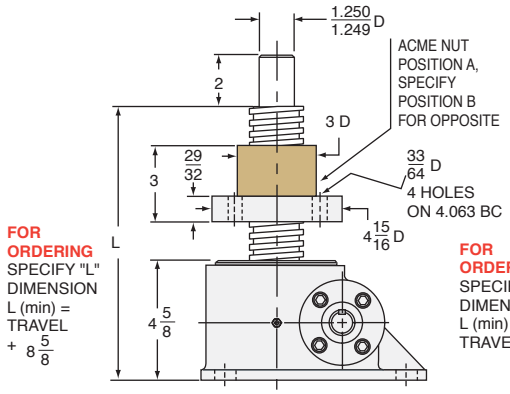
10SS-MSJ-U
(Upright)



10SS-MSJ-I
(Inverted)



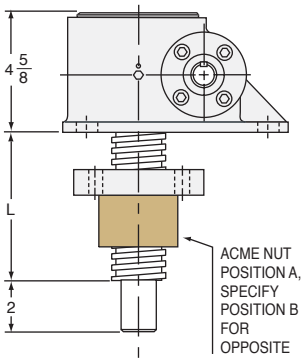
10SS-MSJ-UR
(Upright Rotating)



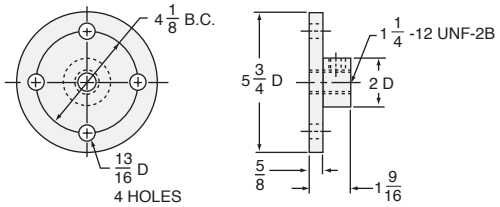
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + $8\frac{5}{8}$

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4

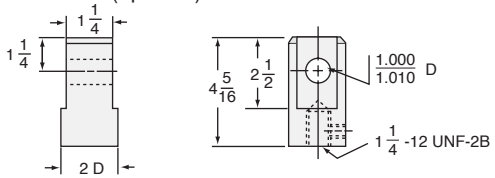
10SS-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): B9000-SS-03



CLEVIS END (optional): B9001-SS-03



10SS-MSJ STANDARD SCREW

SCREW:	2 - 2
ROOT DIAMETER:	1.410
DRAG TORQUE:	20 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	50
PER INCH TRAVEL:	1.2
GREASE:	1.50

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
8:1	16	.0377 in.-lbs.	5	1255 rpm	4775 lbs.
24:1	48	.0192 in.-lbs.	1½	739 rpm	2813 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

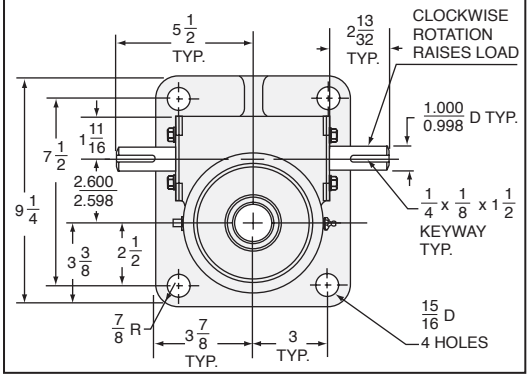
STAINLESS SCREW JACKS

15SS-MSJ

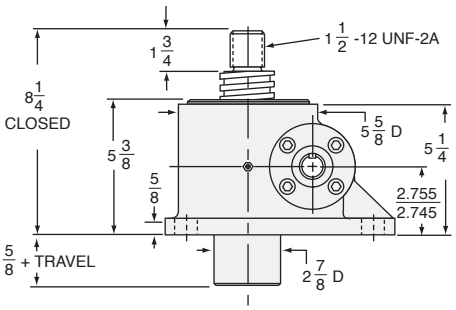
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

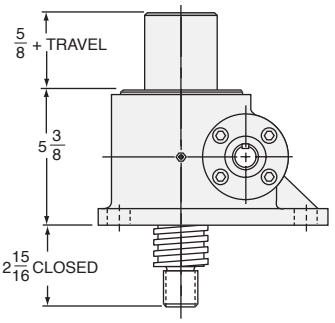
15SS MSJ Housing Top View



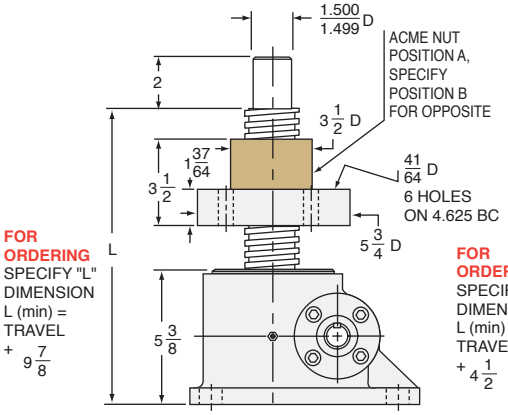
15SS-MSJ-U
(Upright)



15SS-MSJ-I
(Inverted)



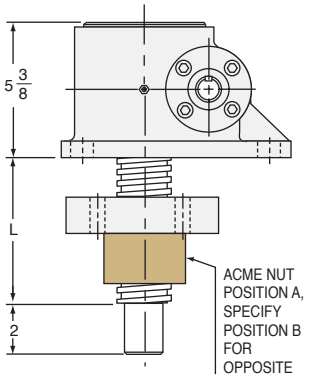
15SS-MSJ-UR
(Upright Rotating)



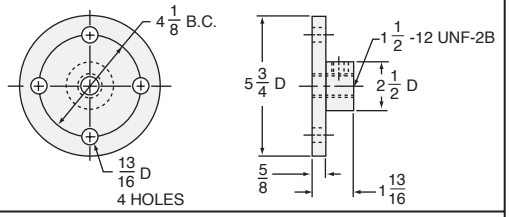
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 9 7/8

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 4 1/2

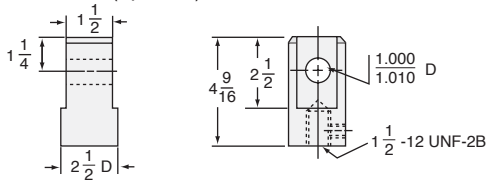
15SS-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): B9000-SS-05



CLEVIS END (optional): B9001-SS-05



15SS-MSJ STANDARD SCREW

SCREW:	2 1/4 - 2
ROOT DIAMETER:	1.684
DRAG TORQUE:	20 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	60
PER INCH TRAVEL:	1.4
GREASE:	1.50

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
8:1	16	.0407 in.-lbs.	5	774 rpm	4424 lbs.
24:1	48	.0218 in.-lbs.	1½	434 rpm	2478 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

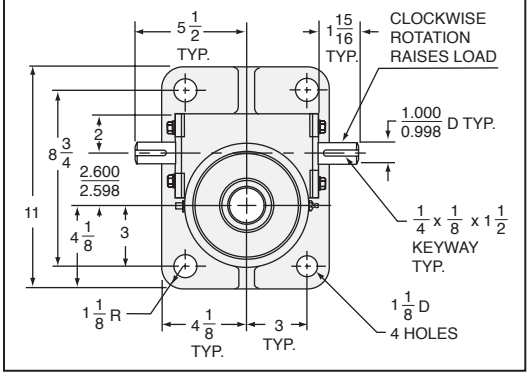
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

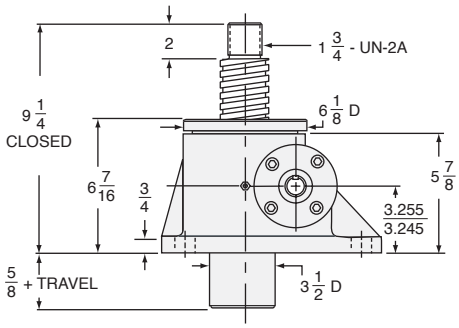
20SS-MSJ

STAINLESS SCREW JACKS

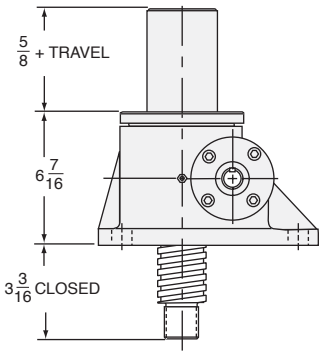
20SS MSJ Housing Top View



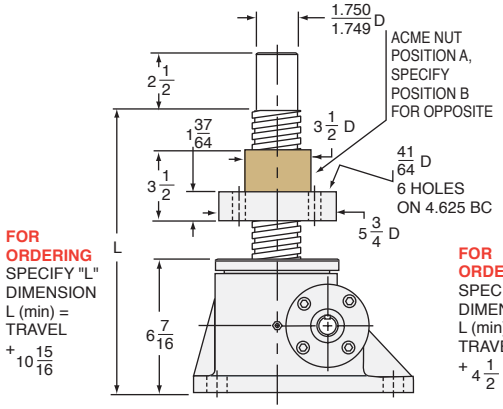
20SS-MSJ-U
(Upright)



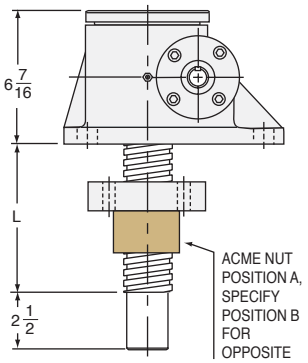
20SS-MSJ-I
(Inverted)



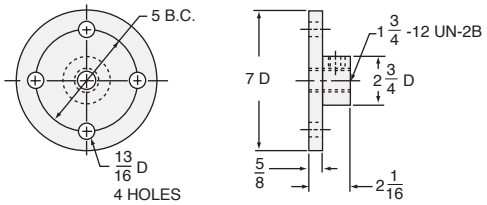
20SS-MSJ-UR
(Upright Rotating)



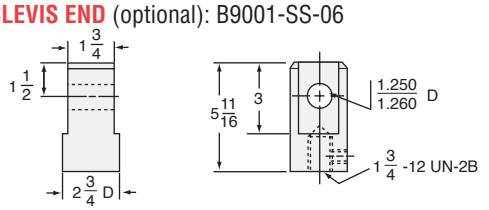
20SS-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): B9000-SS-06



CLEVIS END (optional): B9001-SS-06



20SS-MSJ STANDARD SCREW

SCREW:	2 1/2 - 2
ROOT DIAMETER:	1.908
DRAG TORQUE:	40 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	85
PER INCH TRAVEL:	2.0
GREASE:	2.25

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
8:1	16	.0435 in.-lbs.	5	540 rpm	4140 lbs.
24:1	48	.0218 in.-lbs.	1½	325 rpm	2478 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

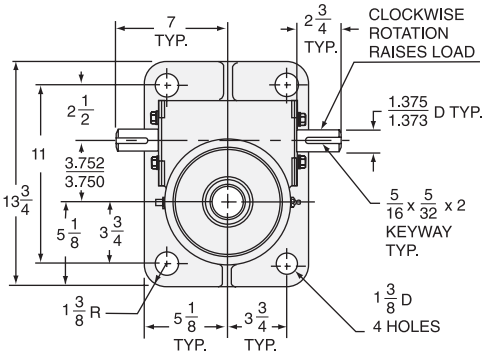
STAINLESS SCREW JACKS

25SS-MSJ

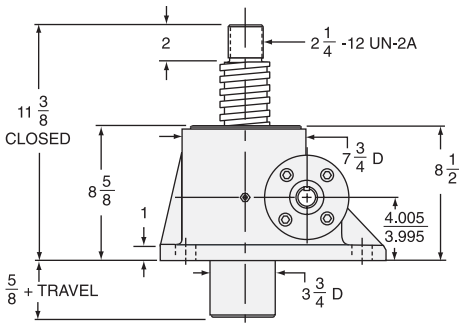
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

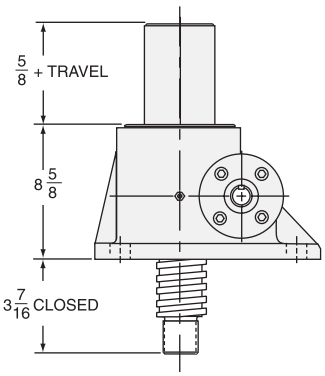
25SS MSJ Housing Top View



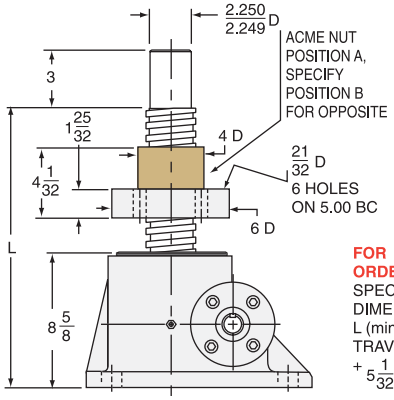
25SS-MSJ-U
(Upright)



25SS-MSJ-I
(Inverted)

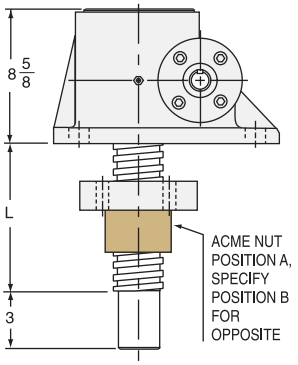


25SS-MSJ-UR
(Upright Rotating)



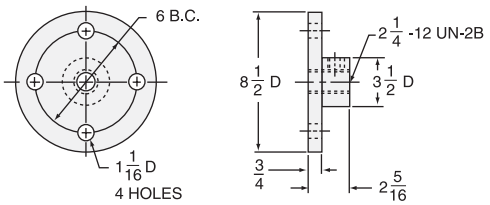
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 13 21/32

25SS-MSJ-IR
(Inverted Rotating)

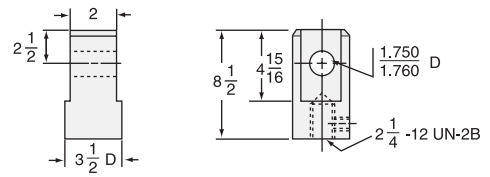


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 5 1/32

TOP PLATE (optional): B9000-SS-07



CLEVIS END (optional): B9001-SS-08



25SS-MSJ STANDARD SCREW

SCREW:	3 - 1 1/2
ROOT DIAMETER:	2.287
DRAG TORQUE:	50 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	155
PER INCH TRAVEL:	3.1
GREASE:	3.50

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
10 2/3:1	16	.0452 in.-lbs.	11	768 rpm	7310 lbs.
32:1	48	.0235 in.-lbs.	3 1/2	468 rpm	4457 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

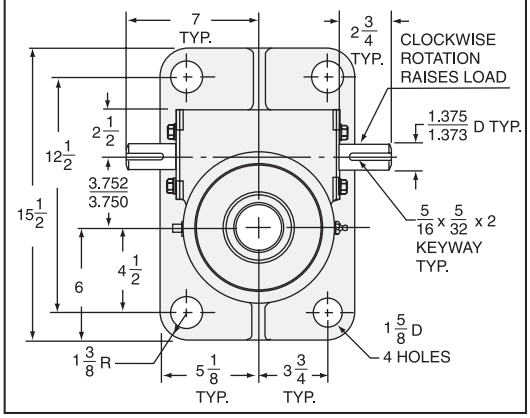
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

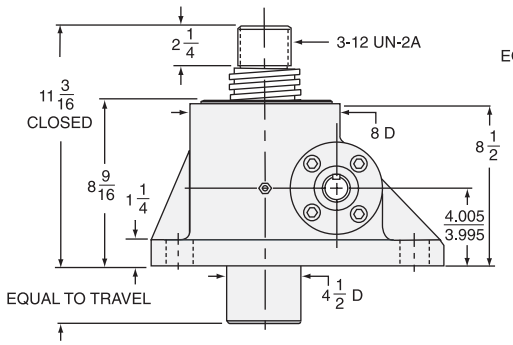
35SS-MSJ

STAINLESS SCREW JACKS

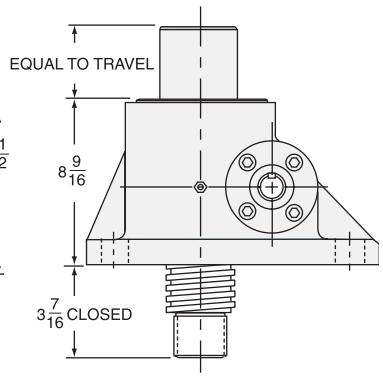
35SS MSJ Housing Top View



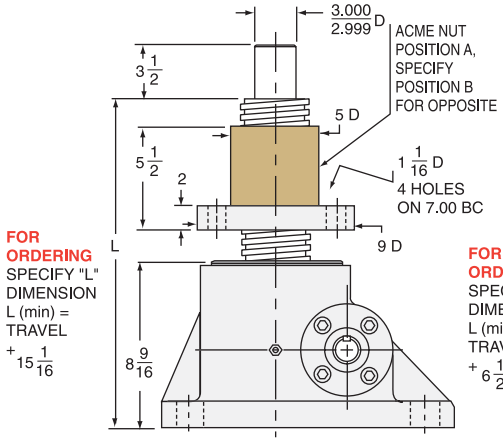
35SS-MSJ-U
(Upright)



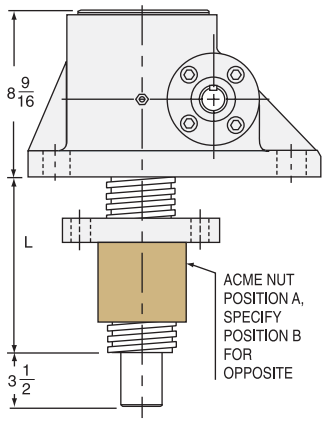
35SS-MSJ-I
(Inverted)



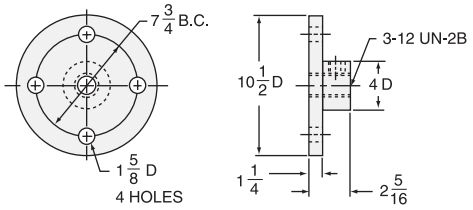
35SS-MSJ-UR
(Upright Rotating)



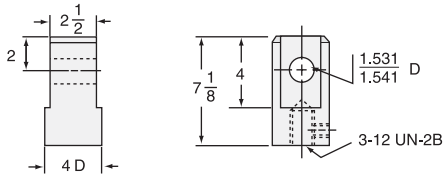
35SS-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): B9000-SS-13



CLEVIS END (optional): B9001-SS-16



35SS-MSJ STANDARD SCREW

SCREW:	3 3/4 - 1 1/2
ROOT DIAMETER:	3.009
DRAG TORQUE:	50 IN.-LB.
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Pounds)	
"0" TRAVEL:	165
PER INCH TRAVEL:	3.5
GREASE:	3.50

RATIO	TURNS OF WORM PER INCH TRAVEL	TORQUE TO RAISE ONE LB.	MAX. HP	MAX. WORM SPEED AT RATED LOAD	MAX. LOAD AT 1750 RPM
10⅔:1	16	.0493 in.-lbs.	11	603 rpm	8035 lbs.
32:1	48	.0251 in.-lbs.	3½	368 rpm	4906 lbs.

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

METRIC BALL SCREW JACKS

With over twenty-five years of experience manufacturing precision worm gear screw jacks, Nook Industries has expanded the ActionJac™ offering to include metric models providing design engineers a globally accepted product. All the efficiency advantages that come with ball screw technology are available in ActionJac™ metric ball screw jacks. A full line of IEC motor mounts are available.

See the technical introduction at the beginning of this section for additional Metric Ball Screw Jack features and comparison to Machine Screw Jacks.

Download Accurate Moveable Assembly 3D Models and 2D Drawings

For ActionJac™ Worm Gear Screw Jacks:

- **Configure** specific requirements for your Worm Gear Screw Jack application in a simple interface, including motor adapter, right angle reducer, bellows boots and limit switch accessories.
- **View** complete assemblies on-line with zoom, pan and rotate capabilities.
- **Download** true assembly models with full range of motion in native AutoCAD®, SolidWorks®, Pro/E®, CATIA®, ParaSolids®, SAT® and many other formats.
- **Order** complete jack assemblies with generated part number.

Download 3D Models

Actionjac WORM GEAR SCREW JACKS

www.nookindustries.com

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

QUICK REFERENCE: METRIC BALL SCREW JACKS

JACK SIZES					JACK SELECTION									
MODEL	Capacity (kN)	Lifting Screw Dia. (mm)	Screw Lead (mm)	Root Dia. (mm)	Gear Ratio	Raise for One Turn of Worm (mm)	Maximum Input Torque (N·m)	Maximum Allowable Input (kW)	Max. Worm Speed at Rated Load (rpm)	Maximum Load at 1425 RPM (kN)	Torque to Raise 1 kN (N·m)	No Load Torque (N·m)	BackDrive Holding Torque (N·m)	Page Ref
EM05-BSJ	5	15.7	5	12.9	5:1	1.00	1.21	0.21	1625	5.0	0.24	0.11	1.0	349
					20:1	0.25	0.51	0.09	1625	5.0	0.10	0.11	0.5	349
EM1-BSJ	10	20.0	5	17.5	5:1	1.00	2.41	0.38	1500	10.0	0.24	0.34	2.0	350
					20:1	0.25	1.14	0.19	1585	10.0	0.11	0.34	1.0	350
EM2.5-BSJ	25	25.0	5	22.5	6:1	0.83	5.05	1.08	2035	25.0	0.20	0.56	4.5	351
					12:1	0.42	3.05	0.65	2035	25.0	0.12	0.56	2.5	351
					24:1	0.21	2.13	0.38	1695	25.0	0.09	0.56	2.0	351
EM5-BSJ	50	40	10	34.8	6:1	1.67	19.3	2.28	1125	39.4	0.39	1.13	16.0	352
					24:1	0.42	7.7	0.56	695	24.4	0.15	1.13	6.5	352
EM10-BSJ	100	50	10	45.2	8:1	1.25	31.9	3.75	1125	78.9	0.32	2.26	26.0	353
					24:1	0.42	16.2	1.12	665	46.6	0.16	2.26	13.5	353
EM20-BSJ	200	63	12	57	8:1	1.50	75.2	5.6	710	99.8	0.38	4.52	61.0	354
					24:1	0.50	37.7	1.9	470	66.1	0.19	4.52	31.0	354

NOTES:

1) The recommended maximum speed is 3000 RPM providing that the recommended horsepower and temperature are not exceeded.

2) Input torque is shown as torque to lift one kN of load. Starting Torque is 100% greater than torque shown. For loads less than 25% of rated loads add tare drag torque.

3) Maximum allowable horsepower ratings are based on a 35% duty cycle. For operation at higher duty cycles or repeated use over any segment of the total travel, temperature must be monitored and remain less than 95°C.

4) Overload capacity of the Metric ball Screw Jack is as follows: 0% for dynamic loads, 20% for static loads.

5) All Ball Screw Jacks can backdrive and require some means of holding the load, such as a brake on the motor. The product specification pages show holding torque values. Holding torque represents the amount of input torque required to restrain the load and does not indicate recommended brake size to bring dynamic load to stop.

6) All units are suitable for intermittent operation providing that the housing temperature including ambient is not lower than -30°C. or higher than +95°C. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges consult Nook Industries.

7) Accessories such as boots, limit switches, top plates and clevises are available.

8) Catalog dimensions are representative only and are subject to change without notice. For construction, use only certified prints.

9) Units are not to be used as personnel support or movement.

10) End-of-travel stops are not provided.

Δ Starting torque is100% greater than torque shown.

$$\text{kW per jack} = \frac{\text{Torque to raise one kN(N•m)} \times \text{Number of kN to be raised} \times \text{RPM}}{9{,}549}$$

* No load torque need only be added if operating under 25% rated load.

COLUMN STRENGTH: METRIC BALL SCREW JACKS

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the ball screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

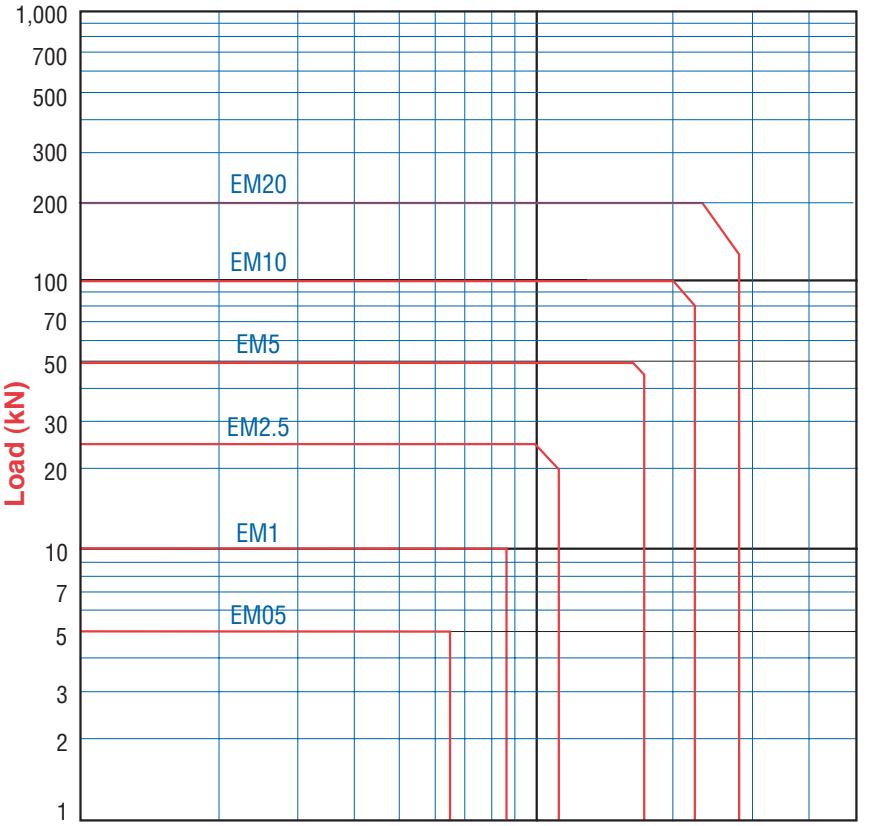
The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

To use this chart:

Find a point at which the maximum length "L" intersects the maximum load. Be sure the jack selected is above and to the right of that point.

CAUTION: chart does not include a design factor.

The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries, Inc. if side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.

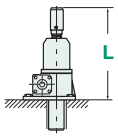


A	50	100	150	250	350	500	1,000	1,500	2,500
B	100	200	200	500	700	1,000	2,000	3,000	5,000
C	150	300	450	750	1,050	1,500	3,000	4,500	7,500
D	200	400	600	1,000	1,400	2,000	4,000	6,000	10,000

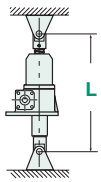
"L" (mm)
Metric Ball Screw Jack

MOUNTING CONDITIONS

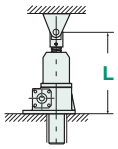
A
ONE END FIXED
ONE END FREE



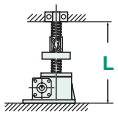
B
BOTH ENDS SUPPORTED BY CLEVIS ENDS



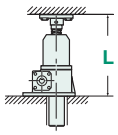
C
ONE END FIXED, ONE END SUPPORTED (CLEVIS ATTACHED TO GUIDE STRUCTURE)



ONE END FIXED, ONE END SUPPORTED (RADIAL BEARING))



D
BOTH ENDS FIXED (TOP PLATE ATTACHED TO GUIDED STRUCTURE)



AVAILABLE LIFT SCREW LENGTHS

As a major manufacturer of industrial lead screws, Nook Industries stocks a wide selection of ball screws. Nook Industries has the capacity to make long ball screws for special applications. Rotating screw jacks can be built with a larger diameter lift screw for greater column strength, or a different lead to change the jack operating speed.

ActionJac WORM GEAR SCREW JACKS

2D/3D CAD

LIFE EXPECTANCY: METRIC BALL SCREW JACKS

The following Chart provides the minimum life expectancy in total meters of travel for the ball screws.

MODEL	Operating Load (kN)	MINIMUM METERS OF TRAVEL		Page Number
		UPRIGHT & INVERTED	UPRIGHT & INVERTED ROTATING	
		Standard	Standard	
EM05-BSJ	4	34,295	42,869	349
	2	274,360	342,950	
	1	2,194,880	2,743,600	
EM1-BSJ	8	21,455	26,819	350
	5	87,880	109,850	
	2.5	703,040	878,800	
EM2.5-BSJ	22	2,793	3,716	351
	12	18,321	22,901	
	6	146,565	183,206	
EM5-BSJ	44	28,660	35,825	352
	22	229,283	286,604	
	10	2,441,406	3,051,758	
EM10-BSJ	88	6,315	7,894	353
	44	50,522	63,153	
	22	404,178	505,223	
EM20-BSJ	170	6,702	8,378	354
	85	53,618	67,023	
	42	444,444	555,555	

LEAD ACCURACY

The metric rolled thread ball screw, as employed in ActionJac™ products, is held within .1mm per 300 mm cumulative from nominal dimension. Jacks can be matched to within ±.05mm per 300mm when ordered as matched sets. Special ground threads having lead accuracies of .013mm per 300mm can be provided if necessary.

BACKLASH

Axial backlash ranges from .2 to .5 mm. Specify optional selective fit lift shaft for 0.13 to 0.2mm backlash.

MATERIAL HARDNESS

Ball screws have a race hardness of Rockwell C 58 minimum. Core hardness will run from Rc 20 to 35.

NOTES:

- Refer to Lubrication Instructions in order to obtain maximum life from ball screw assemblies
- These values may be greatly reduced if the units are subjected to misalignment, shock loads, side thrust, contamination or lack of proper lubrication and maintenance.

REFERENCE NUMBER SYSTEM: METRIC BALL SCREW JACKS

2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

EM2.5-BSJ- U 6:1 / SSE-1 / 80B5-2 / FT / 580mm / SB

BALL SCREW MODEL

kN	Model #	kN	Model #
5	= EM05-BSJ	**50**	= EM5-BSJ
10	= EM1-BSJ	**100**	= EM10-BSJ
25	= EM2.5-BSJ	**200**	= EM20-BSJ

CONFIGURATION

U = Upright
I = Inverted
UR = Upright Rotating
IR = Inverted Rotating

GEAR RATIO

Refer to product pages for available ratios.

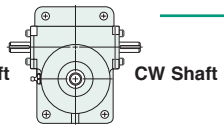
SHAFT ORDER CODE

CCW Position 1
CW Position 2

ORDER CODES (Must Include A Position)

NO ACCESSORY

SSE-_ = Standard Shaft Extension, Position 1 or 2
000-_ = Delete Shaft Extension, Position 1 or 2
SPC-_ = Special Modified Shaft Extension, Position 1 or 2



Motor Mounts Without Motor
(Position 1 or 2)

56B5	= EM05	**80B5**	= EM2.5 and EM5
56B14	= EM05	**80B14**	= EM2.5 and EM5
63B5	= EM1	**90B5**	= EM5 and EM10
63B14	= EM1	**90B14**	= EM5 and EM10
71B5	= EM1 and EM2.5	**100B5**	= EM10 and EM20
71B14	= EM1 and EM2.5	**100B14**	= EM10 and EM20

NOTE: Both Shaft Extensions Must Be Specified

HOUSING CONFIGURATION

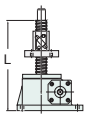
F = Standard Flange Base

SCREW CONFIGURATION

TRANSLATING - U and I MODELS
T = Standard Threaded End
C = Clevis End
P = Top Plate

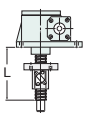
ROTATING - UR and IR MODELS
A = Travel Nut Position "A"
B = Travel Nut Position "B"

UR - Upright Rotating



Travel Nuts shown in position "A"

IR - Inverted Rotating



TRAVEL

For Translating Screw Models (U and I) use actual Travel in mm. For Rotating Screw Models (UR and IR) use "L" Dimension in Inches.

MODIFIER LIST

S or M Required
S = Standard. no additional description required
M = Modified, additional description required

E and/or B Optional
E = In-Line Encoder (motor or motor mount required)
B = Bellows Boots (must calculate retracted and extended boot length, see page 280-281)

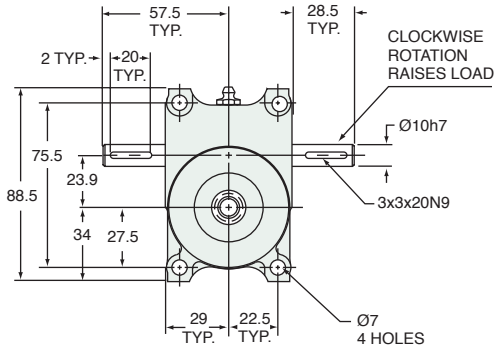
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

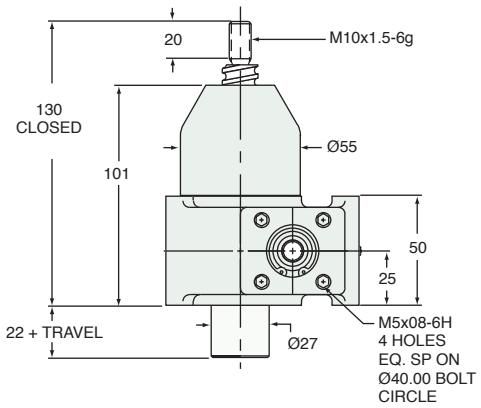
EM05-BSJ

METRIC BALL SCREW JACKS

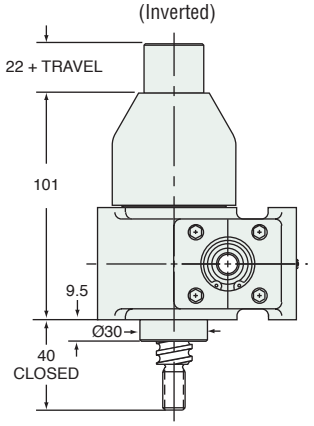
EM05 BSJ Housing Top View



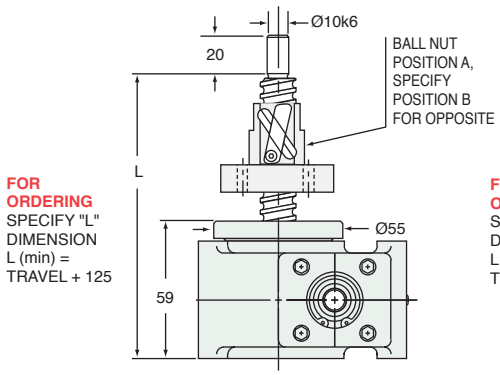
EM05-BSJ-U
(Upright)



EM05-BSJ-I
(Inverted)

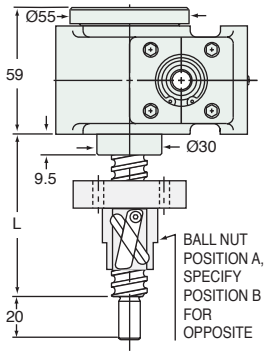


EM05-BSJ-UR
(Upright Rotating)



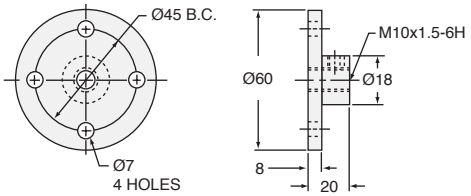
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 125

EM05-BSJ-IR
(Inverted Rotating)

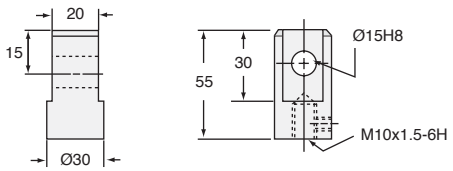


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 75

TOP PLATE (optional): 9000-EM-12

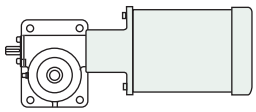


CLEVIS END (optional): 9001-EM-12

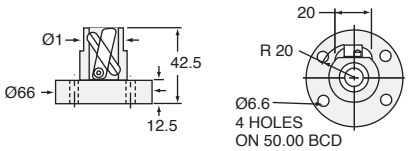


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM05-BSJ SCREW

SCREW:	MRT16x5
ROOT DIAMETER:	12.9
DRAG TORQUE:	.11
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	1.36
PER 100mm TRAVEL:	0.14
GREASE:	0.14

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
5:1	1.00 mm	0.24 Nm	0.21	1625 rpm	5.0 kN
20:1	0.25 mm	0.10 Nm	0.09	1625 rpm	5.0 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

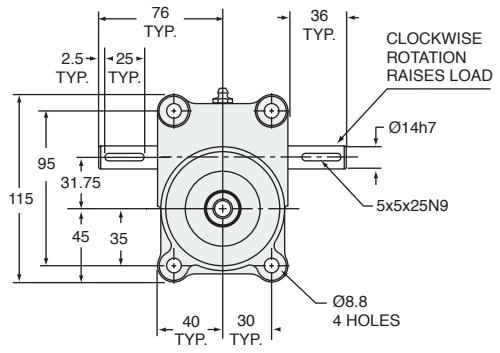
METRIC BALL SCREW JACKS

EM1-BSJ

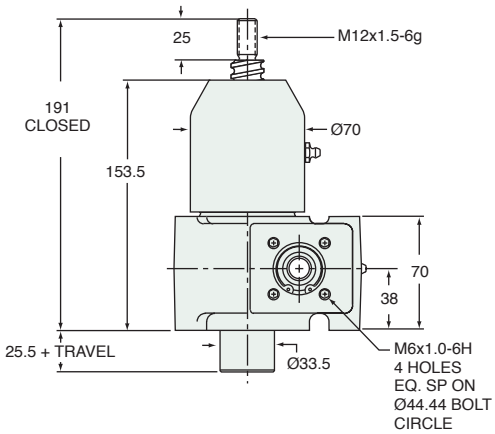
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

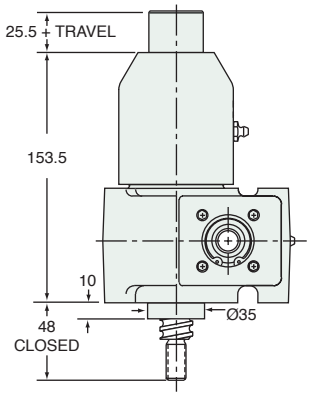
EM1 BSJ Housing Top View



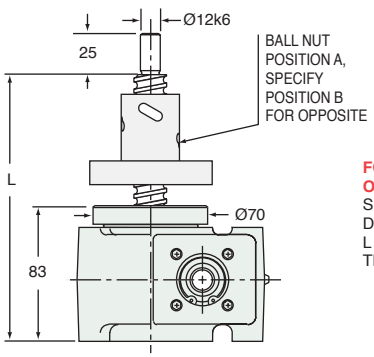
EM1-BSJ-U
(Upright)



EM1-BSJ-I
(Inverted)

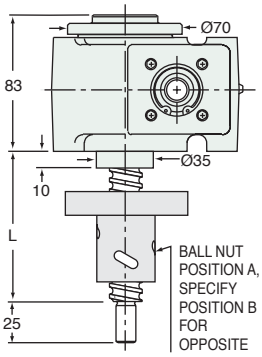


EM1-BSJ-UR
(Upright Rotating)



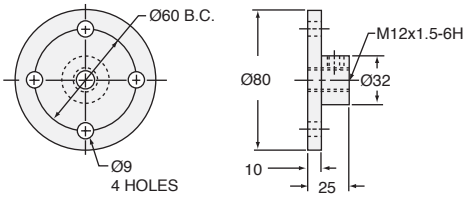
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 164

EM1-BSJ-IR
(Inverted Rotating)

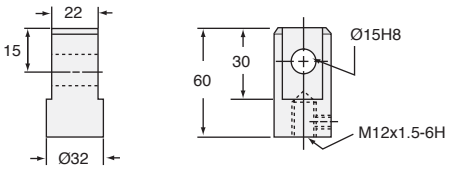


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 90

TOP PLATE (optional): 9000-EM-11

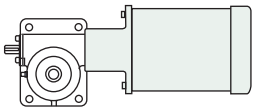


CLEVIS END (optional): 9001-EM-11

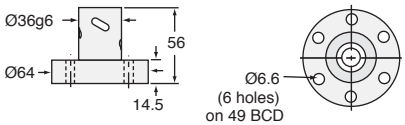


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM1-BSJ SCREW

SCREW:	MRT20x5
ROOT DIAMETER:	17.5
DRAG TORQUE:	0.34
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	3.6
PER 100mm TRAVEL:	0.23
GREASE:	0.23

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
5:1	1.00 mm	0.24 Nm	0.38	1500 rpm	10.0 kN
20:1	0.25 mm	0.11 Nm	0.19	1585 rpm	10.0 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

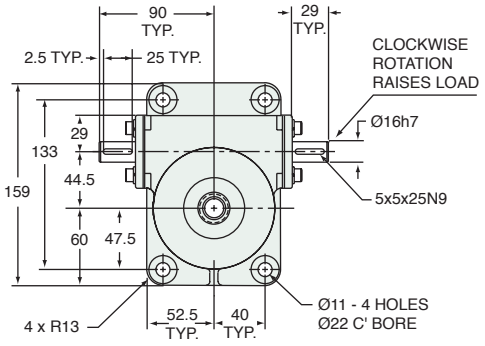
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

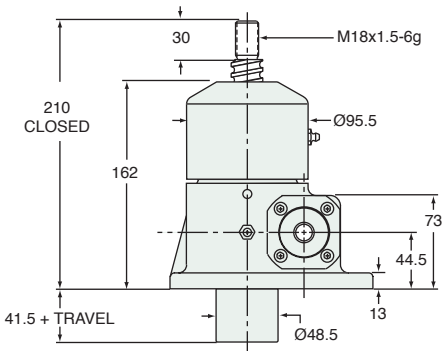
EM2.5-BSJ

METRIC BALL SCREW JACKS

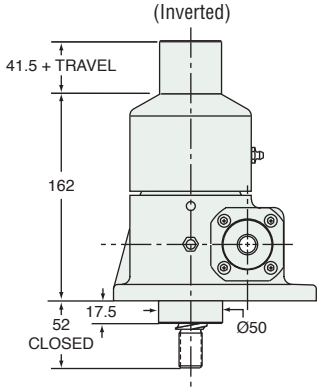
EM2.5 BSJ Housing Top View



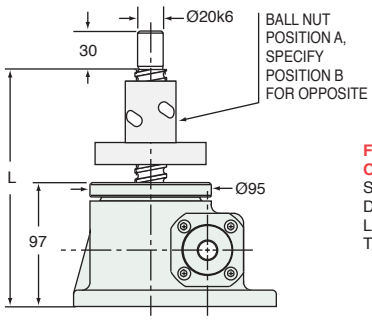
EM2.5-BSJ-U
(Upright)



EM2.5-BSJ-I
(Inverted)

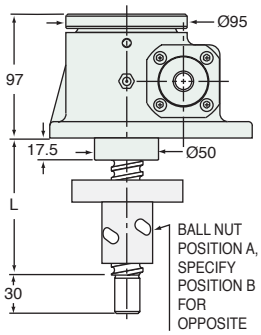


EM2.5-BSJ-UR
(Upright Rotating)



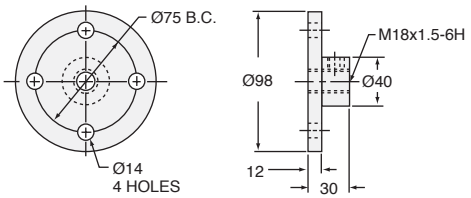
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 186

EM2.5-BSJ-IR
(Inverted Rotating)

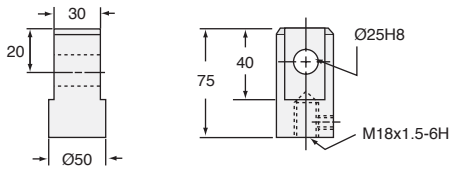


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 107

TOP PLATE (optional): 9000-EM-01

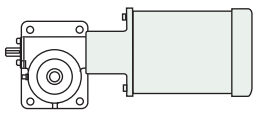


CLEVIS END (optional): 9001-EM-01

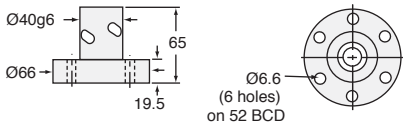


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM2.5-BSJ SCREW

SCREW:	MRT25x5
ROOT DIAMETER:	22.5
DRAG TORQUE:	0.56
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	7.7
PER 100mm TRAVEL:	0.36
GREASE:	0.22

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
6:1	0.83 mm	0.20 Nm	1.08	2035 rpm	25.0 kN
12:1	0.42 mm	0.12 Nm	0.65	2035 rpm	25.0 kN
24:1	0.21 mm	0.09 Nm	0.38	1695 rpm	25.0 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

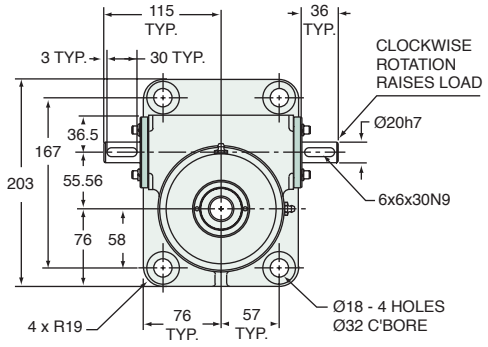
METRIC BALL SCREW JACKS

EM5-BSJ

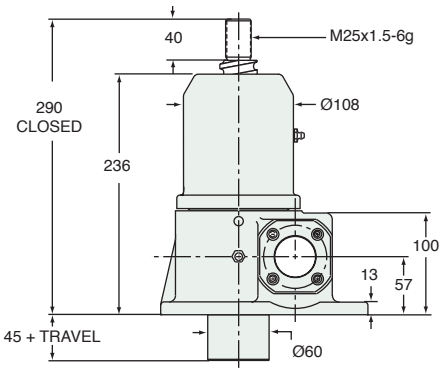
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

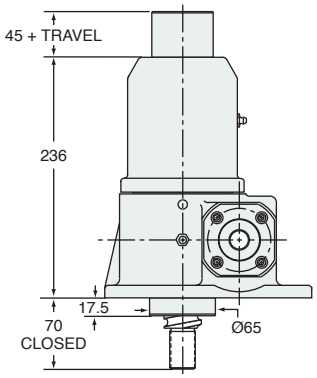
EM5 BSJ Housing Top View



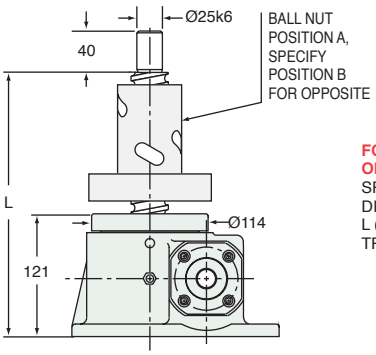
EM5-BSJ-U
(Upright)



EM5-BSJ-I
(Inverted)

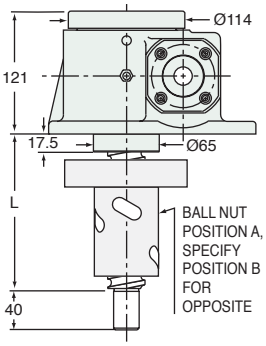


EM5-BSJ-UR
(Upright Rotating)



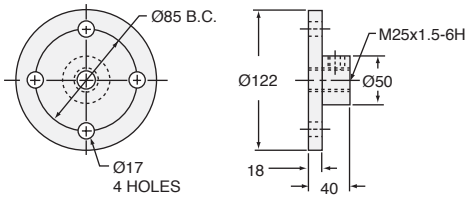
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 260

EM5-BSJ-IR
(Inverted Rotating)

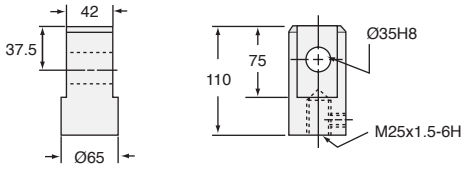


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 157

TOP PLATE (optional): 9000-EM-02

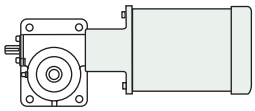


CLEVIS END (optional): 9000-EM-02

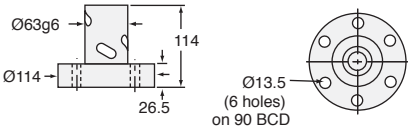


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM5-BSJ SCREW

SCREW:	MRT40x10
ROOT DIAMETER:	34.8
DRAG TORQUE:	1.13
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	15.9
PER 100mm TRAVEL:	0.93
GREASE:	0.45

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
6:1	1.67 mm	0.39 Nm	2.28	1125 rpm	39.4 kN
24:1	0.42 mm	0.15 Nm	0.56	695 rpm	24.4 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

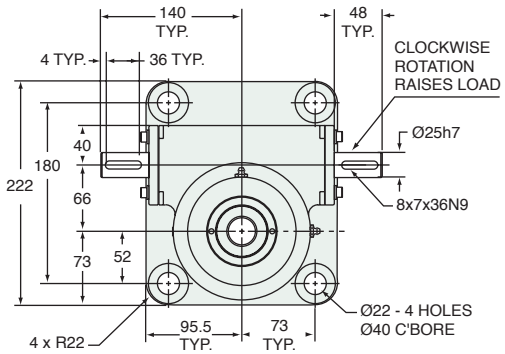
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

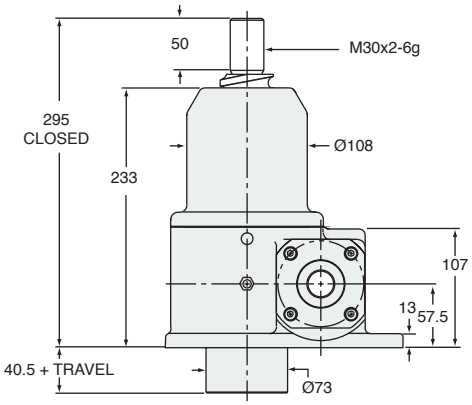
EM10-BSJ

METRIC BALL SCREW JACKS

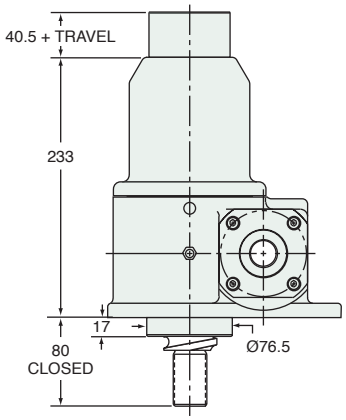
EM10 BSJ Housing Top View



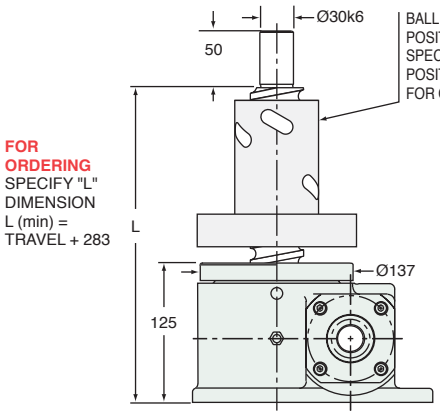
EM10-BSJ-U
(Upright)



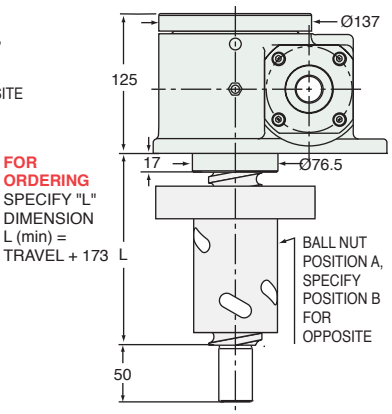
EM10-BSJ-I
(Inverted)



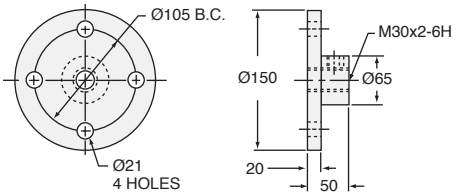
EM10-BSJ-UR
(Upright Rotating)



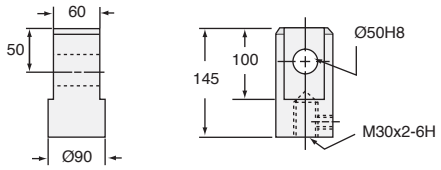
EM10-BSJ-IR
(Inverted Rotating)



TOP PLATE (optional): 9000-EM-04

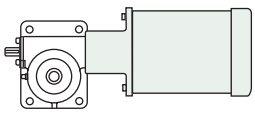


CLEVIS END (optional): 9001-EM-04

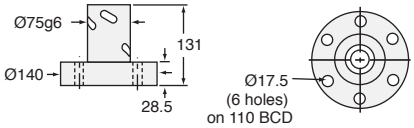


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM10-BSJ SCREW

SCREW:	MRT50x10
ROOT DIAMETER:	45.2
DRAG TORQUE:	2.26
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	22.7
PER 100mm TRAVEL:	1.46
GREASE:	0.68

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
8:1	1.25 mm	0.32 Nm	3.75	1125 rpm	78.9 kN
24:1	0.42 mm	0.16 Nm	1.12	665 rpm	46.6 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

www.nookindustries.ru (499) 703 35 98 sell@nookindustries.ru

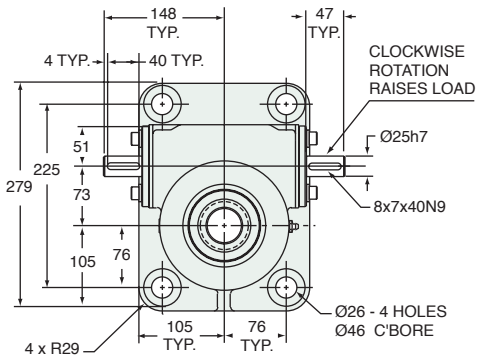
METRIC BALL SCREW JACKS

EM20-BSJ

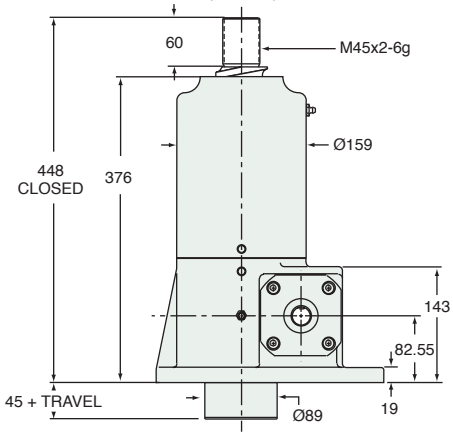
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

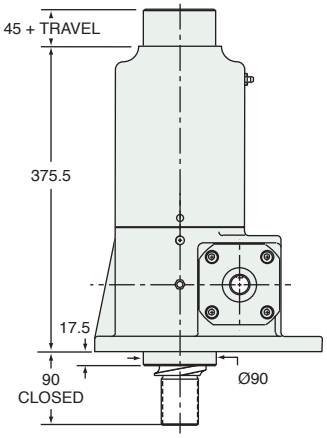
EM20 BSJ Housing Top View



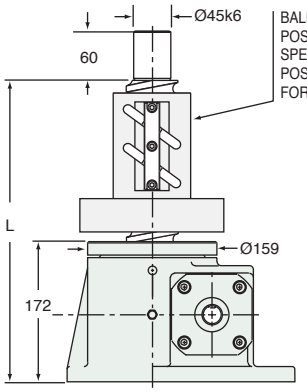
EM20-BSJ-U
(Upright)



EM20-BSJ-I
(Inverted)

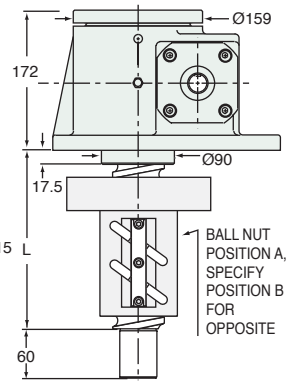


EM20-BSJ-UR
(Upright Rotating)



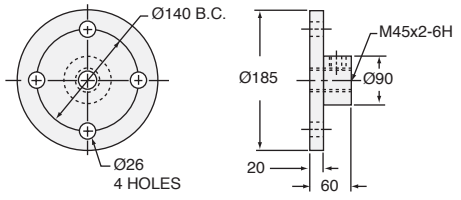
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 370

EM20-BSJ-IR
(Inverted Rotating)

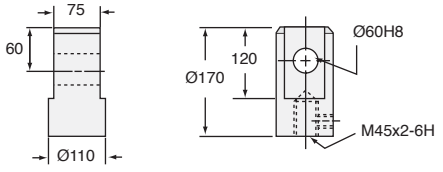


FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 215

TOP PLATE (optional): 9000-EM-06

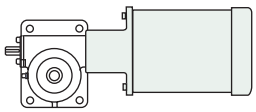


CLEVIS END (optional): 9001-EM-06

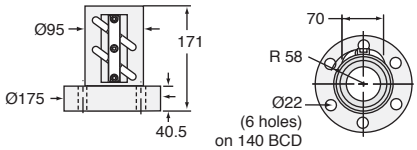


MOTOR MOUNTS

see page 277



BALL NUT & FLANGE DIMENSIONS



EM20-BSJ SCREW

SCREW:	MRT63x12
ROOT DIAMETER:	57.0
DRAG TORQUE:	4.52
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	38.6
PER 100mm TRAVEL:	2.31
GREASE:	1.0

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
8:1	1.5 mm	0.38 Nm	5.6	710 rpm	99.8 kN
24:1	0.5 mm	0.19 Nm	1.9	470 rpm	66.1 kN

CAUTION! JACK IS SELF-LOWERING. LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.

METRIC TRAPEZOIDAL SCREW JACKS

The ActionJac™ Trapezoidal Screw Jacks utilize the same rugged design as the ActionJac™ machine screw jacks. These true metric jacks include a lift shaft with a special trapezoidal thread form. This thread form has been created to stay within ISO standards yet retains the centralizing feature of our 2C acme threads. These jacks may be assembled with IEC motor mounts.

See the technical introduction at the beginning of this section for additional Trapezoidal Screw Jack features and comparison to Ball Screw Jacks.

Download Accurate Moveable Assembly 3D Models and 2D Drawings

For ActionJac™ Worm Gear Screw Jacks:

- **Configure** specific requirements for your Worm Gear Screw Jack application in a simple interface, including motor adapter, right angle reducer, bellows boots and limit switch accessories.
- **View** complete assemblies on-line with zoom, pan and rotate capabilities.
- **Download** true assembly models with full range of motion in native AutoCAD®, SolidWorks®, Pro/E®, CATIA®, ParaSolids®, SAT® and many other formats.
- **Order** complete jack assemblies with generated part number.

Download 3D Models

ActionJac WORM GEAR SCREW JACKS

www.nookindustries.com

QUICK REFERENCE: METRIC TRAPEZOIDAL JACKS

JACK SIZES					JACK SELECTION								
MODEL	Capacity (kN)	Lifting Screw Dia. (mm)	Screw Lead (mm)	Root Dia. (mm)	Gear Ratio	Raise for One Turn of Worm (mm)	Maximum Input Torque (N·m)	Maximum Allowable Input (kW)	Max. Worm Speed at Rated Load (rpm)	Maximum Load at 1425 RPM (kN)	Torque to Raise 1 kN (N·m)	No Load Torque (N·m)	Page Ref
EM05-MSJ	5	16	4	10.9	5:1	0.80	2.25	0.27	1130	4.0	0.45	0.11	359
					20:1	0.20	0.94	0.13	1130	4.6	0.19	0.11	359
EM1-MSJ	10	20	4	14.9	5:1	0.80	5.19	0.36	665	4.7	0.52	0.34	360
					20:1	0.20	2.44	0.19	730	5.1	0.24	0.34	360
EM2.5-MSJ	25	26	6	17.8	6:1	1.0	14.9	1.51	975	17.0	0.59	0.56	361
					12:1	0.5	8.7	1.13	1235	21.7	0.35	0.56	361
					24:1	0.25	6.3	0.38	575	10.1	0.25	0.56	361
EM5-MSJ	50	40	7	30.9	6:1	1.17	40.3	1.87	445	15.6	0.81	1.13	362
					24:1	0.29	16.0	0.51	300	10.7	0.32	1.13	362
EM10-MSJ	100	55	12	40.0	8:1	1.50	97.2	3.65	360	25.2	0.97	2.26	363
					24:1	1.50	215	5.60	250	14.8	0.50	2.26	363
EM20-MSJ	200	65	12	50.0	8:1	1.50	215	5.60	250	35.0	1.08	4.52	364
					24:1	0.50	108	1.9	165	23.0	0.54	4.52	364

NOTES:

1) The recommended maximum speed is 1800 RPM providing the recommended horsepower and temperature are not exceeded.

2) Input torque is shown as torque to lift one kN of load. Starting Torque is 100% greater than torque shown. For loads less than 25% of rated loads add tare drag torque.

3) Maximum allowable power ratings are based on a 25% duty cycle. For operation at higher duty cycles or repeated use over any segment of the total travel, temperature must be monitored and remain less than 95°C.

4) Overload capacity of the Trapezoidal Screw Jack is as follows: 10% for dynamic loads, 30% for static loads.

5) Trapezoidal Screw Jacks having gear ratios between 20:1 and 32:1, are self-locking and will hold loads without backdriving in the absence of vibrations. All other ratios may require a brake to prevent backdriving.

6) All units are suitable for intermittent operation providing that the housing temperature including ambient is not lower than -30°C. or higher than +95°C. Factory supplied grease in standard units will operate in this range. For higher or lower operating temperature ranges consult Nook Industries.

7) Accessories such as boots, limit switches, top plates and clevises are available.

8) Catalog dimensions are representative only and are subject to change without notice. For construction, use only certified prints.

9) Units are not to be used as personnel support or movement.

10) End-of-travel stops are not provided.

$$\text{kW per jack} = \frac{\text{Torque to raise one kN(N•m)} \times \text{Number of kN to be raised} \times \text{RPM}}{9{,}549}$$

Starting torque is100% greater than torque shown.

* No load torque need only be added if operating under 25% rated load.

Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

COLUMN STRENGTH: METRIC TRAPEZOIDAL JACKS

Column strength is the ability of the lift shaft to hold compressive loads without buckling. With longer screw lengths, column strength may be substantially lower than nominal jack capacity.

If the lift shaft is in tension only, the screw jack travel is limited by the available screw material or by the critical speed of the screw. Refer to the trapezoidal screw technical section for critical speed limitations. If there is any possibility for the lift shaft to go into compression, the application should be sized for sufficient column strength.

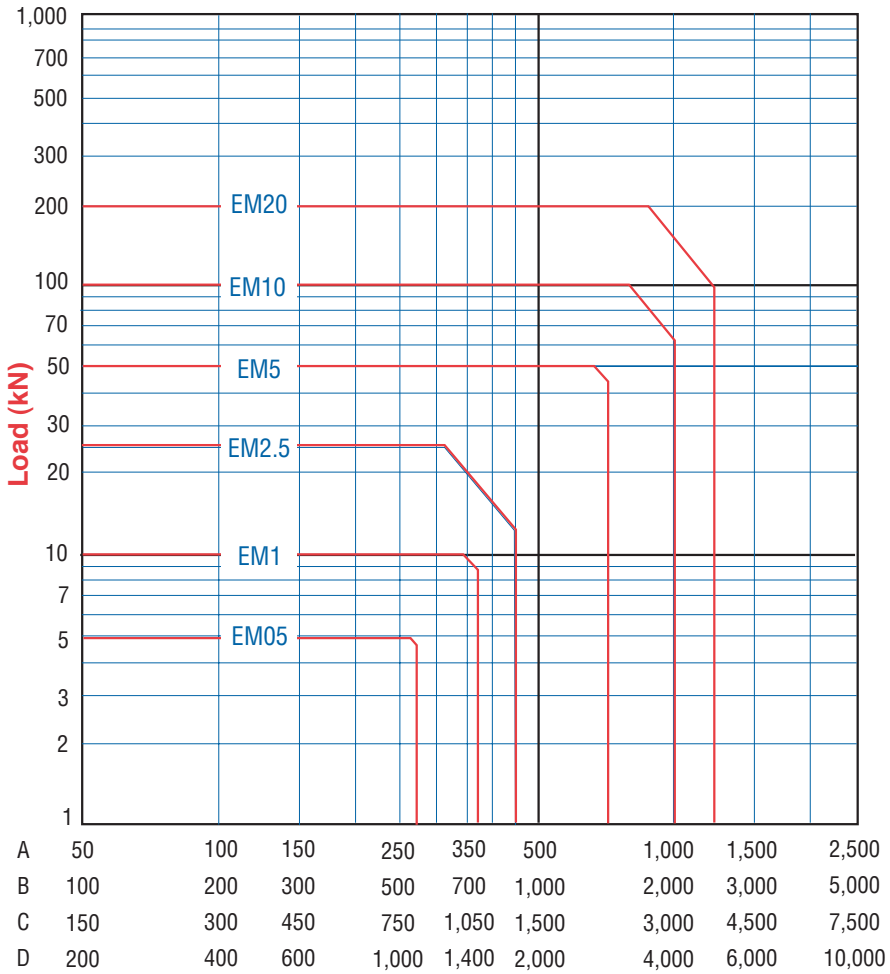
The chart below is used to determine the required jack size in applications where the lift shaft is loaded in compression.

To use this chart:

Find a point at which the maximum length "L" intersects the maximum load. Be sure the jack selected is above and to the right of that point.

CAUTION: chart does not include a design factor.

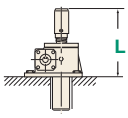
The chart assumes proper jack alignment with no bending loads on the screw. Effects from side loading are not included in this chart. Jacks operating horizontally with long lift shafts can experience bending from the weight of the screw. Consult Nook Industries, Inc. if side thrust is anticipated, operating horizontally, or maximum raise is greater than 30 times the screw diameter.



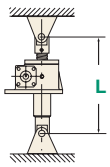
"L" (mm)
Metric Trapezoidal Screw Jacks

MOUNTING CONDITIONS

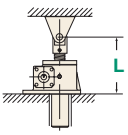
A
ONE END FIXED
ONE END FREE



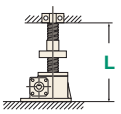
B
BOTH ENDS SUPPORTED BY CLEVIS ENDS



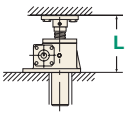
C
ONE END FIXED, ONE END SUPPORTED (CLEVIS ATTACHED TO GUIDE STRUCTURE)



ONE END FIXED, ONE END SUPPORTED (RADIAL BEARING))



D
BOTH ENDS FIXED (TOP PLATE ATTACHED TO GUIDED STRUCTURE)



AVAILABLE LIFT SCREW LENGTHS

As a major manufacturer of industrial lead screws, Nook Industries stocks a broad selection of trapezoidal screws. Nook Industries has the capacity to make long trapezoidal screws for special applications. Rotating screw jacks can be built with a larger diameter lift shaft for greater column strength.

REFERENCE NUMBER SYSTEM: METRIC TRAPEZOIDAL JACKS

2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

EM2.5-MSJ- U 6:1 / SSE-1 / 80B5-2 / FT / 580mm / SB

TRAPEZOIDAL SCREW MODEL

kN	Model #	kN	Model #
5	= EM05-MSJ	50	= EM5-MSJ
10	= EM1-MSJ	100	= EM10-MSJ
25	= EM2.5-MSJ	200	= EM20-MSJ

CONFIGURATION

U = Upright
I = Inverted
UR = Upright Rotating
IR = Inverted Rotating

GEAR RATIO

Refer to product pages for available ratios.

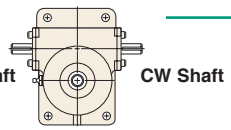
SHAFT ORDER CODE

CCW Position 1
CW Position 2

ORDER CODES (Must Include A Position)

NO ACCESSORY

SSE-_ = Standard Shaft Extension, Position 1 or 2
000-_ = Delete Shaft Extension, Position 1 or 2
SPC-_ = Special Modified Shaft Extension, Position 1 or 2



Motor Mounts Without Motor
(Position 1 or 2)

56B5	= EM05	**80B5**	= EM2.5 and EM5
56B14	= EM05	**80B14**	= EM2.5 and EM5
63B5	= EM1	**90B5**	= EM5 and EM10
63B14	= EM1	**90B14**	= EM5 and EM10
71B5	= EM1 and EM2.5	**100B5**	= EM10 and EM20
71B14	= EM1 and EM2.5	**100B14**	= EM10 and EM20

NOTE: Both Shaft Extensions Must Be Specified

HOUSING CONFIGURATION

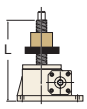
F = Standard Flange Base

SCREW CONFIGURATION

TRANSLATING - U and I MODELS
T = Standard Threaded End
C = Clevis End
P = Top Plate

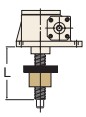
ROTATING - UR and IR MODELS
A = Travel Nut Position "A"
B = Travel Nut Position "B"

UR - Upright Rotating



Travel Nuts shown in position "A"

IR - Inverted Rotating



TRAVEL

For Translating Screw Models (U and I) use actual Travel in mm. For Rotating Screw Models (UR and IR) use "L" Dimension in Inches.

MODIFIER LIST

S or M Required
S = Standard. no additional description required
M = Modified, additional description required

E and/or B Optional
E = In-Line Encoder (motor or motor mount required)
B = Bellows Boots (must calculate retracted and extended boot length, see page 280-281)

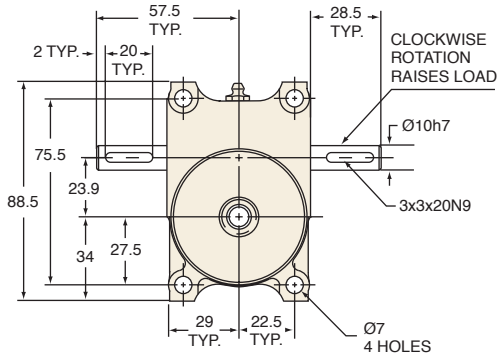
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

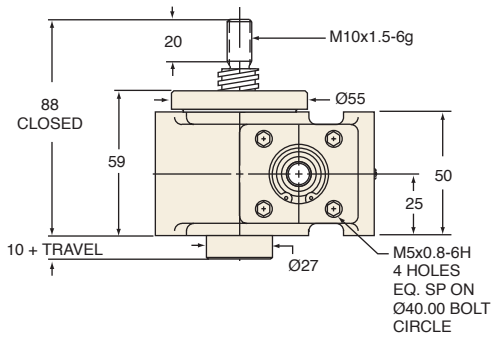
EM05-MSJ

TRAPEZOIDAL SCREW JACKS

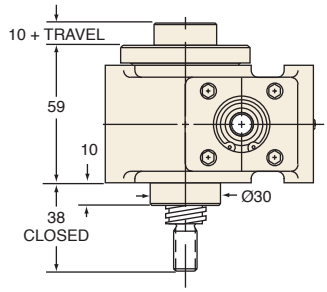
EM05 MSJ Housing Top View



EM05-MSJ-U
(Upright)

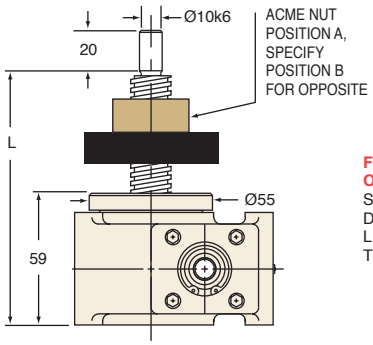


EM05-MSJ-I
(Inverted)



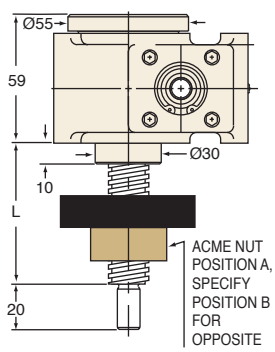
EM05-MSJ-UR
(Upright Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 111

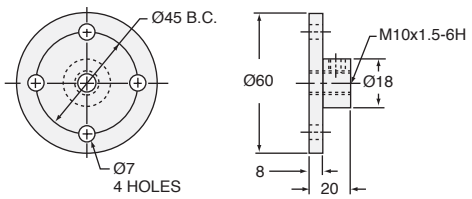


EM05-MSJ-IR
(Inverted Rotating)

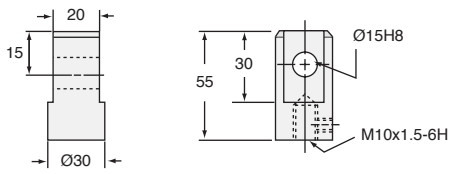
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 61



TOP PLATE (optional): 9000-EM-12

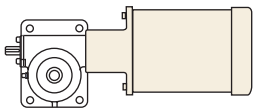


CLEVIS END (optional): 9001-EM-12

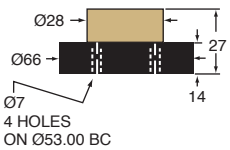


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM05-MSJ SCREW

SCREW:	Tr16x4
ROOT DIAMETER:	10.9
DRAG TORQUE:	0.11
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	1.13
PER 100mm TRAVEL:	0.12
GREASE:	0.23

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
5:1	0.80 mm	0.45 Nm	0.27	1130 rpm	4.0 kN
20:1	0.20 mm	0.19 Nm	0.13	1300 rpm	4.6 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

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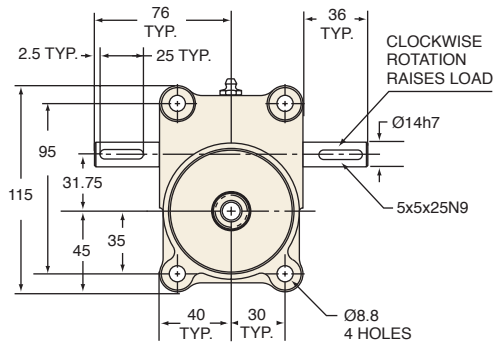
TRAPEZOIDAL SCREW JACKS

EM1-MSJ

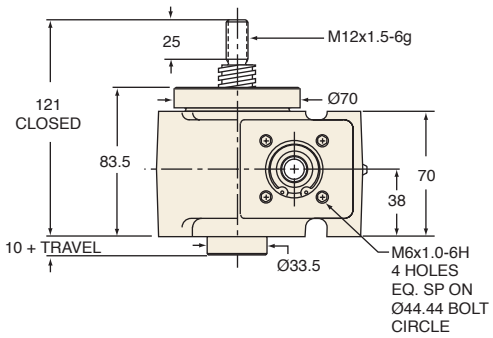
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

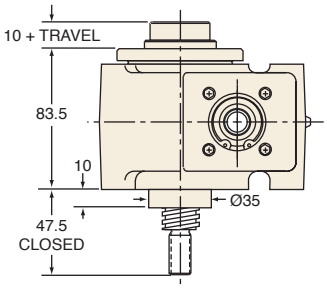
EM1 MSJ Housing Top View



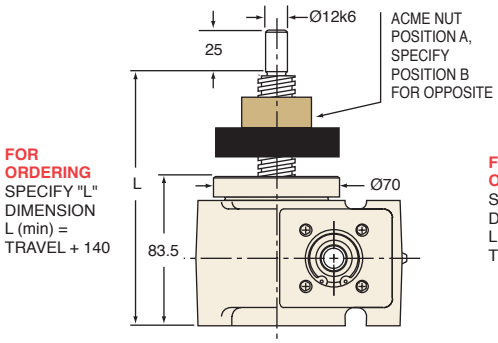
EM1-MSJ-U
(Upright)



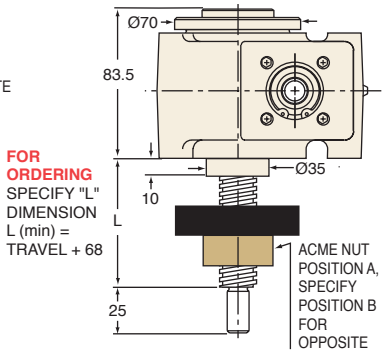
EM1-MSJ-I
(Inverted)



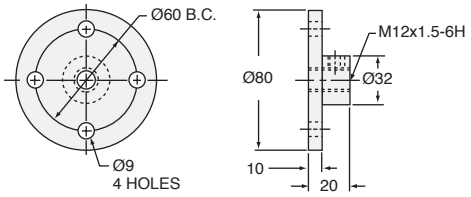
EM1-MSJ-UR
(Upright Rotating)



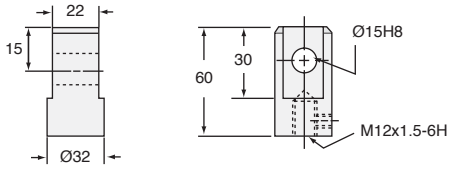
EM1-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): 9000-EM-11

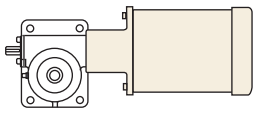


CLEVIS END (optional): 9001-EM-11

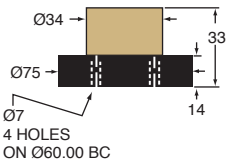


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM1-MSJ SCREW

SCREW:	Tr20x4
ROOT DIAMETER:	14.9
DRAG TORQUE:	0.34
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	2.5
PER 100mm TRAVEL:	0.19
GREASE:	0.23

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
5:1	0.80 mm	0.52 Nm	0.36	665 rpm	4.7 kN
20:1	0.20 mm	0.24 Nm	0.19	730 rpm	5.1 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

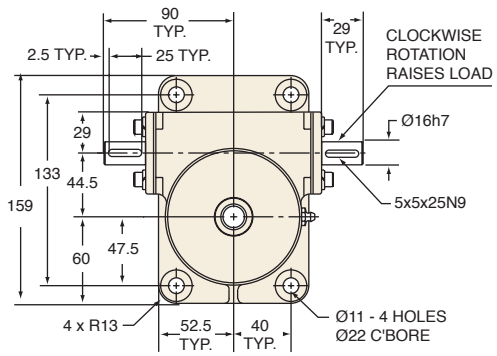
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

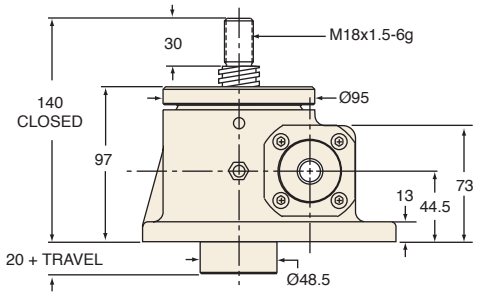
EM2.5-MSJ

TRAPEZOIDAL SCREW JACKS

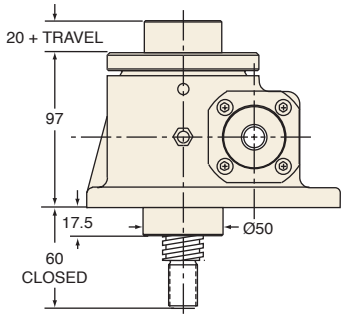
EM2.5 MSJ Housing Top View



EM2.5-MSJ-U
(Upright)

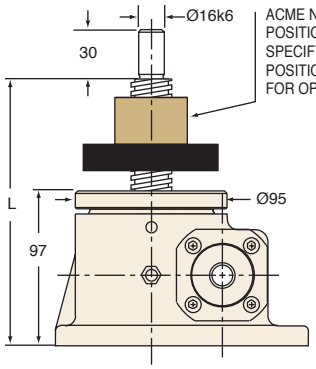


EM2.5-MSJ-I
(Inverted)



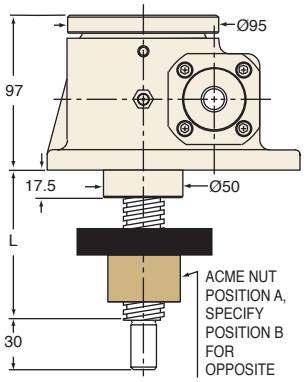
EM2.5-MSJ-UR
(Upright Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 168

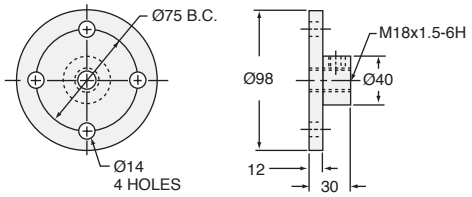


EM2.5-MSJ-IR
(Inverted Rotating)

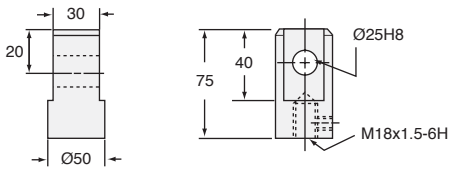
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 92



TOP PLATE (optional): 9000-EM-01

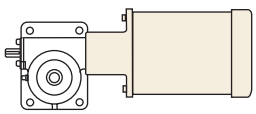


CLEVIS END (optional): 9001-EM-01

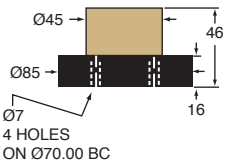


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM2.5-MSJ SCREW

SCREW:	Tr26x6
ROOT DIAMETER:	17.8
DRAG TORQUE:	.56
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	7.7
PER 100mm TRAVEL:	0.32
GREASE:	0.22

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
6:1	1.0 mm	0.59 Nm	1.51	975 rpm	17.0 kN
12:1	0.5 mm	0.35 Nm	1.13	1235 rpm	21.7 kN
24:1	0.25 mm	0.25 Nm	0.38	575 rpm	10.1 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

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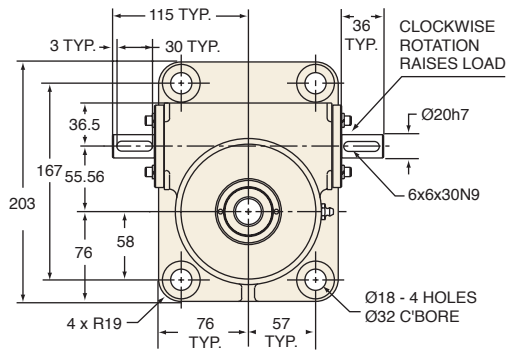
EM5-MSJ

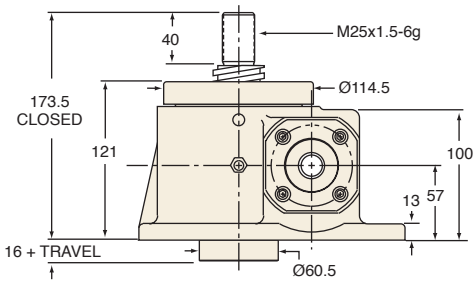
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

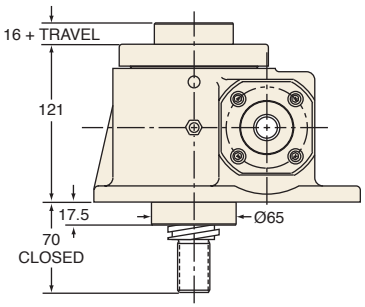
EM5 MSJ Housing Top View



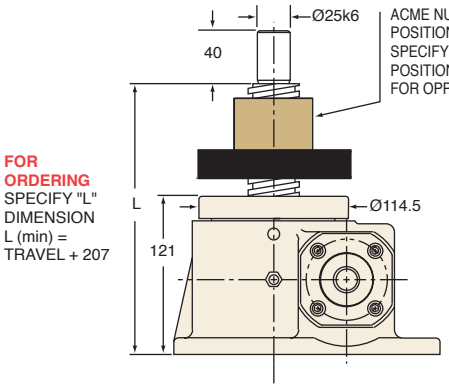
EM5-MSJ-U
(Upright)



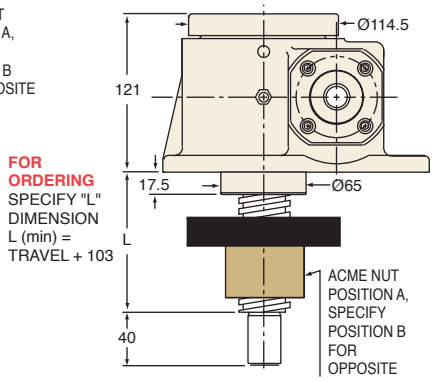
EM5-MSJ-I
(Inverted)



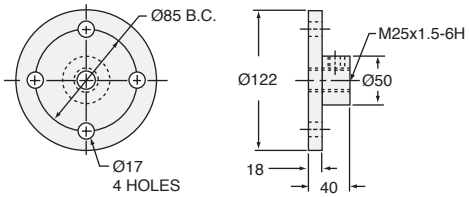
EM5-MSJ-UR
(Upright Rotating)



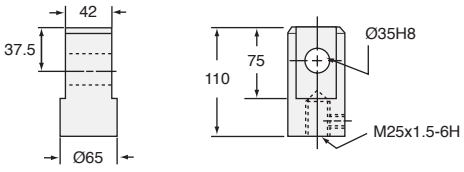
EM5-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): 9000-EM-02

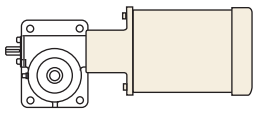


CLEVIS END (optional): 9001-EM-02

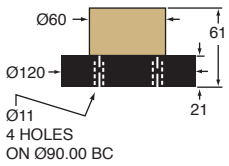


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM5-MSJ SCREW

SCREW:	Tr40x7
ROOT DIAMETER:	30.9
DRAG TORQUE:	1.13
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	13.6
PER 100mm TRAVEL:	0.81
GREASE:	0.45

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
6:1	1.17 mm	0.81 Nm	1.87	445 rpm	15.6 kN
24:1	0.29 mm	0.32 Nm	0.51	300 rpm	10.7 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

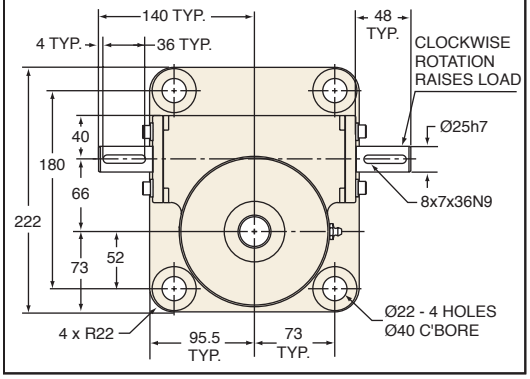
Actionjac WORM GEAR SCREW JACKS

2D/3D CAD

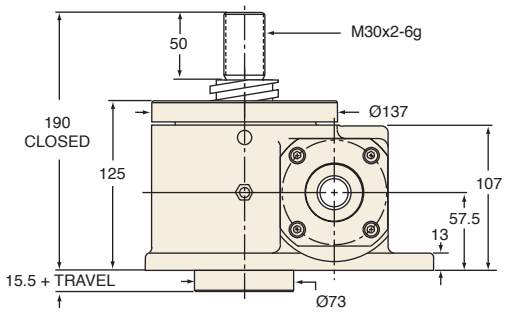
EM10-MSJ

TRAPEZOIDAL SCREW JACKS

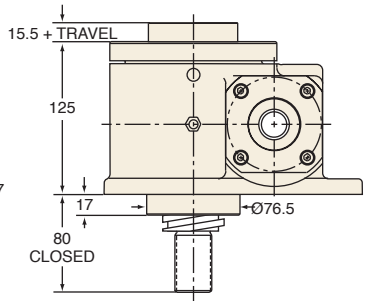
EM10 MSJ Housing Top View



EM10-MSJ-U
(Upright)

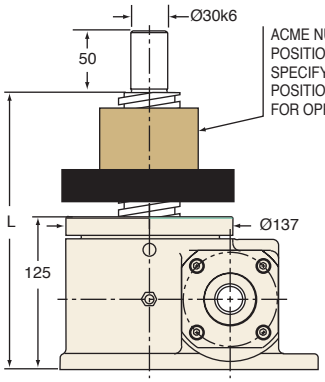


EM10-MSJ-I
(Inverted)



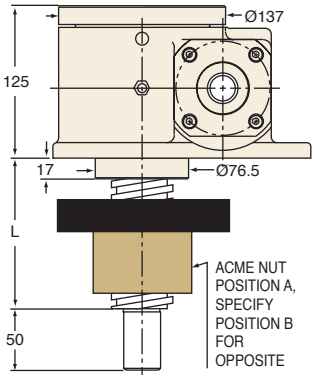
EM10-MSJ-UR
(Upright Rotating)

FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 227

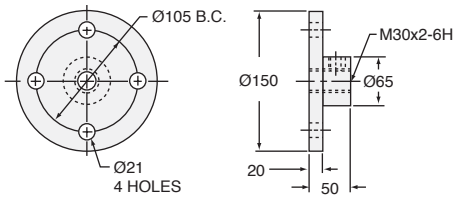


EM10-MSJ-IR
(Inverted Rotating)

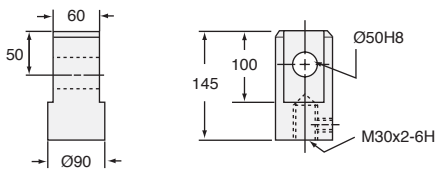
FOR ORDERING SPECIFY "L" DIMENSION L (min) = TRAVEL + 120



TOP PLATE (optional): 9000-EM-04

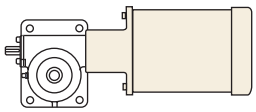


CLEVIS END (optional): 9001-EM-04

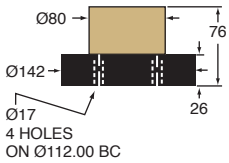


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM10-MSJ SCREW

SCREW:	Tr55x12
ROOT DIAMETER:	40
DRAG TORQUE:	2.26
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	20.4
PER 100mm TRAVEL:	1.46
GREASE:	0.68

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
8:1	1.5 mm	0.97 Nm	3.65	360 rpm	25.2 kN
24:1	0.5 mm	0.50 Nm	1.10	210 rpm	14.8 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.

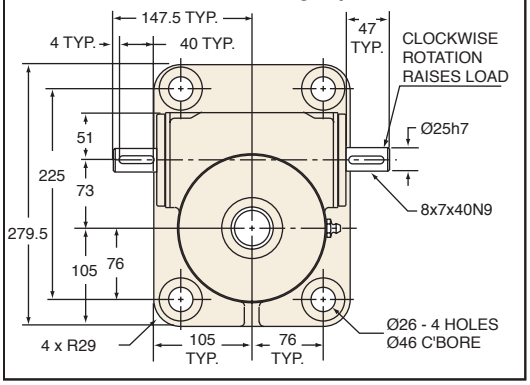
www.nookindustries.ru (499) 703 35 98 sell@nookindustries.ru

EM20-MSJ

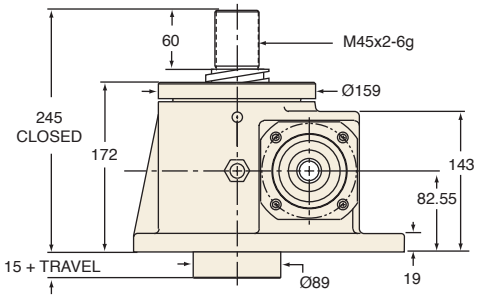
2D/3D CAD

Actionjac WORM GEAR SCREW JACKS

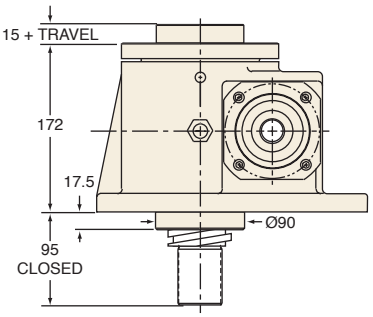
EM20 MSJ Housing Top View



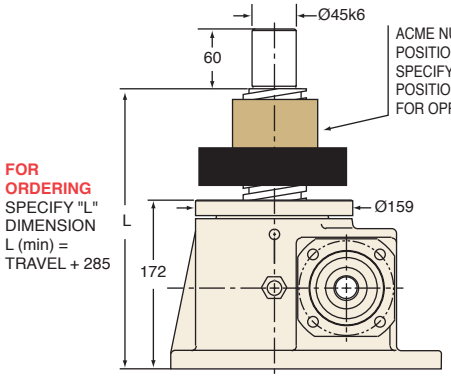
EM20-MSJ-U
(Upright)



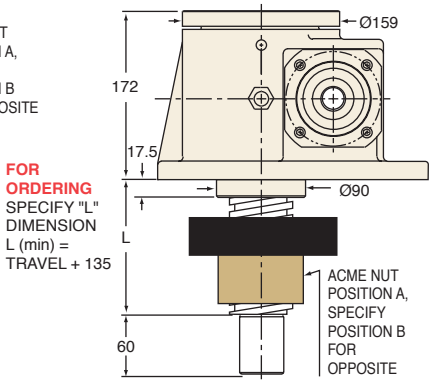
EM20-MSJ-I
(Inverted)



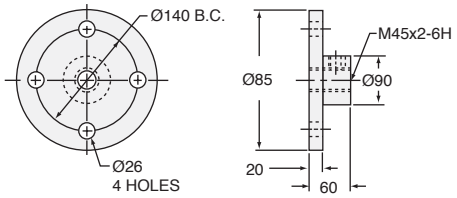
EM20-MSJ-UR
(Upright Rotating)



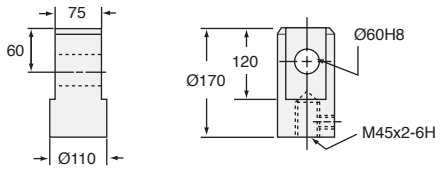
EM20-MSJ-IR
(Inverted Rotating)



TOP PLATE (optional): 9000-EM-06

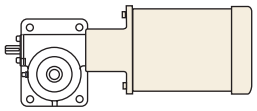


CLEVIS END (optional): 9001-EM-06

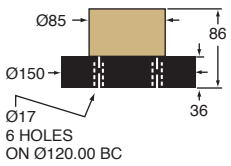


MOTOR MOUNTS

see page 277



ACME NUT & FLANGE DIMENSIONS



EM20-MSJ SCREW

SCREW:	Tr65x12
ROOT DIAMETER:	50
DRAG TORQUE:	4.52
START TORQUE:	2 x Running Torque
WEIGHT (Approx. in Kg)	
"0" TRAVEL:	36.3
PER 100mm TRAVEL:	2.12
GREASE:	1.0

RATIO	TRAVEL PER 1 TURN OF WORM	TORQUE TO RAISE ONE kN NON-KEYED	MAX. kW	MAX. WORM SPEED AT RATED LOAD NON-KEYED	MAX. LOAD AT 1425 RPM NON-KEYED
8:1	1.50 mm	1.08 Nm	5.6	250 rpm	35.0 kN
24:1	0.5 mm	0.54 Nm	1.9	165 rpm	23.0 kN

LIFTING SCREW OR NUT MUST BE SECURED TO PREVENT ROTATION FOR NON-KEYED UNITS.
CAUTION! JACK MAY BE SELF-LOWERING IN SOME OPERATING CONDITIONS.