JOYCE®

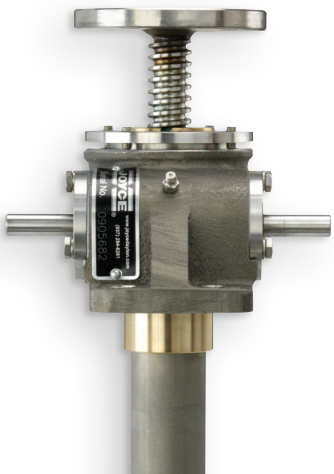
# SCREW JACKS AND LINEAR ACTUATORS




- Machine Screw Jacks
- Ball Screw Jacks
- ComDRIVE® Actuators
- Metric Screw Jacks
- Electric Cylinders
- Integrated Actuators
- Stainless Steel Screw Jacks
- Bevel Gear® Jacks
- Bevel Ball Actuators
- Protective Boots
- Limit Switches
- System Accessories









# JAX® Online – The Fastest Way to Your Ideal System

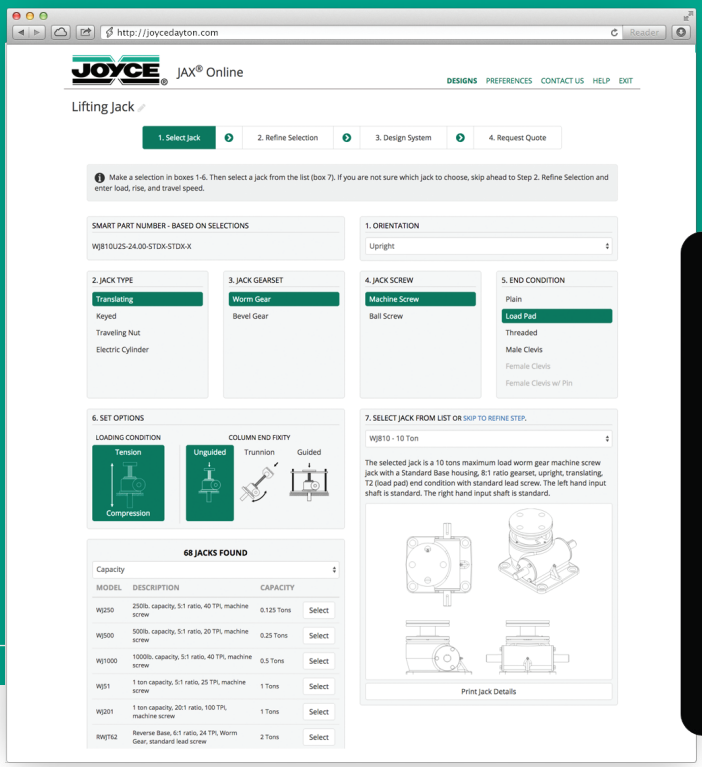
## Web-based Linear Motion Design Software

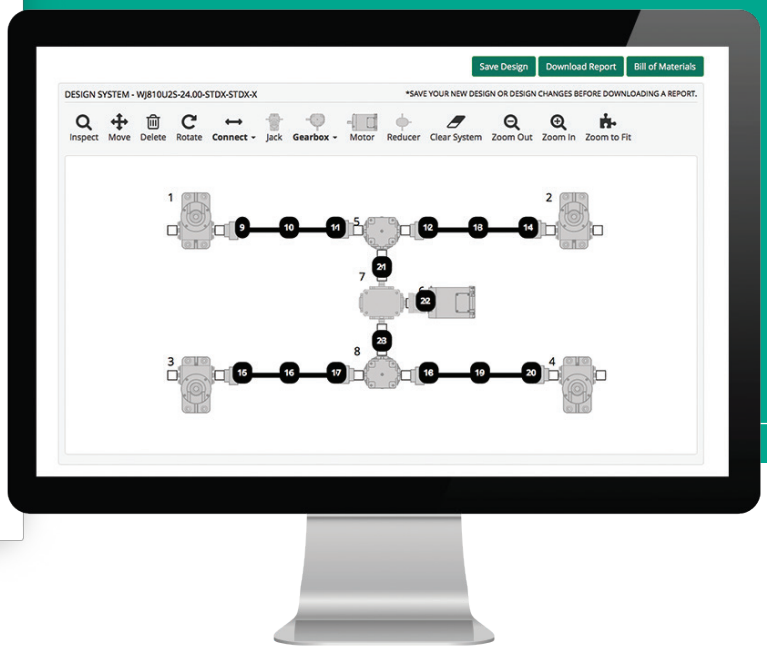
Easy-to-use JAX® Online software enables you to specify the right jacks and components for your ideal lifting and positioning systems. You can start with a complete set of requirements, or just a few simple inputs, and let JAX Online suggest components that are right for your application. The detailed reports created are complete and ideal for inclusion in technical project files, saving you time and minimizing headaches.

**Use JAX Online to:**

- Size jacks and complete systems, from any computer
- Automatically configure and download 2D and 3D models of specific jacks
- Save files to your private account and return to your designs at any time
- Evaluate multiple combinations and options before choosing your final design
- Automatically generate a bill of materials in real-time
- Request a quote and transmit your requirements with a single click

JAX Online is one more example of how Joyce is committed to providing designers and engineers with the tools they need to succeed.




Scan the QR Code to go to the JAX Online site.

Create your account and start designing right away at **www.joycedayton.com/jax**

**1-937-294-6261** | **sales@joycedayton.com**

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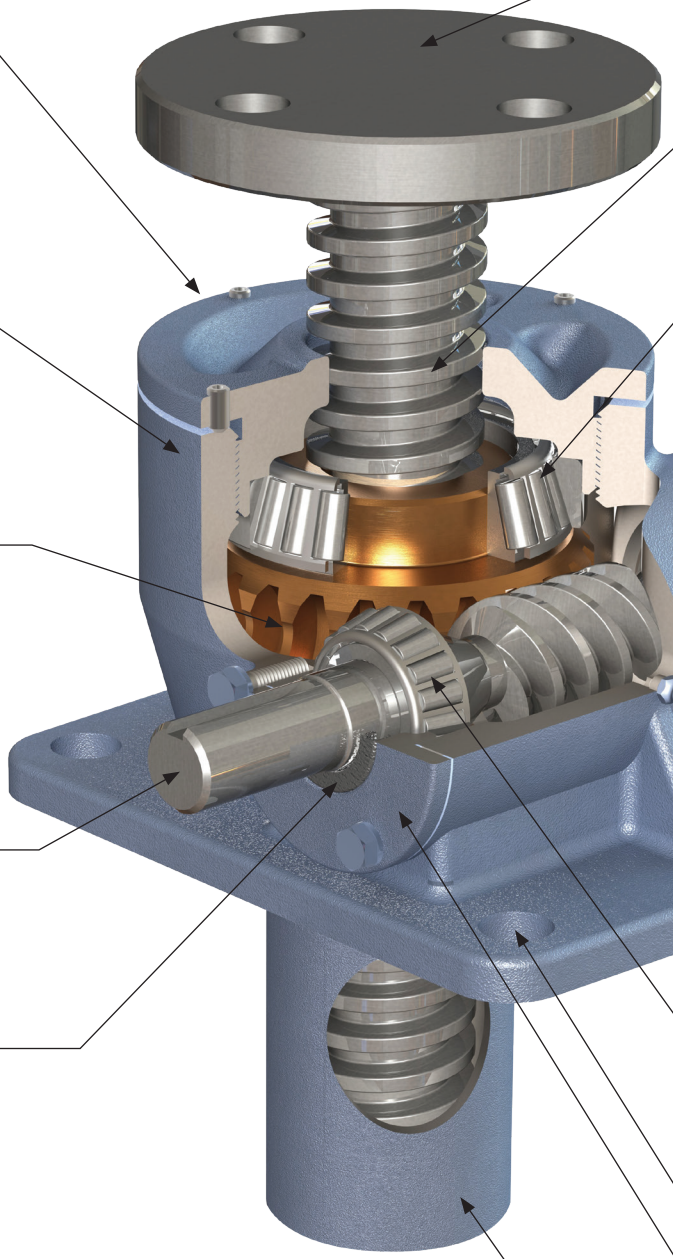
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# WORMGEAR STYLE JACK UPRIGHT TRANSLATING STYLE SHOWN



**Load Pad End Condition**

Jack must be attached to load and rotation must be restrained. Keyed machine screw jacks are available (WJ 500 and larger).

**Sleeve Cap**

Threaded onto sleeve and secured with set screws. See note below for material.

**Lifting Screw**

Standard end conditions, Plain (T1), Load Pad (T2), Threaded (T3) and Male Clevis (T4).

**Sleeve (housing)**

Material varies based on size of jack. See note below.

**Thrust Bearing**

Upper (shown) and lower (not shown) permit jack to bear load in both directions.

**Wormgear**

Made from aluminum bronze material.

**Grease Fitting**

**Input Shaft (worm)**

Standard input shaft extends to the right and the left. Shaft modifications are available.

**Input Shaft Seal**

Standard on 2-ton and larger jacks.

**Input Shaft Bearing**

One bearing supports each end of the input shaft.

**Mounting Bolt Holes**

**Bearing Cap**

2-ton and larger jacks – smaller jacks have retaining rings.

**Protection Tube**

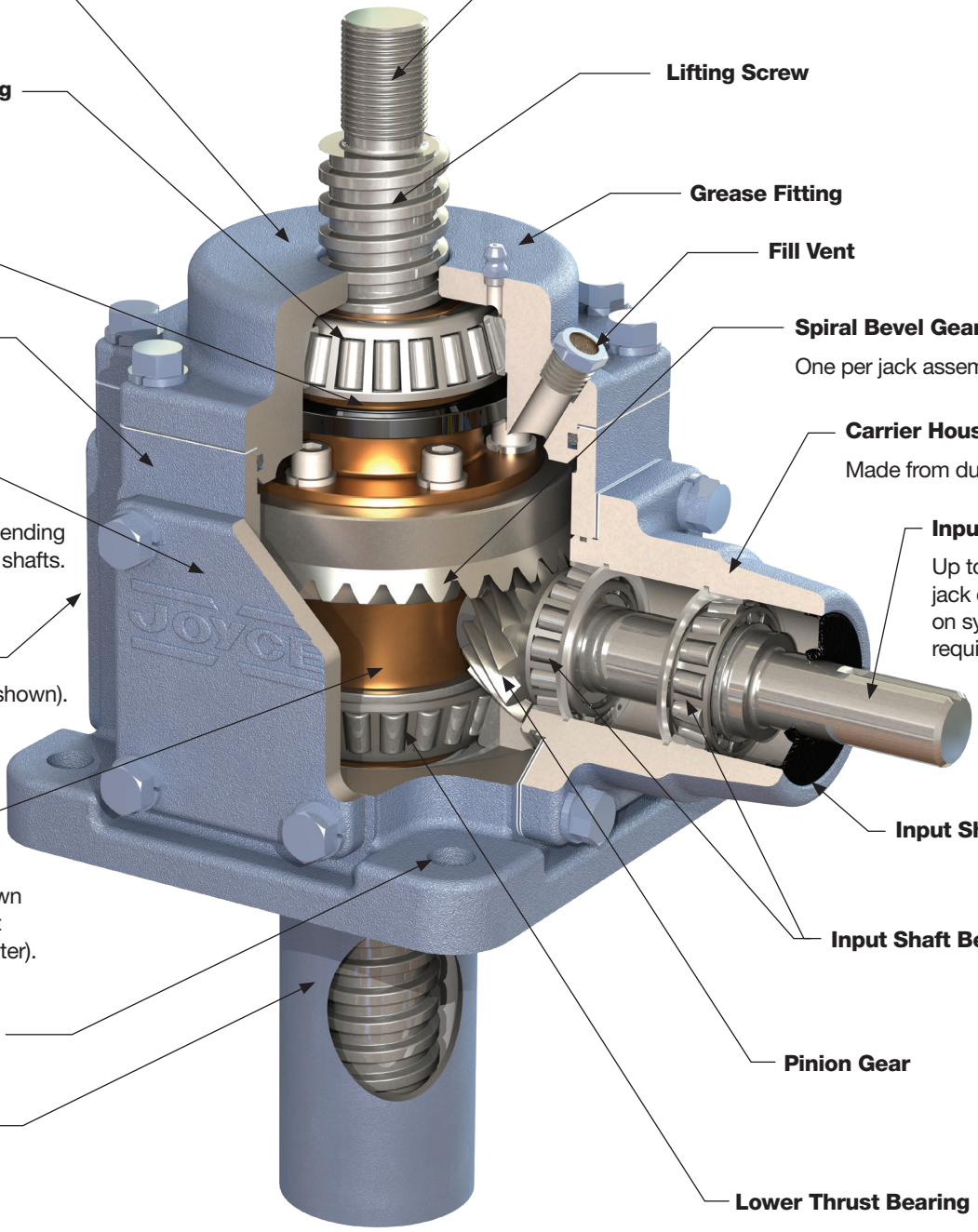
**Sleeve/Sleeve Cap Material**

| | |
|---|---|
| 250-lb – 1-ton | Aluminum |
| 2-ton – 35-ton | Ductile Iron |
| 50-ton – 250-ton | Steel |

Options

| | |
|---|---|
| 2-ton | Stainless Steel |
| 5-ton – 25-ton | Stainless Steel |
| 5-ton – 35-ton | Steel |

# BEVEL GEAR STYLE JACK UPRIGHT TRANSLATING STYLE SHOWN



**Sleeve Cap**

Made from ductile iron.

**Upper Thrust Bearing**

**Upper Seal**

**Sleeve (housing)**

Made from ductile iron.

**Cover Plate**

Made from ductile iron.
Up to two required depending on the number of input shafts.

**Fill and Drain Port**

Located in sleeve (not shown).

**Jack Nut**

Aluminum bronze material – BG jack shown (BB jack uses a ball nut with a ductile iron adapter).

**Mounting Bolt Holes**

**Protection Tube**

**Threaded End Condition**

Standard end conditions, Plain (T1), Load Pad (T2), Threaded (T3), and Male Clevis (T4).

**Lifting Screw**

**Grease Fitting**

**Fill Vent**

**Spiral Bevel Gear**

One per jack assembly.

**Carrier Housing**

Made from ductile iron.

**Input Shaft**

Up to three per jack depending on system requirements.

**Input Shaft Seal**

**Input Shaft Bearings**

**Pinion Gear**

**Lower Thrust Bearing**

This graphic shows a Joyce Bevel Gear® jack (BG).
Bevel ball actuators (BB) also use a bevel gear set.
See pages 144 - 154 for more information.

# QUICK REFERENCE GUIDE

| Product | Prefix | Capacity Range (tons) | Typical Lifting Speeds (IPM) | Input Shaft | | Predictable Life | Inherently Self-Locking | Corrosion Resistant | Enclosed Screw | Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | In-Line | Right Angle | | | | | Keyed for Non-Rotation | Limit Switch | Direct Drive Motor Mount | Anti-Backlash or Limited End Play |
| Machine Screw Jack (pp. 18-44) | WJ RWJ DWJ DRWJ | 1/8-250 | 14-55 | ■ | | | A WJ, RWJ | C | | ■ | ■ | ■ | ■ |
| Machine Screw ComDRIVE® (pp. 45-57) | CD DCD | 2-30 | 2-35 | ■ | | | A CD | C | | ■ | ■ | | ■ |
| Stainless Steel Jack (pp. 58-70) | SWJ RSWJ DSWJ DRSWJ | 2-25 | 14-55 | ■ | | | A SWJ, RSWJ | ■ | | ■ | ■ | ■ | ■ |
| Metric Jack (pp. 71-79) | MWJ | 1-10 (10-100 Kn) | 14-55 (6-23 mm/ sec) | ■ | | | ■ | C | | ■ | ■ | ■ | ■ |
| Ball Screw Jack (pp. 80-101) | WBL HWBL WB HWB | 1-50 | 14-300 | ■ | | ■ Screw Only | | C | | | ■ | ■ | D |
| Ball Screw ComDRIVE® (pp. 102-117) | CDB CDBL | 2-30 | 2-55 | ■ | | ■ Screw Only | | C | | | ■ | | D |
| Electric Cylinder - Standard (pp. 118-134) | ECA ECB | 2 1/2-20 | 15-540 | ■ | | ■ ECB Screw Only | B ECA | C | ■ | | ■ | | D |
| Electric Cylinder - Motor Mount (pp. 118-134) | ECA ECB | 2 1/2-20 | 18-540 | ■ | | ■ ECB Screw Only | B ECA | C | ■ | | ■ | ■ | D |
| Electric Cylinder - ComDRIVE® (pp. 118-134) | ECA ECB | 2 1/2-20 | 15-104 | | ■ | ■ ECB Screw Only | B ECA | C | ■ | | ■ | | D |
| Integrated Actuator (pp. 135-142) | IA DIA BIA HBIA | 1 | 15-350 | ■ | | ■ BIA, HBIA Screw Only | ■ IA | C | ■ | | ■ | ■ | D |
| Bevel Gear® Jack (pp. 144-154) | BG | 5-60 | 50-130 | ■ | ■ | | A Single Lead | C | | ■ | ■ | | |
| Bevel Gear Ball Screw Jacks (pp. 155-163) | BB | 5-60 | 15-600 | ■ | ■ | ■ | | C | | | ■ | | D |

A Jacks with single lead screws are self-locking. Double lead screw jacks may lower under load.

B ECA jacks that are ≤ 30% efficient are self-locking.

C Joyce offers a variety of finishes and modifications that resist corrosion (p. 178).

D Oversized ball bearings can be added to limit the end play between the ball screw and ball nut.

# OPTIONS OVERVIEW FOR JACKS AND ACTUATORS



### Protective Boots

- Protection from dirt and dust
- Guard against moisture
- Guard against corrosive contaminants
- Neoprene coated nylon (std)
- Special materials available



### Lubrication

- Standard grease temp. range (40˚F to 220˚F)
- Low temperature option
- Hight temperature option
- Food grade option



### ComDRIVE® Options

- Special reducer ratios available
- Special mounting positions available
- Special motor adapters available
- Mount limit switch to gear reducers



### Mechanical Counters

- 0.001" increments (CNT0)



### Motor Mounts

- NEMA mounts available on 2-ton to 20-ton wormgear jacks and electric cylinders
- NEMA mounts included on integrated actuators
- Servo motor mounts available on 2-ton to 10-ton jacks and electric cylinders, special mounts available
- Custom mounts available



### Machine Screws

- Right hand thread standard
- L/H thread option on many models
- Special material available
- Special pitch/lead available
- Special finishes available
- Special machining options
- Special end conditions available



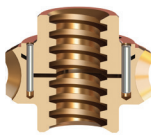
### Hand Wheels

- 4" - 12" dia. (standard)
- Aluminum (standard)
- Stainless steel available



### Screw Stops

- Standard on ComDrives
- Adjustable
- Bolt-on



### Anti-Backlash Devices

- Available for machine screw jacks
- Available for metric (trapezoidal) jacks
- Limits lifting screw endplay



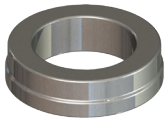
### Ball Screw Options

- Right hand thread standard
- L/H thread option on many models
- Special pitch/lead available
- Special finishes available
- Special machining options



### Potentiometers

- 0-10V (POTA)
- 4-20mA (POTB)
- 0-10V with limit switches (POTC)
- 4-20mA with limit switches (POTD)
- IP65



### Thrust Rings

- Used in applications where static loads exceed jack capacity



### Input Shaft (worm)

- Square or hex to fit tool
- Special lengths
- 17-4 stainless steel available
- Metric diameters available
- One side can be cut off
- Other modifications available
- Input shaft cover available



### Wormgear Sets

- Right hand thread standard
- L/H thread option on many models
- 25:1 ratio options available on several models




### Limit Switches

- Rotary cam (2-4 switches)
- SPDT standard
- DPDT available
- Explosion proof available



### Finishes

- Enamel (standard)
- Epoxy
- STEEL IT® epoxy
- Outdoor paint process
- Custom finishes available
- Anodized (250-lb to 1-ton)
- Nickel, Xylan®, Armoloy®



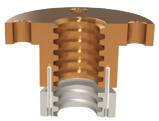
### Oversized Ball Bearings

- Available for ball screw jacks
- Limits screw backlash to 0.003"



### Encoders

- Standard 200 or 1024 PPR
- Quadrature wave form
- Stainless steel encoder
- Absolute encoder



### Follower Nuts

- For KFTN jack
- For translating jack

Scan the QR Code to view options on our website.

# SELECTION GUIDE WORKSHEET JACKS AND ACTUATORS

Name _____ Title _____

Company _____ Project _____

Address _____

Phone _____ Fax _____ Email _____

## System Considerations

Number of Jacks _____ Load per Jack _____ System Load _____ Travel Speed _____

**Type of Gear Set**
- ☐ Worm Gear
- ☐ Bevel Gear

**Type of Screw**
- ☐ Machine Screw
- ☐ Ball Screw

**Configuration**
- ☐ Upright
- ☐ Inverted

**Mounting Orientation**
- ☐ Horizontal
- ☐ Vertical

**Load**
- ☐ Tension (T)
- ☐ Compression (C)
- ☐ Both T & C

**Rise/Stroke**
- ☐ _____ Inches
- ☐ _____ Millimeters

**Product Family**
- ☐ Screw Jack
- ☐ Electric Cylinder
- ☐ Actuator

**Jack Design**
- ☐ Translating
- ☐ Keyed (non-rotation)
- ☐ Traveling Nut (flush mount)

**End Condition**
- ☐ T1 Plain
- ☐ T2 Load Pad
- ☐ T3 Threaded
- ☐ T4 Male Clevis

**Static Side Load**
- ☐ Yes_____
- ☐ No

**Power Requirements**
- ☐ Manual (Machine screws)
- ☐ Electrical _____V._____Hz._____ph.
- ☐ Other _____

## Environmental and Other Considerations

**Temperature**
- ☐ Standard +40˚ F to +220˚ F
- ☐ +_____˚ F to -_____˚ F
- ☐ +_____˚ C to -_____˚ C

**Environment**
- ☐ Dust
- ☐ Dirt
- ☐ Sand
- ☐ Water
- ☐ Oil
- ☐ Outdoor
- ☐ Wash Down

**Duty Cycle**
- ☐ Cycles/Minute_____
- ☐ Cycles/Hour_____
- ☐ Cycles/Day_____

**Description of Cycle**
- ☐ Frequency_____
- ☐ Dwell Time_____
- ☐ Other_____

**System Will Lift**
- ☐ Full Stroke
- ☐ Partial Stroke
- ☐ Incrementally

**System Will Lower**
- ☐ Full Stroke
- ☐ Partial Stroke
- ☐ Incrementally

**System Controls**
- ☐ Motor Starter
- ☐ Synchronizing Controls
- ☐ Programmable Controls
- ☐ Custom Controls

## Options and Accessories

- ☐ Protective Boots
- ☐ Limit Switches
- ☐ Screw Stops
- ☐ Anti-backlash
- ☐ Motor Mount
- ☐ Servo Mount
- ☐ Motor/Brake Motor
- ☐ Hand Wheel
- ☐ Food Grade Grease
- ☐ Outdoor Paint
- ☐ Epoxy Paint
- ☐ Trunnion Mount
- ☐ Miter Gear Box
- ☐ Gear Reducer
- ☐ Shafting/Couplings
- ☐ Stainless Steel
- ☐ Encoder
- ☐ Counter
- ☐ Geared Pot.
- ☐ Pillow Blocks

**Please list additional information and include a drawing of your application.**

_____

_____

_____

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# SELECTION GUIDE WORKSHEET CONTROLS

Name _____ Title _____

Company _____ Project _____

Address _____

Phone _____ Fax _____ Email _____

## System Information

Number of Jacks _____ Number of Motors _____

Are Jacks: ☐ Mechanically Synchronized ☐ Electrically Synchronized ☐ Independently Operated

**System Environment**

☐ Indoor/General Purpose
☐ Outdoor Temperature Range _____
☐ Wash Down
☐ Explosion Proof
☐ Coastal/Salt Spray

**Enclosure Requirement**

☐ NEMA 4 Std. Indoor/Outdoor
☐ NEMA 4X Washdown
☐ NEMA 12 Indoor
☐ Other
☐ Size constraints

**Approvals**

☐ UL Listed
☐ CSA Approval
☐ Other

**What aspect of operation needs to be controlled?**

☐ Position
☐ Travel Speed
☐ Both Position and Travel Speed

**Motor Requirements**

Horsepower _____
Voltage _____
Phase _____

Frequency _____
Brake required ☐ YES ☐ NO
Brake Voltage _____
Brake Wiring ☐ Internal
☐ External (for variable frequency drives)

**Motor Operation**

☐ Variable Speed
☐ Constant Speed
☐ Multiple Speed (preset)

**Motor Enclosure**

☐ Totally Enclosed TEFC
☐ Wash Down
☐ Explosion Proof

**Primary Control Requirement**

☐ Momentary Operation
☐ Programmable Positions
  ☐ One to Four
  ☐ More than Four
☐ Accuracy for Positioning
  _____+/- ☐ inch ☐ mm
☐ Desired Travel Speed

☐ Maintained Operation
☐ Synchronized Travel
  Tolerance _____+/- ☐ inch ☐ mm
☐ Variable Speed
  Range of frequency _____

**Control Options**

☐ Alarms ☐ Indicators ☐ Pendant Control ☐ Wireless Control ☐ HMI/Touch Screen

**Other Considerations**

Please describe the order of operation and other functional requirements of your system:

_____

_____

_____

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# ENGINEERING INFORMATION PRODUCT SELECTION – CRITICAL FACTORS

1. **Maximum Input RPM** – Input rotational speeds up to 2400 RPM are permissible for jacks and actuators depending on load, duty cycle, and other factors specific to the application. Use our exclusive JAX® Online browser-based software to evaluate jacks and systems having input RPM values ≥ to 1750 RPM.

2. **Side Load** – Standard jacks and actuators are not designed for dynamic side loads. The load must be positioned axially. Static side loads are limited. Contact Joyce for technical assistance.

3. **Duty Cycle** – Relationship between operation time and rest time. The allowable duty cycle for jacks and actuators is based upon several application variables such as load, speed, and temperature. Consideration must be given to the severity of the duty cycle during the product selection phase. Our Application Engineers are available to discuss your requirements.

4. **Self-Locking Jacks** – Screw jacks that require power to raise or lower. Exceptions include machine screw jacks having double lead screws and ECA electric cylinders that are more than 30% efficient and all ball screw jacks. A brake must be used on the input shaft of any jack that is not self-locking. A brake should also be included for applications that expose the jack or actuator to vibration. Contact Joyce for more information.

5. **Jacks That Require a Brake Motor** – Any jack that will lower under load requires a brake motor. This includes ball screw jacks (WB, HWB, WBL, HWBL), ball screw ComDRIVEs® (CDB, CDBL, CDHB, CDHBL), ball screw electric cylinders (ECB), ball screw integrated actuators (BIA, HBIA), and bevel ball actuators (BB). Machine screw jacks with double lead screws and WJ500 jacks may also require brakes to hold postion.

6. **Travel Speed Limitations** – Typical travel speeds for various jacks and actuators are measured in inches per minute (IPM). Speeds depend on the input RPM, load, internal ratio and lead of the screw. Maximum allowable travel speeds for machine screw jacks are typically slower than ball screw jacks. Wormgear jacks typically have slower travel speeds than bevel gear jacks. Refer to the JAX Online browser-based software for more detail or contact Joyce to talk with an application engineer.

7. **Maximum Screw Length** – Maximum distance from the base of the jack to the end of the extended screw. It is limited by the column load in compression. Refer to column load charts throughout this catalog or use the JAX Online browser-based software. Contact Joyce with questions.

8. **Calculated Life for Machine Screws** – There is no formula available to calculate the life of a machine screw. If a calculated life for the screw jack is required, specify ball screw jacks, ball screw ComDRIVEs®, ball screw electric cylinders, ball screw integrated actuators, or bevel ball actuators.

9. **Calculated Life for Ball Screws** – The calculated life for ball screws is based on the ball nut life. This information is available for all ball screw jacks, ball screw ComDRIVEs®, ball screw integrated actuators, bevel ball actuators, and ball screw electric cylinders (ECB). Register at joycedayton.com/register to use JAX Online browser-based software, or contact Joyce with your requirements.

10. **Screw Stops** – Stops are offered as options for screw jacks and actuators, and are not to be used as operating limits. Engaging the stop may prevent damage to your structure but will most likely damage the jack. To control jack or actuator travel, include travel limits in the system design. Stops may increase the closed height of the jack and the length of the protection tube. Refer to specific ordering sections in the catalog or contact Joyce for more information.
**Note:** *Adjustable screw stops are standard on most Joyce ComDRIVE® jacks.(The extending stop on 15- and 50-ton jacks and ComDRIVEs is threaded on and functions as a fixed stop.)*

11. **Adjustable or Fixed Screw Stops** – Adjustable screw stops are used most frequently. They are secured against the lifting screw with set screws and can easily be repositioned. Fixed screw stops are positioned at the factory and their position cannot be adjusted. Fixed extending screw stops, when used, are standard on extending stops for both 15- and 50-ton machine screw jacks.

12. **Hard Stops** – Jacks are not designed to operate into a hard stop. Sudden impacts and shock loads may cause damage to jacks and actuators. Customers are responsible for providing travel limits to avoid this situation.

13. **Standard Operating Temperature** – The standard operating temperature range for most products is 40°F – 220°F. There are some exceptions. For operation outside this range, special lubricants and seals can be provided.

14. **Lubrication of Wormgear Jacks** – Standard wormgear jacks are lubricated with NLGI grade #1 grease prior to shipment. Specific information and commercial brand names can be found in the Operation & Maintenance Manuals, which are available at joycedayton.com.

15. **Lubrication of Bevel Gear Jacks** – Bevel Gear jacks use both NLGI grade #1 grease and oil. The upper bearing and jackscrew are grease lubricated while the remaining internal components are oil lubricated. These jacks are grease lubricated prior to shipment; however, oil must be added to the unit prior to operation. Bevel Ball Actuators are typically grease lubricated with NLGI grade #1 grease prior to shipment.

16. **Horizontal Mounting** – When jacks are mounted horizontally, Joyce recommends that the input shaft (worm) be mounted below the lifting screw and parallel with the horizon. This position provides the most lubrication to the input shaft (worm), and to both worm shaft bearings. The load capacity of the jack may be reduced when the lifting screw is mounted horizontally. Bevel gear jacks are designed to be mounted vertically with the flange base down but can be adapted for other mounting orientations. Consideration must be given to the position of vents and oil fittings to ensure proper lubrication levels.

17. **High Screw RPM and Long Screw Lengths** – Keyed for traveling nut (KFTN) jacks with long screw lengths require additional support when the screw rotates at high RPM.

18. **Direct Drive Considerations** – Whenever the input worm shaft is driven directly from a motor, designers should consider the starting torque capacity of the motor, handwheel, or other power train device. Torque values calculated in JAX Online software are based on running torque and selection of motor horsepower may require additional consideration.

**Technical Questions**
Our qualified and experienced Application Engineers are available Monday through Friday, 8 a.m. - 5 p.m., EST.

Contact Joyce to discuss specific application questions and technical questions.

- sales@joycedayton.com
- 937-294-6261

**Tools for Engineers and Designers**
Register at joycedayton.com/user/register to access 2D/3D drawing software and our exclusive JAX® Online browser-based software.

### Column Loading Capacity

**The type of load on a jack, and the way the jack is mounted, affects its load bearing capacity.** There are two types of possible jack loads, tension and compression. A jack is under tension when its load pulls the screw away from the jack. It is under compression when the load pushes the lifting screw toward the jack (see diagrams). A jack can be under tension or compression regardless of jack positioning (i.e., vertical, horizontal, upright, or inverted).

When tension loaded, the jack retains full rated capacity. Under compression loads, the screw may not be able to support full capacity. For example, a 2-ton jack with a 15" screw length will be limited to 2293 pounds in compression, about half the jack's capacity. In compression the load, screw length and jack mounting configuration determine the load capacity of the screw. The examples shown illustrate four common mounting configurations.

### Unguided

If the screw is the only support for the load, it is considered unguided. The screw must be large enough to support the load and prevent buckling. On the Column Loading charts, use the row labeled "unguided" for the allowable lengths for this design. The Column Loading charts are located within the appropriate product sections of the catalog.

### Trunnion Mounting

In a trunnion mounting arrangement, the screw has a pivot on the end and the jack body is mounted on a large pivoting frame, or trunnion. This type of mounting is particularly common in the antenna industry. In practice, the pivot should be as close to the centerline of the internal nut as design permits. This will eliminate moment loads caused by loose threads. Use the "trunnion" row on the Column Loading charts found within the appropriate product sections of the catalog.

### Guided

Guided loading is often termed "fixed-fixed" loading. With guided loading, both ends of the column are rigidly held – the jack body is bolted firmly to a sturdy base, and the load travels on slides, bearings, rollers or other means. The guides should be snug enough to prevent any side load or moment load from reaching the screw. Use the "guided" row on the appropriate Column Loading charts.

### Double-Clevis Mounting

Double-clevis jacks have less load capacity than the other common mounting configurations. A double-clevis jack has pivots or clevises at both ends: one on the screw tip and one on the end of the protection tube. This tends to weaken it as a column by creating eccentric loads on the screw. This eccentricity tends to increase with greater distance and higher loading. For this reason, double-clevis jacks are limited both in capacity and maximum length. Double-clevis mounting differs from trunnion mounting because the pivot is located farther from the jack body. The Column Loading charts do not apply for this mounting. Please consult Joyce for load bearing information.

### How to use the Column Loading charts:

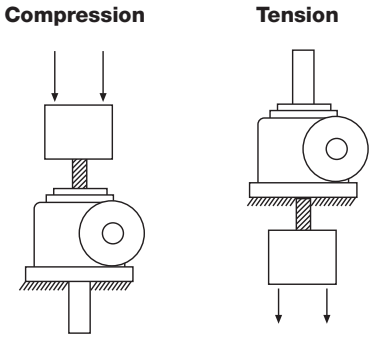
Note: Charts for machine screw jacks, machine screw ComDRIVEs®, metric screw jacks, ball screw jacks, ball screw ComDRIVEs®, stainless steel jacks, bevel gear jacks, and bevel ball actuators are located within the specific product section of the catalog. These charts only apply to jacks with axial loads. ***For side loads, offset loads, and horizontal mounting, contact Joyce.***

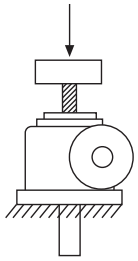
1. Determine the type of jack you wish to use and locate that column load chart which is found near the beginning of each product section.
2. Determine the proper mounting arrangement for your application. Locate the appropriate row and find the screw length at the bottom of the chart.
3. Find the load you need to move (in pounds or kilonewtons) on the left side of the chart.
4. Find the point on the chart where the load and length intersect. Choose a jack whose line is on or above this intersection.
5. Add the length of the end condition you have chosen and any additional screw extension to the screw length to find the "unbraced" screw length. Verify your selection using the unbraced length.

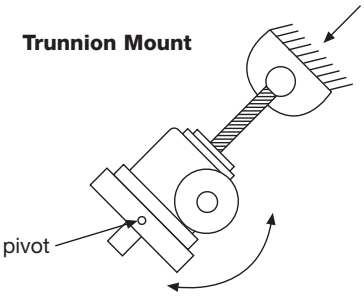
### Example:

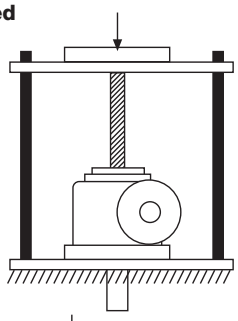
A jack must lift 5 tons (10,000 pounds) over a distance of 31 inches. The load places the screw in compression. The jack is mounted firmly by its base, and the load is attached to a load pad (Type 2 end) and is not guided.

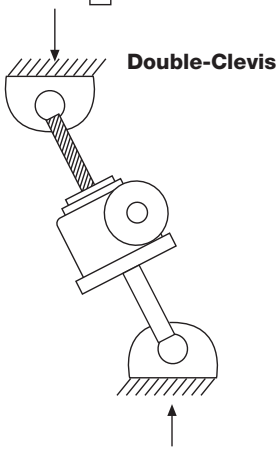
1. In this example, a machine screw jack will be used so locate the Column Loading chart for machine screw jacks on page 24.
2. Look at the "unguided" row at the bottom of the machine screw jack Column Loading chart and find the 31" mark.
3. From this, the 10-ton double lead jack is selected. Look at the dimensions from the jack body for the Type 2 end for this jack. The Type 2 end adds 2" from the top of the jack to the end of the screw. Thus the total unbraced length of the screw is 31" + 2"= 33".
4. Use this new unbraced screw length to verify your selection. In this case, the intersection point still falls below the 10-ton double lead jack line, so this selection is correct.



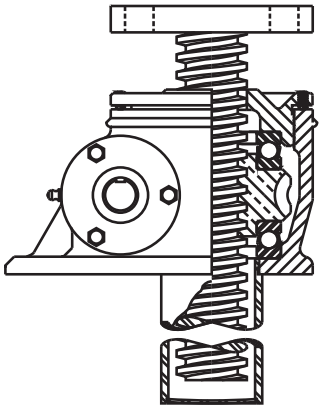



### Joyce Translating Design Jacks

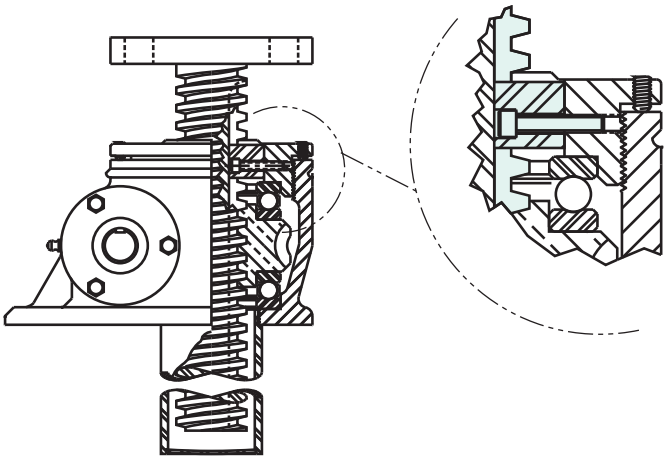
A driven worm acts on an internal wormgear, which in turn drives a lifting screw to extend or retract. As the lifting screw translates through the body of the jack, inherent screw rotation is prevented by an attached load or mounting structure either of which is anchored to resist rotation.



This design is available for:
- Machine Screw Jacks
- Machine Screw ComDRIVEs®
- Stainless Steel Jacks
- Metric Screw Jacks
- Ball Screw Jacks
- Ball Screw ComDRIVEs®
- Bevel Gear Jacks
- Bevel Ball Actuators

### Joyce Keyed Design Jacks

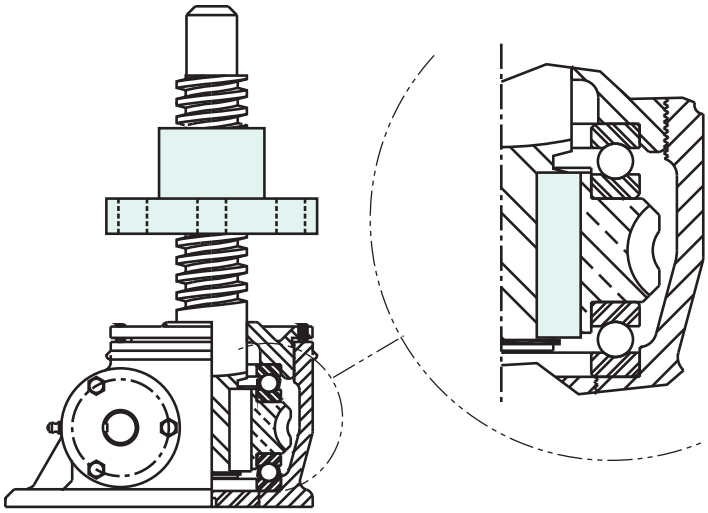
Some loads do not prevent lifting screw rotation. These applications require a keyed jack. A key, fixed to the jack housing and inserted into a keyway milled into the lifting screw, forces the lifting screw to translate without rotating. Several dimensions of the keyed jack differ from the translating jack – check the keyed jack drawings for each jack model.



This design is available for:
- Machine Screw Jacks (except WJ250)
- Machine Screw ComDRIVEs®
- Stainless Steel Jacks
- Metric Screw Jacks
- Bevel Gear Jacks

### Joyce Keyed for Traveling Nut (KFTN) Jacks

A keyed for traveling nut jack (sometimes referred to as a rotating screw jack) features a lifting screw keyed to the wormgear as a single unit, forcing the lifting screw to rotate, but not translate. A flanged traveling nut, attached to the load, is driven by the rotation of the lifting screw. This type of jack is ideal for applications that cannot accommodate a screw protection tube or that require a flush mount. Refer to the keyed for traveling nut (KFTN) dimensional drawings for each jack model.



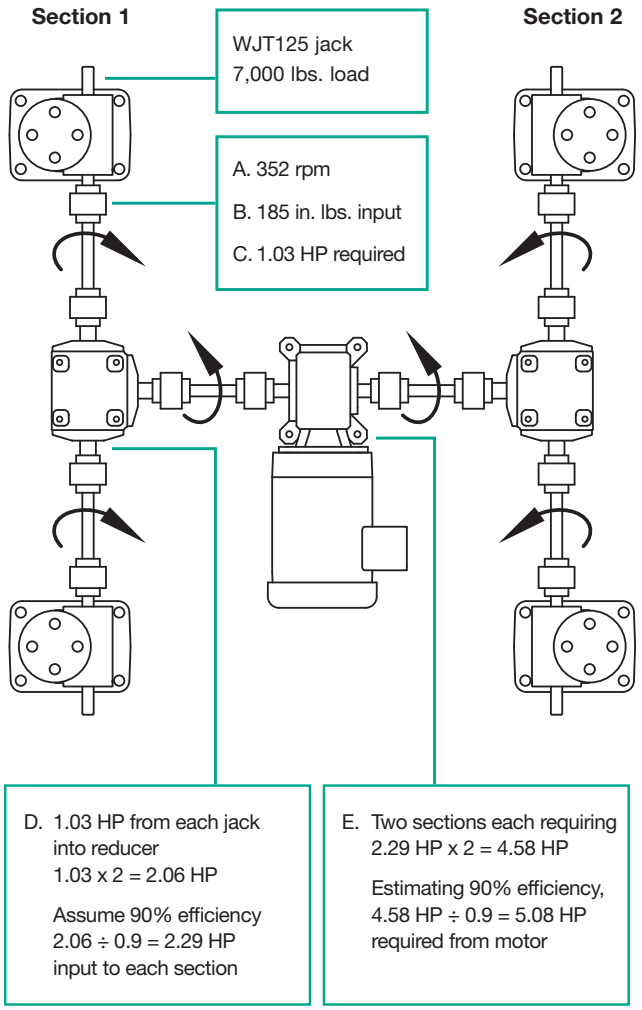
This design is available for:
- Machine Screw Jacks
- Machine Screw ComDRIVEs®
- Stainless Steel Jacks
- Metric Screw Jacks
- Ball Screw Jacks
- Ball Screw ComDRIVEs®
- Integrated Actuators
- Bevel Gear Jacks
- Bevel Ball Actuators

Operating Torque Constants and Tare Torque values can be found on specification pages.
Use the following formula to calculate horsepower:
**(RPM x Load (lb) x Operating Torque Constant + Tare Torque)/ 63025 = Horsepower**

**Example 1 – *Calculate the horsepower needed to move a load on a single jack (WJT242).***

WJT242 has a torque constant of 0.009W with (W) representing the load in pounds and a tare torque of 4 inch-pounds (page 22). Using 350 RPM on the input shaft and a 2000-pound load results in the following horsepower equation:
(350 RPM x 2000 lb x 0.009 + 4 in. lbs) / 63,025 = 0.10 HP

Note: Unlike bevel gear jacks and bevel ball actuators, wormgear style jack input torque requirements vary with input speed, therefore the constants listed in the catalog are only accurate for the RPM listed. To calculate horsepower at speeds other than those listed, please refer to the free JAX® Online browser-based software or fill out a selection guide (page 8) and contact Joyce .




**Example 2 – *Calculate the horsepower needed to move a system load (WJT125).***

Find the horsepower required to raise a system load of 28,000-pounds, a distance of 10 inches, at a speed of 11 in./min., using four WJT125 jacks (page 22). The load per jack is 7000 pounds.

A. Determine input speed:
32 turns of the input shaft = 1 inch of linear travel.
(32 turns/inch x 11 inches/min = 352 RPM input)

B. Determine the input operating torque plus tare torque for one jack:
(0.025 in. lbs. x 7,000) + 10 in. lbs = 185 in. lbs

C. Determine the input horsepower for one jack:
(352 rpm x 185 in. lbs)/ 63,025 = 1.03 HP per jack

To calculate the horsepower required when operating a jack system, it is usually easiest to separate the system into sections. For example, the “H” system can be viewed as two jack systems joined by a speed reducer in the center.

Always remember to take into account the inefficiencies of miter boxes and gear reducers when calculating system horsepower requirements. (For this exercise use 90% efficiency for miter boxes and gear reducers, but in actual systems efficiencies may differ.)

D. Determine horsepower required for Section 1:
Total horsepower required for the left side of the system =
1.03 HP per jack x 2 jacks = 2.06 HP

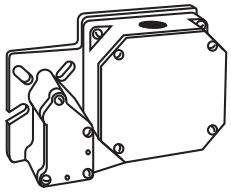
2.06 HP / .9 = 2.29 HP required into miter box of Section 1. Since Sections 1 and 2 are identical, Section 2 also requires 2.29 HP.

E. Determine horsepower required for Sections 1 and 2:
2.29 HP + 2.29 HP = 4.58 HP

Account for the inefficiency of the central gear reducer to determine the total system horsepower requirement.

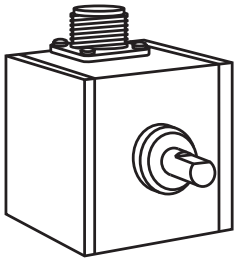
4.58 HP / 0.9 = 5.08 HP required to operate this system

## SHAFT MOUNTED OPTIONS



**Rotary Cam Limit Switches**

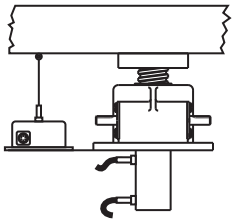
See page 170



**Encoders**

- **Standard, 200 or Optional 1024 PPR**
- **Stainless steel Encoder 1024 PPM**
- **Absolute Encoder**

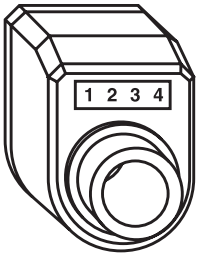
See pages 172-173



**String Encoder and other Linear Displacement devices**

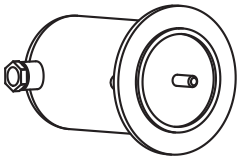
**Proximity Switches**

Contact Joyce




**Mechanical Counters**

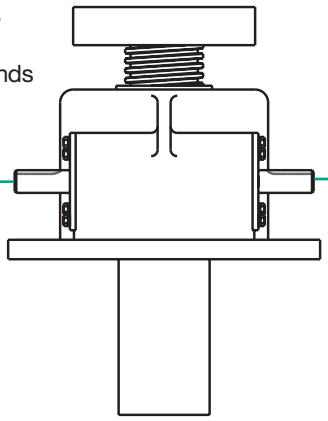
See page 176



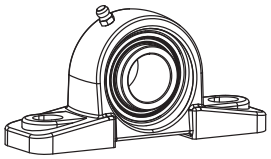
**Geared Potentiometer 0-10V or 4-20Ma**

See page 171

Joyce jacks and actuators are at the heart of linear motion systems in thousands of applications worldwide.

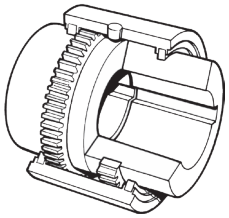


## ACCESSORIES



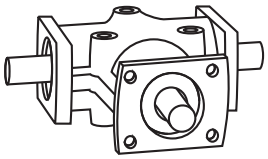
**Pillow Block and Flange Block Supports**

See page 180



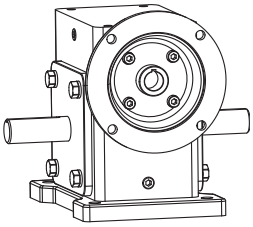
**Shafts and Couplings**

See pages 184-187



**Miter Gear Boxes**

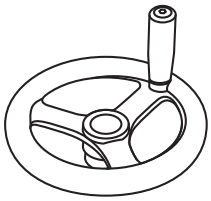
See pages 181-183



**Speed Reducers**

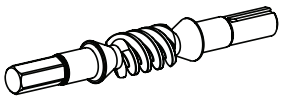
Contact Joyce

## DRIVE OPTIONS



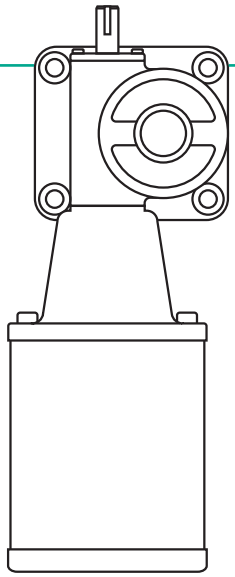
**Hand Wheels**

See page 176



**Square or Hex ends on worm input**

Contact Joyce

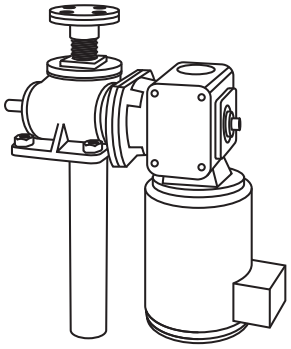


**Specialty Motors**

- AC or DC
- Air
- IEC Frame
- Gear Motor
- International Voltages
- Single Phase
- Brake Motors

**Direct Drives**

- Stock AC Motor Mounts See page 175
- Servo Motor Adapters See page 174
- Stepper Motor Adapters Available
- Custom Adapters



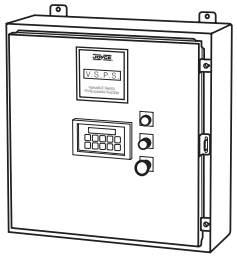
**ComDRIVE®**
**Self-contained actuators combine jack, gear reducer and motor in a single compact unit.**

- Machine Screw ComDRIVE® See pages 45-57
- Ball Screw ComDRIVE® See pages 103–117
- Electric Cylinder ComDRIVE® See pages 118-134

## MOTOR CONTROLS

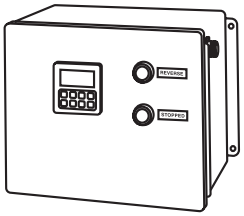
**Variable Speed Positioning System (VSPS)**

- 10 Programmable Preset positions See page 189



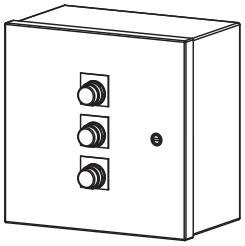
**Custom Controls include Synchronized Systems, Positioning Systems, and Leveling Systems**

Contact Joyce



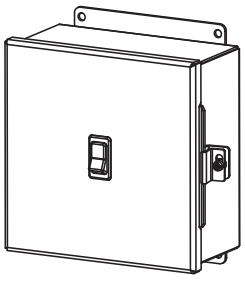
**Motor Starters**

- Momentary Contact Motor Starters See page 188



**Actuator Controls**

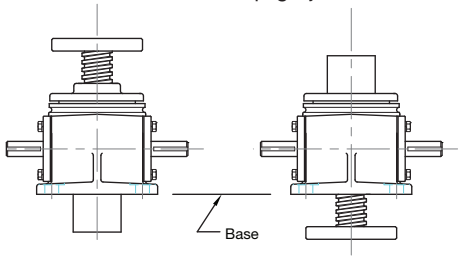
- 120 VAC - 120 VAC
- 120 VAC - 12 VDC
- 12 VDC - 12 VDC See page 189



# ENGINEERING INFORMATION FAQ

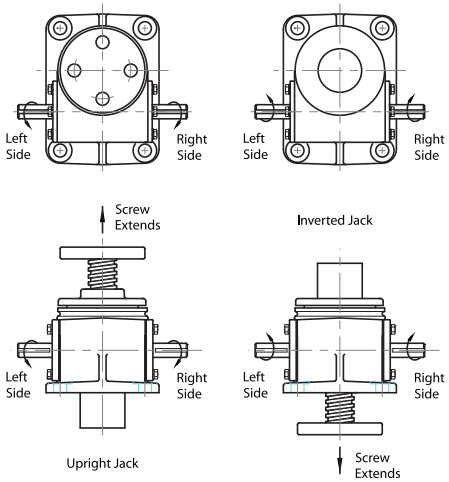
**1. What is the difference between upright and inverted jack configurations?**
The difference between an upright and an inverted jack is the location at which the lifting screw exits the jack relative to the jack base. For example, an upright jack's lifting screw exits the jack opposite the base. An inverted jack's lifting screw exits the jack on the same side as the base. The choice between inverted and upright jack is dependent upon the application.

Note: An upright jack mounted upside down is still referred to as an upright jack.




**2. How can I determine worm shaft rotation extending the lifting screw?**
Refer to the views of the standard jack with right hand screw threads below:

- For an Upright jack:
  CCW rotation of right input shaft extends the lifting screw.
  CW rotation of the left shaft extends lifting screw.
- For an Inverted jack:
  CW rotation of right input shaft extends lifting screw.
  CCW rotation of the left shaft extends lifting screw.




**3. How is the linear travel speed calculated?** Each screw jack and actuator has an inherent number of input shaft turns per inch (TPI) of screw travel. TPI is the result of the jack's gear ratio divided by the lifting screw lead. The TPI can be found on jack specification pages at the beginning of many product sections. A model WJT242 has a TPI of 96. If 350 RPM is applied to the input shaft, the resultant linear speed of travel is 350/96 or 3.65 inches per minute.

**4. Are screw jacks lubricated prior to shipment?** All Joyce machine screw jacks and ComDRIVEs®, ball screw jacks and ComDRIVEs®, bevel ball actuators, integrated actuators, and electric cylinders are lubricated with an extreme pressure NLGI grade #1 grease before leaving the factory.

Bevel gear jacks are lubricated with NLGI grade #1 grease and oil. The upper bearing and jackscrew are grease lubricated while the remaining internal components are oil lubricated. They are grease lubricated prior to shipment; however oil must be added to the unit prior to operation.

Linear actuators (LA) are lubricated for life.

**5. What are the standard end conditions for screw jack lifting screws?**
The following standard end conditions are available on Joyce screw jacks:

- Type 1
  plain turned end



- Type 2
  load pad with mounting holes



- Type 3
  male threaded end



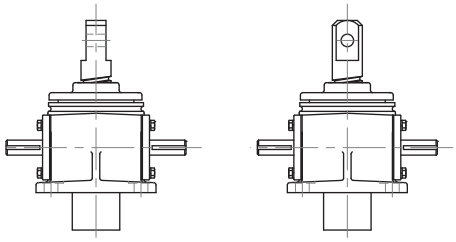
- Type 4
  male clevis end



Contact Joyce for information about custom end conditions.

**6. How is the clevis, T4 end, positioned on a keyed jack?**

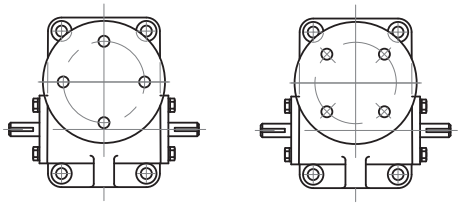
- Standard clevis mounting position – the hole in the clevis end is parallel with the worm input shaft.
- Optional mounting position – the hole in the clevis end is perpendicular to the worm input shaft.



Standard Optional

**7. How is the load pad, T2 end, positioned on keyed jacks?**

- Standard load pad mounting position – the holes on the load pad are on the jack centerlines.
- Optional load pad mounting position – the holes on the load pad end straddle the jack centerlines.



Standard Optional

# ENGINEERING INFORMATION FAQ

8. **Can I buy a jack with a clevis on both ends?** Yes. When freedom of movement in two axes is required, a double clevis jack may be specified.
   - Double clevis jacks incorporate a clevis machined or pinned on the screw end and also a clevis welded to the protection tube.

     Screw travel is limited. Contact sales@joycedayton.com for more information.
   - Electric cylinders, integrated actuators, and linear actuators are also available with a clevis on both ends.

9. **What is meant by "self-locking"?** Self-locking is a term used to describe jacks that require power to move in either direction. They hold their position when power to the system is off. See page 10 for more details.

10. **What if the jack is not self-locking?** A brake is required on the input shaft of any jack that may lower under load (ball screw jacks, double-lead Acme screw jacks, integrated actuators, and electric cylinders that are more than 30% efficient). See page 10 for more details.

11. **How much side load can be placed on a screw jack?** Standard jacks and actuators are not designed for dynamic side loads. The load must be positioned axially. Static side loads are limited. Contact sales@joycedayton.com for technical assistance. See page 10 for more details.

12. **How much backlash is in a machine screw jack?** In machine screw jacks there are two types of backlash: worm to wormgear backlash (typically 8-15° worm rotation), and lifting screw to nut backlash, sometimes called endplay (up to 0.020 inches on new standard jacks). Refer to the JAX® Online browser-based software for information about specific jacks.

13. **Can I reduce machine screw backlash?** Yes, screw backlash can be adjusted on translating and keyed style machine screw jacks via one of the following anti-backlash options: standard split-nut design; A90 external nut adjustment; or A95 design. See page 181.

14. **What is screw lead error?** The deviation from the mathematical lead expressed in inches per foot cumulative.

15. **What is the amount of lead error in a standard lifting screw?** Rolled Acme screws have up to .010 in/ft cumulative error, milled Acme screws have up to 0.003 in/ft cumulative error; and ball screws have up to 0.007 in/ft cumulative error. Contact Joyce for more information.

16. **Are Joyce/Dayton jacks and actuators user-serviceable?** The level to which products can be serviced in the field varies from product to product. Refer to the product Operation & Maintenance Manuals or contact Joyce for more information.

17. **What motor options are available?** Motor options vary among product lines. Customers can use AC 3-phase, AC single-phase, DC motors, international voltage motors and others. Let us know your requirements.

    The motors on linear actuators are an integral component. They are available in 120 VAC, or 12 VDC.

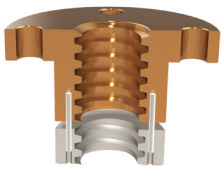
18. **What is the clutch on a linear actuator and how is it used?** A screw clutch device is an option on linear actuators (if they do not have limit switches). This device allows the screw to turn if the actuator is operated against a hard stop. This is an emergency protection device, not to be used repeatedly as an end of travel stop.

19. **Are limit switches preset?** No.
    - Shaft-mounted rotary cam limit switches must be set to the required positions during installation.
    - Limit switches on linear actuators must be set after the actuators have been installed in order to tailor the stop position to the individual application.

20. **What do I need to consider when ordering a bellows boot to protect the lifting screw?**
    - Closed height dimensions may increase when boots are added.
    - The customer must specify boot collar diameter when ordering bellows boots for KFTN jacks.
    - Zippered boots are also available.
    - Special boot material is available.
    - Horizontal screw applications may require boot guides.
    - See pages 170-173

21. **Are jacks and actuators corrosion-resistant?** Stainless steel jacks are inherently corrosion resistant. All exposed surfaces are stainless steel and aluminum bronze. Most other jacks can be modified with special finishes, coatings, and seals. Contact Joyce with your requirements. See Finishes on page 182.

22. **What is a follower nut assembly and when is it helpful to have one?** Follower nut assemblies allow customers to gauge the wear on the wormgear screw thread of translating jacks and on the traveling nut screw thread of KFTN jacks. This allows customers to replace the nut before its threads wear too thin to support the design load. These assemblies generally consist of a gear nut or traveling nut pinned to a second nut of dissimilar material. A preset gap separates the two nuts. As the wormgear or traveling nut threads wear, the preset gap narrows. The assembly is replaced when the gap measurement reaches the design limit. Follower nut assemblies are designed for specific applications. Contact Joyce for more information.



Versatile Joyce machine screw jacks lift and precisely position all kinds of loads from 250 pounds to 250 tons.

Upright or inverted, these precision jacks operate at full capacity whether the load is in tension or compression. WJ and RWJ series single lead jacks are self-locking under full lifting capacity. DWJ and DRWJ double lead series jacks offer increased travel speed.

Alloy steel input shafts, aluminum bronze wormgears and tapered roller or ball thrust bearings provide rugged reliability.

Double input shafts are standard. Single input shafts are available with right or left hand extension or additional length. Jacks are available with one of four standard end conditions or special ends to meet your requirements. All jack designs can be fitted with protective boots.

An optional anti-backlash feature (page 177) compensates for thread wear, assuring minimum play between lifting screw and wormgear for smooth, precise operation. Jacks equipped with the anti-backlash feature are rated at full capacity under static conditions. For anti-backlash jack capacity under dynamic conditions, please contact sales@joycedayton.com.

Joyce can customize machine screw jacks to meet your specifications.

Scan the QR Code to view this product on our website.

# MACHINE SCREW JACKS

**Joyce offers Machine Screw Jacks in several designs including:**

- **Translating**
- **Keyed for non-rotation**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**
- **Trunnion**

A guide for ordering is on pages 20 and 21.



# MACHINE SCREW JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| Miniature | 1-Ton | 2-Ton | 2-Ton Reverse Base | 3-Ton | 5-Ton | 10-Ton | 15-Ton | 20-Ton |
|---|---|---|---|---|---|---|---|---|
| WJ250<br>WJ500*<br>WJ1000 | WJ51<br>WJ201 | WJT62<br>WJT122<br>WJT242<br>WJT252 | RWJT62<br>RWJT122<br>RWJT242<br>RWJT252 | WJ63<br>WJ123<br>WJ243<br>WJ253 | WJT65<br>WJT125<br>WJT245<br>WJT255 | WJ810<br>WJ2410<br>WJ2510 | WJ815<br>WJ2415<br>WJ2515 | WJ820<br>WJ2420<br>WJ2520 |
| | | DWJ62*<br>DWJ122*<br>DWJ242* | DRWJ62*<br>DRWJ122*<br>DRWJ242* | DWJ63*<br>DWJ123*<br>DWJ243* | DWJ65*<br>DWJ125*<br>DWJ245* | DWJ810*<br>DWJ2410* | DWJ815*<br>DWJ2415* | DWJ820*<br>DWJ2420* |
| **25-Ton** | **30-Ton** | **35-Ton** | **50-Ton** | **50-Ton Reverse Base** | **75-Ton** | **100-Ton** | **150-Ton** | **250-Ton** |
| WJ1125<br>WJ3225 | WJ1130<br>WJ3230 | WJ1135<br>WJ3235 | WJT1150<br>WJT3250 | RWJT1150<br>RWJT3250 | WJ1175<br>WJ3275 | WJ12100<br>WJ36100 | WJ12150<br>WJ36150 | WJ50250 |
| DWJ1125*<br>DWJ3225* | DWJ1130*<br>DWJ3230* | | | | | | | |

Important Note: *Not self-locking, may lower under load. Brake motors or external locking systems are recommended.

D: Double Lead Screw

R: Reverse Base Jack, (only available on 2-ton and 50-ton jacks).

## Sample Part Number: WJT65U1N-18.50-STDX-STDX-B

### Jack Configuration



U=Upright



I=Inverted

### End Conditions



1=T1
(plain end)



2=T2
(load pad)

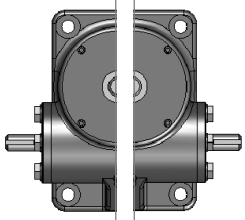


3=T3
(threaded end)



4=T4
(male clevis)

### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 21.

### Right Side Shaft Code
(see below)

XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 21.

### Machine Screw Jack Rise

Rise is travel expressed in inches and not the actual screw length.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Anti-Backlash p. 177**
A=Split Nut
A90=A90 Design
A95=A95 Design

**Protective Boots pp. 166-169**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

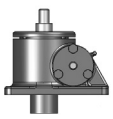
**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade

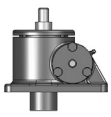
**Screw Stops**
ST0=Extending
ST1=Retracting
ST2=Both

* Specify as many options as needed

### Jack Designs



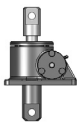
S=Translating



K=Keyed for Non Rotation



N=Traveling Nut



D=Double Clevis



A=KFTN Trunnion*
T=Trunnion*

*Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 179)

# MACHINE SCREW JACKS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the jack.

## Screw Stops (p. 10) and Boots (pp. 165-169)

Screw stops are optional on machine screw jacks. When specified, the closed height of the jack and/or the protection tube length may be increased.

When boots are added to machine screw jacks, the closed height of the jack may be increased.

## Mechanical Counters (p. 176)

CNT0=0.001" Increments

Note: Contact Joyce for availability and options.



## Hand Wheels (p. 176)

HW04=4" dia
HW06=6" dia
HW08=8" dia
HW10=10" dia
HW12=12" dia



Recommended for self-locking jacks only.

## Geared Potentiometers (p. 171)



POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures

## Encoders (pp. 172-173)



ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR

## Motors for Systems and Direct Drives (pp. 174-175)

- All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available. Specify the appropriate motor size from the chart on the right.
- Refer to the "Additional Options" chart on the preceding page as needed.
- Brake motors (M2) are recommended for jacks that are not self-locking, and jacks with double lead screws.
- If the motor frequency will be varied to provide a "soft" start an inverter duty motor may be required.

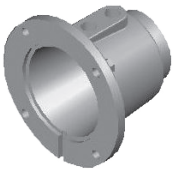
## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |
| 7-1/2 HP | H |
| 10 HP | I |
| 15 HP | J |

## Motor Mounts (pp. 174-175)

Ordering Example:

MMA A



MMA=56C
MMB=140TC
MMC=180TC
MMD=210TC

Motor code from chart at left

For servo motor mounts see p. 174

Standard motor adapters are aluminum.

## Mechanical Limit Switches (p. 170)

Ordering Example: LA13

### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

### Available Positions

| | 1 | 2* | 3 | 4 | 5 | 6* | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 2, 3, 5, 10, 15, and 20 ton jacks are available with positions #1, #3, and #5
- 25, 30, 35, 50, 75, 100, and 150 ton jacks are available with positions #1, #4, #7, and #8

*These positions are not standard. Contact Joyce with your requirements.

# MACHINE SCREW JACKS SPECIFICATIONS

| Model | Capacity | Screw Diameter (Inches) | Thread Pitch/Lead | Worm Gear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Efficiency Rating % Approx. | Screw Torque (Inch Lbs.) | Basic Jack Weight (Lbs.) | Jack Weight per Inch Travel (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WJ250 | 250 lbs. | 5/8 | .125 pitch STUB ACME | 5:1 | 40 | 1 | .047W* | .040W* @ 500 RPM | 10.0 | .083W* | 1.2 | 0.1 |
| WJ500 | 500 lbs. | 5/8 | .125 pitch .250 lead STUB ACME | 5:1 | 20 | 1 | .041W* | .030W* @ 500 RPM | 27.2 | .079W* | 1.3 | 0.1 |
| WJ1000 | 1,000 lbs. | 5/8 | .125 pitch STUB ACME | 5:1 | 40 | 1 | .030W* | .021W* @ 500 RPM | 19.9 | .059W* | 1.3 | 0.1 |
| WJ51 | 1 ton | 3/4 | .200 pitch ACME 2C | 5:1 | 25 | 3 | .038W* | .026W* @ 500 RPM | 25.0 | .075W* | 6 | 0.3 |
| WJ201 | | | | 20:1 | 100 | | .017W* | .009W* @ 500 RPM | 15.9 | | | |
| (R)WJT62 | 2 ton | 1 | .250 pitch ACME 2C | 6:1 | 24 | 4 | .041W* | .028W* @ 500 RPM | 24.2 | .098W* | 15 | 0.3 |
| (R)WJT122 | | | | 12:1 | 48 | | .025W* | .015W* @ 500 RPM | 22.0 | | | |
| (R)WJT242 | | | | 24:1 | 96 | | .018W* | .009W* @ 500 RPM | 18.3 | | | |
| (R)WJT252 | | | | 25:1 | 100 | | .015W* | .0085W* @ 500 RPM | 17.0 | | | |
| D(R)WJ62 | | | .250 pitch .500 lead ACME 2C | 6:1 | 12 | | .057W* | .039W* @ 500 RPM | 33.7 | .139W* | | |
| D(R)WJ122 | | | | 12:1 | 24 | | .035W* | .022W* @ 500 RPM | 30.5 | | | |
| D(R)WJ242 | | | | 24:1 | 48 | | .025W* | .013W* @ 500 RPM | 25.4 | | | |
| WJ63 | 3 ton | 1 | .250 pitch ACME 2C | 6:1 | 24 | 6 | .040W* | .029W* @ 500 RPM | 24.3 | .098W* | 17 | 0.4 |
| WJ123 | | | | 12:1 | 48 | | .025W* | .016W* @ 500 RPM | 22.2 | | | |
| WJ243 | | | | 24:1 | 96 | | .017W* | .009W* @ 500 RPM | 18.5 | | | |
| WJ253 | | | | 25:1 | 100 | | .0155W* | .009W* @ 500 RPM | 17.8 | | | |
| DWJ63 | | | .250 pitch .500 lead ACME 2C | 6:1 | 12 | | .055W* | .041W* @ 500 RPM | 33.8 | .139W* | | |
| DWJ123 | | | | 12:1 | 24 | | .034W* | .022W* @ 500 RPM | 30.7 | | | |
| DWJ243 | | | | 24:1 | 48 | | .024W* | .013W* @ 500 RPM | 25.6 | | | |
| WJT65 | 5 ton | 1 1/2 | .375 pitch STUB ACME | 6:1 | 16 | 10 | .065W* | .044W* @ 300 RPM | 23.0 | .151W* | 32 | 0.7 |
| WJT125 | | | | 12:1 | 32 | | .041W* | .025W* @ 300 RPM | 20.6 | | | |
| WJT245 | | | | 24:1 | 64 | | .029W* | .015W* @ 300 RPM | 16.7 | | | |
| WJT255 | | | .250 pitch ACME 2C | 25:1 | 100 | | .022W* | .011W* @ 300 RPM | 13.4 | .131W* | | |
| DWJ65 | | | .250 pitch .500 lead ACME 2C | 6:1 | 12 | | .072W* | .050W* @ 300 RPM | 26.8 | .171W* | | |
| DWJ125 | | | | 12:1 | 24 | | .045W* | .028W* @ 300 RPM | 23.9 | | | |
| DWJ245 | | | | 24:1 | 48 | | .033W* | .017W* @ 300 RPM | 19.6 | | | |
| WJ810 | 10 ton | 2 | .500 pitch ACME 2C | 8:1 | 16 | 20 | .061W* | .043W* @ 200 RPM | 23.1 | .195W* | 43 | 1.3 |
| WJ2410 | | | | 24:1 | 48 | | .030W* | .018W* @ 200 RPM | 18.8 | | | |
| WJ2510 | | | .250 pitch ACME 2C | 25:1 | 100 | | .024W* | .014W* @ 200 RPM | 11.3 | .161W* | | |
| DWJ810 | | | .333 pitch .666 lead ACME 2C | 8:1 | 12 | | .070W* | .062W* @ 200 RPM | 31.9 | .228W* | | |
| DWJ2410 | | | | 24:1 | 36 | | .035W* | .026W* @ 200 RPM | 25.9 | | | |

Important Note: Series DWJ double lead screw jacks and WJ500 screw jacks are not self-locking. Brake motors or external locking systems are recommended.

(R): Reverse Base Jack.

*W: Load in pounds.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving the rated load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to JAX® Online to determine actual torque values at your RPM.

Screw Torque: Torque required to resist screw rotation (Translating Design Jacks) and traveling nut rotation (Keyed for Traveling Nut Design Jacks).

Lead: The distance traveled axially in one rotation of the lifting screw.

Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.

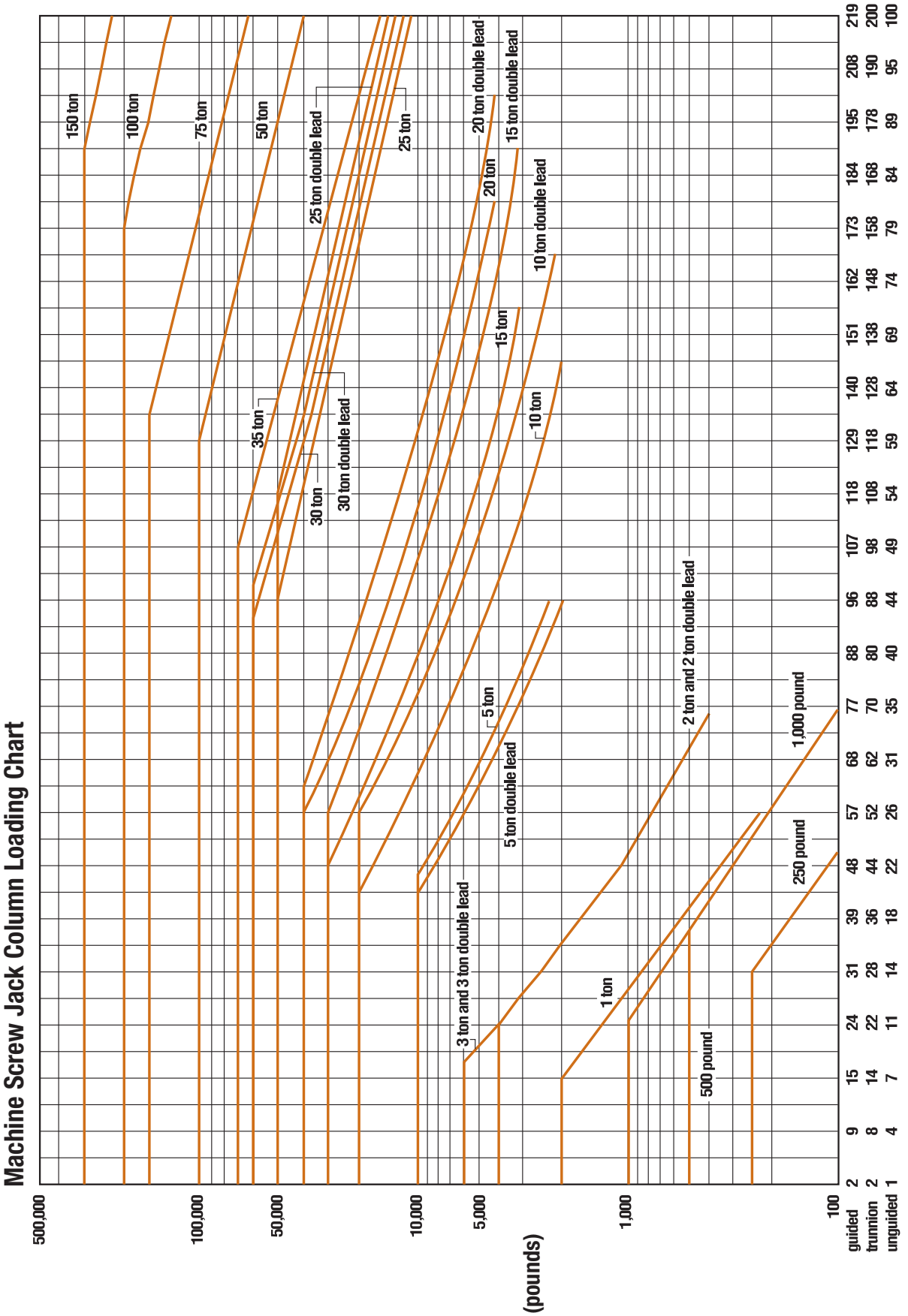
Note: This chart is provided for reference only. For specific information such as column loading, allowable continuous travel and other performance factors please refer to JAX® Online software or contact Joyce.

# MACHINE SCREW JACKS SPECIFICATIONS

| Model | Capacity | Screw Diameter (Inches) | Thread Pitch/Lead | Worm Gear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Efficiency Rating % Approx | Screw Torque (Inch Lbs.) | Basic Jack Weight (Lbs.) | Jack Weight per Inch Travel (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WJ815 | 15 ton | 2 1/4 | .500 pitch ACME 2C | 8:1 | 16 | 30 | .069W* | .047W* @ 200 RPM | 21.1 | .210W* | 59 | 1.4 |
| WJ2415 | | | | 24:1 | 48 | | .036W* | .020W* @ 200 RPM | 16.6 | | | |
| WJ2515 | | | .250 pitch ACME 2C | 25:1 | 100 | | .026W* | .015W* @ 200 RPM | 10.2 | .178W* | | |
| DWJ815 | | 2 1/4 | .333 pitch .666 lead ACME 2C | 8:1 | 12 | | .079W* | .058W* @ 200 RPM | 34.4 | .244W* | | |
| DWJ2415 | | | | 24:1 | 36 | | .041W* | .025W* @ 200 RPM | 27.0 | | | |
| WJ820 | 20 ton | 2 1/2 | .500 pitch ACME 2C | 8:1 | 16 | 40 | .075W* | .051W* @ 200 RPM | 19.6 | .227W* | 77 | 1.9 |
| WJ2420 | | | | 24:1 | 48 | | .039W* | .022W* @ 200 RPM | 15.4 | | | |
| WJ2520 | | | .250 pitch ACME 2C | 25:1 | 100 | | .029W* | .016W* @ 200 RPM | 9.4 | .194W* | | |
| DWJ820 | | 2 1/2 | .375 pitch .750 lead ACME 2C | 8:1 | 10.67 | | .088W* | .061W* @ 200 RPM | 24.5 | .272W* | | |
| DWJ2420 | | | | 24:1 | 32 | | .046W* | .026W* @ 200 RPM | 19.3 | | | |
| WJ1125 | 25 ton | 3 3/8 | .666 pitch Stub ACME | 11:1 | 16 | 50 | .088W* | .055W* @ 200 RPM | 18.3 | .313W* | 164 | 3.1 |
| WJ3225 | | | | 32:1 | 48 | | .053W* | .025W* @ 200 RPM | 13.5 | | | |
| DWJ1125 | | 3 3/8 | .562 pitch 1.125 lead ACME 2C | 11:1 | 9.5 | | .106W* | .067W* @ 200 RPM | 25.1 | .384W* | | |
| DWJ3225 | | | | 32:1 | 28.5 | | .063W* | .030W* @ 200 RPM | 18.6 | | | |
| WJ1130 | 30 ton | 3 1/2 | .666 pitch ACME 2C | 11:1 | 16 | 60 | .088W* | .055W* @ 200 RPM | 18.3 | .313W* | 164 | 3.0 |
| WJ3230 | | | | 32:1 | 48 | | .052W* | .025W* @ 200 RPM | 13.5 | | | |
| DWJ1130 | | 3 1/2 | .5625 pitch 1.125 lead ACME 2C | 11:1 | 9.5 | | .107W* | .067W* @ 200 RPM | 25.1 | .384W* | | |
| DWJ3230 | | | | 32:1 | 28.5 | | .064W* | .030W* @ 200 RPM | 18.6 | | | |
| WJ1135 | 35 ton | 3 3/4 | .666 pitch ACME 2C | 11:1 | 16 | 70 | .093W* | .057W* @ 200 RPM | 17.4 | .328W* | 240 | 3.4 |
| WJ3235 | | | | 32:1 | 48 | | .055W* | .026W* @ 200 RPM | 12.9 | | | |
| (R)WJT1150 | 50 ton | 4 1/2 | .666 pitch ACME 2C | 11:1 | 16 | 100 | .095W* | .063W* @ 150 RPM | 15.8 | .378W* | 387 | 6.1 |
| (R)WJT3250 | | | | 32:1 | 48 | | .050W* | .027W* @ 150 RPM | 12.4 | | | |
| WJ1175 | 75 ton | 5 | .666 pitch ACME 2C | 11:1 | 16 | 155 | .107W* | .067W* @ 150 RPM | 14.8 | .418W* | 610 | 6.5 |
| WJ3275 | | | | 32:1 | 48 | | .056W* | .028W* @ 150 RPM | 11.7 | | | |
| WJ12100 | 100 ton | 6 | .750 pitch ACME 2C | 12:1 | 16 | 205 | .112W* | .072W* @ 90 RPM | 13.9 | .495W* | 1010 | 10.0 |
| WJ36100 | | | | 36:1 | 48 | | .059W* | .031W* @ 90 RPM | 10.8 | | | |
| WJ12150 | 150 ton | 7 | 1.00 pitch ACME 2C | 12:1 | 12 | 300 | .134W* | .084W* @ 90 RPM | 15.7 | .595W* | 1350 | 12.2 |
| WJ36150 | | | | 36:1 | 36 | | .070W* | .037W* @ 90 RPM | 12.1 | | | |
| WJ50250 | 250 ton | 9 | 1.00 pitch ACME 2C | 50:1 | 50 | 500 | | .036W* @ 60 RPM | 8.8 | .711W* | 3415 | 21.0 |

Important Note: Series DWJ double lead screw jacks and WJ500 screw jacks are not self-locking. Brake motors or external locking systems are recommended.
(R): Reverse Base Jack.
*W: Load in pounds.
Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.
Starting Torque: Torque value required to start moving the rated load (dissipates to operating torque values once the load begins moving).
Operating Torque: Torque required to continuously raise a given load at the input RPM listed.
Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to JAX® Online to determine actual torque values at your RPM.
Screw Torque: Torque required to resist screw rotation (Translating Design Jacks) and traveling nut rotation (Keyed for Traveling Nut Design Jacks).
Lead: The distance traveled axially in one rotation of the lifting screw.
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.
Note: This chart is provided for reference only. For specific information such as column loading, allowable continuous travel and other performance factors please refer to JAX® Online software or contact Joyce.

# MACHINE SCREW JACKS COLUMN LOADING



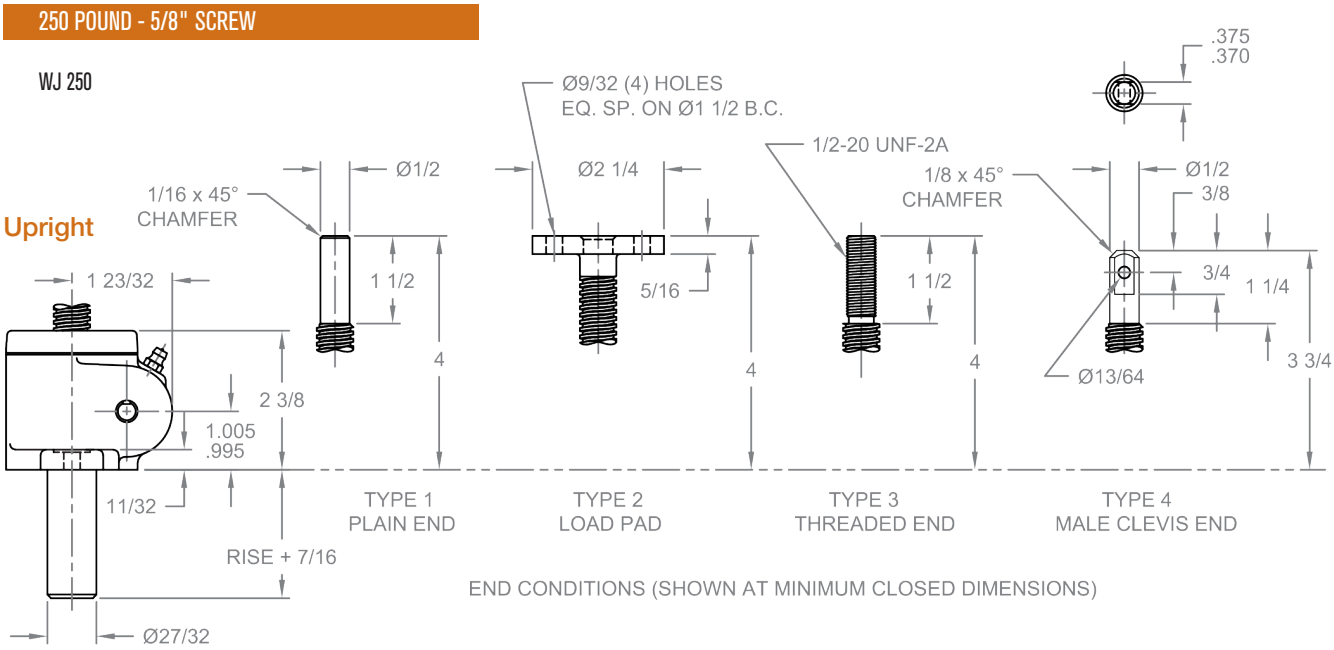

This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.) The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact factory for assistance.

# MACHINE SCREW JACKS

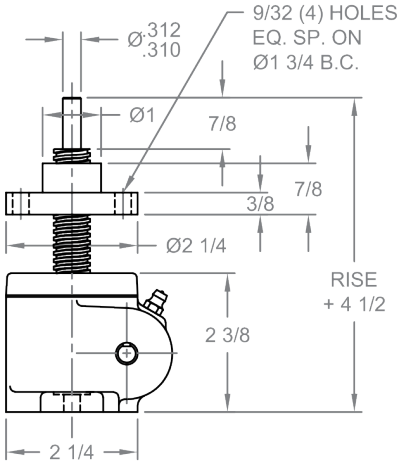
## 250 POUND - 5/8" SCREW

WJ 250

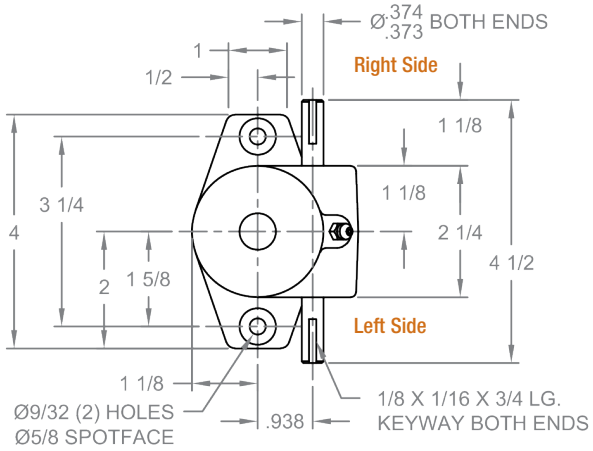
### Upright



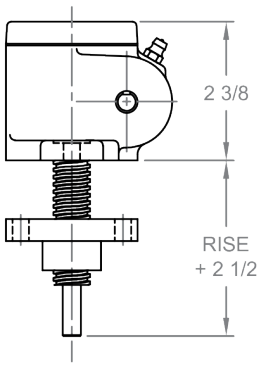

### Upright traveling nut



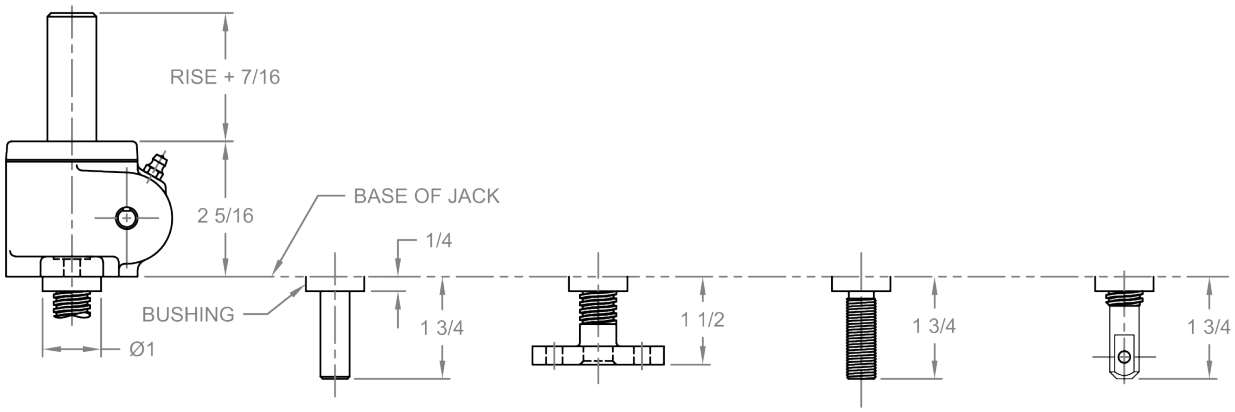

### Typical Plan View




### Inverted traveling nut




### Inverted



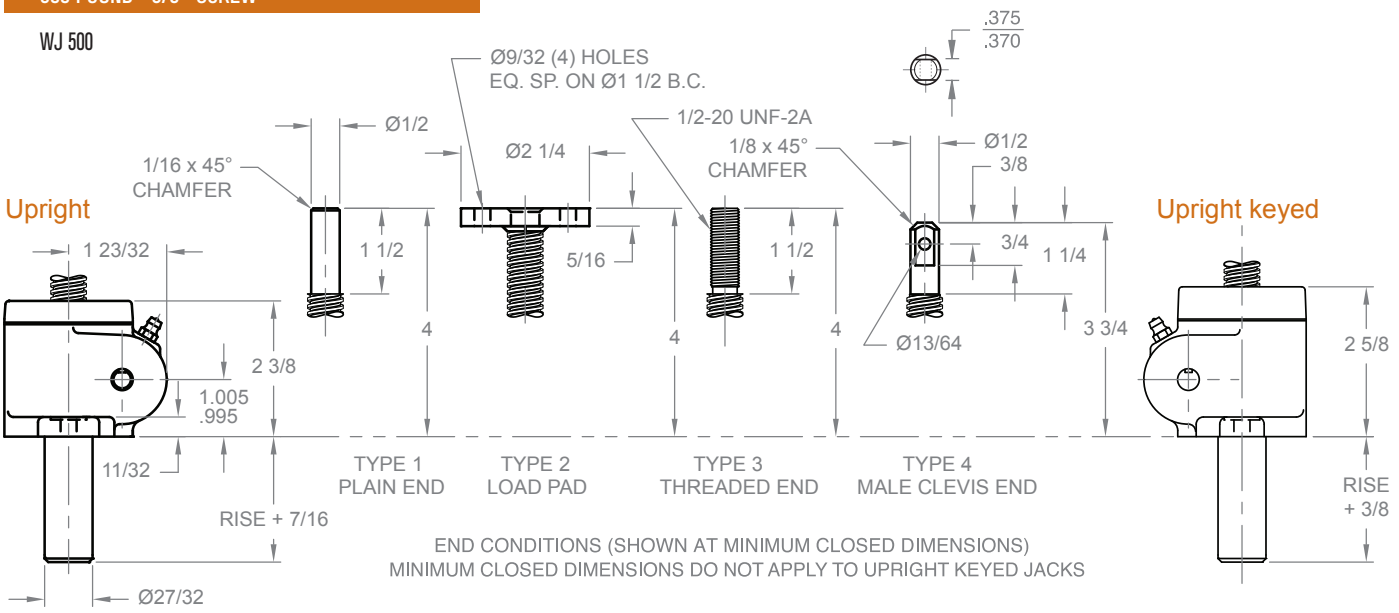

Material Notes: Housing and protection tube are aluminum. Lifting screw is 304 S.S., Input shaft (worm) is 416 S.S.

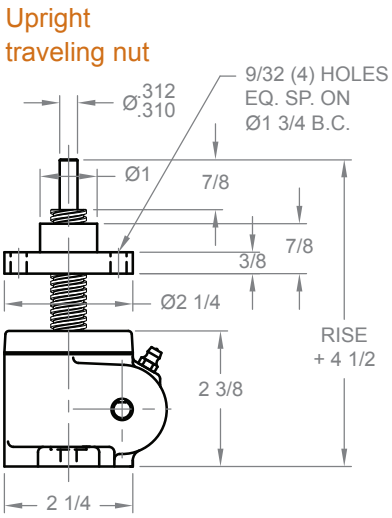
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

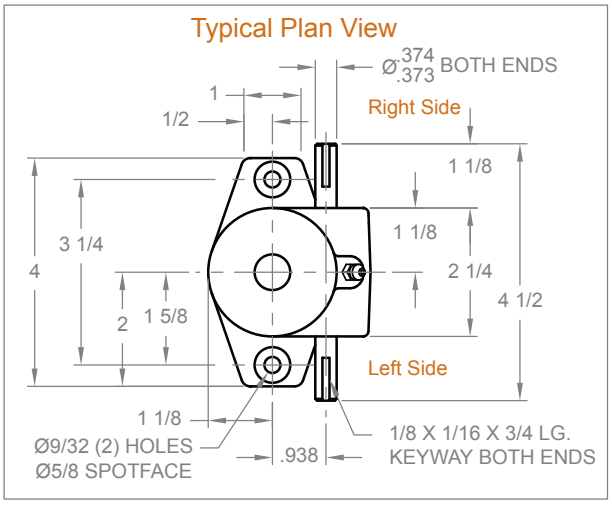
# MACHINE SCREW JACKS

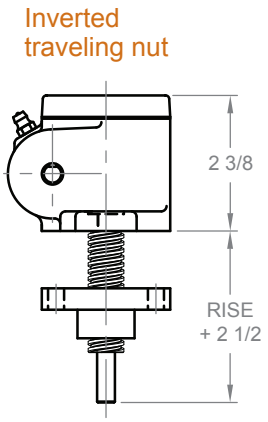
## 500 POUND - 5/8" SCREW

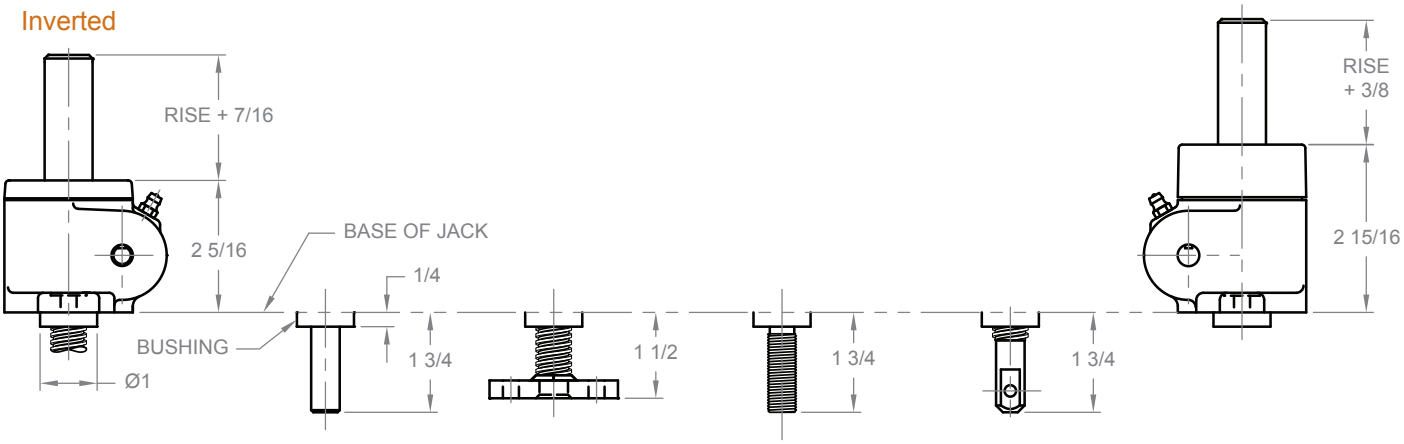
WJ 500



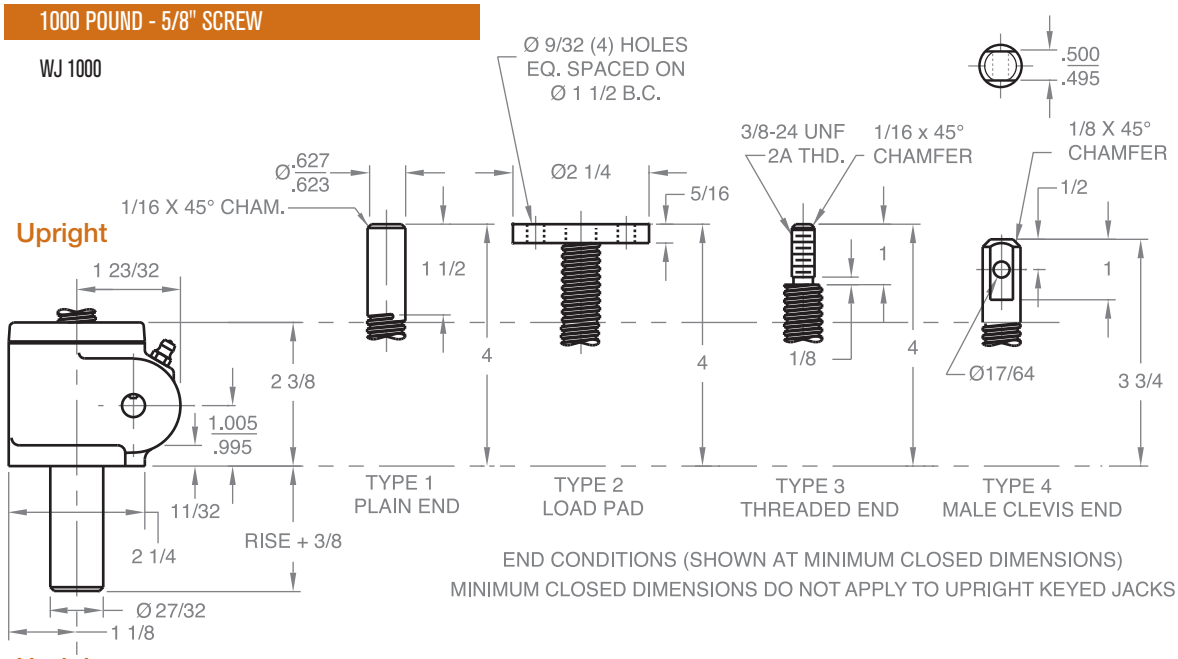

Material Notes: Housing and protection tube are aluminum. Lifting screw is 304 S.S. Input shaft (worm) is 416 S.S.

Note: Drawings are artist's conception - not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

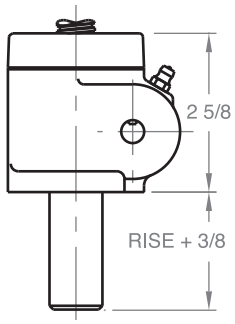
## 1000 POUND - 5/8" SCREW

WJ 1000

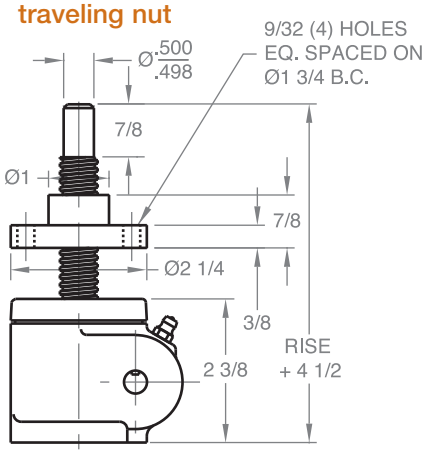



### Upright

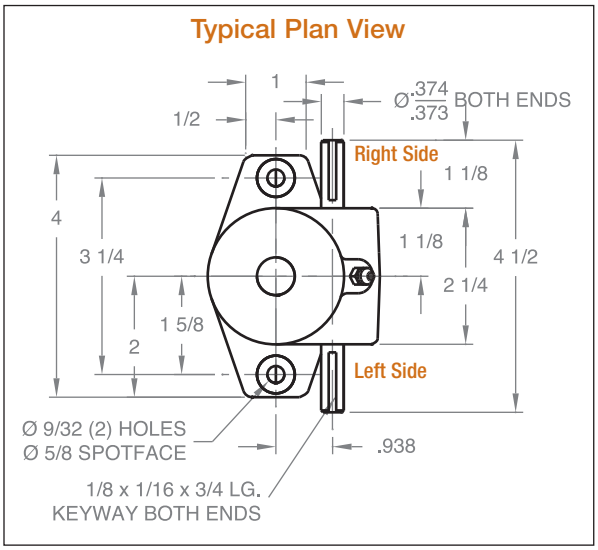
### Upright keyed



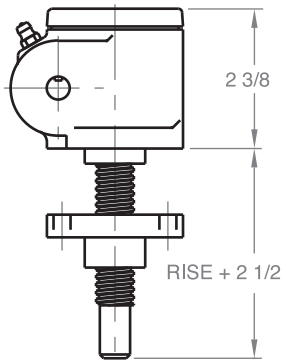

### Upright traveling nut



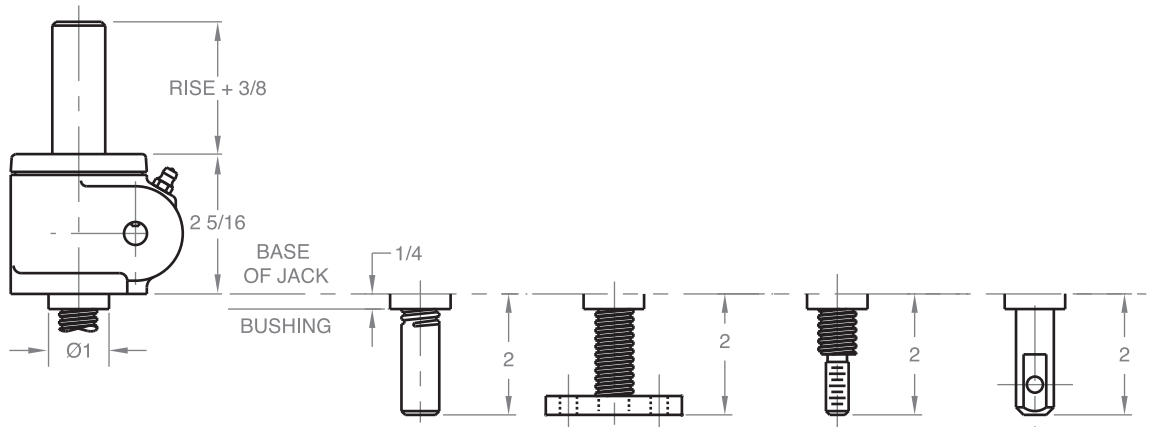

### Typical Plan View



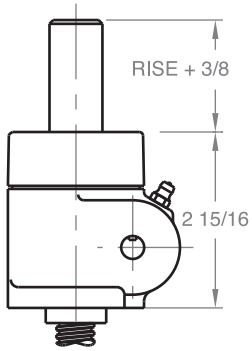

### Inverted traveling nut




### Inverted




### Inverted keyed




Material Notes: Housing and protection tube are aluminum. Lifting screw is 304 S.S. Input shaft (worm) is 416 S.S.

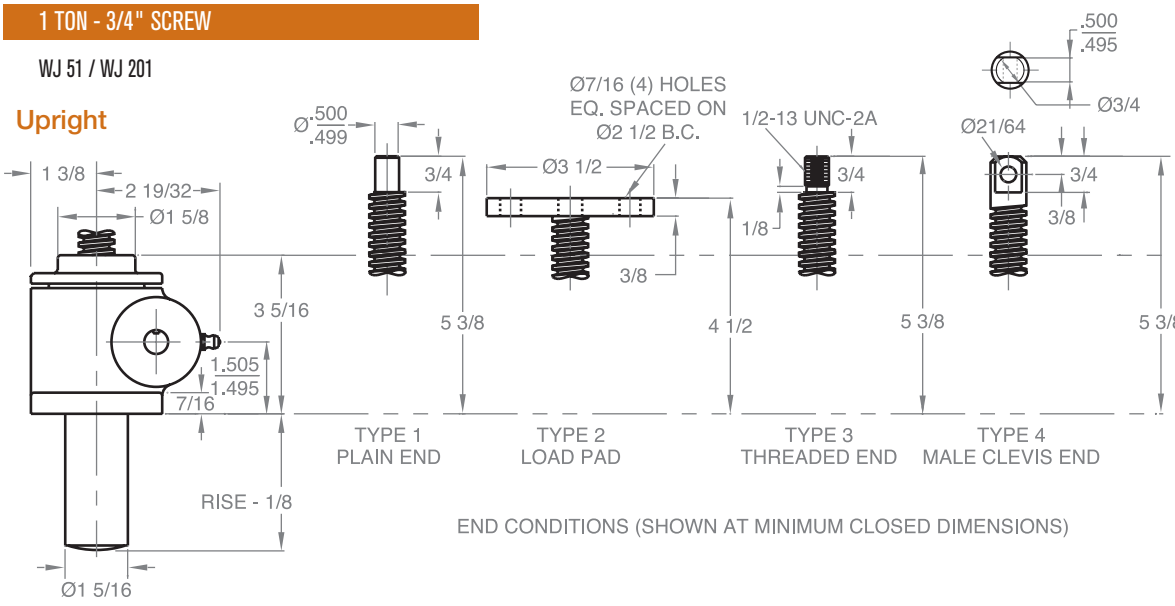
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

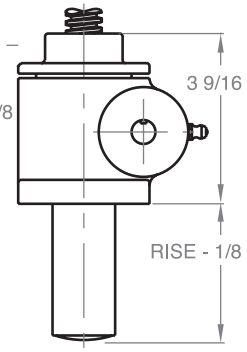
## 1 TON - 3/4" SCREW

WJ 51 / WJ 201

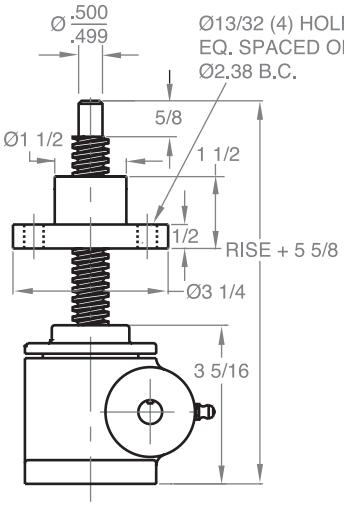
### Upright



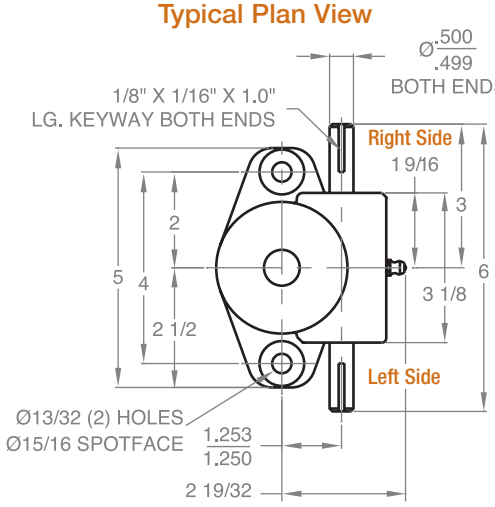

### Upright keyed



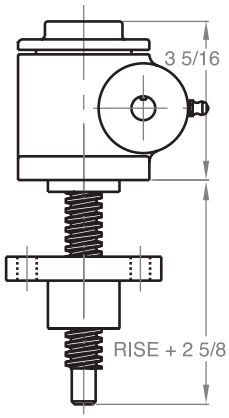

### Upright traveling nut



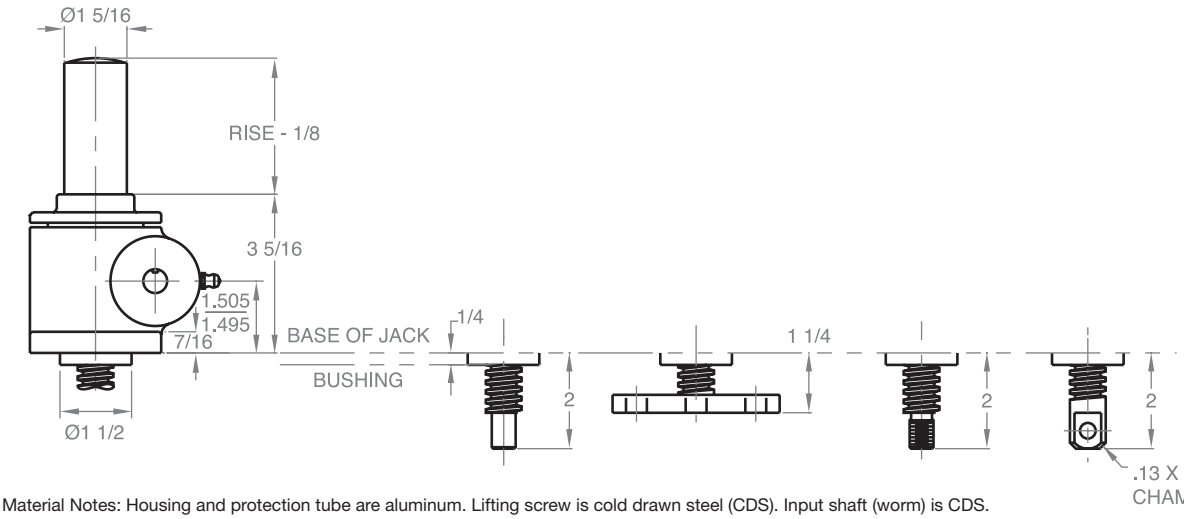

### Typical Plan View



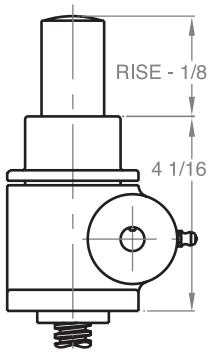

### Inverted traveling nut




### Inverted




### Inverted keyed



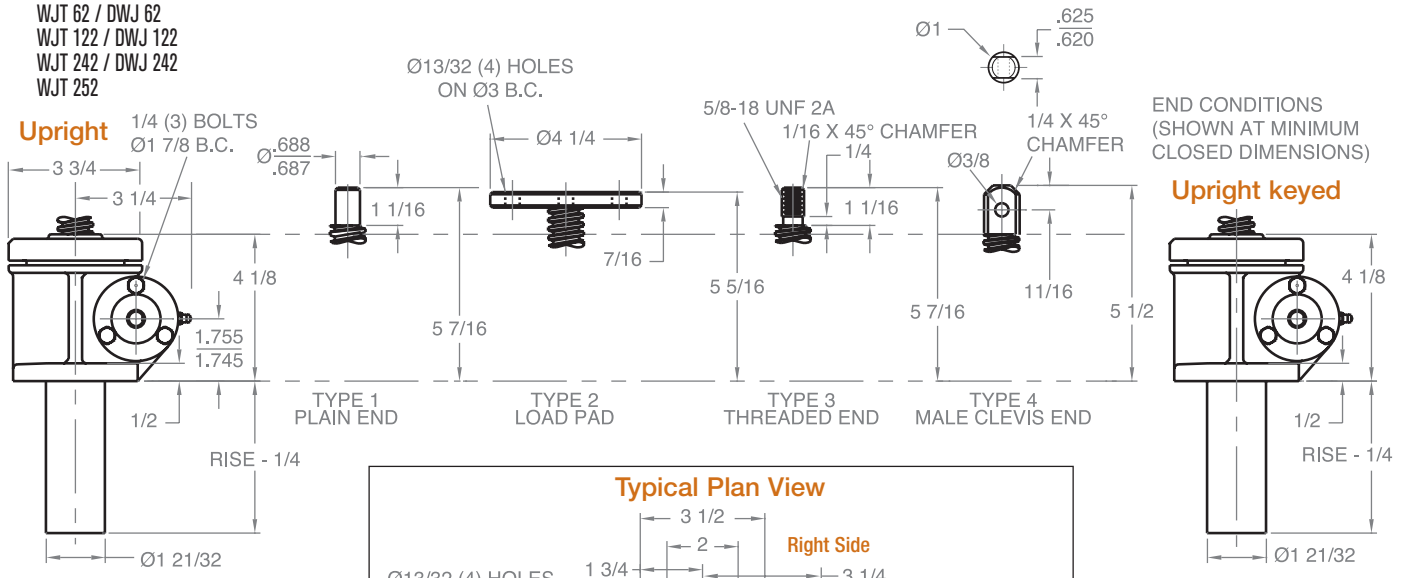

Material Notes: Housing and protection tube are aluminum. Lifting screw is cold drawn steel (CDS). Input shaft (worm) is CDS.

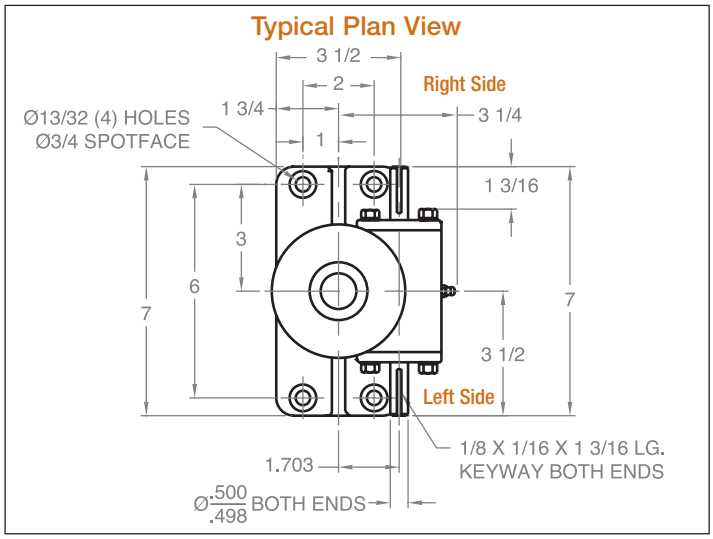
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

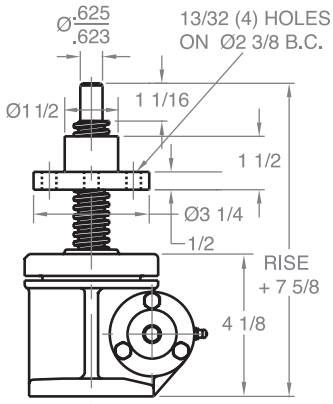
# MACHINE SCREW JACKS

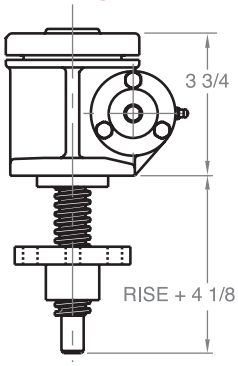
## 2 TON - 1" SCREW

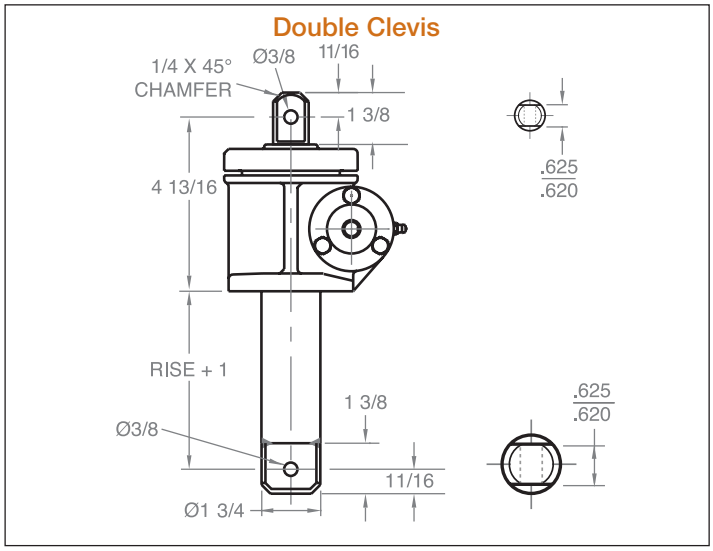
WJT 62 / DWJ 62
WJT 122 / DWJ 122
WJT 242 / DWJ 242
WJT 252

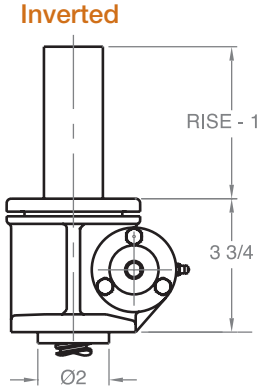


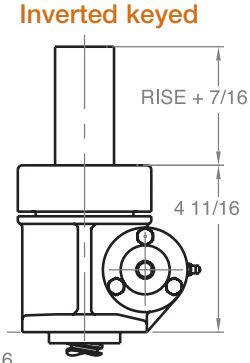



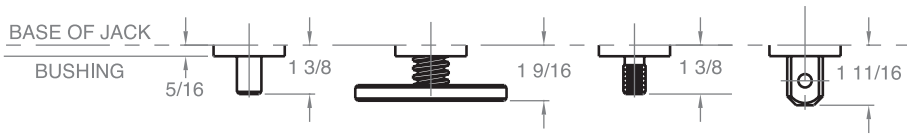



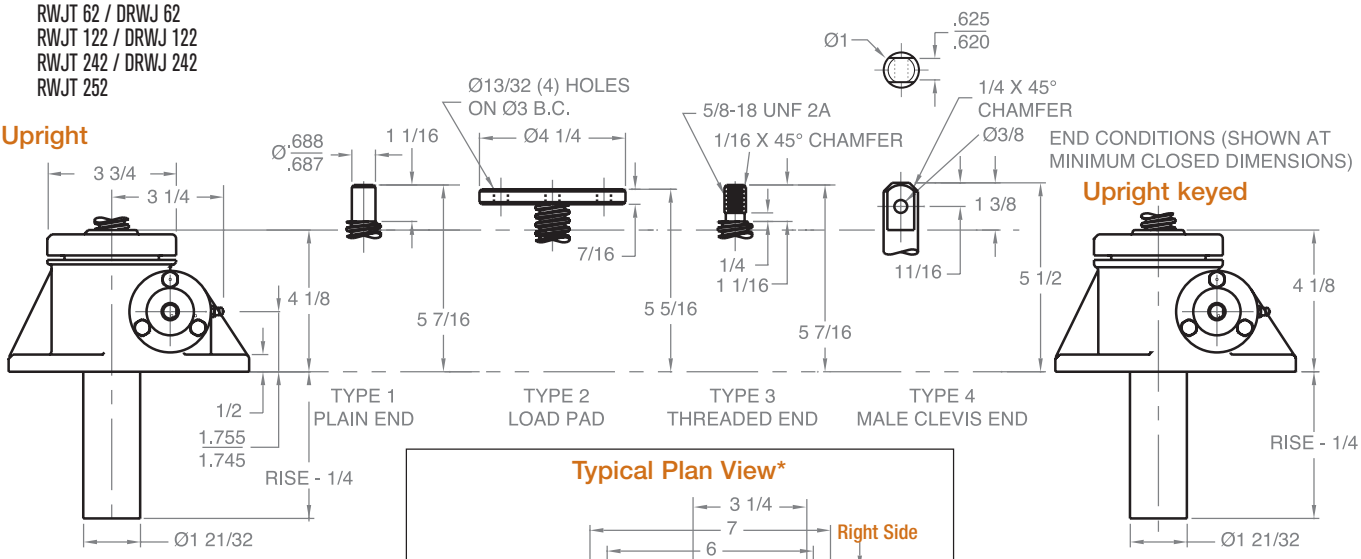

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

## 2 TON REVERSE BASE - 1" SCREW

RWJT 62 / DRWJ 62
RWJT 122 / DRWJ 122
RWJT 242 / DRWJ 242
RWJT 252

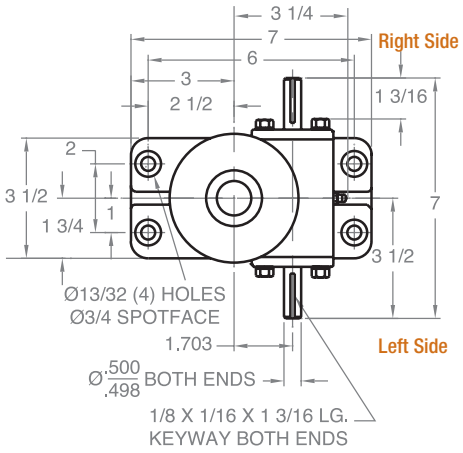
### Upright



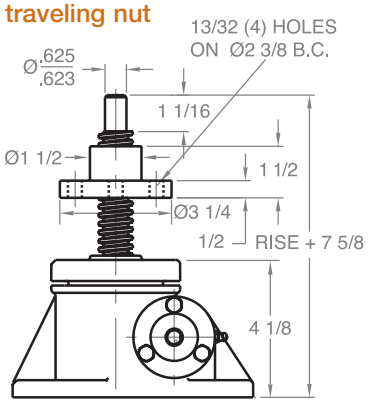

### Upright keyed



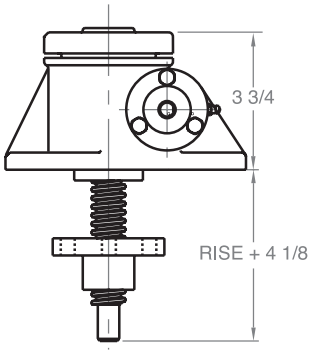

### Typical Plan View*



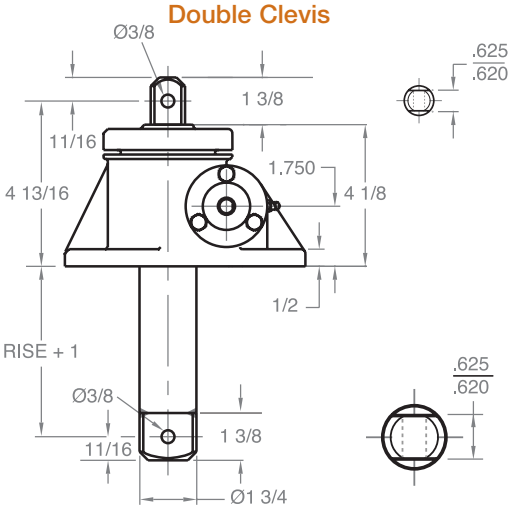

### Upright traveling nut



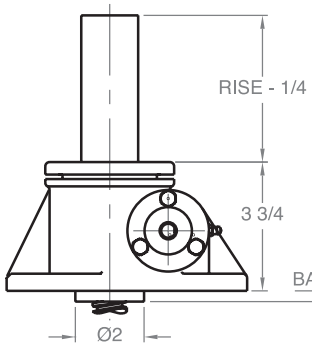

### Inverted traveling nut



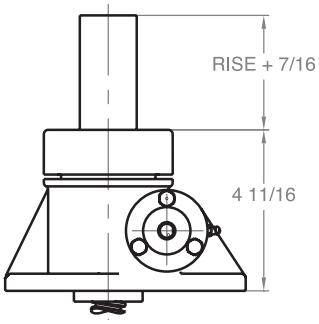

### Double Clevis

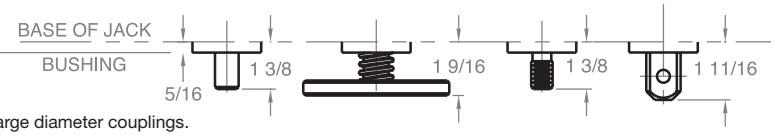



### Inverted




### Inverted keyed



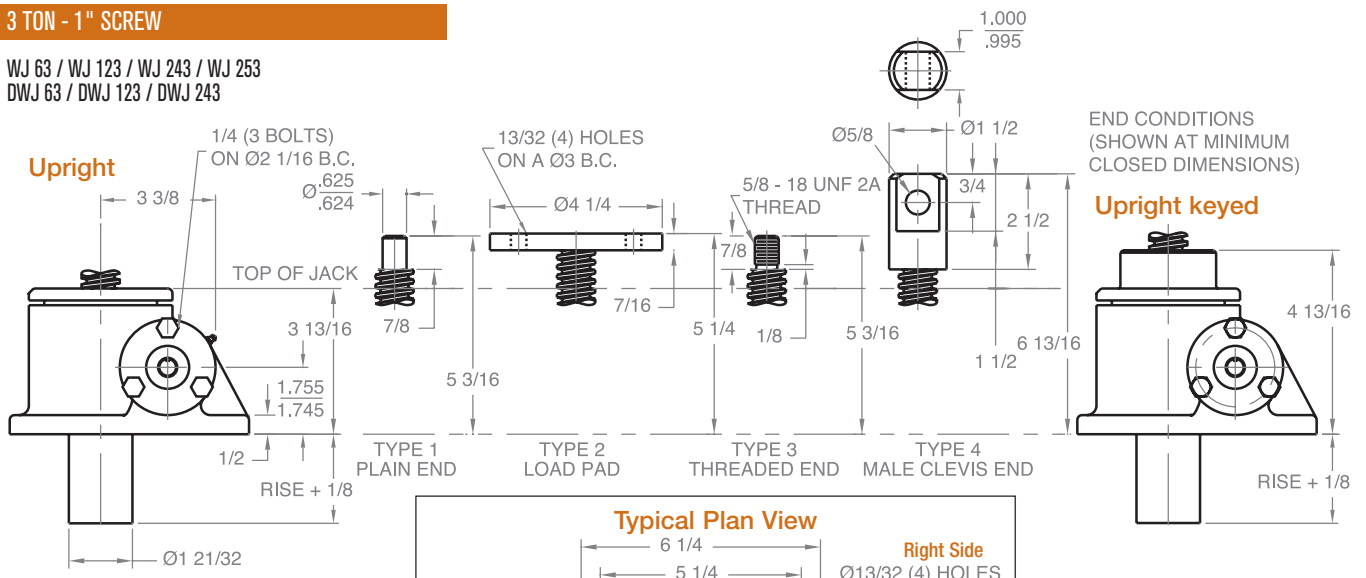

*Ideal for DD motor mounts or for large diameter couplings.

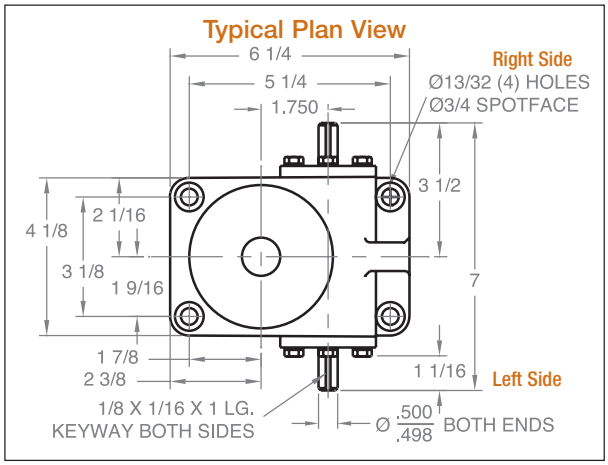
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

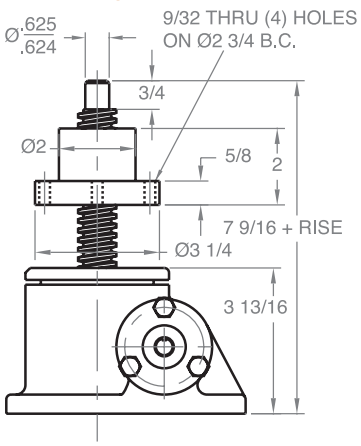
# MACHINE SCREW JACKS

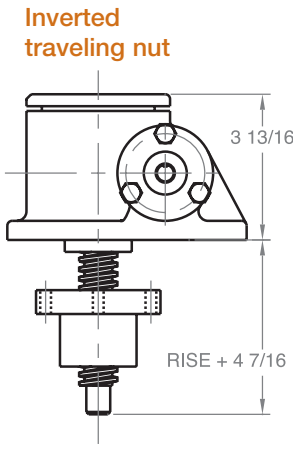
## 3 TON - 1" SCREW

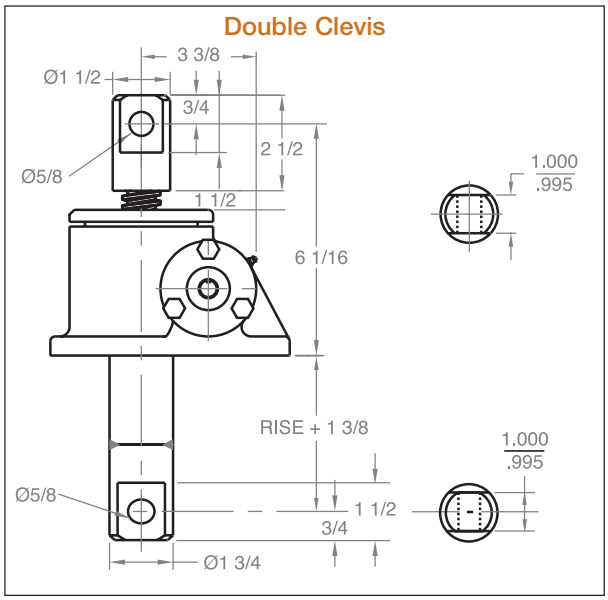
WJ 63 / WJ 123 / WJ 243 / WJ 253
DWJ 63 / DWJ 123 / DWJ 243

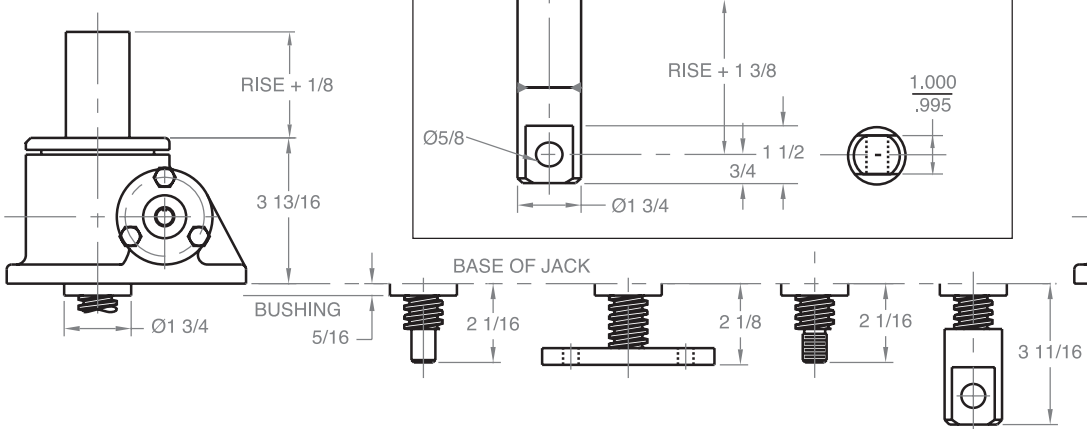


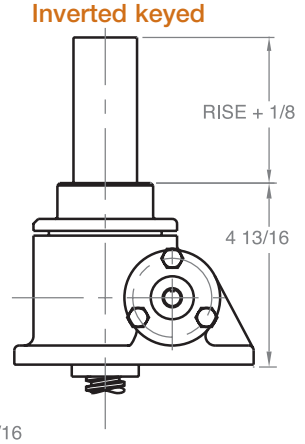



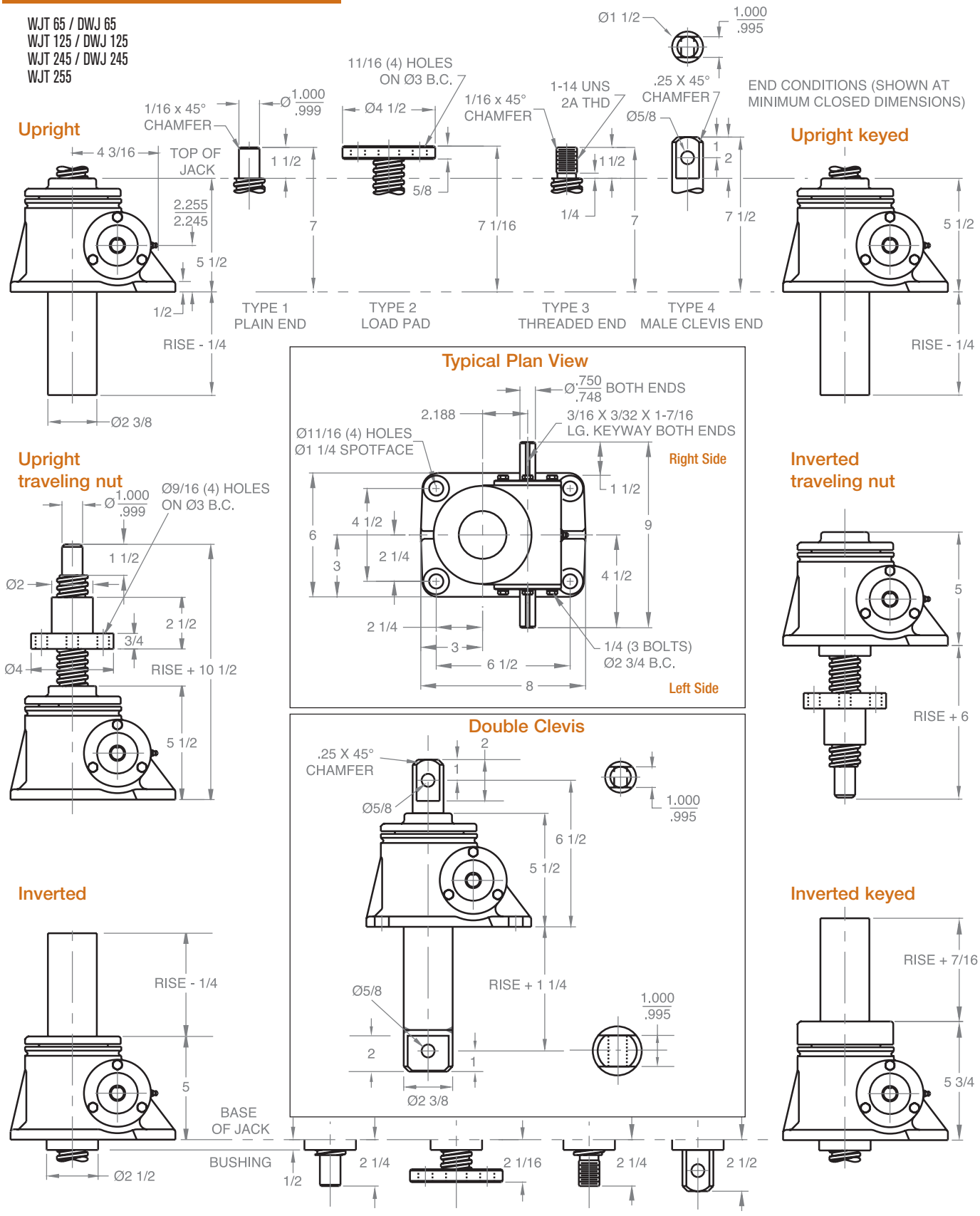




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice. Minimum closed dimensions do not apply to upright keyed jacks.

# MACHINE SCREW JACKS

## 5 TON - 1 1/2" SCREW

WJT 65 / DWJ 65
WJT 125 / DWJ 125
WJT 245 / DWJ 245
WJT 255

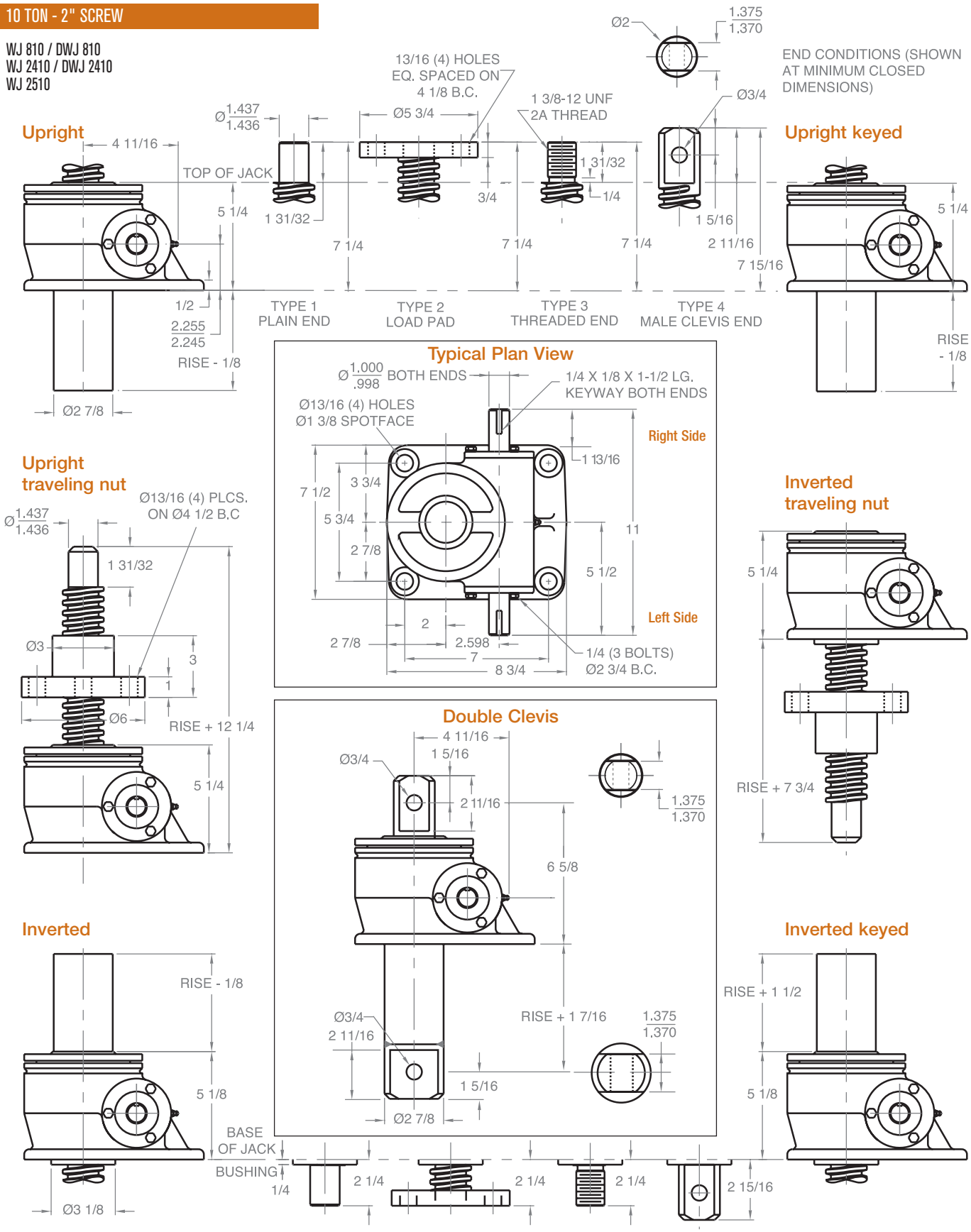



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

## 10 TON - 2" SCREW

WJ 810 / DWJ 810
WJ 2410 / DWJ 2410
WJ 2510



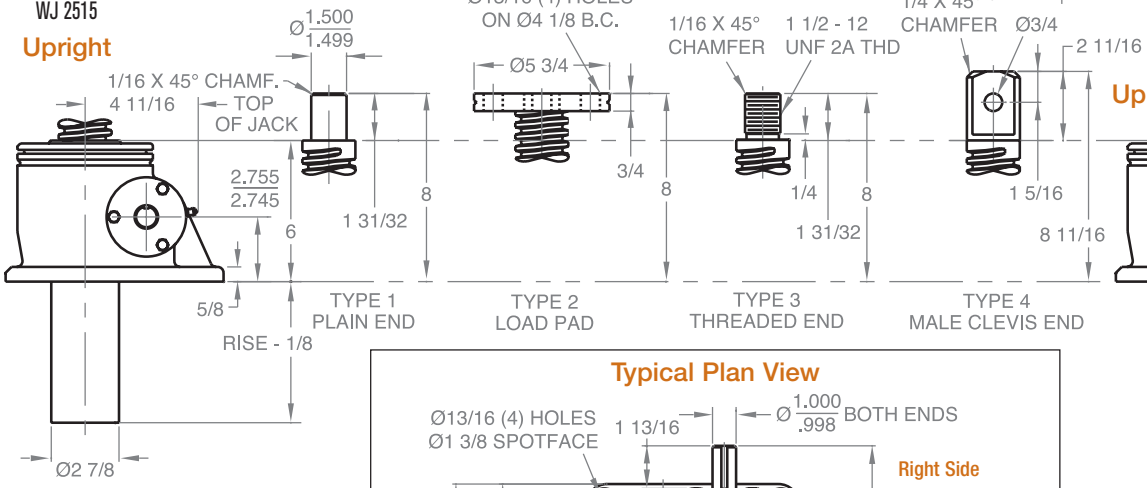

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

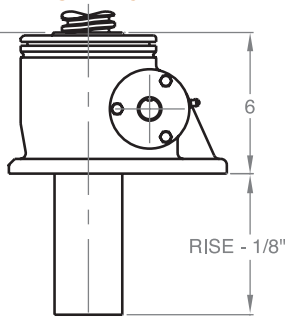
## 15 TON - 2 1/4" SCREW

WJ 815 / DWJ 815
WJ 2415 / DWJ 2415
WJ 2515

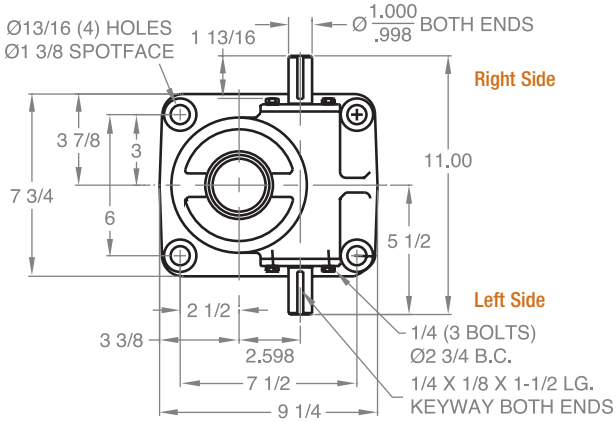
### Upright



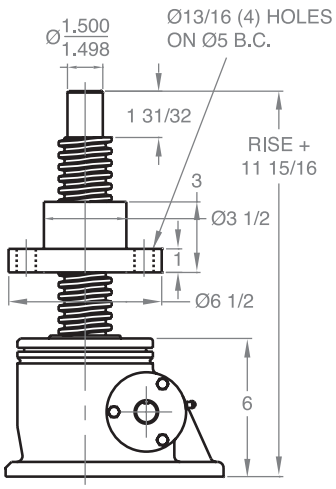

### Upright keyed



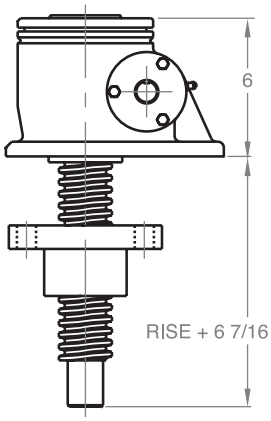

### Typical Plan View



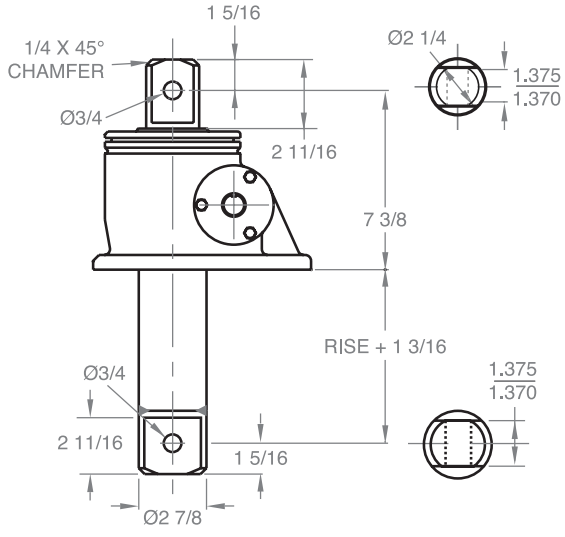

### Upright traveling nut



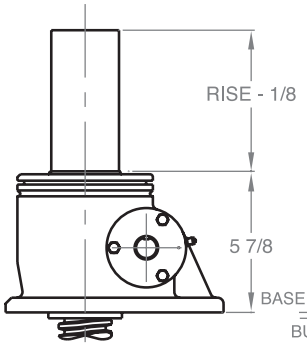

### Inverted traveling nut



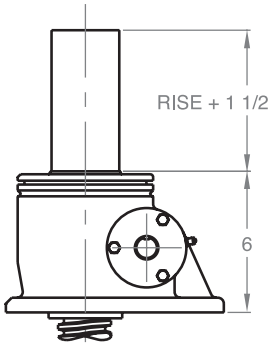

### Double Clevis

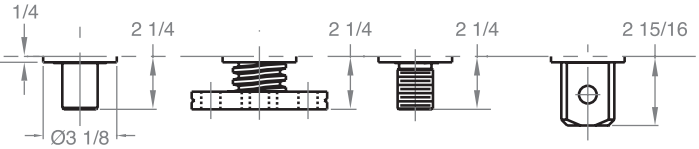



### Inverted




### Inverted keyed



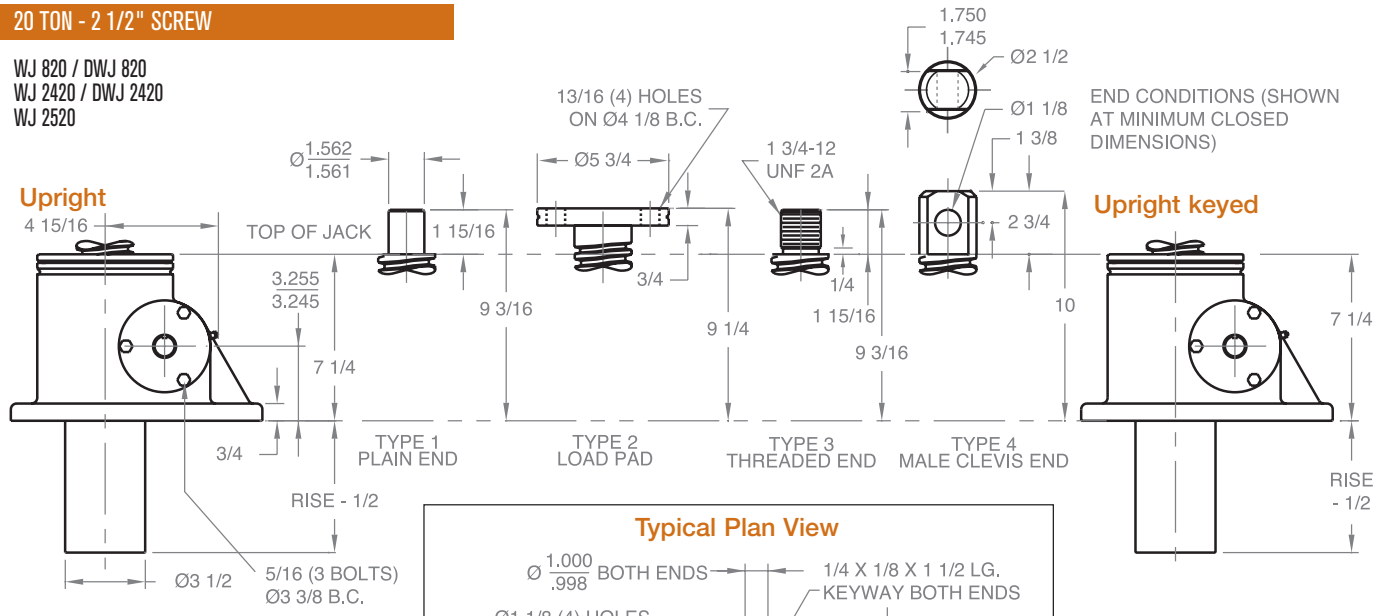



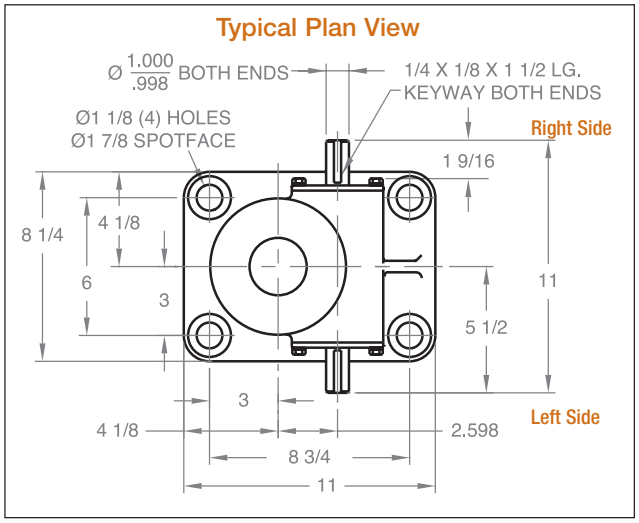

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

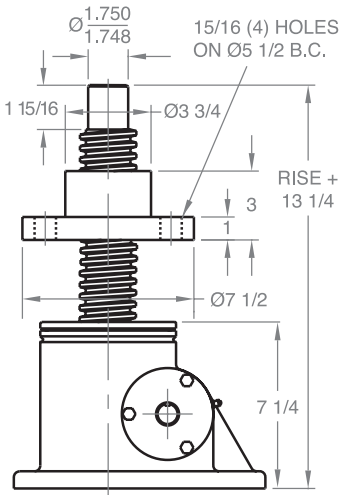
## 20 TON - 2 1/2" SCREW

WJ 820 / DWJ 820
WJ 2420 / DWJ 2420
WJ 2520

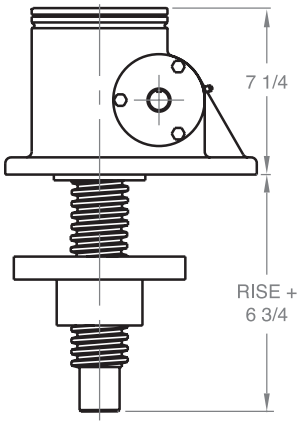


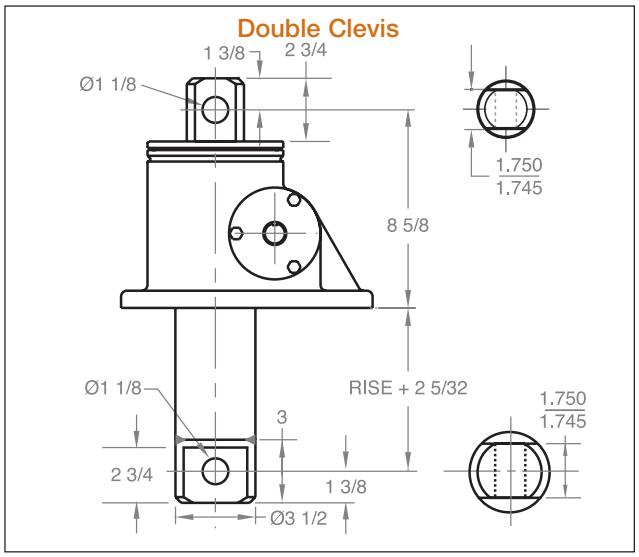




Upright traveling nut

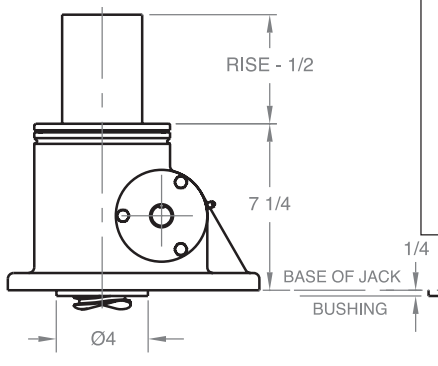



Inverted traveling nut

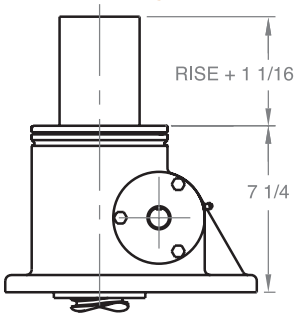


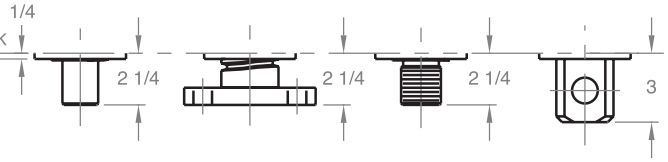




Inverted




Inverted keyed



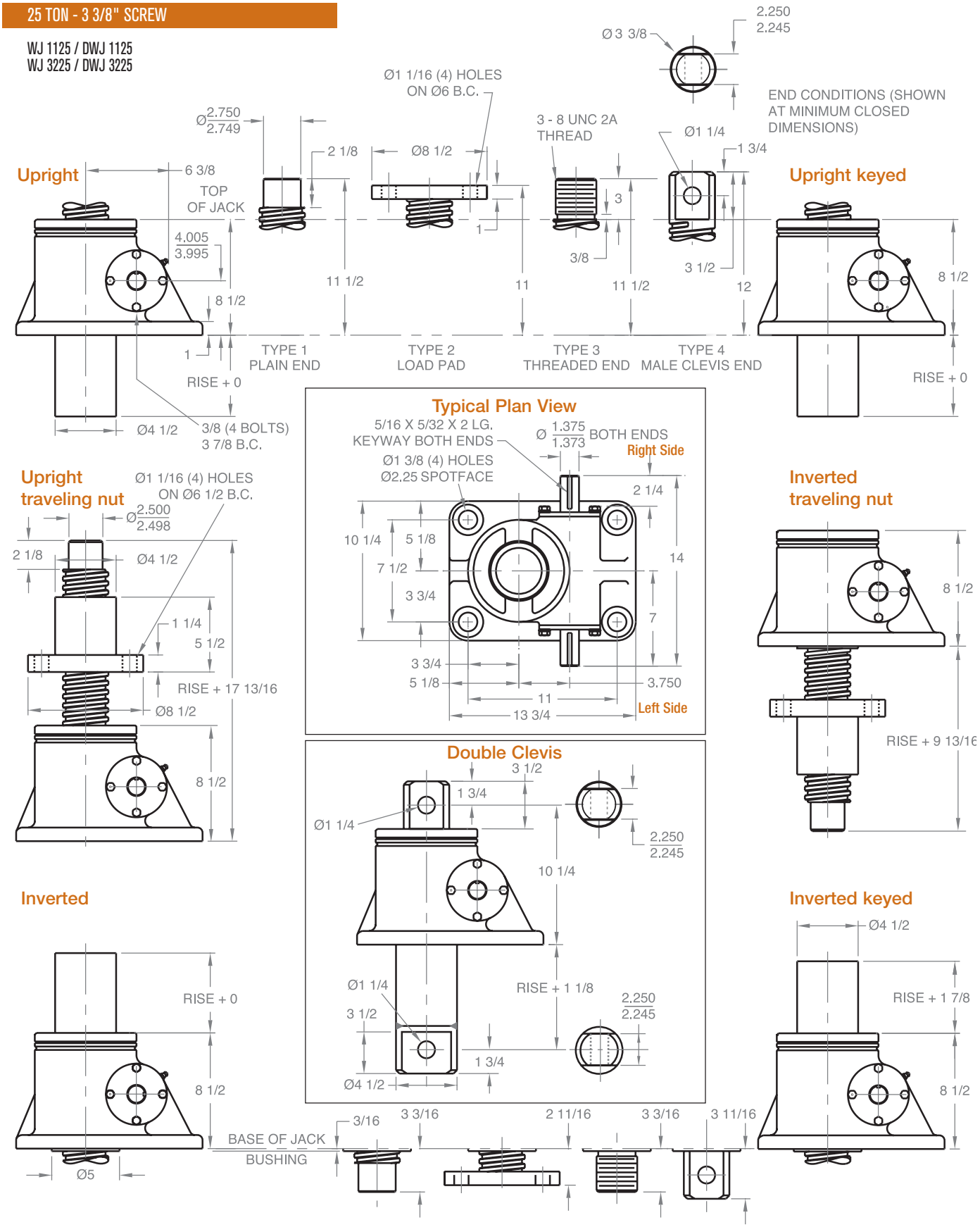




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

## 25 TON - 3 3/8" SCREW

WJ 1125 / DWJ 1125
WJ 3225 / DWJ 3225

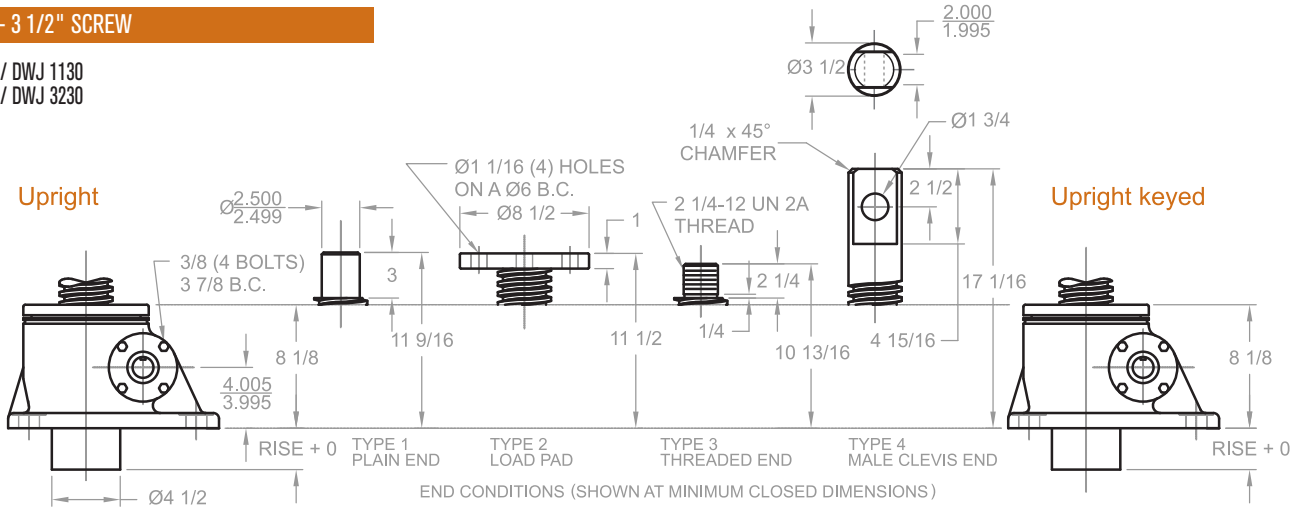


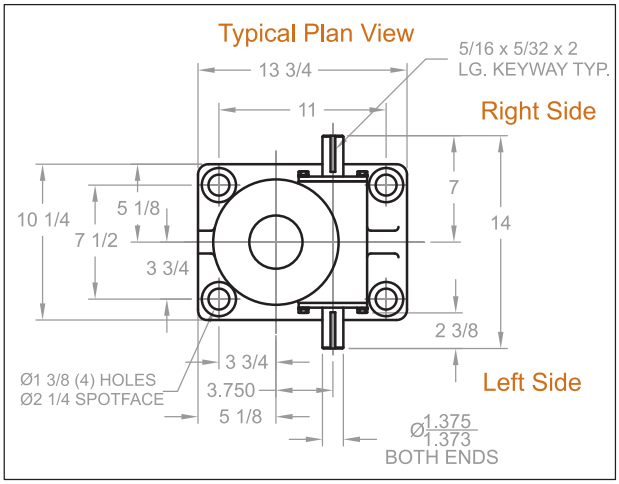

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

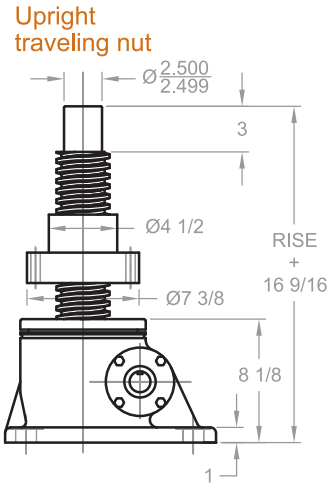
# MACHINE SCREW JACKS

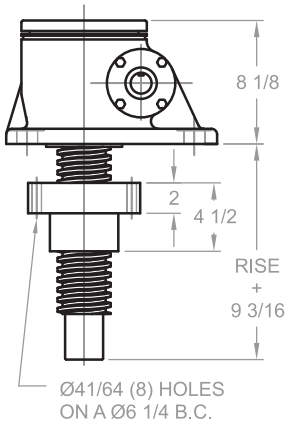
## 30 TON - 3 1/2" SCREW

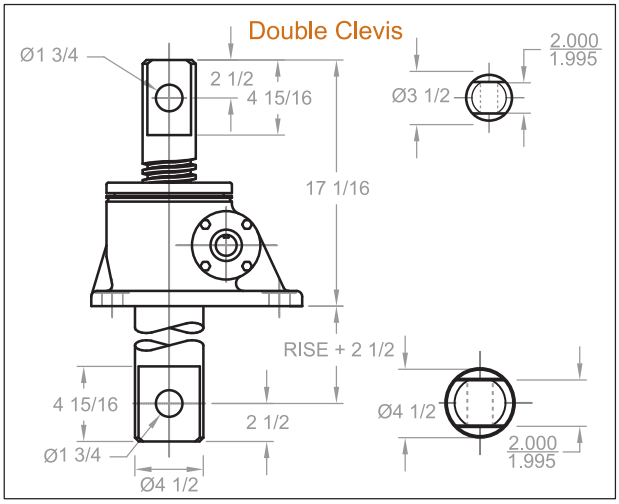
WJ 1130 / DWJ 1130
WJ 3230 / DWJ 3230

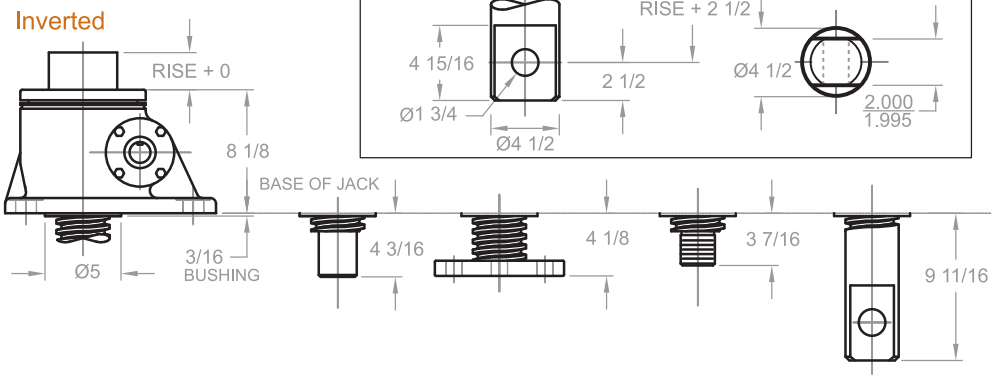


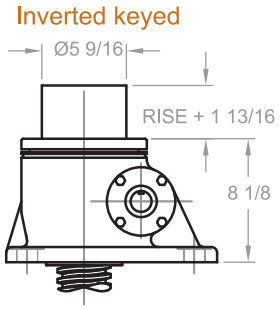



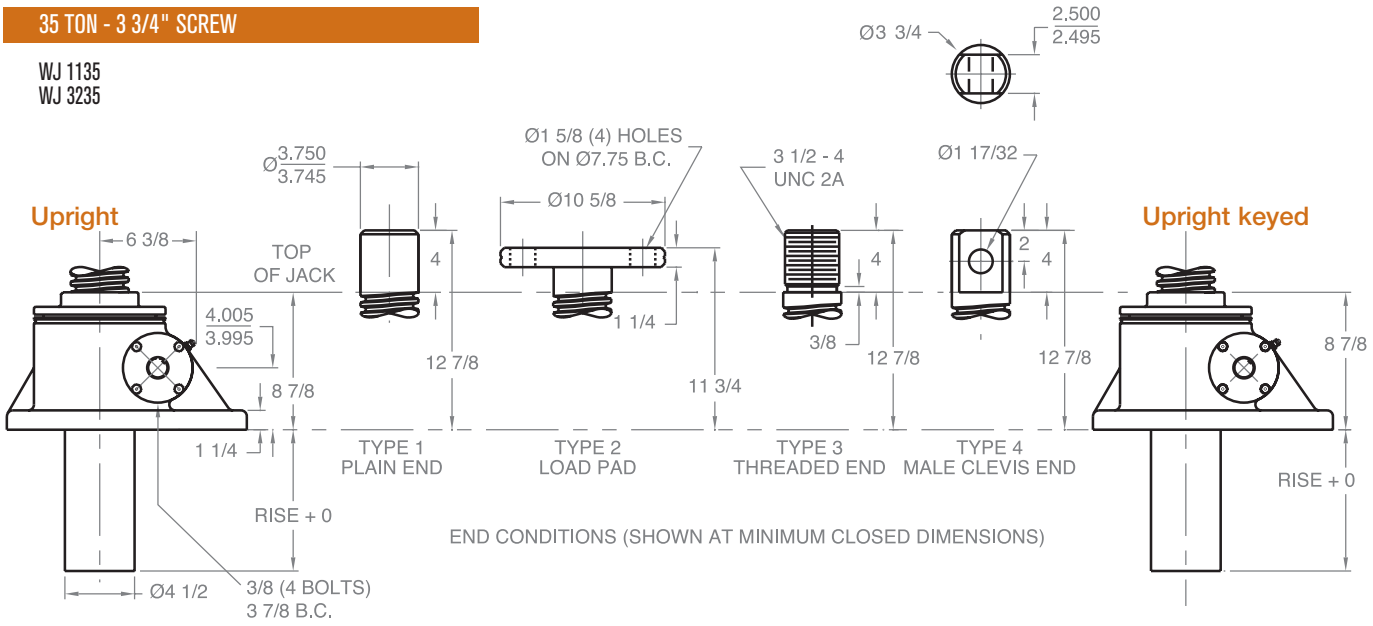




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

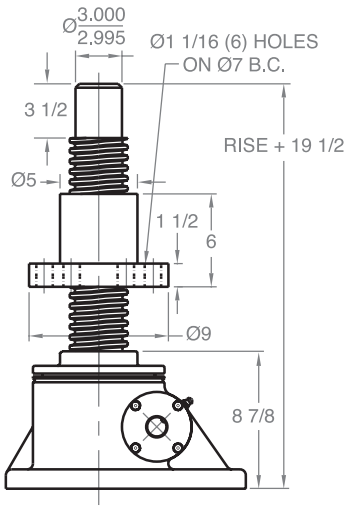
# MACHINE SCREW JACKS

## 35 TON - 3 3/4" SCREW

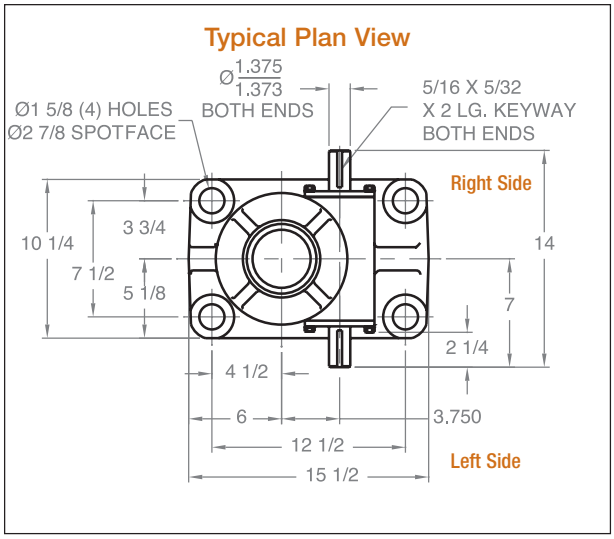
WJ 1135
WJ 3235



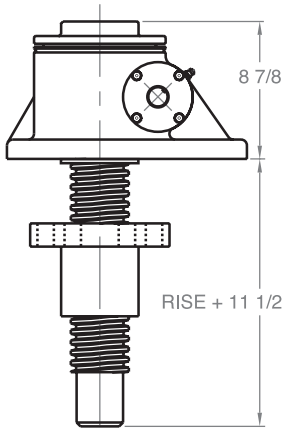

### Upright traveling nut



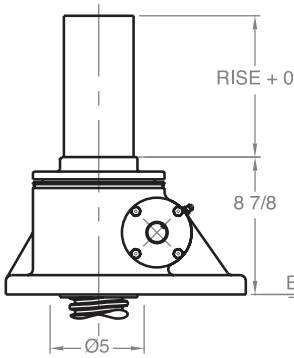

### Typical Plan View




### Inverted traveling nut

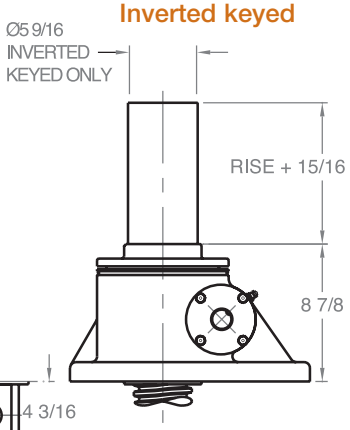


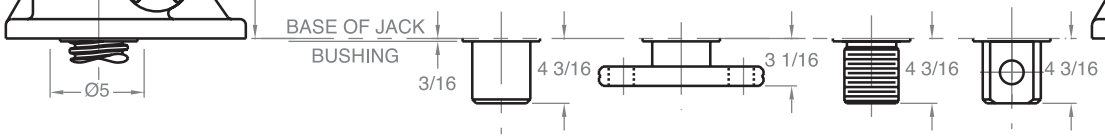

### Inverted




FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE

### Inverted keyed



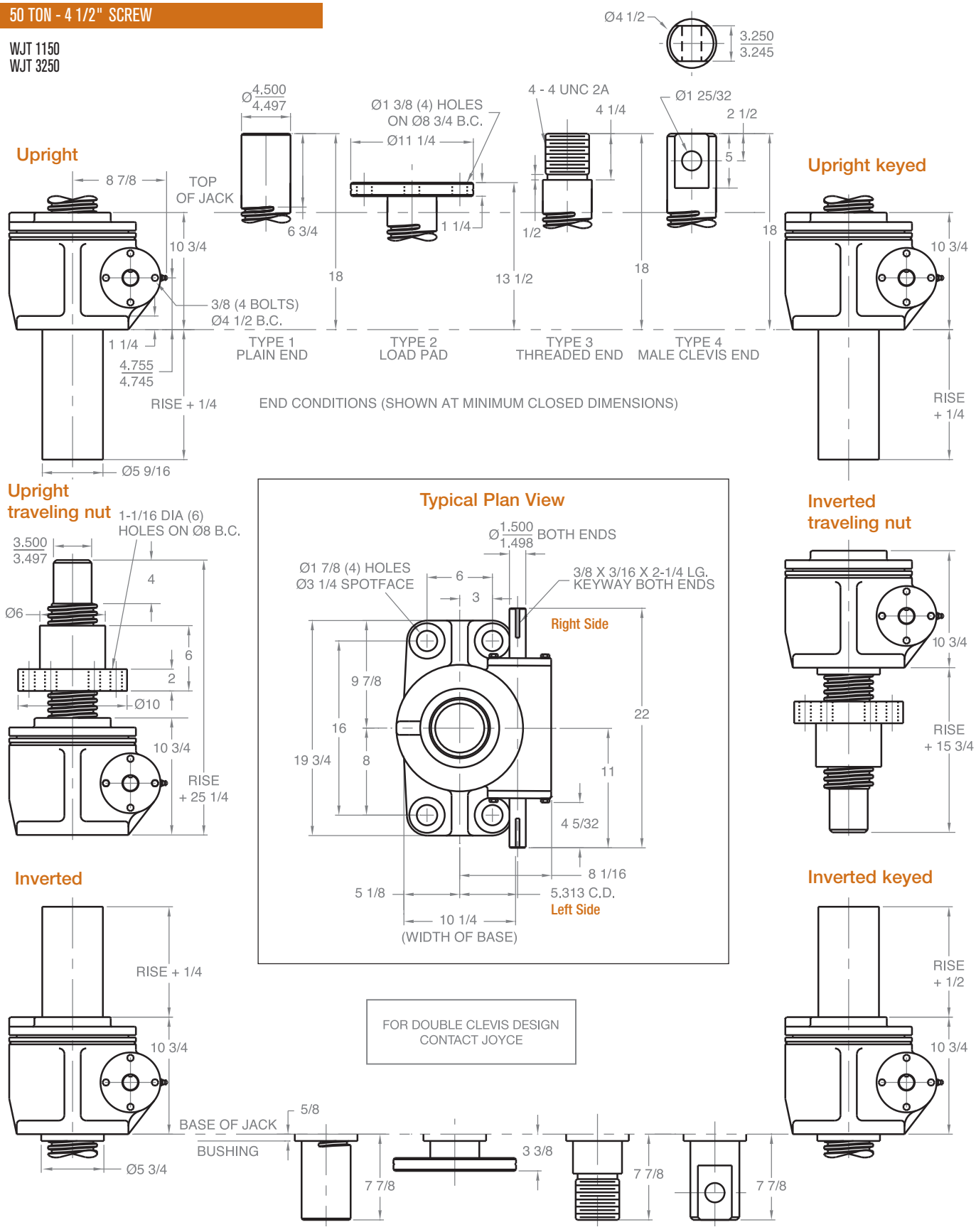




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW JACKS

## 50 TON - 4 1/2" SCREW

WJT 1150
WJT 3250

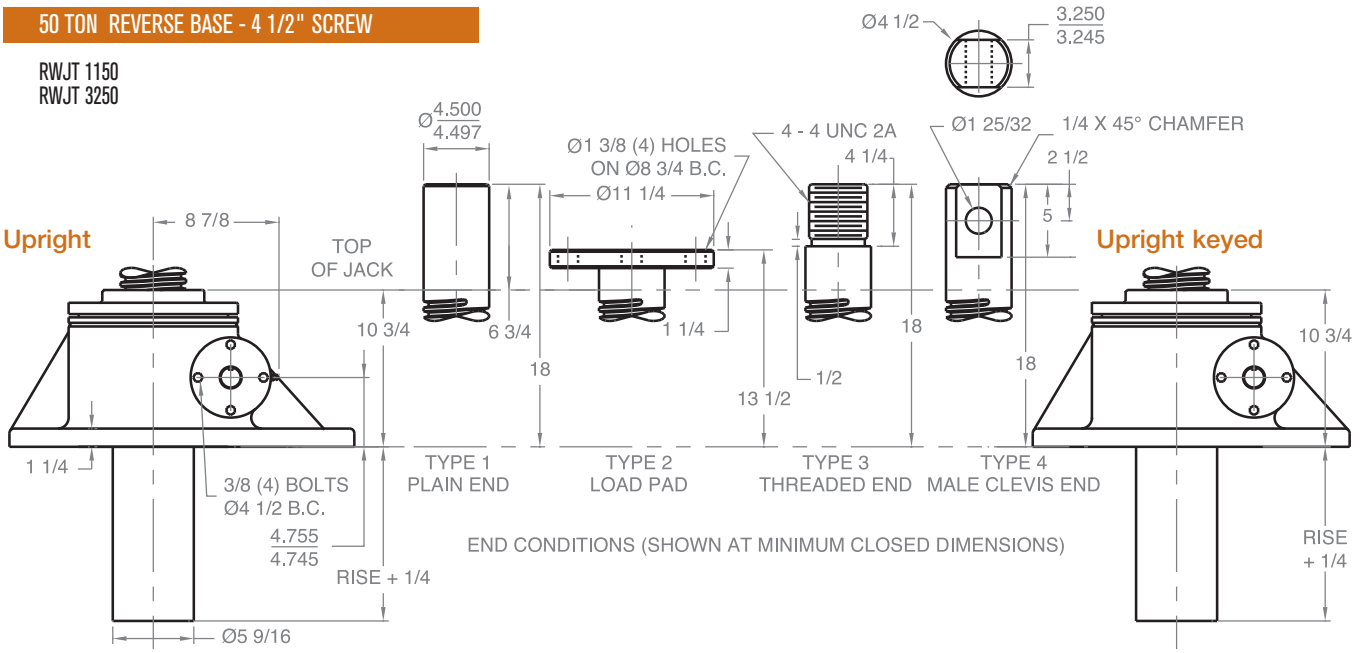


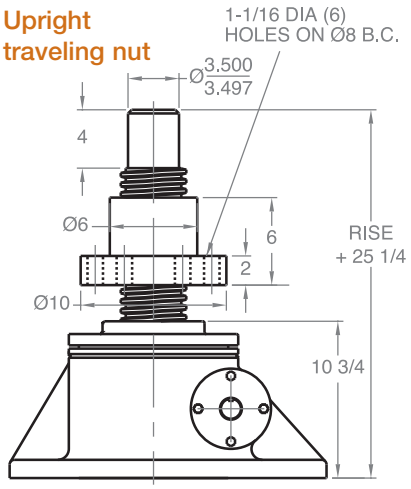

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

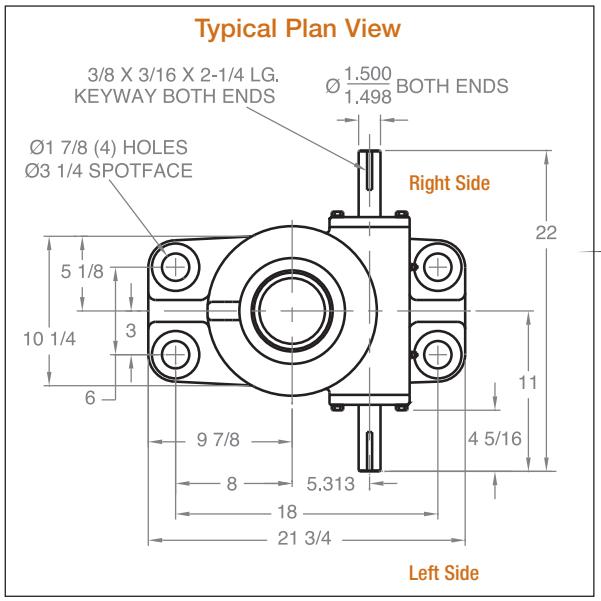
# MACHINE SCREW JACKS

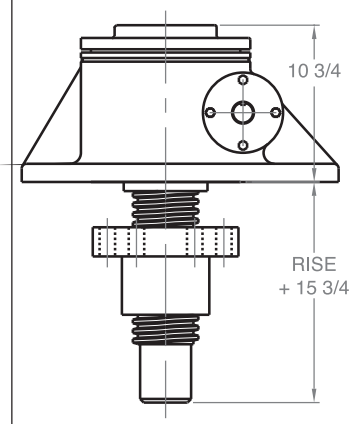
## 50 TON REVERSE BASE - 4 1/2" SCREW

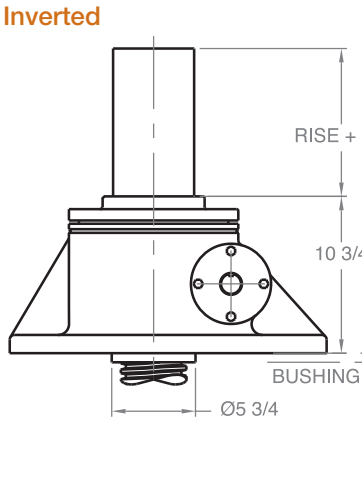
RWJT 1150
RWJT 3250



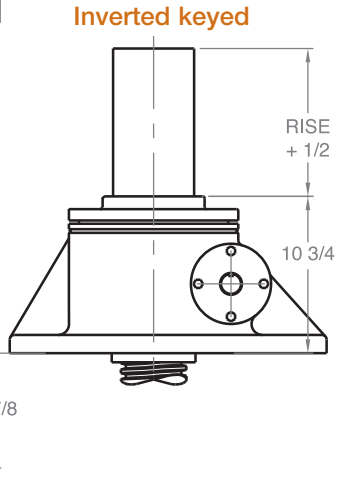



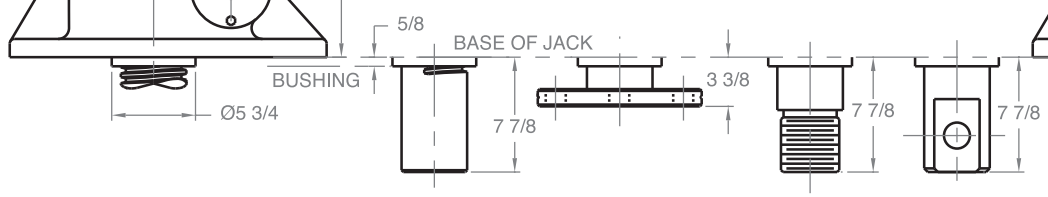




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE



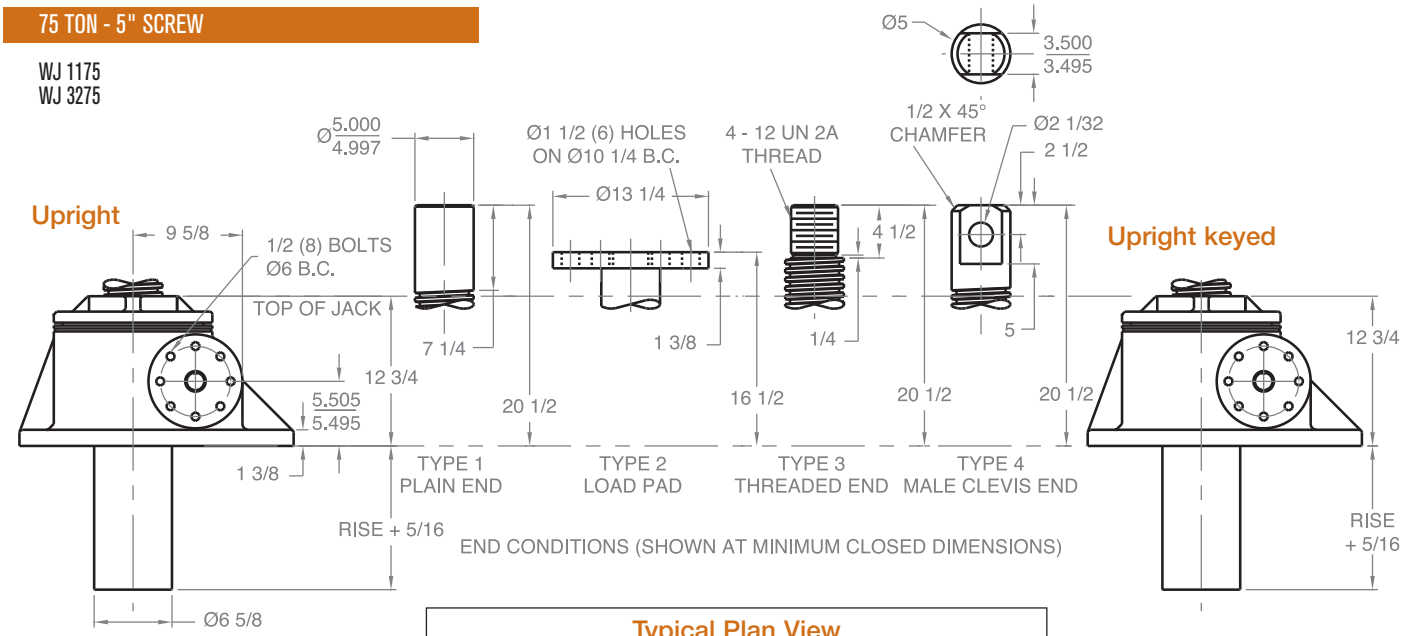



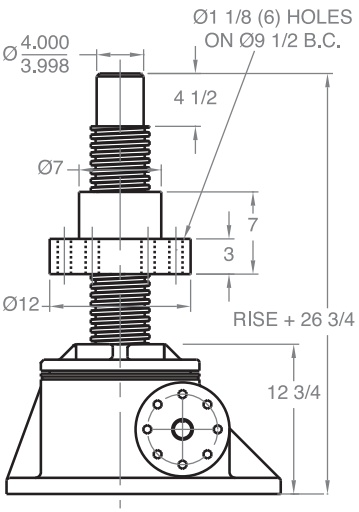

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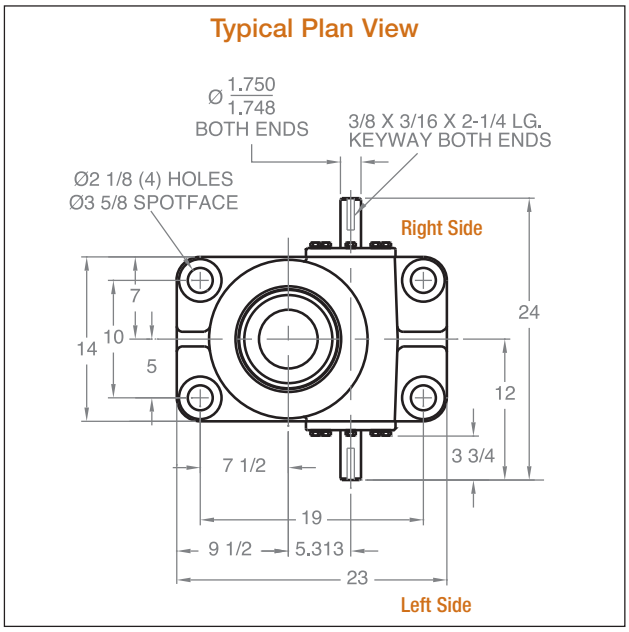
# MACHINE SCREW JACKS

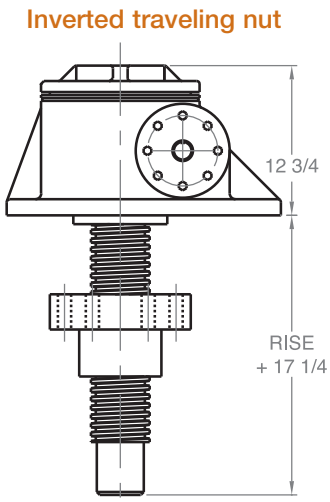
## 75 TON - 5" SCREW

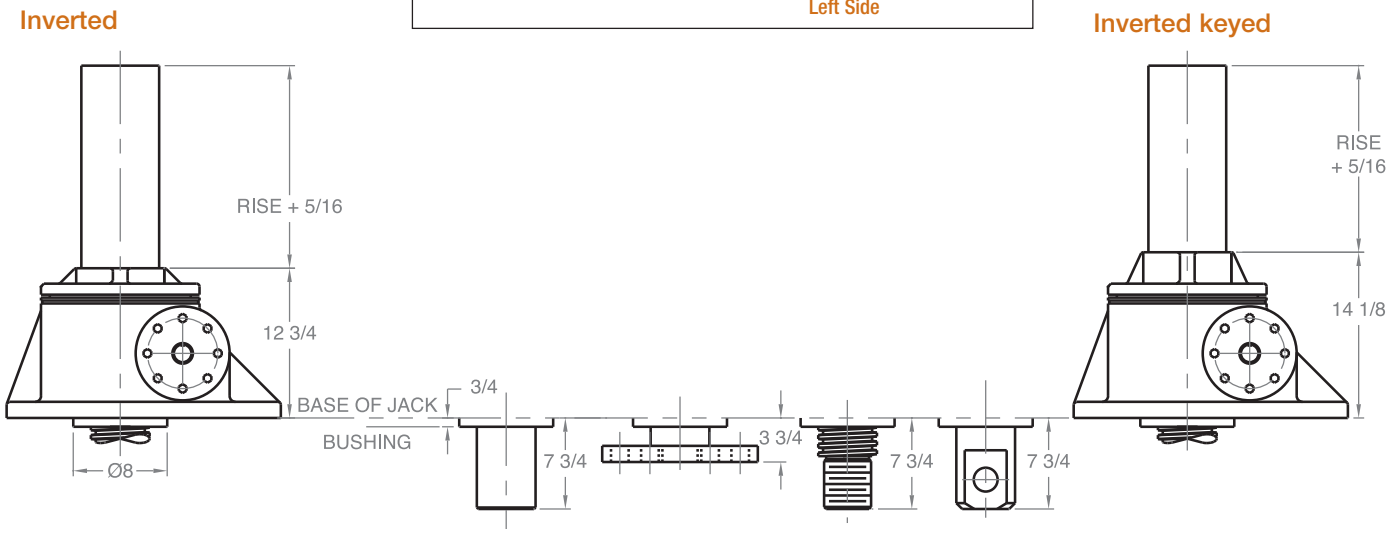
WJ 1175
WJ 3275



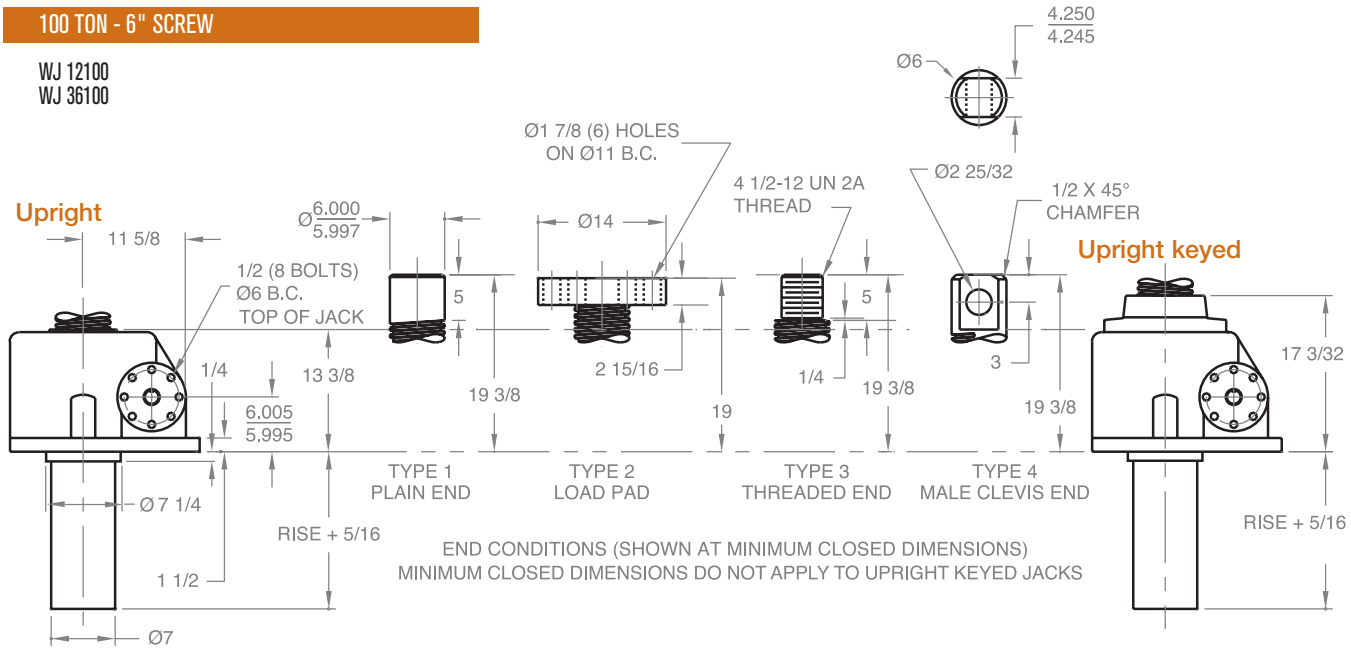



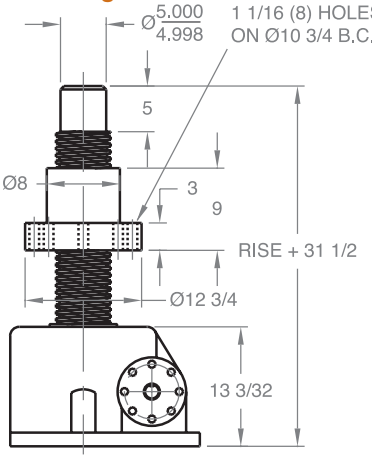

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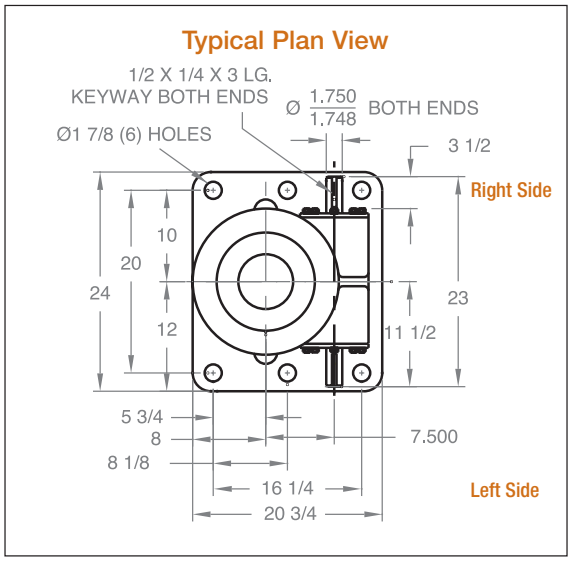
# MACHINE SCREW JACKS

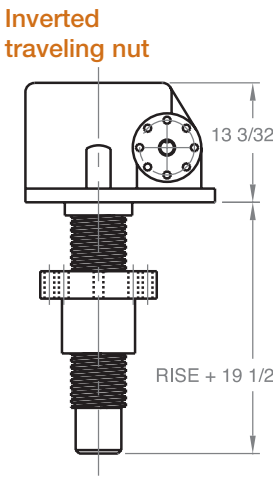
## 100 TON - 6" SCREW

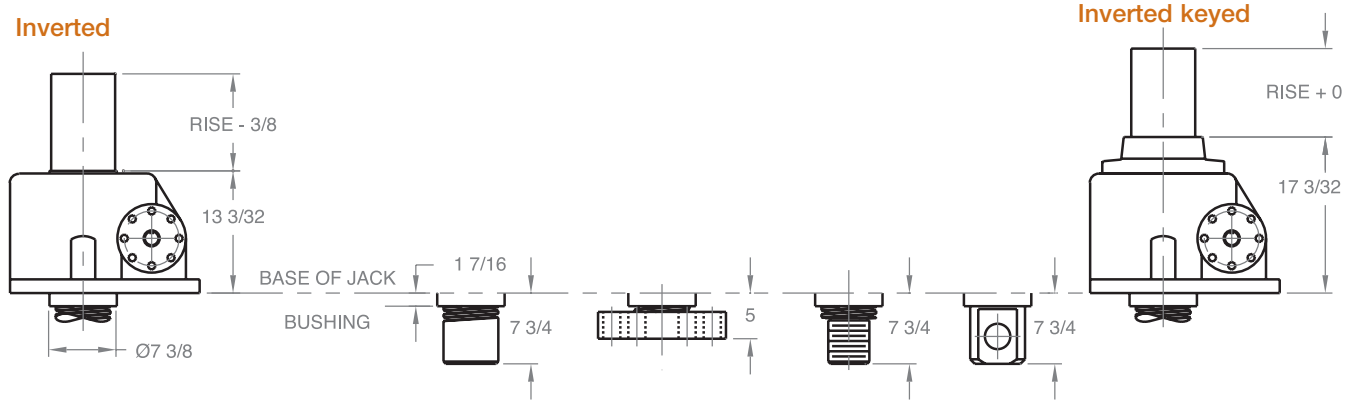
WJ 12100
WJ 36100



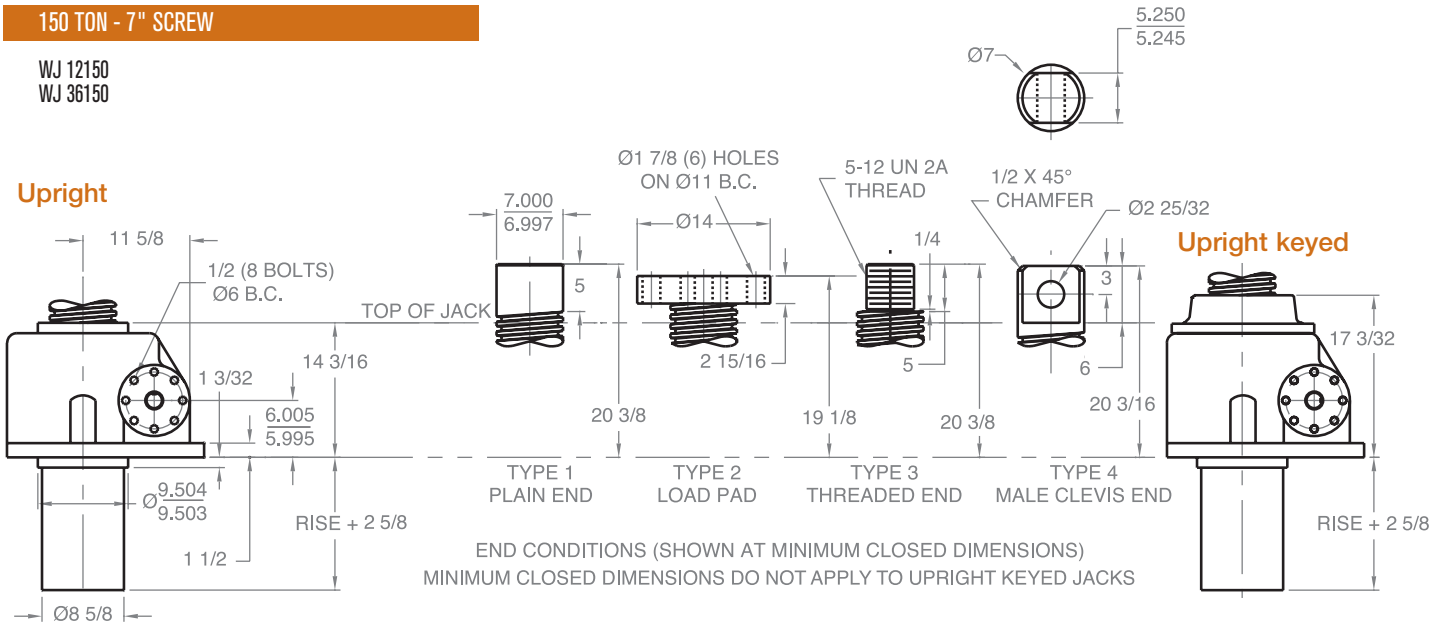



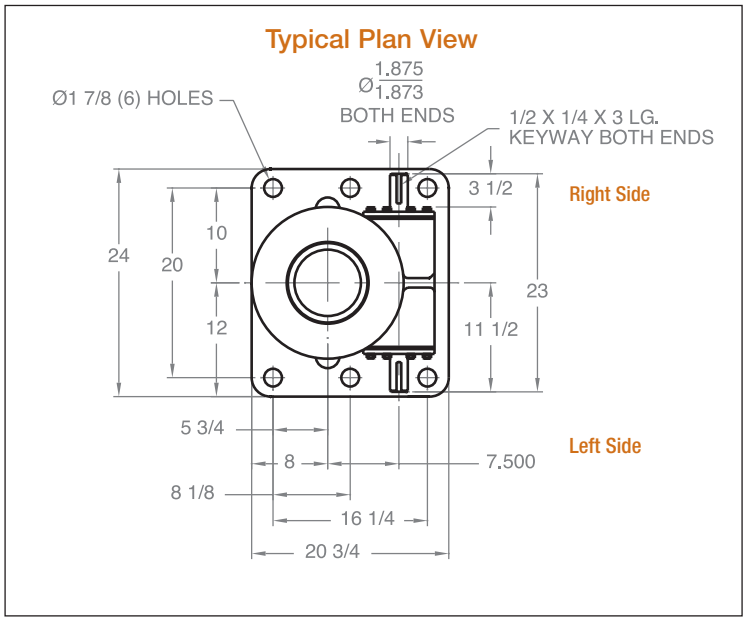

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice. Minimum closed dimensions do not apply to upright keyed jacks.

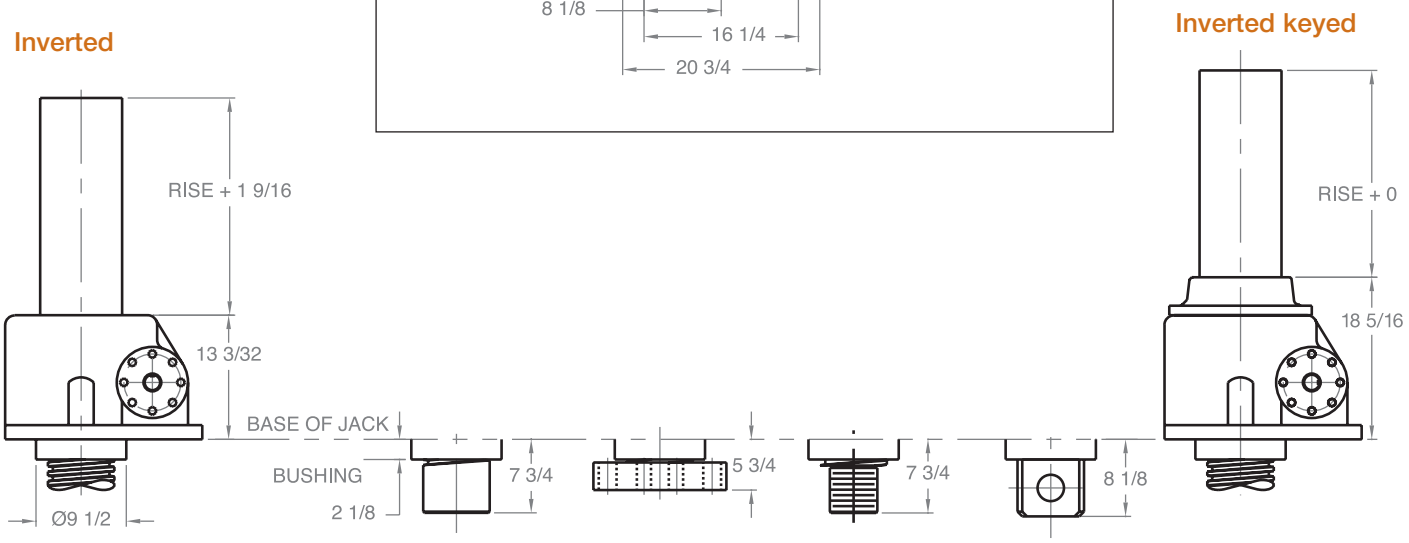
# MACHINE SCREW JACKS

## 150 TON - 7" SCREW

WJ 12150
WJ 36150



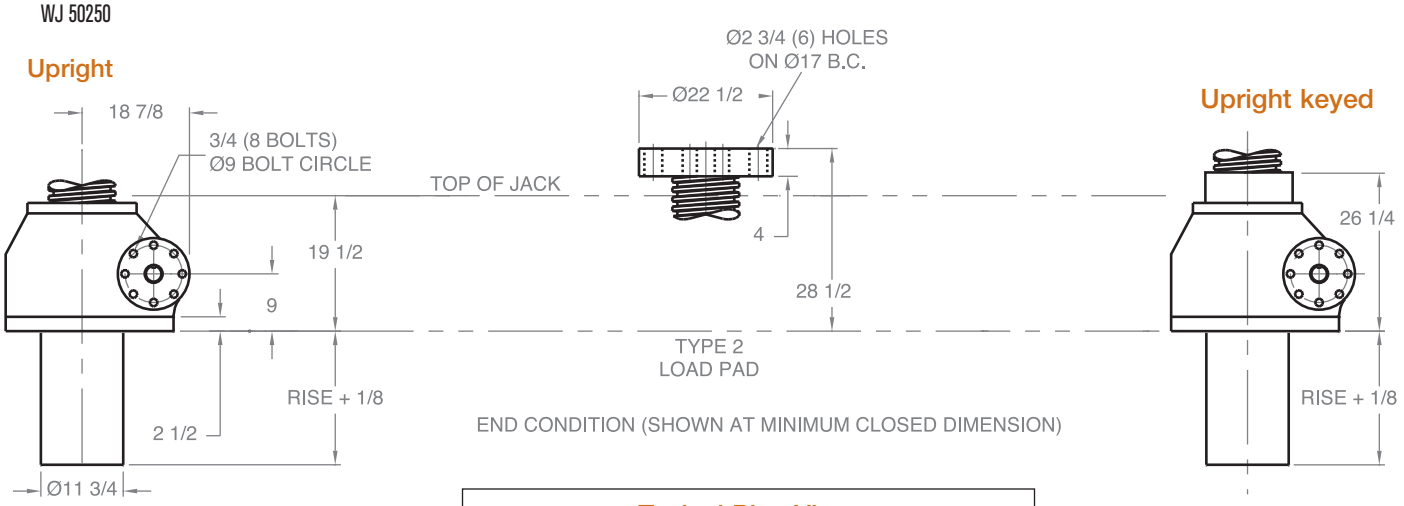

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice. Minimum closed dimensions do not apply to upright keyed jacks.

# MACHINE SCREW JACKS

## 250 TON - 9" SCREW

WJ 50250

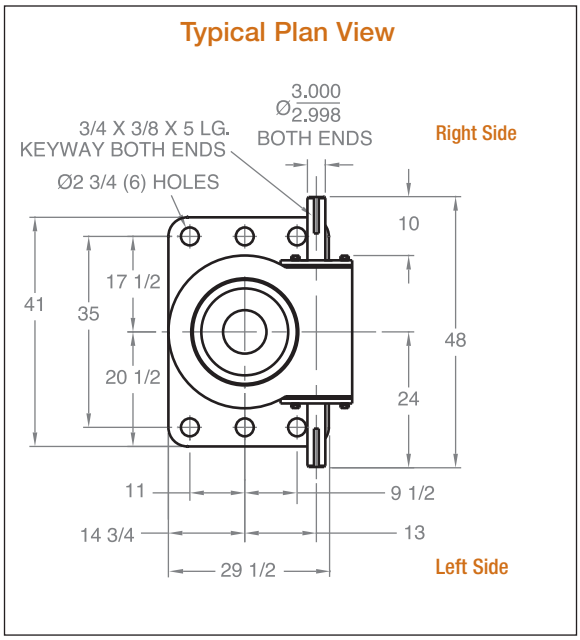
### Upright



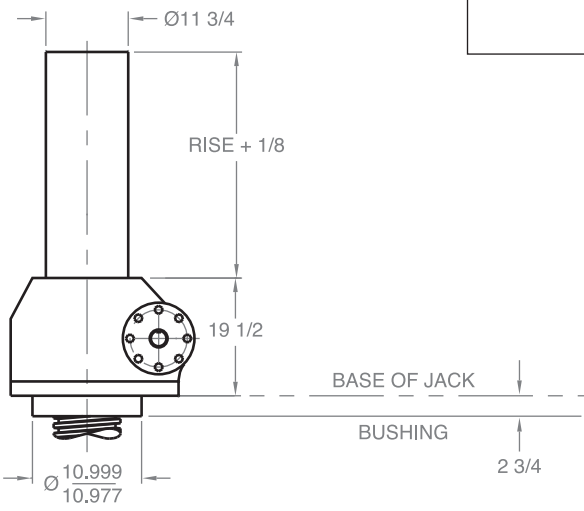

### Upright keyed



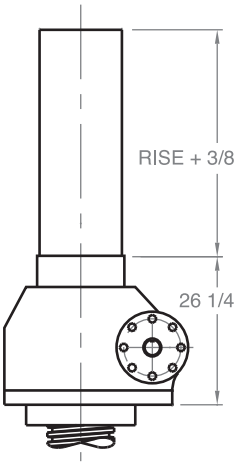

### Typical Plan View




### Inverted




### Inverted keyed




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice. Minimum closed dimensions do not apply to upright keyed jacks.

# MACHINE SCREW ComDRIVEs®



Joyce machine screw ComDRIVEs® combine a machine screw jack, motor and gear reducer into a single compact unit. ComDRIVEs are available in 2-ton through 30-ton capacities. They provide travel speeds up to 35.1 inches per minute. ComDRIVEs with single lead screws (CD) are self-locking; those with double lead screws (DCD) may require a brake motor or external locking device to hold position.

Four standard end conditions are available and ComDRIVEs can be fitted with protective boots. Limit switches, anti-backlash devices, and other options are also available.

ComDRIVE Benefits:

- Can power an entire jacking system.
- Reduces the number of components that must be specified.
- Simplifies design.
- Reduces installation costs with only a single plate needed to mount the jack body.
- Reduces the number of couplings and shafts required in multi-jack systems.
- Standard 230/460 volt, 3-phase, 60 hertz motor included.

ComDRIVEs can be specified without the motor. The reducer flange accepts standard NEMA motor frame sizes.

Joyce can customize ComDRIVEs to meet your specifications. Ask about larger size ComDRIVEs.

**Joyce offers Machine Screw ComDRIVEs in several designs including:**

- **Translating**
- **Keyed for non-rotation**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**
- **Trunnion mount**

A guide for ordering is on pages 46 and 47.

Scan the QR Code to view this product on our website.

# MACHINE SCREW ComDRIVEs® ORDERING INFORMATION

Instructions: Select a model number from this chart.

| 2-Ton | 3-Ton | 5-Ton | 10-Ton | 15-Ton | 20-Ton | 25-Ton | 30-Ton |
|---|---|---|---|---|---|---|---|
| CD62<br>CD122<br>CD242 | CD63<br>CD123<br>CD243 | CD65<br>CD125<br>CD245 | CD810<br>CD2410 | CD815<br>CD2415 | CD820<br>CD2420 | CD1125<br>CD3225 | CD1130<br>CD3230 |
| DCD62*<br>DCD122*<br>DCD242* | DCD63*<br>DCD123*<br>DCD243* | DCD65*<br>DCD125*<br>DCD245* | DCD810*<br>DCD2410* | DCD815*<br>DCD2415* | DCD820*<br>DCD2420* | DCD1125*<br>DCD3225* | DCD1130*<br>DCD3230* |

Important Note: *Not self-locking, may lower under load. Brake motors or external locking systems are recommended.

DCD: Double lead screw.

(For 25:1 ratio contact Joyce.)

## Sample Part Number: CD65U2S-18.50-P1AB-STDX-B

### Jack Configuration



U=Upright



I=Inverted

### End Conditions



1=T1
(plain end)



2=T2
(load pad)

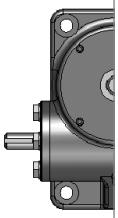


3=T3
(threaded end)



4=T4
(male clevis)

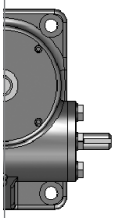
### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 47.

### Right Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 47.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Anti-Backlash p. 177**

A=Split Nut
A90=A90 Design
A95=A95 Design

**Protective Boots pp. 166-169**

B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**

F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**Motor Options**

M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**

H1=High Temperature Operation
H2=Food Grade

**Screw Stops**

Extending and retracting stops are standard on ComDRIVEs.

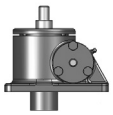
* Specify as many options as needed

### ComDRIVE® Rise

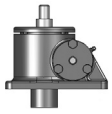
Rise is travel expressed in inches and not the actual screw length.

When companion jacks are ordered with the ComDRIVE®, their screws are lengthened to match the ComDRIVE®.

### Jack Designs



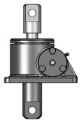
S=Translating



K=Keyed for Non Rotation



N=Traveling Nut



D=Double Clevis



A=KFTN Trunnion*
T=Trunnion*

*Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 179)

# MACHINE SCREW ComDRIVEs® SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the ComDRIVE®.

## Screw Stops (p. 10) and Boots (pp. 166-169)

Extending and retracting screw stops are standard on ComDRIVEs. When boots are added to ComDRIVEs, the closed height of the unit may be increased.

## Mechanical Counters (p. 176)

CNT0=0.001" Increments

Note: Contact Joyce for availability and options.



## Geared Potentiometers (p. 171)

POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures



## Encoders (pp. 172-173)

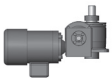
ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR



## ComDRIVE Reducers (pp. 49-57)

Ordering Example: P2AC — Motor code from chart at right

### Mounting Positions

| Code | P1 | P2 | P3 | P4 |
|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |

### Ratio

| |
|---|
| 5:1 Code A |
| 7.5:1 Code B |
| 10:1 Code C |
| 15:1 Code D |
| Special Ratio Code X |

## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |
| 7-1/2 HP | H |
| 10 HP | I |
| 15 HP | J |

All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available including international voltages, and single phase AC. Specify the appropriate motor size from the chart above. Refer to the "Additional Options" chart on the preceding page as needed. Brake motors are required for ball screw ComDRIVEs®. Contact Joyce for options that are not listed.

## Mechanical Limit Switches (p. 170)

Ordering Example: LA13

### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

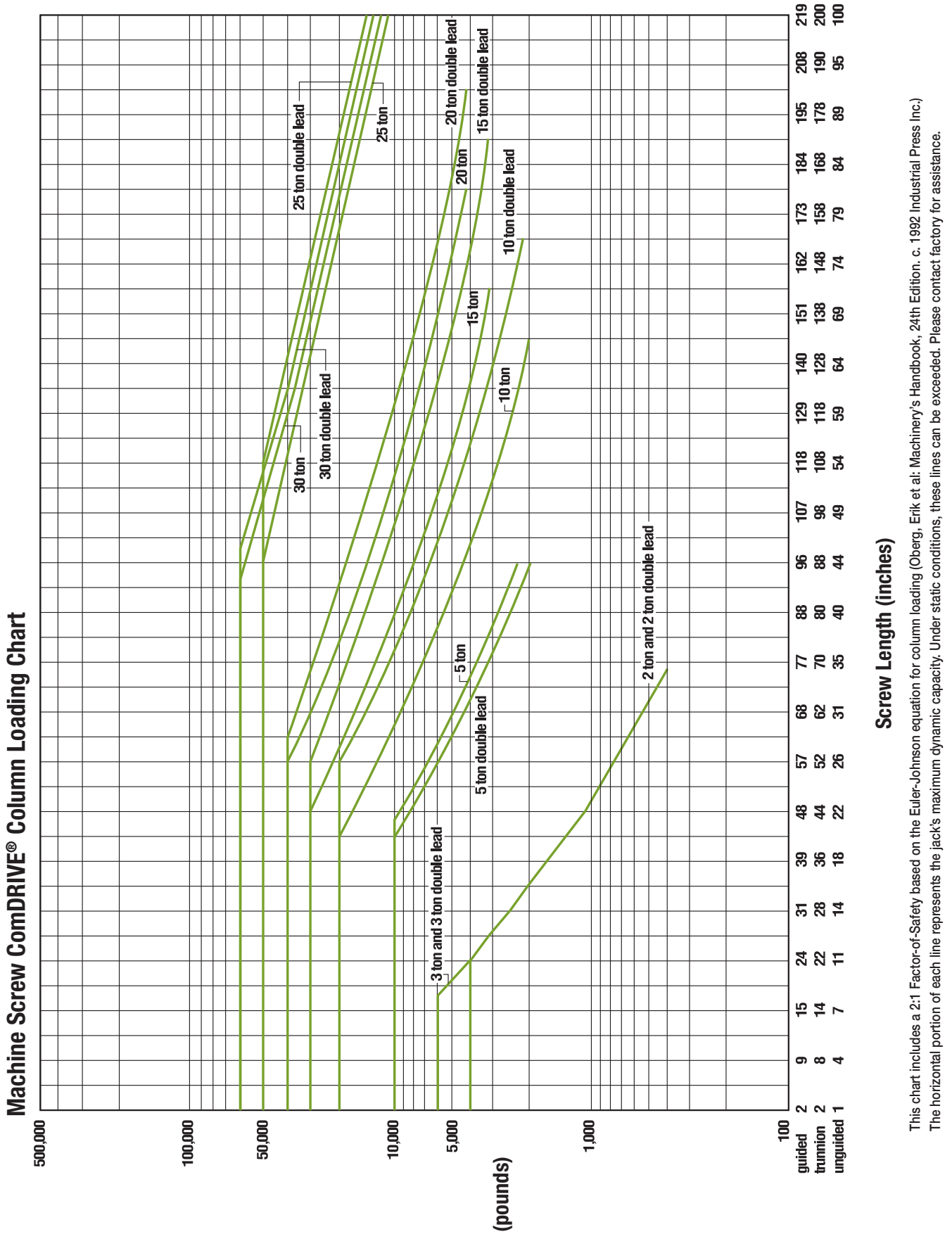
### Available Positions

| | 1 | 2* | 3 | 4 | 5 | 6* | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 2, 3, 5, 10, 15, and 20 ton ComDRIVEs are available with positions #1, #3, and #5.
- 25 and 30 ton ComDRIVEs are available with positions #1, #4, #7 and #8.

* These positions are not standard. Contact Joyce with your requirements.

# MACHINE SCREW ComDRIVEs® COLUMN LOADING




This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.)
The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact factory for assistance.



2D and 3D models available on website • Ordering information on pages 46 and 47

# MACHINE SCREW ComDRIVEs® SPECIFICATIONS

| 2 Ton Model Number | | CD62 | | | CD122 | | CD242 | | | DCD62 | | | DCD122 | DCD242 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 10 | 7 1/2 | 5 | 7 1/2 | 10 |
| Travel Speed IPM | | 13.88 | 9.50 | 7.04 | 6.94 | 4.75 | 3.47 | 2.38 | 1.76 | 27.75 | 19.00 | 14.08 | 9.50 | 6.94 | 4.75 | 3.52 |
| Lifting Capacity, Lbs. | 1/3 HP | 1,865 | 2,650 | 3,500 | 3,350 | 4,000 | 4,000 | 4,000 | 4,000 | 1,300 | 1,850 | 2,450 | 3,300 | 3,830 | 4,000 | 4,000 |
| | 1/2 HP | 2,875 | 4,000 | 4,000 | 4,000 | | | | | 2,000 | 2,825 | 3,720 | 4,000 | 4,000 | | |
| | 3/4 HP | 4,000 | | | | | | | | 3,060 | 4,000 | | | | | |

| 3 Ton Model Number | | CD63 | | | CD123 | | CD243 | | | DCD63 | | | DCD123 | DCD243 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 10 | 7 1/2 | 5 | 7 1/2 | 10 |
| Travel Speed IPM | | 13.88 | 9.50 | 7.04 | 6.94 | 4.75 | 3.47 | 2.38 | 1.76 | 27.75 | 19.00 | 14.08 | 9.50 | 6.94 | 4.75 | 3.52 |
| Lifting Capacity, Lbs. | 1/3 HP | 1,910 | 2,700 | 3,555 | 3,425 | 4,790 | 5,610 | 6,000 | 6,000 | 1,335 | 1,890 | 2,485 | 3,350 | 3,925 | 5,415 | 6,000 |
| | 1/2 HP | 2,920 | 4,095 | 5,380 | 5,235 | 6,000 | 6,000 | | | 2,045 | 2,865 | 3,765 | 5,085 | 6,000 | 6,000 | |
| | 3/4 HP | 4,430 | 6,000 | | 6,000 | | | | | 3,100 | 4,340 | | 6,000 | | | |

| 5 Ton Model Number | | CD65 | | CD125 | CD245 | DCD65 | | DCD125 | DCD245 |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 10 | 10 | 5 | 10 | 10 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 5.28 | 2.64 | 27.75 | 14.08 | 7.04 | 3.52 |
| Lifting Capacity, Lbs. | 1 HP | 3,760 | 6,980 | 10,000 | 10,000 | 3,320 | 6,170 | 10,000 | 10,000 |
| | 1 1/2 HP | 5,755 | | | | 5,085 | | | |
| | 2 HP | 7,750 | | | | 6,845 | | | |

| 10 Ton Model Number | | CD810 | | CD2410 | | DCD810 | | DCD2410 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 6.94 | 3.52 | 27.76 | 14.09 | 9.25 | 4.69 |
| Lifting Capacity, Lbs. | 1 HP | 3,680 | 7,070 | 9,000 | 16,760 | 3,150 | 6,045 | 7,700 | 14,330 |
| | 1 1/2 HP | 5,760 | | 14,090 | | 4,925 | | 12,050 | |
| | 2 HP | 7,840 | | 19,165 | | 6,700 | | 16,390 | |
| | 3 HP | 12,150 | 20,000 | 20,000 | 20,000 | 10,385 | 19,450 | 20,000 | 20,000 |
| | 5 HP | | | | | | | | |

| 15 Ton Model Number | | CD815 | | CD2415 | | DCD815 | | DCD2415 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 6.94 | 3.52 | 27.76 | 14.09 | 9.25 | 4.69 |
| Lifting Capacity, Lbs. | 1 HP | 3,140 | 6,200 | 7,535 | 14,385 | 2,715 | 5,365 | 6,515 | 12,440 |
| | 1 1/2 HP | 5,035 | | 12,085 | | 4,350 | | 10,450 | |
| | 2 HP | 6,925 | | 16,620 | | 5,990 | | 14,375 | |
| | 3 HP | 10,850 | 20,425 | 26,040 | 30,000 | 9,380 | 17,665 | 22,520 | 30,000 |
| | 5 HP | 18,515 | | 30,000 | | 16,010 | | 30,000 | |

| 20 Ton Model Number | | CD820 | | CD2420 | | DCD820 | | DCD2420 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 6.94 | 3.52 | 27.76 | 14.09 | 9.25 | 4.69 |
| Lifting Capacity, Lbs. | 1 HP | 2,715 | 5,570 | 6,520 | 12,920 | 2,265 | 4,645 | 5,435 | 10,765 |
| | 1 1/2 HP | 4,475 | | 10,745 | | 3,730 | | 8,960 | |
| | 2 HP | 6,235 | | 14,965 | | 5,195 | | 12,475 | |
| | 3 HP | 9,880 | 18,785 | 23,715 | 40,000 | 8,235 | 15,660 | 19,770 | 36,300 |
| | 5 HP | 17,000 | | 40,000 | | 14,175 | | 34,020 | |

| 25 Ton Model Number | | CD1125 | | CD3225 | | DCD1125 | | DCD3225 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.79 | 10.55 | 6.93 | 3.52 | 35.12 | 17.82 | 11.71 | 5.94 |
| Lifting Capacity, Lbs. | 3 HP | 9,050 | 17,165 | 20,390 | 36,800 | 7,385 | 14,000 | 16,640 | 30,040 |
| | 5 HP | 15,700 | 29,420 | 35,390 | 50,000 | 12,815 | 24,010 | 28,885 | 50,000 |
| | 7 1/2 HP | 23,930 | 45,755 | 50,000 | | 19,530 | 37,340 | 44,010 | |
| | 10 HP | 32,625 | 50,000 | | | 26,625 | 50,000 | 50,000 | |
| | 15 HP | 49,410 | | | | 40,325 | | | |

| 30 Ton Model Number | | CD1130 | | CD3230 | | DCD1130 | | DCD3230 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.82 | 10.57 | 6.94 | 3.52 | 35.12 | 17.82 | 11.71 | 5.94 |
| Lifting Capacity, Lbs. | 3 HP | 9,435 | 17,540 | 21,260 | 37,620 | 7,535 | 14,000 | 16,975 | 30,040 |
| | 5 HP | 16,100 | 29,815 | 36,280 | 60,000 | 12,885 | 23,810 | 28,970 | 51,060 |
| | 7 1/2 HP | 24,335 | 46,170 | 54,840 | | 19,430 | 36,870 | 43,790 | 60,000 |
| | 10 HP | 33,040 | 60,000 | 60,000 | | 26,385 | 49,300 | 59,460 | |
| | 15 HP | 49,845 | | | | 39,800 | | 60,000 | |

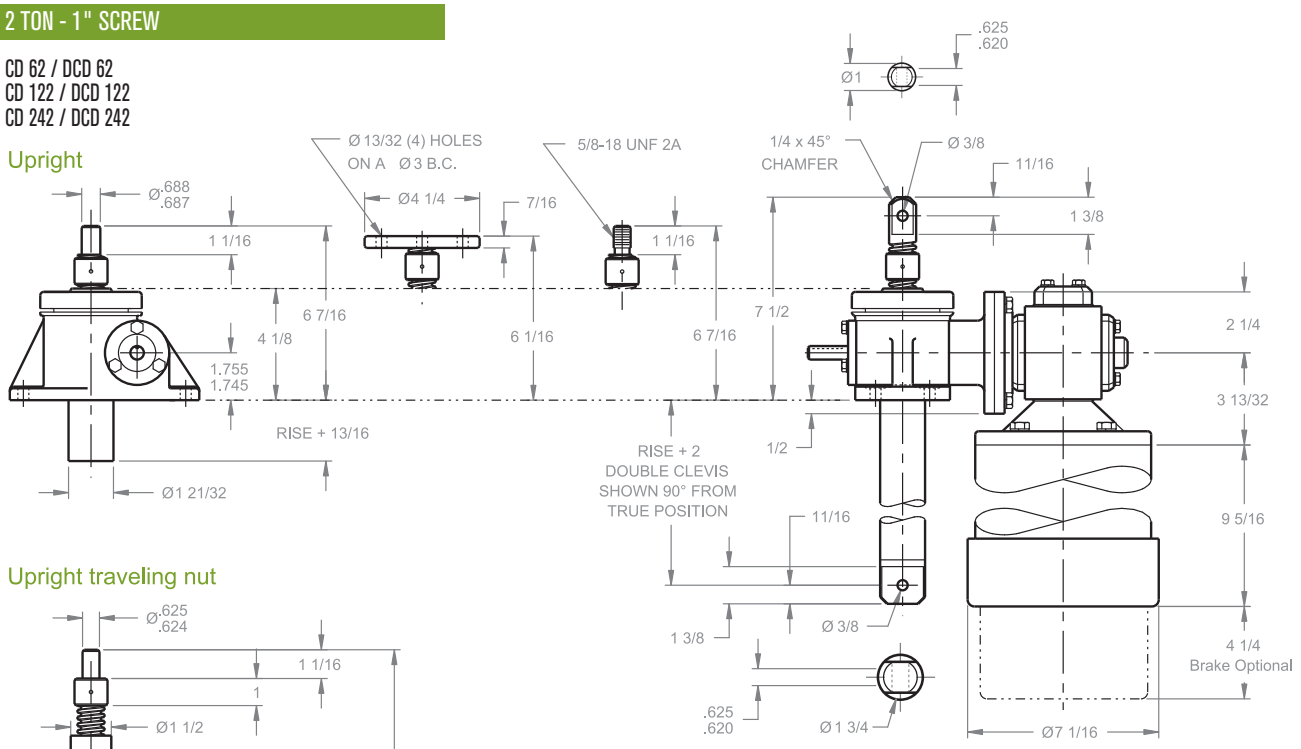
Important Note: DCD models may lower under load. Brake motors or external locking systems are recommended.

# MACHINE SCREW ComDRIVEs®

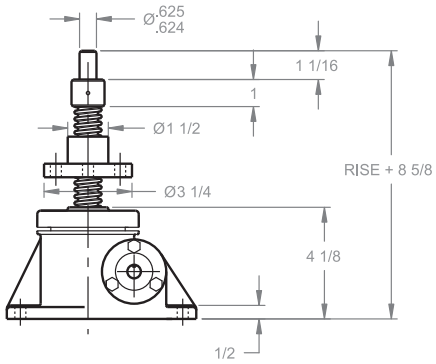
## 2 TON - 1" SCREW

CD 62 / DCD 62
CD 122 / DCD 122
CD 242 / DCD 242

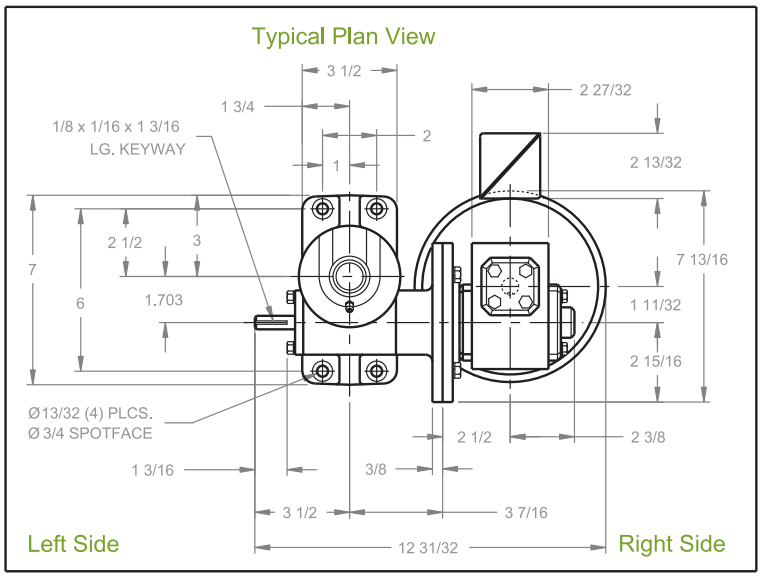
### Upright



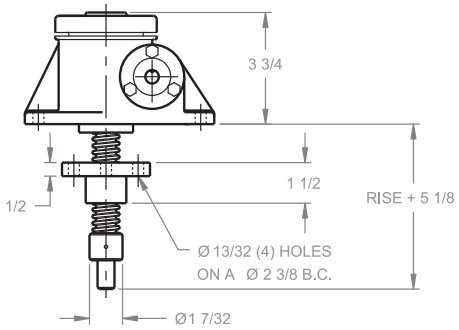

### Upright traveling nut



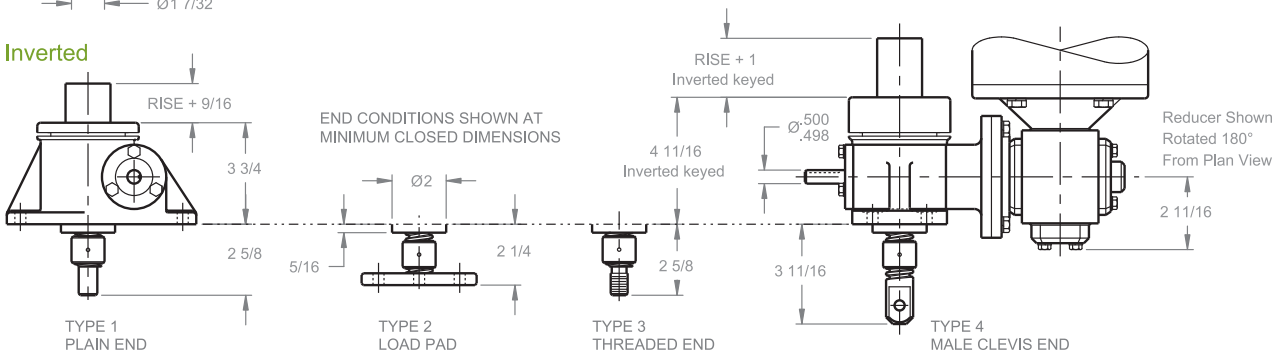

### Typical Plan View




### Inverted traveling nut




### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

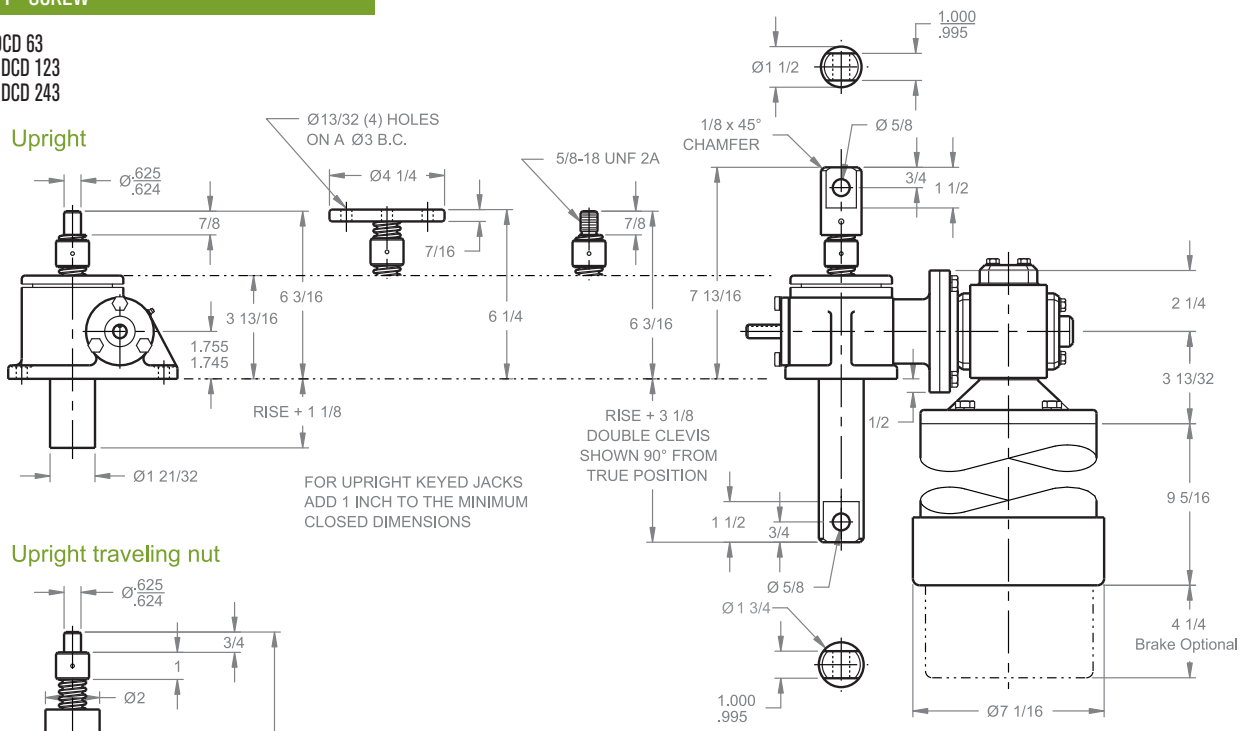
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

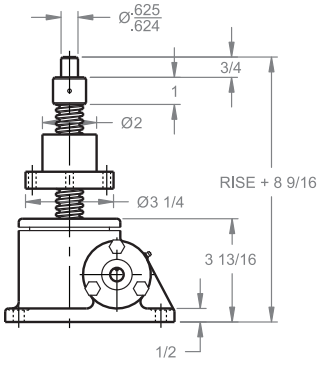
## 3 TON - 1" SCREW

CD 63 / DCD 63
CD 123 / DCD 123
CD 243 / DCD 243

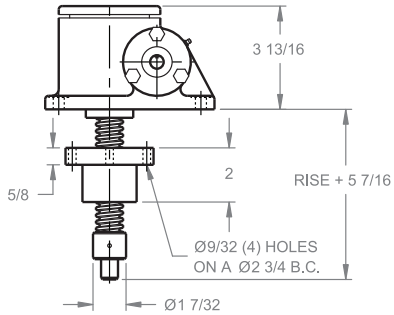
### Upright



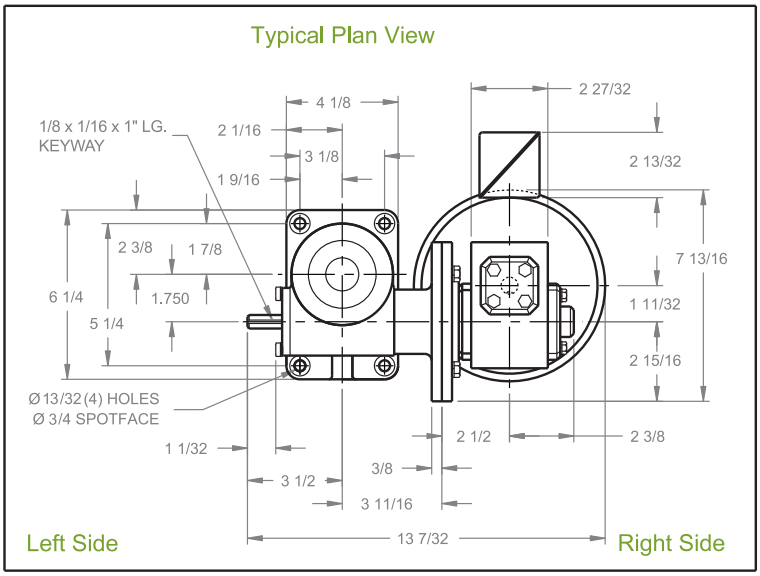

### Upright traveling nut



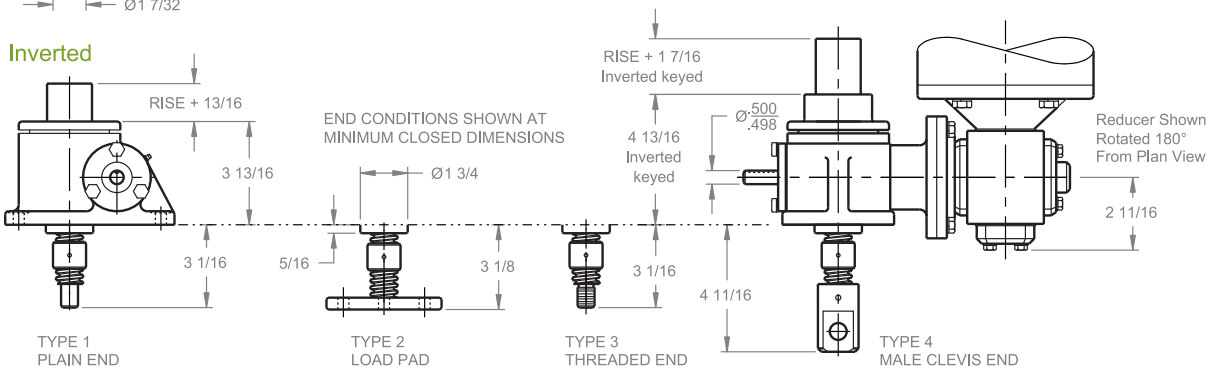

### Inverted traveling nut




### Typical Plan View




### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

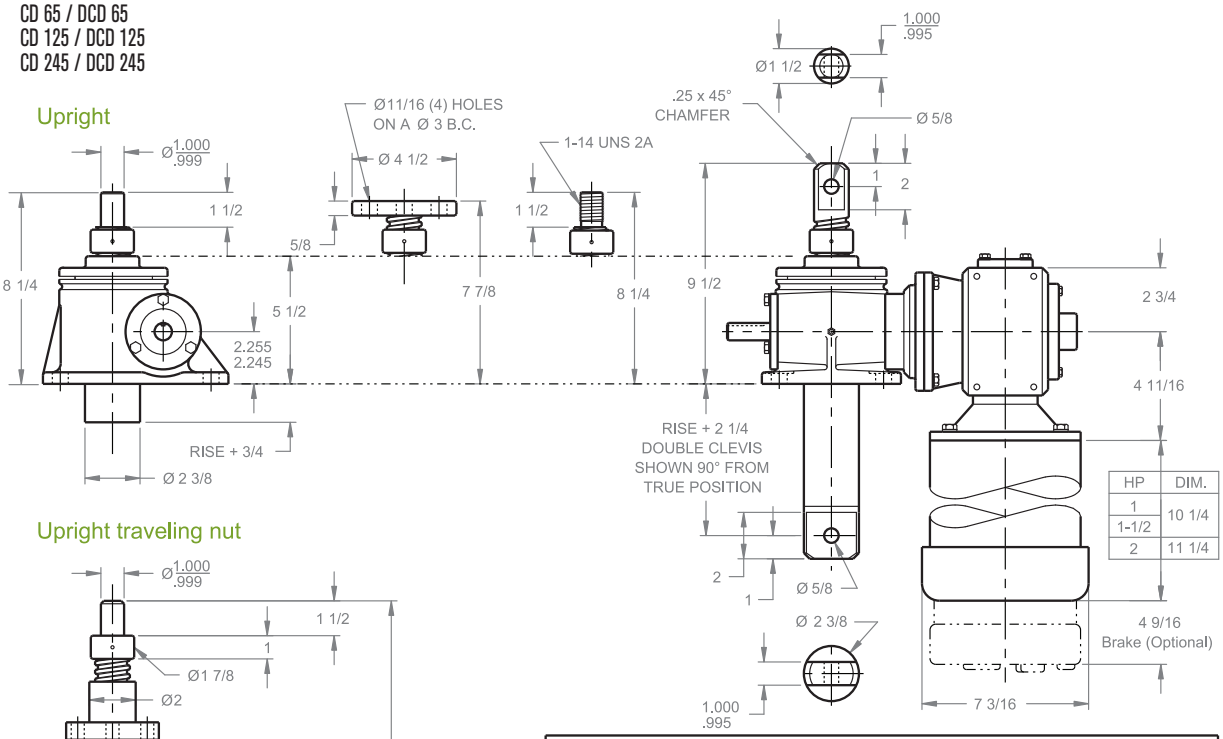
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

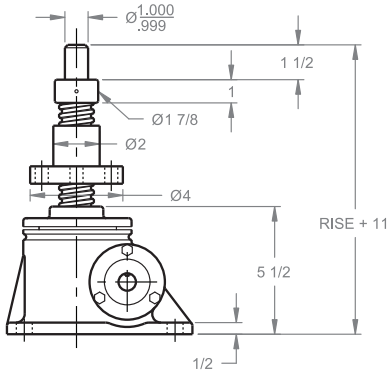
## 5 TON - 1 1/2" SCREW

CD 65 / DCD 65
CD 125 / DCD 125
CD 245 / DCD 245

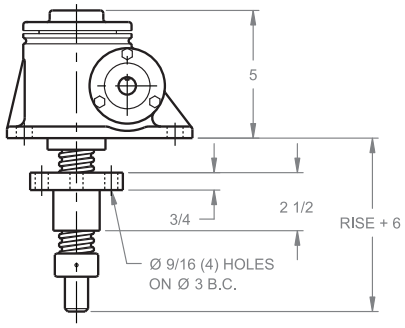
### Upright



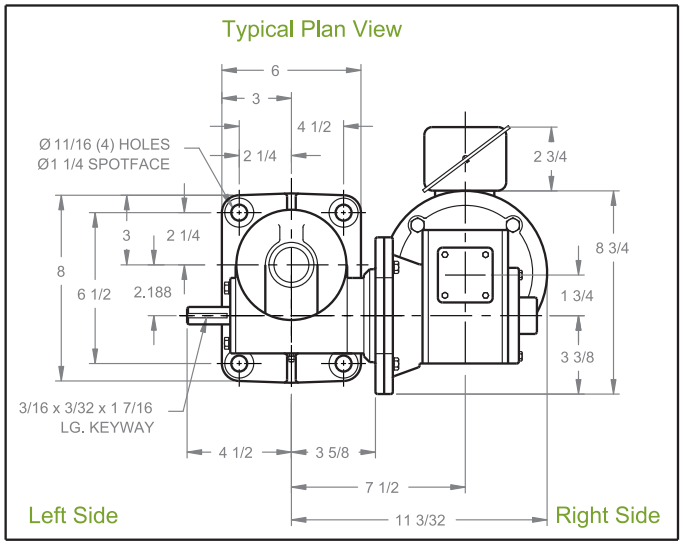

### Upright traveling nut



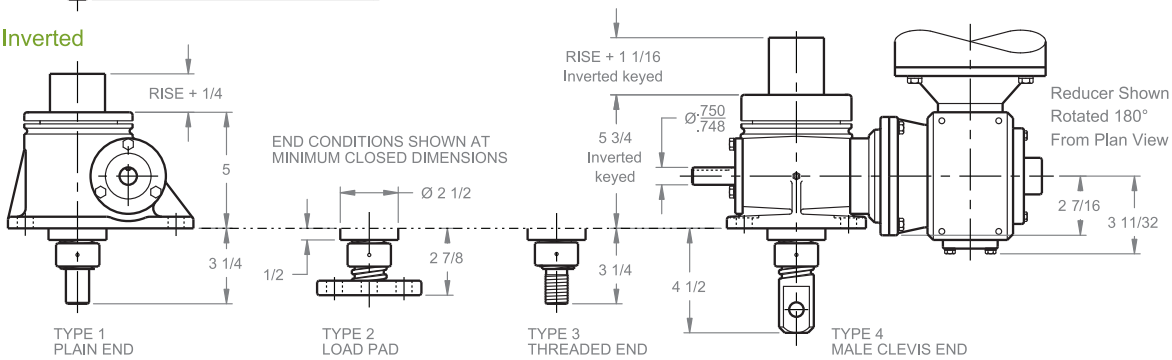

### Inverted traveling nut




### Typical Plan View




### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

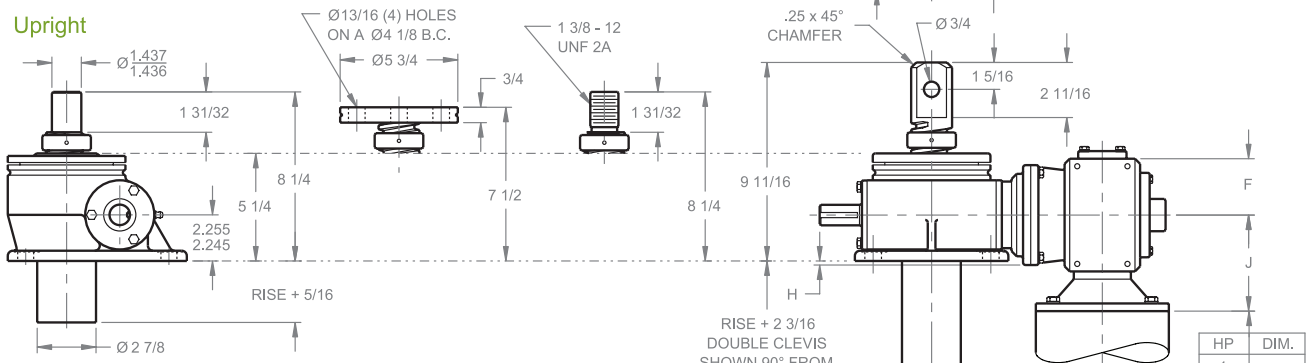
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

## 10 TON - 2" SCREW

CD 810 / DCD 810
CD 2410 / DCD 2410

### Upright

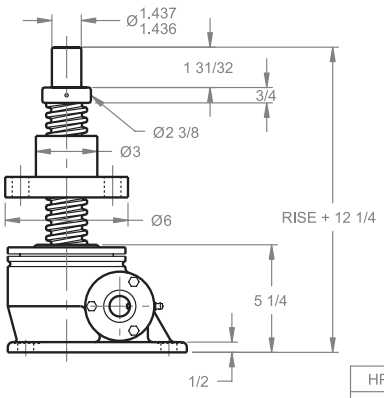



| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

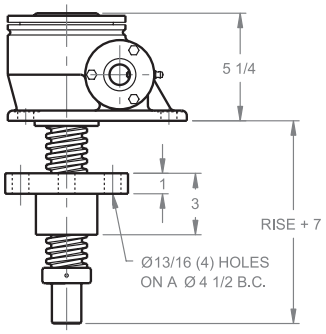
| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | Ø7 3/16 |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | 4 9/16 |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

### Upright traveling nut



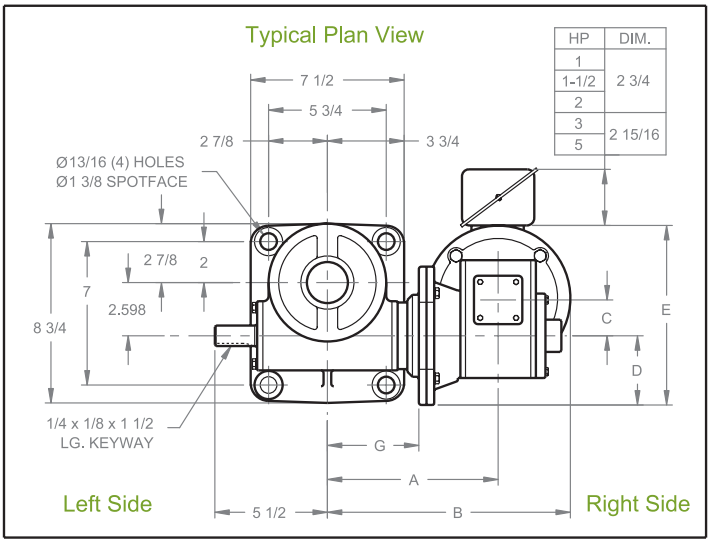

### Inverted traveling nut




REDUCER DIMENSIONS

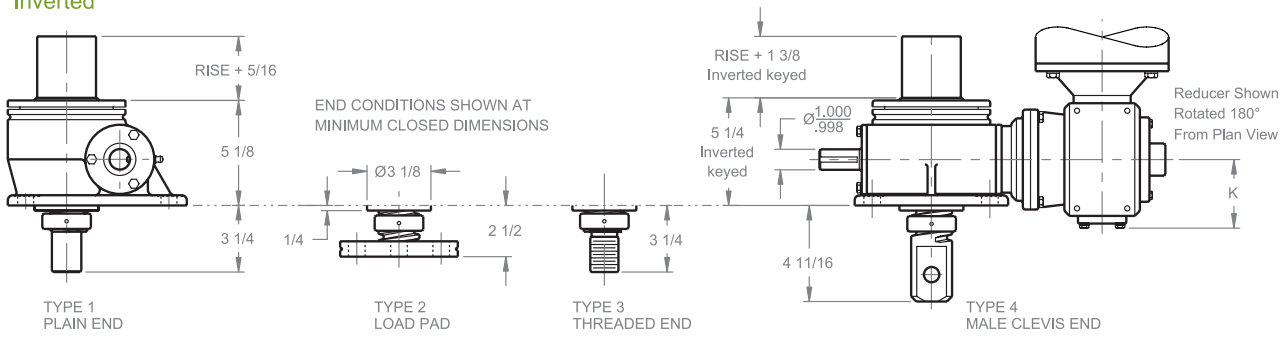
| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 3/16 | 1 5/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

### Typical Plan View




| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | 2 3/4 |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

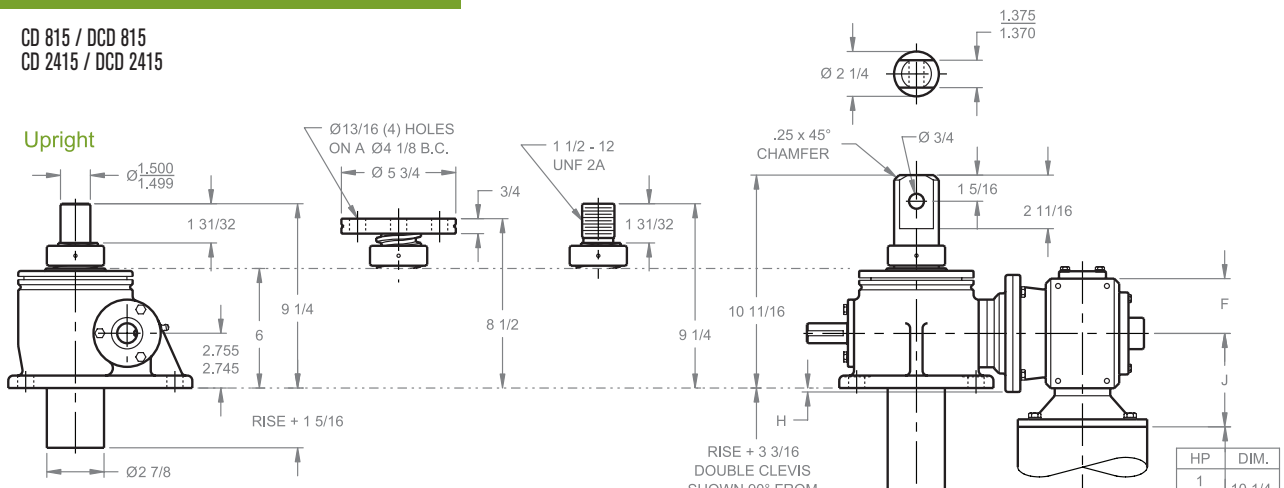
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

## 15 TON - 2 1/4" SCREW

CD 815 / DCD 815
CD 2415 / DCD 2415

### Upright

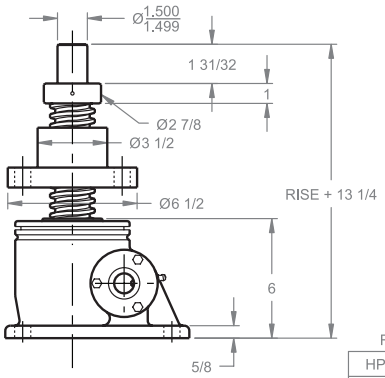



| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

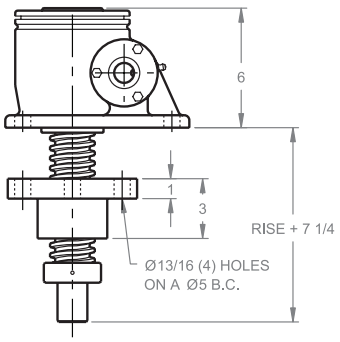
| HP | DIM. |
|---|---|
| 1 | Ø 7 3/16 |
| 1-1/2 | |
| 2 | |
| 3 | Ø 9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | 4 9/16 |
| 1-1/2 | |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

### Upright traveling nut



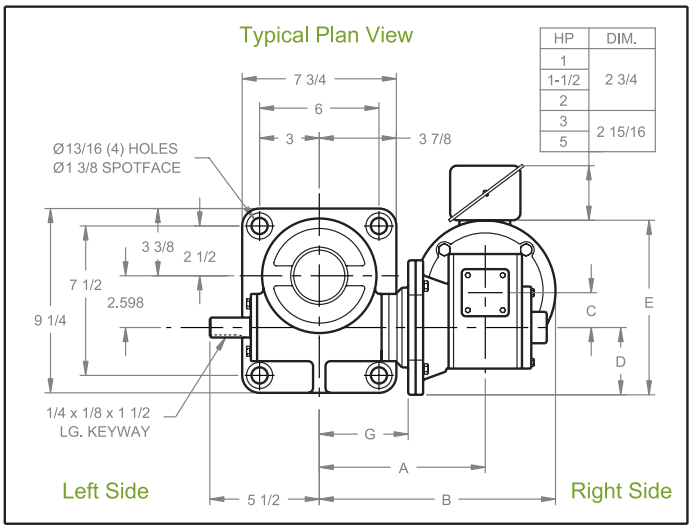

### Inverted traveling nut




REDUCER DIMENSIONS

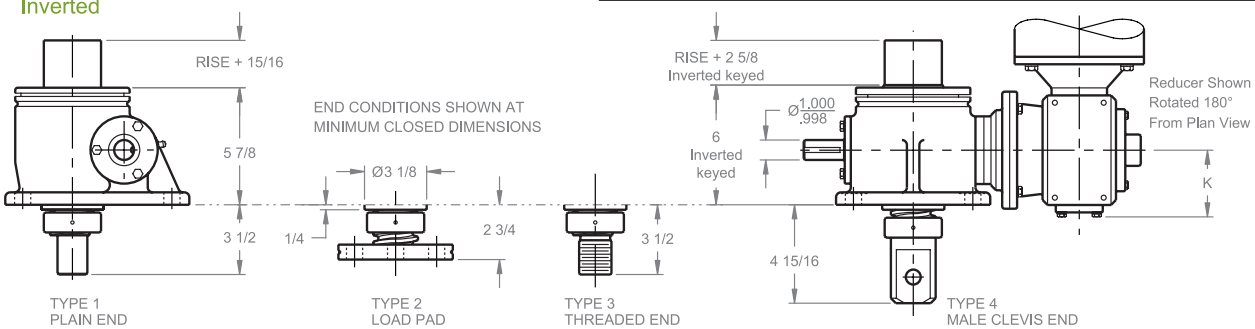
| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 1 1/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

### Typical Plan View




| HP | DIM. |
|---|---|
| 1 | 2 3/4 |
| 1-1/2 | |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

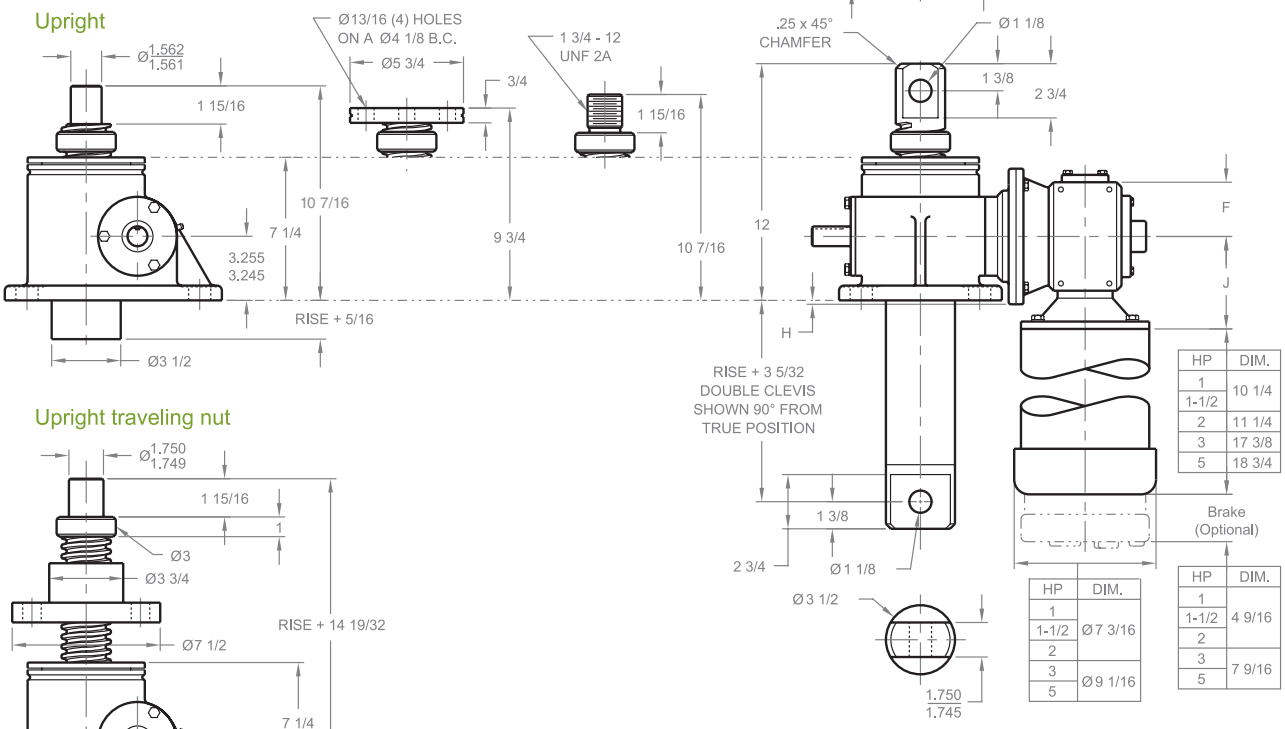
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

## 20 TON - 2 1/2" SCREW

CD 820 / DCD 820
CD 2420 / DCD 2420

### Upright




| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

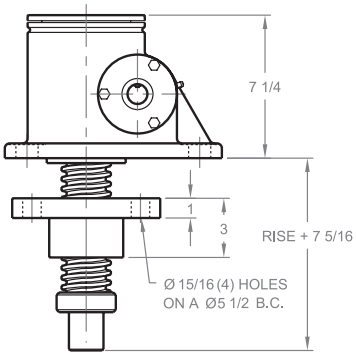
| HP | DIM. |
|---|---|
| 1 | Ø7 3/16 |
| 1-1/2 | |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | 4 9/16 |
| 1-1/2 | |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

### Upright traveling nut



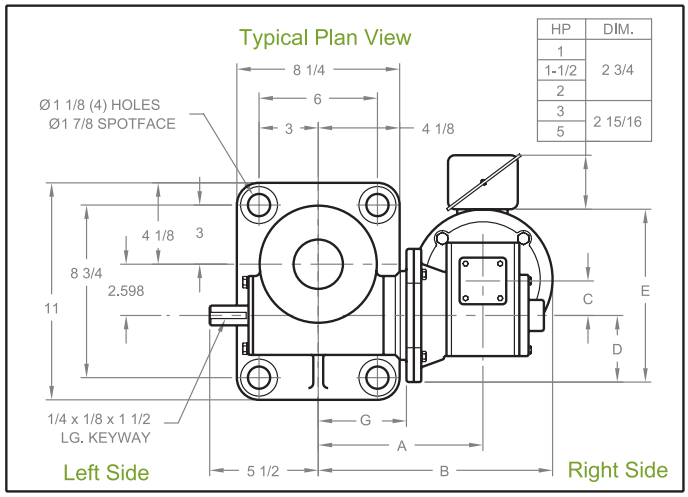

### Inverted traveling nut




REDUCER DIMENSIONS

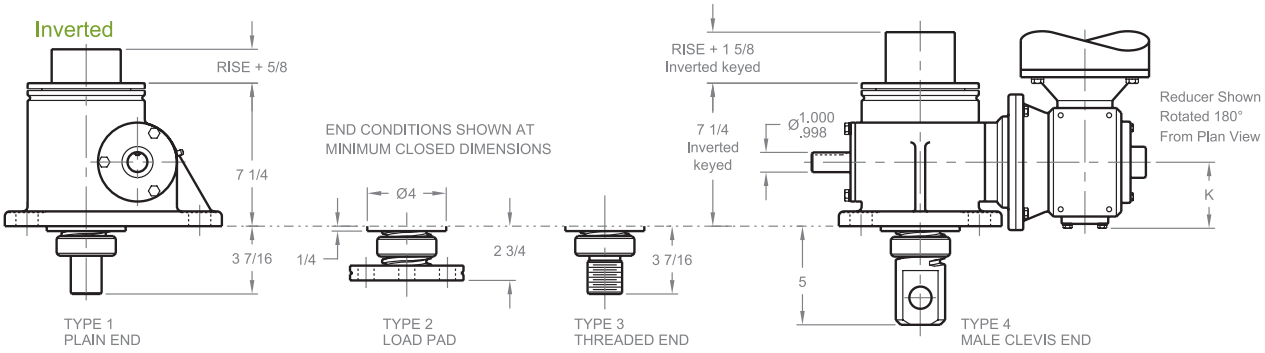
| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 19/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 5/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

### Typical Plan View




| HP | DIM. |
|---|---|
| 1 | 2 3/4 |
| 1-1/2 | |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

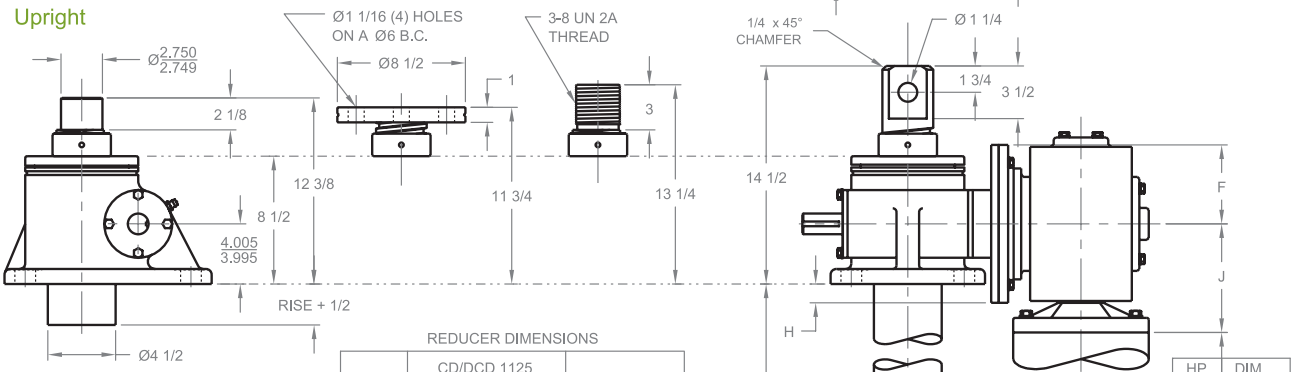
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

## 25 TON - 3 3/8" SCREW

CD 1125 / DCD 1125
CD 3225 / DCD 3225

### Upright




| HP | DIM. |
|---|---|
| 3 | 17 3/8 |
| 5 | 18 3/4 |
| 7 1/2 | 15 13/16 |
| 10 | 16 5/8 |
| 15 | 16 5/8 |

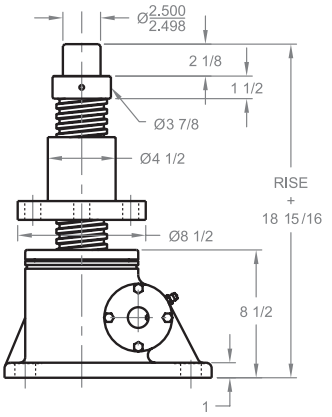
| HP | DIM. |
|---|---|
| 3 | Ø9 1/16 |
| 5 | |
| 7 1/2 | Ø10 7/8 |
| 10 | |
| 15 | Ø12 3/8 |

| HP | DIM. |
|---|---|
| 3 | 7 9/16 |
| 5 | |
| 7 1/2 | 8 1/4 |
| 10 | 8 7/8 |
| 15 | 9 1/16 |

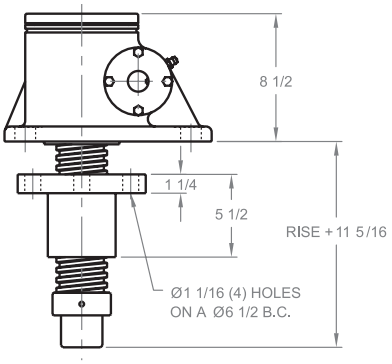
REDUCER DIMENSIONS

| MODEL | CD/DCD 1125 CD/DCD 3225 | | | | CD/DCD 1125 | | |
|---|---|---|---|---|---|---|---|
| RATIO | 5:1 10:1 | 5:1 | 10:1 | 5:1 | 10:1 | 5:1 10:1 | 5:1 |
| HP | 3 | 5 | 5 | 7 1/2 | 7 1/2 | 10 | 15 |
| A | 9 17/32 | | 9 31/32 | | 11 19/32 | | |
| B | 13 1/32 | | 13 29/32 | | 16 3/32 | | |
| C | 2 5/8 | | 3 1/4 | | 4 1/4 | | |
| D | 4 7/16 | | 5 1/2 | | 6 1/2 | | |
| E | 11 9/16 | | 12 3/4 | | 15 1/4 | | |
| F | 3 9/16 | | 4 1/2 | | 5 1/4 | | |
| G | 5 1/2 | | 5 1/2 | | 5 1/2 | | |
| H | 0 | | 1/2 | | 1 1/4 | | |
| J | 4 11/16 | | 6 3/4 | | 7 1/4 | | |
| K | 3 11/32 | | 4 5/16 | | 6 1/8 | | |

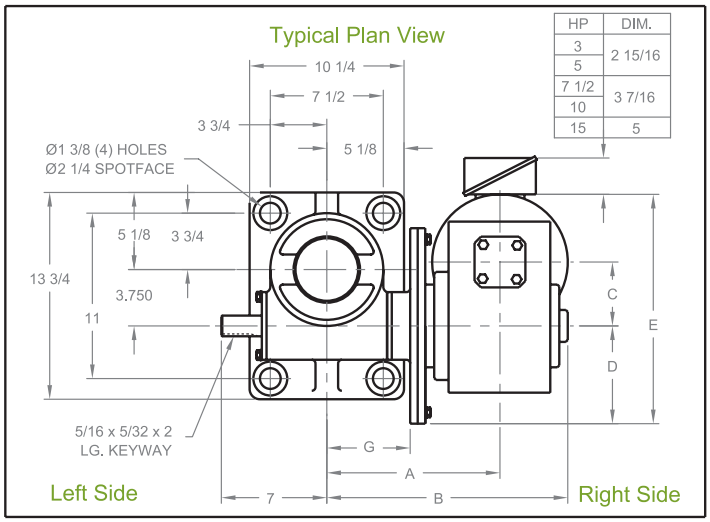
### Upright traveling nut




### Inverted traveling nut

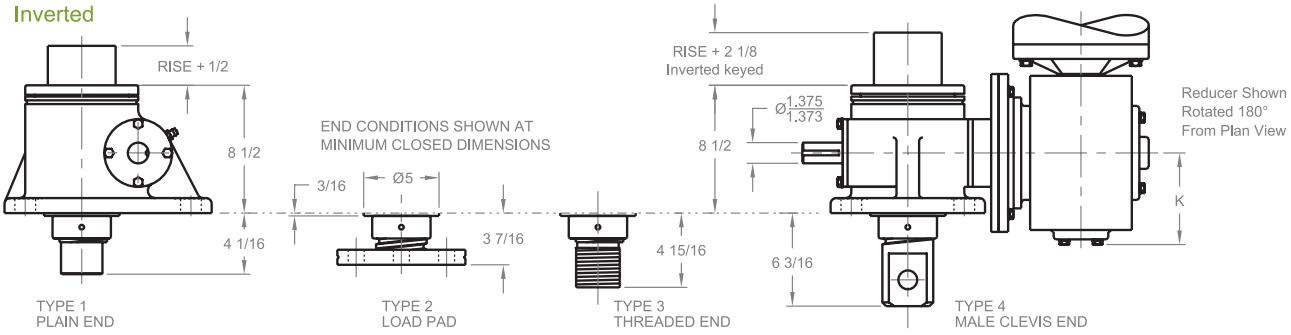



### Typical Plan View




| HP | DIM. |
|---|---|
| 3 | 2 15/16 |
| 5 | |
| 7 1/2 | 3 7/16 |
| 10 | |
| 15 | 5 |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

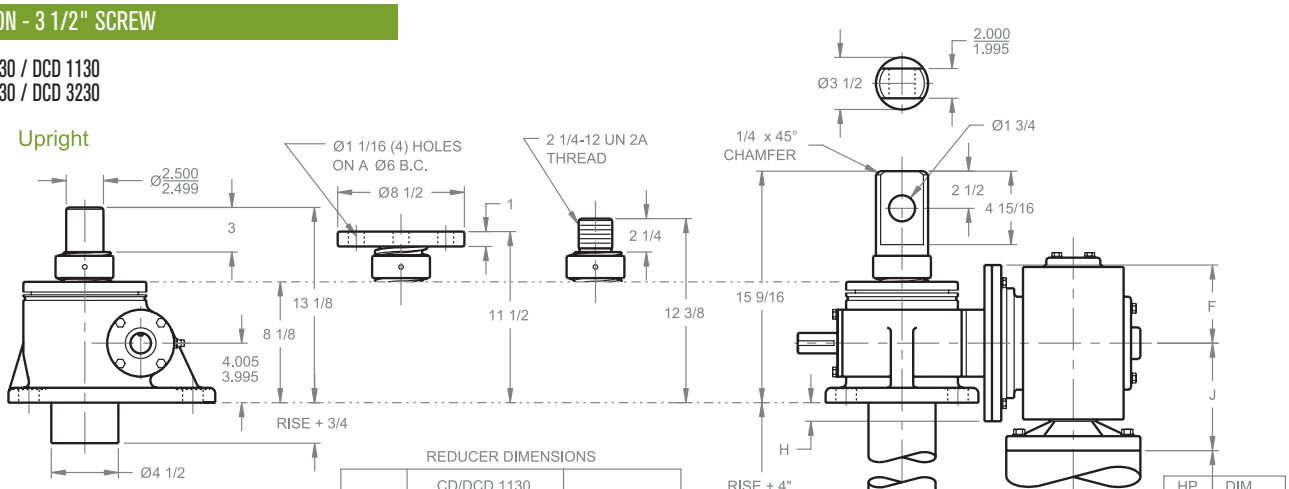
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# MACHINE SCREW ComDRIVEs®

## 30 TON - 3 1/2" SCREW

CD 1130 / DCD 1130
CD 3230 / DCD 3230

### Upright




REDUCER DIMENSIONS

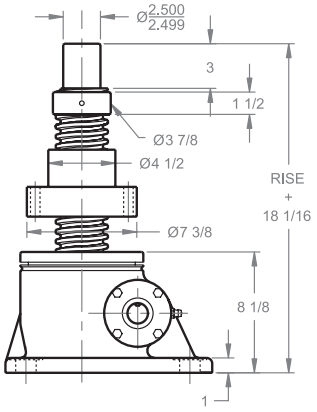
| MODEL | CD/DCD 1130 CD/DCD 3230 | | | | CD/DCD 1130 | | |
|---|---|---|---|---|---|---|---|
| RATIO | 5:1 10:1 | 5:1 | 10:1 | 5:1 | 10:1 | 5:1 10:1 | 5:1 |
| HP | 3 | 5 | 5 | 7 1/2 | 7 1/2 | 10 | 15 |
| A | 9 17/32 | | 9 31/32 | | 11 19/32 | | |
| B | 13 1/32 | | 13 29/32 | | 16 3/32 | | |
| C | 2 5/8 | | 3 1/4 | | 4 1/4 | | |
| D | 4 7/16 | | 5 1/2 | | 6 1/2 | | |
| E | 11 9/16 | | 12 3/4 | | 15 1/4 | | |
| F | 3 9/16 | | 4 1/2 | | 5 1/4 | | |
| G | 5 1/2 | | 5 1/2 | | 5 1/2 | | |
| H | 0 | | 1/2 | | 1 1/4 | | |
| J | 4 11/16 | | 6 3/4 | | 7 1/4 | | |
| K | 3 11/32 | | 4 5/16 | | 6 1/8 | | |

| HP | DIM. |
|---|---|
| 3 | 17 3/8 |
| 5 | 18 3/4 |
| 7 1/2 | 15 13/16 |
| 10 | 16 5/8 |
| 15 | 16 5/8 |

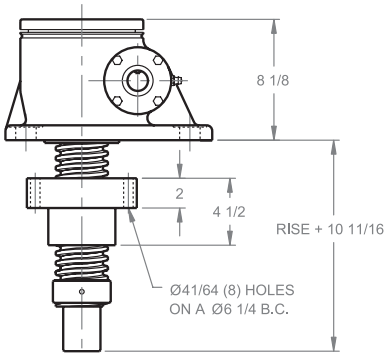
| HP | DIM. |
|---|---|
| 3 | Ø9 1/16 |
| 5 | |
| 7 1/2 | Ø10 7/8 |
| 10 | |
| 15 | Ø12 3/8 |

| HP | DIM. |
|---|---|
| 3 | 7 9/16 |
| 5 | |
| 7 1/2 | 8 1/4 |
| 10 | 8 7/8 |
| 15 | 9 1/16 |

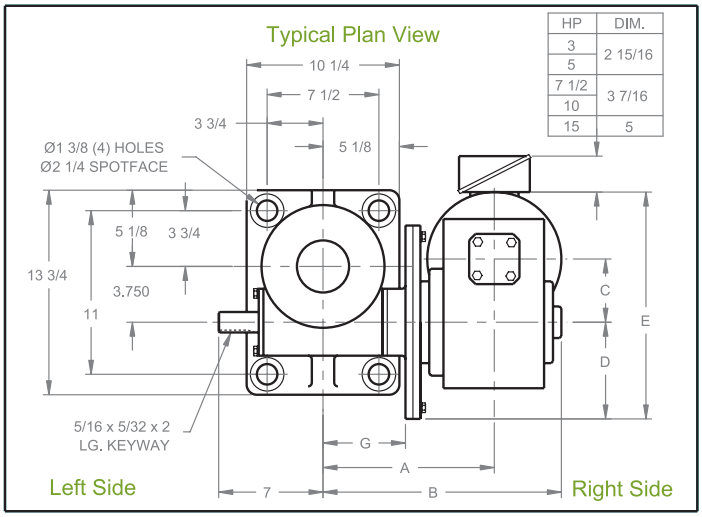
### Upright traveling nut




### Inverted traveling nut

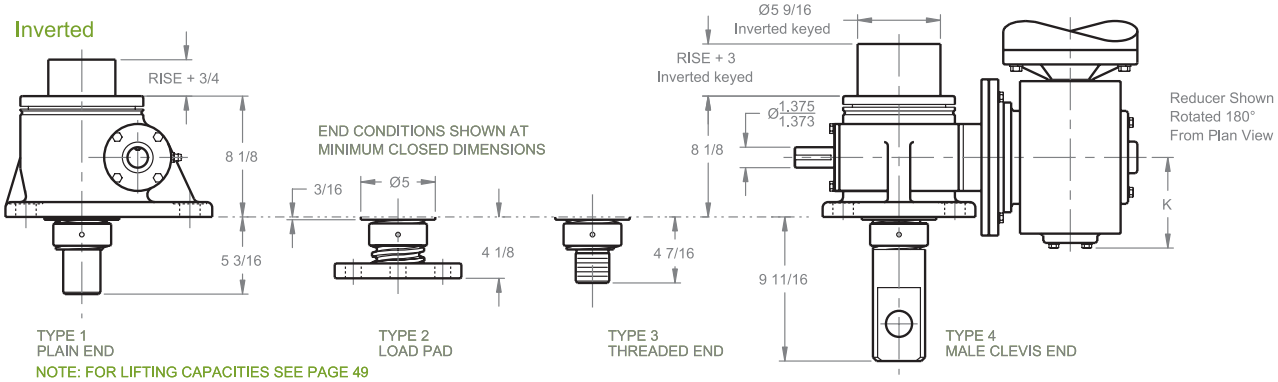



### Typical Plan View




| HP | DIM. |
|---|---|
| 3 | 2 15/16 |
| 5 | |
| 7 1/2 | 3 7/16 |
| 10 | |
| 15 | 5 |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

Joyce stainless steel screw jacks are specifically designed for positioning and lifting applications that are located in wet, corrosive or other harsh environments. In most cases, these jacks can be easily retrofitted into applications where non-stainless steel jacks have already been installed.

They are available in 2-ton through 25-ton capacities with either single lead (SWJ) or double lead (DSWJ) lifting screws. SWJ series jacks are self-locking under full lifting capacity. DSWJ series jacks offer increased travel speeds and may require a brake motor or other external locking device to hold position.

- All exposed surfaces and components feature 316 or 17-4 stainless steel construction and bronze (bushings and traveling nut).
- Nitrile rubber seals protect all internal mechanisms.
- Tapered roller or ball thrust bearings provide rugged reliability.

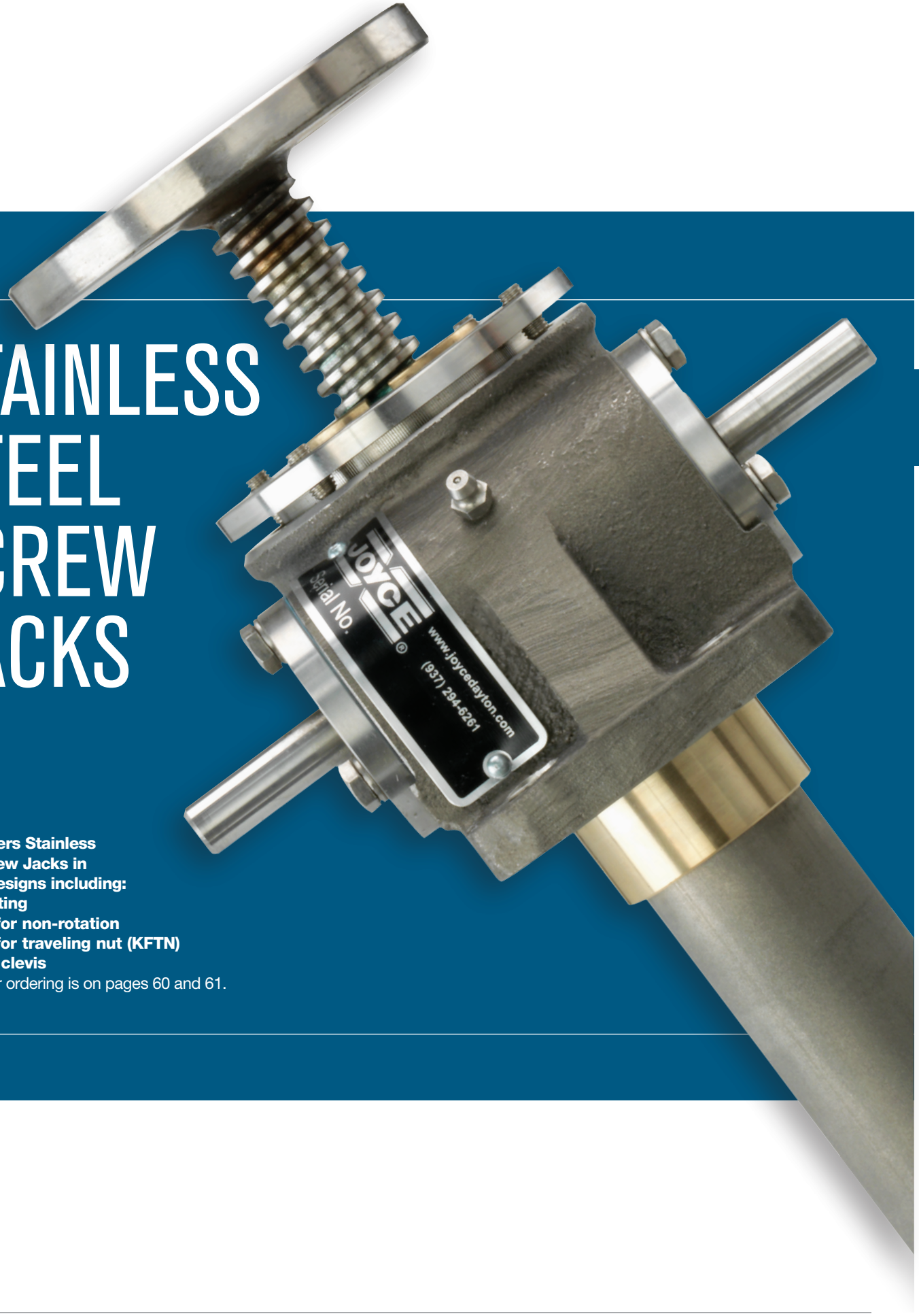
They are available with one of four standard screw ends or special ends to meet your requirements. Double input shafts are standard. An optional anti-backlash feature (page 181) compensates for thread wear, assuring minimum play between lifting screw and wormgear for smooth, precise operation. All jack designs can be fitted with protective boots.

Joyce can customize stainless steel jacks to meet your specifications.

**Stainless steel jacks are widely used in many industries including the following:**
- **Food handling**
- **Paper mill**
- **Printing**
- **Defense**
- **Coastal installations**

Scan the QR Code to view this product on our website.

# STAINLESS STEEL SCREW JACKS




**Joyce offers Stainless Steel Screw Jacks in several designs including:**

- **Translating**
- **Keyed for non-rotation**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**

A guide for ordering is on pages 60 and 61.

# STAINLESS STEEL JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| 2-Ton | 2-Ton Reverse Base | 5-Ton | 10-Ton | 15-Ton | 20-Ton | 25-Ton |
|---|---|---|---|---|---|---|
| SWJ62<br>SWJ122<br>SWJ242 | RSWJ62<br>RSWJ122<br>RSWJ242 | SWJ65<br>SWJ125<br>SWJ245 | SWJ810<br>SWJ2410 | SWJ815<br>SWJ2415 | SWJ820<br>SWJ2420 | SWJ1125<br>SWJ3225 |
| DSWJ62*<br>DSWJ122*<br>DSWJ242* | DRSWJ62*<br>DRSWJ122*<br>DRSWJ242* | DSWJ65*<br>DSWJ125*<br>DSWJ245* | DSWJ810*<br>DSWJ2410* | DSWJ815*<br>DSWJ2415* | DSWJ820*<br>DSWJ2420* | DSWJ1125*<br>DSWJ3225* |

Important Note: *Not self-locking, may lower under load. Brake motors or external locking systems are recommended.

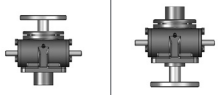
D: Double Lead Screw.

R: Reverse Base Jack (only available on 2-ton jacks).

(For 25:1 ratio contact Joyce.)

## Sample Part Number: RSWJ62U2S-6.00-STDX-STDX-B

### Jack Configuration



U=Upright I=Inverted

### End Conditions



1=T1
(plain end)



2=T2
(load pad)

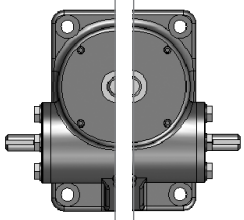


3=T3
(threaded end)



4=T4
(male clevis)

### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 61.

### Right Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 61.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Anti-Backlash p. 177**
A=Split Nut
A90=A90 Design
A95=A95 Design

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F2=Epoxy Paint
F3=Outdoor Paint Process

**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade

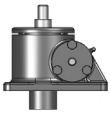
**Screw Stops**
ST0=Extending
ST1=Retracting
ST2=Both

* Specify as many options as needed

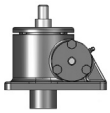
### Stainless Steel Screw Jack Rise

Rise is travel expressed in inches and not the actual screw length.

### Jack Designs



S=Translating



K=Keyed for Non Rotation



N=Traveling Nut



D=Double Clevis*



A=KFTN Trunnion*
T=Trunnion*

*Contact Joyce with your requirements.

# STAINLESS STEEL JACKS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the jack.

## Screw Stops (p. 10) and Boots (p. 166-168)

Stainless steel screw stops are optional on stainless steel jacks. When specified, the closed height of the jack and the protection tube length may be increased.

When boots are added to stainless steel jacks, the closed height of the jack may be increased.

## Mechanical Counters (p.176)

CNT0=0.001" Increments

Note: Contact Joyce for availability and options.



## Hand Wheels (p. 176)

HW04=4" dia
HW06=6" dia
HW08=8" dia
HW10=10" dia
HW12=12" dia



Recommended for self-locking jacks only.

## Geared Potentiometers (p. 171)

POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches

IP65 rated enclosures



## Encoders (pp. 172-173)

ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR



## Motors for Systems and Direct Drives (pp. 174-175)

- All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available. Specify the appropriate motor size from the chart on the right.
- Refer to the "Additional Options" chart on the preceding page as needed.
- Brake motors (M2) are recommended for jacks that are not self locking and jacks with double lead screws.
- If the motor frequency will be varied to provide a "soft" start, an inverter duty motor may be required.

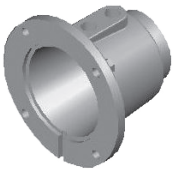
## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |
| 7-1/2 HP | H |
| 10 HP | I |
| 15 HP | J |

## Motor Mounts (pp. 174-175)

Ordering Example:

MMA A



MMA=56C
MMB=140TC
MMC=180TC
MMD=210TC

Motor code from chart at left

For servo motor mounts see p. 174

Standard motor adapters are aluminum.

## Mechanical Limit Switches (p. 170)

### Ordering Example: LA13

**Models**

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

**Available Positions**

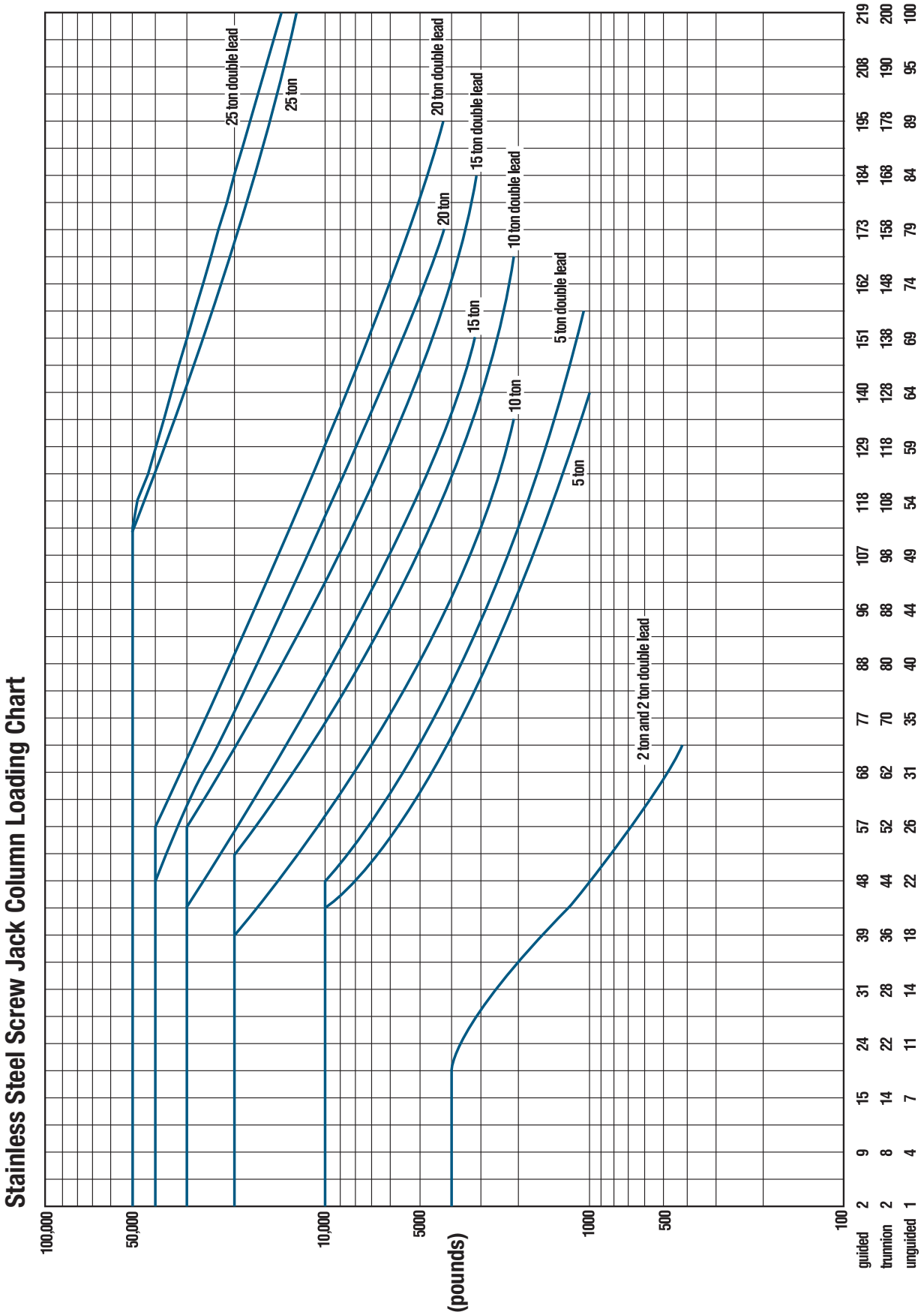
| | 1 | 2* | 3 | 4 | 5 | 6* | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 2, 5, 10, 15, and 20 ton stainless steel jacks are available with positions #1, #3, and #5.
- 25 ton stainless steel jacks are available with positions # 1, #4, #7, and #8.

*These positions are not standard. Contact Joyce with your requirements.

Note: Limit Switch housings are not stainless steel. Choose STEEL IT® epoxy paint option instead.

# STAINLESS STEEL JACKS COLUMN LOADING




This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.) The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact factory for assistance.

# STAINLESS STEEL JACKS SPECIFICATIONS

| Model | Capacity | Screw Diameter (inches) | Thread Pitch/Lead | Worm Gear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Efficiency Rating % Approx | Screw Torque (Inch Lbs.) | Basic Jack Weight (Lbs.) | Jack Weight per Inch Travel (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (R)SWJ62 | 2 ton | 1 | .250 pitch ACME 2C | 6:1 | 24 | 6 | .041W* | .028W* @ 500 RPM | 24.2 | .098W* | 15 | 0.3 |
| (R)SWJ122 | | | | 12:1 | 48 | | .025W* | .015W* @ 500 RPM | 22.0 | | | |
| (R)SWJ242 | | | | 24:1 | 96 | | .018W* | .009W* @ 500 RPM | 18.3 | | | |
| D(R)SWJ62 | | | .250 pitch .500 lead ACME 2C | 6:1 | 12 | | .057W* | .039W* @ 500 RPM | 33.7 | .139W* | | |
| D(R)SWJ122 | | | | 12:1 | 24 | | .035W* | .022W* @ 500 RPM | 30.5 | | | |
| D(R)SWJ242 | | | | 24:1 | 48 | | .025W* | .013W* @ 500 RPM | 25.4 | | | |
| SWJ65 | 5 ton | 1 1/2 | .375 pitch STUB ACME | 6:1 | 16 | 15 | .065W* | .044W* @ 300 RPM | 23.0 | .151W* | 32 | 0.7 |
| SWJ125 | | | | 12:1 | 32 | | .041W* | .025W* @ 300 RPM | 20.6 | | | |
| SWJ245 | | | | 24:1 | 64 | | .029W* | .015W* @ 300 RPM | 16.7 | | | |
| DSWJ65 | | | .250 pitch .500 lead STUB ACME | 6:1 | 12 | | .072W* | .050W* @ 300 RPM | 26.8 | .171W* | | |
| DSWJ125 | | | | 12:1 | 24 | | .045W* | .028W* @ 300 RPM | 23.9 | | | |
| DSWJ245 | | | | 24:1 | 48 | | .033W* | .017W* @ 300 RPM | 19.6 | | | |
| SWJ810 | 10 ton | 2 | .500 pitch ACME 2C | 8:1 | 16 | 30 | .061W* | .043W* @ 200 RPM | 23.1 | .195W* | 43 | 1.3 |
| SWJ2410 | | | | 24:1 | 48 | | .030W* | .018W* @ 200 RPM | 18.8 | | | |
| DSWJ810 | | | .333 pitch .667 lead ACME 2C | 8:1 | 12 | | .070W* | .062W* @ 200 RPM | 31.9 | .228W* | | |
| DSWJ2410 | | | | 24:1 | 36 | | .035W* | .026W* @ 200 RPM | 25.9 | | | |
| SWJ815 | 15 ton | 2 1/4 | .500 pitch ACME 2C | 8:1 | 16 | 45 | .069W* | .047W* @ 200 RPM | 21.1 | .210W* | 59 | 1.4 |
| SWJ2415 | | | | 24:1 | 48 | | .036W* | .020W* @ 200 RPM | 16.6 | | | |
| DSWJ815 | | | .333 pitch .667 lead ACME 2C | 8:1 | 12 | | .079W* | .058W* @ 200 RPM | 34.4 | .244W* | | |
| DSWJ2415 | | | | 24:1 | 36 | | .041W* | .025W* @ 200 RPM | 27 | | | |
| SWJ820 | 20 ton | 2 1/2 | .500 pitch ACME 2C | 8:1 | 16 | 60 | .075W* | .051W* @ 200 RPM | 19.6 | .227W* | 77 | 1.9 |
| SWJ2420 | | | | 24:1 | 48 | | .039W* | .022W* @ 200 RPM | 15.4 | | | |
| DSWJ820 | | | .375 pitch .750 lead ACME 2C | 8:1 | 10.67 | | .088W* | .061W* @ 200 RPM | 24.5 | .272W* | | |
| DSWJ2420 | | | | 24:1 | 32 | | .046W* | .026W* @ 200 RPM | 19.3 | | | |
| SWJ1125 | 25 ton | 3 3/8 | .666 pitch STUB ACME | 11:1 | 16 | 75 | .088W* | .055W* @ 200 RPM | 18.3 | .313W* | 164 | 3.1 |
| SWJ3225 | | | | 32:1 | 48 | | .053W* | .025W* @ 200 RPM | 13.5 | | | |
| DSWJ1125 | | | .5625 pitch 1.125 lead ACME 2C | 11:1 | 9.5 | | .106W* | .067W* @ 200 RPM | 25.1 | .384W* | | |
| DSWJ3225 | | | | 32:1 | 28.5 | | .063W* | .030W* @ 200 RPM | 18.6 | | | |

Important Note: Series DSWJ models may lower under load. Brake motors or external locking systems are recommended.

(R): Reverse Base Jack.

*W: Load in pounds.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving the rated load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to JAX® Online to determine actual torque values at your RPM.

Screw Torque: Torque required to resist screw rotation (Translating Design Jacks) and traveling nut rotation (Keyed for Traveling Nut Design Jacks).

Lead: The distance traveled axially in one rotation of the lifting screw.

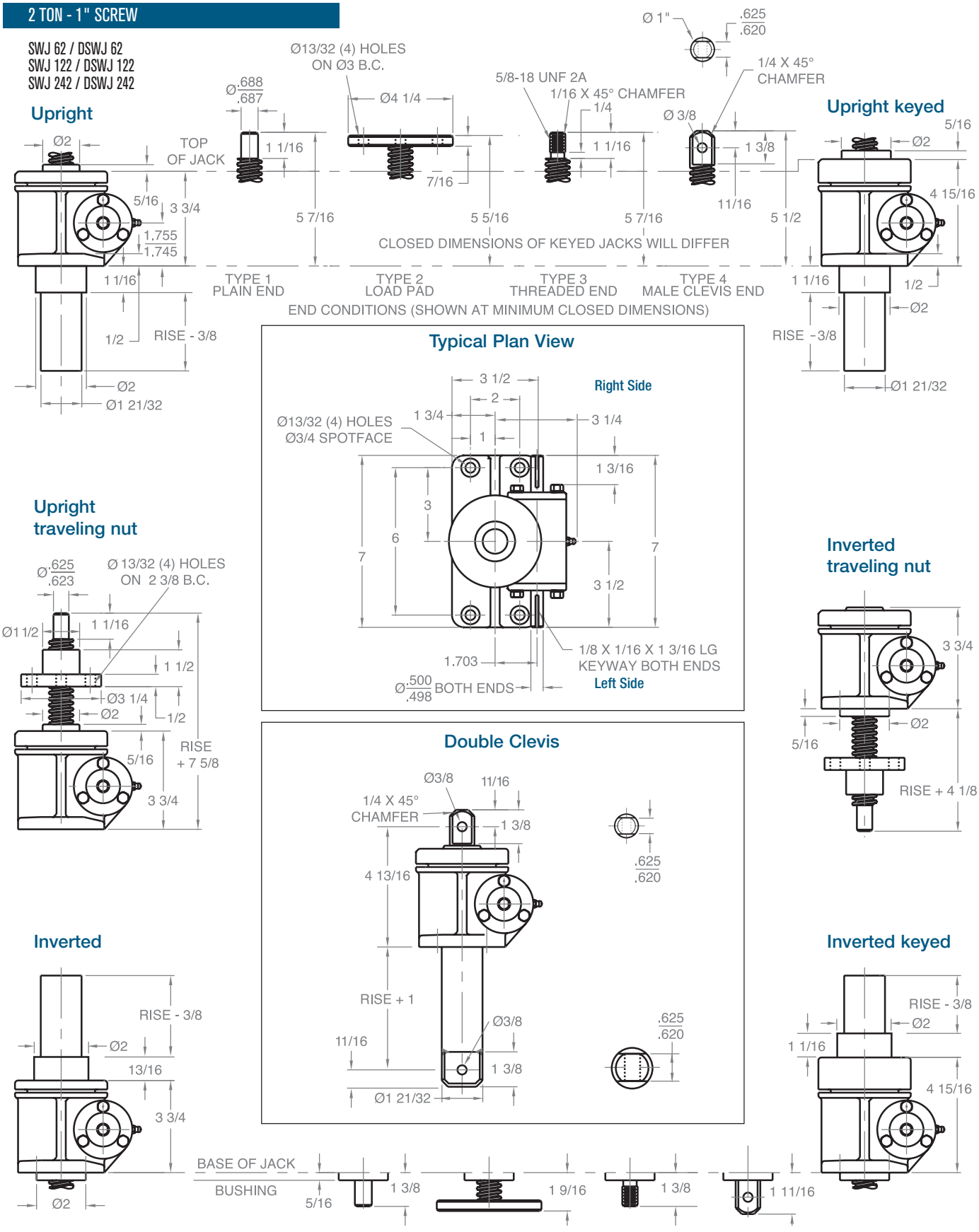
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.

Note: This chart is provided for reference only. For specific information such as column loading, allowable continuous travel and other performance factors please refer to JAX® Online software or contact Joyce.

# STAINLESS STEEL JACKS

## 2 TON - 1" SCREW

SWJ 62 / DSWJ 62
SWJ 122 / DSWJ 122
SWJ 242 / DSWJ 242

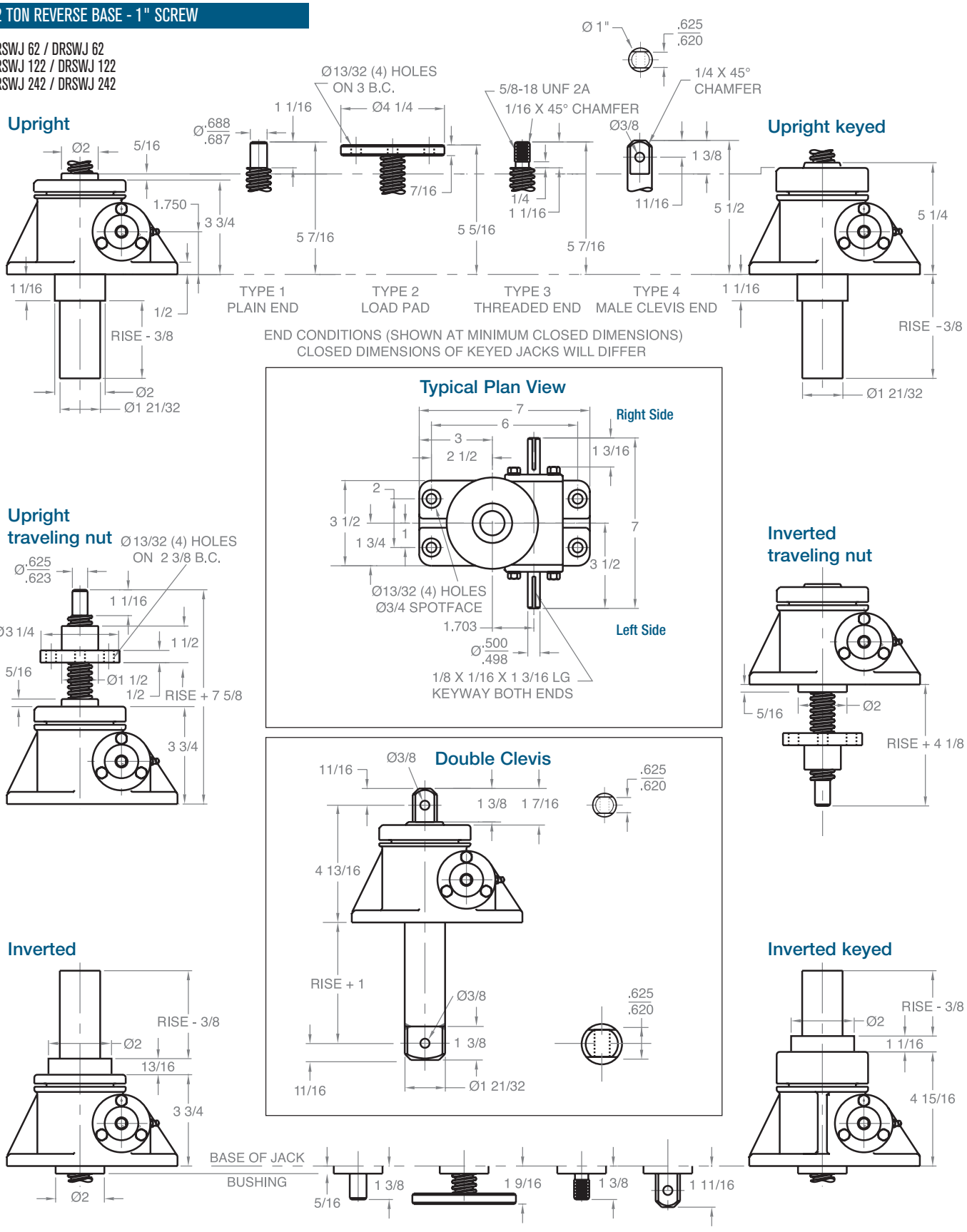



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 2 TON REVERSE BASE - 1" SCREW

RSWJ 62 / DRSWJ 62
RSWJ 122 / DRSWJ 122
RSWJ 242 / DRSWJ 242

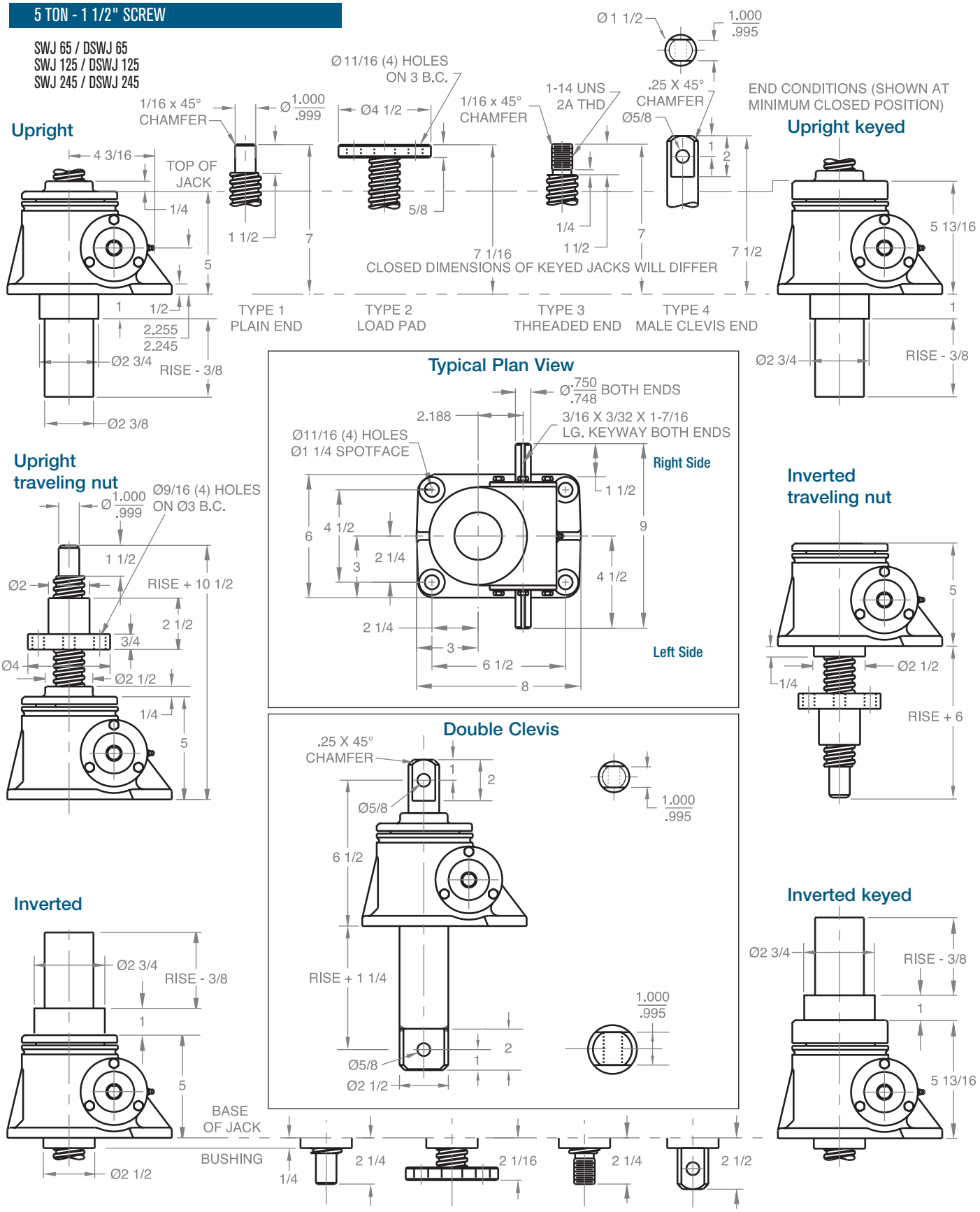



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 5 TON - 1 1/2" SCREW

SWJ 65 / DSWJ 65
SWJ 125 / DSWJ 125
SWJ 245 / DSWJ 245

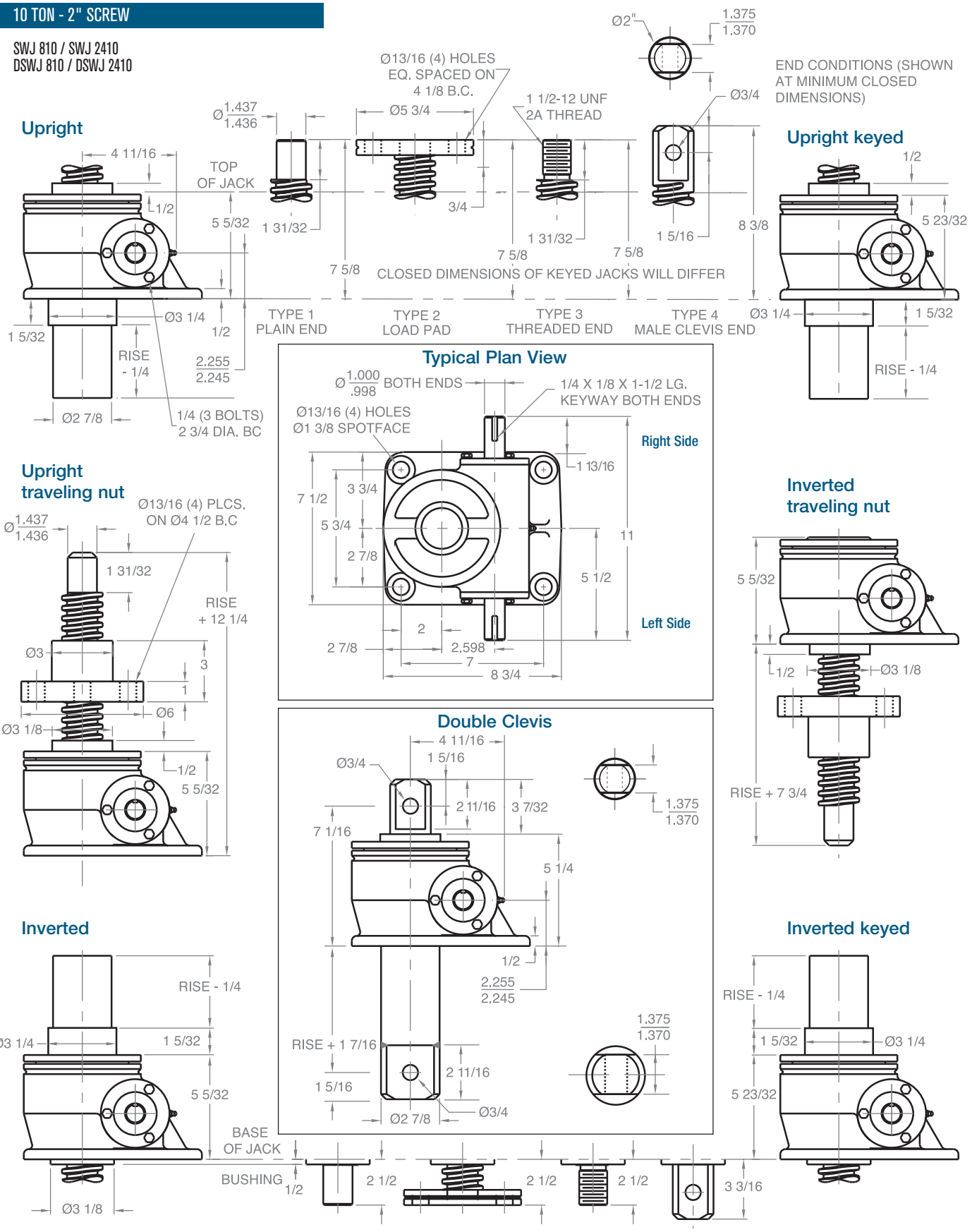



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 10 TON - 2" SCREW

SWJ 810 / SWJ 2410
DSWJ 810 / DSWJ 2410

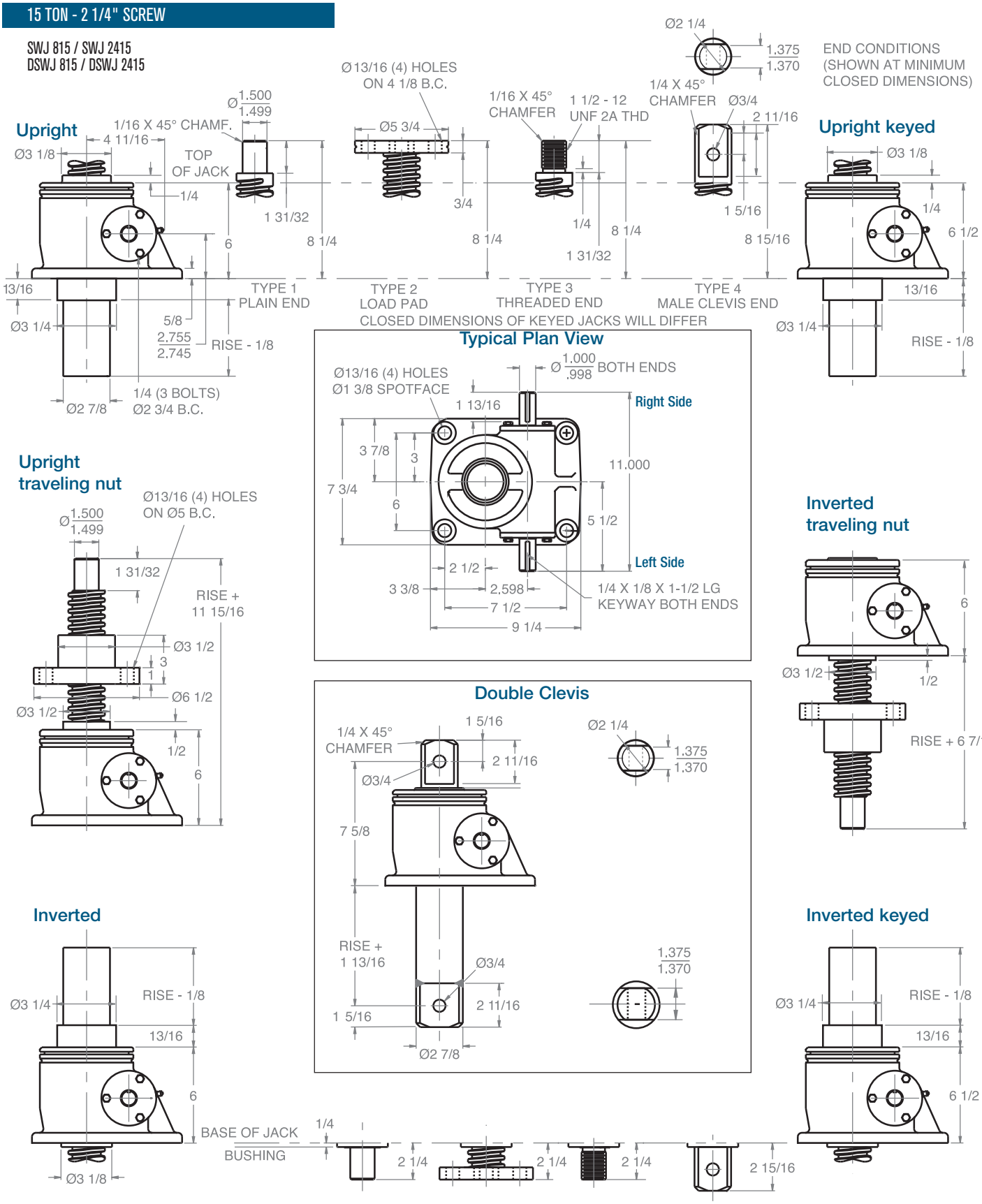



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 15 TON - 2 1/4" SCREW

SWJ 815 / SWJ 2415
DSWJ 815 / DSWJ 2415

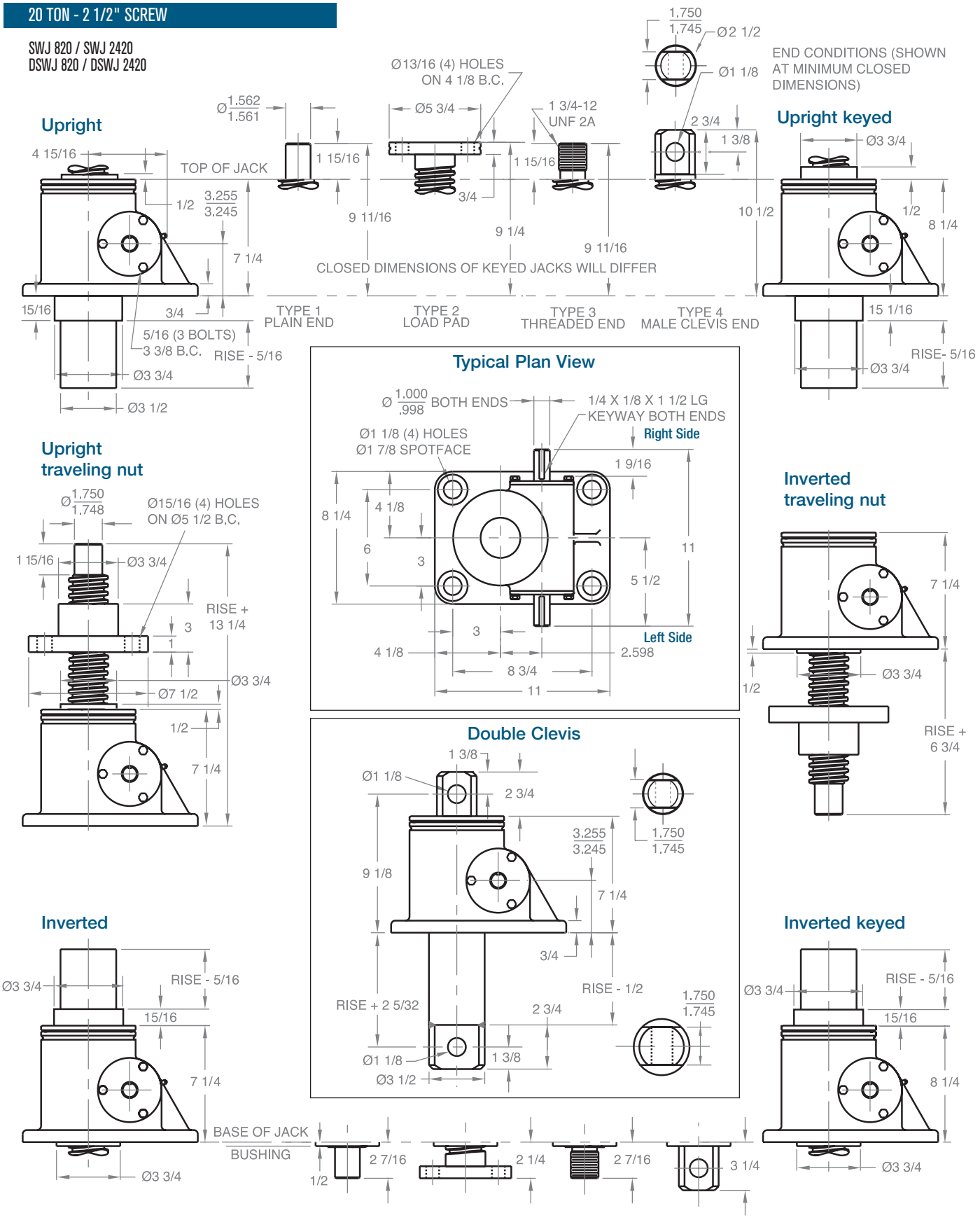



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 20 TON - 2 1/2" SCREW

SWJ 820 / SWJ 2420
DSWJ 820 / DSWJ 2420

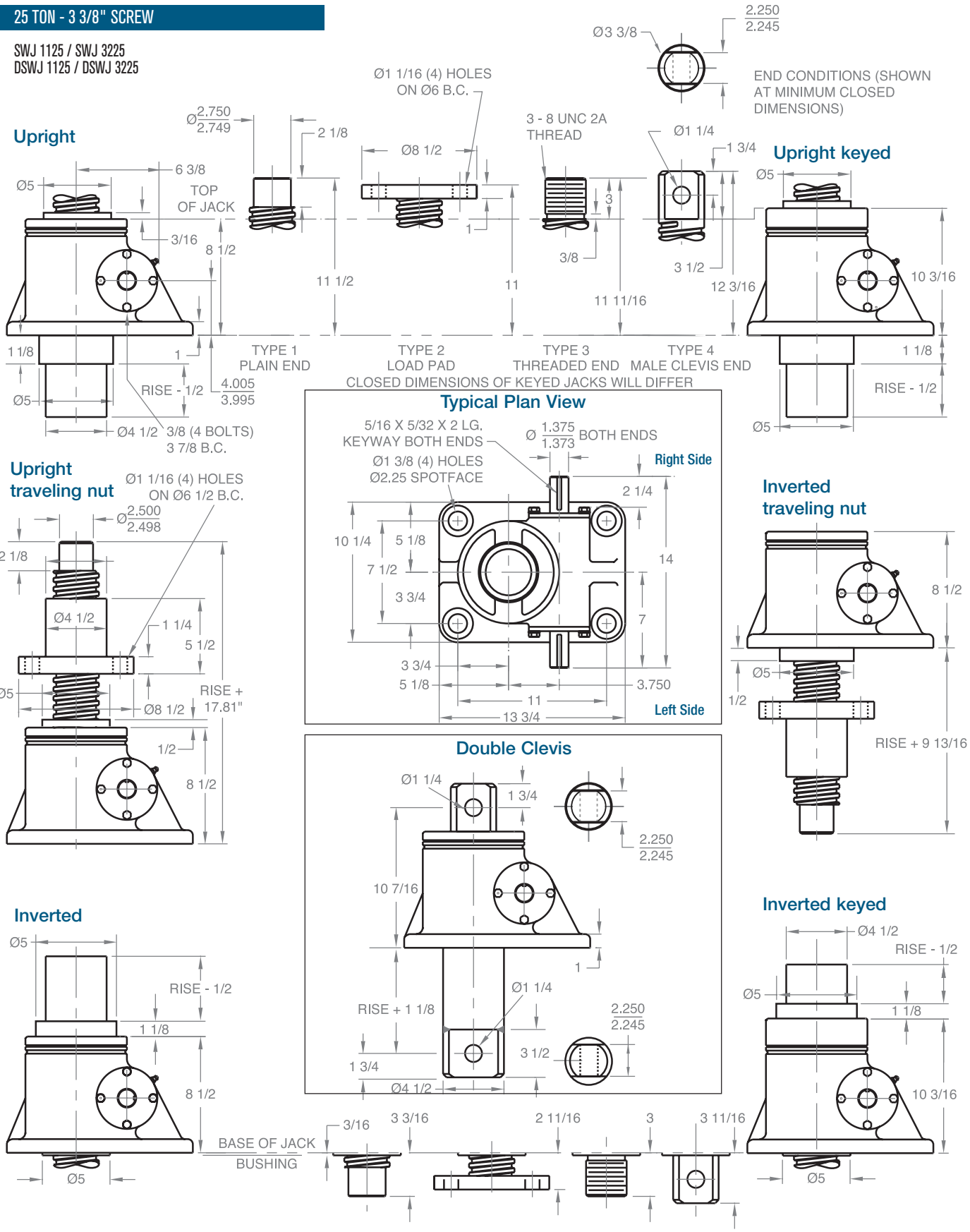



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# STAINLESS STEEL JACKS

## 25 TON - 3 3/8" SCREW

SWJ 1125 / SWJ 3225
DSWJ 1125 / DSWJ 3225




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# METRIC SCREW JACKS

**Joyce offers Metric Screw Jacks in several designs including:**
- **Translating**
- **Keyed for non-rotation**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**

A guide for ordering is on pages 72 and 73.




Joyce metric screw jacks, series MWJ, are specifically designed for positioning and lifting applications that must be fully metric. These jacks are commonly used in OEM machinery manufactured in the U.S. and shipped to other countries around the world. They are fully interchangeable with several European products.

Metric screw jacks are available in four capacities: 10 kN, 25 kN, 50 kN, and 100 kN. MWJ screw jacks feature:

- Industry standard metric (trapezoidal) lifting screw diameters and pitches.
- Fully metric mounting hole locations, diameters and fasteners.
- Alloy steel worm shafts and bronze wormgears and traveling nuts.
- Tapered roller or ball thrust bearings provide rugged reliability.

Both upright and inverted configurations of these precision jacks operate at full capacity whether the load is in tension or compression. All MWJ jacks are self-locking under full capacity.

Metric screw jacks are available with one of four standard screw ends or special ends to meet your requirements. Double input shafts are standard. An optional anti-backlash feature (page 181) compensates for thread wear, assuring minimum play between lifting screw and wormgear for smooth, precise operation. All jack designs can be fitted with protective boots.

Joyce can customize metric screw jacks to meet your specifications.

Scan the QR Code to view this product on our website.

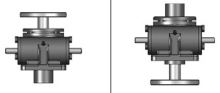
# METRIC SCREW JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| 10 kN | 25 kN | 50 kN | 100 kN |
|---|---|---|---|
| MWJ51<br>MWJ201 | MWJ62.5<br>MWJ122.5<br>MWJ242.5 | MWJ65<br>MWJ125<br>MWJ245 | MWJ810<br>MWJ2410 |

## Sample Part Number: MWJ65U2S-300–STDX–STDX-B

### Jack Configuration



U=Upright I=Inverted

### End Conditions



1=T1
(plain end)



2=T2
(load pad)

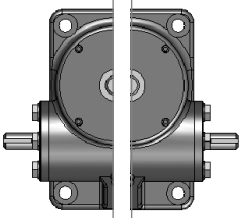


3=T3
(threaded end)



4=T4
(male clevis)

### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 73.

### Right Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 73.

### Metric Screw Jack Rise

Rise is travel expressed in millimeters and not the actual screw length.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Anti-Backlash p. 177**
A=Split Nut
A90=A90 Design
A95=A95 Design

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

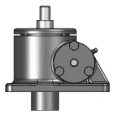
**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade

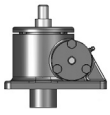
**Screw Stops**
ST0=Extending
ST1=Retracting
ST2=Both

* Specify as many options as needed

### Jack Designs



S=Translating



K=Keyed for Non Rotation



N=Traveling Nut



D=Double Clevis*



A=KFTN Trunnion*
T=Trunnion*

*Contact Joyce with your requirements.

# METRIC SCREW JACKS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the jack.

## Screw Stops (p. 10) and Boots (pp. 166-168)

Screw stops are optional on metric screw jacks. When specified, the closed height of the jack and the protection tube length may be increased.

When boots are added to metric jacks, the closed height of the jack may be increased.

## Mechanical Counters (p. 176)

CNT0=0.025 mm increments

Note: Contact Joyce for availability and options.



## Hand Wheels (p. 176)

HW04=4" dia. (102 mm)
HW06=6" dia. (152 mm)
HW08=8" dia (203 mm)
HW10=10" dia (254 mm)
HW12=12" dia (305 mm)



Recommended for self-locking jacks only.

## Geared Potentiometers (p. 171)

POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures



## Encoders (pp. 172-173)

ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR



## Motors for Systems and Direct Drives (pp. 178-179)

- All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available. Specify the appropriate motor size from the chart on the right.
- Refer to the "Additional Options" chart on the preceding page as needed.
- If the motor frequency will be varied to provide a "soft" start, an inverter duty motor may be required.
- International voltage motors are available.

## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |

## Motor Mounts (pp. 178-179)

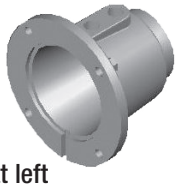
Ordering Example:

MMA A

MMA=56C
MMB=140TC
MMC=180TC
MMD=210TC

Motor code from chart at left

For servo motor mounts see p. 174



- Standard motor adapters are aluminum.
- Motor adapters for many IEC motors are available as an option.

## Mechanical Limit Switches (p. 170)

Ordering Example: LA13

### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

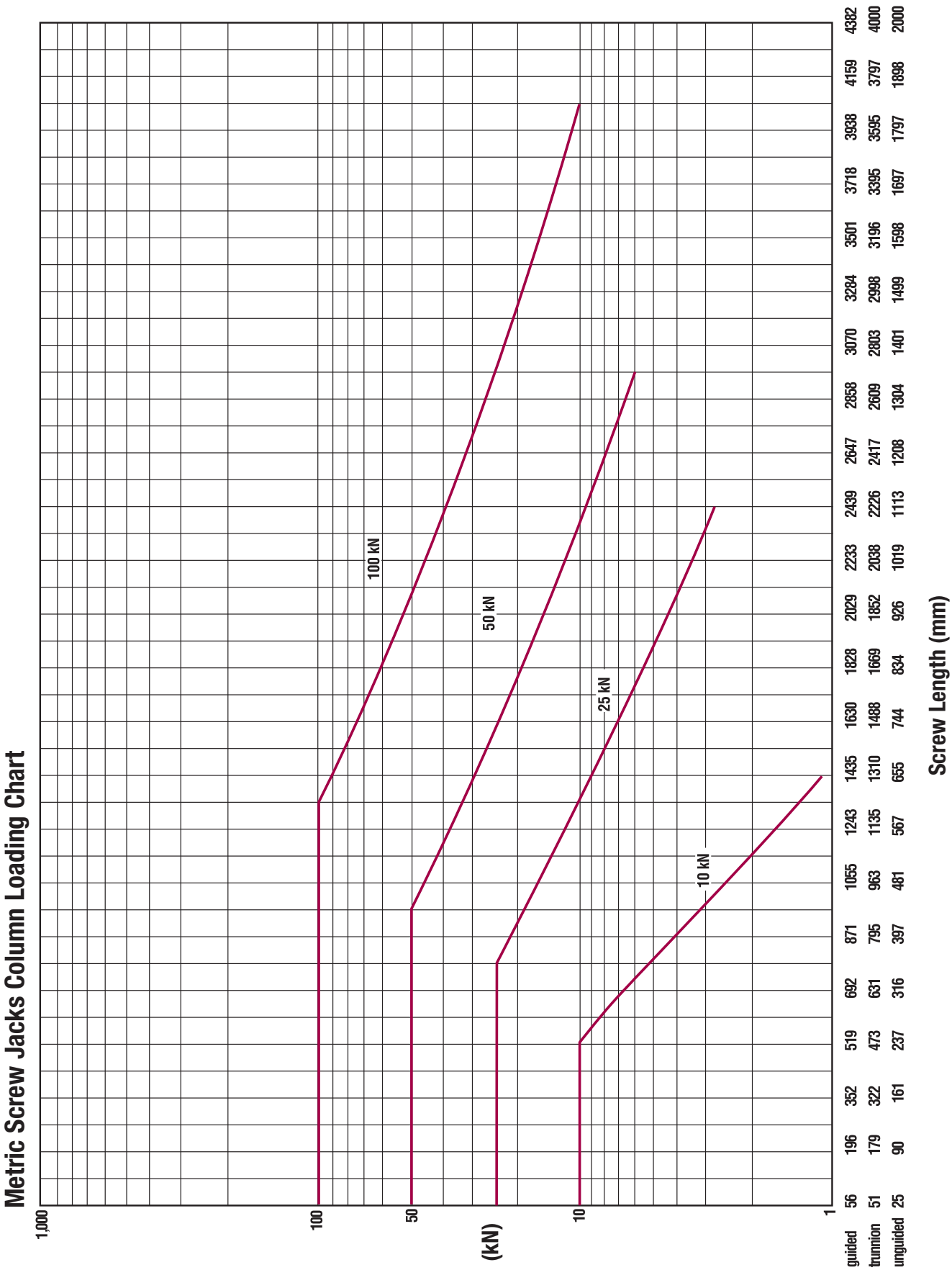
### Available Positions

| | 1 | 2* | 3 | 4* | 5 | 6* | 7* | 8* |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 25 kN, 50 kN, and 100 kN metric jacks are available with positions #1, #3, and #5.

*These positions are not standard. Contact Joyce with your requirements.

# METRIC SCREW JACKS COLUMN LOADING




This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading
The horizontal portion of each line represents the jack's maximum static capacity. Under static conditions, these lines can be exceeded. Please contact the factory for assistance.

# METRIC SCREW JACKS SPECIFICATIONS

| Model | Capacity | Screw Diameter (mm) | Thread Pitch/Lead | Worm Gear Ratio | Worm Shaft Turns for 1mm Travel | Tare Torque (Nm) | Starting Torque (Nm) | Operating Torque (Nm) | Efficiency Rating % Approx. | Screw Torque (Nm) | Basic Jack Weight (Kg) | Screw Weight (Kg) per 25mm Travel |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MWJ51 | 10kN | 20 | 5mm | 5:1 | 1 | 0.33 | .95W* | .70W* @ 500 RPM | 22.7 | 2W* | 2.7 | 0.14 |
| MWJ201 | | | | 20:1 | 4 | | .41W* | .23W* @ 500 RPM | 17.0 | | | |
| MWJ62.5 | 25kN | 30 | 6mm | 6:1 | 1 | 0.67 | 1.01W* | .81W* @ 500 RPM | 19.6 | 3W* | 6.8 | 0.18 |
| MWJ122.5 | | | | 12:1 | 2 | | .62W* | .45W* @ 500 RPM | 17.8 | | | |
| MWJ242.5 | | | | 24:1 | 4 | | .44W* | .27W* @ 500 RPM | 14.7 | | | |
| MWJ65 | 50kN | 40 | 9mm | 6:1 | 0.67 | 1.13 | 1.64W* | 1.14W* @ 300 RPM | 20.9 | 4W* | 14.5 | 0.32 |
| MWJ125 | | | | 12:1 | 1.33 | | 1.03W* | .64W* @ 300 RPM | 18.7 | | | |
| MWJ245 | | | | 24:1 | 2.67 | | .74W* | .39W* @ 300 RPM | 15.2 | | | |
| MWJ810 | 100kN | 55 | 12mm | 8:1 | 0.67 | 2.26 | 1.53W* | 1.18W* @ 200 RPM | 20.2 | 5W* | 19.5 | 0.59 |
| MWJ2410 | | | | 24:1 | 2 | | .76W* | .49W* @ 200 RPM | 16.1 | | | |

*W: Load in kN.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving a given load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Screw Torque: Torque required to resist screw rotation (Translating Design Jacks) and traveling nut rotation (Keyed for Traveling Nut Design Jacks).

Lead: The distance traveled axially in one rotation of the lifting screw.

Pitch: The distance from a point on a screw thread to a corresponding point on the next thread measured axially.

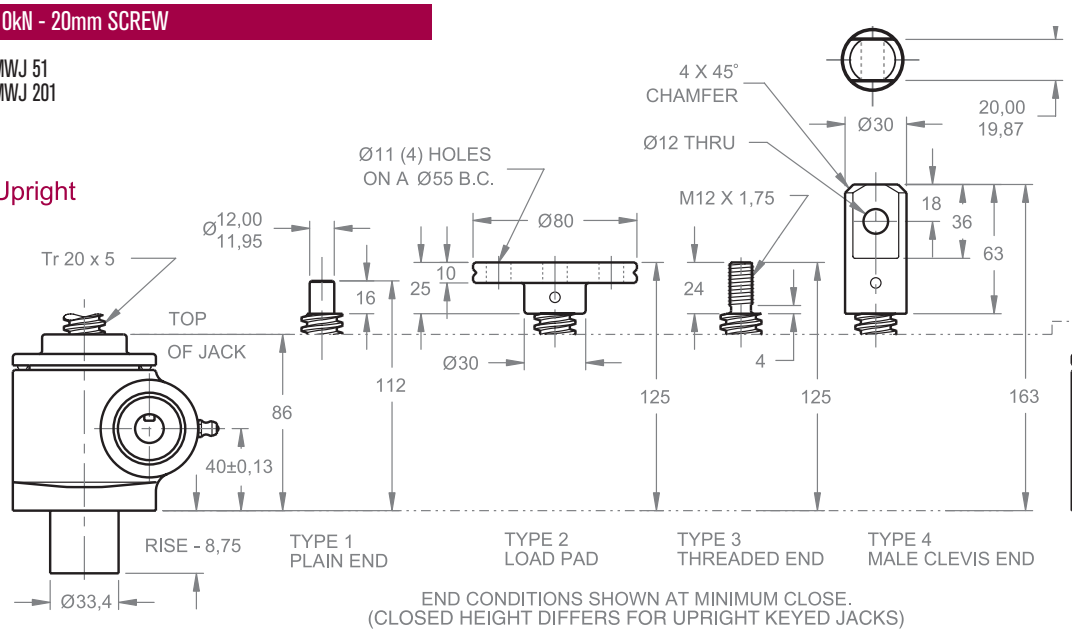
Note: This chart is provided for reference only. For specific information such as column loading allowable continuous travel and other performance factors please contact Joyce/Dayton.

# METRIC SCREW JACKS

## 10kN - 20mm SCREW

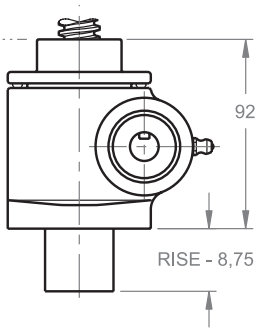
MWJ 51
MWJ 201

### Upright

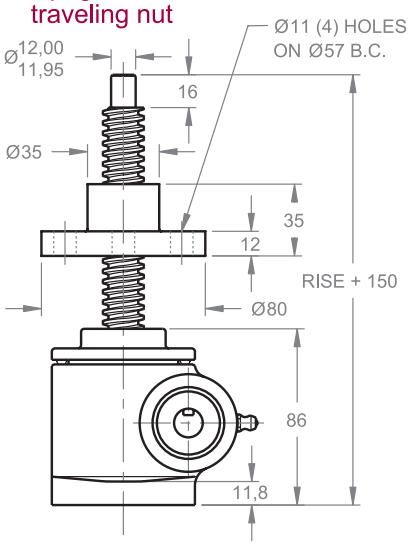



END CONDITIONS SHOWN AT MINIMUM CLOSE.
(CLOSED HEIGHT DIFFERS FOR UPRIGHT KEYED JACKS)

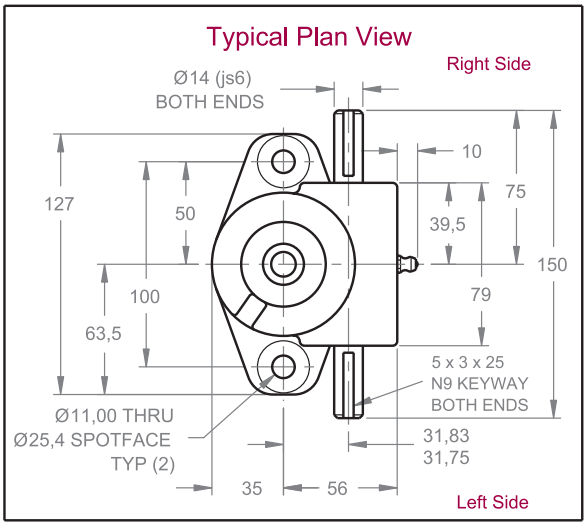
### Upright keyed



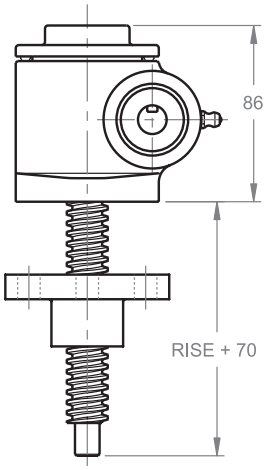

### Upright traveling nut



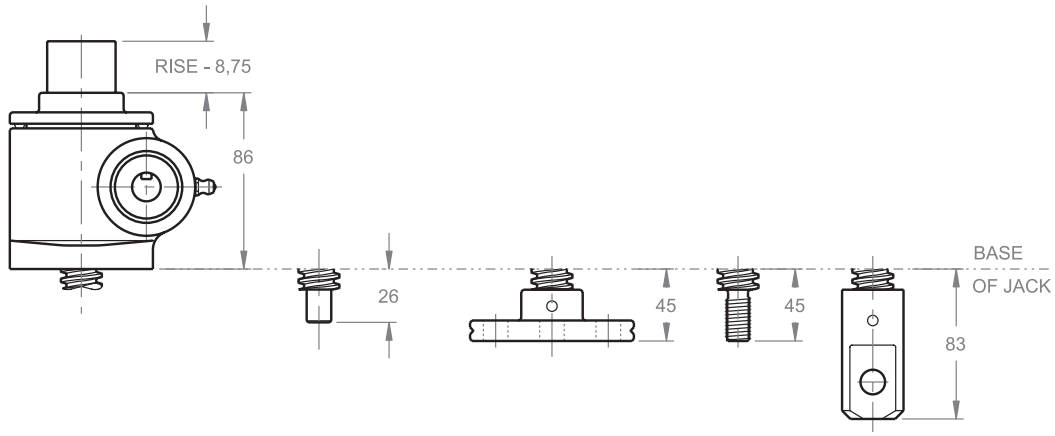

### Typical Plan View



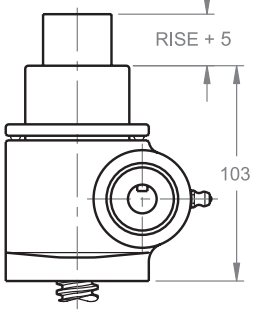

### Inverted traveling nut




### Inverted




### Inverted keyed



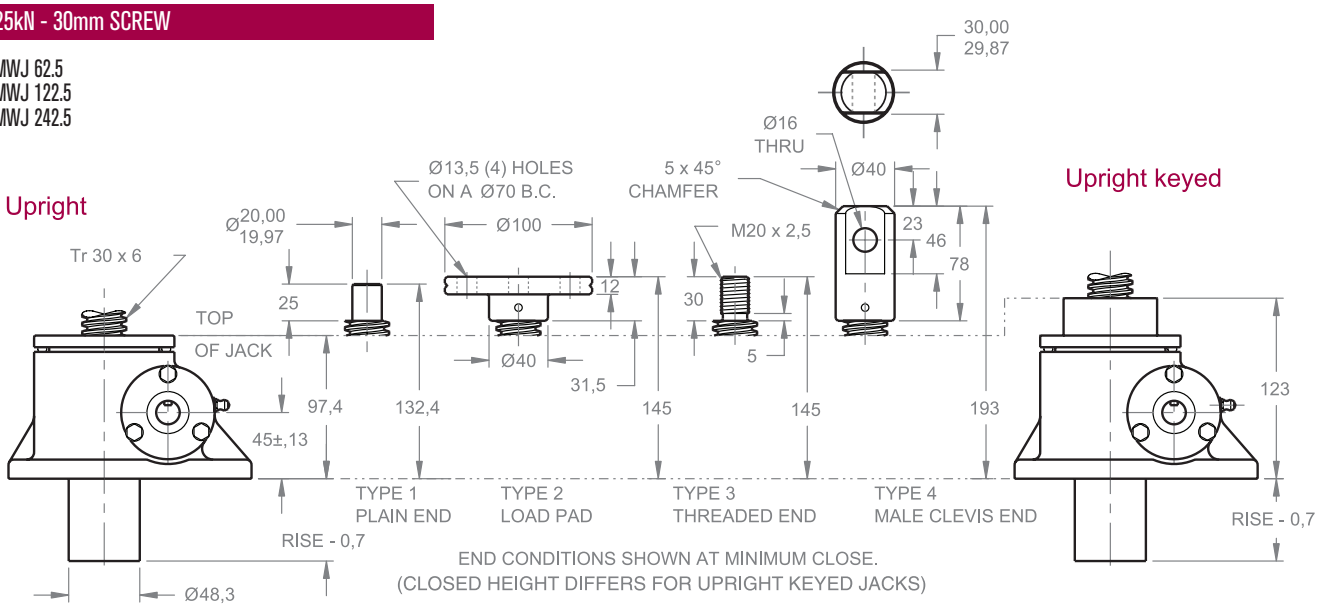

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# METRIC SCREW JACKS

## 25kN - 30mm SCREW

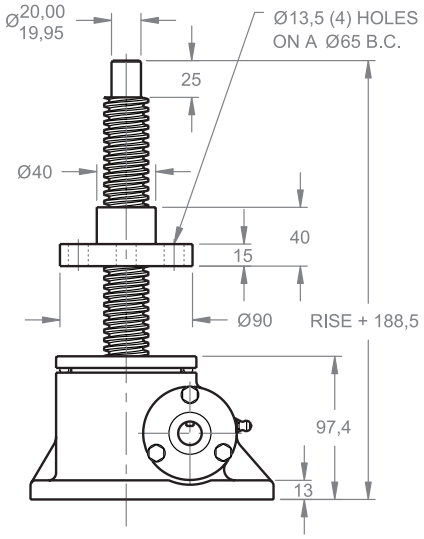
MWJ 62.5
MWJ 122.5
MWJ 242.5

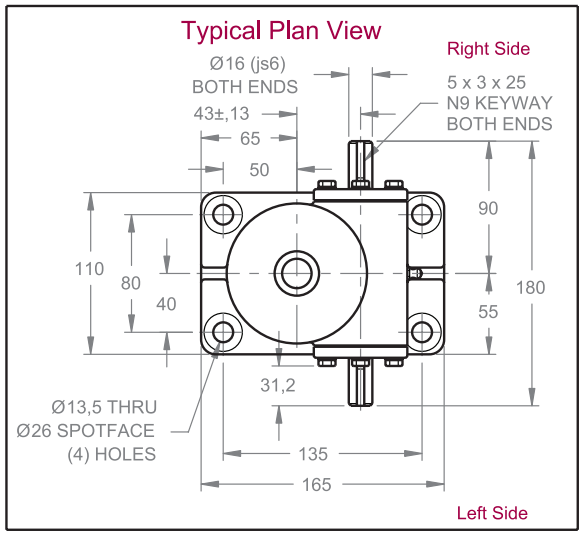
### Upright



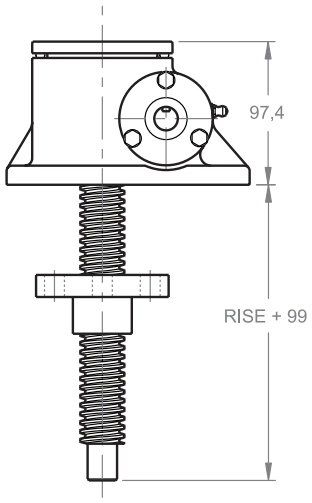

### Upright keyed

### Upright traveling nut

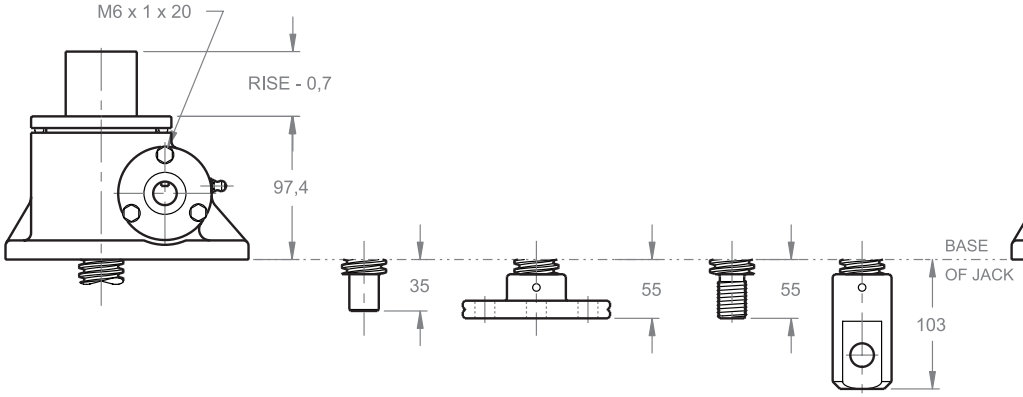


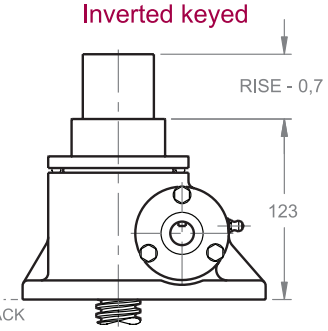

### Inverted traveling nut




### Inverted




### Inverted keyed

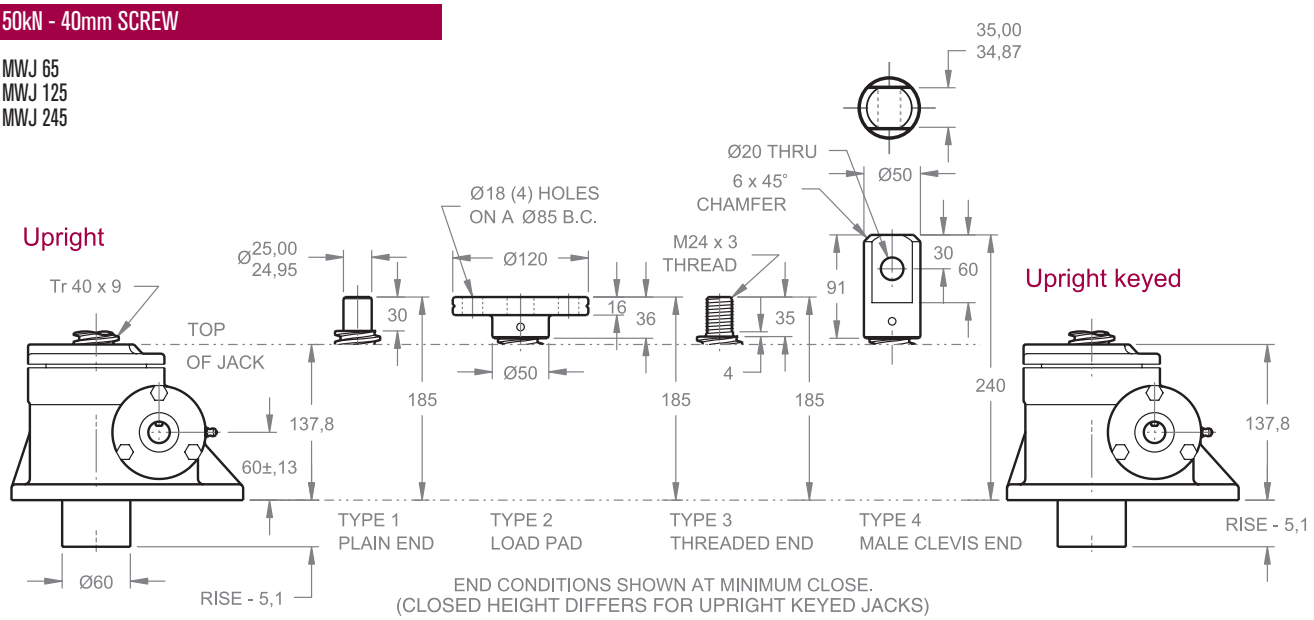


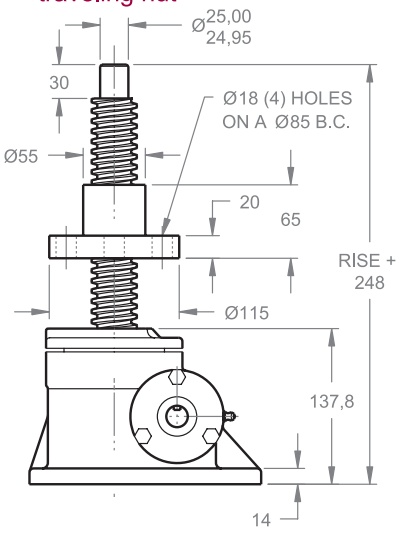

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

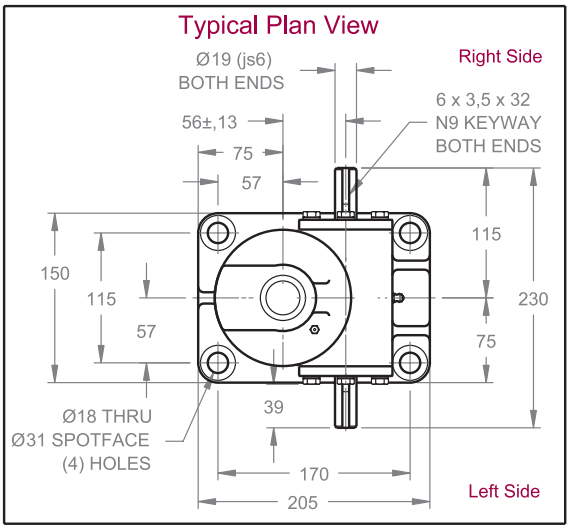
# METRIC SCREW JACKS

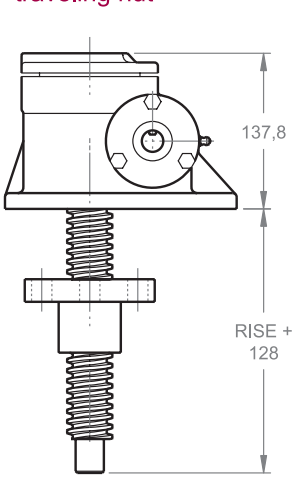
## 50kN - 40mm SCREW

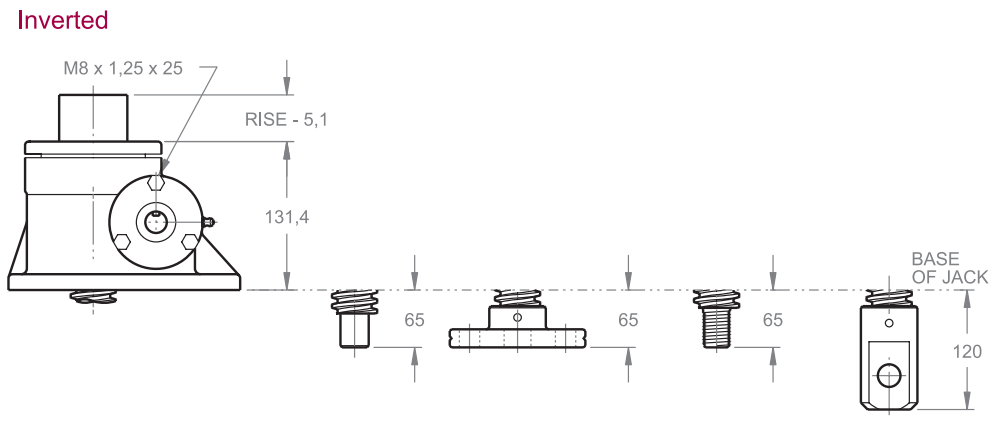
MWJ 65
MWJ 125
MWJ 245

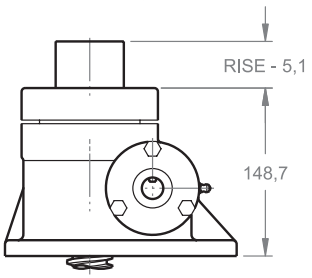


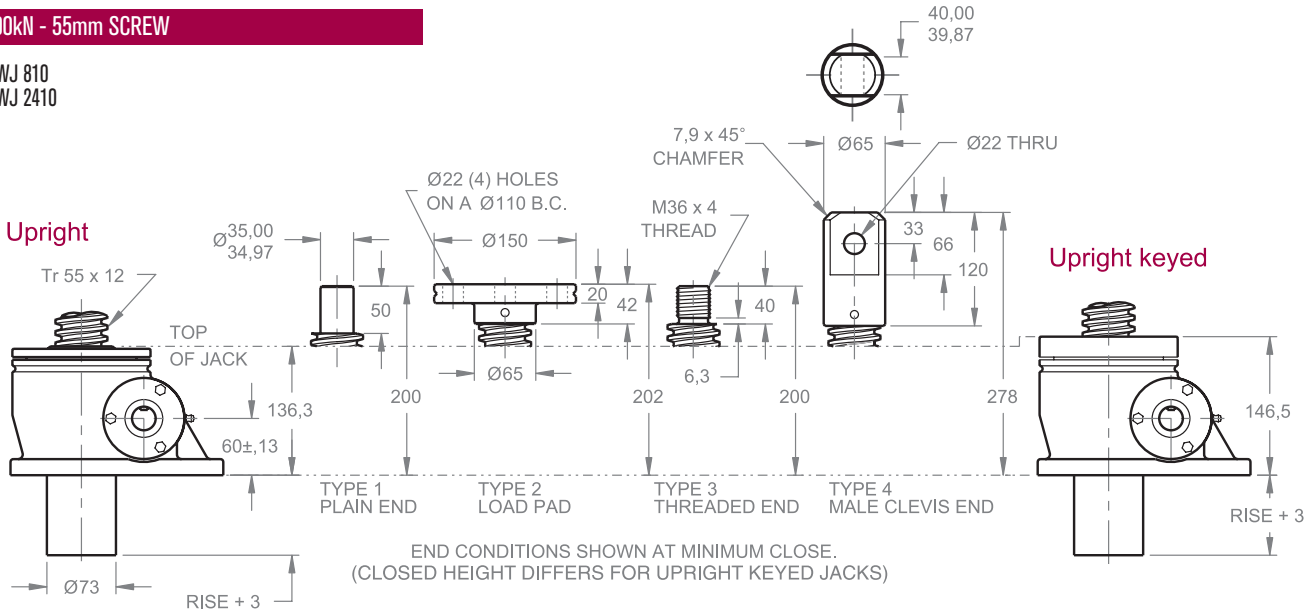



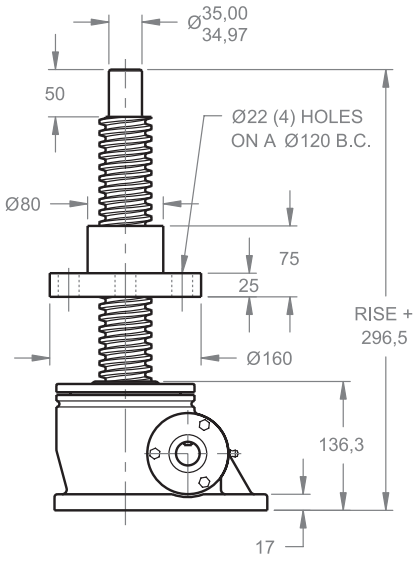

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

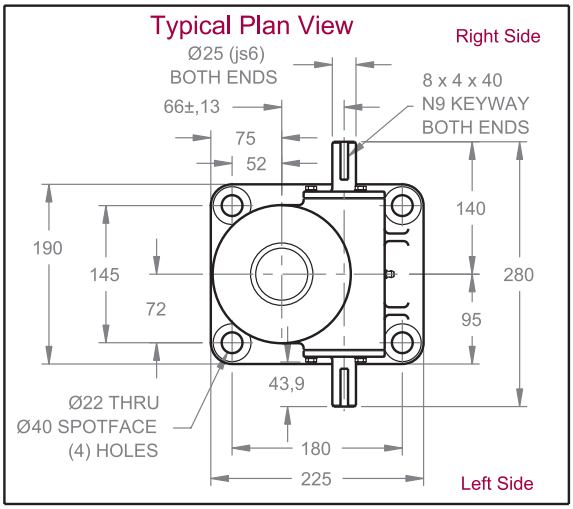
# METRIC SCREW JACKS

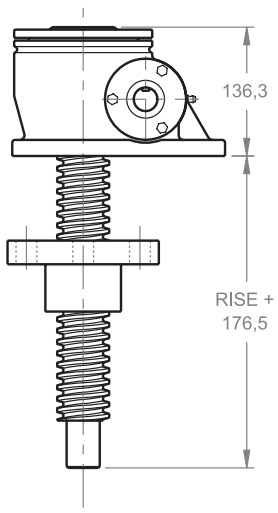
## 100kN - 55mm SCREW

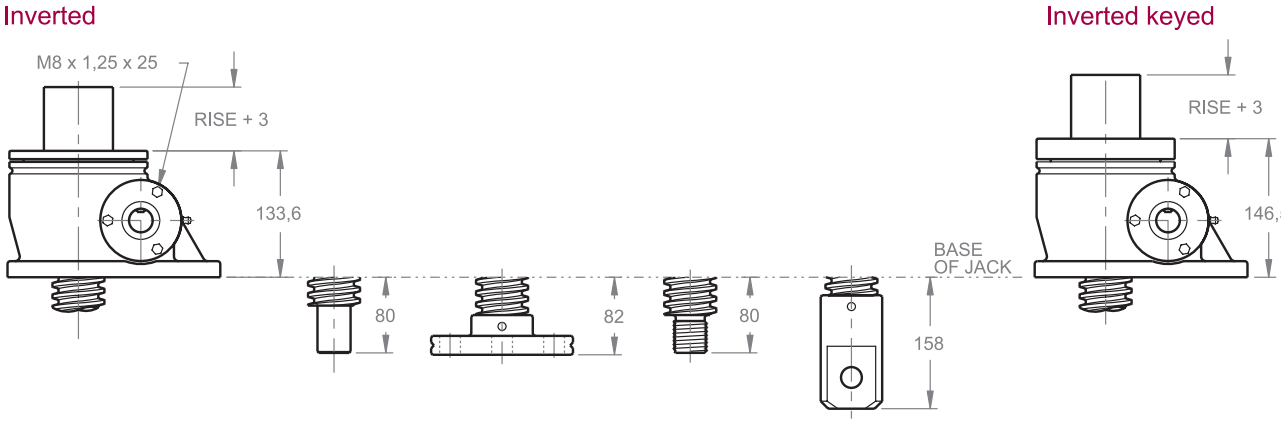
MWJ 810
MWJ 2410




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.



Joyce ball screw jacks feature a ball nut with integral ball bearings that circulate along the surface of the ball screw. This significantly reduces friction between the ball nut and the ball screw, resulting in greater efficiency. Ball screw jacks require up to two-thirds less input torque to move the load than similarly rated machine screw jacks. They require a brake motor or external locking device to hold position.

Both upright and inverted ball screw jacks are available to lift and precisely position loads up to 50 tons. Alloy steel input shafts, aluminum bronze wormgears and tapered roller or ball thrust bearings provide rugged reliability. Select from standard lead (WB, WBL) and high lead (HWB, HWBL) models to meet your travel speed and ball nut life requirements.

Compared to machine screw jacks, Joyce ball screw jacks:

- Require less motor horsepower.
- Allow higher travel speed.
- Provide an extended duty cycle.

Joyce ball screw jacks are available with one of four standard screw ends or special ends to meet your requirements. Double input shafts are standard. Many options are available including oversized ball bearings, which can be specified to reduce endplay between ball screw and ball nut. All jack designs can be fitted with protective boots.

Joyce can customize ball screw jacks to meet your specifications.

Scan the QR Code to view this product on our website.

# BALL SCREW JACKS




**Joyce offers Ball Screw Jacks in several designs including:**

- **Translating**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**
- **Trunnion mount**

A guide for ordering is on pages 82 and 83.

# BALL SCREW JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| 1-Ton Standard | 2-Ton Standard | 2-Ton Reverse Base Standard | 5-Ton Standard | 10-Ton Standard | 10-Ton Heavy Duty | 20-Ton Standard | 30-Ton Standard | 50-Ton Standard |
|---|---|---|---|---|---|---|---|---|
| WBL51<br>WBL201 | WB62<br>WB122<br>WB242 | RWB62<br>RWB122<br>RWB242 | WB65<br>WB125<br>WB245 | WBL810<br>WBL2410 | WB810<br>WB2410 | WB820<br>WB2420 | WB1130<br>WB3230 | WB1150<br>WB3250 |
| **1-Ton Heavy Duty** | **2-Ton High Lead** | **2-Ton Reverse Base High Lead** | **5-Ton High Lead** | **10-Ton Standard High Lead** | **10-Ton Heavy Duty High Lead** | | | **50-Ton Reverse Base** |
| WB51<br>WB201 | HWB62<br>HWB122<br>HWB242 | RHWB62<br>RHWB122<br>RHWB242 | HWB65<br>HWB125<br>HWB245 | HWBL810<br>HWBL2410 | HWB810<br>HWB2410 | | | RWB1150<br>RWB3250 |

Important Note: *Not self-locking, may lower under load. Brake motors or external locking systems are required.
** Keyed for non-rotation is not a standard option. Contact sales@joycedayton.com

H: indicates High lead (2-ton, 5-ton and 10-ton only).

R: Reverse Base Jack (2-ton and 50-ton only).

For additional sizes contact our team at:
sales@joycedayton.com or call (937) 294-6261.

## Sample Part Number: WB65U4S-6.0-STDX-STDX-B

### Jack Configuration


U=Upright


I=Inverted

### End Conditions

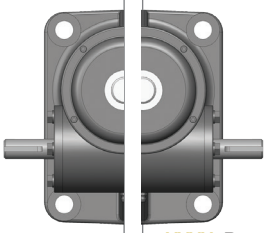

1=T1
(plain end)


2=T2
(load pad)


3=T3
(threaded end)


4=T4
(male clevis)

### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 83.

### Right Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 83.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade

**Screw Stops**
ST0=Extending

* Specify as many options as needed

### Ball Screw Jack Rise

Rise is travel expressed in inches and not the actual screw length.

### Jack Designs


S=Translating


K=Keyed for Non Rotation**


N=Traveling Nut


D=Double Clevis


A=KFTN Trunnion*
T=Trunnion*

*Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 179)

**Keyed for non-rotation is not a standard option. Contact Joyce with your requirements.

# BALL SCREW JACKS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the jack.

## Screw Stops (p. 10) and Boots (pp. 166-168)

Extending Screw stops are optional on ball screw jacks. When specified the closed height of the jack and the protection tube length may be increased.
When boots are added to ball screw jacks, the closed height of the jack may be increased.

## Geared Potentiometers (p. 171)

POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures



## Encoders (pp. 172-173)

ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR



## Motors for Systems and Direct Drive (pp. 174-175)

- All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available. Specify the appropriate motor size from the chart on the right.
- Refer to the "Additional Options" chart on the preceding page as needed.
- Brake motors (M2) are required for ball screw jacks.
- If the motor frequency will be varied to provide a "soft" start, an inverter duty brake motor may be required.

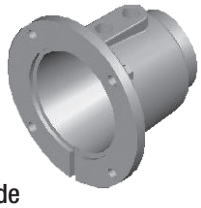
## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |
| 7-1/2 HP | H |
| 10 HP | I |
| 15 HP | J |

## Motor Mounts (pp. 174-175)

Ordering Example:

MMA A



MMA=56C
MMB=140TC
MMC=180TC
MMD=210TC

Motor code from chart at left

For servo motor mounts see p. 174

Standard motor adapters are aluminum.

## Mechanical Limit Switches (p. 170)

Ordering Example: LA13

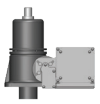
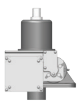
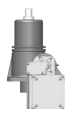
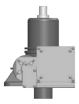
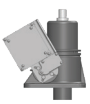
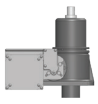
### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

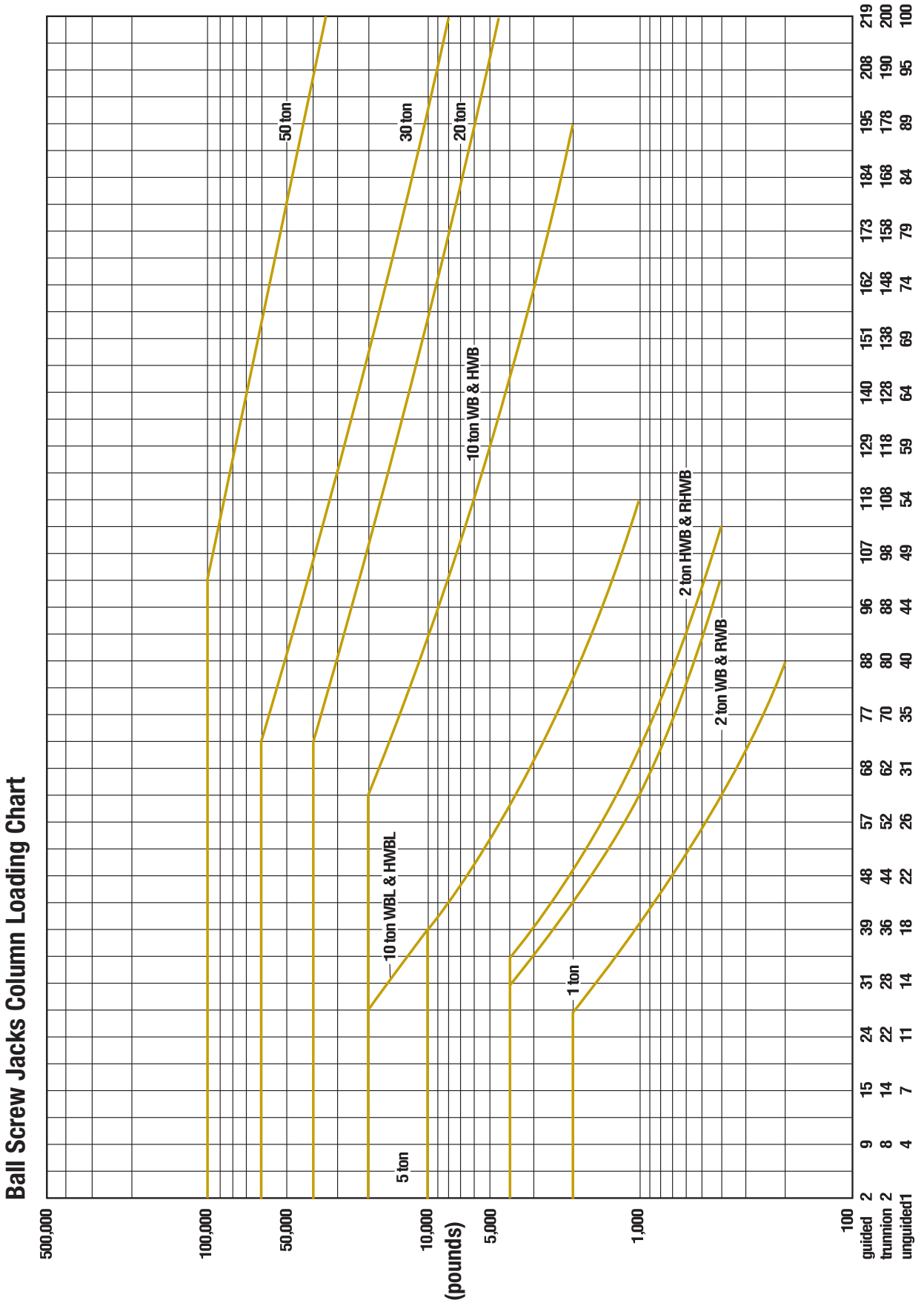
### Available Positions

| | 1 | 2* | 3 | 4 | 5 | 6* | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 2, 5, 10, 15, and 20 Ton ball screw jacks are available with positions #1, #3, and #5.
- 30-ton and 50-ton ball screw jacks are available with positions #1, #4, #7 and #8.

*These positions are not standard. Contact Joyce with your requirements.

# BALL SCREW JACKS COLUMN LOADING




This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.) The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact factory for assistance.

# BALL SCREW JACKS SPECIFICATIONS

| Model | Capacity | Screw Diameter (Inches) | Thread Pitch/Lead | Worm Gear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Efficiency Rating % Approx | Screw Torque (Inch Lbs.) | Worm Holding Torque | Ball Nut Life at Rated Load (Inch Screw Travel x 1000) | Basic Jack Weight (Lbs.) | Screw Weight per Inch Travel (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WBL51 | 1 ton | 3/4 | 0.2 | 5:1 | 25 | 3 | .014W* | .012W* @ 500 RPM | 51.7 | .035W* | .006W* | 108 | 8 | 0.25 |
| WBL201 | | | | 20:1 | 100 | | .005W* | .004W* @ 500 RPM | 38.5 | | .002W* | | | |
| WB51 | | | | 5:1 | 25 | | .014W* | .012W* @ 500 RPM | 51.7 | | .006W* | 858 | | |
| WB201 | | | | 20:1 | 100 | | .005W* | .004W* @ 500 RPM | 38.5 | | .002W* | | | |
| (R)WB62 | 2 ton | 1 | 0.25 | 6:1 | 24 | 4 | .015W* | .013W* @ 500 RPM | 52.1 | .044W* | .007W* | 642 | 18 | 0.4 |
| (R)WB122 | | | | 12:1 | 48 | | .009W* | .007W* @ 500 RPM | 47.2 | | .004W* | | | |
| (R)WB242 | | | | 24:1 | 96 | | .006W* | .004W* @ 500 RPM | 39.3 | | .002W* | | | |
| (R)HWB62 | | | 1.0 | 6:1 | 6 | | .064W* | .051W* @ 500 RPM | 52.1 | .177W* | .033W* | 190 | | |
| (R)HWB122 | | | | 12:1 | 12 | | .039W* | .028W* @ 500 RPM | 47.2 | | .020W* | | | |
| (R)HWB242 | | | | 24:1 | 24 | | .028W* | .017W* @ 500 RPM | 39.3 | | .014W* | | | |
| WB65 | 5 ton | 1 1/2 | 0.474 | 6:1 | 12.66 | 10 | .030W* | .025W* @ 300 RPM | 51.1 | .084W* | .013W* | 1015 | 42 | 0.7 |
| WB125 | | | | 12:1 | 25.33 | | .019W* | .014W* @ 300 RPM | 45.7 | | .007W* | | | |
| WB245 | | | | 24:1 | 50.66 | | .013W* | .008W* @ 300 RPM | 37.2 | | .004W* | | | |
| HWB65 | | | 1.0 | 6:1 | 6 | | .065W* | .052W* @ 300 RPM | 51.1 | 0.177W* | .033W* | 512 | | |
| HWB125 | | | | 12:1 | 12 | | .041W* | .029W* @ 300 RPM | 45.7 | | .020W* | | | |
| HWB245 | | | | 24:1 | 24 | | .029W* | .018W* @ 300 RPM | 37.2 | | .014W* | | | |
| WBL810 | 10 ton | 1 1/2 | 0.474 | 8:1 | 16.88 | 20 | .022W* | .019W* @ 200 RPM | 50.7 | .084W* | .010W* | 127 | 58 | 0.9 |
| WBL2410 | | | | 24:1 | 50.66 | | .010W* | .008W* @ 200 RPM | 40.3 | | .004W* | | | |
| HWBL810 | | | 1.0 | 8:1 | 8 | | .047W* | .039W* @ 200 RPM | 50.7 | .177W* | .024W* | 64 | | |
| HWBL2410 | | | | 24:1 | 24 | | .024W* | .016W* @ 200 RPM | 40.3 | | .012W* | | | |
| WB810 | 10 ton | 2 | 0.5 | 8:1 | 16 | 20 | .023W* | .019W* @ 200 RPM | 50.7 | .088W* | .009W* | 729 | 62 | 1.4 |
| WB2410 | | | | 24:1 | 48 | | .011W* | .008W* @ 200 RPM | 40.3 | | .003W* | | | |
| HWB810 | | | 1.0 | 8:1 | 8 | | .047W* | .039W* @ 200 RPM | 50.7 | .177W* | .018W* | 1423 | | |
| HWB2410 | | | | 24:1 | 24 | | .023W* | .016W* @ 200 RPM | 40.3 | | .006W* | | | |
| WB820 | 20 ton | 2 1/4 | 0.5 | 8:1 | 16 | 40 | .024W* | .020W* @ 200 RPM | 47.4 | .088W* | .009W* | 121 | 105 | 2.6 |
| WB2420 | | | | 24:1 | 48 | | .012W* | .009W* @ 200 RPM | 35 | | .003W* | | | |
| WB1130 | 30 ton | 3 | 0.66 | 11:1 | 16.67 | 60 | .027W* | .020W* @ 200 RPM | 48 | .117W* | .009W* | 343 | 220 | 3.2 |
| WB3230 | | | | 32:1 | 48.48 | | .016W* | .009W* @ 200 RPM | 35 | | .003W* | | | |
| (R)WB1150 | 50 ton | 4 | 1.0 | 11:1 | 11 | 100 | .038W* | .029W* @ 200 RPM | 49.3 | .177W* | .013W* | 614 | 460 | 4.8 |
| (R)WB3250 | | | | 32:1 | 32 | | .020W* | .012W* @ 200 RPM | 37.5 | | .005W* | | | |

Important Note: Ball Screw Jacks are not self-locking. Brake motors or external locking systems are required.

(R): Reverse Base Jack.

*W: Load in pounds.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving a given load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Screw Torque: Torque required to resist screw rotation (Translating Design Jacks) and traveling nut rotation (Keyed for Traveling Nut Design Jacks).

Worm Holding Torque: Torque required to prevent input shaft (worm) from backdriving.

Lead: The distance traveled axially in one rotation of the lifting screw.

Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.

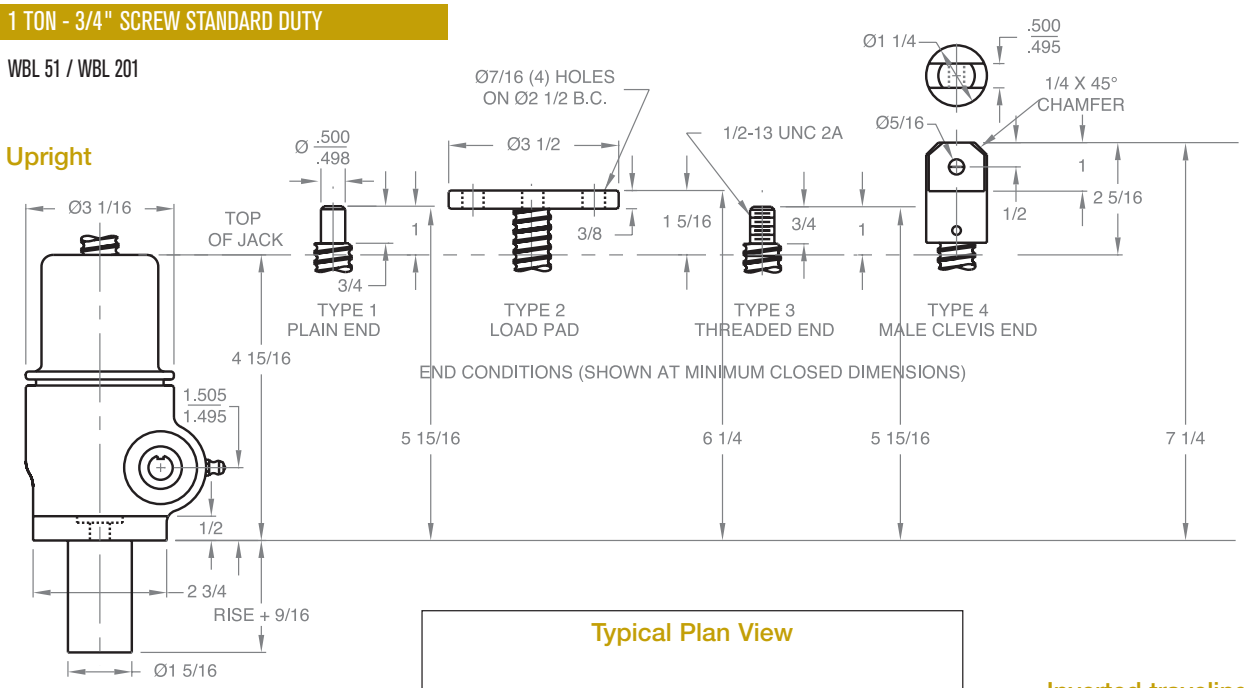
Note: This chart is provided for reference only. For specific information such as column loading, ball nut life and other performance factors please refer to JAX® Online software or contact Joyce.

# BALL SCREW JACKS

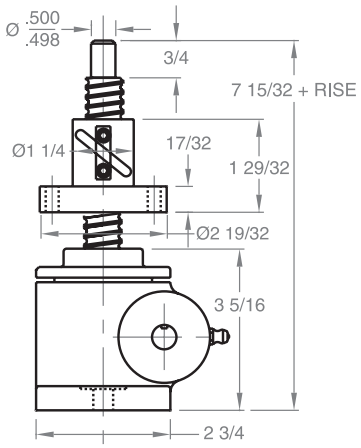
## 1 TON - 3/4" SCREW STANDARD DUTY

WBL 51 / WBL 201

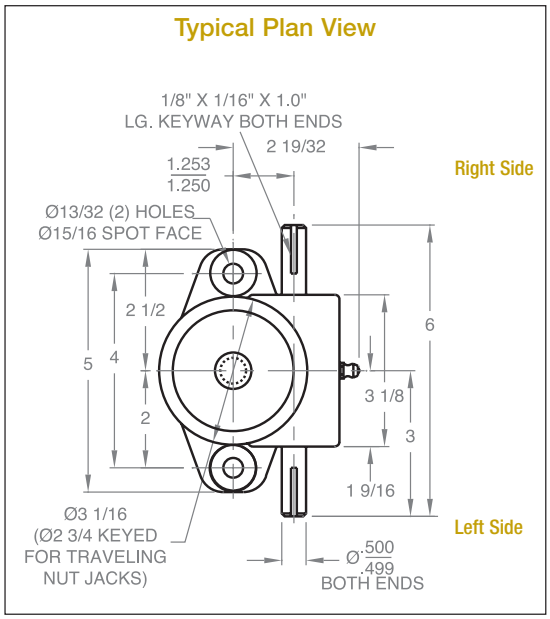
### Upright



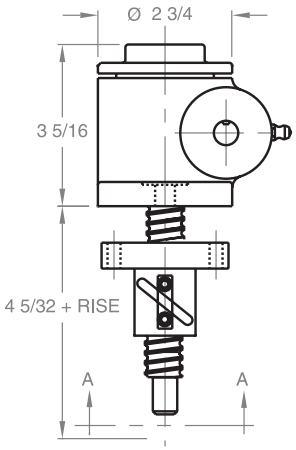

### Upright traveling nut



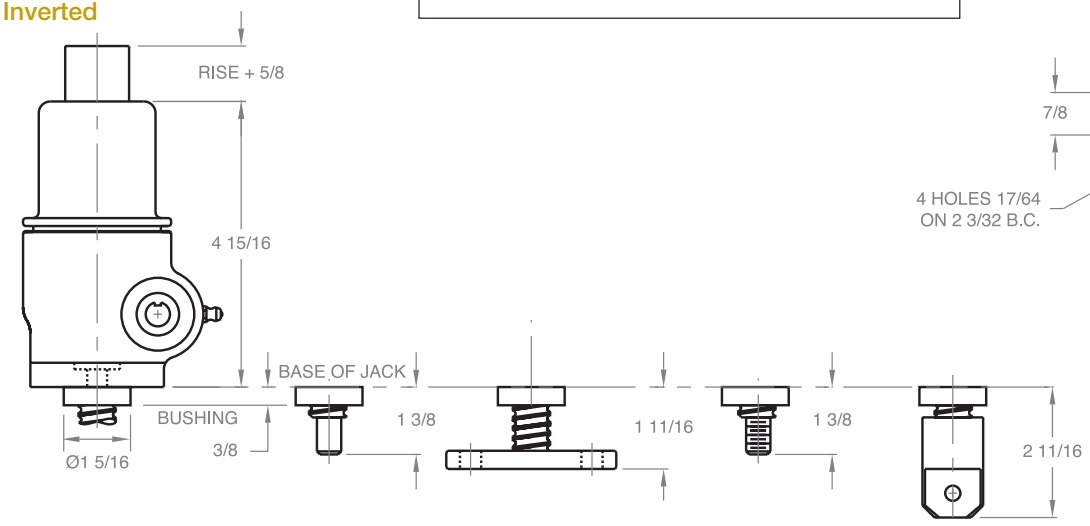

### Typical Plan View

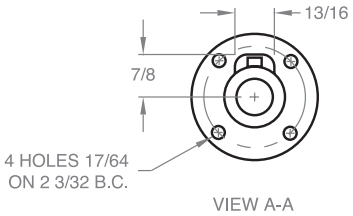



### Inverted traveling nut




### Inverted



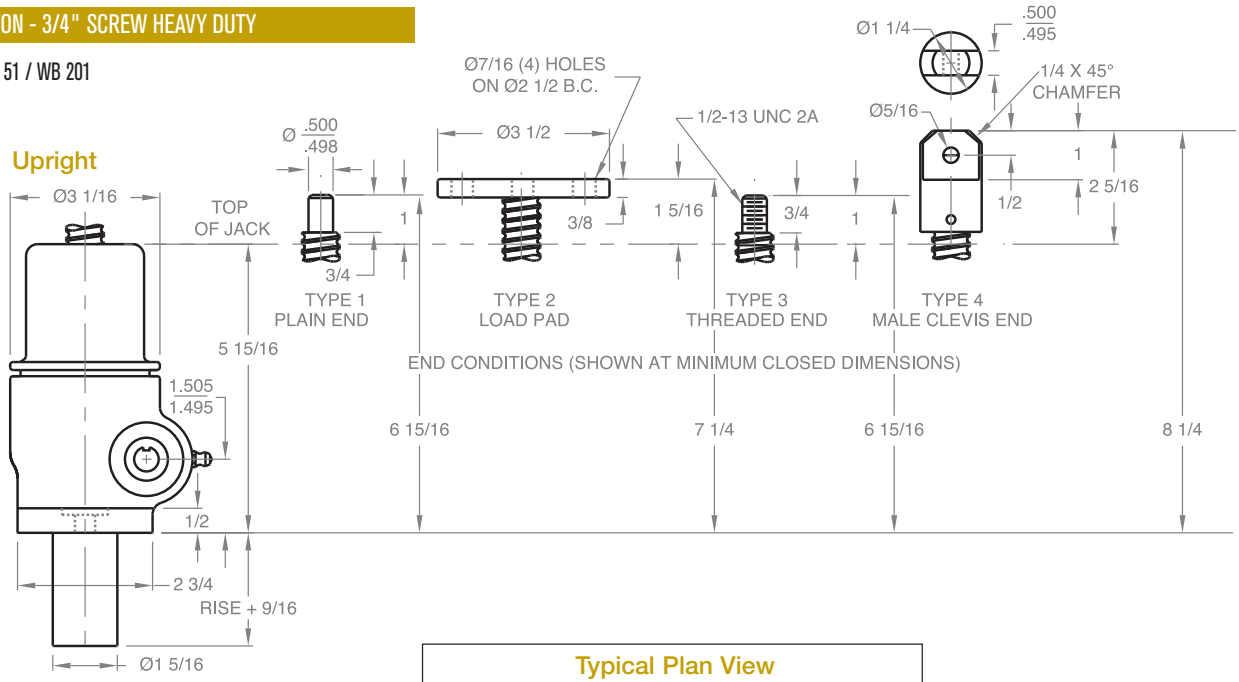

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW JACKS

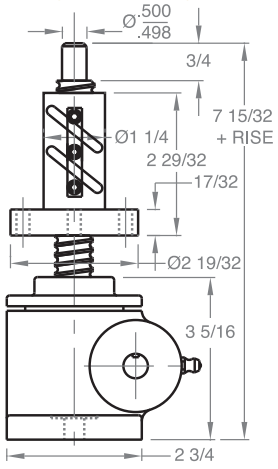
## 1 TON - 3/4" SCREW HEAVY DUTY

WB 51 / WB 201

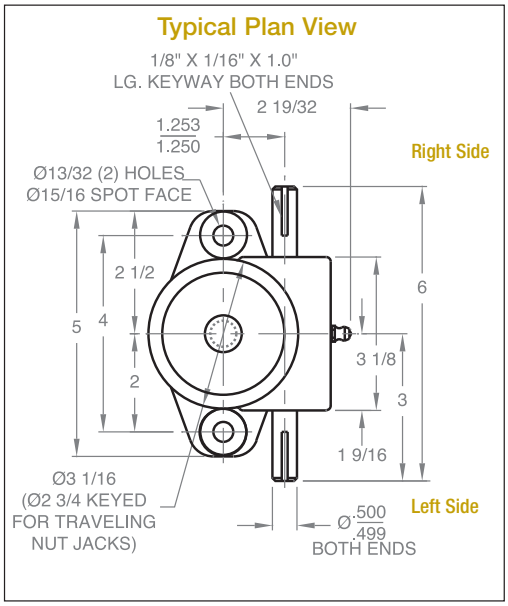
### Upright



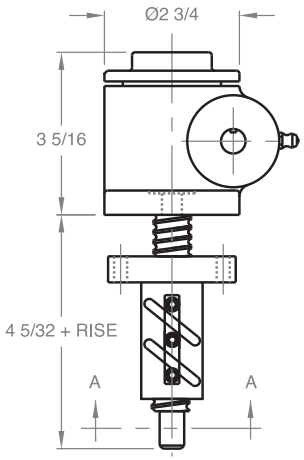

### Upright traveling nut



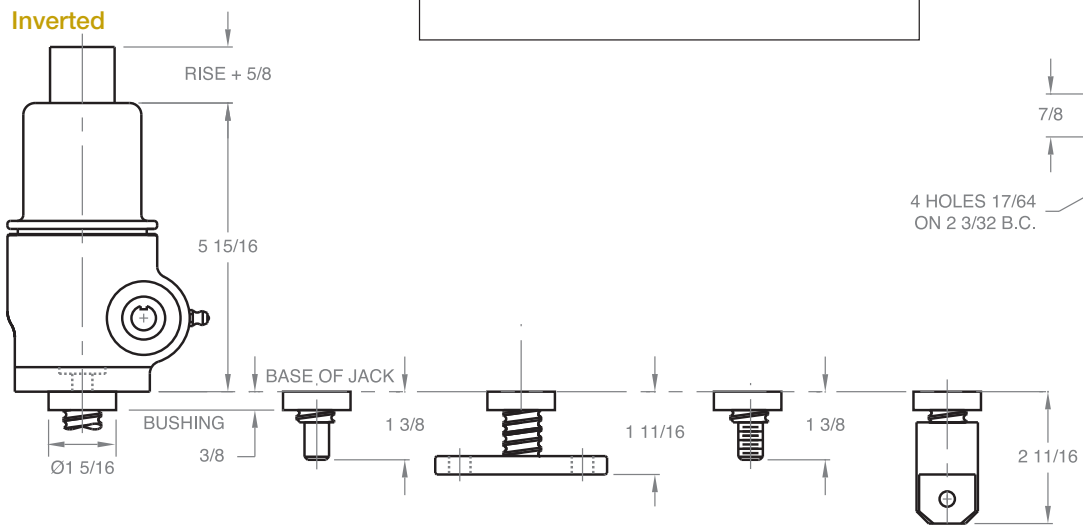

### Typical Plan View

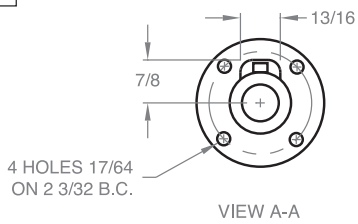



### Inverted traveling nut




### Inverted



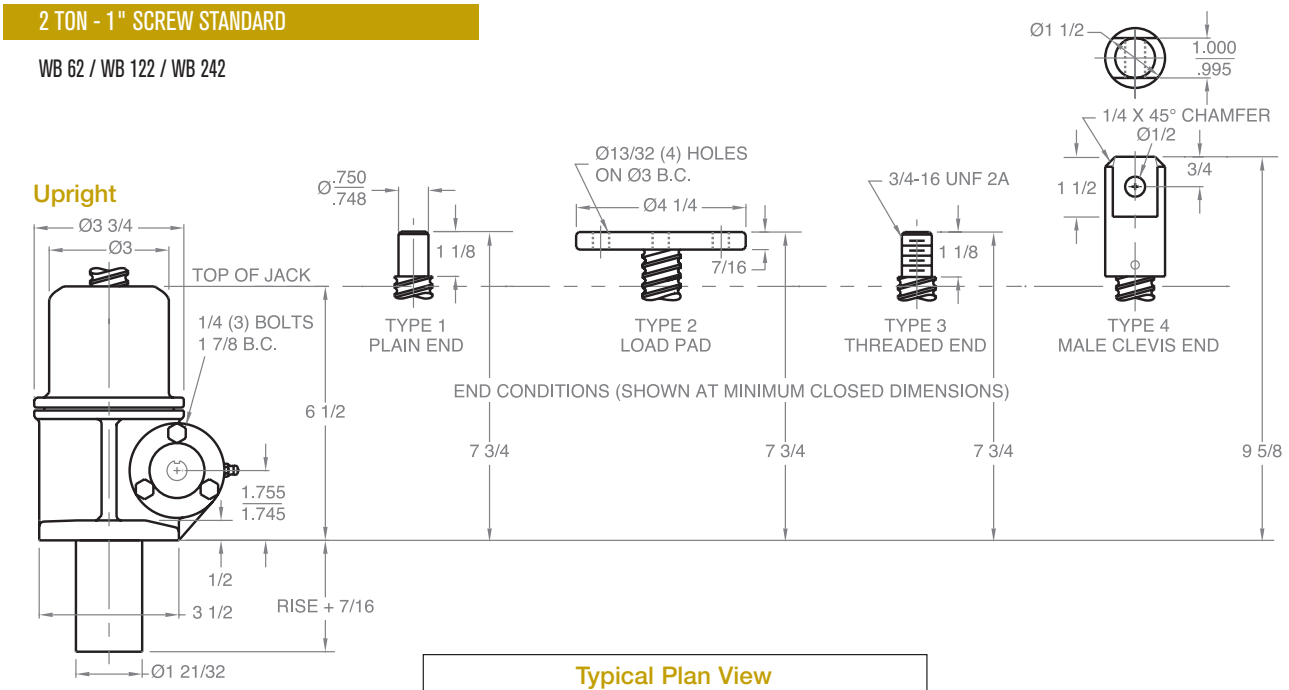



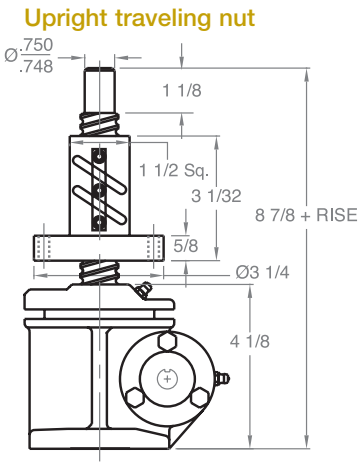

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

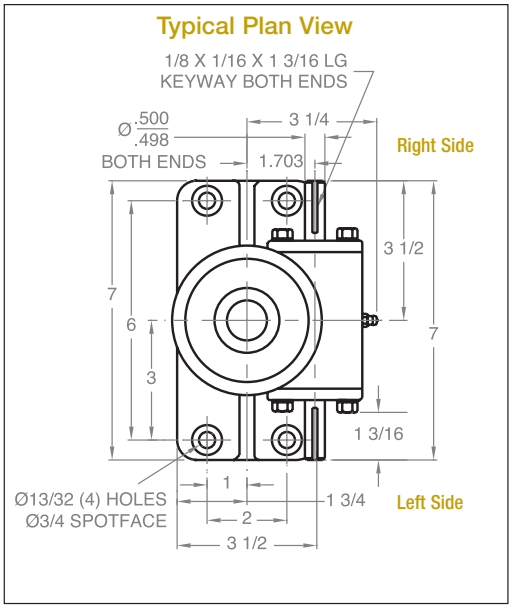
# BALL SCREW JACKS

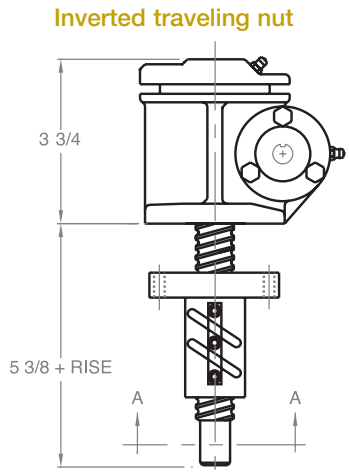
## 2 TON - 1" SCREW STANDARD

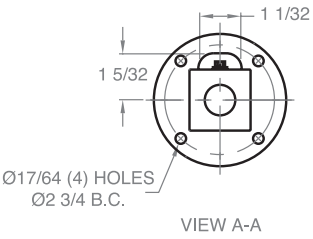
WB 62 / WB 122 / WB 242




VIEW A-A



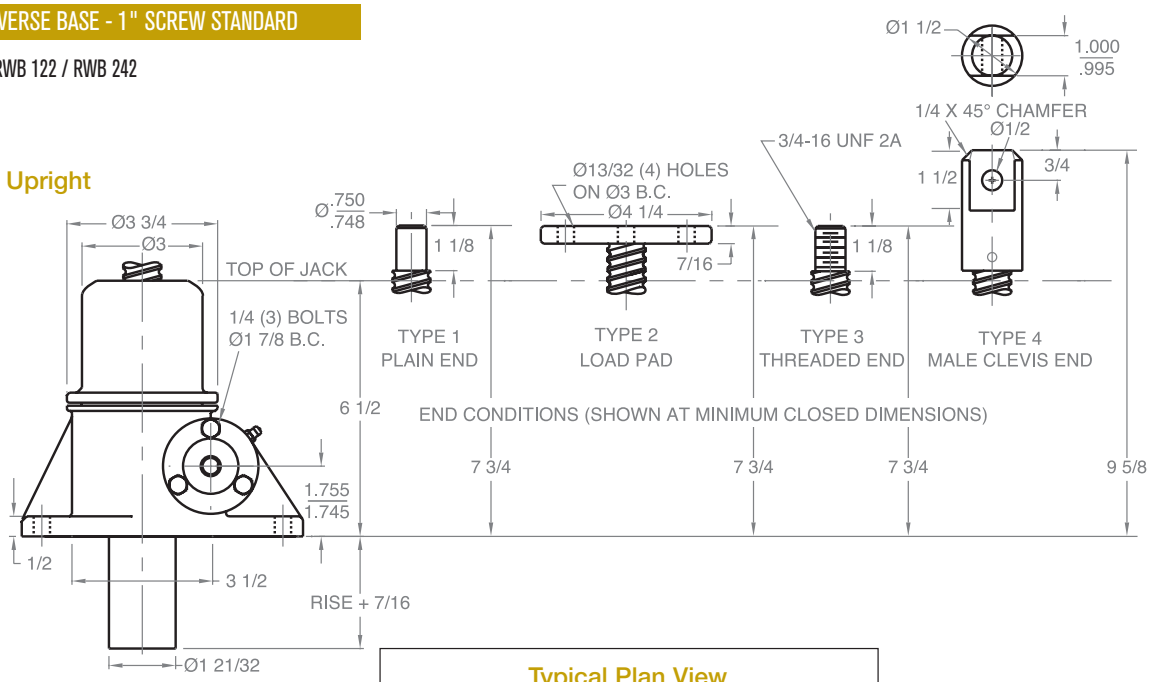

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE

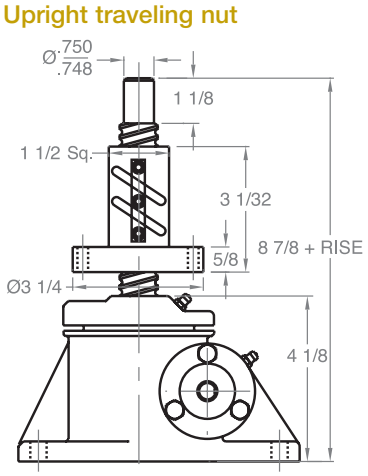
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

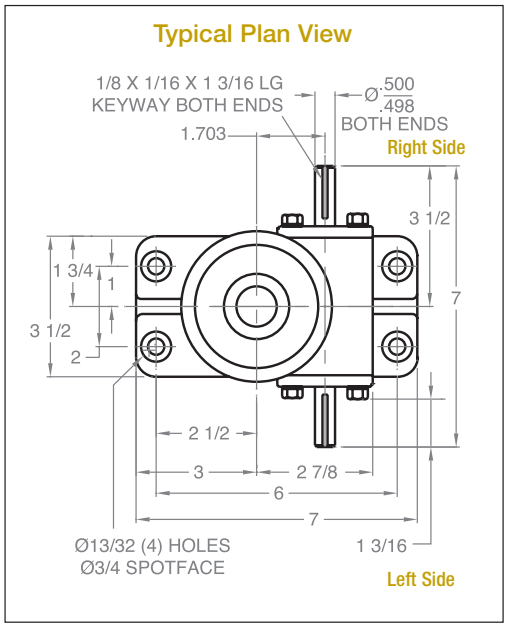
# BALL SCREW JACKS

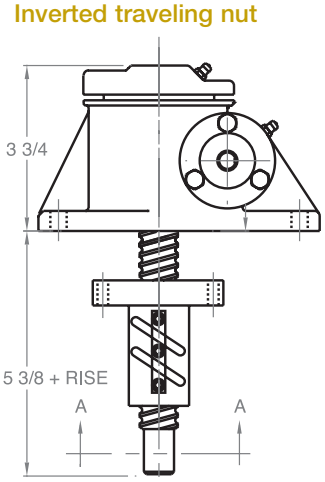
## 2 TON REVERSE BASE - 1" SCREW STANDARD

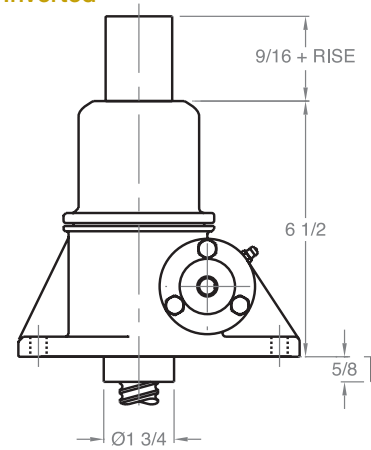
RWB 62 / RWB 122 / RWB 242



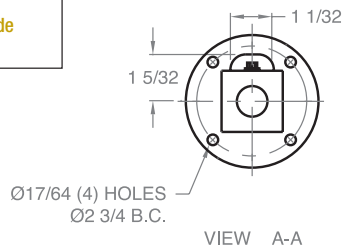



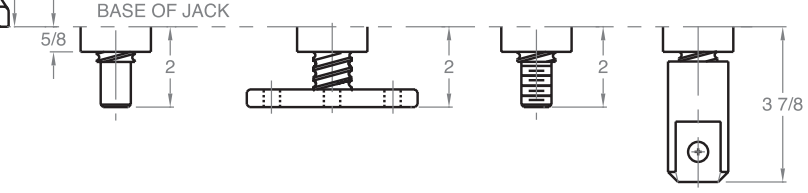




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE



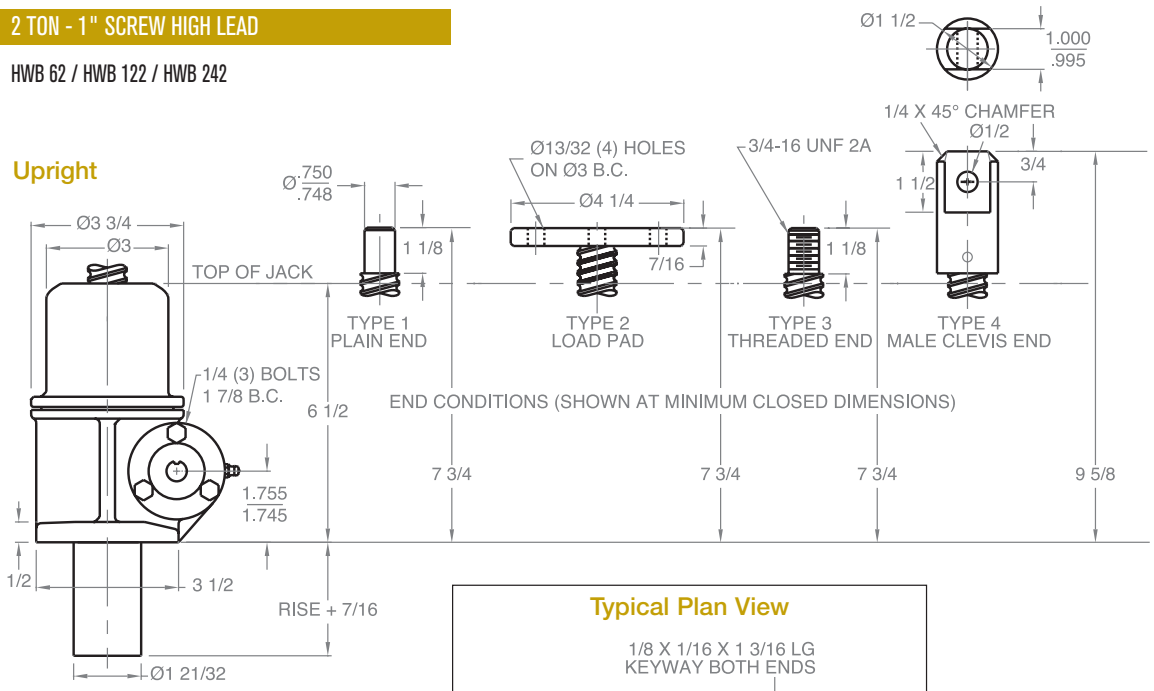

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# BALL SCREW JACKS

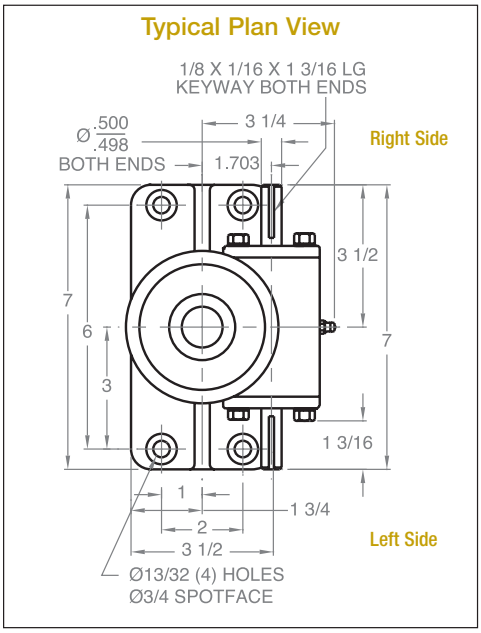
## 2 TON - 1" SCREW HIGH LEAD

HWB 62 / HWB 122 / HWB 242

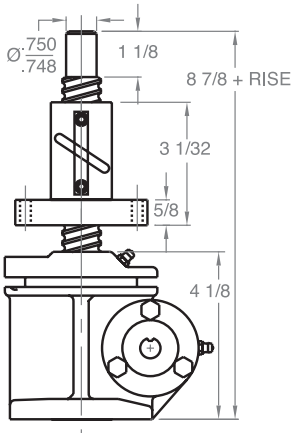
### Upright



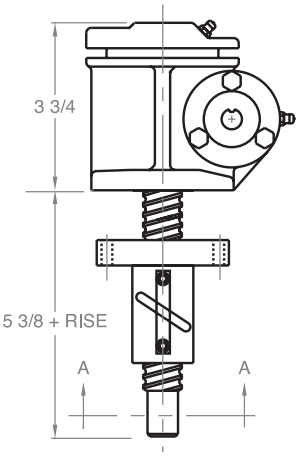

### Typical Plan View



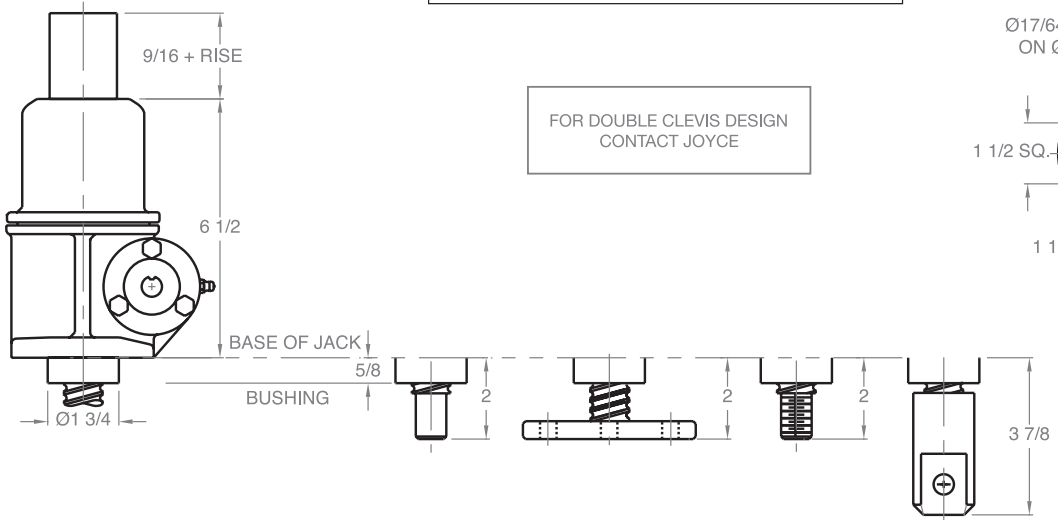

### Upright traveling nut



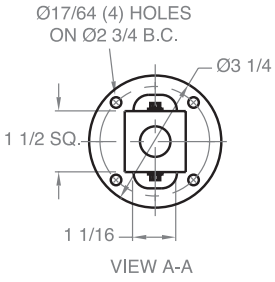

### Inverted traveling nut




### Inverted




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE

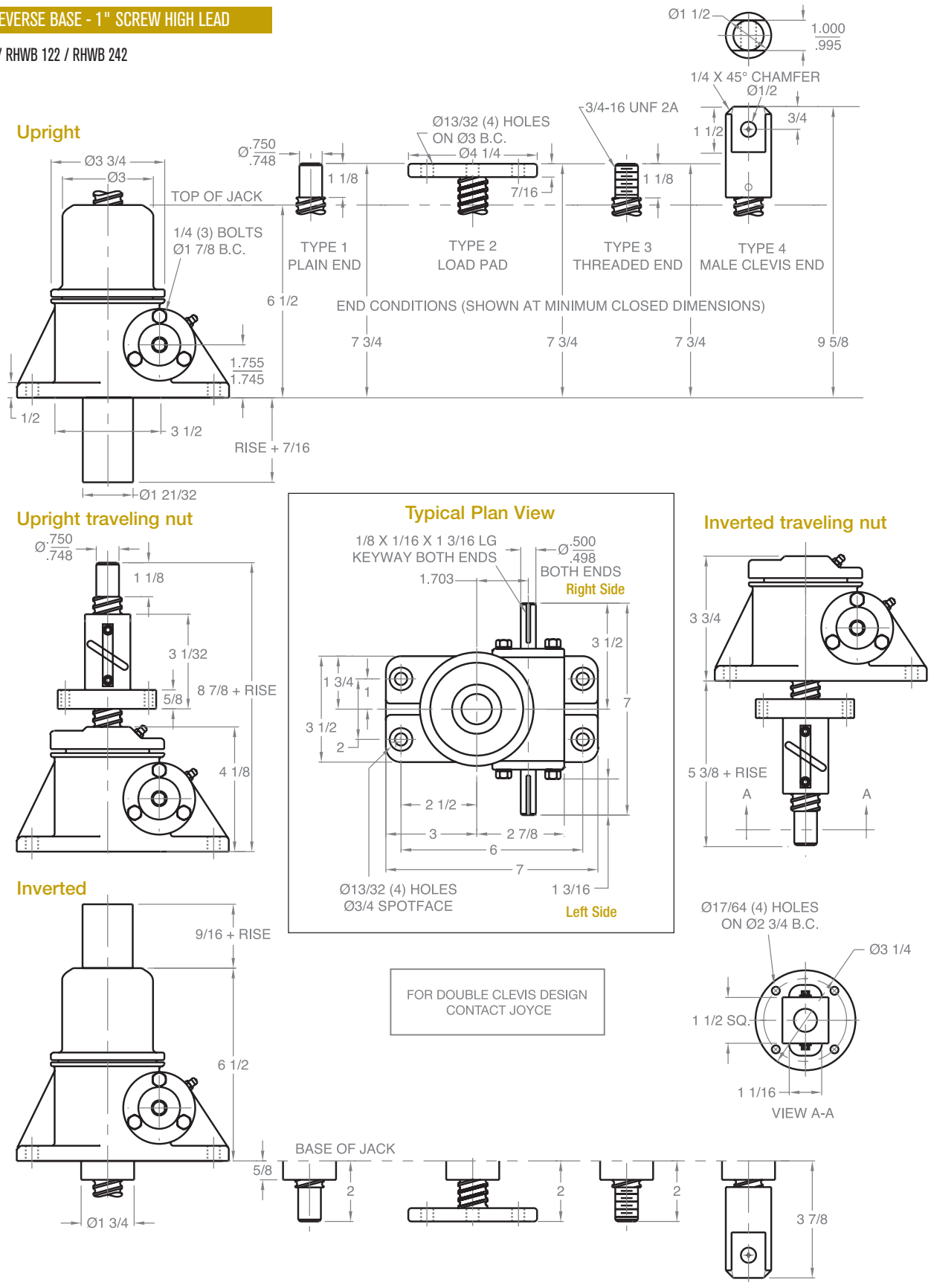



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW JACKS

## 2 TON REVERSE BASE - 1" SCREW HIGH LEAD

RHWB 62 / RHWB 122 / RHWB 242



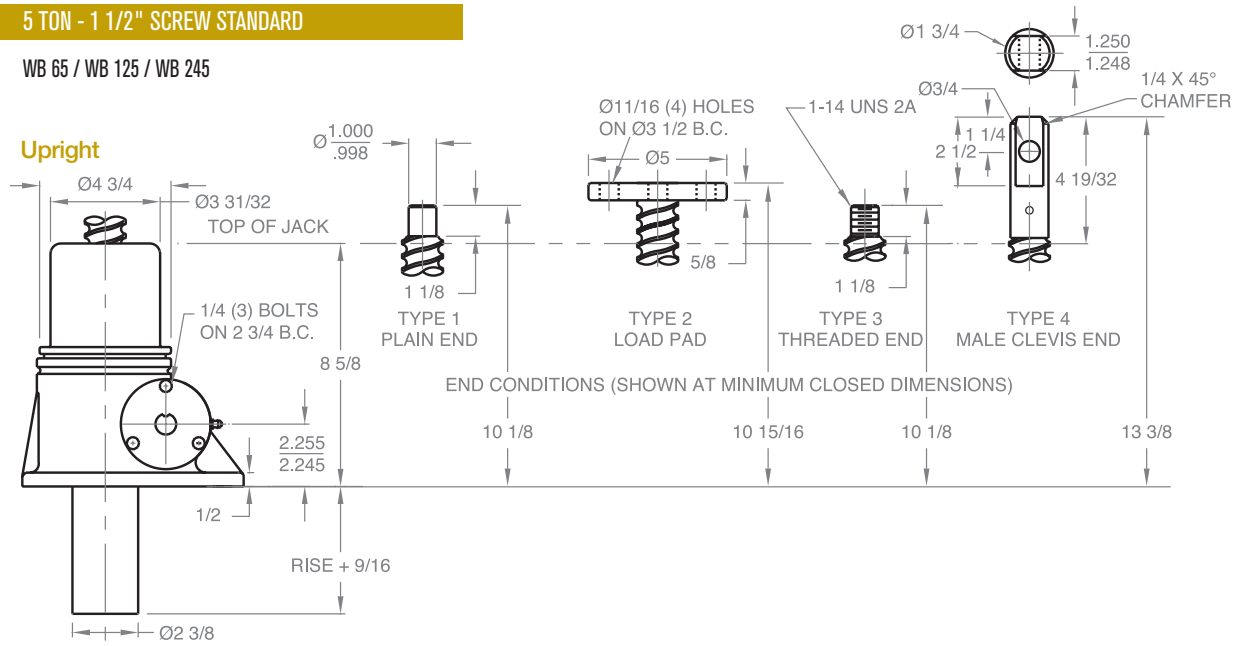

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW JACKS

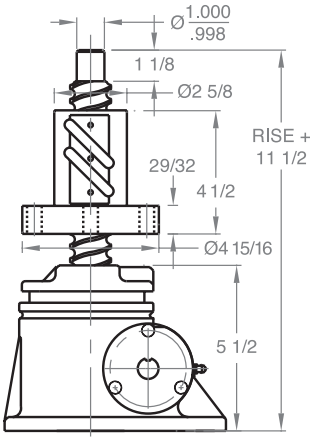
## 5 TON - 1 1/2" SCREW STANDARD

WB 65 / WB 125 / WB 245

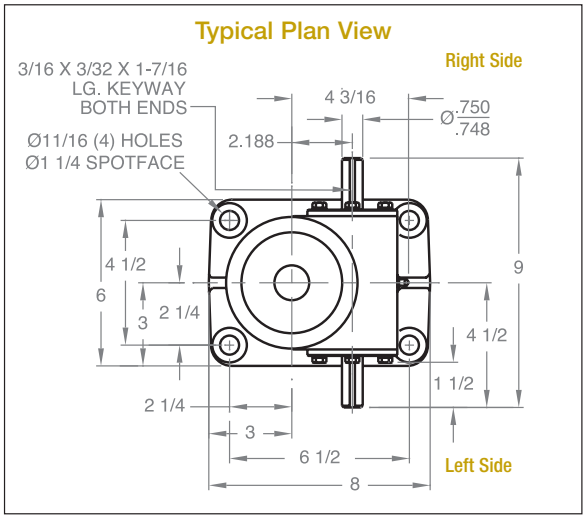
### Upright



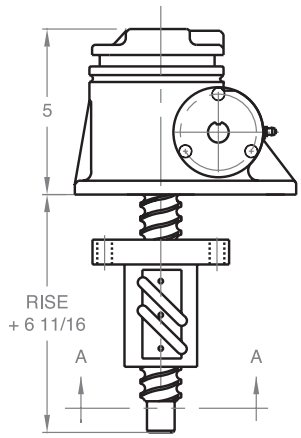

### Upright traveling nut



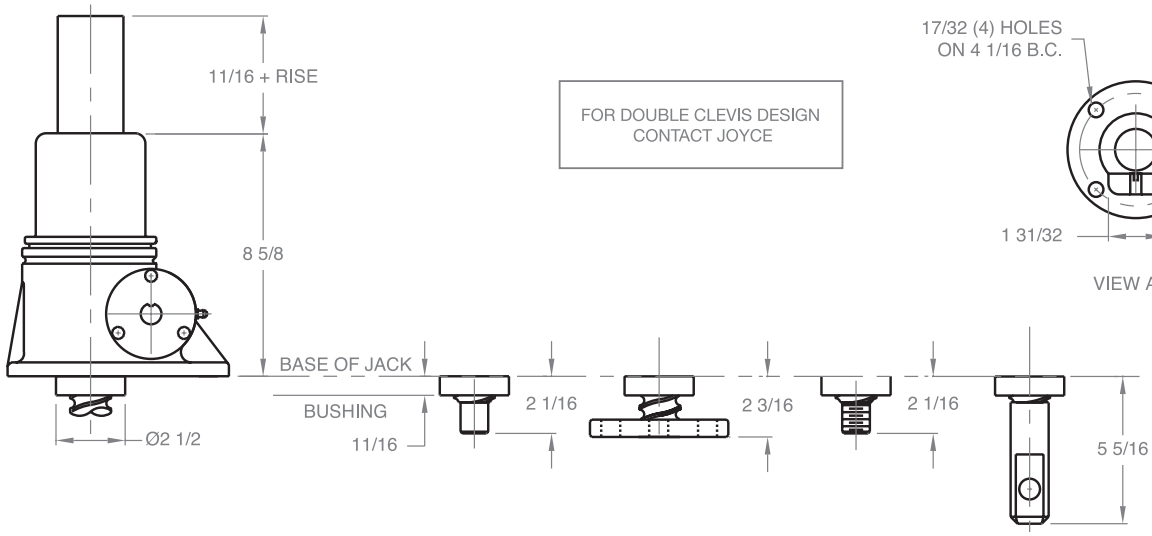

### Typical Plan View




### Inverted traveling nut




### Inverted




FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE

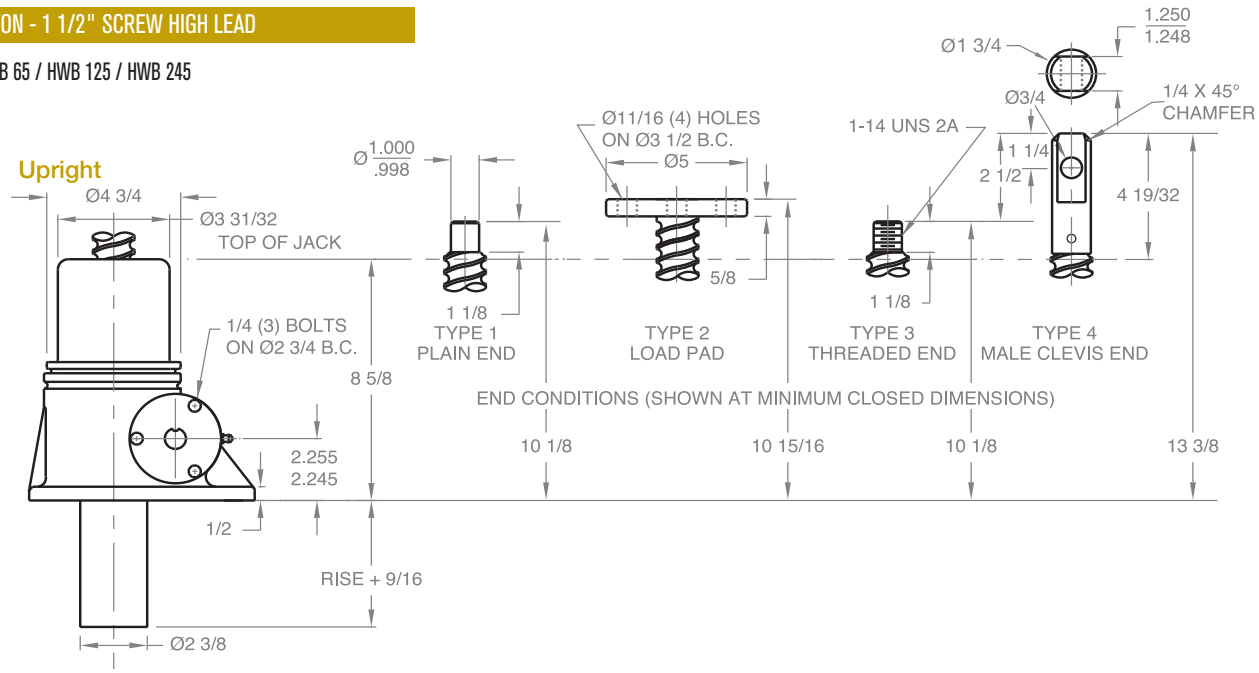


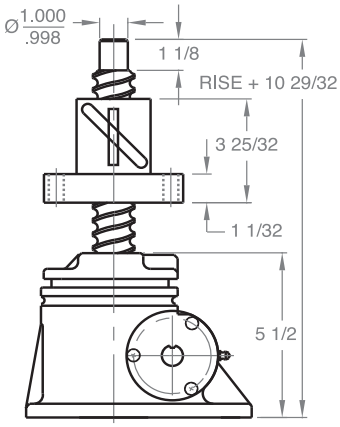

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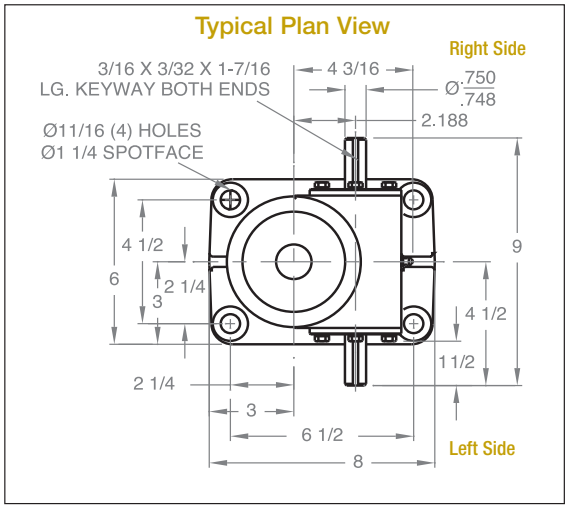
# BALL SCREW JACKS

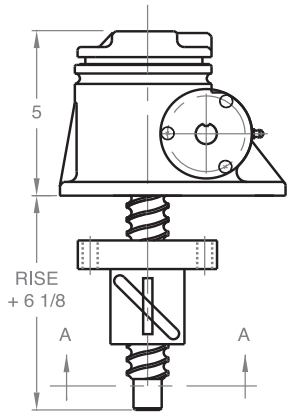
## 5 TON - 1 1/2" SCREW HIGH LEAD

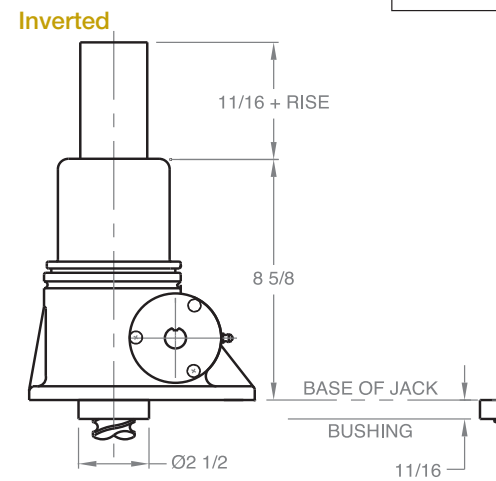
HWB 65 / HWB 125 / HWB 245



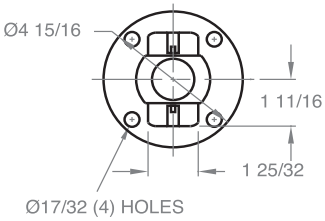



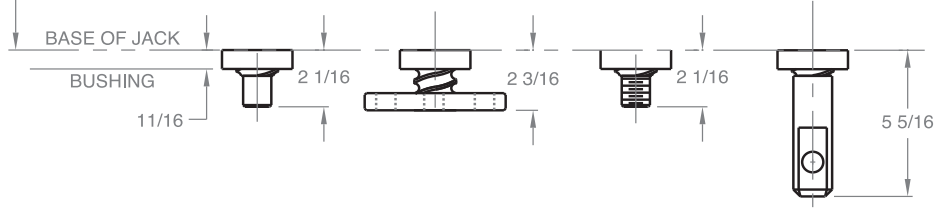




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE



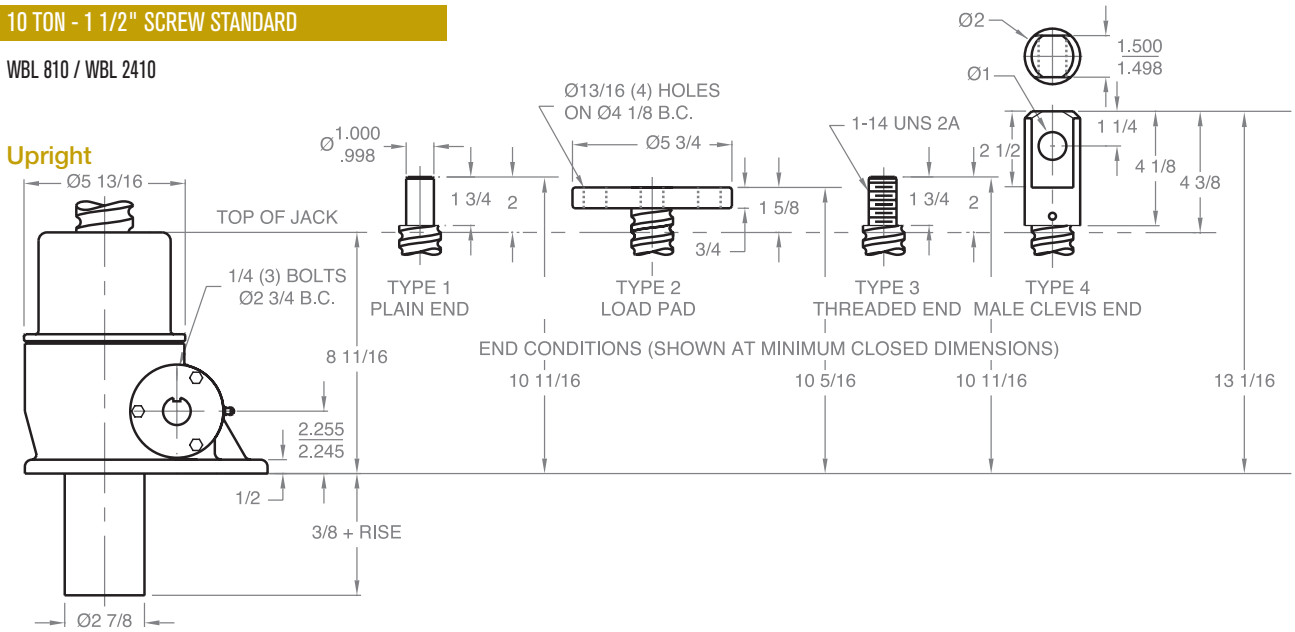

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# BALL SCREW JACKS

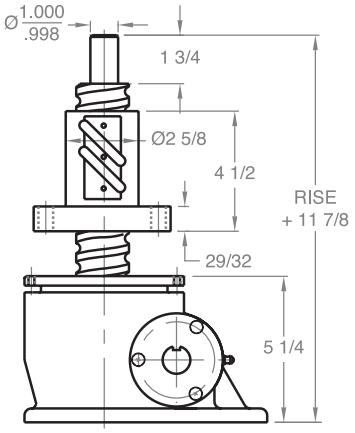
## 10 TON - 1 1/2" SCREW STANDARD

WBL 810 / WBL 2410

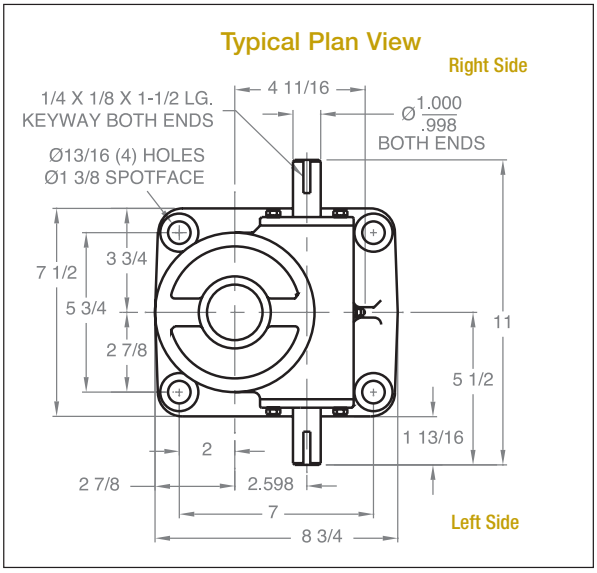
### Upright



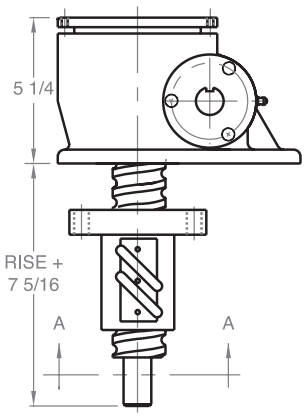

### Upright traveling nut



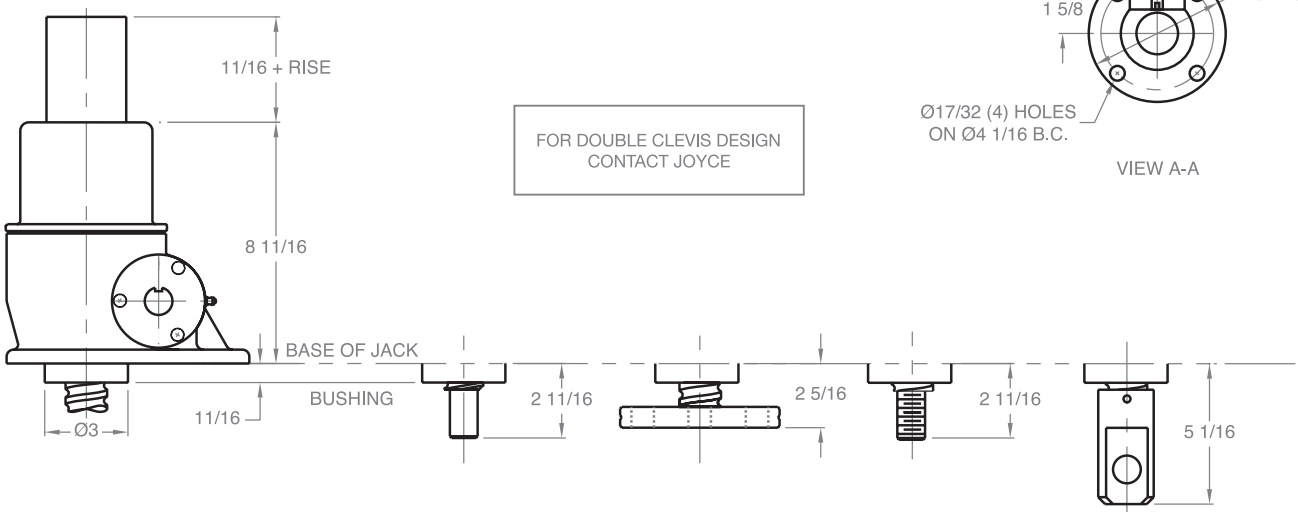

### Typical Plan View




### Inverted traveling nut




### Inverted




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE




VIEW A-A

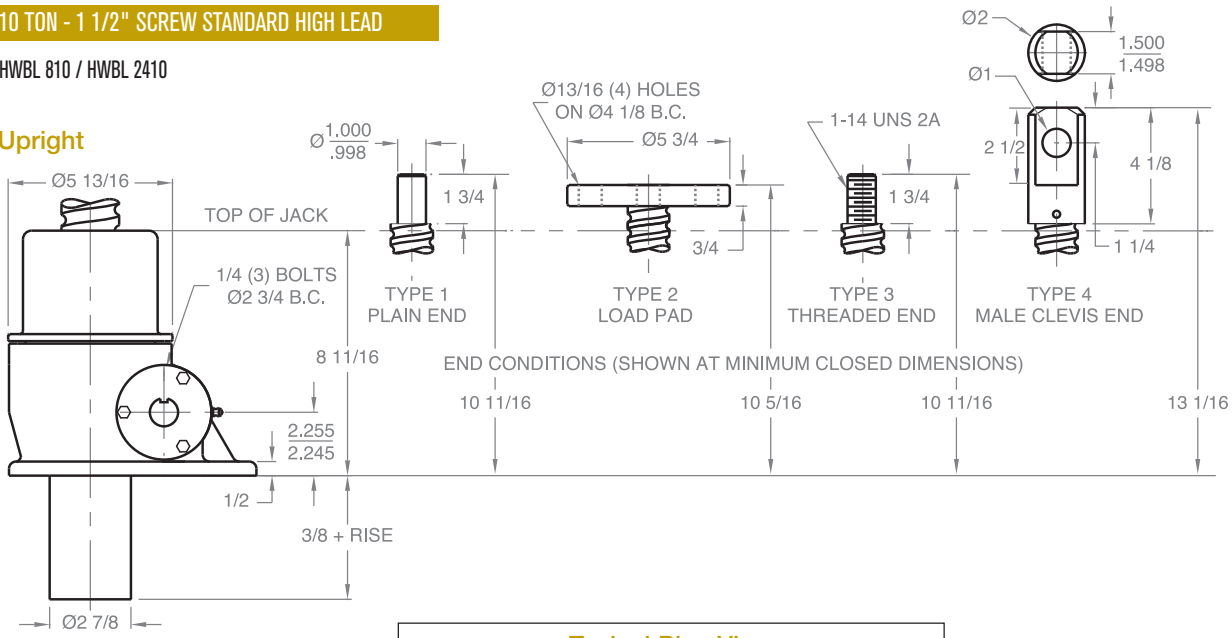
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# BALL SCREW JACKS

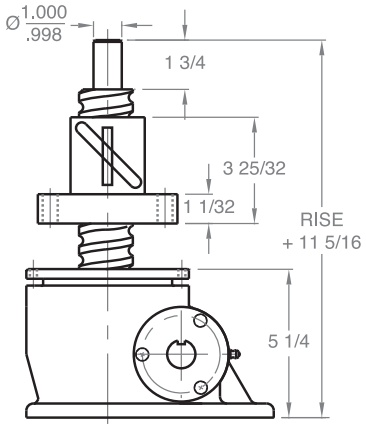
## 10 TON - 1 1/2" SCREW STANDARD HIGH LEAD

HWBL 810 / HWBL 2410

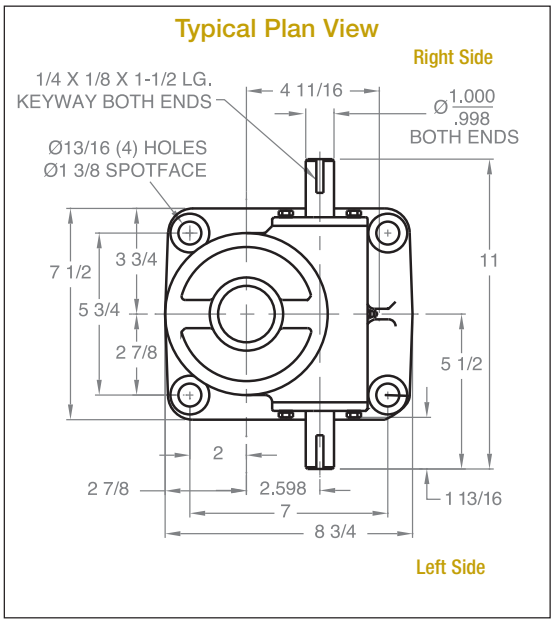
### Upright



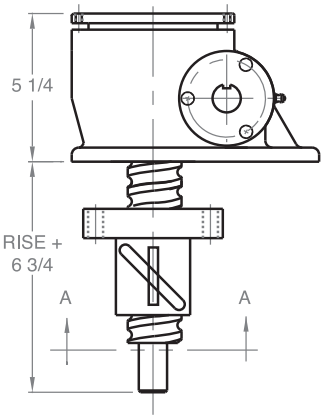

### Upright traveling nut



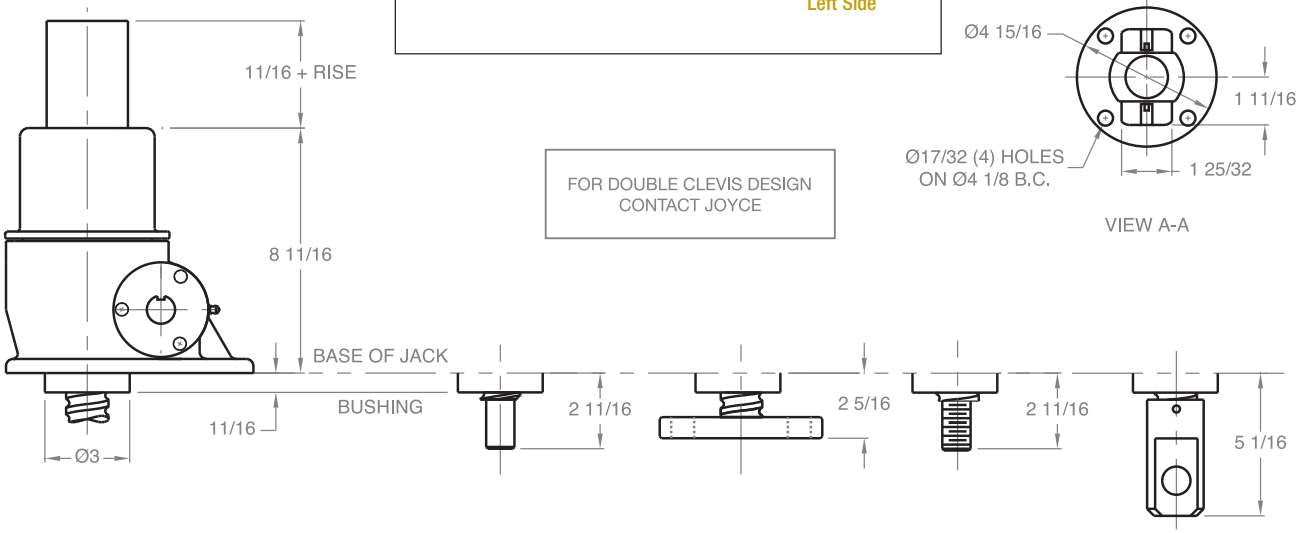

### Typical Plan View




### Inverted traveling nut




### Inverted




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE



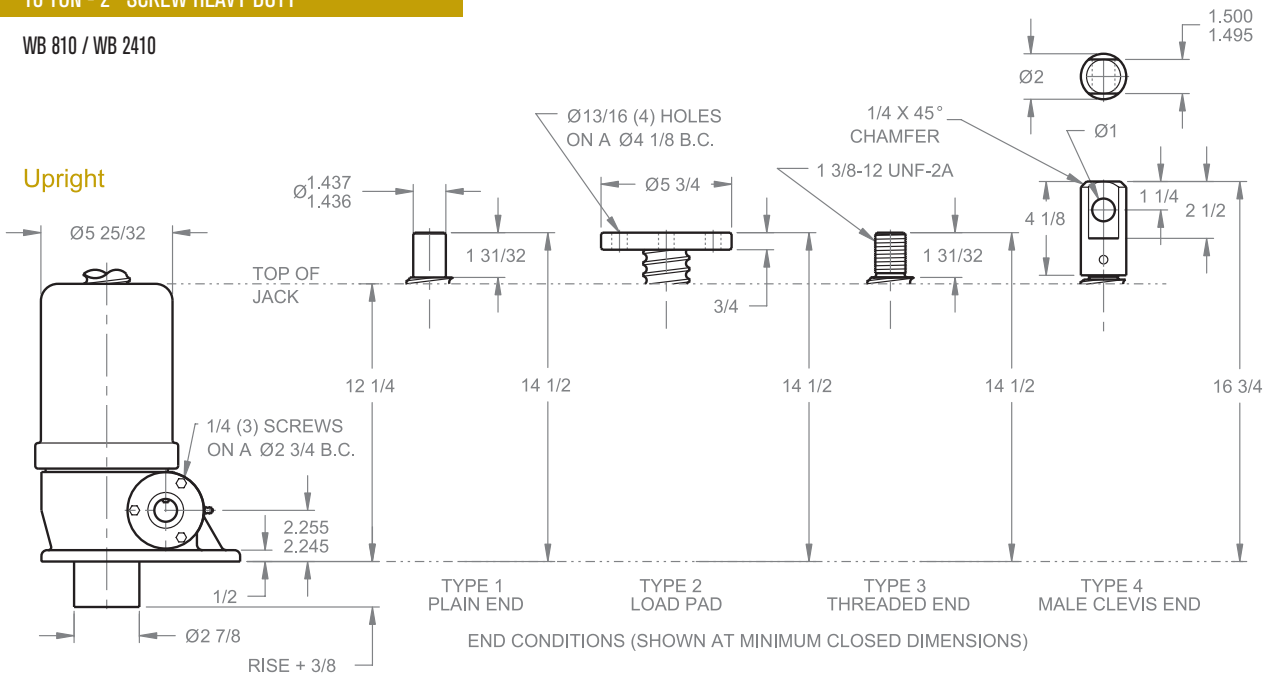

VIEW A-A

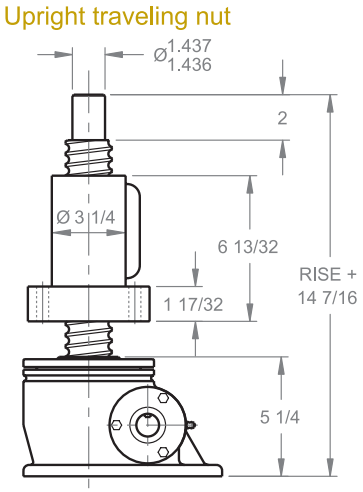
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

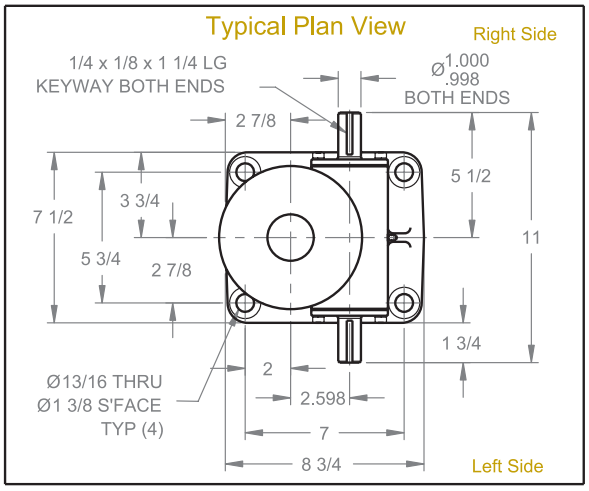
# BALL SCREW JACKS

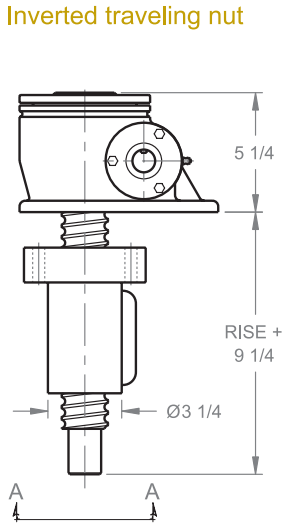
## 10 TON - 2" SCREW HEAVY DUTY

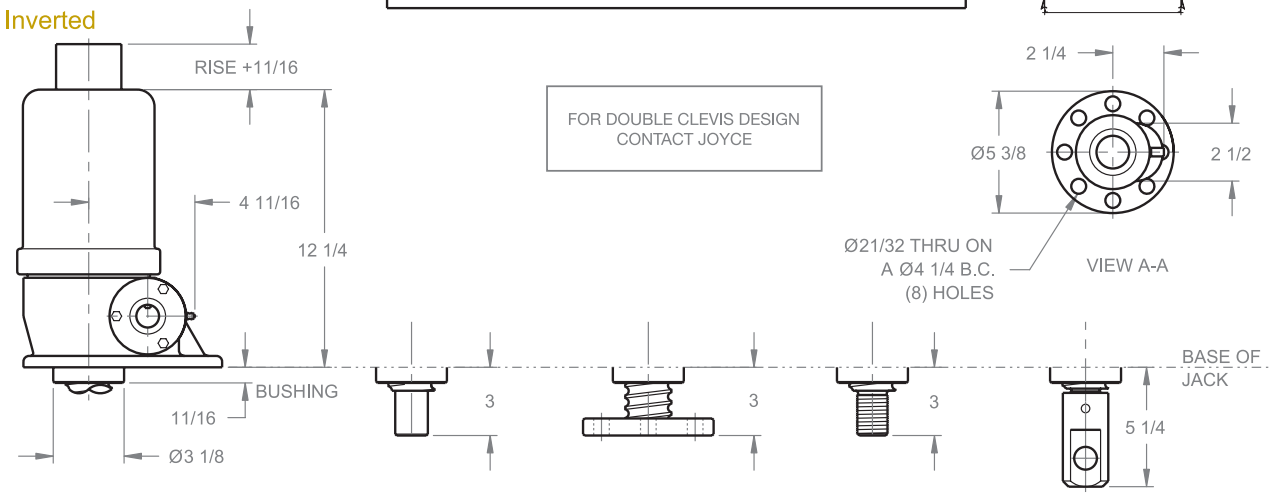
WB 810 / WB 2410




FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE

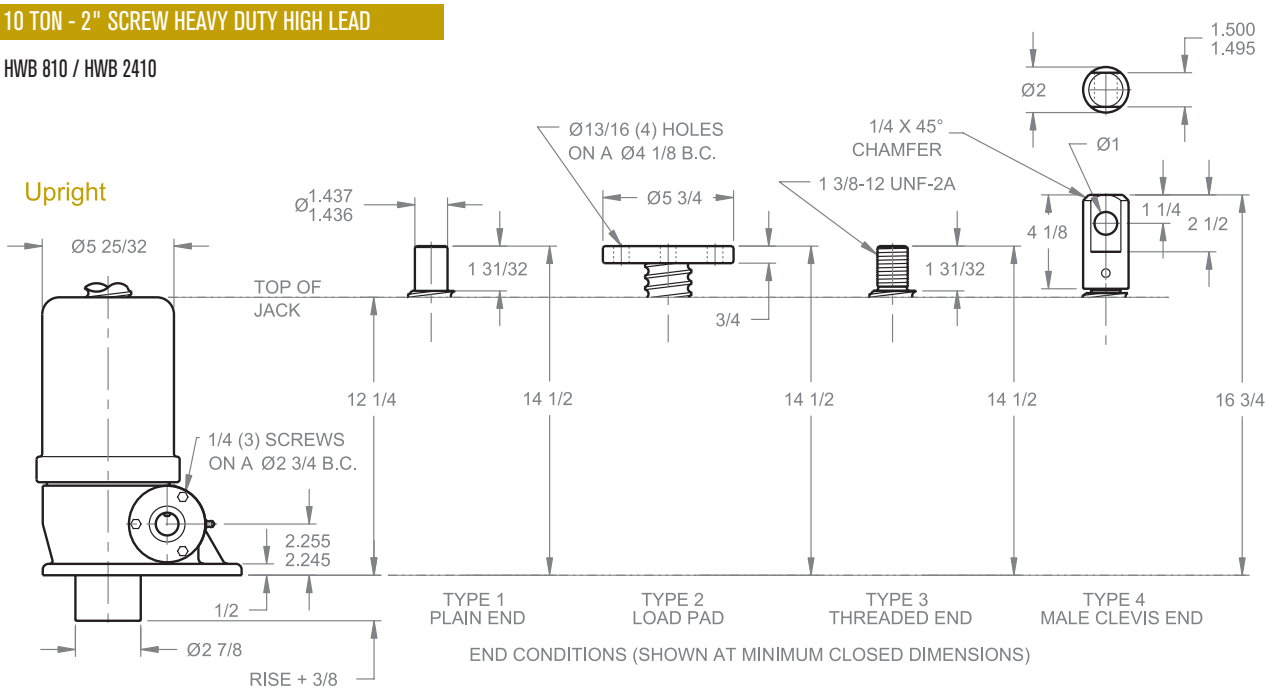



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

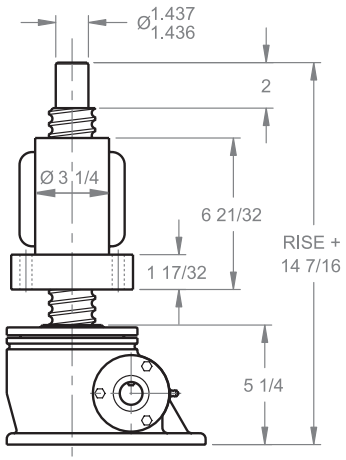
# BALL SCREW JACKS

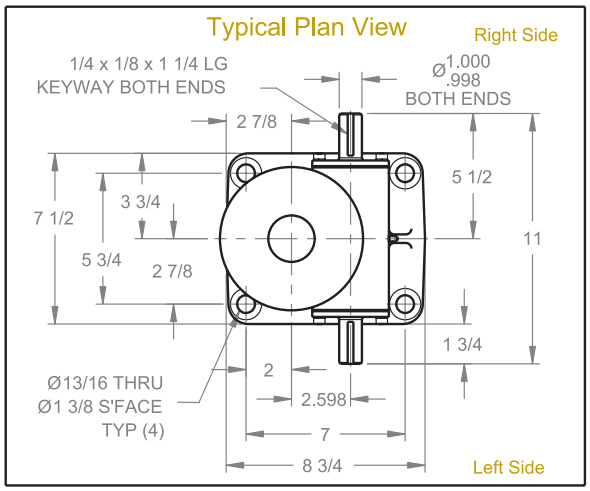
## 10 TON - 2" SCREW HEAVY DUTY HIGH LEAD

HWB 810 / HWB 2410

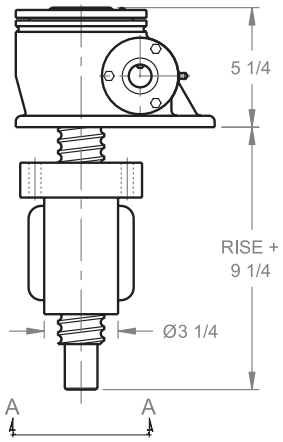



### Upright traveling nut

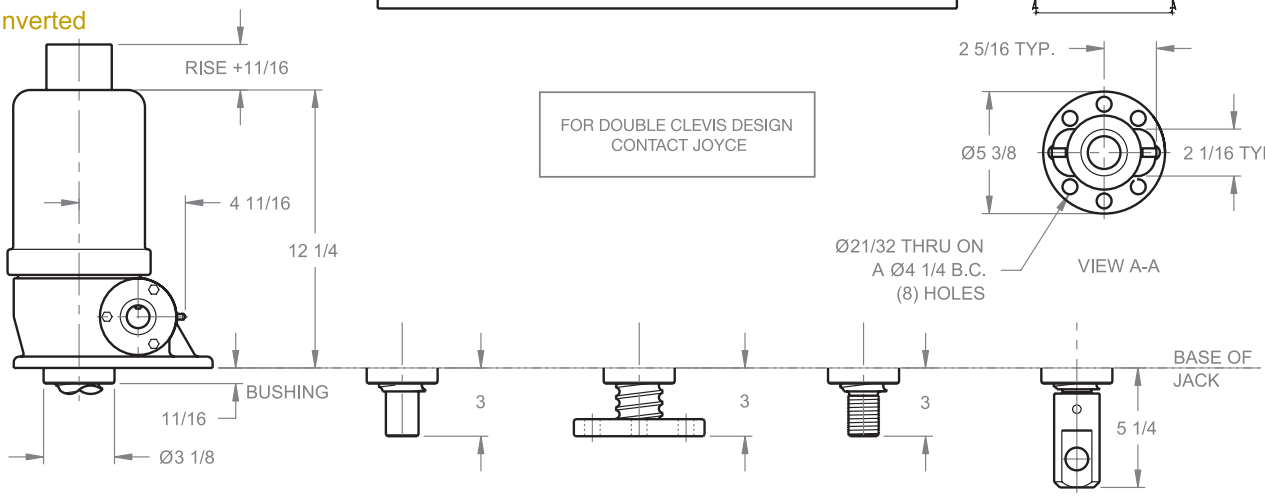



### Inverted traveling nut




### Inverted




FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE

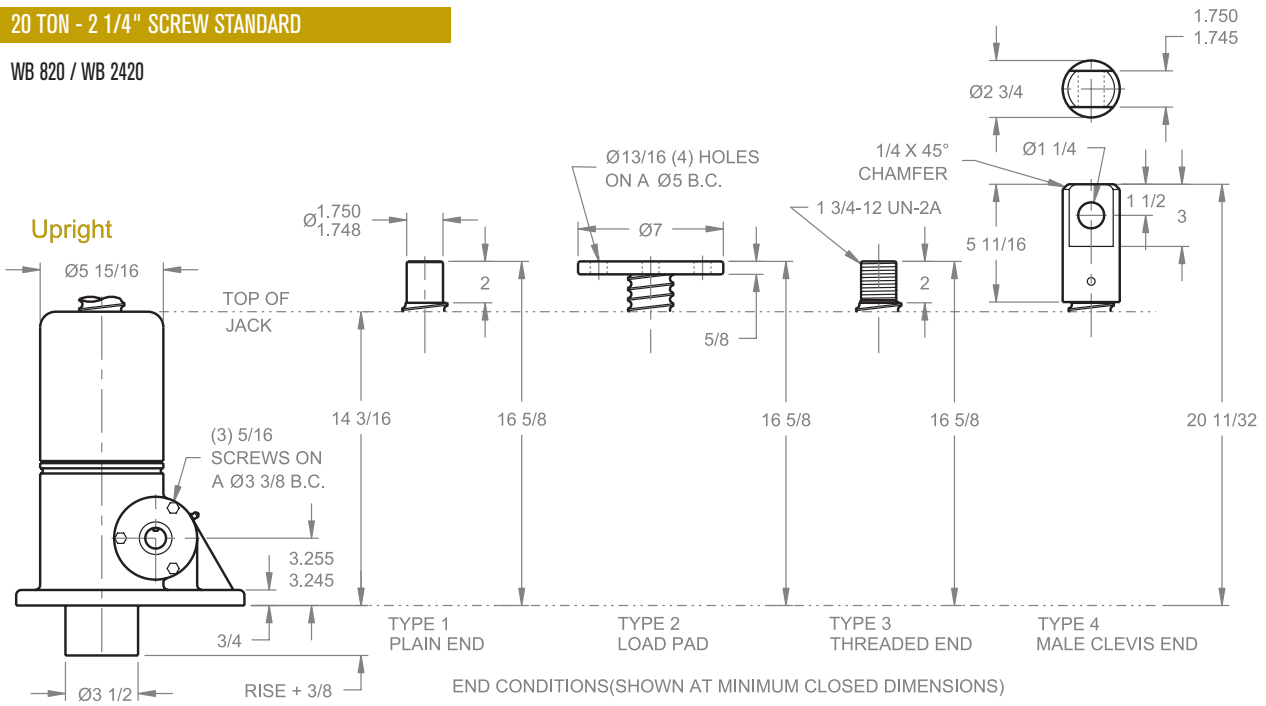


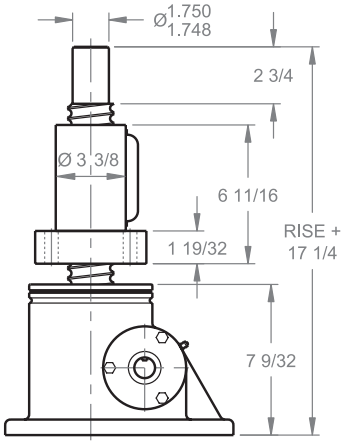

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

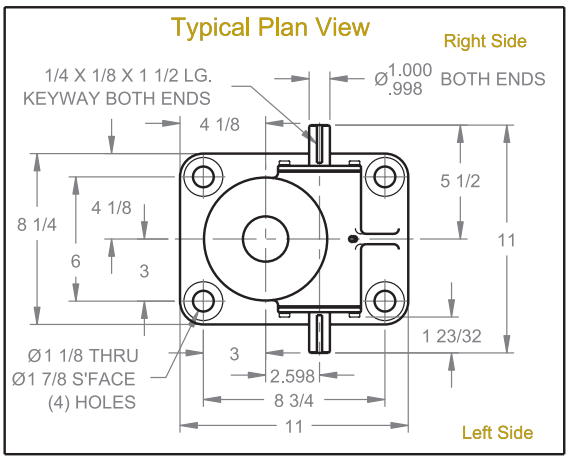
# BALL SCREW JACKS

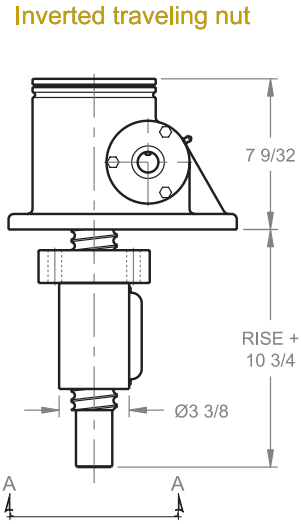
## 20 TON - 2 1/4" SCREW STANDARD

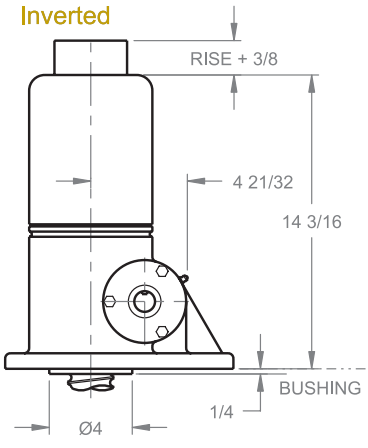
WB 820 / WB 2420



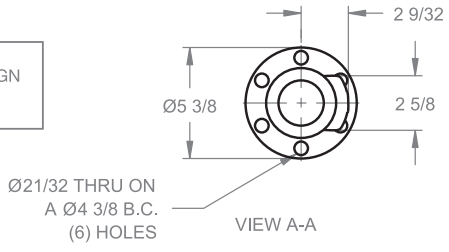



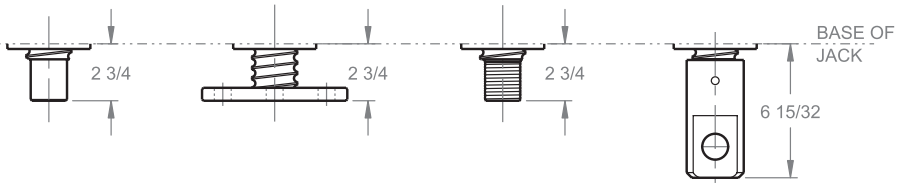




FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE



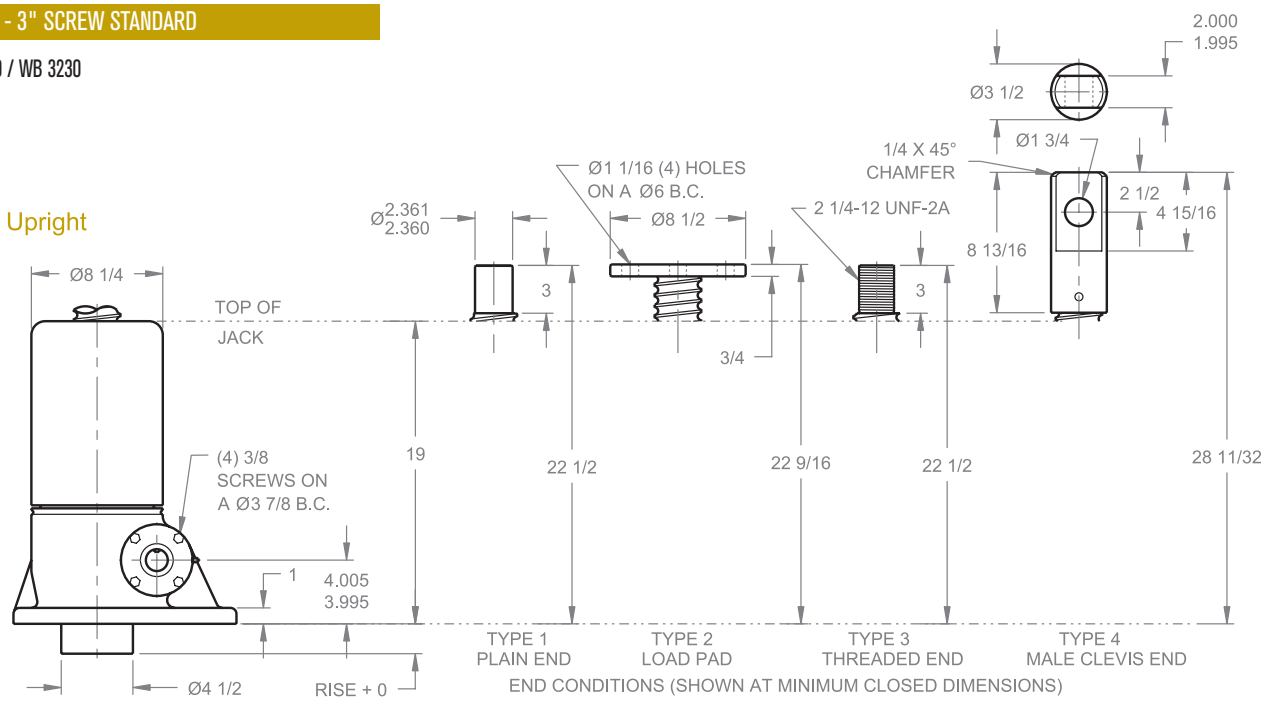



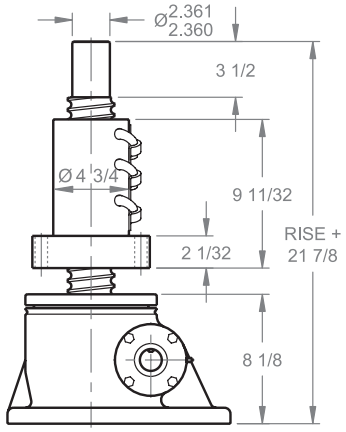

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

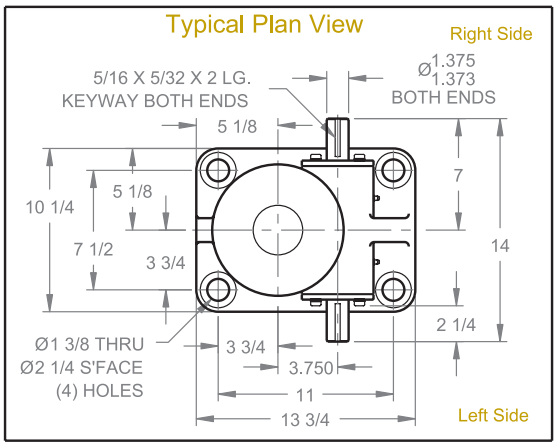
# BALL SCREW JACKS

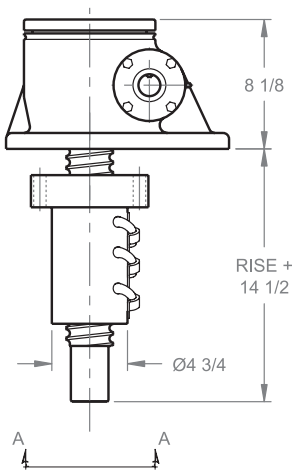
## 30 TON - 3" SCREW STANDARD

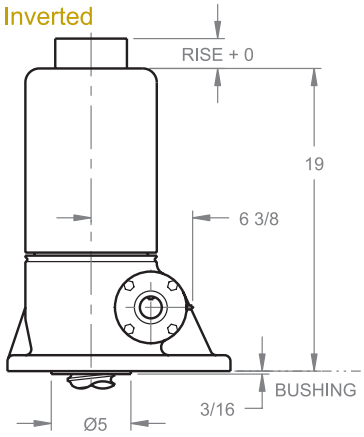
WB 1130 / WB 3230



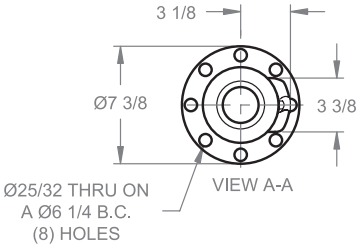



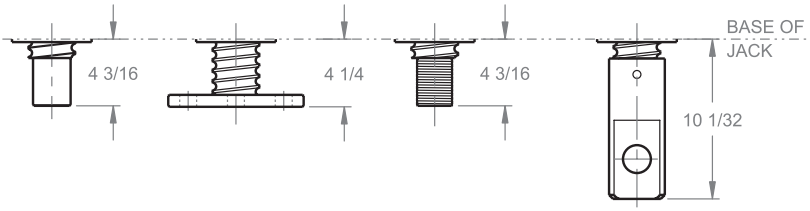




FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE



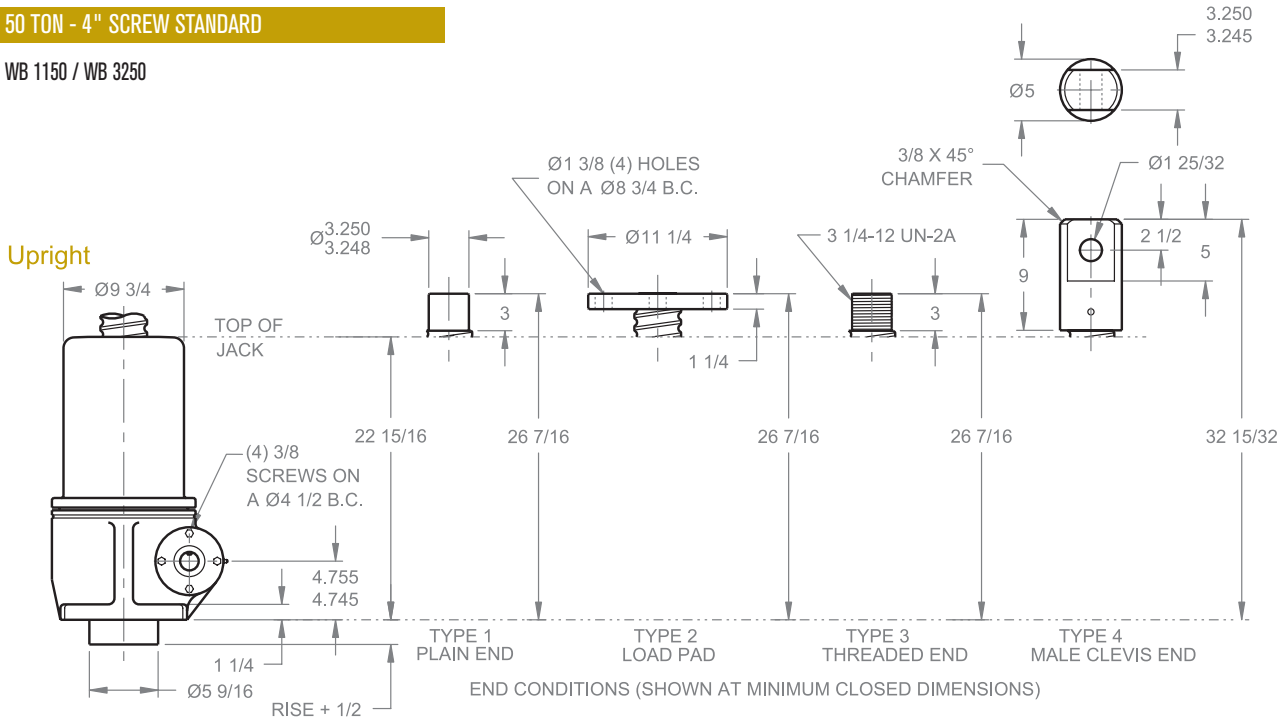




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

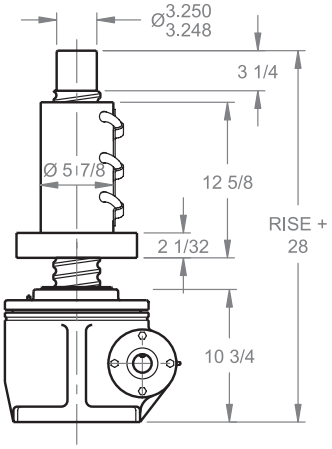
# BALL SCREW JACKS

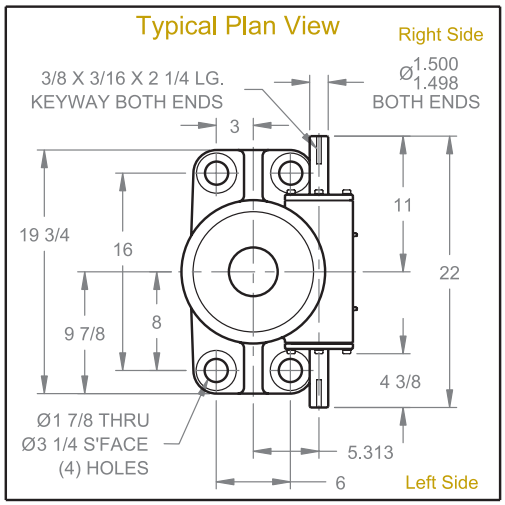
## 50 TON - 4" SCREW STANDARD

WB 1150 / WB 3250

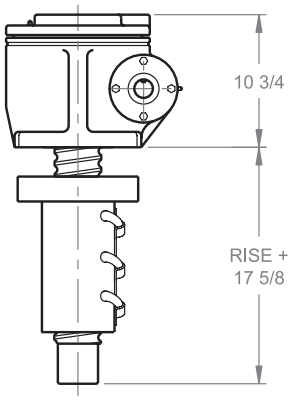



### Upright traveling nut

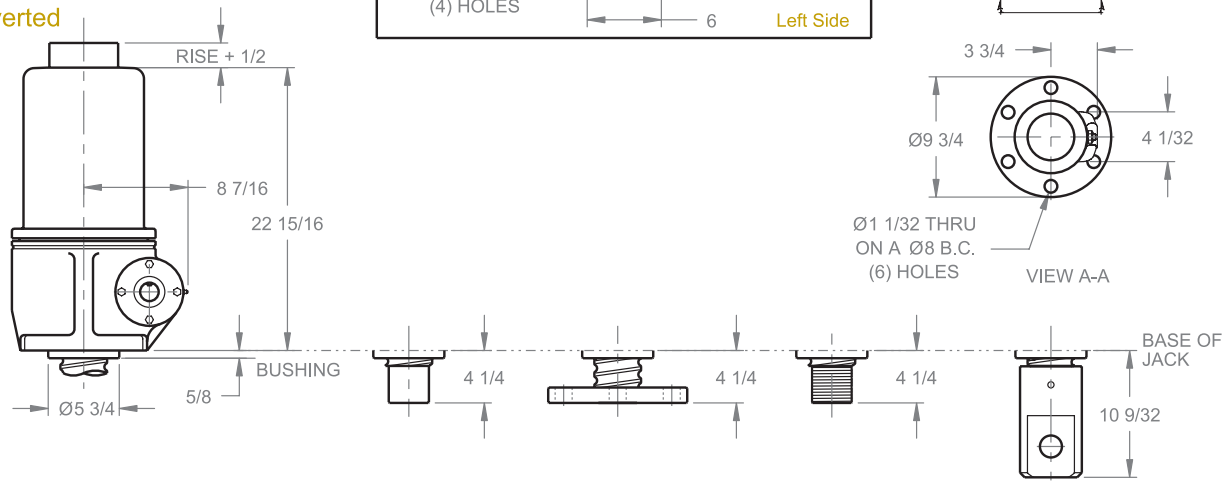



### Inverted traveling nut




### Inverted





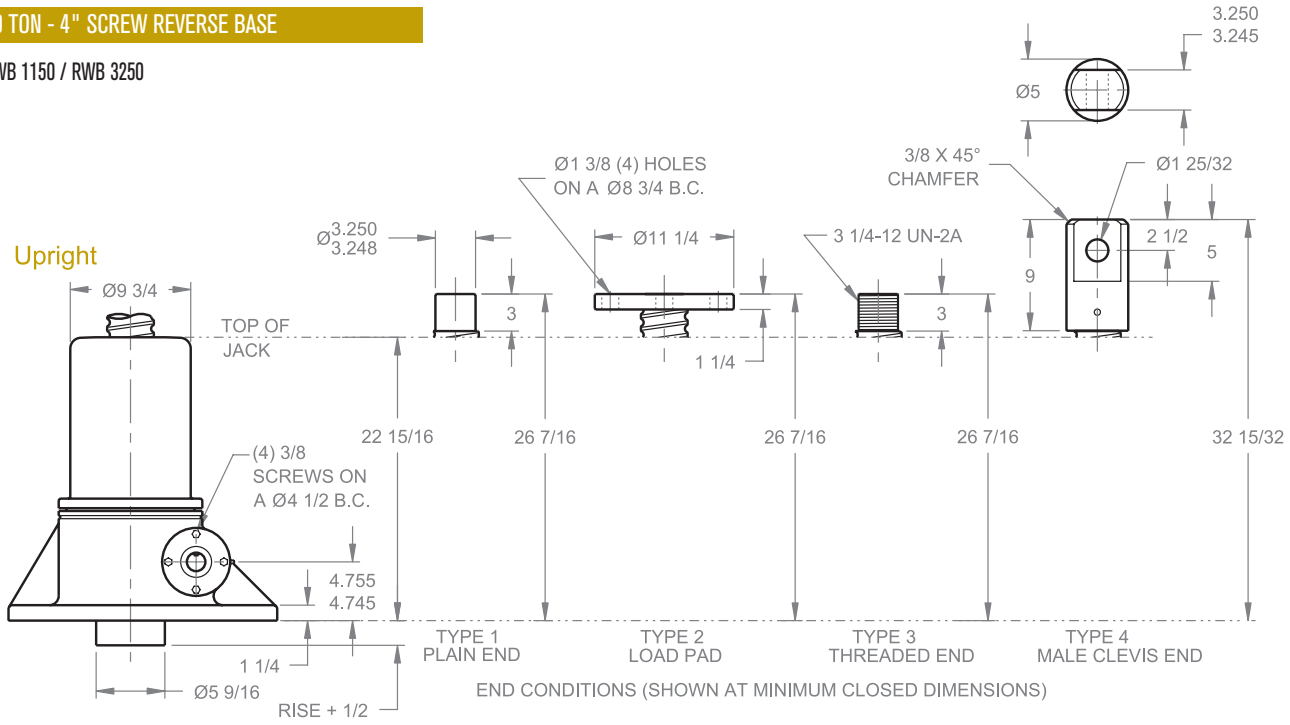


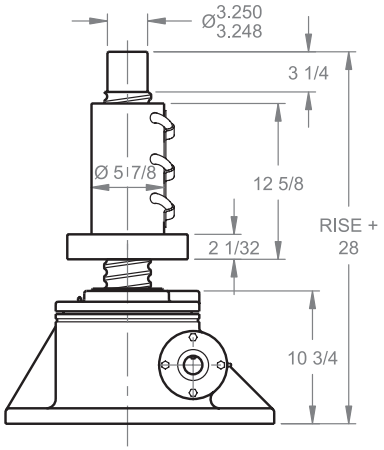
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

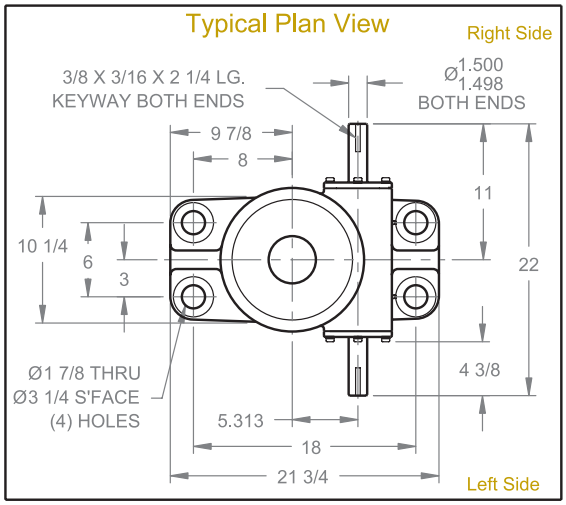
# BALL SCREW JACKS

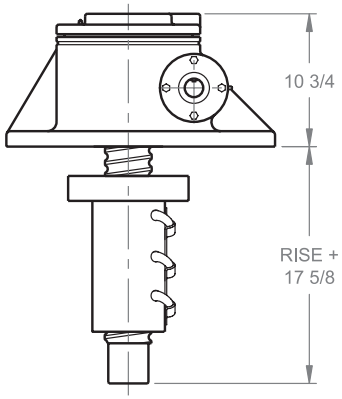
## 50 TON - 4" SCREW REVERSE BASE

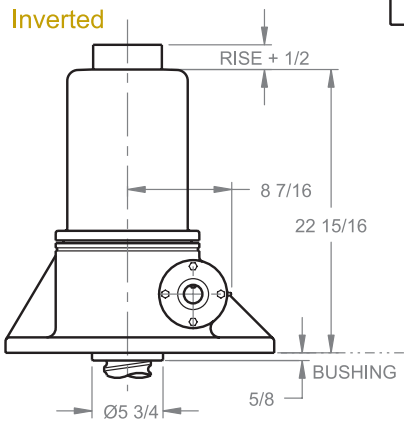
RWB 1150 / RWB 3250

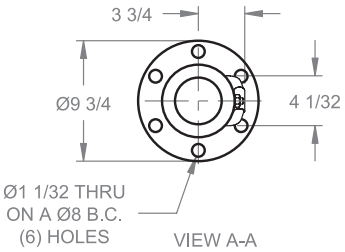


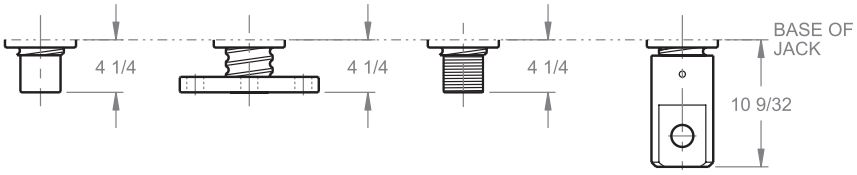




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

Joyce ball screw ComDRIVEs® combine a ball screw jack, motor and gear reducer into a single compact unit. Ball screw ComDRIVEs are available in 2-ton through 30-ton capacities. They provide travel speeds up to 55.5 inches per minute. Ball screw ComDRIVEs require up to two-thirds less input torque to move the load than a similarly sized machine screw ComDRIVE. They require a brake motor or external locking device to hold position.

Four standard end conditions are available and ball screw ComDRIVEs can be fitted with protective boots. Limit switches, oversized ball bearings and other options are also available.

Ball Screw ComDRIVE Benefits:

- Can power an entire jacking system.
- Reduces the number of components that must be specified.
- Simplifies design.
- Reduces installation costs because only a single plate is needed to mount the jack body.
- Reduces the number or couplings and shafts required in multi-jack systems.
- Standard 230/460 volt, 3-phase, 60 hertz motor included (brake recommended).

Ball screw ComDRIVEs can be specified without the motor and the reducer flange accepts standard NEMA motor frame sizes.

Joyce can customize ball screw ComDRIVEs to meet your specifications. Ask about larger size ComDRIVEs.



**Joyce offers Ball Screw ComDRIVEs in several designs including:**
- **Translating**
- **Keyed for traveling nut (KFTN)**
- **Double clevis**
- **Trunnion mount**

A guide for ordering is on pages 104 and 105.

Scan the QR Code to view this product on our website.

# BALL SCREW ComDRIVEs®



# BALL SCREW ComDRIVEs® ORDERING INFORMATION

Instructions: Select a model number from this chart.

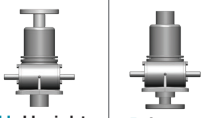
| 2-Ton Standard | 5-Ton Standard | 10-Ton Standard | 10-Ton Heavy Duty | 20-Ton Standard | 30-Ton Standard |
|---|---|---|---|---|---|
| CDB62<br>CDB122<br>CDB242 | CDB65<br>CDB125<br>CDB245 | CDBL810<br>CDBL2410 | CDB810<br>CDB2410 | CDB820<br>CDB2420 | CDB1130<br>CDB3230 |
| **2-Ton High Lead** | **5-Ton High Lead** | **10-Ton Standard High Lead** | **10-Ton Heavy Duty High Lead** | | |
| CDHB62<br>CDHB122<br>CDHB242 | CDHB65<br>CDHB125<br>CDHB245 | CDHBL810<br>CDHBL2410 | CDHB810<br>CDHB2410 | | |

Important Note: Not self-locking, may lower under load. Brake motors or external locking systems are required.

H: High lead (2-ton, 5-ton and 10-ton only).

## Sample Part Number: CDHB65U1N-18.50-STDX-P3AE-M2

### Jack Configuration



U=Upright I=Inverted

### End Conditions



1=T1
(plain end)



2=T2
(load pad)



3=T3
(threaded end)



4=T4
(male clevis)

### Left Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 105.

### Right Side Shaft Code
(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 105.

### Additional Options*

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade

**Screw Stops**
Extending Stops are standard on ball screw ComDRIVEs

* Specify as many options as needed

### Ball Screw ComDRIVE® Rise

Rise is travel expressed in inches and not the actual screw length.

### Jack Designs



S=Translating



K=Keyed for Non Rotation**



N=Traveling Nut



D=Double Clevis



A=KFTN Trunnion*
T=Trunnion*

*Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 179)

**Keyed for non-rotation is not a standard option. Contact Joyce.

# BALL SCREW ComDRIVEs® SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the ComDRIVE®.

## Screw Stops (p. 10) and Boots (pp. 166-168)

Extending screw stops are standard on ball screw ComDRIVEs and they are not adjustable.
When boots are added to ball screw ComDRIVEs, the closed height of the jack may be increased.

## Geared Potentiometers (p. 171)

POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures



## Encoders (pp. 172-173)

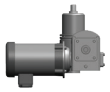
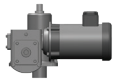
ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR



## ComDRIVE Reducers (pp. 107-117)

Ordering Example: P2AC — Motor code from chart at right

### Mounting Positions

| Code | P1 | P2 | P3 | P4 |
|---|---|---|---|---|
| Left Side Shaft Positions |  |  |  |  |
| Right Side Shaft Positions |  |  |  |  |

### Ratio

| |
|---|
| 5:1 Code A |
| 7.5:1 Code B |
| 10:1 Code C |
| 15:1 Code D |
| Special Ratio Code X |

### Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |
| 7-1/2 HP | H |

All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Other motor options are available including international voltages, and single phase AC. Specify the appropriate motor size from the chart above. Refer to the "Additional Options" chart on the preceding page as needed. Brake motors are required for ball screw ComDRIVEs. Contact Joyce for options that are not listed.

## Mechanical Limit Switches (p. 174)

Ordering Example: LA13

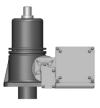
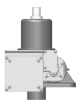
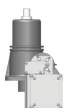
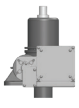
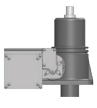
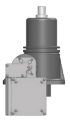
### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

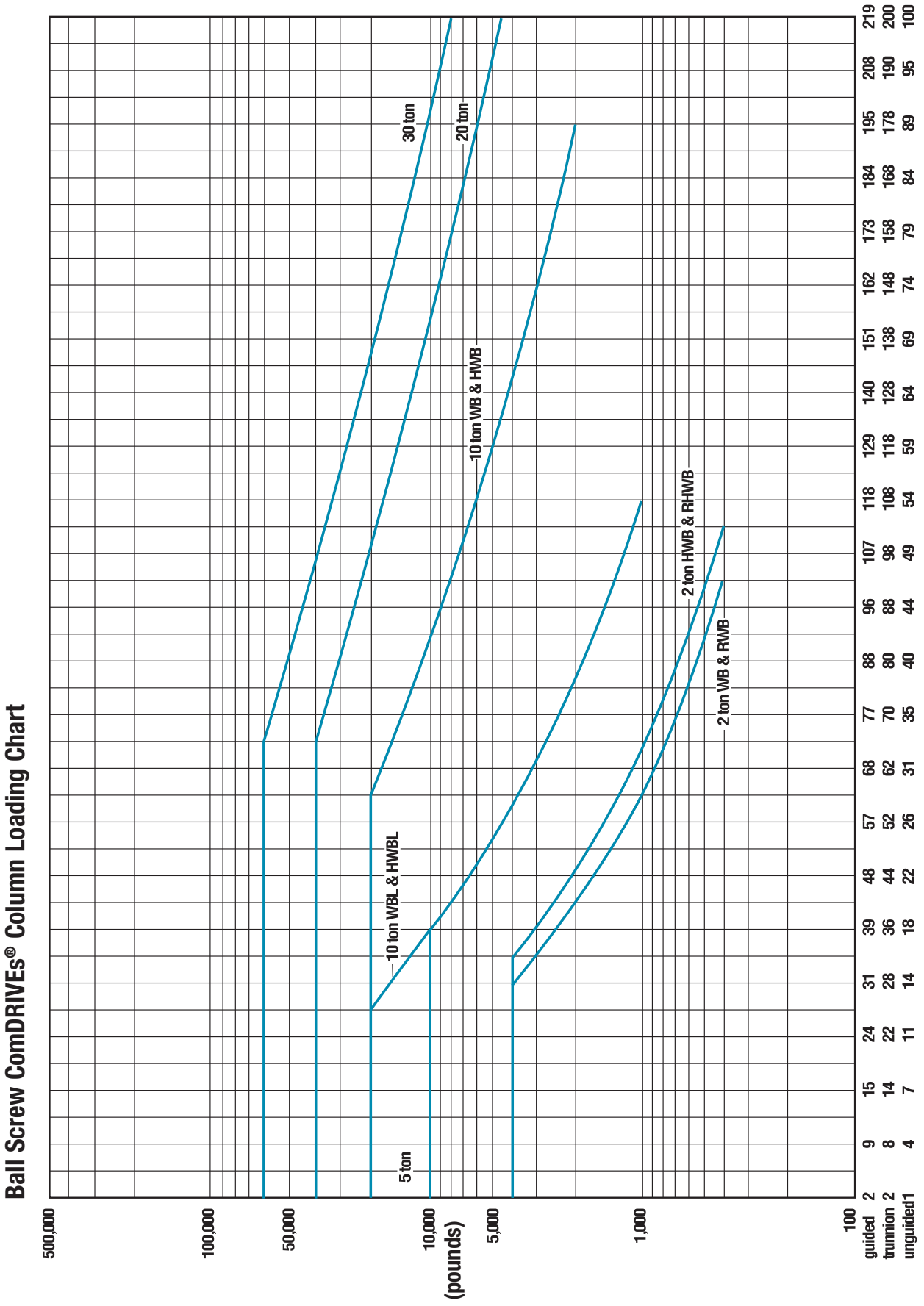
### Available Positions

| | 1 | 2* | 3 | 4 | 5 | 6* | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Left Side Shaft Options |  |  |  |  |  |  |  |  |
| Right Side Shaft Options |  |  |  |  |  |  |  |  |

- 2, 5, 10, and 20-ton ball screw ComDRIVEs are available with positions #1, #3, and #5.
- 30-ton ball screw ComDRIVEs are available with positions #1, #4, #7 and #8.

* These positions are not standard. Contact Joyce with your requirements.

# BALL SCREW ComDRIVEs® COLUMN LOADING




This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.) The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact factory for assistance.

# BALL SCREW ComDRIVEs® SPECIFICATIONS

| 2-Ton Model Number | | CDB62 | | | CDB122 | | CDB242 | | | CDHB62 | | | CDHB122 | CDHB242 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 5 | 7 1/2 | 10 | 5 | 7 1/2 | 10 | 7 1/2 | 5 | 7 1/2 | 10 |
| Travel Speed IPM | | 13.88 | 9.50 | 7.04 | 6.94 | 4.75 | 3.47 | 2.38 | 1.76 | 55.50 | 38.00 | 28.16 | 19.00 | 13.88 | 9.50 | 7.04 |
| Lifting Capacity, Lbs. | 1/3 HP | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 1,025 | 1,455 | 1,925 | 2,595 | 3,015 | 4,000 | 4,000 |
| | 1/2 HP | | | | | | | | | 1,580 | 2,220 | 2,925 | 3,955 | 4,000 | | |
| | 3/4 HP | | | | | | | | | 2,400 | 3,375 | | 4,000 | | | |

| 5-Ton Model Number | | CDB65 | | CDB125 | CDB245 | CDHB65 | | CDHB125 | CDHB245 |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 10 | 10 | 5 | 10 | 10 | 10 |
| Travel Speed IPM | | 26.29 | 13.34 | 6.67 | 3.34 | 55.50 | 28.16 | 14.08 | 7.04 |
| Lifting Capacity, Lbs. | 1 HP | 6,770 | 10,000 | 10,000 | 10,000 | 3,200 | 5,950 | 10,000 | 10,000 |
| | 1 1/2 HP | 10,000 | | | | 4,900 | | | |
| | 2 HP | | | | | 6,600 | | | |

| 10-Ton Model Number | | CDBL810 | | CDBL2410 | | CDHBL810 | | CDHBL2410 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 19.72 | 10.00 | 6.57 | 3.34 | 41.63 | 21.13 | 13.88 | 7.04 |
| Lifting Capacity, Lbs. | 1 HP | 8,555 | 16,425 | 20,000 | 20,000 | 4,050 | 7,780 | 9,910 | 18,445 |
| | 1 1/2 HP | 13,390 | | | | 6,340 | | 15,500 | |
| | 2 HP | 18,210 | | | | 8,625 | | 20,000 | |
| | 3 HP | 20,000 | 20,000 | | | 13,370 | 20,000 | | |
| | 5 HP | | | | | 20,000 | | | |

| 10-Ton Model Number | | CDB810 | | CDB2410 | | CDHB810 | | CDHB2410 | |
|---|---|---|---|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 6.94 | 3.52 | 41.63 | 21.13 | 13.88 | 7.04 |
| Lifting Capacity, Lbs. | 1 HP | 8,100 | 15,560 | 19,820 | 20,000 | 4,050 | 7,780 | 9,910 | 18,445 |
| | 1 1/2 HP | 12,685 | | 20,000 | | 6,340 | | 15,500 | |
| | 2 HP | 17,255 | | | | 8,625 | | 20,000 | |
| | 3 HP | 20,000 | 20,000 | | | 13,370 | 20,000 | | |
| | 5 HP | | | | | 20,000 | | | |

| 20-Ton Model Number | | CDB820 | | CDB2420 | |
|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.81 | 10.56 | 6.94 | 3.52 |
| Lifting Capacity, Lbs. | 1 HP | 6,965 | 14,285 | 16,720 | 33,120 |
| | 1 1/2 HP | 11,480 | | 27,550 | |
| | 2 HP | 15,980 | | 38,360 | |
| | 3 HP | 25,330 | 40,000 | 40,000 | 40,000 |
| | 5 HP | 40,000 | | | |

| 30-Ton Model Number | | CDB1130 | | CDB3230 | |
|---|---|---|---|---|---|
| Reducer Ratio | | 5 | 10 | 5 | 10 |
| Travel Speed IPM | | 20.60 | 10.46 | 6.87 | 3.49 |
| Lifting Capacity, Lbs. | 3 HP | 24,295 | 46,080 | 54,745 | 60,000 |
| | 5 HP | 42,165 | 60,000 | 60,000 | |
| | 7 1/2 HP | 60,000 | | | |

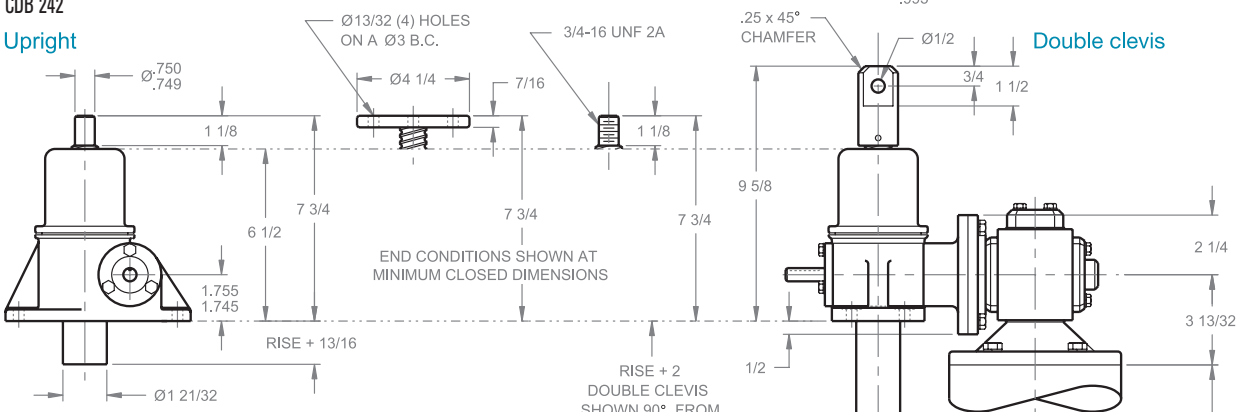
Important Note: Ball Screw ComDRIVEs are not self-locking. Brake motors or external locking systems are required.

# BALL SCREW ComDRIVEs®

## 2 TON REVERSE BASE - 1" SCREW STANDARD

CDB 62
CDB 122
CDB 242

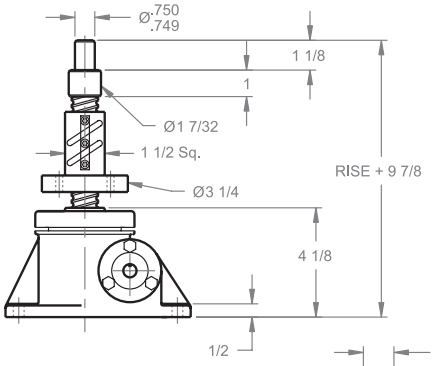
### Upright



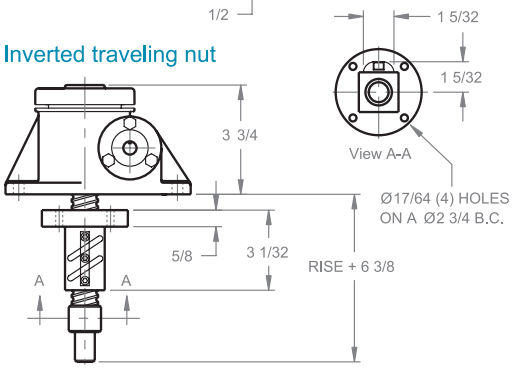

### Double clevis



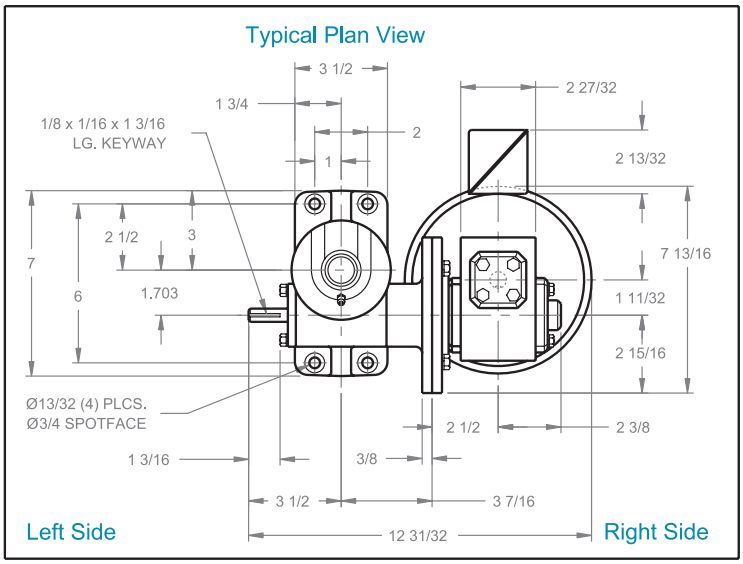

### Upright traveling nut



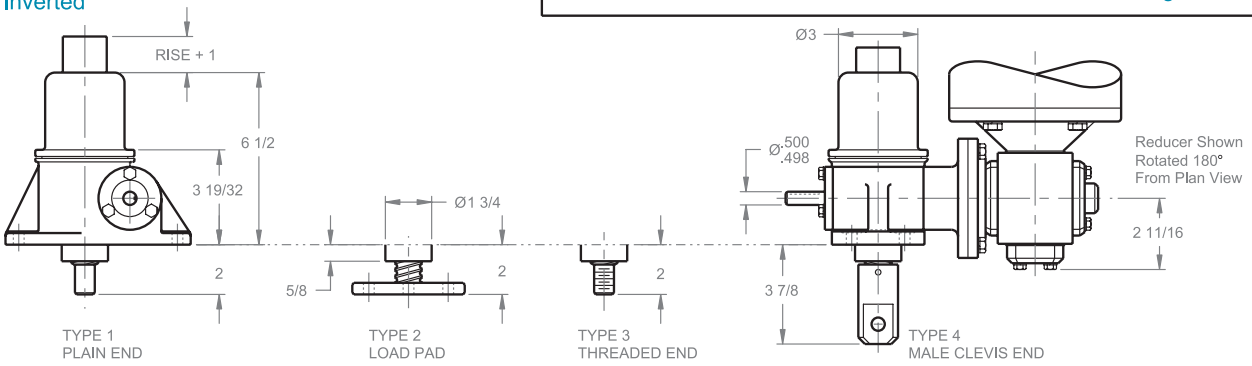

### Inverted traveling nut




### Typical Plan View




### Inverted

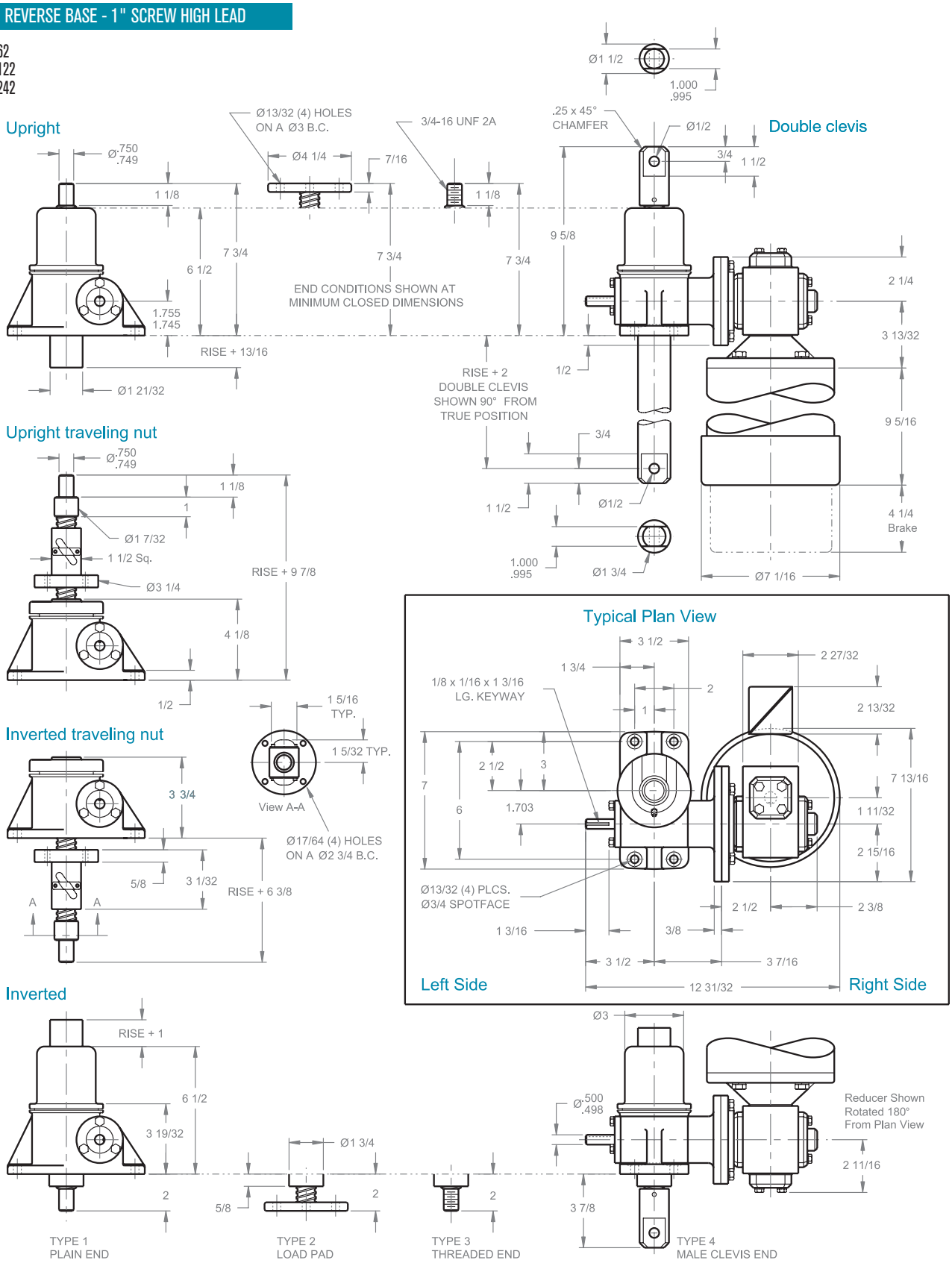



NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

## 2 TON REVERSE BASE - 1" SCREW HIGH LEAD

CDHB 62
CDHB 122
CDHB 242



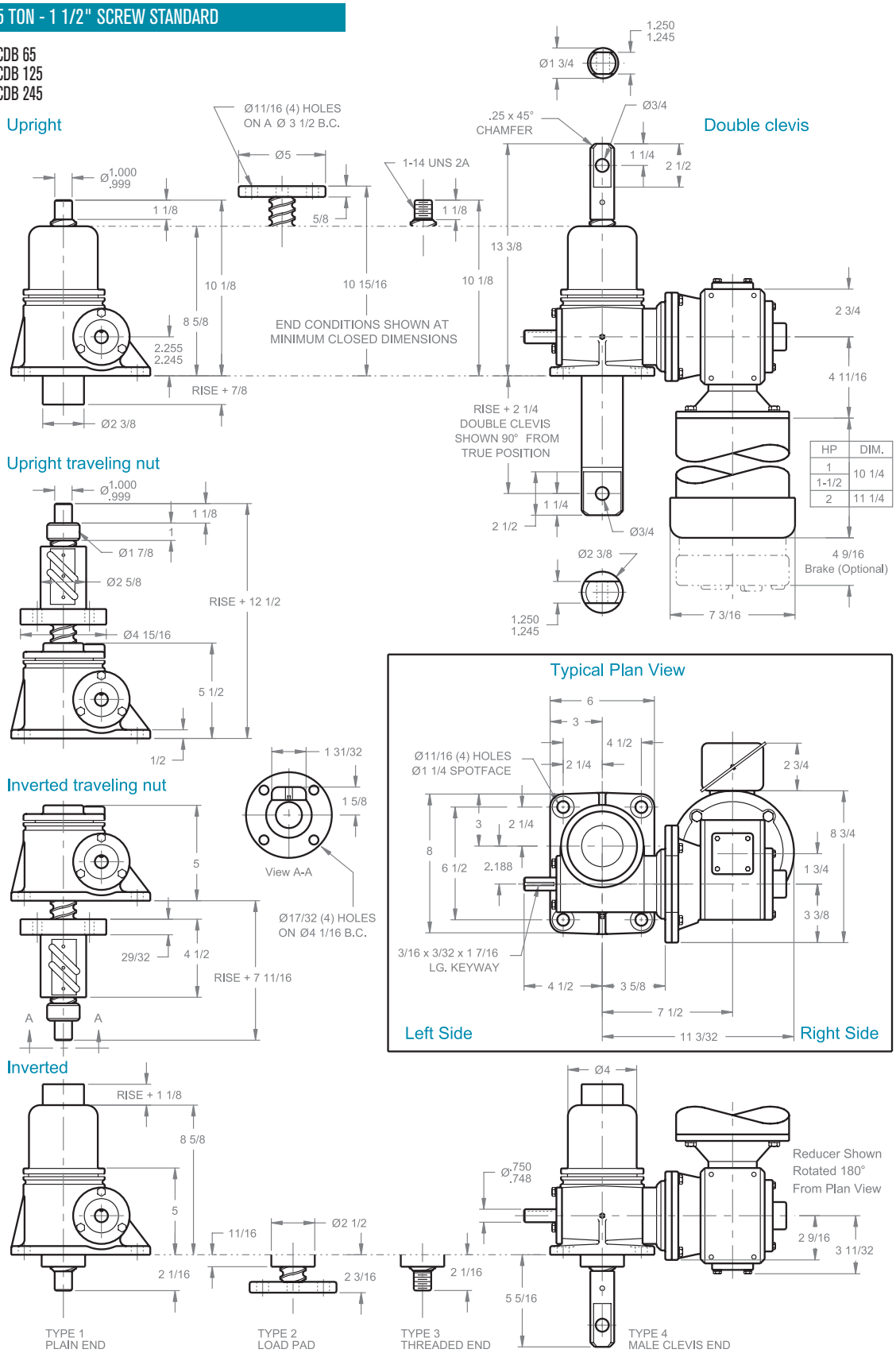

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

## 5 TON - 1 1/2" SCREW STANDARD

CDB 65
CDB 125
CDB 245



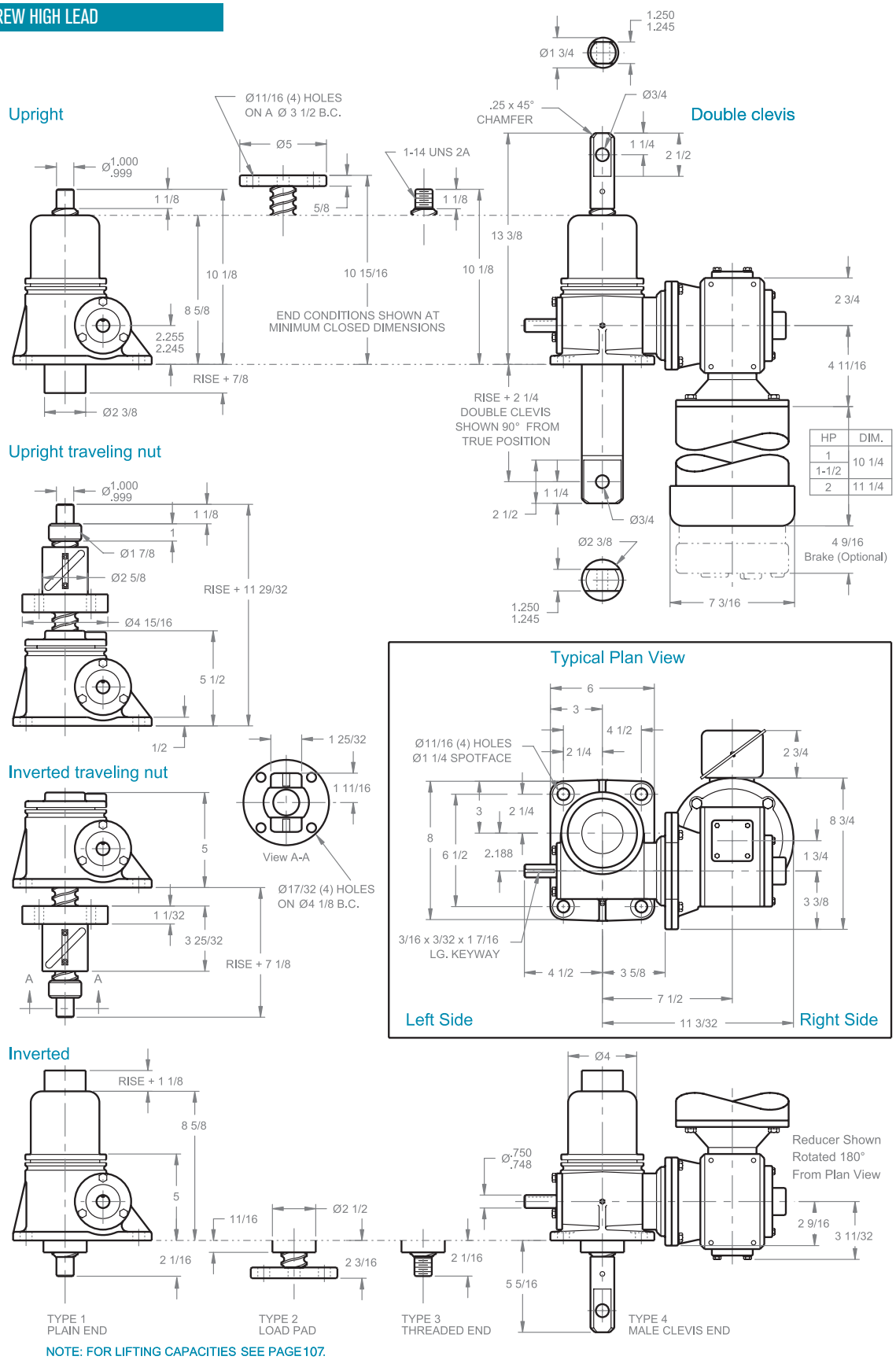

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

## 5 TON - 1 1/2" SCREW HIGH LEAD

CDHB 65
CDHB 125
CDHB 245




NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

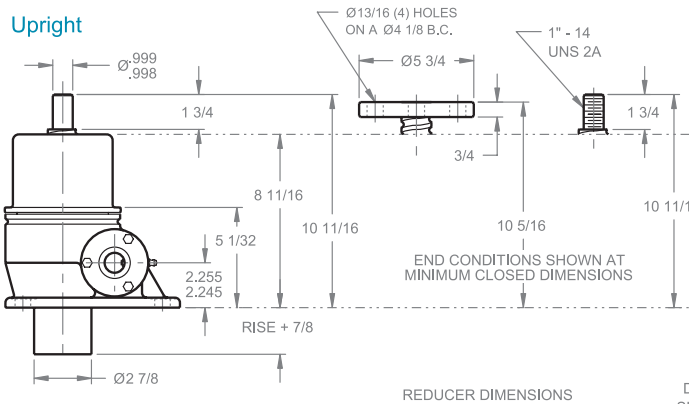
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

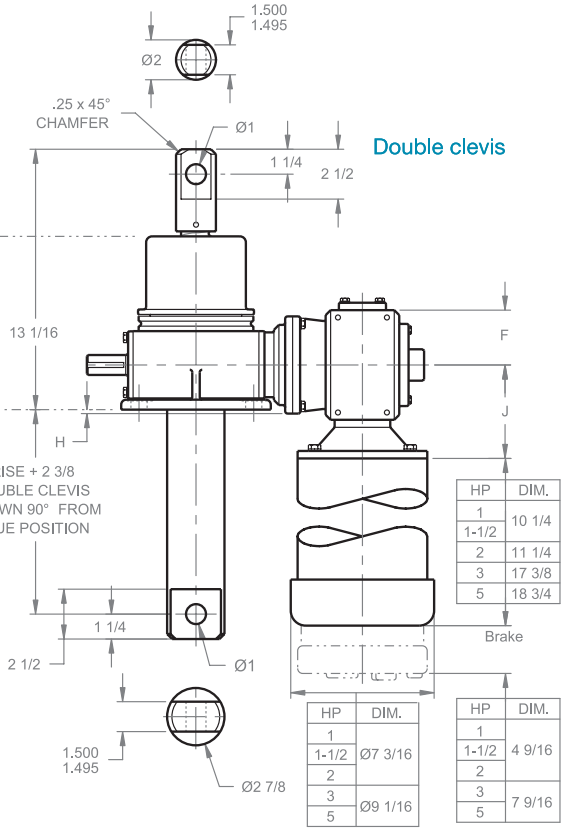
## 10 TON - 1 1/2" SCREW STANDARD

CDBL 810
CDBL 2410

### Upright




### Double clevis



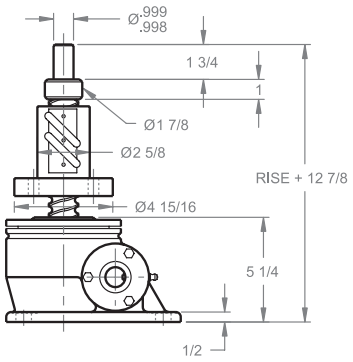

| REDUCER DIMENSIONS | | |
|---|---|---|
| HP | 1, 1 1/2, 2 | 3, 5 |
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 1 1/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

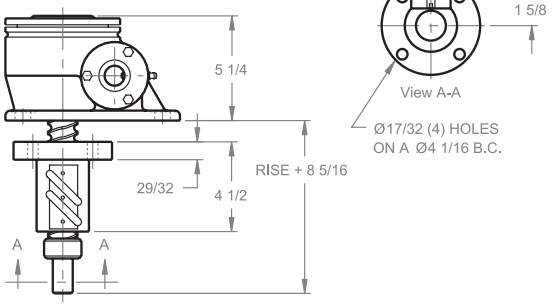
| HP | DIM. |
|---|---|
| 1 | Ø7 3/16 |
| 1-1/2 | |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | 4 9/16 |
| 1-1/2 | |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

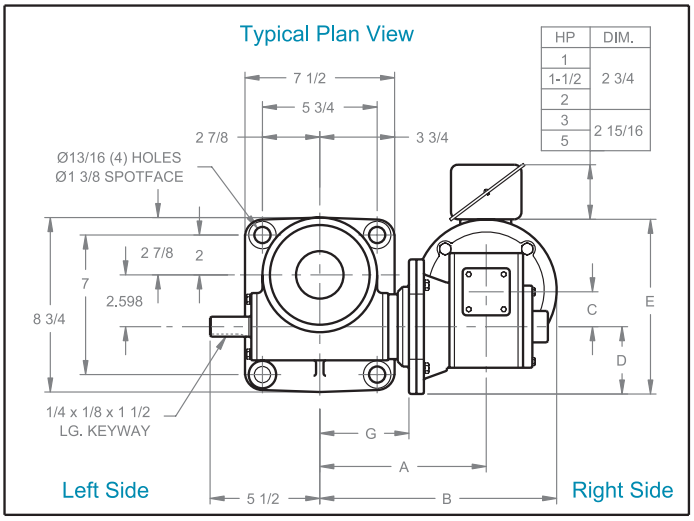
### Upright traveling nut




### Inverted traveling nut

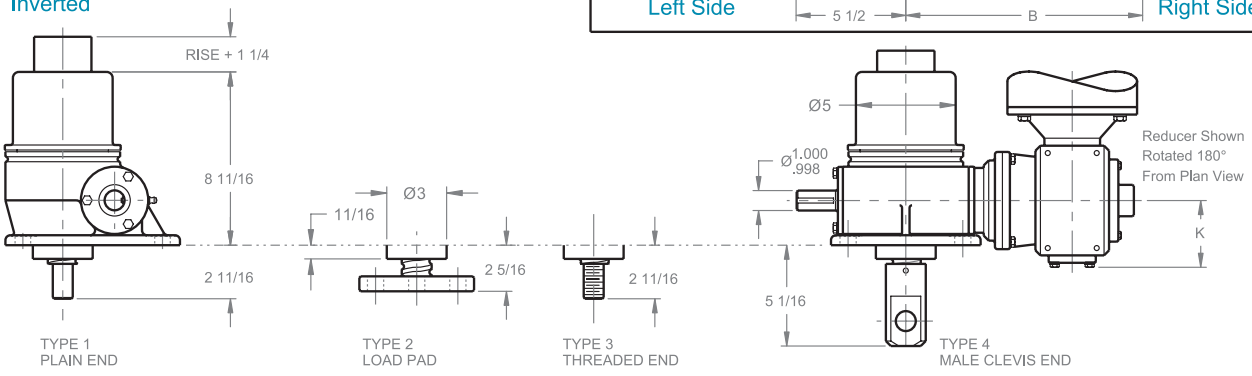



### Typical Plan View




| HP | DIM. |
|---|---|
| 1 | 2 3/4 |
| 1-1/2 | |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

### Inverted




NOTE: FOR LIFTING CAPACITIES SEE PAGE107.

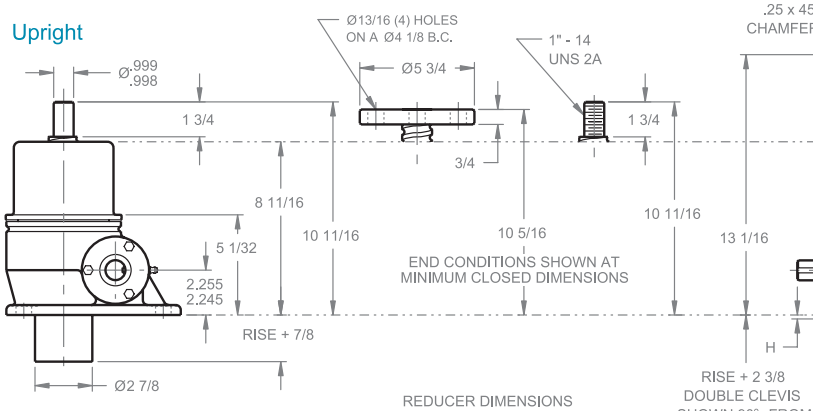
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

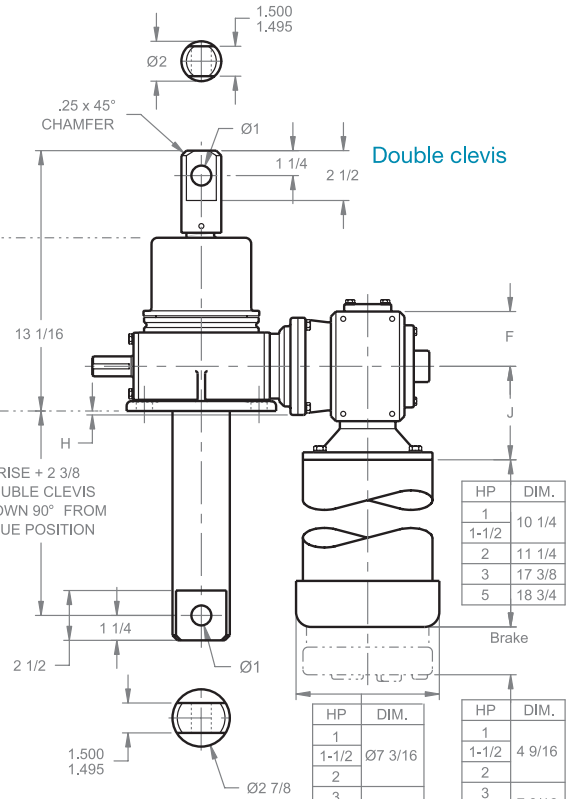
## 10 TON - 1 1/2" SCREW STANDARD HIGH LEAD

CDHBL 810
CDHBL 2410

### Upright




### Double clevis

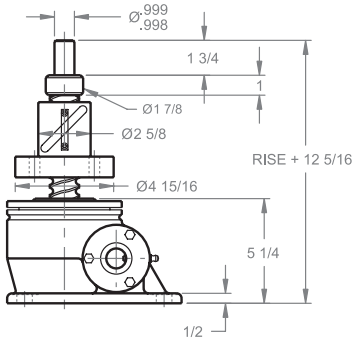



| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

| HP | DIM. |
|---|---|
| 1 | Ø7 3/16 |
| 1-1/2 | |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | 4 9/16 |
| 1-1/2 | |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

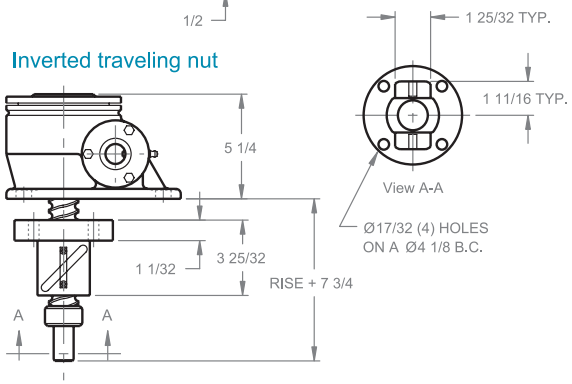
### Upright traveling nut



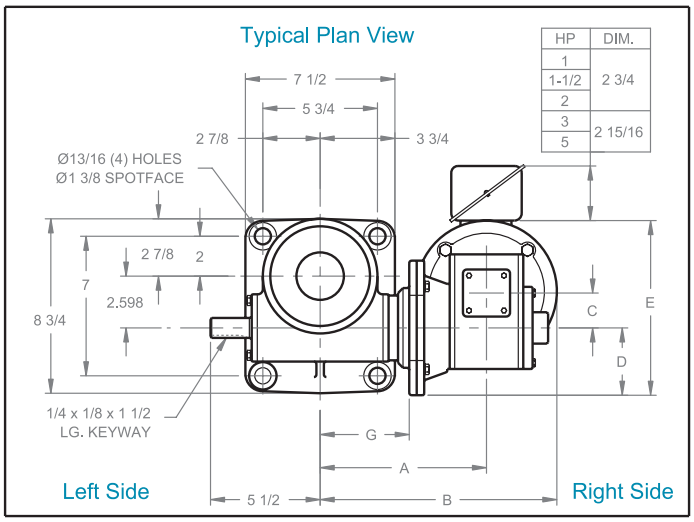

REDUCER DIMENSIONS

| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 1 1/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

### Inverted traveling nut

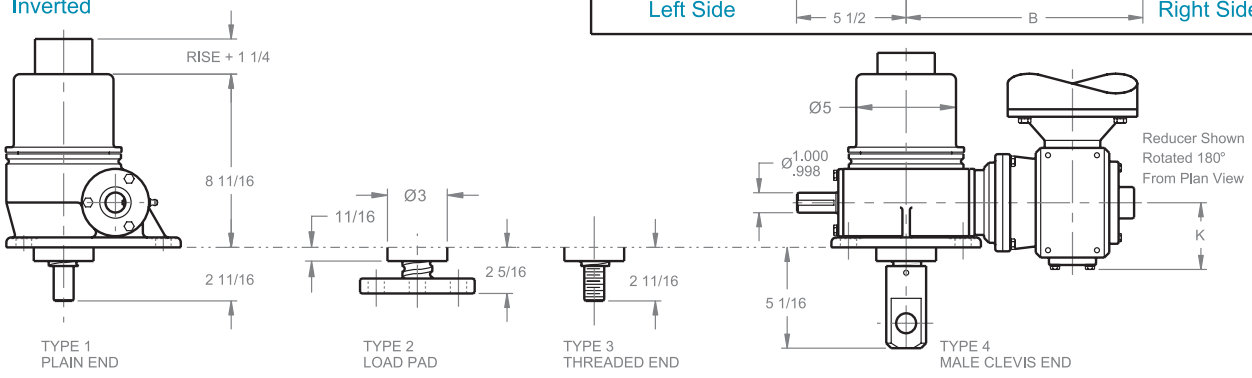



### Typical Plan View




| HP | DIM. |
|---|---|
| 1 | 2 3/4 |
| 1-1/2 | |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

### Inverted



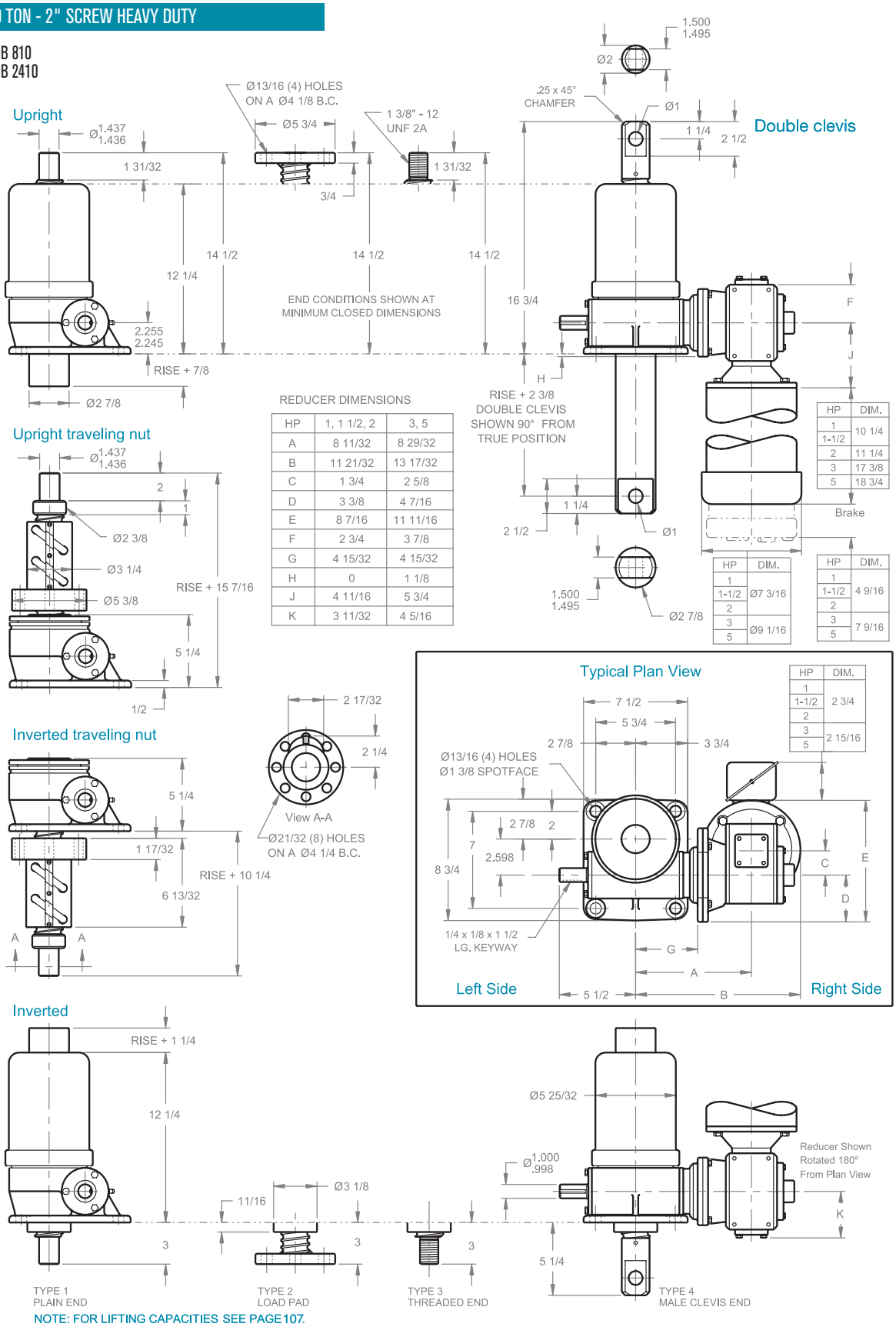

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

## 10 TON - 2" SCREW HEAVY DUTY

CDB 810
CDB 2410




| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 1 1/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | Ø7 3/16 |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | 4 9/16 |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | 10 1/4 |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

| HP | DIM. |
|---|---|
| 1 | |
| 1-1/2 | 2 3/4 |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

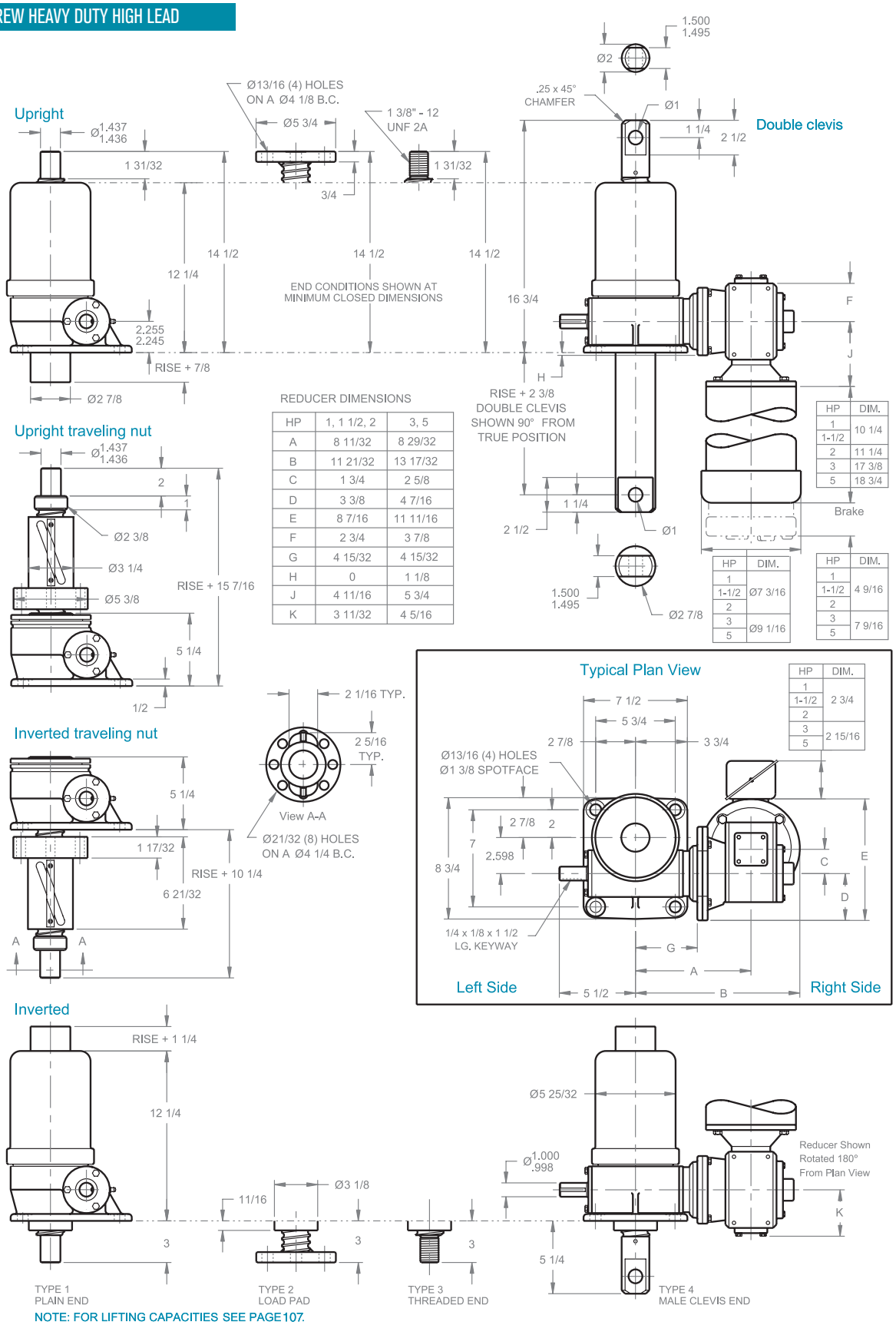
NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

## 10 TON - 2" SCREW HEAVY DUTY HIGH LEAD

CDHB 810
CDHB 2410



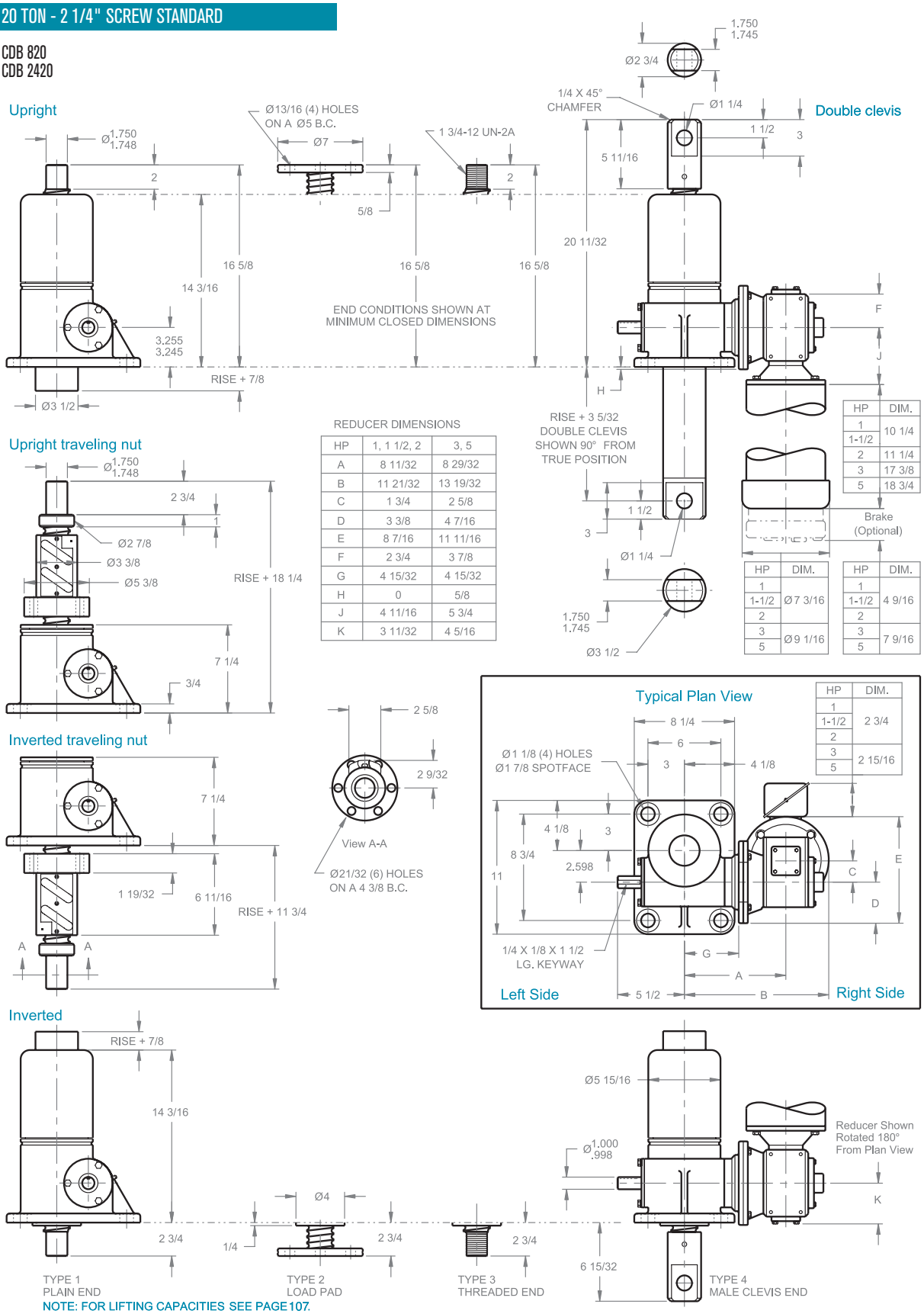

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BALL SCREW ComDRIVEs®

## 20 TON - 2 1/4" SCREW STANDARD

CDB 820
CDB 2420




REDUCER DIMENSIONS

| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 19/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 5/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

| HP | DIM. |
|---|---|
| 1 | 10 1/4 |
| 1-1/2 | |
| 2 | 11 1/4 |
| 3 | 17 3/8 |
| 5 | 18 3/4 |

| HP | DIM. |
|---|---|
| 1 | Ø7 3/16 |
| 1-1/2 | |
| 2 | |
| 3 | Ø9 1/16 |
| 5 | |

| HP | DIM. |
|---|---|
| 1 | 4 9/16 |
| 1-1/2 | |
| 2 | |
| 3 | 7 9/16 |
| 5 | |

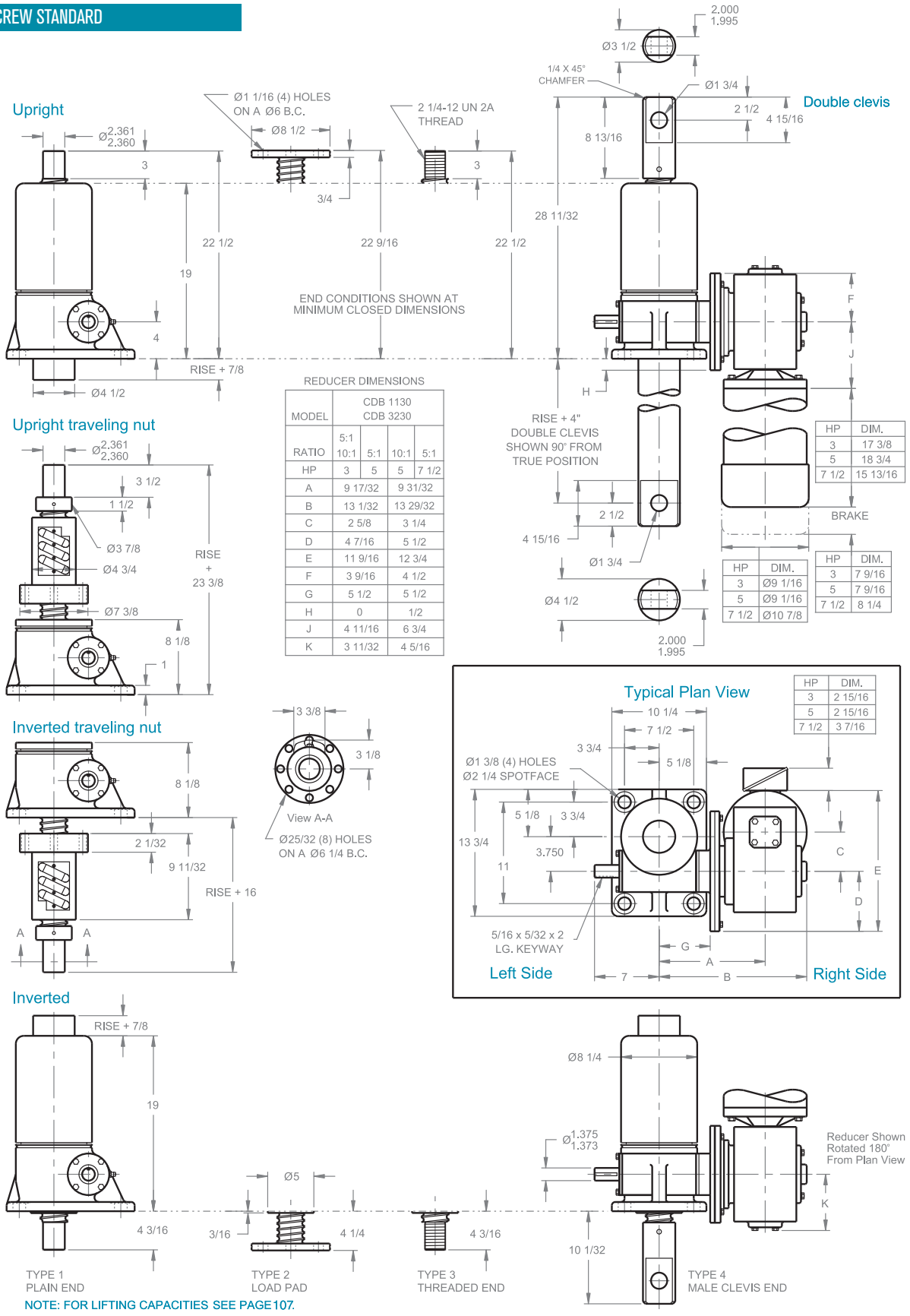
| HP | DIM. |
|---|---|
| 1 | 2 3/4 |
| 1-1/2 | |
| 2 | |
| 3 | 2 15/16 |
| 5 | |

NOTE: FOR LIFTING CAPACITIES SEE PAGE107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

## 30 TON - 3" SCREW STANDARD

CDB 1130
CDB 3230




REDUCER DIMENSIONS

| MODEL | CDB 1130 CDB 3230 | | | |
|---|---|---|---|---|
| RATIO | 5:1 10:1 | 5:1 | 10:1 | 5:1 |
| HP | 3 | 5 | 5 | 7 1/2 |
| A | 9 17/32 | | 9 31/32 | |
| B | 13 1/32 | | 13 29/32 | |
| C | 2 5/8 | | 3 1/4 | |
| D | 4 7/16 | | 5 1/2 | |
| E | 11 9/16 | | 12 3/4 | |
| F | 3 9/16 | | 4 1/2 | |
| G | 5 1/2 | | 5 1/2 | |
| H | 0 | | 1/2 | |
| J | 4 11/32 | | 6 3/4 | |
| K | 3 11/32 | | 4 5/16 | |

| HP | DIM. |
|---|---|
| 3 | 17 3/8 |
| 5 | 18 3/4 |
| 7 1/2 | 15 13/16 |

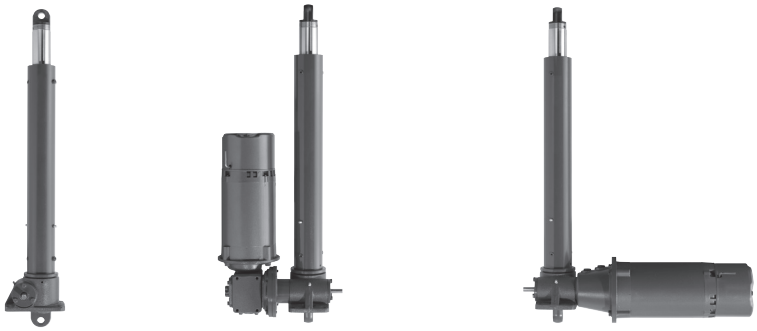
| HP | DIM. |
|---|---|
| 3 | Ø9 1/16 |
| 5 | Ø9 1/16 |
| 7 1/2 | Ø10 7/8 |

| HP | DIM. |
|---|---|
| 3 | 7 9/16 |
| 5 | 7 9/16 |
| 7 1/2 | 8 1/4 |

| HP | DIM. |
|---|---|
| 3 | 2 15/16 |
| 5 | 2 15/16 |
| 7 1/2 | 3 7/16 |

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.



Joyce electric cylinders are designed to lift and precisely position loads in industrial environments where protection of the lifting screw mechanism is critical and low maintenance is desired. Requiring only electric power, Joyce electric cylinders may also be used in place of hydraulic cylinders, eliminating the cost and potential for leaks associated with hydraulic systems.

Electric cylinders use the same drive housings offered on our rugged machine screw and ball screw jacks. They are available in 2.5-ton to 20-ton capacities. Electric cylinders can achieve speeds up to 546 inches per minute and raise loads up to 100 inches. Complete dynamic speed/load ratings and maximum rise information can be viewed on our quick reference charts (pages 125 to 129). Both acme screw (ECA) and ball screw (ECB) models are designed to operate at the charted capacities under both tension and compression loading.

Joyce Electric Cylinder Features and Benefits:

- Ground and hard-chrome plated inner cylinder tube resists harsh contaminants while providing smooth cylinder translation.
- Dual lip tube seals retain lubrication while preventing dirt and grime from entering the internal cavity and contaminating the lifting screw.
- Enamel outer finish provides a durable coating for external surfaces.
- Rigid cylinder tube guide bearings provide resistance to buckling (external guides are required when side loads are present).
- Alloy steel input shafts riding on tapered roller bearings provide proper wormgear alignment for increased service life.
- Spring-loaded input shaft seals prevent the loss of lubrication.

Joyce can customize electric cylinders to meet your specifications.

Scan the QR Code to view this product on our website.




# ELECTRIC CYLINDERS

**Electric Cylinder Operation:**
**The input shaft (worm) shaft rotates a wormgear, which in turn rotates the lifting screw. As the lifting screw rotates, it forces the lifting nut (fixed to the cylinder tube) to translate, thus extending or retracting the cylinder tube. For proper operation, the load being lifted must be restrained from rotation.**

**Joyce offers Electric Cylinders in several models including:**
- **Standard**
- **Motor mount**
- **ComDRIVE®**

A guide for ordering is on pages 120 and 121.

# ELECTRIC CYLINDERS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| 2.5-Ton ACME Screw | 2.5-Ton Ball Screw | 3-Ton ACME Screw | 3-Ton Ball Screw | 5-Ton ACME Screw | 5-Ton Ball Screw | 10-Ton ACME Screw | 10-Ton Ball Screw | 20-Ton ACME Screw | 20-Ton Ball Screw |
|---|---|---|---|---|---|---|---|---|---|
| ECAL242.5<br><br>ECAH62.5<br>ECAH122.5<br>ECAH242.5 | ECBL62.5<br>ECBL122.5<br>ECBL242.5<br><br>ECBM62.5<br><br>ECBH62.5 | ECAL63<br>ECAL123<br>ECAL243 | ECBL63<br>ECBL123<br>ECBL243<br><br>ECBH63<br>ECBH123<br>ECBH243 | ECAL65<br>ECAL245<br><br>ECAM65<br>ECAM125<br>ECAM245<br><br>ECAH65<br>ECAH125<br>ECAH245 | ECBL65<br>ECBL125<br>ECBL245<br><br>ECBM65<br>ECBM125<br>ECBM245<br><br>ECBH65<br>ECBH125<br>ECBH245 | ECAL810<br>ECAL2410<br><br>ECAM810<br>ECAM2410<br><br>ECAH810<br>ECAH2410 | ECBL810<br>ECBL2410<br><br>ECBM810<br>ECBM2410<br><br>ECBH810<br>ECBH2410 | ECAL820<br>ECAL2420<br><br>ECAM820<br>ECAM2420<br><br>ECAH820<br>ECAH2420 | ECBL820<br>ECBL2420 |

Important Note: Electric Cylinders that are ≥ 30% efficient may lower under load. Brake motors or external locking systems are required.
Detailed information about each electric cylinder model is available on pages 125-134.

## Sample Part Number: ECAL654C-18.5-STDX-STDX-X

### Tube End Conditions



3 (threaded end)



4 (male clevis)



5 (female clevis)



6 (female clevis with pin)

### Cylinder Rise

Rise is travel expressed in inches and not the actual tube length.

The allowable travel for each unit is listed in the Quick Reference section.

Allowable lengths differ for vertical and horizontal mounting.

### Left Side Shaft Code

(see below)

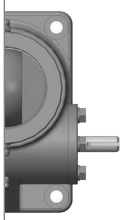


XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 121.

### Right Side Shaft Code

(see below)



XXXX=Remove
STDX=Standard
CUST=Custom

For optional shaft codes, see page 121.

### Additional Options*

X=Standard, no additional options

S=Additional Specification Required (comment as necessary)

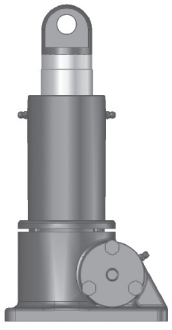
**Finishes p. 178**
F1=Do Not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**Motor Options**
M1=Less Motor
M2=Brake Motor
M3=Single Phase Motor (120VAC)
M4=50Hz Motor
M5=Special Motor

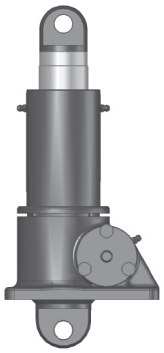
**Grease/Seals**
H1=High Temperature Operation
H2=Food Grade Grease

* Specify as many options as needed

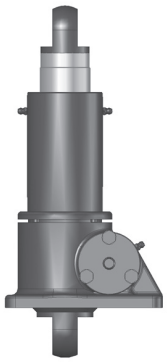
### Base Designs



F=Flange Base



C=Clevis Base



R=Rotated Clevis Base

# ELECTRIC CYLINDERS SHAFT CODES

Instructions: Select the appropriate shaft codes for both right and left hand shafts. One shaft code must be specified for each side of the electric cylinder.

## Mechanical Counters (p. 176)



CNTO=0.001" Increments

Note: Contact Joyce for availability and options.

## Hand Wheels (p. 176)



HW04=4" dia
HW06=6" dia
HW08=8" dia
HW10=10" dia
HW12=12" dia

Not recommended for electric cylinders that are ≥ 30% efficient.

## Geared Potentiometers (p. 171)



POTA=0-10V
POTB=4-20mA
POTC=0-10V w/2 switches
POTD=4-20mA w/2 switches
IP65 rated enclosures

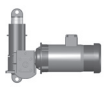
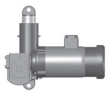
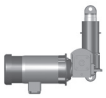
## Encoders (pp. 172)



ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR

## ComDRIVE Reducers (pp. 125-134)

Ordering Example: P2AC — Motor code from chart at right

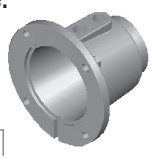
| Mounting Positions | | | | | Ratio |
|---|---|---|---|---|---|
| Code | P1 | P2 | P3 | P4 | 5:1 Code A |
| Left Side Shaft Positions |  |  |  |  | 7.5:1 Code B |
| Right Side Shaft Positions |  |  |  |  | 10:1 Code C<br>15:1 Code D<br>Special Ratio Code X |

## Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| 1 HP | D |
| 1-1/2 HP | E |
| 2 HP | F |
| 3 HP | L |
| 5 HP | G |

## Motor Mounts (pp. 174-175)

Ordering Example: MMA A



MMA=56C
MMB=140TC
MMC=180TC
MMD=210TC

Motor code from chart at left

For servo motor mounts see p. 174

Standard motor adapters are aluminum.

All standard motors are 3-phase, 208-230/460 VAC or 230/460 VAC. Specify the appropriate motor size from the chart above. Refer to the "Additional Options" chart on the preceding page as needed. Brake motors are required for electric cylinders that are more than 30% efficient. Contact Joyce for options that are not listed.

## Mechanical Limit Switches (p. 170)

Ordering Example: LA13

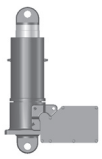
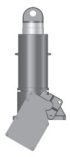
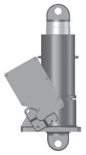
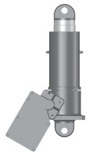
### Models

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

### Available Positions

| | 1 | 3 | 5 |
|---|---|---|---|
| Left Side Shaft Options |  |  |  |
| Right Side Shaft Options |  |  |  |

• 2.5, 3, 5, 10, and 20 Ton Electric Cylinders are available with positions #1, #3, and #5

## To order additional options, use these part numbers (p. 124)

Female Clevis Bracket
FCB-30
FCB-100
FCB-200

Clevis Pin w/ retaining rings
CP-30
CP-100
CP-200

Female Rod Clevis
FRC-30
FRC-100
FRC-200

# ELECTRIC CYLINDERS MODELS




### Standard

The Joyce standard electric cylinder is intended for applications where the customer provides their own drive mechanism. To determine capacity, input torque, and turns-per-inch use the specification chart on page 123. This design can also be used where one or more electric cylinders are being driven by one common drive motor or in combination with the motor mount (direct drive) or ComDRIVE® models listed below.

**Example part number:**
**ECAL635C-15.00-STDX-HW08-X**

Acme screw (ECA), low lead (L), 6:1 gear ratio (6), 3-ton capacity (3), female clevis (5), clevis base (C), 15 inches rise (15), standard input shaft left hand side of jack (STDX), 8" diameter hand wheel right side of jack (HW08), no additional options (X).




### Motor Mount (direct drive)

Joyce motor mount electric cylinders are intended for higher speed applications. Motor mount models can be used in conjunction with one or more of the standard electric cylinders shown above. To determine lifting speed and capacity, view “direct drive” models shown on the quick reference charts (pages 125-129). Standard motors are 3-phase, 230/460 VAC, 60 Hz, and 1750 RPM. For additional motor information, see page 175.

**Example part number:**
**ECAM24104R-9.50-STDX-MMBE-F2**

Acme screw (ECA), medium lead (M), 24:1 gear ratio (24), 10-ton capacity (10), male clevis (4), rotated clevis base (R), 9 1/2 inches rise (9.50), standard input shaft left hand side of jack (STDX), 145TC motor mount (MMB) with 1 1/2 HP motor (E) on right hand side, epoxy paint (F2).




### ComDRIVE®

Joyce ComDRIVE® models include a right angle gearmotor mounted to the right or left side of the standard model. ComDRIVEs are intended for applications requiring heavy lifting capacities at speeds up to 34 inches per minute (acme screw) and 104 inches per minute (ball screw). ComDRIVE models can be used in conjunction with one or more of the standard electric cylinders shown above. To determine lifting speeds and capacity, refer to the charts on pages 125-129.

**Example part number:**
**ECAH8206F-52.25-P1CL-ENCX-M3**

Acme screw (ECA), high lead (H), 8:1 gear ratio (8), 20-ton capacity (20), female clevis with pin (6), flange base (F), 52 1/4 inches rise (52.25), 10:1 reducer with a 3 horsepower motor mounted to left hand side of jack (P1CL), encoder on right side of jack (ENCX), single phase motor (M3).

# ELECTRIC CYLINDERS SPECIFICATIONS

| Model | Static Capacity | Screw Diameter | Thread Pitch/Lead | Wormgear Ratio | Worm Shaft Turns for 1" Travel | Tare Torque (Inch Lbs.) | Starting Torque (Inch Lbs.) | Operating Torque (Inch Lbs.) | Translating Tube Torque (Inch Lbs.) | Base Weight | Weight per Inch Travel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ECAL242.5 | 2.5 ton | 1 | .25 pitch ACME 2C | 24:1 | 96 | 6 | .018W* | .010W* @500 RPM | .098W* | 24 | 1.5 |
| ECAH62.5 | | | .25 pitch .5 lead ACME 2C | 6:1 | 12 | 8 | .056W* | .040W* @500 RPM | .140W* | | |
| ECAH122.5 | | | | 12:1 | 24 | 7 | .035W* | .023W* @500 RPM | | | |
| ECAH242.5 | | | | 24:1 | 48 | 6 | .025W* | .014W* @500 RPM | | | |
| ECBL62.5 | | | 0.25 lead ball | 6:1 | 24 | 8 | .017W* | .013W* @500 RPM | .045W* | 30 | 1.5 |
| ECBL122.5 | | | | 12:1 | 48 | 7 | .010W* | .008W* @500 RPM | | | |
| ECBL242.5 | | | | 24:1 | 96 | 6 | .008W* | .005W* @500 RPM | | | |
| ECBM62.5 | | | .5 lead ball | 6:1 | 12 | 8 | .033W* | .026W* @500 RPM | .089W* | | |
| ECBH62.5 | | | 1.0 lead ball | 6:1 | 6 | 8 | .065W* | .051W* @500 RPM | .177W* | | |
| ECAL63 | 3 ton | 1 1/4 | .25 pitch ACME 2C | 6:1 | 24 | 9 | .048W* | .033W* @500 RPM | .114W* | 26 | 1.9 |
| ECAL123 | | | | 12:1 | 48 | 8 | .030W* | .018W* @500 RPM | | | |
| ECAL243 | | | | 24:1 | 96 | 7 | .021W* | .011W* @500 RPM | | | |
| ECBL63 | | 1 3/20 | .2 lead ball | 6:1 | 30 | 9 | .013W* | .011W* @500 RPM | .036W* | 32 | 1.9 |
| ECBL123 | | | | 12:1 | 60 | 8 | .008W* | .006W* @500 RPM | | | |
| ECBL243 | | | | 24:1 | 120 | 7 | .006W* | .004W* @500 RPM | | | |
| ECBH63 | | 1 1/16 | .625 lead ball | 6:1 | 9.6 | 9 | .041W* | .032W* @500 RPM | .111W* | | 1.8 |
| ECBH123 | | | | 12:1 | 19.2 | 8 | .025W* | .018W* @500 RPM | | | |
| ECBH243 | | | | 24:1 | 38.4 | 7 | .018W* | .011W* @500 RPM | | | |
| ECAL65 | 5 ton | 1 1/2 | .25 pitch ACME 2C | 6:1 | 24 | 15 | .057W* | .039W* @300 RPM | .130W* | 50 | 2.3 |
| ECAL245 | | | | 24:1 | 96 | 12 | .026W* | .014W* @300 RPM | | | |
| ECAM65 | | | .375 pitch STUB ACME | 6:1 | 16 | 15 | .065W* | .045W* @300 RPM | .151W* | | |
| ECAM125 | | | | 12:1 | 32 | 13 | .041W* | .025W* @300 RPM | | | |
| ECAM245 | | | | 24:1 | 64 | 12 | .030W* | .016W* @300 RPM | | | |
| ECAH65 | | | .25 pitch .5 lead ACME 2C | 6:1 | 12 | 15 | .073W* | .051W* @300 RPM | .171W* | | |
| ECAH125 | | | | 12:1 | 24 | 13 | .046W* | .029W* @300 RPM | | | |
| ECAH245 | | | | 24:1 | 48 | 12 | .033W* | .018W* @300 RPM | | | |
| ECBL65 | | | .474 lead ball | 6:1 | 12.66 | 15 | .032W* | .025W* @300 RPM | .084W* | 65 | 2.3 |
| ECBL125 | | | | 12:1 | 25.33 | 13 | .020W* | .014W* @300 RPM | | | |
| ECBL245 | | | | 24:1 | 50.66 | 12 | .015W* | .009W* @300 RPM | | | |
| ECBM65 | | | 1.0 lead ball | 6:1 | 6 | 15 | .067W* | .052W* @300 RPM | .177W* | | |
| ECBM125 | | | | 12:1 | 12 | 13 | .042W* | .030W* @300 RPM | | | |
| ECBM245 | | | | 24:1 | 24 | 12 | .031W* | .018W* @300 RPM | | | |
| ECBH65 | | | 1.875 lead ball | 6:1 | 3.2 | 15 | .125W* | .098W* @300 RPM | .332W* | | |
| ECBH125 | | | | 12:1 | 6.4 | 13 | .079W* | .055W* @300 RPM | | | |
| ECBH245 | | | | 24:1 | 12.8 | 12 | .057W* | .034W* @300 RPM | | | |
| ECAL810 | 10 ton | 2 | .25 pitch ACME 2C | 8:1 | 32 | 30 | .052W* | .036W* @200 RPM | .162W* | 64 | 2.8 |
| ECAL2410 | | | | 24:1 | 96 | 25 | .026W* | .016W* @200 RPM | | | |
| ECAM810 | | | .5 pitch ACME 2C | 8:1 | 16 | 30 | .061W* | .044W* @200 RPM | .195W* | | 2.6 |
| ECAM2410 | | | | 24:1 | 48 | 25 | .031W* | .019W* @200 RPM | | | |
| ECAH810 | | | .333 pitch .666 lead ACME 2C | 8:1 | 12 | 30 | .070W* | .051W* @200 RPM | .228W* | | 2.7 |
| ECAH2410 | | | | 24:1 | 36 | 25 | .035W* | .022W* @200 RPM | | | |
| ECBL810 | | 1 1/2 | .474 lead ball | 8:1 | 16.88 | 30 | .023W* | .019W* @200 RPM | .084W* | 81 | 2.3 |
| ECBL2410 | | | | 24:1 | 50.66 | 25 | .012W* | .008W* @200 RPM | | | |
| ECBM810 | | | 1.0 lead ball | 8:1 | 8 | 30 | .049W* | .040W* @200 RPM | .172W* | | |
| ECBM2410 | | | | 24:1 | 24 | 25 | .024W* | .017W* @200 RPM | | | |
| ECBH810 | | | 1.875 lead ball | 8:1 | 4.27 | 30 | .091W* | .074W* @200 RPM | .332W* | | |
| ECBH2410 | | | | 24:1 | 12.8 | 25 | .045W* | .031W* @200 RPM | | | |
| ECAL820 | 20 ton | 2 1/2 | .25 pitch ACME 2C | 8:1 | 32 | 60 | .066W* | .044W* @200 RPM | .194W* | 124 | 4.9 |
| ECAL2420 | | | | 24:1 | 96 | 40 | .035W* | .019W* @200 RPM | | | |
| ECAM820 | | | .5 pitch ACME 2C | 8:1 | 16 | 60 | .075W* | .052W* @200 RPM | .227W* | | 4.7 |
| ECAM2420 | | | | 24:1 | 48 | 40 | .039W* | .022W* @200 RPM | | | |
| ECAH820 | | | .375 pitch .75 lead ACME 2C | 8:1 | 10.67 | 60 | .088W* | .062W* @200 RPM | .273W* | | 4.8 |
| ECAH2420 | | | | 24:1 | 32 | 40 | .046W* | .027W* @200 RPM | | | |
| ECBL820 | | 2 1/4 | .5 lead ball | 8:1 | 16 | 60 | .026W* | .020W* @200 RPM | .089W* | 164 | 4.5 |
| ECBL2420 | | | | 24:1 | 48 | 40 | .014W* | .009W* @200 RPM | | | |

Important Note: Electric cylinders that are ≥ 30% are not self-locking. Brake motors or external locking systems are required.

*W: Load in pounds.

Tare Torque: Initial torque to overcome seal and normal assembly drag. This value must be added to starting torque or operating torque values.

Starting Torque: Torque value required to start moving a given load (dissipates to operating torque values once the load begins moving).

Operating Torque: Torque required to continuously raise a given load at the input RPM listed.

Translating Tube Torque: Torque required to resist tube rotation.

Lead: The distance traveled axially in one rotation of the lifting screw.

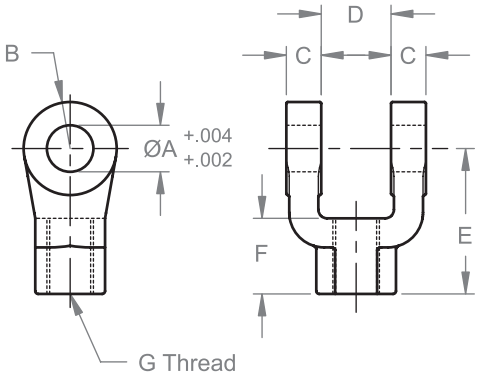
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.

Note: This chart is provided for reference only. For specific information such as allowable continuous travel or ball nut life and other performance factors refer to JAX® Online software or contact Joyce.

# ELECTRIC CYLINDERS CLEVIS AND BRACKET

### Female Rod Clevis

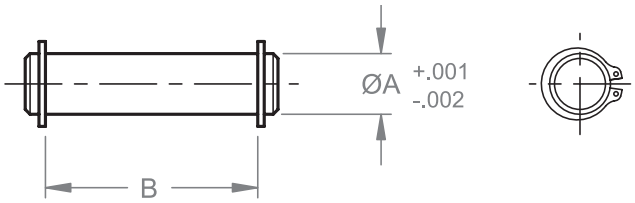
A female rod clevis end is included for type 5 and type 6 end conditions.
They are also available as options.




| Cylinder Capacity | Part Number | Dimensions (Inches) | | | | | | | Load Capacity (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|
| | | ØA | B | C | D | E | F | G | |
| 2.5 & 3 | FRC-30 | 3/4 | 3/4 | 5/8 | 1 1/4 | 2 3/8 | 1 1/8 | 3/4-16 | 11,200 |
| 5 & 10 | FRC-100 | 1 | 1 | 3/4 | 1 1/2 | 3 1/8 | 1 5/8 | 1-14 | 19,500 |
| 20 | FRC-200 | 1 3/8 | 1 3/8 | 1 | 2 | 4 1/8 | 2 | 1 1/4-12 | 33,500 |

### Clevis Pin with Retaining Rings

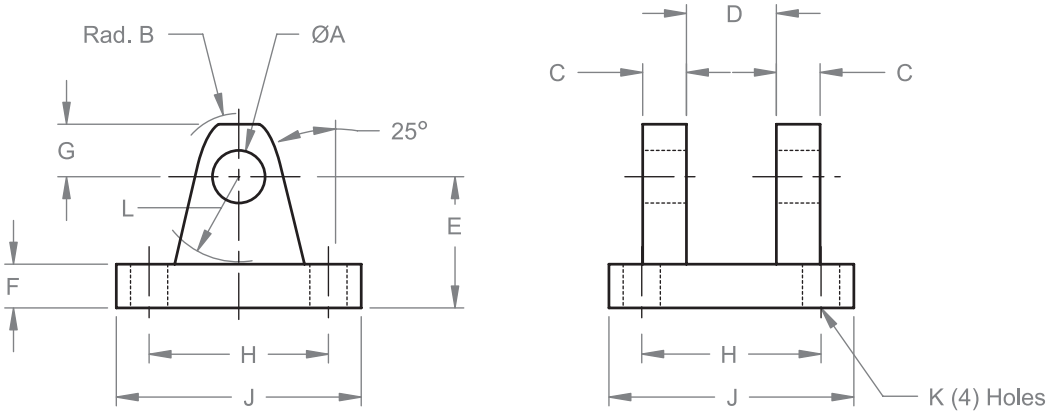
A clevis pin with retaining rings is included on type 6 end conditions.
They are also available as options.




| Cylinder Capacity | Part Number | Dimensions (Inches) | | Load Capacity (Lbs.) |
|---|---|---|---|---|
| | | ØA | B | |
| 2.5 & 3 | CP-30 | 3/4 | 2 5/8 | 19,300 |
| 5 & 10 | CP-100 | 1 | 3 1/8 | 34,300 |
| 20 | CP-200 | 1 3/8 | 4 1/8 | 65,000 |

### Female Clevis Bracket

Female clevis brackets are available as options.




| Cylinder Capacity | Part Number | Dimensions (Inches) | | | | | | | | | | | Load Capacity (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ØA | B | C | D | E | F | G | H | J | K | L | |
| 2.5 & 3 | FCB-30 | 3/4 | 29/32 | 5/8 | 1 1/4 | 1 7/8 | 5/8 | 3/4 | 3.82 | 5 | 17/32 | 1 3/16 | 14,000 |
| 5 & 10 | FCB-100 | 1 | 1 1/4 | 3/4 | 1 1/2 | 2 1/4 | 3/4 | 1 | 4.95 | 6 1/2 | 21/32 | 1 1/2 | 19,200 |
| 20 | FCB-200 | 1 3/8 | 1 21/32 | 1 | 2 | 3 | 7/8 | 1 3/8 | 5.73 | 7 1/2 | 21/32 | 2 | 33,500 |

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ELECTRIC CYLINDERS QUICK REFERENCE

Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 130. Contact Joyce with questions regarding the proper selection of electric cylinders.

| 2.5-Ton Thrust Capacity Electric Cylinders | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | Max Static Capacity (tons) | Screw Lead (in) | Linear Speed (in/min) | External Gearbox Ratio | Estimated Efficiency | Max Dynamic Load at HP (lbs) | | | | | |
| | | | | | | .33HP | .5HP | .75HP | 1HP | 1.5HP | 2HP |
| **ACME Screw** | | | | | | | | | | | |
| ECAL242.5 | 2.5 | 0.250 | 1.76 | 10 | 14% | 5,000 | | | | | |
| ECAL242.5 | 2.5 | 0.250 | 2.38 | 7.5 | 15% | 5,000 | | | | | |
| ECAH242.5 | 2.5 | 0.500 | 3.53 | 10 | 20% | 5,000 | | | | | |
| ECAH242.5 | 2.5 | 0.500 | 4.76 | 7.5 | 21% | 5,000 | | | | | |
| ECAH122.5 | 2.5 | 0.500 | 7.06 | 10 | 25% | 4,234 | 5,000 | | | | |
| ECAH122.5 | 2.5 | 0.500 | 9.52 | 7.5 | 26% | 3,219 | 5,000 | | | | |
| ECAH62.5 | 2.5 | 0.500 | 14.12 | 10 | 28% | 2,374 | 3,701 | 5,000 | | | |
| ECAL242.5 | 2.5 | 0.250 | 18.23 | Direct drive | 21% | 756 | 1,543 | | | | |
| ECAH62.5 | 2.5 | 0.500 | 19.04 | 7.5 | 29% | 1,787 | 2,811 | 4,317 | | | |
| ECAH62.5 | 2.5 | 0.500 | 27.78 | 5 | 30% | 1,213 | 1,946 | 3,025 | | | |
| ECAH242.5 | 2.5 | 0.500 | 36.46 | Direct drive | 30% | 525 | 1,072 | | | | |
| ECAH122.5 | 2.5 | 0.500 | 72.92 | Direct drive | 33% | | 555 | 1,010 | 1,464 | 2,373 | |
| ECAH62.5 | 2.5 | 0.500 | 145.83 | Direct drive | 36% | | | 512 | 754 | 1,238 | 1,723 |
| **Ball Screw** | | | | | | | | | | | |
| ECBL242.5 | 2.5 | 0.250 | 1.76 | 10 | 30% | 5,000 | | | | | |
| ECBL242.5 | 2.5 | 0.250 | 2.38 | 7.5 | 32% | 5,000 | | | | | |
| ECBL122.5 | 2.5 | 0.250 | 3.53 | 10 | 38% | 5,000 | | | | | |
| ECBL122.5 | 2.5 | 0.250 | 4.76 | 7.5 | 40% | 5,000 | | | | | |
| ECBL62.5 | 2.5 | 0.250 | 7.06 | 10 | 43% | 5,000 | | | | | |
| ECBL62.5 | 2.5 | 0.250 | 9.52 | 7.5 | 45% | 5,000 | | | | | |
| ECBL62.5 | 2.5 | 0.250 | 13.89 | 5 | 47% | 3,752 | 5,000 | | | | |
| ECBL242.5 | 2.5 | 0.250 | 18.23 | Direct drive | 46% | 1,624 | 3,315 | | | | |
| ECBM62.5 | 2.5 | 0.500 | 19.04 | 7.5 | 45% | 2,763 | 4,347 | 5,000 | | | |
| ECBM62.5 | 2.5 | 0.500 | 27.78 | 5 | 47% | 1,876 | 3,010 | 4,678 | 5,000 | | |
| ECBL122.5 | 2.5 | 0.250 | 36.46 | Direct drive | 52% | 762 | 1,718 | 3,123 | 4,528 | 5,000 | |
| ECBH62.5 | 2.5 | 1.000 | 38.08 | 7.5 | 45% | 1,381 | 2,173 | 3,338 | | | |
| ECBH62.5 | 2.5 | 1.000 | 55.56 | 5 | 47% | 938 | 1,505 | 2,339 | 3,247 | | |
| ECBL62.5 | 2.5 | 0.250 | 72.92 | Direct drive | 55% | | 833 | 1,582 | 2,331 | 3,830 | 5,000 |
| ECBM62.5 | 2.5 | 0.500 | 145.83 | Direct drive | 55% | | | 791 | 1,166 | 1,915 | 2,664 |
| ECBH62.5 | 2.5 | 1.000 | 291.67 | Direct drive | 55% | | | | 583 | 957 | 1,332 |

| 2.5-Ton Electric Cylinders | | | |
|---|---|---|---|
| | Maximum Rise | | Cylinder Tube Torque |
| | Vertical Operation | Horizontal Operation | (in*lb) Per Pound Thrust |
| **ACME Screw** | | | |
| ECAL | 28" | 21" | .098 |
| ECAH | 28" | 21" | .139 |
| **Ball Screw** | | | |
| ECBL | 41" | 31" | .045 |
| ECBM | 44" | 33" | .089 |
| ECBH | 41" | 31" | .178 |

### Selection Guidelines:

- Select the model most closely matching your desired load and speed requirements. The chart is sorted by static capacity, then screw type (ACME or ball), then travel speed.
- To determine the maximum rise for the model selected, see maximum rise chart above.
- L, M, and H in the model numbers designate low, medium, or high screw leads.
- ECA models are not suitable for duty cycles greater than 25%.
- **All models with efficiencies >30% require a brake motor.**
- Models with efficiencies ≤30% are self-locking in the absence of vibration. A brake motor is required if vibration is present or faster stopping times are desired.
- Loads and speeds shown assume use of a 1750 rpm 3ph AC induction motor.
- Cylinder tube torque per pound thrust is the means to calculate how much torque must be resisted at the mounting locations of the cylinder. To calculate torque (in*lb), multiply the value in the chart times the load in pounds.
- When ordering cylinders with a ComDRIVE reducer the listed part number should specify the proper 4 letter ComDRIVE shaft code from page 121. Units with a "direct drive" listing should specify the proper 4 letter motor mount code listed on page 121.
- Note: For normal operation, the translating tube end must be restrained from rotation.

# ELECTRIC CYLINDERS QUICK REFERENCE

Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 131. Contact Joyce with questions regarding the proper selection of electric cylinders.

**3-Ton Thrust Capacity Electric Cylinders**

| Model | Max Static Capacity (tons) | Screw Lead (in) | Linear Speed (in/min) | External Gearbox Ratio | Estimated Efficiency | Max Dynamic Load at HP (lbs) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | .33HP | .5HP | .75HP | 1HP | 1.5HP | 2HP |
| **ACME Screw** | | | | | | | | | | | |
| ECAL243 | 3 | 0.250 | 1.76 | 10 | 12% | 6,000 | | | | | |
| ECAL243 | 3 | 0.250 | 2.38 | 7.5 | 13% | 6,000 | | | | | |
| ECAL123 | 3 | 0.250 | 3.53 | 10 | 15% | 5,183 | 6,000 | | | | |
| ECAL123 | 3 | 0.250 | 4.76 | 7.5 | 16% | 3,926 | 6,000 | | | | |
| ECAL63 | 3 | 0.250 | 7.06 | 10 | 17% | 2,906 | 4,547 | 6,000 | | | |
| ECAL63 | 3 | 0.250 | 9.52 | 7.5 | 18% | 2,179 | 3,446 | 5,310 | | | |
| ECAL63 | 3 | 0.250 | 13.89 | 5 | 19% | 1,468 | 2,375 | 3,710 | 5,162 | | |
| ECAL243 | 3 | 0.250 | 18.23 | Direct drive | 18% | | 1,215 | | | | |
| ECAL63 | 3 | 0.250 | 72.92 | Direct drive | 22% | | | | 899 | 1,499 | 2,098 |
| **Ball Screw** | | | | | | | | | | | |
| ECBL243 | 3 | 0.200 | 1.41 | 10 | 30% | 6,000 | | | | | |
| ECBL243 | 3 | 0.200 | 1.90 | 7.5 | 32% | 6,000 | | | | | |
| ECBL123 | 3 | 0.200 | 2.82 | 10 | 38% | 6,000 | | | | | |
| ECBL123 | 3 | 0.200 | 3.81 | 7.5 | 40% | 6,000 | | | | | |
| ECBH243 | 3 | 0.625 | 4.41 | 10 | 30% | 6,000 | | | | | |
| ECBL63 | 3 | 0.200 | 5.65 | 10 | 43% | 6,000 | | | | | |
| ECBH243 | 3 | 0.625 | 5.95 | 7.5 | 32% | 6,000 | | | | | |
| ECBL63 | 3 | 0.200 | 7.62 | 7.5 | 45% | 6,000 | | | | | |
| ECBH123 | 3 | 0.625 | 8.82 | 10 | 38% | 5,183 | 6,000 | | | | |
| ECBL63 | 3 | 0.200 | 11.11 | 5 | 47% | 4,587 | 6,000 | | | | |
| ECBH123 | 3 | 0.625 | 11.90 | 7.5 | 40% | 3,926 | 6,000 | | | | |
| ECBL243 | 3 | 0.200 | 14.58 | Direct drive | 46% | 1,686 | 3,798 | | | | |
| ECBH63 | 3 | 0.625 | 17.65 | 10 | 43% | 2,906 | 4,547 | 6,000 | | | |
| ECBH63 | 3 | 0.625 | 23.80 | 7.5 | 45% | 2,179 | 3,446 | 5,310 | | | |
| ECBL123 | 3 | 0.200 | 29.17 | Direct drive | 52% | 758 | 1,952 | 3,709 | 5,465 | 6,000 | |
| ECBH63 | 3 | 0.625 | 34.72 | 5 | 47% | 1,468 | 2,375 | 3,710 | 5,162 | | |
| ECBH243 | 3 | 0.625 | 45.57 | Direct drive | 46% | | 1,215 | | | | |
| ECBL63 | 3 | 0.200 | 58.33 | Direct drive | 55% | | 937 | 1,874 | 2,810 | 4,683 | 6,000 |
| ECBH123 | 3 | 0.625 | 91.15 | Direct drive | 52% | | 625 | 1,187 | 1,749 | 2,873 | |
| ECBH63 | 3 | 0.625 | 182.29 | Direct drive | 55% | | | | 899 | 1,499 | 2,098 |

**3-Ton Electric Cylinders**

| | Maximum Rise | | Cylinder Tube Torque |
|---|---|---|---|
| | Vertical Operation | Horizontal Operation | (in*lb) Per Pound Thrust |
| **ACME Screw** | | | |
| ECAL | 48" | 36" | .113 |
| **Ball Screw** | | | |
| ECBL | 56" | 42" | .036 |
| ECBH | 46" | 34" | .111 |

### Selection Guidelines:

- Select the model most closely matching your desired load and speed requirements. The charts are sorted by static capacity, then screw type (ACME or ball), then travel speed.
- To determine the maximum rise for the model selected, see maximum rise charts above and to the right.
- L, M, and H in the model numbers designate low, medium, or high screw leads.
- ECA models are not suitable for duty cycles greater than 25%.
- **All models with efficiencies >30% require a brake motor.**
- Models with efficiencies ≤30% are self-locking in the absence of vibration. A brake motor is required if vibration is present or faster stopping times are desired.
- Loads and speeds shown assume use of a 1750 rpm 3ph AC induction motor.
- Cylinder tube torque per pound thrust is the means to calculate how much torque must be resisted at the mounting locations of the cylinder. To calculate torque (in*lb), multiply the value in the chart times the load in pounds.
- When ordering cylinders with a ComDRIVE the reducer listed in the part number should specify the proper ComDRIVE 4 letter shaft code from page 121. Units with a “direct drive” listing should specify the proper 4 letter motor mount code listed on page 121.
- Note: For normal operation, the translating tube end must be restrained from rotation.

# ELECTRIC CYLINDERS QUICK REFERENCE

Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 132. Contact Joyce with questions regarding the proper selection of electric cylinders.

**5-Ton Thrust Capacity Electric Cylinders**

| Model | Max Static Capacity (tons) | Screw Lead (in) | Linear Speed (in/min) | External Gearbox Ratio | Estimated Efficiency | Max Dynamic Load at HP (lbs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | .33HP | .5HP | .75HP | 1HP | 1.5HP | 2HP | 3HP |
| **ACME Screw** | | | | | | | | | | | | |
| ECAL245 | 5 | 0.250 | 1.76 | 10 | 11% | 6,895 | 10,000 | | | | | |
| ECAM245 | 5 | 0.375 | 2.65 | 10 | 14% | 5,891 | 9,330 | 10,000 | | | | |
| ECAH245 | 5 | 0.500 | 3.53 | 10 | 16% | 5,193 | 8,224 | 10,000 | | | | |
| ECAM125 | 5 | 0.375 | 5.29 | 10 | 17% | 3,661 | 5,822 | 9,000 | 10,000 | | | |
| ECAH125 | 5 | 0.500 | 7.06 | 10 | 20% | 3,227 | 5,132 | 7,933 | 10,000 | | | |
| ECAM65 | 5 | 0.375 | 10.59 | 10 | 19% | 2,031 | 3,257 | 5,059 | 7,022 | | | |
| ECAH65 | 5 | 0.500 | 14.12 | 10 | 23% | 1,790 | 2,871 | 4,460 | 6,189 | | | |
| ECAL245 | 5 | 0.250 | 18.23 | Direct drive | 16% | | | 1,471 | | | | |
| ECAM65 | 5 | 0.375 | 20.83 | 5 | 21% | | 1,634 | 2,635 | 3,723 | 5,768 | 7,813 | |
| ECAM245 | 5 | 0.375 | 27.34 | Direct drive | 21% | | | 1,257 | | | | |
| ECAH65 | 5 | 0.500 | 27.78 | 5 | 25% | | 1,441 | 2,322 | 3,282 | 5,085 | 6,887 | |
| ECAH245 | 5 | 0.500 | 36.46 | Direct drive | 24% | | | 1,108 | | | | |
| ECAM125 | 5 | 0.375 | 54.69 | Direct drive | 23% | | | | 1,085 | 1,935 | | |
| ECAL65 | 5 | 0.250 | 72.92 | Direct drive | 19% | | | | | 1,144 | 1,672 | 2,728 |
| ECAM65 | 5 | 0.375 | 109.38 | Direct drive | 25% | | | | | | 1,429 | 2,331 |
| ECAH65 | 5 | 0.500 | 145.83 | Direct drive | 29% | | | | | | 1,259 | 2,055 |
| **Ball Screw** | | | | | | | | | | | | |
| ECBL245 | 5 | 0.474 | 3.34 | 10 | 30% | 10,000 | | | | | | |
| ECBL125 | 5 | 0.474 | 6.69 | 10 | 38% | 6,441 | 10,000 | | | | | |
| ECBM245 | 5 | 1.000 | 7.06 | 10 | 30% | 4,910 | 7,775 | 10,000 | | | | |
| ECBH245 | 5 | 1.875 | 13.24 | 10 | 30% | 2,618 | 4,147 | 6,394 | | | | |
| ECBL65 | 5 | 0.474 | 13.37 | 10 | 43% | 3,572 | 5,729 | 8,900 | 10,000 | | | |
| ECBM125 | 5 | 1.000 | 14.12 | 10 | 38% | 3,051 | 4,852 | 7,500 | 10,000 | | | |
| ECBH125 | 5 | 1.875 | 26.47 | 10 | 38% | 1,627 | 2,588 | 4,000 | 5,537 | | | |
| ECBL65 | 5 | 0.474 | 26.32 | 5 | 47% | 1,678 | 2,875 | 4,635 | 6,550 | 10,000 | | |
| ECBM65 | 5 | 1.000 | 28.23 | 10 | 43% | 1,692 | 2,714 | 4,216 | 5,851 | | | |
| ECBL245 | 5 | 0.474 | 34.54 | Direct drive | 46% | | | 2,211 | | | | |
| ECBH65 | 5 | 1.875 | 52.94 | 10 | 43% | | 1,447 | 2,249 | 3,121 | | | |
| ECBM65 | 5 | 1.000 | 55.56 | 5 | 47% | | 1,362 | 2,196 | 3,103 | 4,807 | 6,511 | |
| ECBL125 | 5 | 0.474 | 69.08 | Direct drive | 52% | | | 1,162 | 1,910 | 3,404 | 4,898 | |
| ECBM245 | 5 | 1.000 | 72.92 | Direct drive | 46% | | | 1,048 | | | | |
| ECBH65 | 5 | 1.875 | 104.17 | 5 | 47% | | | 1,171 | 1,655 | 2,564 | 3,473 | |
| ECBL65 | 5 | 0.474 | 138.16 | Direct drive | 55% | | | | | 1,720 | 2,513 | 4,101 |
| ECBM125 | 5 | 1.000 | 145.83 | Direct drive | 52% | | | | | 1,612 | 2,320 | |
| ECBH125 | 5 | 1.875 | 273.44 | Direct drive | 52% | | | | | | 1,237 | |
| ECBM65 | 5 | 1.000 | 291.67 | Direct drive | 55% | | | | | | 1,191 | 1,942 |
| ECBH65 | 5 | 1.875 | 546.88 | Direct drive | 55% | | | | | | | 1,036 |

**5-Ton Electric Cylinders**

| | Maximum Rise | | Cylinder Tube Torque |
|---|---|---|---|
| | Vertical Operation | Horizontal Operation | (in*lb) Per Pound Thrust |
| **ACME Screw** | | | |
| ECAL | 59" | 44" | .131 |
| ECAM | 63" | 47" | .151 |
| ECAH | 59" | 44" | .171 |
| **Ball Screw** | | | |
| ECBL | 54" | 40" | .084 |
| ECBM | 54" | 40" | .178 |
| ECBH | 59" | 44" | .332 |

Note: For proper model selection refer to Selection Guidelines on page 129.

# ELECTRIC CYLINDERS QUICK REFERENCE

Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 133. Contact Joyce with questions regarding the proper selection of electric cylinders.

## 10-Ton Thrust Capacity Electric Cylinders

| Model | Max Static Capacity (tons) | Screw Lead (in) | Linear Speed (in/min) | External Gearbox Ratio | Estimated Efficiency | Max Dynamic Load at HP (lbs) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | .33HP | .5HP | .75HP | 1HP | 1.5HP | 2HP | 3HP | 5HP |
| **ACME Screw** | | | | | | | | | | | | | |
| ECAL2410 | 10 | 0.250 | 1.76 | 10 | 10% | 5,417 | 9,111 | 14,543 | 19,976 | | | | |
| ECAL2410 | 10 | 0.250 | 1.71 | 10 | 10% | | | | | | | 20,000 | |
| ECAM2410 | 10 | 0.500 | 3.53 | 10 | 16% | 4,468 | 7,515 | 11,996 | 16,872 | | | | |
| ECAM2410 | 10 | 0.500 | 3.42 | 10 | 17% | | | | | | | 20,000 | |
| ECAH2410 | 10 | 0.666 | 4.70 | 10 | 18% | 3,811 | 6,409 | 10,231 | 14,390 | | | | |
| ECAH2410 | 10 | 0.666 | 4.55 | 10 | 19% | | | | | | | 20,000 | |
| ECAL810 | 10 | 0.250 | 5.29 | 10 | 12% | 2,134 | 3,689 | 5,977 | 8,468 | | | | |
| ECAL810 | 10 | 0.250 | 5.13 | 10 | 13% | | | | | | | 20,000 | |
| ECAM2410 | 10 | 0.500 | 6.94 | 5 | 18% | | 3,554 | 6,112 | 8,896 | 14,126 | 19,355 | | |
| ECAM2410 | 10 | 0.500 | 7.29 | 5 | 19% | | | | | | | 20,000 | |
| ECAH2410 | 10 | 0.666 | 9.25 | 5 | 20% | | 3,031 | 5,213 | 7,587 | 12,047 | 16,508 | | |
| ECAH2410 | 10 | 0.666 | 9.71 | 5 | 21% | | | | | | | 20,000 | |
| ECAM810 | 10 | 0.500 | 10.59 | 10 | 20% | | 3,043 | 4,930 | 6,984 | | | | |
| ECAM810 | 10 | 0.500 | 10.25 | 10 | 21% | | | | | | | 20,000 | |
| ECAH810 | 10 | 0.666 | 14.10 | 10 | 23% | | 2,595 | 4,205 | 5,957 | | | | |
| ECAH810 | 10 | 0.666 | 14.10 | 10 | 24% | | | | | | | 20,000 | |
| ECAL2410 | 10 | 0.250 | 18.23 | Direct drive | 14% | | | | | 2,440 | | | |
| ECAM810 | 10 | 0.500 | 20.83 | 5 | 22% | | | 2,367 | 3,503 | 5,637 | 7,771 | | |
| ECAM810 | 10 | 0.500 | 21.88 | 5 | 23% | | | | | | | 11,611 | 19,837 |
| ECAH810 | 10 | 0.666 | 27.75 | 5 | 25% | | | 2,019 | 2,988 | 4,808 | 6,628 | | |
| ECAH810 | 10 | 0.666 | 29.14 | 5 | 26% | | | | | | | 9,903 | 16,919 |
| ECAM2410 | 10 | 0.500 | 36.46 | Direct drive | 23% | | | | | 2,012 | | | |
| ECAL810 | 10 | 0.250 | 54.69 | Direct drive | 16% | | | | | | | 2,461 | 4,732 |
| ECAM810 | 10 | 0.500 | 109.38 | Direct drive | 26% | | | | | | | 2,030 | 3,903 |
| ECAH810 | 10 | 0.666 | 145.69 | Direct drive | 29% | | | | | | | | 3,329 |
| **Ball Screw** | | | | | | | | | | | | | |
| ECBL2410 | 10 | 0.474 | 3.34 | 10 | 34% | 10,130 | 17,038 | 20,000 | | | | | |
| ECBL2410 | 10 | 0.474 | 6.58 | 5 | 39% | 4,113 | 8,057 | 13,858 | 20,000 | | | | |
| ECBM2410 | 10 | 1.000 | 7.06 | 10 | 34% | 4,798 | 8,071 | 12,883 | 18,121 | | | | |
| ECBM2410 | 10 | 1.000 | 6.83 | 10 | 36% | | | | | | | 20,000 | |
| ECBL810 | 10 | 0.474 | 10.03 | 10 | 43% | 3,990 | 6,899 | 11,178 | 15,834 | | | | |
| ECBL810 | 10 | 0.474 | 9.71 | 10 | 46% | | | | | | | 20,000 | |
| ECBH2410 | 10 | 1.875 | 13.24 | 10 | 34% | 2,559 | 4,304 | 6,871 | 9,664 | | | | |
| ECBM2410 | 10 | 1.000 | 13.89 | 5 | 39% | | 3,817 | 6,565 | 9,554 | 15,171 | 20,000 | | |
| ECBL810 | 10 | 0.474 | 19.74 | 5 | 47% | | 2,999 | 5,366 | 7,942 | 12,781 | 17,619 | | |
| ECBL810 | 10 | 0.474 | 19.11 | 5 | 50% | | | | | | | 20,000 | |
| ECBM810 | 10 | 1.000 | 21.18 | 10 | 43% | | 3,268 | 5,295 | 7,501 | | | | |
| ECBM810 | 10 | 1.000 | 20.50 | 10 | 46% | | | | | | | 20,000 | |
| ECBH2410 | 10 | 1.875 | 26.04 | 5 | 39% | | 2,036 | 3,501 | 5,096 | 8,091 | 11,086 | | |
| ECBL2410 | 10 | 0.474 | 34.54 | Direct drive | 49% | | | | | 4,562 | | | |
| ECBH810 | 10 | 1.875 | 39.71 | 10 | 43% | | | 2,824 | 4,000 | | | | |
| ECBM810 | 10 | 1.000 | 41.67 | 5 | 47% | | | 2,542 | 3,762 | 6,054 | 8,346 | | |
| ECBM810 | 10 | 1.000 | 43.75 | 5 | 49% | | | | | | | 12,470 | 20,000 |
| ECBM2410 | 10 | 1.000 | 72.92 | Direct drive | 49% | | | | | 2,161 | | | |
| ECBH810 | 10 | 1.875 | 78.13 | 5 | 47% | | | | 2,006 | 3,229 | 4,451 | | |
| ECBH810 | 10 | 1.875 | 82.03 | 5 | 49% | | | | | | | 6,651 | 11,363 |
| ECBL810 | 10 | 0.474 | 103.62 | Direct drive | 56% | | | | | | 2,478 | 4,602 | 8,849 |
| ECBM810 | 10 | 1.000 | 218.75 | Direct drive | 56% | | | | | | | 2,180 | 4,192 |
| ECBH810 | 10 | 1.875 | 409.84 | Direct drive | 56% | | | | | | | | 2,236 |

## 10-Ton Electric Cylinders

| | Maximum Rise | | Cylinder Tube Torque |
|---|---|---|---|
| | Vertical Operation | Horizontal Operation | (in*lb) Per Pound Thrust |
| **ACME Screw** | | | |
| ECAL | 84" | 63" | .161 |
| ECAM | 60" | 45" | .195 |
| ECAH | 76" | 57" | .228 |
| **Ball Screw** | | | |
| ECBL | 38" | 28" | .084 |
| ECBM | 38" | 28" | .178 |
| ECBH | 41" | 31" | .332 |

Note: For proper model selection refer to Selection Guidelines on page 129.

# ELECTRIC CYLINDERS QUICK REFERENCE

Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 134. Contact Joyce with questions regarding the proper selection of electric cylinders.

**20-Ton Thrust Capacity Electric Cylinders**

| Model | Max Static Capacity (tons) | Screw Lead (in) | Linear Speed (in/min) | External Gearbox Ratio | Estimated Efficiency | Max Dynamic Load at HP (lbs) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | .33HP | .5HP | .75HP | 1HP | 1.5HP | 2HP | 3HP | 5HP |
| ACME Screw | | | | | | | | | | | | | |
| ECAL2420 | 20 | 0.250 | 1.76 | 10 | 8% | | 6,459 | 10,813 | 15,552 | | | | |
| ECAL2420 | 20 | 0.250 | 1.71 | 10 | 8% | | | | | | | 40,000 | |
| ECAM2420 | 20 | 0.500 | 3.53 | 10 | 13% | | 5,484 | 9,181 | 13,205 | | | | |
| ECAM2420 | 20 | 0.500 | 3.42 | 10 | 14% | | | | | | | 40,000 | |
| ECAH2420 | 20 | 0.750 | 5.29 | 10 | 16% | | 4,560 | 7,634 | 10,979 | | | | |
| ECAH2420 | 20 | 0.750 | 5.13 | 10 | 17% | | | | | | | 38,366 | |
| ECAM2420 | 20 | 0.500 | 6.94 | 5 | 15% | | | 4,305 | 6,621 | 10,972 | 15,324 | | |
| ECAM2420 | 20 | 0.500 | 7.29 | 5 | 15% | | | | | | | 23,176 | 39,948 |
| ECAM820 | 20 | 0.500 | 10.59 | 10 | 17% | | | | 5,276 | | | | |
| ECAM820 | 20 | 0.500 | 10.25 | 10 | 18% | | | | | | | 19,447 | |
| ECAH820 | 20 | 0.750 | 15.38 | 10 | 22% | | | | 4,387 | | | | |
| ECAH820 | 20 | 0.750 | 14.89 | 10 | 23% | | | | | | | 16,170 | |
| ECAL2420 | 20 | 0.250 | 18.23 | Direct drive | 11% | | | | | | | 4,701 | 9,678 |
| ECAM820 | 20 | 0.500 | 20.83 | 5 | 19% | | | | | 4,127 | 5,935 | | |
| ECAM820 | 20 | 0.500 | 21.88 | 5 | 19% | | | | | | | 9,218 | 16,187 |
| ECAH820 | 20 | 0.750 | 31.25 | 5 | 23% | | | | | | 4,935 | | |
| ECAH820 | 20 | 0.750 | 32.81 | 5 | 24% | | | | | | | 7,665 | 13,459 |
| Ball Screw | | | | | | | | | | | | | |
| ECBL2420 | 20 | 0.500 | 3.53 | 10 | 33% | 7,425 | 13,710 | 22,953 | 33,012 | | | | |
| ECBL2420 | 20 | 0.500 | 3.42 | 10 | 35% | | | | | | | 40,000 | |
| ECBL2420 | 20 | 0.500 | 6.94 | 5 | 37% | | 5,442 | 10,763 | 16,553 | 27,431 | 38,309 | | |
| ECBL2420 | 20 | 0.500 | 7.29 | 5 | 39% | | | | | | | 40,000 | |
| ECBL820 | 20 | 0.500 | 10.59 | 10 | 43% | | 4,876 | 8,857 | 13,189 | | | | |
| ECBL820 | 20 | 0.500 | 10.25 | 10 | 45% | | | | | | | 40,000 | |
| ECBL820 | 20 | 0.500 | 20.83 | 5 | 47% | | | | 5,797 | 10,317 | 14,837 | | |
| ECBL820 | 20 | 0.500 | 21.88 | 5 | 48% | | | | | | | 23,046 | 40,000 |
| ECBL2420 | 20 | 0.500 | 36.46 | Direct drive | 49% | | | | | | 4,697 | | |
| ECBL820 | 20 | 0.500 | 109.38 | Direct drive | 55% | | | | | | | | 6,665 |

**20-Ton Electric Cylinders**

| | Maximum Rise | | Cylinder Tube Torque |
|---|---|---|---|
| | Vertical Operation | Horizontal Operation | (in*lb) Per Pound Thrust |
| ACME Screw | | | |
| ECAL | 100" | 75" | .178 |
| ECAM | 78" | 58" | .210 |
| ECAH | 88" | 66" | .244 |
| Ball Screw | | | |
| ECBL | 72" | 54" | .089 |

### Selection Guidelines:

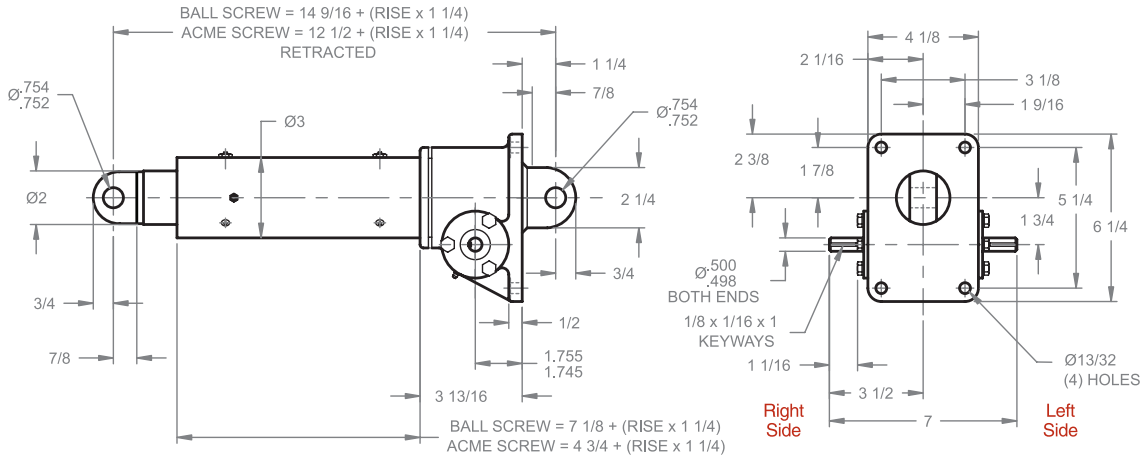
- Select the model most closely matching your desired load and speed requirements. The charts are sorted by static capacity, then screw type (ACME or ball), then travel speed.
- To determine the maximum rise for the model selected, see maximum rise charts above and to the left.
- L, M, and H in the model numbers designate low, medium, or high screw leads.
- ECA models are not suitable for duty cycles greater than 25%.
- **All models with efficiencies >30% require a brake motor.**
- Models with efficiencies ≤30% are self-locking in the absence of vibration. A brake motor is required if vibration is present or faster stopping times are desired.
- Loads and speeds shown assume use of a 1750 rpm 3ph AC induction motor.
- Cylinder tube torque per pound thrust is the means to calculate how much torque must be resisted at the mounting locations of the cylinder. To calculate torque (in*lb), multiply the value in the chart times the load in pounds.
- When ordering cylinders with a ComDRIVE the reducer listed in the part number should specify the proper 4 letter ComDRIVE shaft code from page 121. Units with a "direct drive" listing should specify the proper 4 letter motor mount code listed on page 121.
- Note: For normal operation, the translating tube end must be restrained from rotation.

# ELECTRIC CYLINDERS

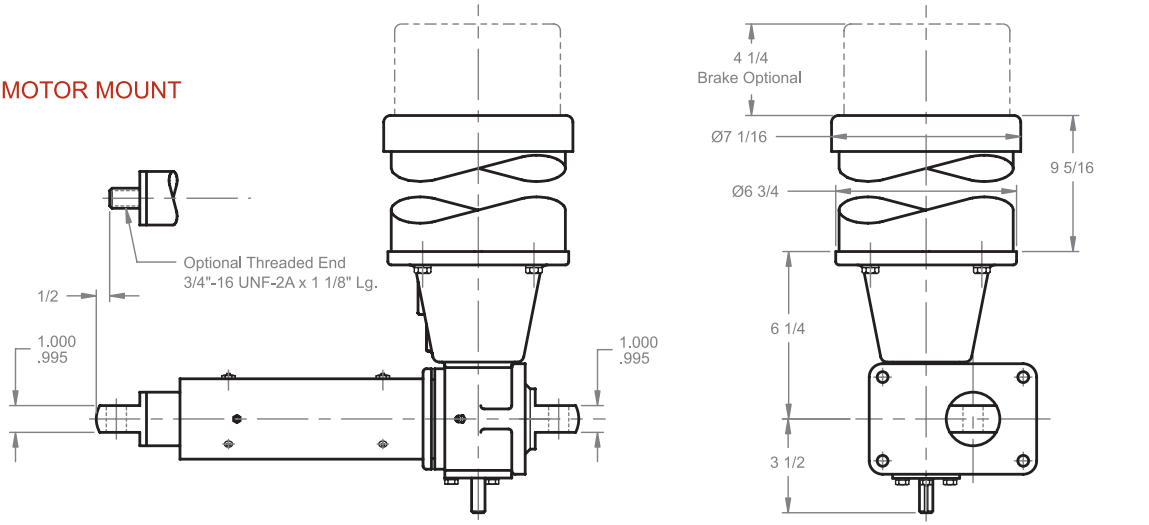
## 2 1/2 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

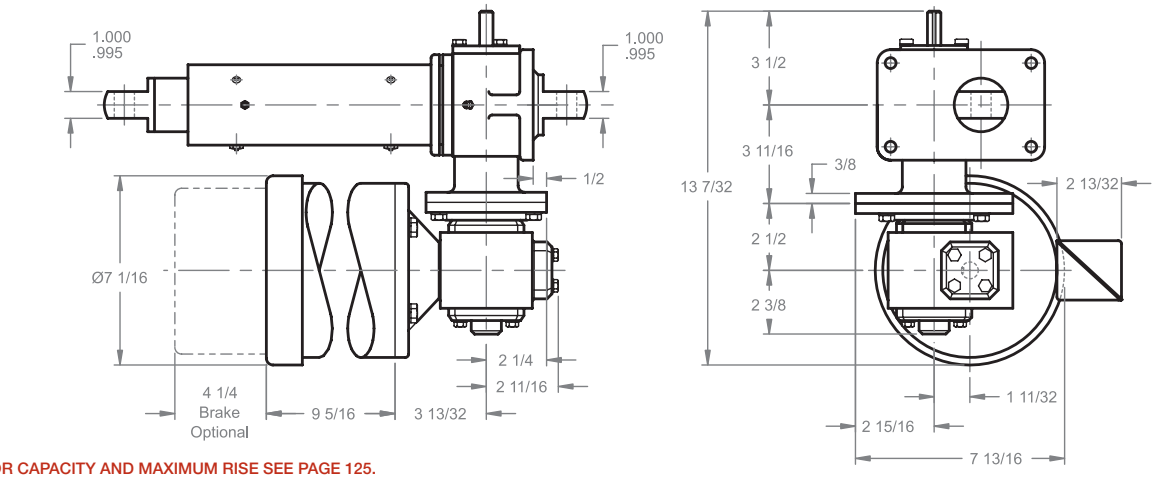
### STANDARD




### MOTOR MOUNT




### ComDRIVE®




NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 125.

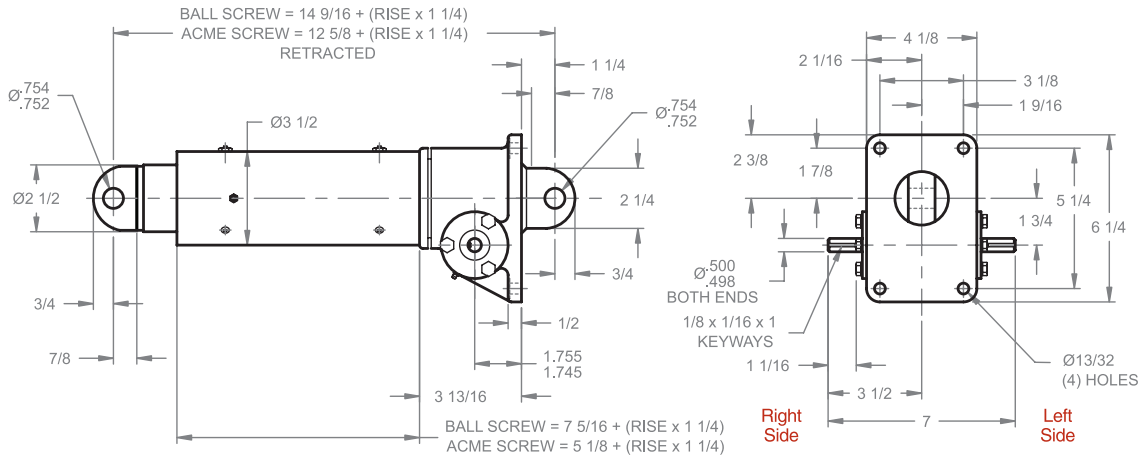
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ELECTRIC CYLINDERS

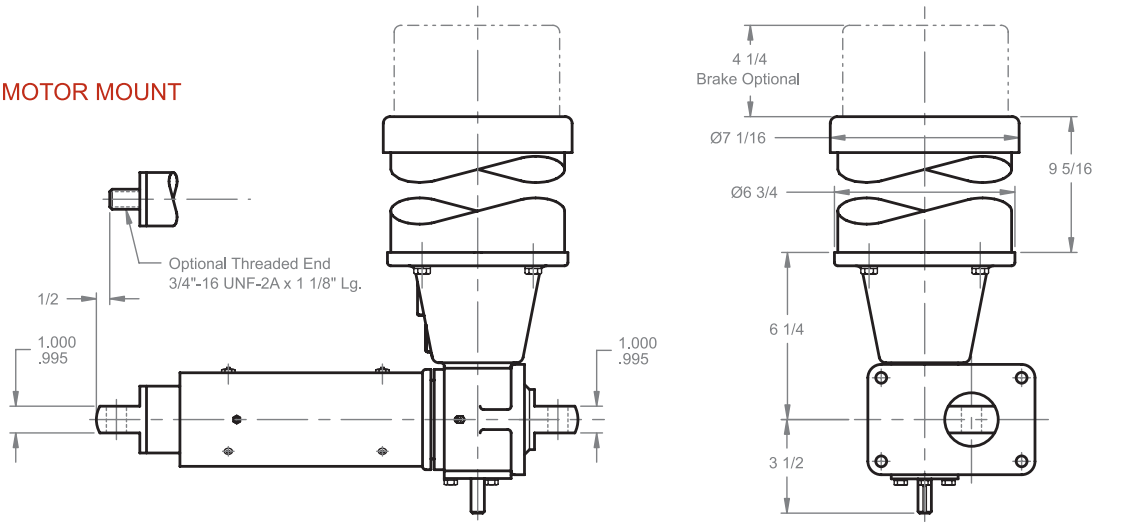
## 3 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

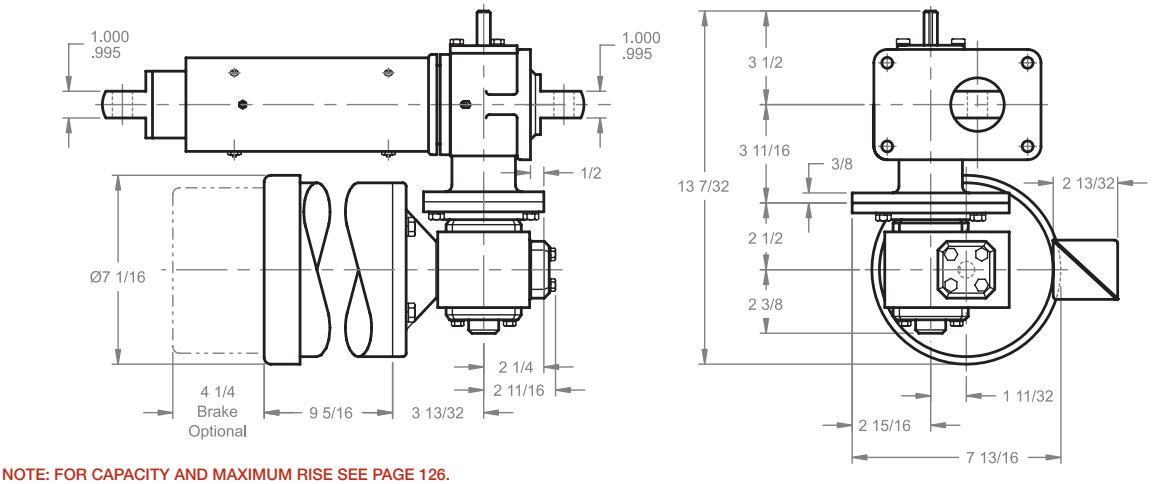
### STANDARD




### MOTOR MOUNT




### ComDRIVE®




NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 126.

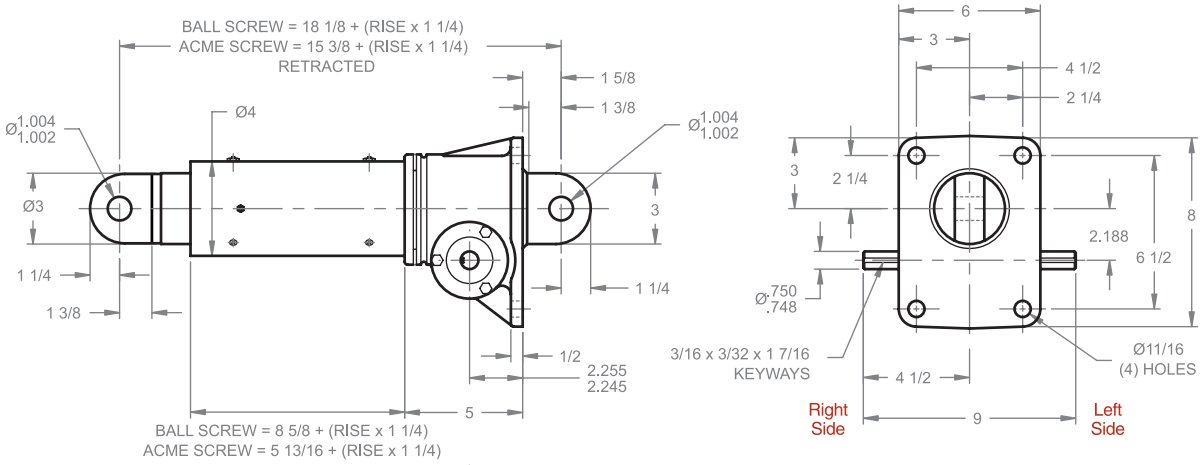
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ELECTRIC CYLINDERS

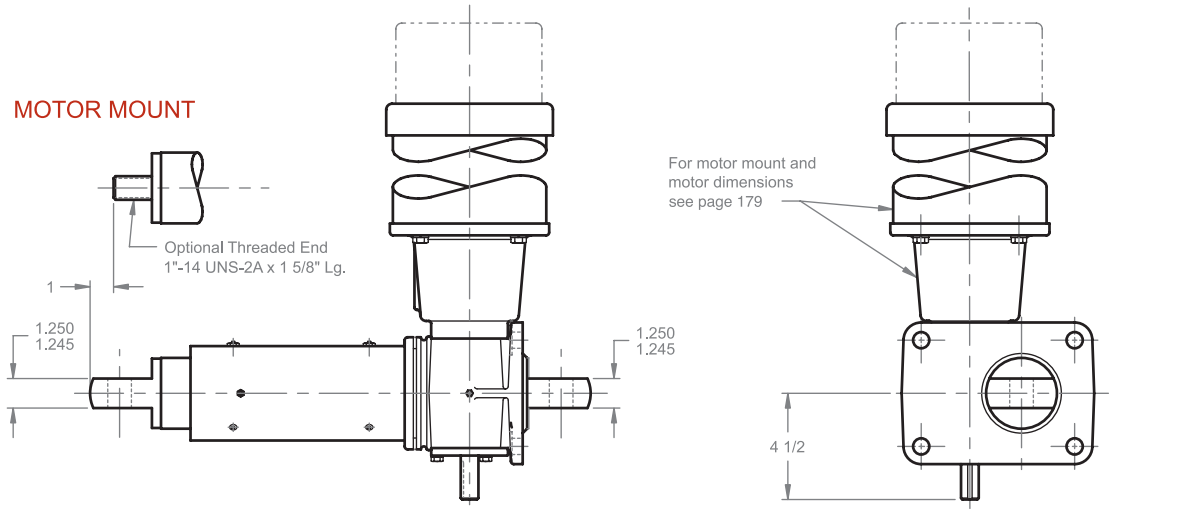
## 5 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

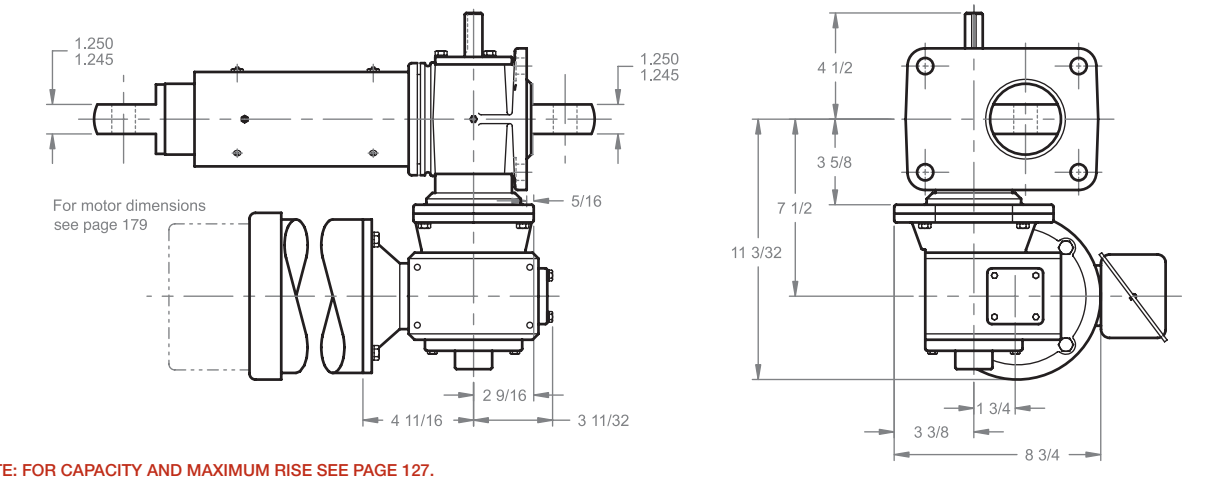
### STANDARD




### MOTOR MOUNT




### ComDRIVE®




NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 127.

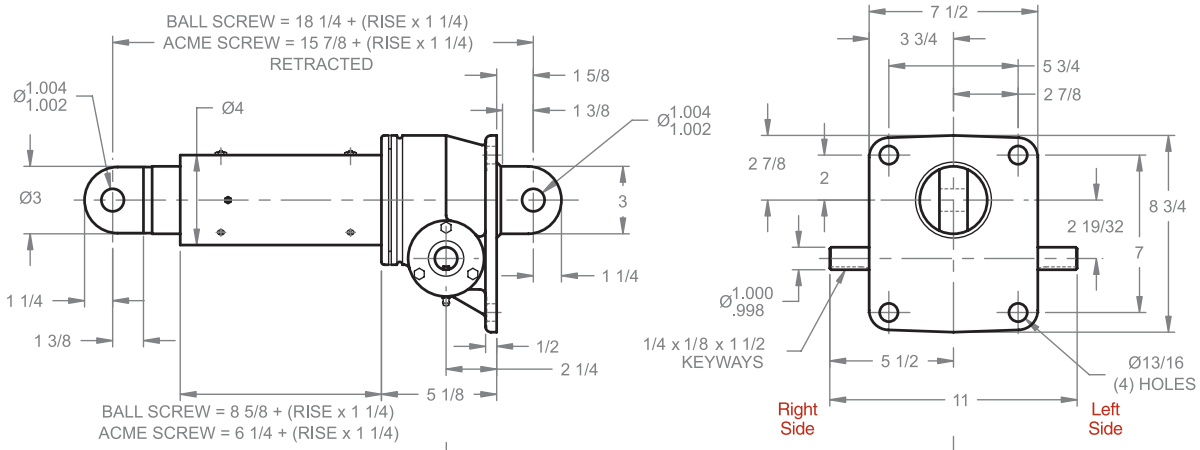
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ELECTRIC CYLINDERS

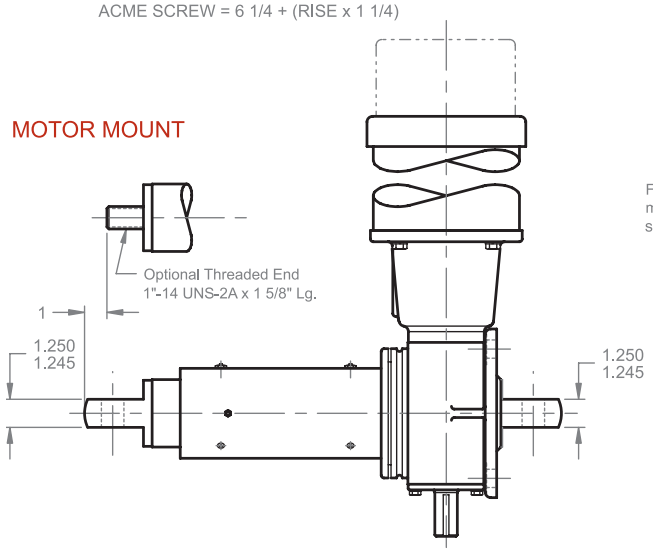
## 10 TON ELECTRIC CYLINDER

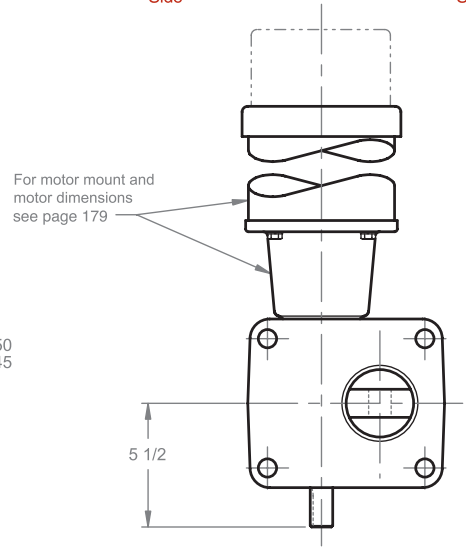
ECA (ACME SCREW)
ECB (BALL SCREW)

### STANDARD

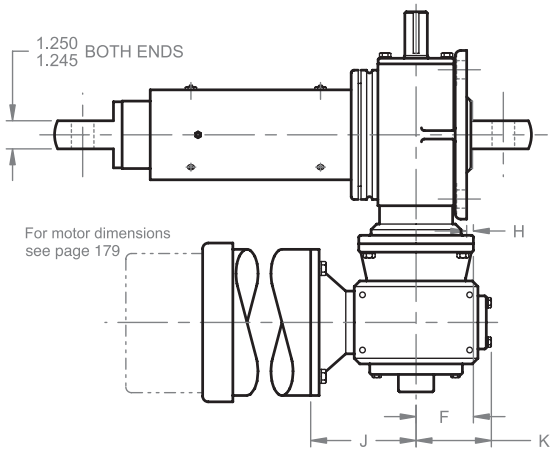



### MOTOR MOUNT



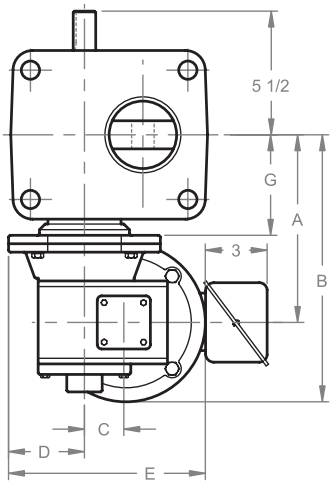




### ComDRIVE®




REDUCER DIMENSIONS

| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 17/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 1 1/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |




NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 128.

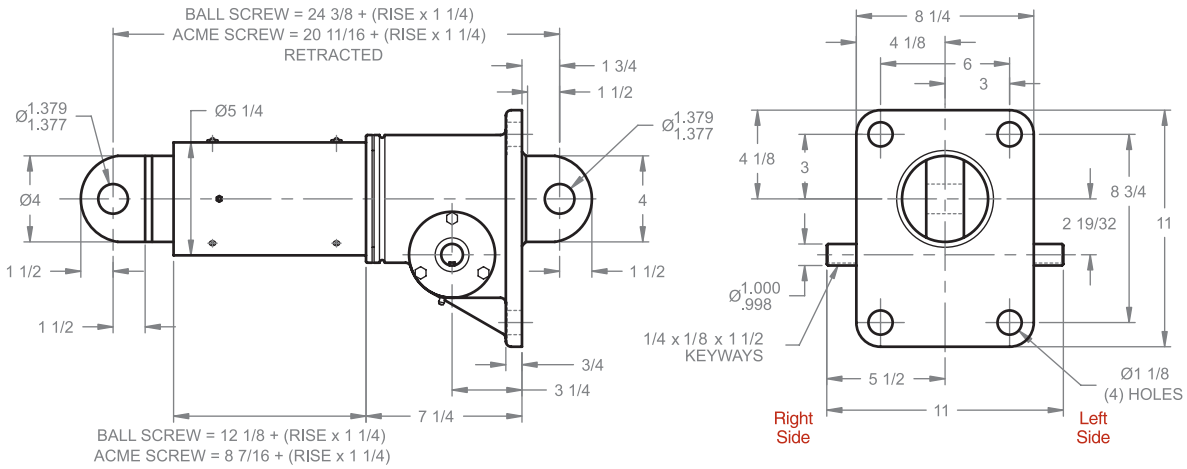
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ELECTRIC CYLINDERS

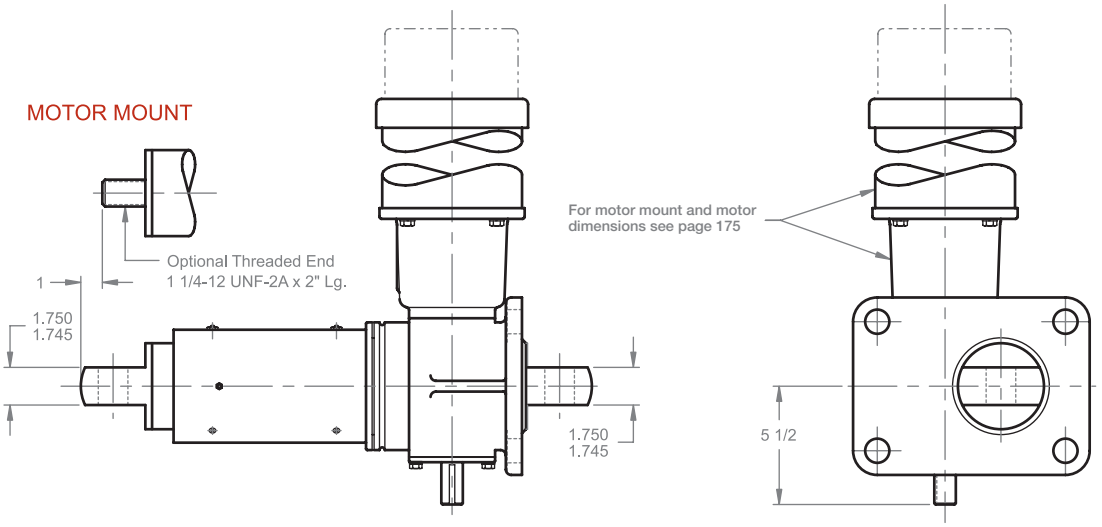
## 20 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

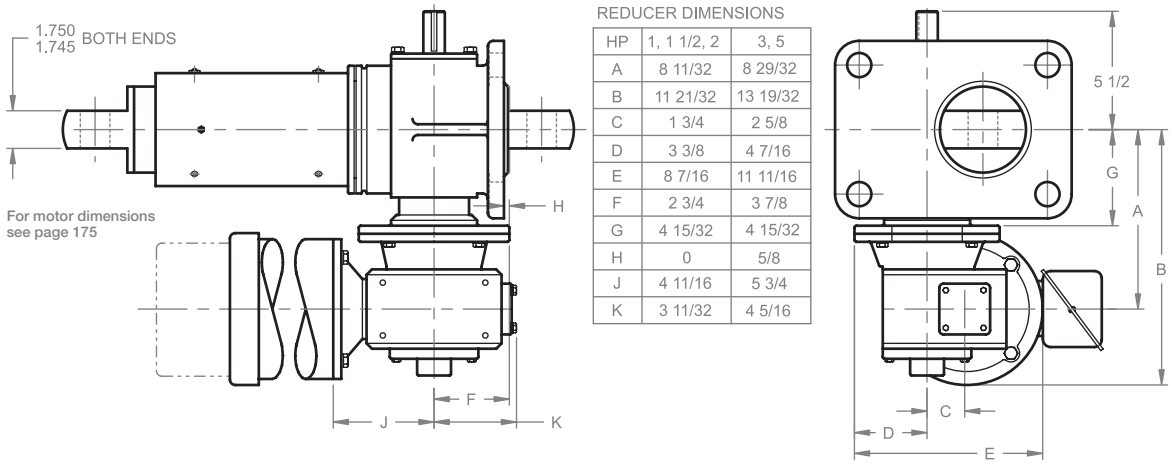
### STANDARD




### MOTOR MOUNT




### ComDRIVE®




REDUCER DIMENSIONS

| HP | 1, 1 1/2, 2 | 3, 5 |
|---|---|---|
| A | 8 11/32 | 8 29/32 |
| B | 11 21/32 | 13 19/32 |
| C | 1 3/4 | 2 5/8 |
| D | 3 3/8 | 4 7/16 |
| E | 8 7/16 | 11 11/16 |
| F | 2 3/4 | 3 7/8 |
| G | 4 15/32 | 4 15/32 |
| H | 0 | 5/8 |
| J | 4 11/16 | 5 3/4 |
| K | 3 11/32 | 4 5/16 |

NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 129.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# INTEGRATED ACTUATORS



Joyce integrated actuators are designed to lift and precisely position loads of up to one ton. Translating tube (TT) integrated actuators are well suited for use in industrial environments where protection of the lifting screw mechanism is critical and low maintenance is desired. Traveling nut (TN) integrated actuators are best suited for use in environments that are relatively clean and free of dust.

Requiring only electric power, Joyce integrated actuators may be used in place of hydraulic cylinders, eliminating the cost and potential for leaks associated with hydraulic systems.

Integrated actuators include NEMA 56C-face motor flanges, and are capable of moving at speeds up to 345 inches per minute. Dynamic speed/load rating charts can be viewed along with product drawings on pages 139 to 142. Both acme screw (IA, DIA) and ball screw (BIA, HBIA) models are designed to operate at the charted capacities under both tension and compression loading.

Joyce Integrated Actuator Features and Benefits:

- Chrome plated (BIA, HBIA) or stainless steel (IA, DIA) inner cylinder tube resists harsh contaminants while providing smooth cylinder translation.
- Tube seals retain lubrication while preventing dirt and grime from entering the internal cavity and contaminating the lifting screw.
- Aluminum cast housing provides durable protection for screw and internal components.
- Rigid cylinder tube guide bearings provide resistance to buckling (external guides are required when side loads are present).
- Alloy steel input shafts riding on tapered roller bearings provide proper wormgear alignment for increased service life.
- Input shaft seals prevent the loss of lubrication.

Joyce can customize integrated actuators to meet your specifications.

**Joyce offers Integrated Actuators in the following designs:**
- **Translating tube**
- **Traveling nut**

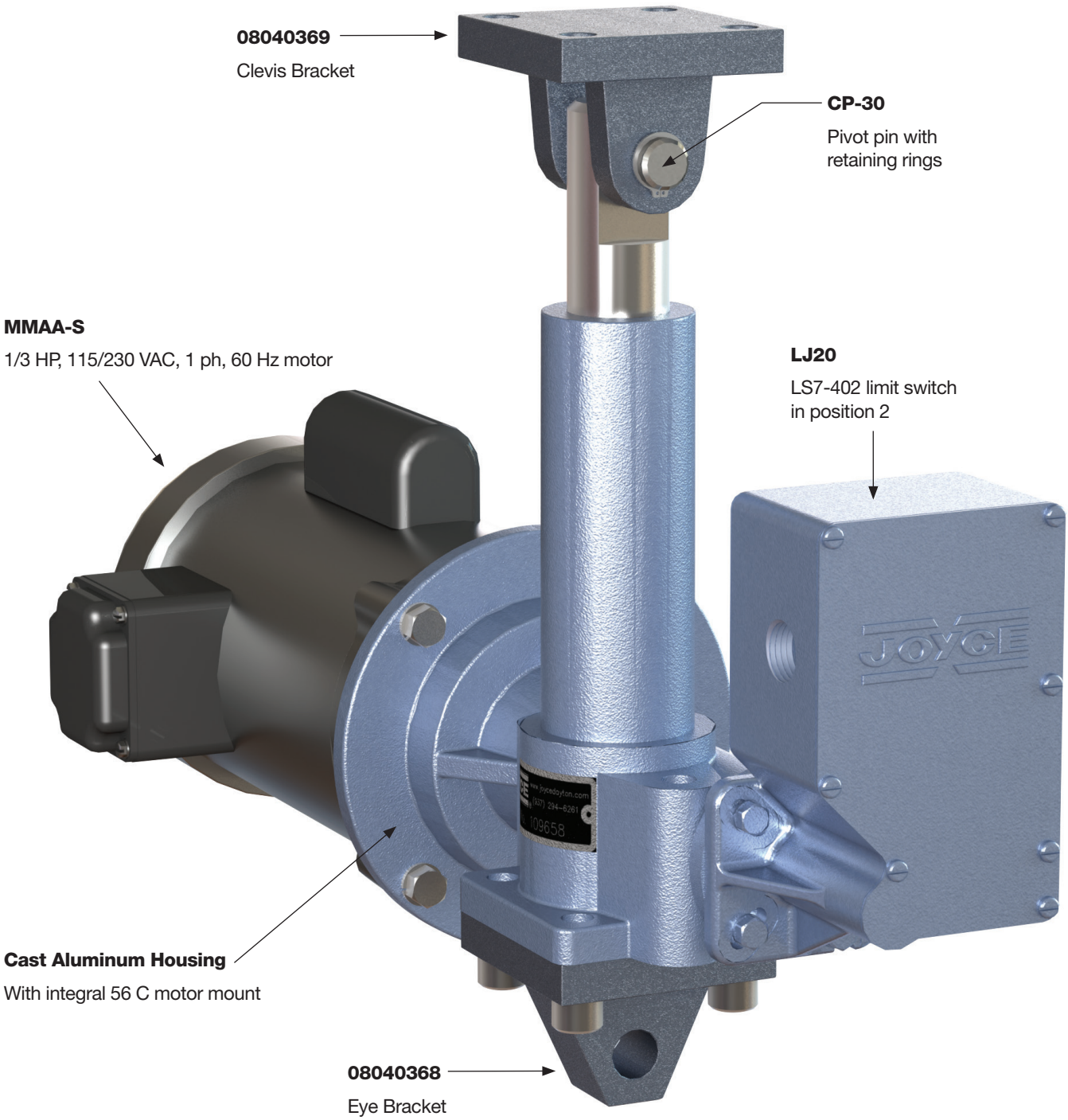
An illustration and a guide for ordering are on pages 136 and 137.

Scan the QR Code to view this product on our website.

# INTEGRATED ACTUATORS

**Integrated Actuator**

(Example: IA51TT-6-LJ20-MMAA-S)




(Shown with typical accessories)

# INTEGRATED ACTUATORS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| ACME 1" diameter, .25" pitch | ACME 1" diameter, .25" pitch/. 50" lead | Ball 1" diameter, .25" pitch | Ball 1" diameter, 1.00" pitch |
|---|---|---|---|
| IA51<br>IA201 | DIA51*<br>DIA201* | BIA51*<br>BIA201* | HBIA51* |

Important Note: *Integrated actuators may lower under load. Brake motors or external locking systems are recommended.

## Sample Part Number: IA51-TT-6.00-LJ20-MMAA-S

### Integrated Actuator Configuration

| TT | TN |
|---|---|
| Translating Tube | Keyed for Traveling Nut |

### Integrated Actuator Rise

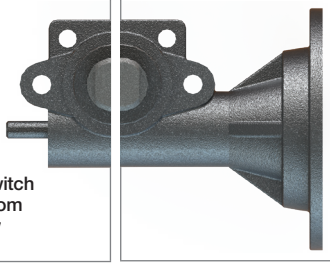
Rise is travel expressed in inches and not the actual tube length.
Contact Joyce for rises greater than 24"

### Left Side Shaft Code

XXXX=Remove Shaft
STDX=Standard
CUST=Custom

LJ10
LJ20
LJ30
LJ40
— See limit switch positions from chart below

### Right Side Shaft Code



RMMT=Remove Motor Mount
MMA_=Standard
— Motor code from chart below

### Limit Switches

| Position | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Left side Shaft |  |  |  |  |
| Code | LJ10 | LJ20 | LJ30 | LJ40 |

### Motors

| Size | Code |
|---|---|
| 1/4 HP | K |
| 1/3 HP | A |
| 1/2 HP | B |
| 3/4 HP | C |
| No Motor | X |

### Standard Motors

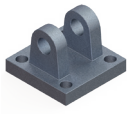
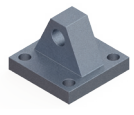
| Voltage | Speed (rpm) | 1/4 HP | 1/3 HP | 1/2 HP | 3/4 HP |
|---|---|---|---|---|---|
| 115/230 VAC Single Phase | 1140 | | | X | X |
| 115/230 VAC Single Phase | 1725 | X | X | X | X |
| 115/230 VAC Single Phase w/brake | 1725 | | X | X | X |
| 230/460 VAC Three Phase | 1140 | X | X | X | X |
| 230/460 VAC Three Phase | 1725 | X | X | X | X |
| 230/460 VAC Three Phase w/brake | 1725 | X | X | X | X |
| 12 VDC Permanent Magnet | 1800 | X | X | X | X |
| 24 VDC Permanent Magnet | 1800 | | X | X | X |
| 90 VDC Permanent Magnet | 1750 | X | X | X | X |
| 180 VDC Permanent Magnet | 1750 | X | X | X | X |

### Options** (see chart to left)

| | |
|---|---|
| X | No additional options |
| M | Modify standard actuator |
| C12 | 12 VDC motor |
| C24 | 24 VDC motor |
| C90 | 90 VDC motor |
| C180 | 180 VDC motor |
| K | Brake motor |
| R | 1140 RPM motor |
| S | Single phase 115/230 1-ph. 60 Hz |

** Specify as many options as needed.

### Optional Accessories (p. 138)

|  Clevis Bracket |  Pivot Pin with retaining rings |  Eye Bracket |
|---|---|---|
| 08040369 | CP-30 | 08040368 |

# INTEGRATED ACTUATORS OPTIONS

## Motors

Standard 56C-NEMA frame motors are available in:

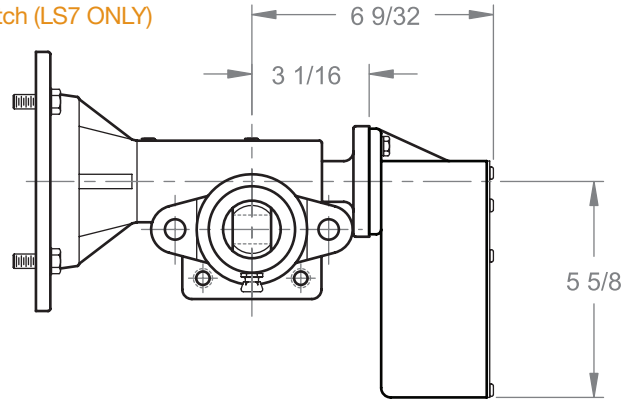
**AC Motors**
- 1/4, 1/3, 1/2, and 3/4 HP
- 1140 or 1725 rpm
- Single or three phase
- With or without brake

**DC Motors**
- 1/4, 1/3, 1/2, and 3/4 HP
- 1750 rpm or 1800 rpm
- 90 and 180 volts

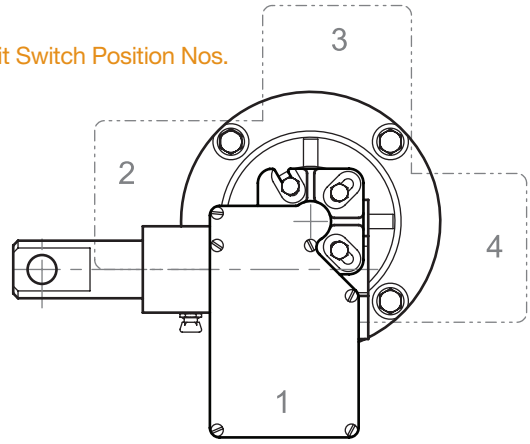
## Ring Encoders

Contact Joyce with your requirements.

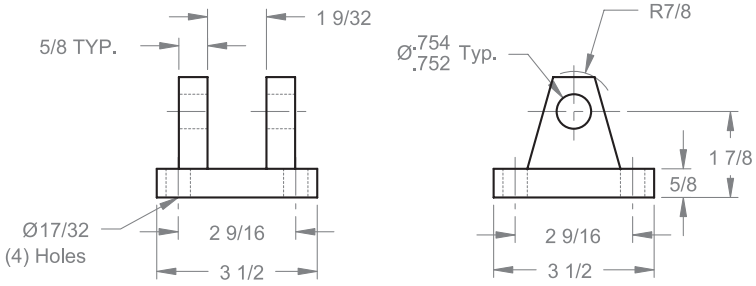
Limit Switch (LS7 ONLY)



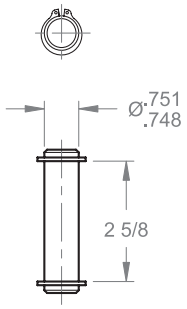

Limit Switch Position Nos.



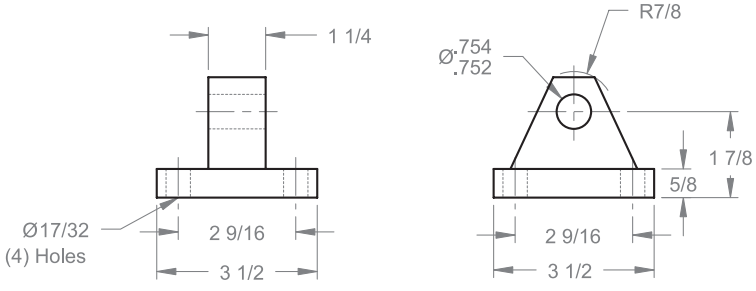

Clevis Accessories




Clevis Bracket #08040369




Pivot Pin
With Retaining Rings
CP-30



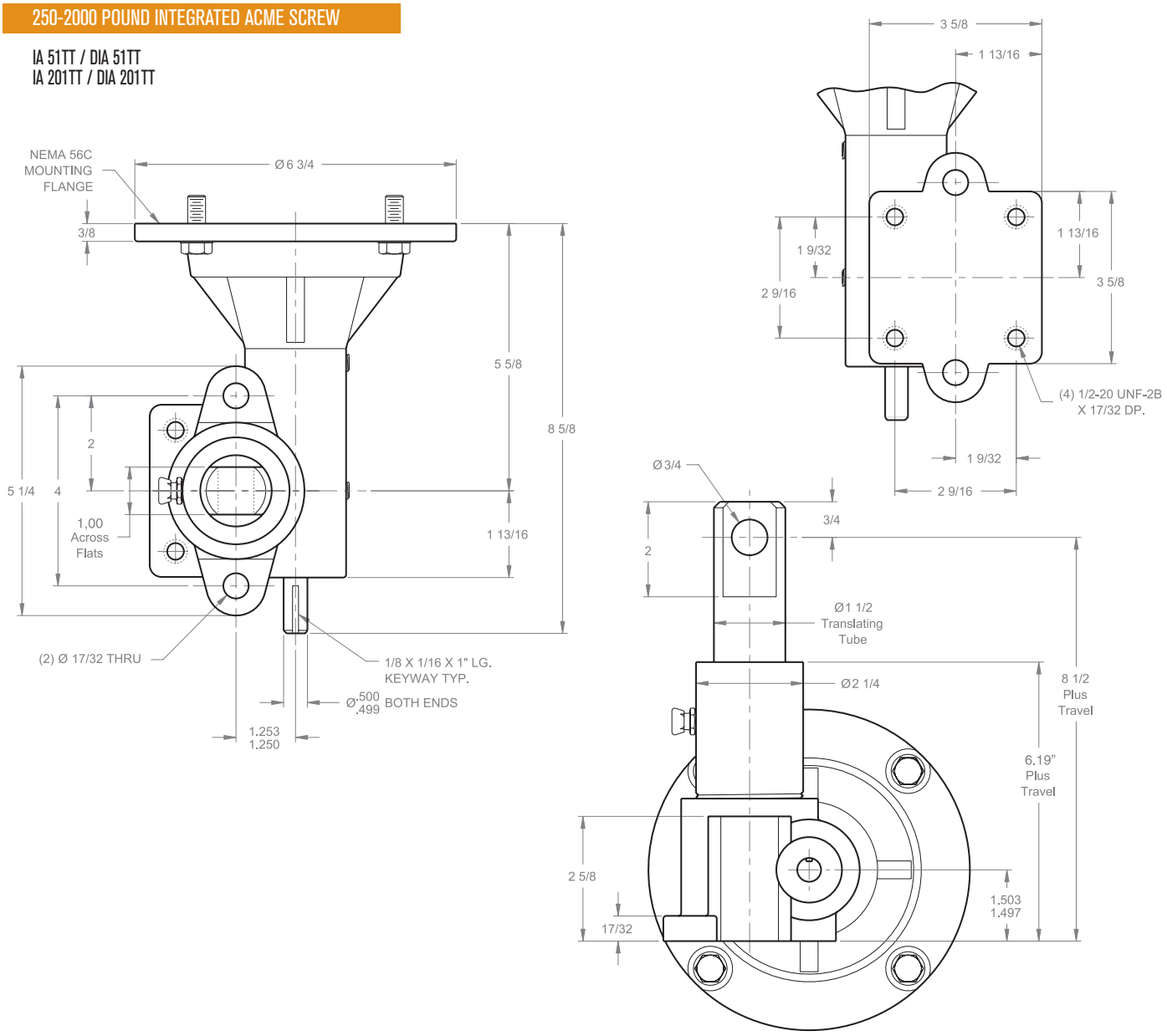

Eye Bracket #08040368

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# INTEGRATED ACTUATORS

## 250-2000 POUND INTEGRATED ACME SCREW

IA 51TT / DIA 51TT
IA 201TT / DIA 201TT




| Model Number | ACME Threaded Lifting Screw | Wormgear Ratio | Worm Shaft Turns/1" Travel | Motor RPM | Lifting Speed (Inches/Minute) | Rated Load (lbs.) with given motor size | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1/3 HP Motor | 1/2 HP Motor | 3/4 HP Motor |
| IA51TT | 1" diameter .25" pitch | 5:1 | 20 | 1140 | 57 | 550 | 850 | 1250 |
| | | | | 1725 | 86 | 375 | 550 | 850 |
| IA201TT | 1" diameter .25" pitch | 20:1 | 80 | 1140 | 14 | 1775 | 2000 | 2000 |
| | | | | 1725 | 21 | 1225 | 1850 | 2000 |
| DIA51TT | 1" diameter .25" pitch .50" lead | 5:1 | 10 | 1140 | 114 | 375 | 575 | 875 |
| | | | | 1725 | 172 | 250 | 400 | 600 |
| DIA201TT | 1" diameter .25" pitch .50" lead | 20:1 | 40 | 1140 | 28 | 1250 | 1875 | 2000 |
| | | | | 1725 | 43 | 850 | 1300 | 1950 |

Lead: The distance traveled axially in one rotation of the lifting screw.
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.
Important Note: DIA models may lower under load. Brake motors or external locking systems are recommended.

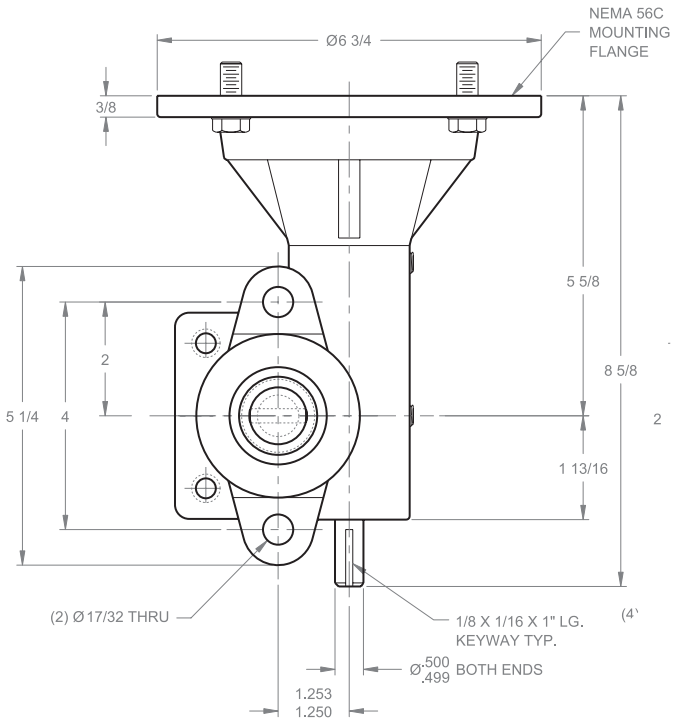
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

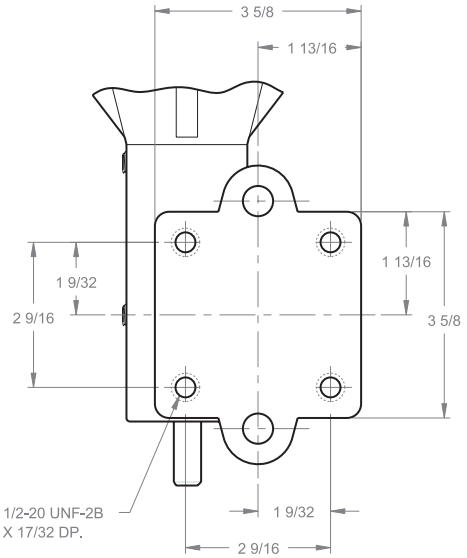
An Illustration and ordering information are on pages 136 and 137

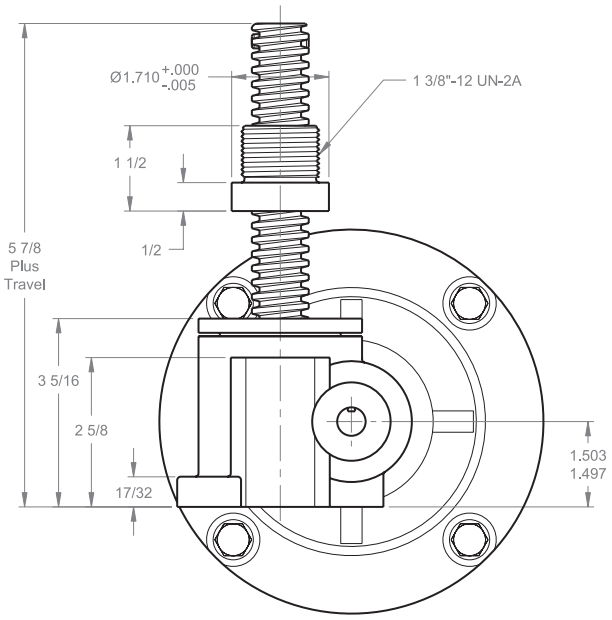
# INTEGRATED ACTUATORS

## 250-2000 POUND INTEGRATED ACME SCREW

IA 51TN / DIA 51TN
IA 201TN / DIA 201TN




| Model Number | ACME Threaded Lifting Screw | Wormgear Ratio | Worm Shaft Turns/1" Travel | Motor RPM | Lifting Speed (Inches/Minute) | Rated Load (lbs.) with given motor size | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1/3 HP Motor | 1/2 HP Motor | 3/4 HP Motor |
| IA51TN | 1" diameter .25" pitch | 5:1 | 20 | 1140 | 57 | 550 | 850 | 1250 |
| | | | | 1725 | 86 | 375 | 550 | 850 |
| IA201TN | 1" diameter .25" pitch | 20:1 | 80 | 1140 | 14 | 1775 | 2000 | 2000 |
| | | | | 1725 | 21 | 1225 | 1850 | 2000 |
| DIA51TN | 1" diameter .25" pitch .50" lead | 5:1 | 10 | 1140 | 114 | 375 | 575 | 875 |
| | | | | 1725 | 172 | 250 | 400 | 600 |
| DIA201TN | 1" diameter .25" pitch .50" lead | 20:1 | 40 | 1140 | 28 | 1250 | 1875 | 2000 |
| | | | | 1725 | 43 | 850 | 1300 | 1950 |

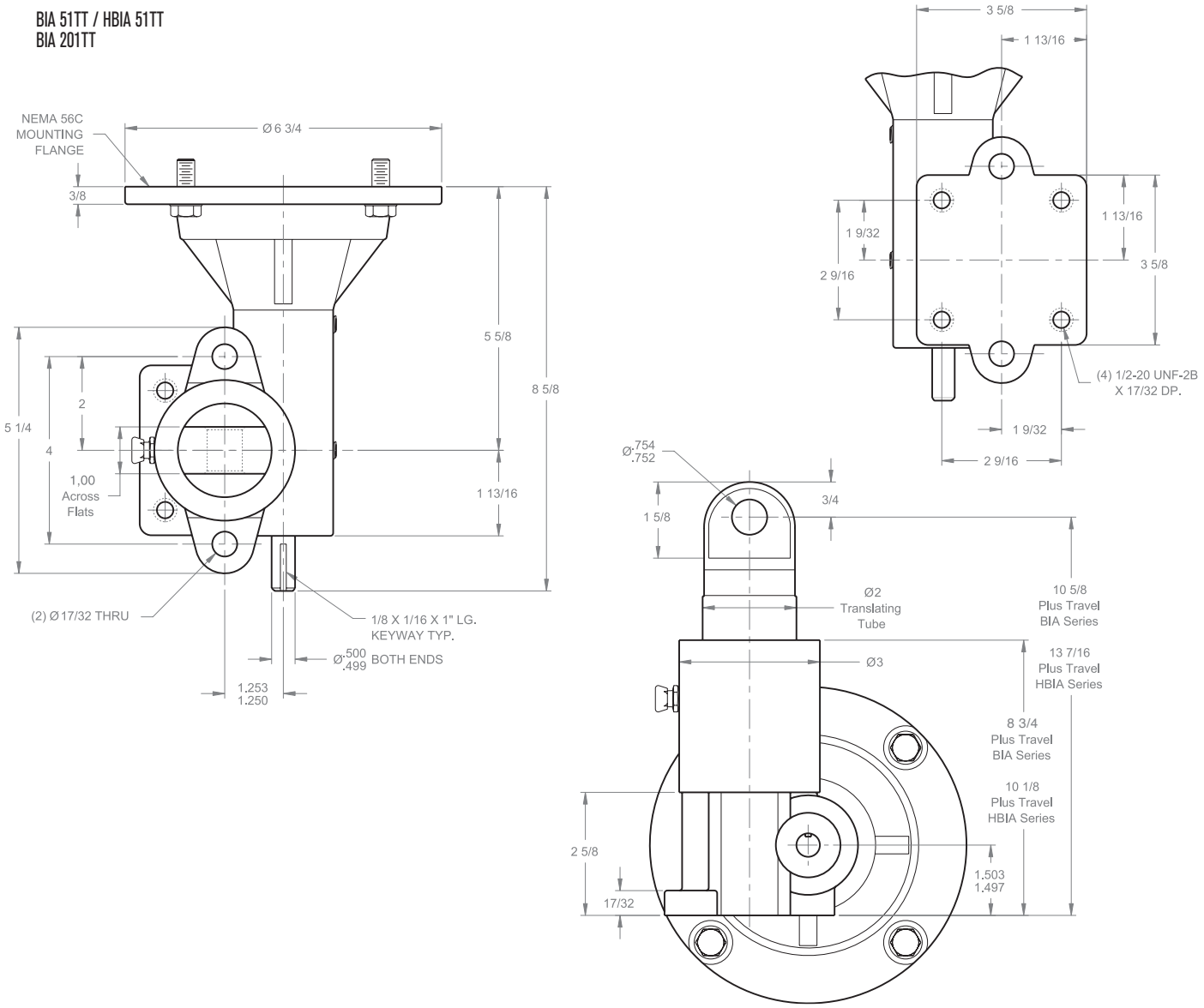
Lead: The distance traveled axially in one rotation of the lifting screw.
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.
Important Note: DIA models may lower under load. Brake motors or external locking systems are recommended.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# INTEGRATED ACTUATORS

## 100-2000 POUND INTEGRATED BALL SCREW

BIA 51TT / HBIA 51TT
BIA 201TT




| Model Number | ACME Threaded Lifting Screw | Wormgear Ratio | Worm Shaft Turns/1" Travel | Motor RPM | Lifting Speed (Inches/Minute) | Rated Load (lbs.) with given motor size | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1/4 HP Motor | 1/3 HP Motor | 1/2 HP Motor | 3/4 HP Motor |
| BIA51TT | 1" diameter .250" lead ball screw | 5:1 | 20 | 1140 | 57 | 925 | 1225 | 1850 | 2000 |
| | | | | 1725 | 86 | 625 | 825 | 1250 | 1875 |
| BIA201TT | 1" diameter .250" lead ball screw | 20:1 | 80 | 1140 | 14 | 2000 | 2000 | 2000 | 2000 |
| | | | | 1725 | 21 | 2000 | 2000 | 2000 | 2000 |
| HBIA51TT | 1" diameter 1.000" lead ball screw | 5:1 | 5 | 1140 | 228 | 225 | 300 | 450 | 700 |
| | | | | 1725 | 345 | 100 | 200 | 300 | 450 |

Lead: The distance traveled axially in one rotation of the lifting screw.
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.
Important Note: DIA models may lower under load. Brake motors or external locking systems are recommended.

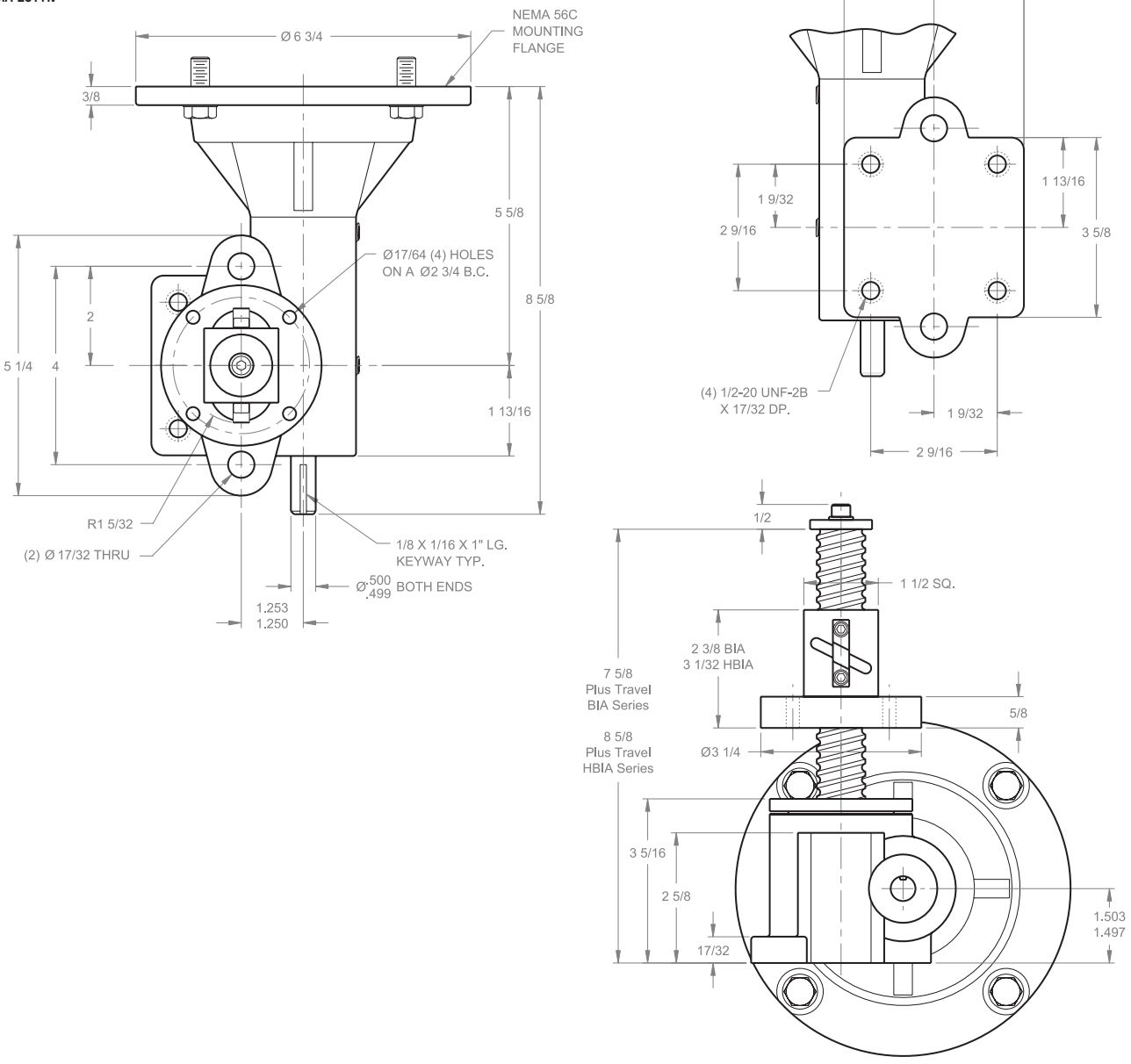
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

An Illustration and ordering information are on pages 136 and 137

# INTEGRATED ACTUATORS

## 100-2000 POUND INTEGRATED BALL SCREW

BIA 51TN / HBIA 51TN
BIA 201TN




| Model Number | ACME Threaded Lifting Screw | Wormgear Ratio | Worm Shaft Turns/1" Travel | Motor RPM | Lifting Speed (Inches/Minute) | Rated Load (lbs.) with given motor size | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1/4 HP Motor | 1/3 HP Motor | 1/2 HP Motor | 3/4 HP Motor |
| BIA51TN | 1" diameter .250" lead ball screw | 5:1 | 20 | 1140 | 57 | 925 | 1225 | 1850 | 2000 |
| | | | | 1725 | 86 | 625 | 825 | 1250 | 1875 |
| BIA201TT | 1" diameter .250" lead ball screw | 20:1 | 80 | 1140 | 14 | 2000 | 2000 | 2000 | 2000 |
| | | | | 1725 | 21 | 2000 | 2000 | 2000 | 2000 |
| HBIA51TT | 1" diameter 1.000" lead ball screw | 5:1 | 5 | 1140 | 228 | 225 | 300 | 450 | 700 |
| | | | | 1725 | 345 | 100 | 200 | 300 | 450 |

Lead: The distance traveled axially in one rotation of the lifting screw.
Pitch: The distance from a point on a screw thread to a corresponding point on the next thread, measured axially.
Important Note: DIA models may lower under load. Brake motors or external locking systems are recommended.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

EDRIVE®
ACTUATORS

# ELECTRIC LINEAR ACTUATORS




Our EDrive brand electric linear actuators are perfect for tough, industrial automation applications where conservative design, rugged construction, long life, and high precision are required.

EDrive electric actuators are an ideal replacement for older power solutions like hydraulic and pneumatic linear actuators.

**Eliminator HD™**
- Rated thrust up to 40,000 lbf
- High velocity up to 20 in/sec, stroke up to 48 inches

**Eliminator HDL™ with Integrated Load Cell**
- Rated thrust up to 25,000 lbf
- High velocity up to 20 in/sec, stroke up to 48 inches

**Eliminator SD™**
- Extreme thrust capacity up to 100,000 lbf
- Velocity up to 12 in/sec, Strokes up to 48 inches

**Eliminator SPL™ ith Integrated Load Cell**
- Thrust up to 25,000 lbf
- High velocity to 20 in/sec, Strokes to 48 inches

**Eliminator SS™**
- Rated thrust up to 2,000 lbf
- Extreme speed up to 63 in/sec, stroke up to 48 inches

**Tac LS™**
- Long stroke actuator with thrust up to 2,000 lbf
- Velocity up to 40 in/sec, stroke from 24 to 60 inches

**Tac VP™**
- Compact actuator with thrust up to 2,000 lbf
- Velocity up to 40 in/sec, stroke up to 24 inches

**Tac VT™**
- Compact actuator with thrust up to 2,000 lbf
- Velocity up to 40 in/sec, Stroke rate up to 24 inches

**Universal Actuator™**
- Rated thrust up to 500 lbf
- Velocity up to 50 in/sec

Scan the QR Code to view EDrive on our website.

Joyce Bevel Gear® Jacks (BG) offer higher efficiency and greater speed than other mechanical screw jacks. At the same time, bevel gear jacks with single lead screws (S series) provide the benefits of a self-locking screw – no special brake is required to prevent the jack from lowering under load. Spiral bevel gears increase strength for higher capacities.

Bevel gear jacks are available in 7.5-ton to 100-ton static capacities with either single lead S series or double lead D series lifting screws. Standard jacks have right hand screw threads. Left hand screw threads are available as an option.

Bevel gear jacks also act as miter boxes, making them an ideal choice for multi-jack systems. As many as three output shafts may be specified for mounting motors, limit switches, readout devices and other accessories. See page 190 for an example of a bevel gear jack system. Note that right hand and left hand screw threads are alternated in the layout.

Many options are available and all jack designs can be fitted with protective boots.

Joyce can customize bevel gear jacks to meet your requirements.

**To properly size jacks, follow the design tips on page 147 and refer to the Thermal Graphs and Column Load charts (pages 148 to 150). Use JAX® Online software to determine dynamic capacity of jacks or contact Joyce.**

Scan the QR Code to view this product on our website.

# BEVEL GEAR JACKS




**Joyce offers Bevel Gear Jacks in several designs including:**
- **Translating**
- **Keyed for non-rotation**
- **Keyed for traveling nut (KFTN)**

A guide for ordering is on page 146.

# BEVEL GEAR JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| Joyce Bevel Gear® Jacks | |
|---|---|
| BG150S | BG150D |
| BG250S | BG250D |
| BG375S | BG375D |
| BG450S | BG450D |

Visit our website for design tips and detailed product information.

Right hand screw threads standard.

**Bevel Gear Jack Rise**

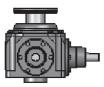
Rise is travel expressed in inches and not the actual screw length.

**Screw Stops (p. 10) and Boots (pp. 166-168)**

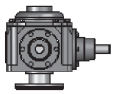
Screw stops are optional on Bevel gear jacks. When specified, the closed height of the jack and protection tube length may be increased.

## Sample Part Number: BG150SU2S-12.25-STDX-STDX-STDX-X

**Jack Configuration**



U=Upright



I=Inverted

**End Conditions**



1=T1 (plain end)



2=T2 (load pad)

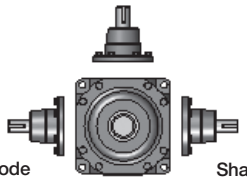


3=T3 (threaded end)



4=T4 (male clevis)

Shaft 2 Code



Shaft 1 Code

Shaft 3 Code

**Jack Design**



S=Translating



K=Keyed for Non Rotation



N=Traveling Nut

**Shaft Codes**

Three shaft codes must be specified for each jack. Electronic and mechanical limit switches may be substituted for the shaft code per the tables on this page.

STDX – Standard
XXXX – Input shaft not required
CUST – Custom

When ordering with only one input shaft, it is recommended to order the following configuration:

XXXX-STDX-XXXX

**Additional Options***

X=Standard Jack, no additional options

S=Additional Specification Required (comment as necessary)

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**ACME Screw**
L=Left Hand Screw

**Screw Stops**
ST0=Extending
ST1=Retracting
ST2=Both

* Specify as many options as needed

**Encoders (pp. 172-173)**



ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR

**Mechanical Limit Switches (p. 170)**

## Ordering Example: LA13

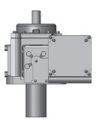
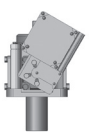
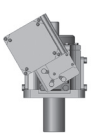
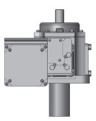
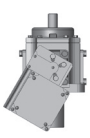
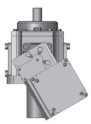
**Models**

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

**Available Positions**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

Note: All BG jacks are available with all mounting positions.

# BEVEL GEAR JACKS SPECIFICATIONS AND DESIGN TIPS

| Model | Dynamic Capacity | Static Load Capacity | | Screw | | Bevel Gear Ratio | Pinion Turns for 1" Travel | Pinion Torque (In. Lbs.) | Screw Torque | Jack Efficiency | Jack† Cooling Time | Base Weight (Lbs.) | Add for Each Inch of Travel (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Upright Assembly: screw-in compression/ Inverted Assembly: screw-in tension | Upright Assembly: screw-in tension/ Inverted Assembly: Screw-in compression | Dia. | Pitch/Lead | | | | | | | | |
| BG150-S | Please use JAX® Online software or contact Joyce | 14,000 lbs. | 14,000 lbs. | 1 1/2" | .375P STUB ACME | 2.69:1 | 7.18 | .059W* | .151W* | 38.5% | 38 min. | 42 | .8 |
| BG150-D* | | | | | .250P / .500L ACME 2C | 2.69:1 | 5.38 | .066W* | .169W* | 45.6% | 38 min. | 42 | .8 |
| BG250-S | | 30,000 lbs. | 30,000 lbs. | 2 1/2" | .500P ACME 2C | 2.15:1 | 4.31 | .111W* | .227W* | 34.2% | 82 min. | 140 | 2.6 |
| BG250-D* | | | | | .375P / .750L ACME 2C | 2.15:1 | 2.87 | .133W* | .272W* | 42.6% | 82 min. | 140 | 2.6 |
| BG375-S | | 66,000 lbs. | 40,000 lbs. | 3 3/4" | .666P ACME 2C | 3.52:1 | 5.29 | .098W* | .329W* | 31.5% | 192 min. | 230 | 4.1 |
| BG375-D* | | | | | .666P / 1.333L STUB ACME | 3.52:1 | 2.64 | .134W* | .448W* | 46.0% | 192 min. | 230 | 4.1 |
| BG450-S | | 218,000 lbs. | 200,000 lbs. | 4 1/2" | .500P ACME 2C | 3:1 | 6 | .125W* | .356W* | 21.9% | 262 min. | 650 | 5.5 |
| BG450-D* | | | | | .500P / 1.00L ACME 2C | 3:1 | 3 | .154W* | .438W* | 35.5% | 262 min. | 650 | 5.5 |

Important Note: *Not self-locking, may lower under load. Brake motors or external locking systems are recommended.

D: Double Lead Screws.

S: Single Lead Screws. These jacks are self-locking.

*W: Load in Pounds.

Pinion Torque: The torque required to continuously raise a given load.

Screw Torque: The torque required to resist screw rotation (translating jack design) and traveling nut rotation (keyed for traveling nut design).

Lead: The distance traveled axially in one rotation of the lifting screw.

Pitch: The distance from a point on the screw thread to a corresponding point on the next thread, measured axially.

†: Cooling time based on time to cool from 200°F to 70°F (ambient).

For additional sizes contact our team at: sales@joycedayton.com or call (937) 294-6261.

**Design Tips:**

1. A PV (pressure/velocity) value must be calculated for each application. The continuous running time should not exceed the corresponding T (time) value. Refer to instructions and graphs on pages 148 and 150.
2. Cooling time data on these charts is calculated based on limiting the lifting nut temperature rise from 70°F to 200°F (100° below dropping point of grease).
3. Check single lead versus double lead screws in each case. A double lead screw may be the appropriate choice due to increased efficiency while offering the same performance characteristics.
4. JAX® Online software is a useful design aid to determine the following:
   - The allowable static compression load for a given rise (or use Column Loading Chart on page 150)
   - The allowable dynamic load for a given rise
   - System horsepower and torque – also see item #5
5. When a direct motor drive is used in a system, consideration must be given to the input starting torque requirements and the motor horsepower will need to be increased accordingly (JAX® Online software data may require additional scrutiny). Contact Joyce for assistance.
6. When selecting multiple bevel gear jacks for an interconnected row or system (page 190) careful attention must be given to the input and output shaft rotations. For example, if the input shaft rotation on the first jack is clockwise, the output shaft(s) on that same jack will rotate counter-clockwise. To insure all jacks raise and lower in unison, alternating jacks must be specified with right and left hand acme screw threads. For example, if you have five jacks interconnected in a straight line and the first jack is right hand, the third and fifth jack will also need to be ordered as right hand and the second and fourth jack will need to be ordered as left hand. Bevel gear jacks are supplied standard with right hand acme screws. To order the left hand acme screw option, add an "L" to the end of your bevel gear jack part number as shown on page 146.
7. Joyce Bevel Gear® "S" Series (single lead) jacks are inherently self-locking. A brake is required for "D" series (double lead) jacks, which may lower under load.
8. Bevel gear jacks are furnished with one input shaft in position #2. Jacks may be ordered with up to three input shafts located at any combination of positions # 1, 2, or 3.
9. Joyce Bevel Gear® jacks are designed for oil bath (EP-90 gear lubricant) or grease operation. The upper bearing is grease lubricated through a fitting on top of the jack. Grease must be applied directly to the lifting screw.
10. Typically jacks are mounted upright with the base plate parallel to the horizon. If the base plate is oriented any other way, contact Joyce for lubrication and other instructions.

# BEVEL GEAR JACKS APPLICATION INFORMATION AND THERMAL GRAPHS

In many applications, Joyce Bevel Gear® jacks are more efficient and faster than wormgear driven jacks. To determine the suitability of a bevel gear jack for your application, use the steps below to calculate load, travel speed and duty cycle.

**Step 1** Determine load in pounds.

**Step 2** Determine velocity in feet / minute (fpm).

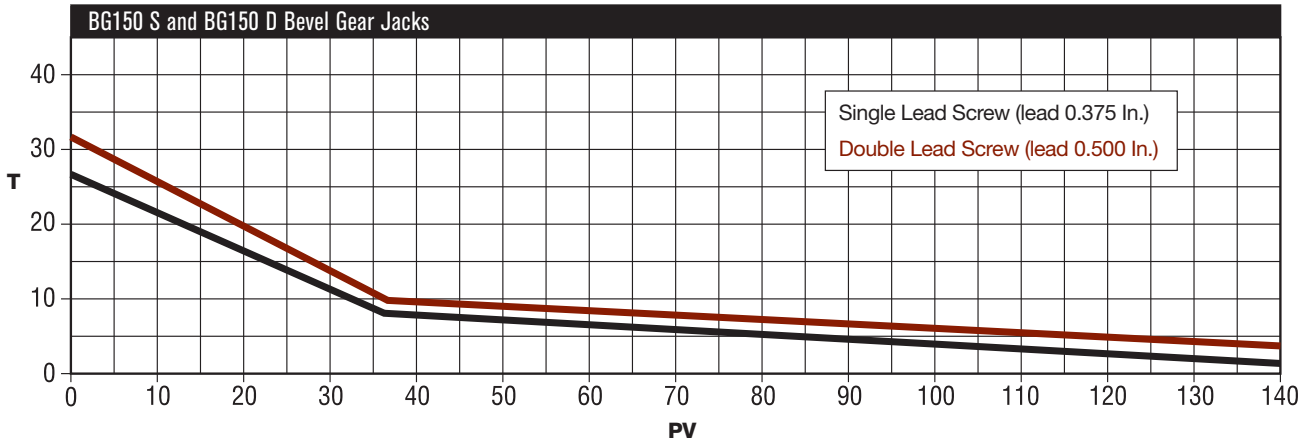
**Step 3** Determine duty cycle in terms of minutes operation / minutes resting (or time on / time off).

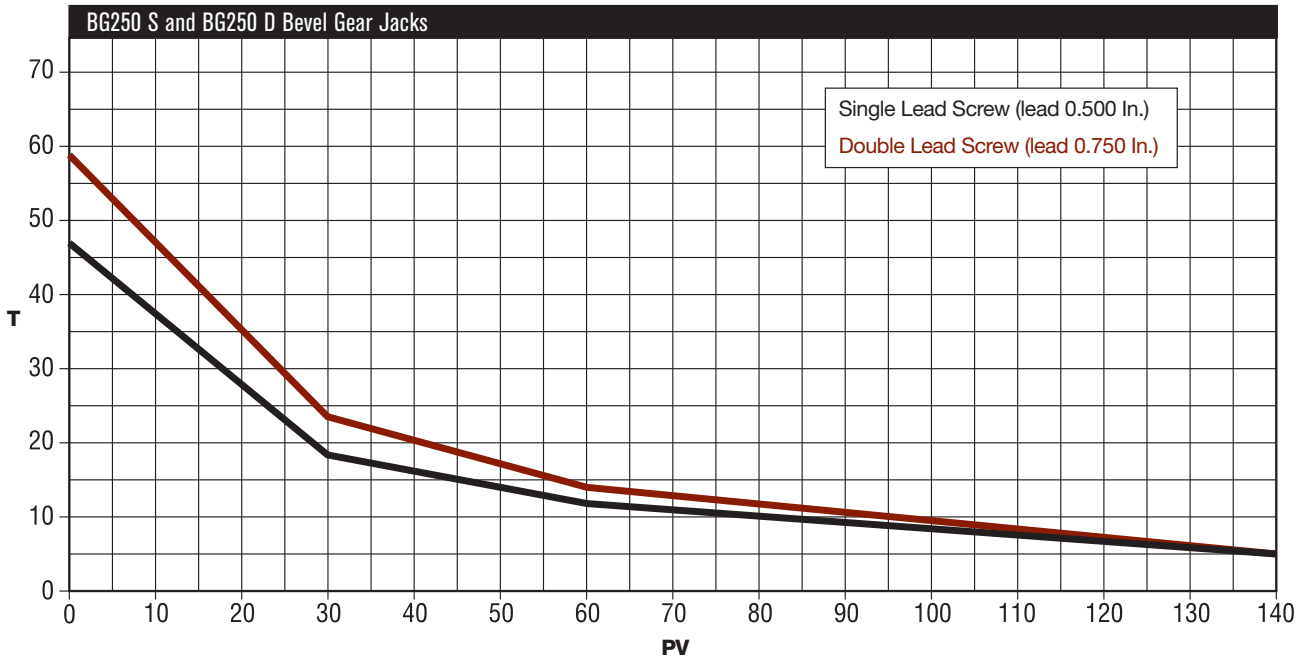
**Step 4** Calculate PV.
PV = (load x velocity in fpm)/1000

**Step 5** Calculate cooling time (T).
T = Cooling time (p. 147) x $\frac{\text{time on}}{\text{time off}}$

**Step 6** Plot the points for PV and T on the appropriate graph (below or on the next page). If the point falls below the line, the application is satisfactory. If it is above the line, recalculate T for the next larger size jack. Each jack size has a different cooling time (p. 147).

**Step 7** Calculate horsepower.
RPM = Velocity in fpm x 12 x input turns per one-inch travel (from chart on p. 147)
Horsepower = Pinion torque (from chart) x load x RPM




**Note: PV** = $\frac{\text{load x velocity (fpm)}}{1000}$ **T** = the maximum running time in minutes before a complete cooling time is required.

# BEVEL GEAR JACKS EXAMPLE AND THERMAL GRAPHS

**Example:** A 5000-pound load must be raised 30 inches in 15 seconds. The load remains in position for two minutes. It is then lowered and remains lowered for 30 seconds. The cycle begins again. Determine the appropriate bevel gear jacks and calculate horsepower required.

**Step 1** Load = 5000 pounds

**Step 2** Velocity = 30 inches in 15 seconds = 10 fpm

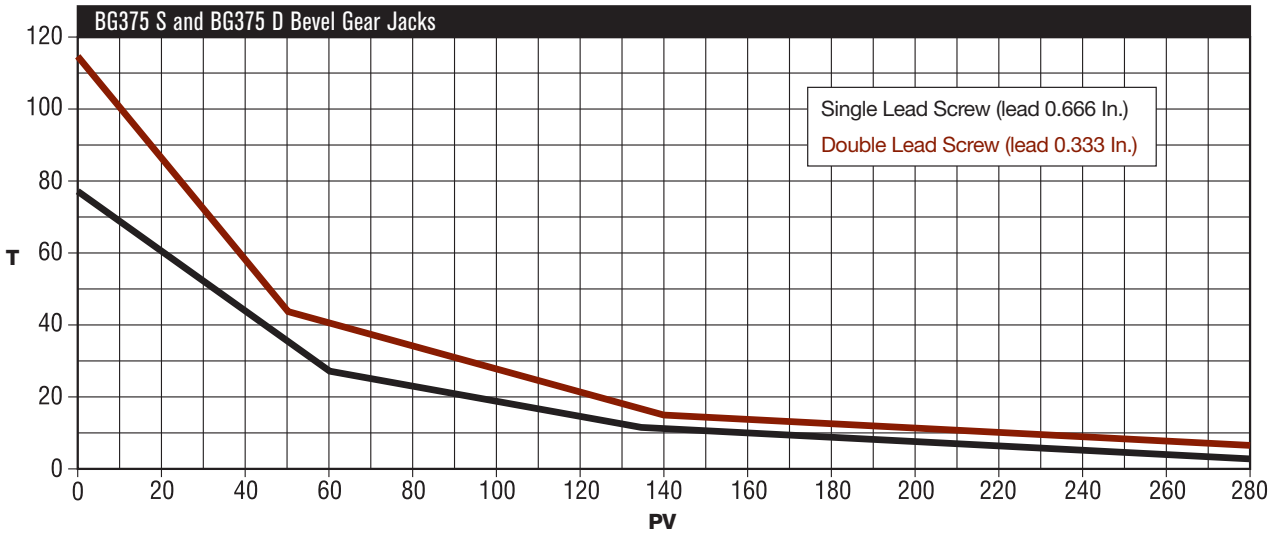
**Step 3** Duty cycle = Time on / Time off
Time on = 15 seconds up +15 seconds down = 30 seconds = 0.5 min
Time off = 2 minutes up + 30 seconds down = 2 minutes 30 seconds = 2.5 minutes

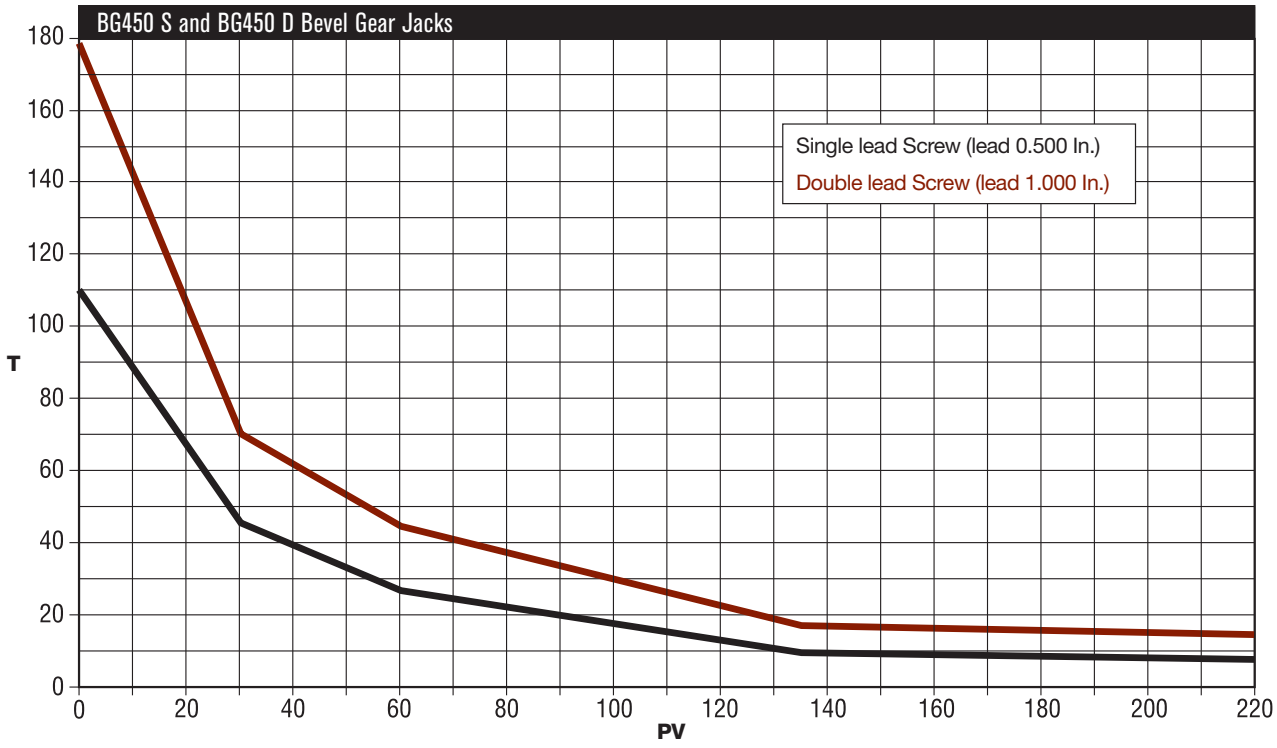
**Step 4** PV= (5000 x 10) / 1000 = 50

**Step 5** T = 38 (for BG150) x (0.5 / 2.5) =7.6

**Step 6** The point for PV, 50. and T, 7.6 falls below the line for BG 150 D and above the line for BG 150S, therefore BG 150 D is appropriate. (reference BG150 chart on p. 148)

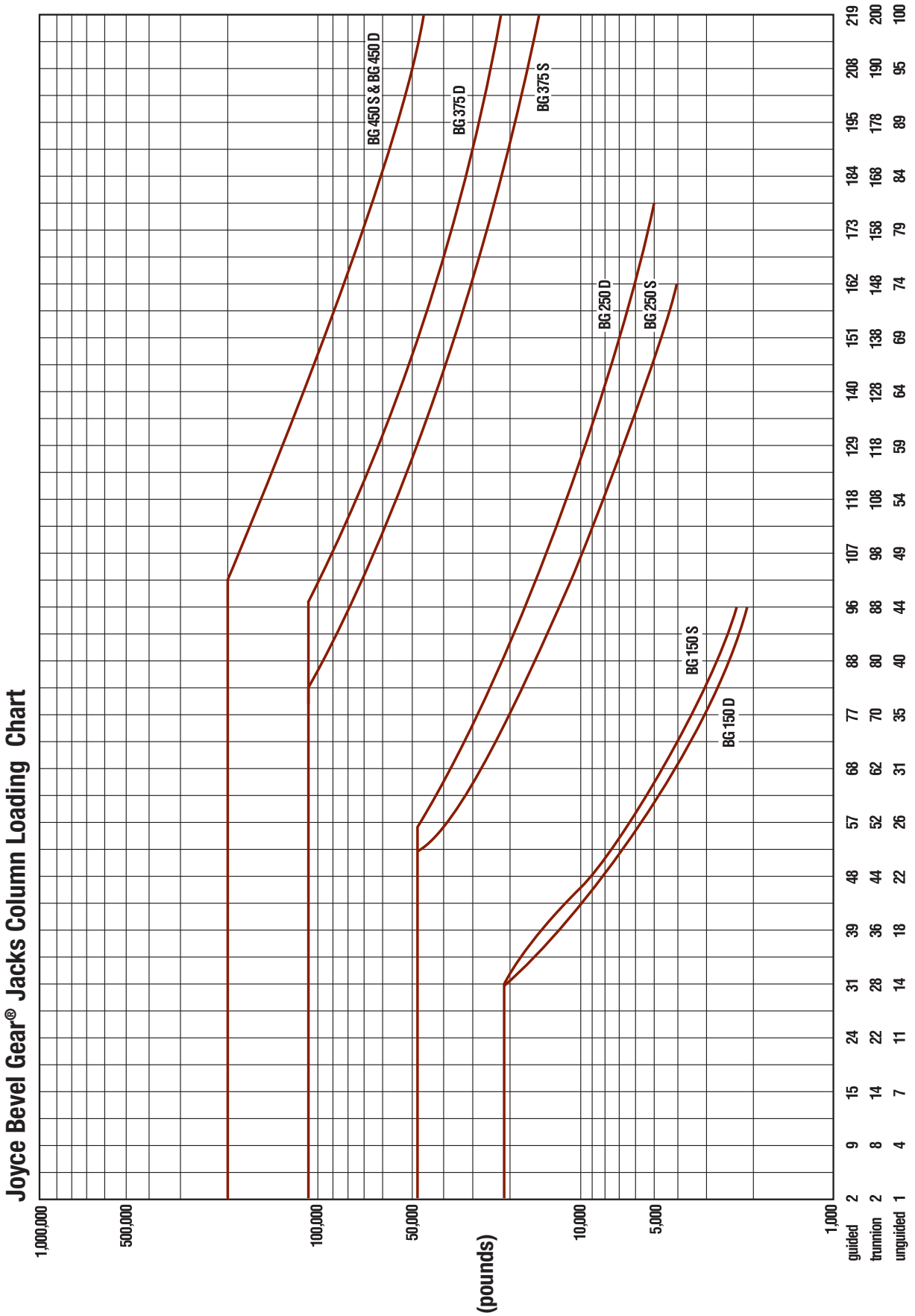
**Step 7** RPM = 10 x 12 x 5.38 = 645.6
Horsepower = (.066 x 5000 x 646) / 63,025 = 3.38




**Note: PV** = $\frac{\text{load x velocity (fpm)}}{1000}$ **T** = the maximum running time in minutes before a complete cooling time is required.

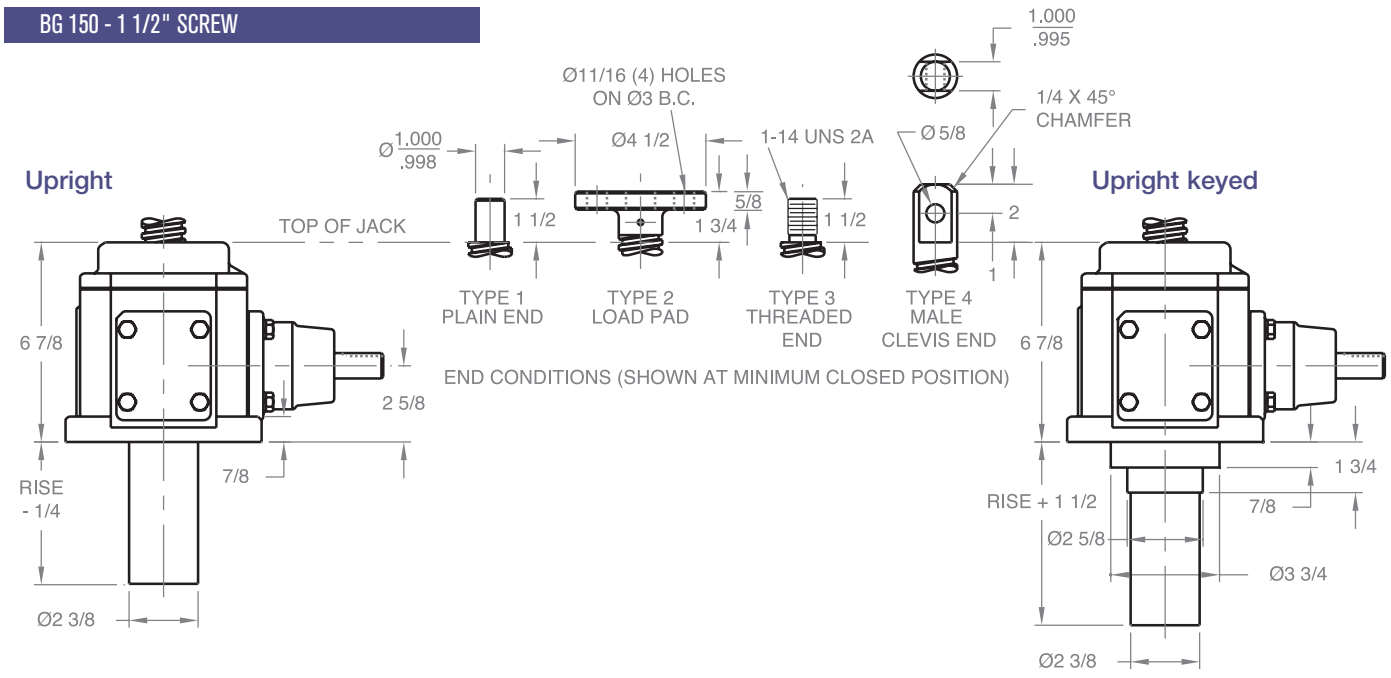
# BEVEL GEAR JACKS COLUMN LOADING

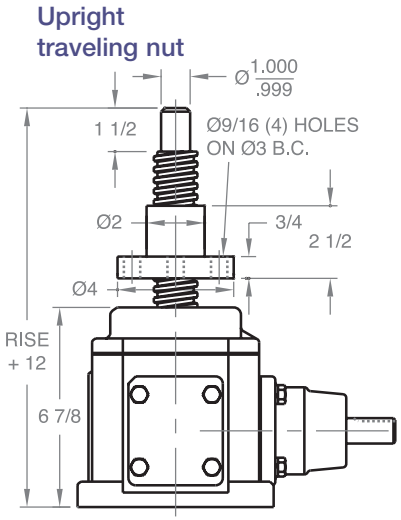


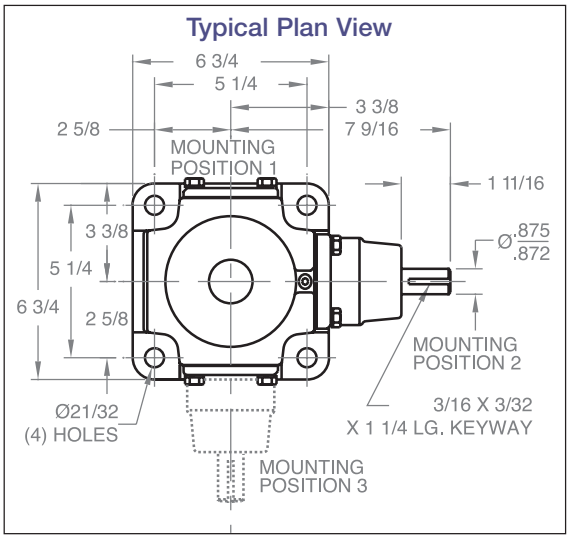

This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.)
The horizontal portion of each line represents the jack's maximum static capacity.

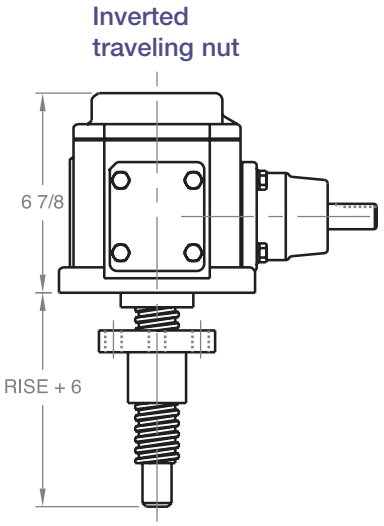
# BEVEL GEAR JACKS

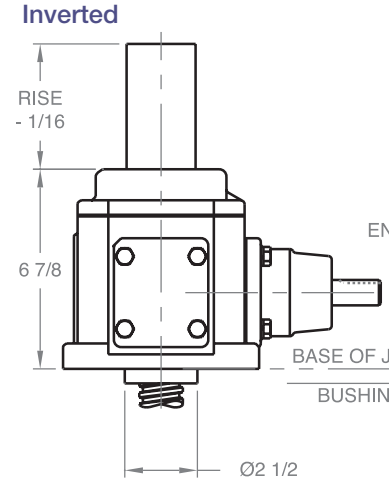
## BG 150 - 1 1/2" SCREW



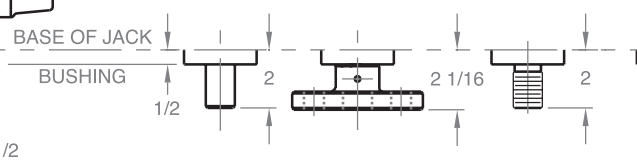



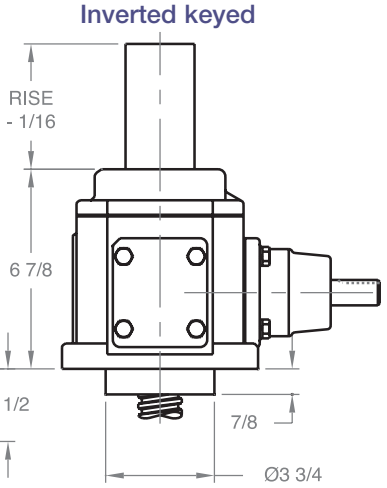




END CONDITIONS (SHOWN AT MINIMUM CLOSED POSITION)
(DOES NOT APPLY TO INVERTED KEYED JACK)

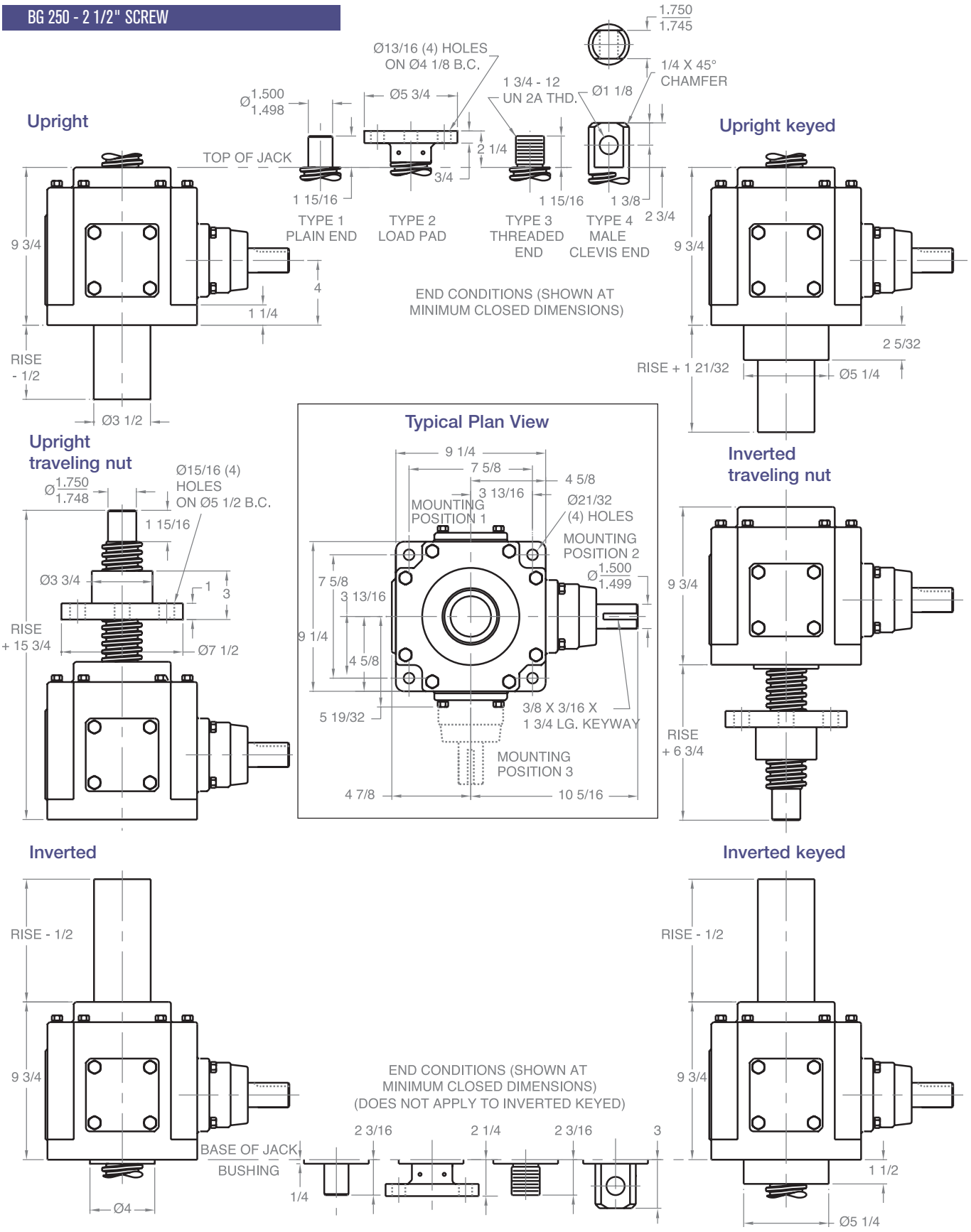



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BEVEL GEAR JACKS

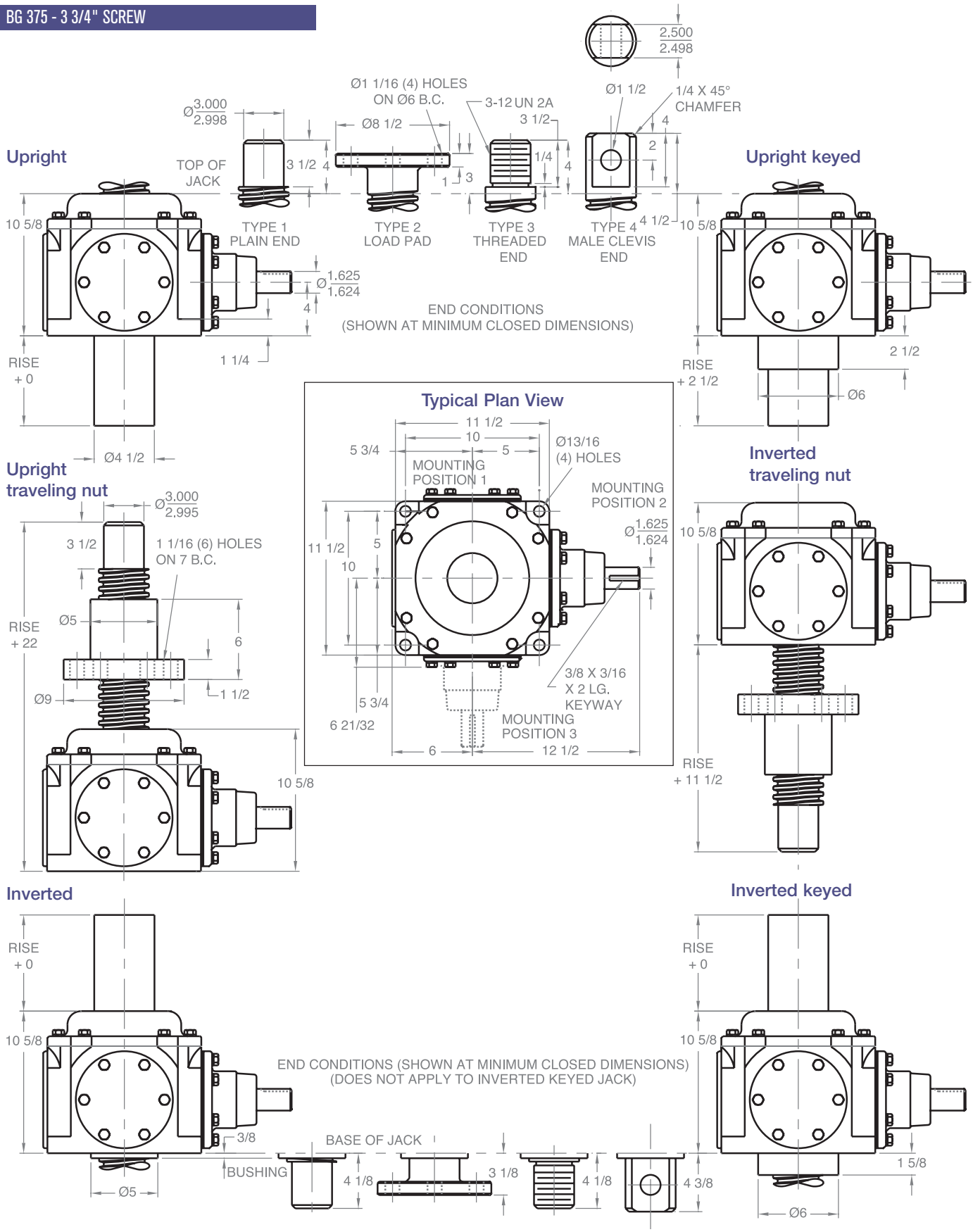
## BG 250 - 2 1/2" SCREW




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BEVEL GEAR JACKS

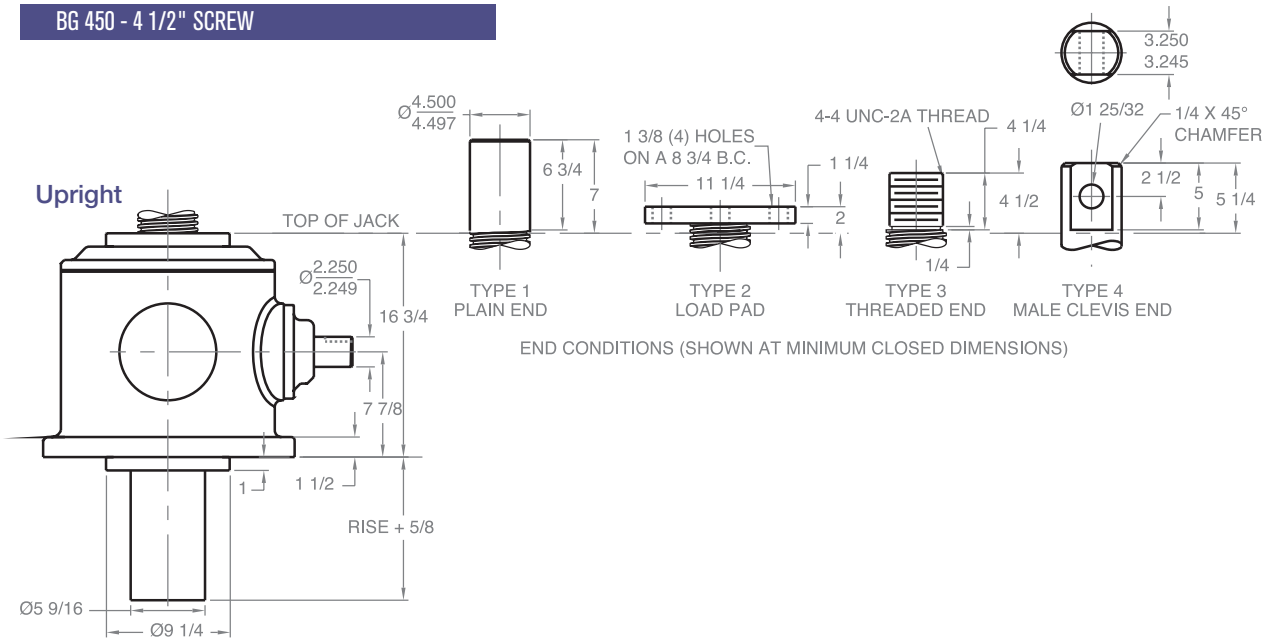
## BG 375 - 3 3/4" SCREW



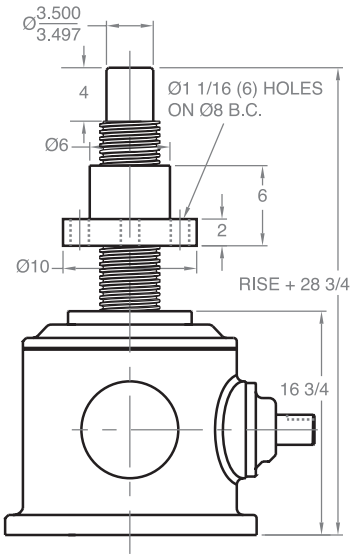

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BEVEL GEAR JACKS

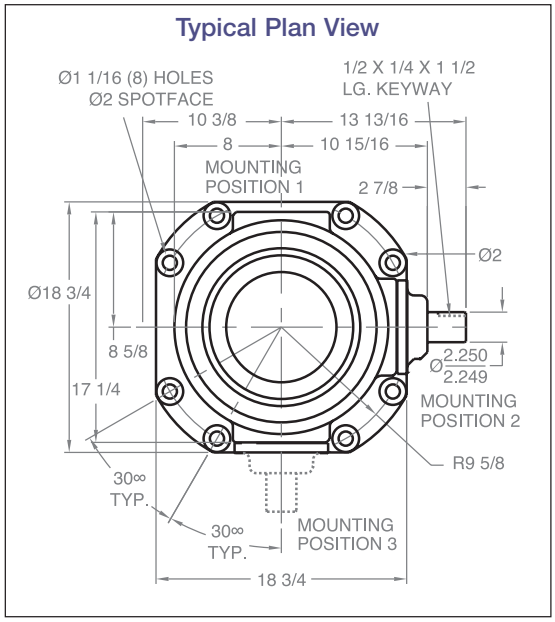
## BG 450 - 4 1/2" SCREW



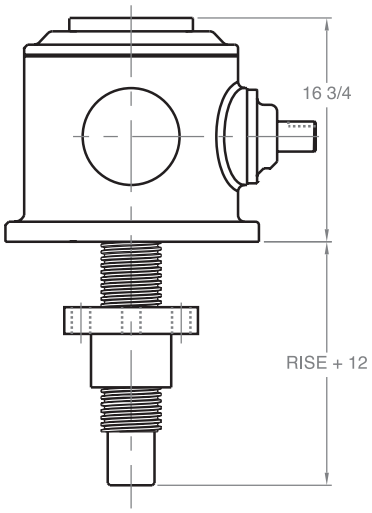

### Upright traveling nut



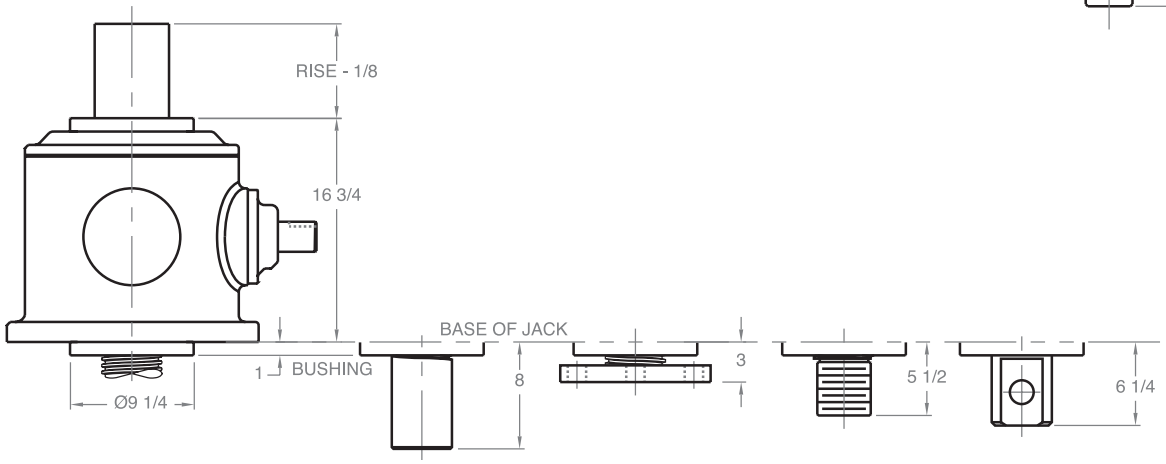

### Typical Plan View




### Inverted traveling nut




### Inverted




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# BEVEL GEAR BALL SCREW JACKS

**To properly size bevel ball jacks, follow the design tips found on page 161, and refer to the Column Load and Life Expectancy charts (pages162 and 163). Use JAX® Online software to determine the dynamic capacity of bevel ball jacks or contact Joyce.**

Joyce high-efficiency bevel gear ball screw jacks (BB) are designed for near-continuous duty operation. BB series bevel ball jacks provide higher speeds and less heat generation than other mechanical actuators and require a brake motor or other external locking device to hold position. They also offer more precise positioning and repeatability than hydraulic cylinders.

Bevel gear ball screw jacks are available in 7.5-ton to 100-ton static capacities and are able to attain travel speeds of up to 48 feet per minute. The ball screw and ball nut have a fully predictable J-10 life expectancy. Standard jacks have right hand ball screws. Left hand ball screws are available as an option. A threaded end condition is standard on translating bevel ball actuators; load pad, plain and clevis ends are also available. KFTN designs have a plain turned end condition.

Bevel gear ball screw jacks are ideal for either single operation or multi-actuator systems. As many as three output shafts may be specified for mounting motors, limit switches, readout devices and other accessories. See page 190 for an example of a bevel gear jack system. Note that right hand and left hand screw threads are alternated in the layout.

Many options are available including oversized ball bearings, which can be specified to reduce endplay between ball screw and ball nut. All jack designs can be fitted with protective boots.

Joyce can customize bevel gear ball screw jacks to meet your requirements.




**Joyce offers Bevel Gear Ball Screw Jacks in the following designs:**
- **Translating**
- **Keyed for traveling nut (KFTN)**

A guide for ordering is on page 156.

Scan the QR Code to view this product on our website.

# BEVEL GEAR BALL SCREW JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

| Joyce Bevel Ball Jacks |
|---|
| BB150 |
| BB225 |
| BB300 |
| BB400 |

Evaluate column load (p. 158).
Evaluate ball nut life (p. 159).
Detailed product information (pp. 160-161).
Right hand ball screws standard.

**Bevel Ball Jack Rise**

Rise is travel expressed in inches and not the actual screw length.

**Screw Stops (p. 10) and Boots (pp. 166-168)**

Extending Screw Stops are optional on bevel ball jacks. When specified, the closed height of the jack and protection tube length may be increased.

## Sample Part Number: BB225U3S-12-XXXX-STDX-XXXX-B

**Actuator Configuration**



U=Upright I=Inverted

**End Conditions**



1=T1 (plain end) 2=T2 (load pad) 3=T3 (threaded end) 4=T4 (male clevis)

**Actuator Design**



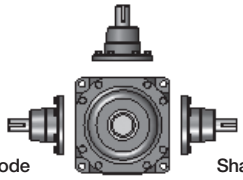
S=Translating Keyed for Non Rotation is not a standard option N=Traveling Nut

**Encoders (pp. 172-173)**



ENCA=Absolute Encoder 0-10 VDC, programmable
ENCB=Absolute Encoder 4-20mA, programmable
ENCC=Absolute Encoder CAN Open
ENCD=Absolute Encoder SSI
ENCS=Stainless Steel Incremental Encoder 1024 PPR
ENCX=Incremental Encoder 200 PPR
ENCY=Incremental Encoder 1024 PPR

Shaft 2 Code



Shaft 1 Code Shaft 3 Code

**Shaft Codes**

Three shaft codes must be specified for each jack. Electronic and mechanical limit switches may be substituted for the shaft code per the tables on this page.

STDX – Standard
XXXX – Input shaft not required
CUST – Custom

When ordering with only one input shaft, it is recommended to order the following configuration:

XXXX-STDX-XXXX.

**Additional Options***

X=Standard Actuator, no additional options

S=Additional Specification Required (comment as necessary)

**Protective Boots pp. 166-168**
B=Protective Boot
D=Dual Protective Boot

**Finishes p. 178**
F1=Do not Paint
F2=Epoxy Paint
F3=Outdoor Paint Process

**Ball Screw**
L=Left Hand Screw

**Screw Stops**
ST0=Extending Stops

* Specify as many options as needed

**Mechanical Limit Switches (p. 170)**

## Ordering Example: LA13

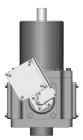
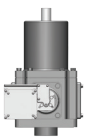
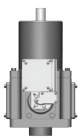
**Models**

| Model | Code |
|---|---|
| LS7-402 | LI |
| LS8-402 | LA |
| LS8-404 | LB |

Number of DPDT Switches (see p. 170)

NOTE: Will always be 0 for LS7 models

**Available Positions**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

Note: All BB jacks are available with all mounting positions.

# BEVEL GEAR BALL SCREW JACKS SPECIFICATIONS & TIPS

| Model | Dynamic Capacity | Static Capacity (Lbs) | | Screw Dia./ Lead | Bevel Gear Ratio | Pinion Turns for 1" Travel | Pinion Torque (Raising) | Pinion Torque (Holding) | Screw Torque | Actuator Efficiency | Base Weight (Lbs) | Add for each inch of travel |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Upright Assembly Screw in Tension | Upright Assembly Screw in Compression | | | | | | | | | |
| BB150 | Please use JAX® Online software or contact Joyce | 15,000 | 15,000 | 1.50/.25 | 2.69:1 | 10.77 | .022W* | .018W* | .044W* | 72.2% | 52 | 0.7 |
| BB225 | | 30,000 | 30,000 | 2.25/.50 | 2.15:1 | 4.31 | .054W* | .044W* | .089W* | | 200 | 2.6 |
| BB300 | | 42,500 | 70,000 | 3.00/.66 | 3.52:1 | 5.34 | .044W* | .035W* | .117W* | | 360 | 3.2 |
| BB400 | | 200,000 | 200,000 | 4.00/1.00 | 3:1 | 3.00 | .078W* | .063W* | .117W* | | 740 | 4.8 |
| | | Inverted Assembly Screw in Tension | Inverted Assembly Screw in Compression | | | | | | | | | |
| BB150 | | 15,000 | 15,000 | 1.50/.25 | 2.69:1 | 10.77 | .022W* | .018W* | .044W* | 72.2% | 52 | 0.7 |
| BB225 | | 30,000 | 30,000 | 2.25/.50 | 2.15:1 | 4.31 | .054W* | .044W* | .089W* | | 200 | 2.6 |
| BB300 | | 70,000 | 42,500 | 3.00/.66 | 3.52:1 | 5.34 | .044W* | .035W* | .117W* | | 360 | 3.2 |
| BB400 | | 200,000 | 200,000 | 4.50/1.00 | 3:1 | 3.00 | .078W* | .063W* | .117W* | | 740 | 4.8 |

Important Note: Bevel Ball Jacks are not self-locking. Brake motors or external locking systems are required.

*W: Load in Pounds.

Pinion Torque (raising): The torque required to continuously raise a given load.

Pinion Torque (holding): The torque required to hold a given static load in position.

Screw Torque: The torque required to resist screw rotation (translating design) and traveling nut rotation (KFTN design).

Lead: The distance traveled axially in one rotation of the lifting screw.

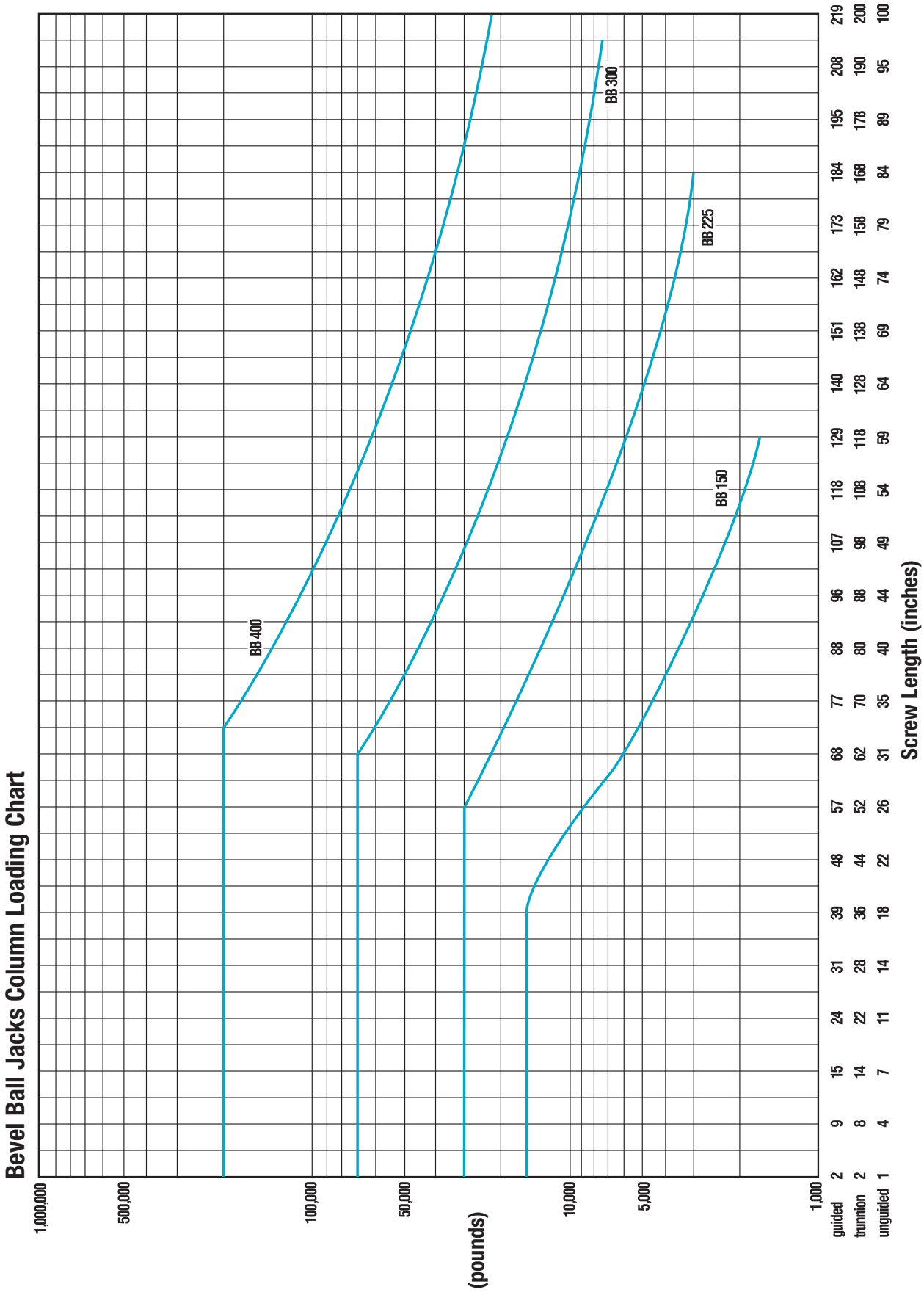
Pitch: The distance from a point on the screw thread to a corresponding point on the next thread, measured axially.

For additional sizes contact our team at: sales@joycedayton.com or call (937) 294-6261.

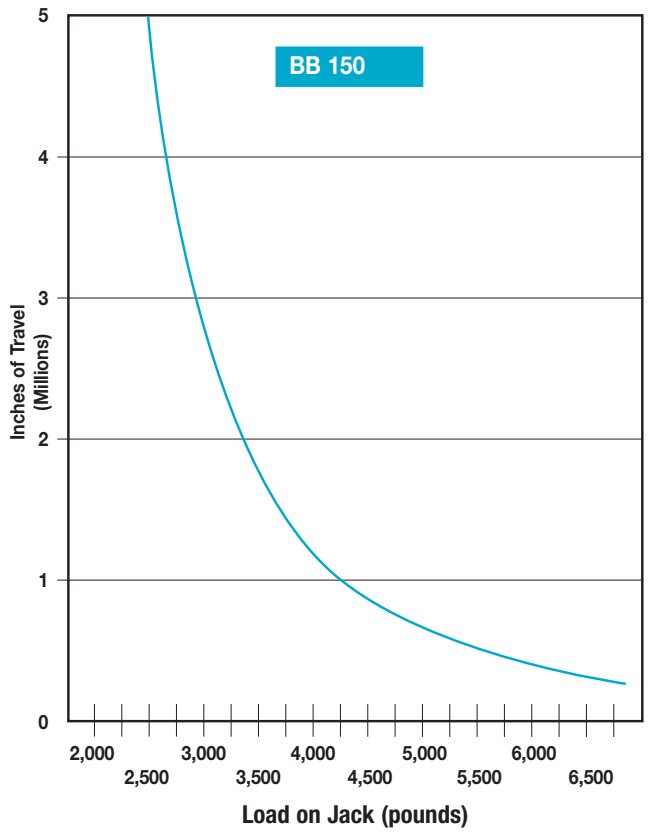
**Design Tips**

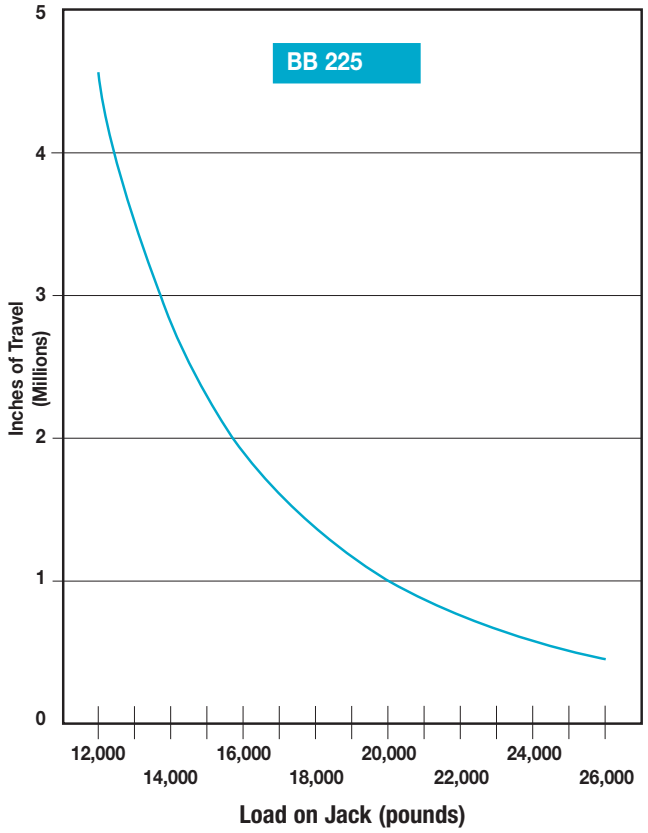
1. Determine the load to each bevel ball jack.
2. Determine the orientation and type of load; for instance, from the chart above it may be an upright compression load or an inverted compression load.
3. Jax® software can be used to determine the following:
   - The allowable static compression load for a given rise (or use Column Loading Chart on page 158)
   - The allowable dynamic load for a given rise
   - Ball nut life (or use Life Expectancy of the ball screw chart on page 159)
   - System horsepower and torque – also see item #4
4. When a direct motor drive is used in a system, consideration must be given to the input starting torque requirements and the motor horsepower will need to be increased accordingly (JAX® software may require additional scrutiny). Contact sales@joycedayton.com for assistance.
5. When selecting bevel ball jacks for an interconnected row or system (p. 190), careful attention must be given to the input and output shaft rotations. For example, if the input shaft rotation on the first bevel ball jack is clockwise, the output shaft(s) on that same bevel ball jack will rotate counter-clockwise. To insure all actuators raise and lower in unison, alternating bevel ball jacks must be specified with right and left hand ball screw threads. For example, if you need five bevel ball jacks interconnected in a straight line and the first bevel ball jack is right hand, the third and fifth bevel ball jack will also need to be ordered as right hand and the second and fourth bevel ball jack will need to be ordered as left hand. Bevel ball bevel ball jacks are supplied standard with right hand ball screws. To order the left hand ball screw option, add an "L" to the end of your bevel ball jack part number as shown on page 156.
6. Bevel ball jacks are not self-locking. They will lower under load. A brake motor or other external locking system is required.
7. Bevel ball jacks are furnished with one input shaft (pinion) in position #2. Bevel ball jack may be ordered with up to three input shafts located at any combination of positions # 1, 2, or 3.
8. Translating bevel ball jack are designed for grease lubrication. The upper bearing is grease lubricated through a fitting on top of the jack. Light oil must be applied directly to the lifting screw.
9. Typically bevel ball jacks are mounted upright with the jack base plate parallel to the horizon. If the base plate is oriented any other way, contact Joyce for lubrication and other instructions.

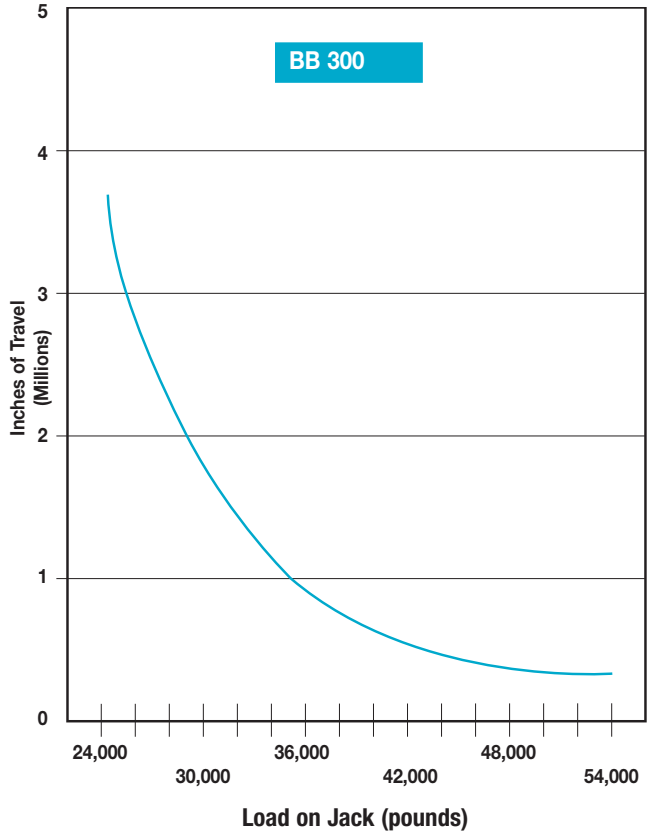
# BEVEL GEAR BALL SCREW JACKS COLUMN LOADING

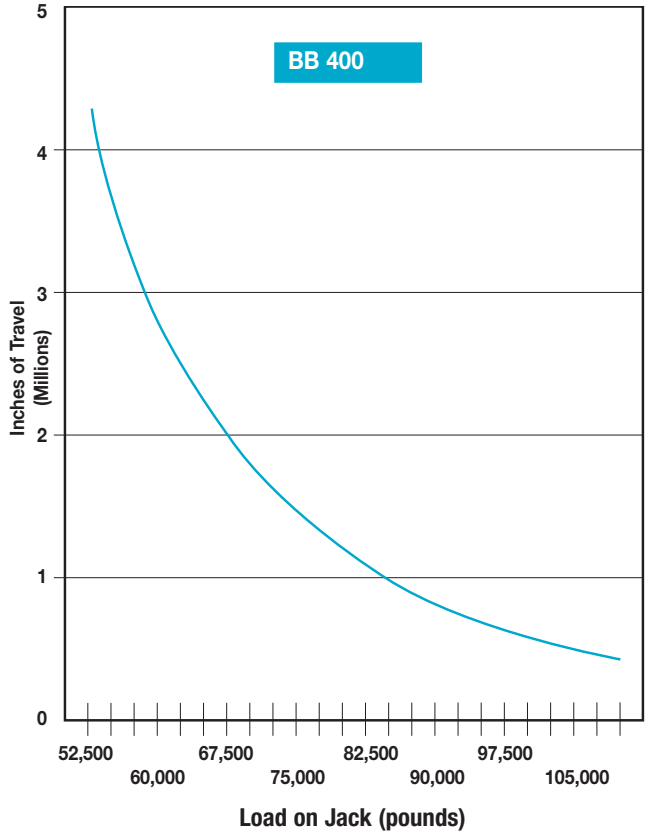



This chart includes a 2:1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Oberg, Erik et al: Machinery's Handbook, 24th Edition. c. 1992 Industrial Press Inc.)
The horizontal portion of each line represents the jack's maximum static capacity.


BB 150
Inches of Travel (Millions)
0
1
2
3
4
5
2,000
2,500
3,000
3,500
4,000
4,500
5,000
5,500
6,000
6,500
Load on Jack (pounds)


BB 225
Inches of Travel (Millions)
0
1
2
3
4
5
12,000
14,000
16,000
18,000
20,000
22,000
24,000
26,000
Load on Jack (pounds)

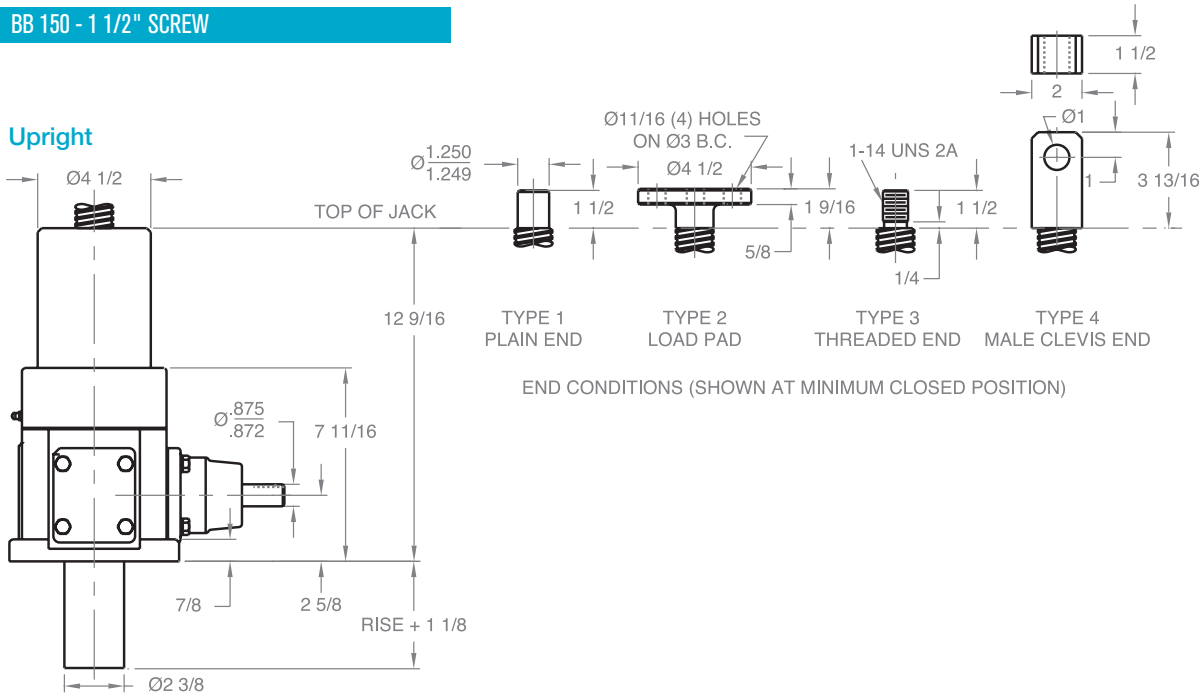

BB 300
Inches of Travel (Millions)
0
1
2
3
4
5
24,000
30,000
36,000
42,000
48,000
54,000
Load on Jack (pounds)


BB 400
Inches of Travel (Millions)
0
1
2
3
4
5
52,500
60,000
67,500
75,000
82,500
90,000
97,500
105,000
Load on Jack (pounds)

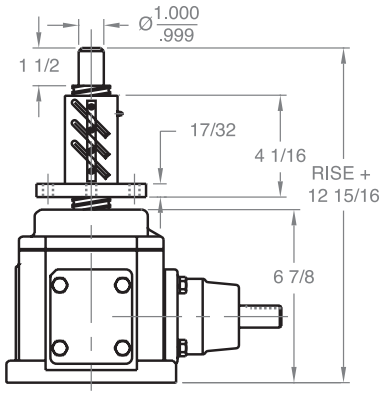
# BEVEL GEAR BALL SCREW JACKS

## BB 150 - 1 1/2" SCREW

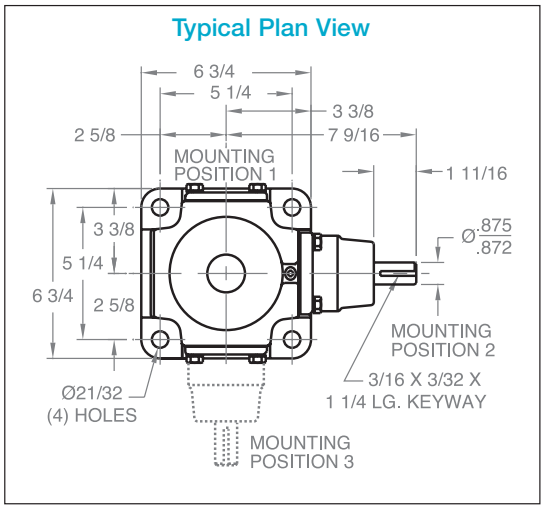
### Upright



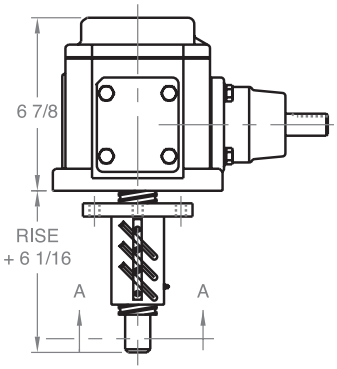

### Upright traveling nut

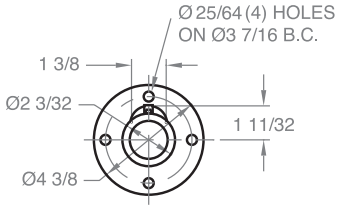



### Typical Plan View




### Inverted traveling nut




VIEW A-A

### Inverted

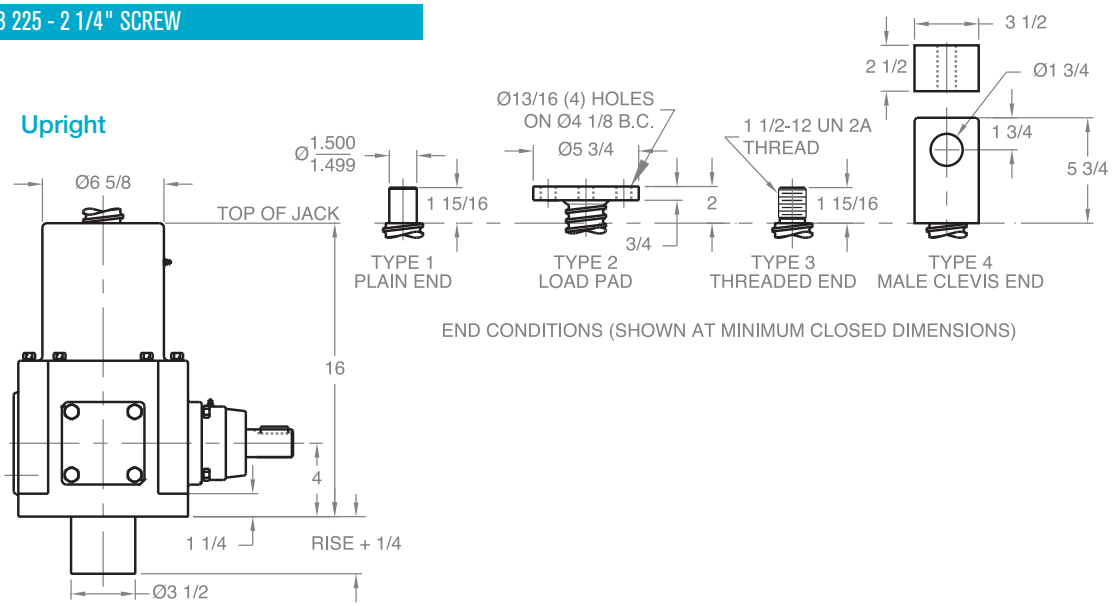



Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

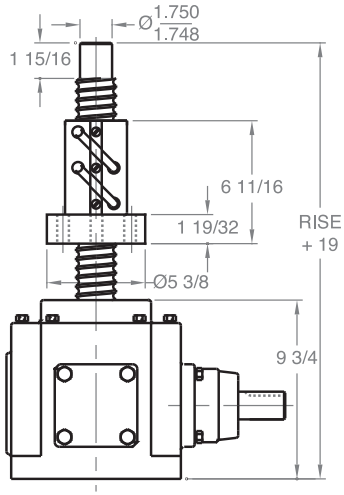
# BEVEL GEAR BALL SCREW JACKS

## BB 225 - 2 1/4" SCREW

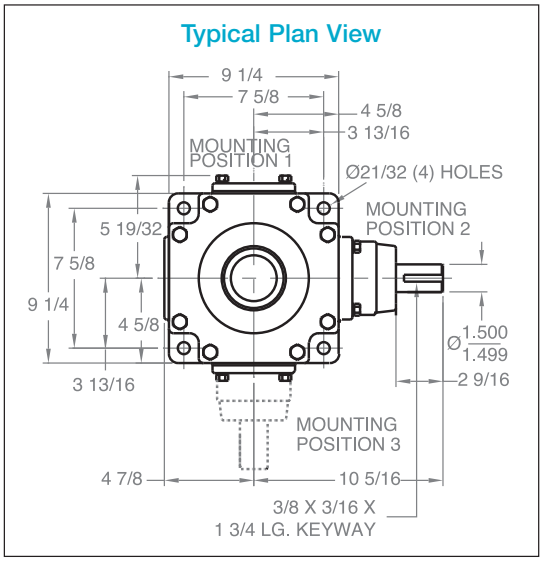
### Upright



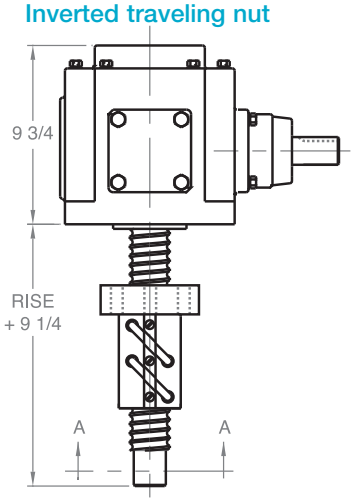

### Upright traveling nut



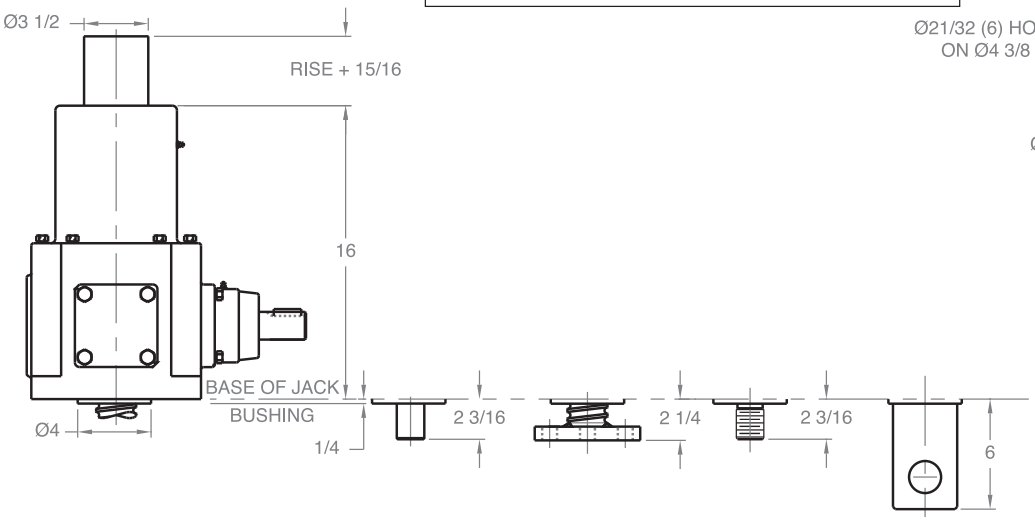

### Typical Plan View

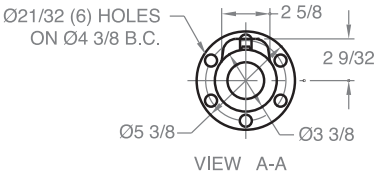



### Inverted traveling nut




### Inverted

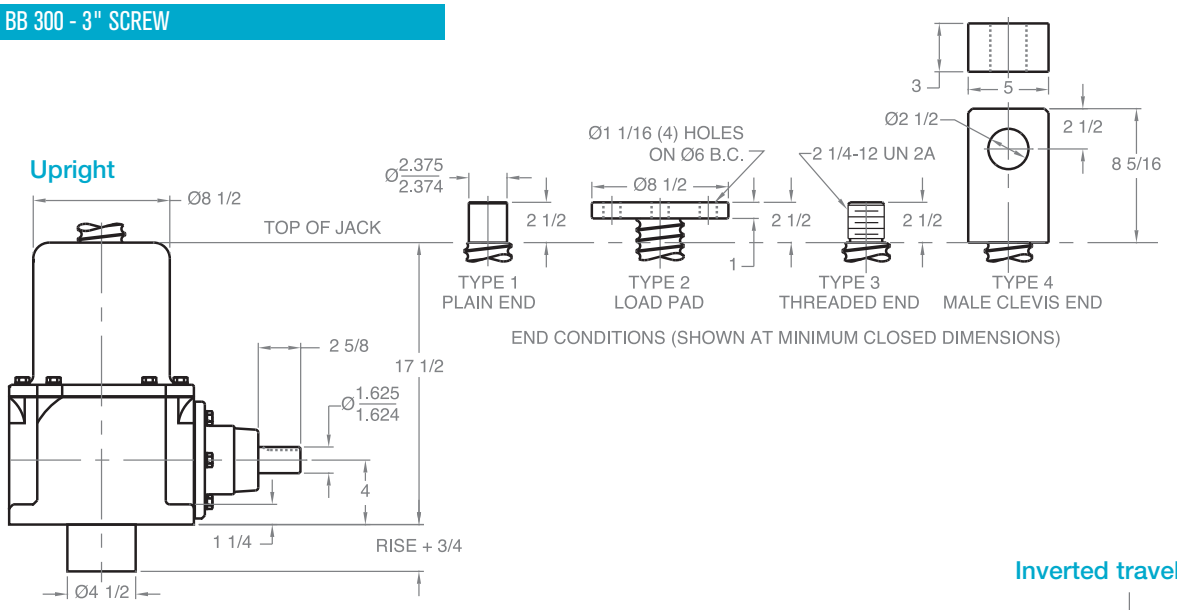


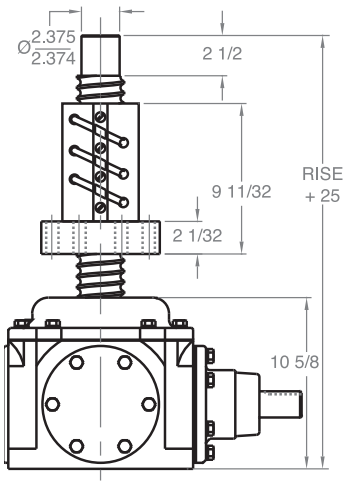



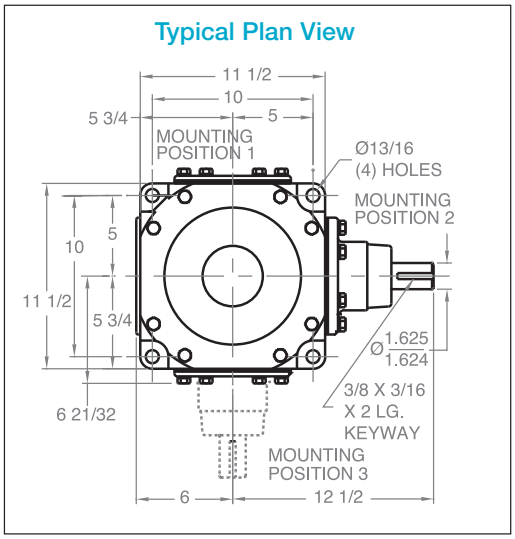

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

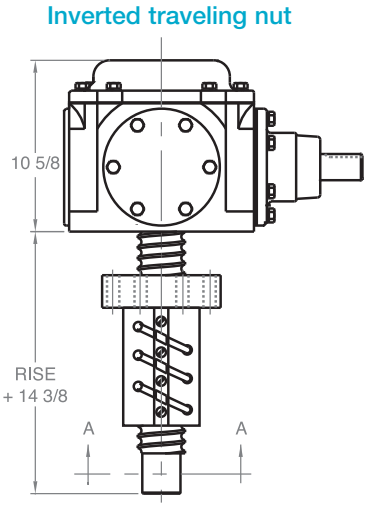
# BEVEL GEAR BALL SCREW JACKS

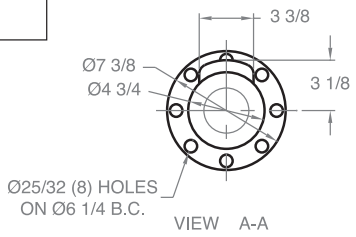
## BB 300 - 3" SCREW

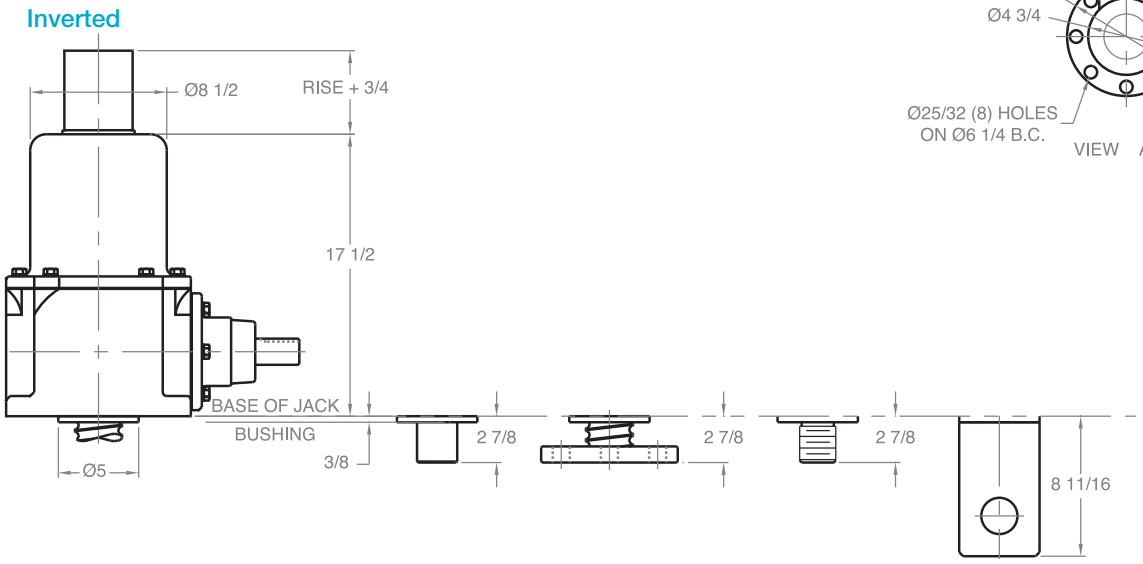


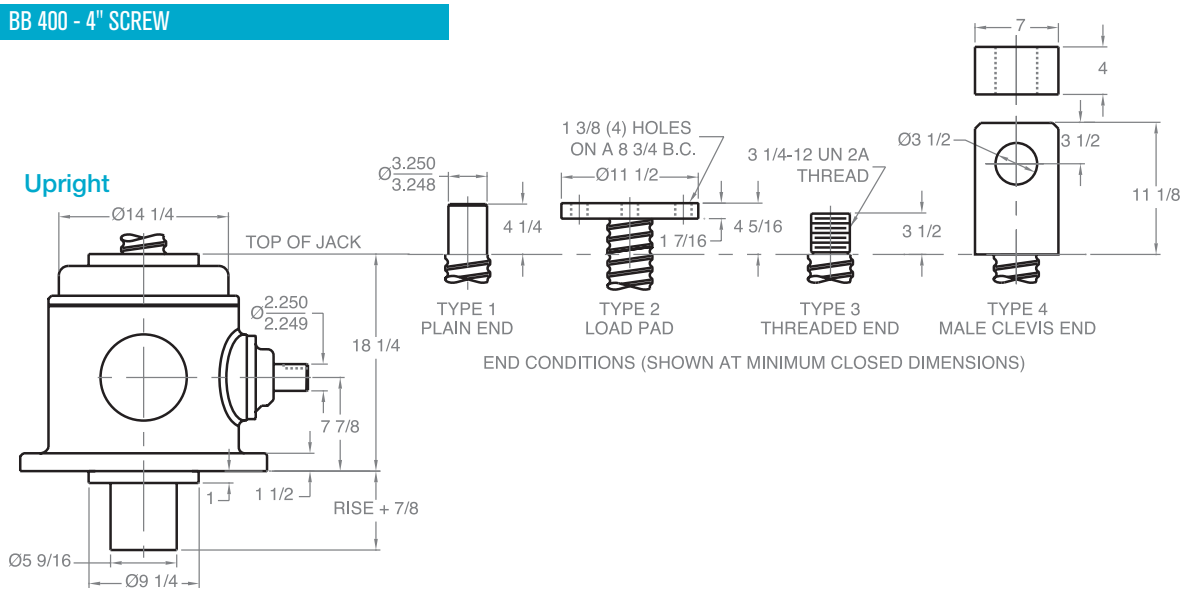




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

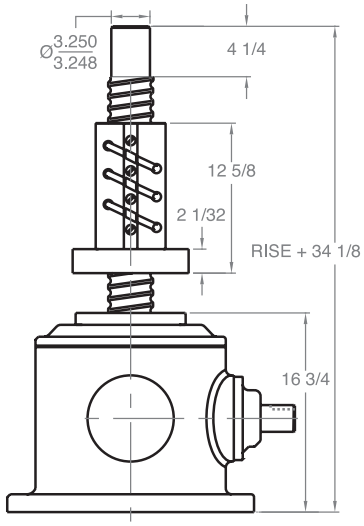
# BEVEL GEAR BALL SCREW JACKS

## BB 400 - 4" SCREW

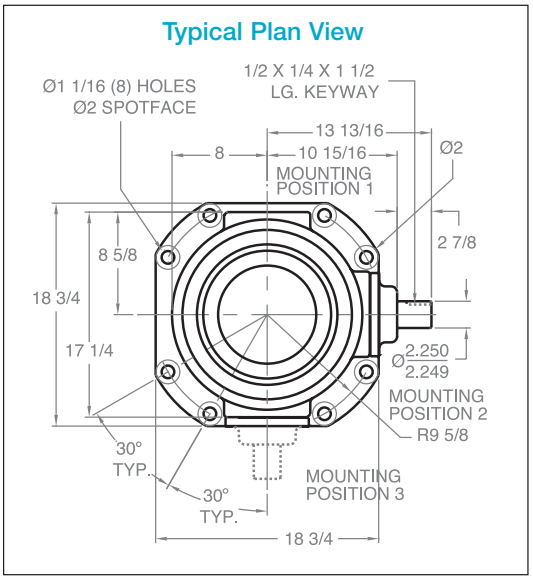
### Upright



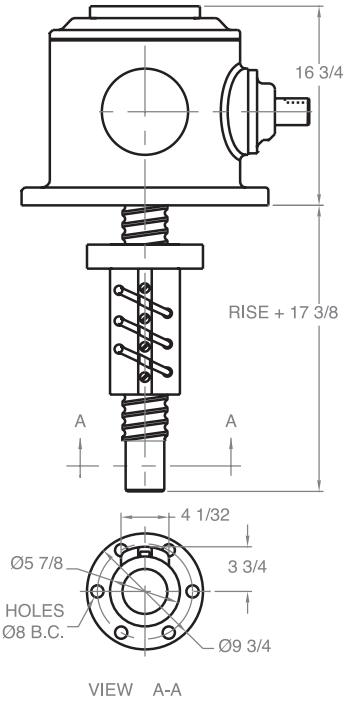

### Upright traveling nut



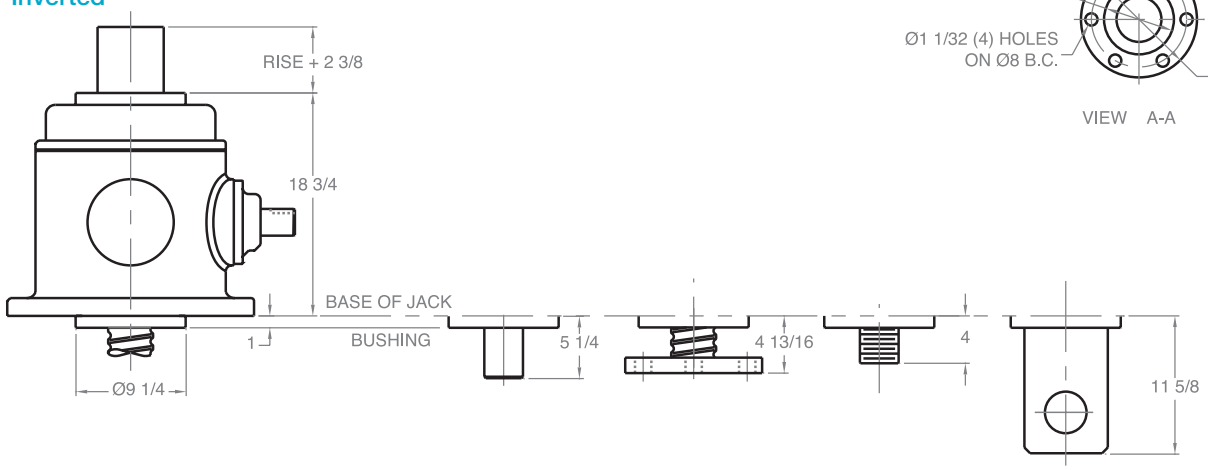

### Typical Plan View




### Inverted traveling nut




### Inverted




Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

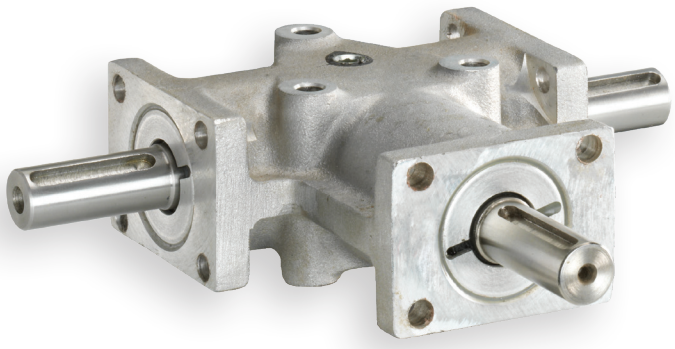
Choose the Joyce options, accessories and motor controls needed to complete your jack system.

We offer everything from protective boots and anti-backlash devices to special materials and finishes. The information needed to complete a system can be found on the pages that follow.

Select components for single- or multiple-jack systems. Choose miter boxes, pillow block supports, shafting and couplings.

Finish the system with a standard motor control, or let us know your requirements. We offer an extensive line of motor starters as well as programmable controls for synchronized systems and leveling systems.

Joyce has been designing systems for decades. Our experienced application engineers can help you put it all together. Contact us today.





Scan the QR Code to view options on our website.

# OPTIONS, ACCESSORIES AND CONTROLS


**Options:**

Boots 166-168
Limit Switches 170
Potentiometers 171
Encoders 172-173
Servo Motor Mounts 174
Motor Mounts and Stock Motors 175
Hand Wheels and Counters 176
Anti-Backlash Devices 177
Special Finishes 178
Trunnion Mounts 179

**Accessories:**

Pillow Blocks and Flange Blocks 180
Miter Gear Boxes 181-183
Couplings 184-185
Shafting 186-187

**Controls:**

Motor Starters 188
Programmable Controls 189

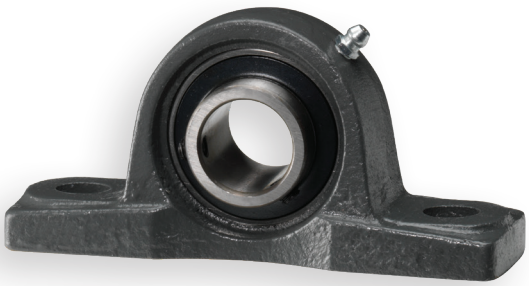
**Systems:**

Common Arrangements 190









# OPTIONS BOOTS FOR MACHINE SCREW JACKS

**For Translating and Keyed Design Machine Screw Jacks**

When boots are included on the Joyce jacks or actuators, Joyce sizes them as part of our service to you.

Adding boots to most jacks increases their retracted (closed) height, "A" or "B". The diagrams and chart below are provided as a reference to help illustrate how the addition of standard boots to jacks increases the closed height of those jacks.

The retracted (closed) height, "A" or "B", is based on the jack capacity and it changes based on the length of travel (rise), and end conditon of the lifting screw. For instance, an upright 2-ton jack with a T3 end conditon and 12 inches of rise will have a greater closed dimension than the same 2-ton jack with just 3 inches of rise.

Standard boot outside diameter, "C", and collar diameter at the base of the jack, "D" are listed in the chart below for reference.

Although Joyce provides the stainless steel clamps needed to secure all boots in place, customers must provide a mounting ring of the standard diameter "D" to mount the boots on inverted jacks.

When you use Joyce 2D/3D online software to specify jacks with boots, the drawings will more accurately depict the added screw length needed to accomodate the boot. However, the actual boot will not be shown on the drawing.

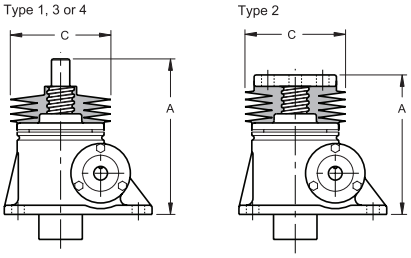
Common Boot Options:

• Zippered boots • Boots for high temperatures

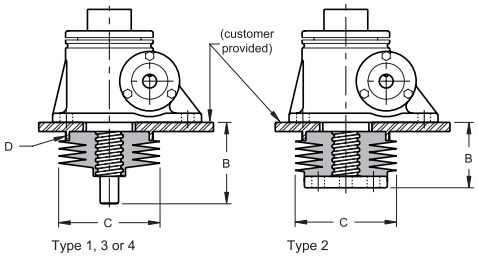
Contact Joyce for more information about these and other custom boot applications or boots for Bevel Gear Jacks.




Upright Machine Screw Jacks




Inverted Machine Screw Jacks




| Jack Capacity | A - Closed Height for Upright Jack | | | | Max. Travel Without Increasing Closed Height - Upright Type 2** | B - Closed Height for Inverted Jack | | | | C O.D. of Boot | D Collar Diameter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type 1* | Type 2 | Type 3* | Type 4* | | Type 1* | Type 2* | Type 3* | Type 4* | | |
| 250/500 Lb. | 4 1/2 | 4 | 4 1/2 | 3 3/4 | 12 | 2 3/4 | 1 5/8 | 2 3/4 | 2 | 3.5 | 2 5/16 |
| 1,000 Lb. | 4 | 4 | 4 | 4 | 12 | 3 | 2 | 3 | 2 1/4 | 3.5 | 2 5/16 |
| 1 Ton | 5 3/8 | 4 1/2 | 5 3/8 | 5 3/8 | 9 | 2 1/2 | 1 15/16 | 2 1/2 | 2 1/2 | 5 | 2 3/4 |
| 2 Ton | 6 | 5 5/16 | 6 | 6 1/4 | 3 | 2 7/8 | 2 1/16 | 2 7/8 | 3 3/16 | 5 | 3 3/4 |
| 3 Ton | 5 15/16 | 5 1/4 | 5 15/16 | 6 3/4 | 0 | 2 5/8 | 1 15/16 | 2 5/8 | 3 1/2 | 5 | 3 3/4 |
| 5 Ton | 7 3/4 | 7 1/16 | 7 3/4 | 8 1/4 | 6 | 3 7/8 | 2 11/16 | 3 7/8 | 4 3/8 | 5 1/2 | 4 3/4 |
| 10 Ton | 8 | 7 1/4 | 8 | 8 11/16 | 9 | 4 | 2 1/2 | 4 | 4 11/16 | 6 1/2 | 5 3/4 |
| 15 Ton | 8 3/4 | 8 | 8 3/4 | 9 7/16 | 9 | 4 | 2 1/2 | 4 | 4 11/16 | 6 1/2 | 5 3/4 |
| 20 Ton | 9 15/16 | 9 1/4 | 9 15/16 | 10 3/4 | 9 | 3 15/16 | 2 1/2 | 3 15/16 | 4 3/4 | 6 1/2 | 6 |
| 25 Ton | 11 3/8 | 11 | 12 1/4 | 12 3/4 | 9 | 4 1/16 | 2 7/8 | 4 15/16 | 5 7/16 | 8 | 7 1/2 |
| 30 Ton | 11 15/16 | 11 1/2 | 11 3/16 | 17 1/16 | 21 | 4 15/16 | 4 1/8 | 4 3/16 | 9 11/16 | 8 | 8 1/4 |
| 35 Ton | 13 5/8 | 12 | 13 5/8 | 13 5/8 | 0 | 6 11/16 | 5 1/16 | 6 11/16 | 6 11/16 | 10 | 8 1/2 |
| 50 Ton | 18 | 14 3/8 | 18 | 18 | 0 | 10 5/8 | 7 | 8 3/8 | 9 1/8 | 13 | 11 5/8 |
| 75 Ton | 20 1/2 | 16 1/2 | 20 1/2 | 20 1/2 | 0 | 9 7/8 | 5 13/16 | 7 3/4 | 7 7/8 | 13 | 13 1/2 |
| 100 Ton | 20 1/4 | 19 | 20 1/4 | 21 1/4 | 0 | 9 7/8 | 6 7/16 | 8 3/8 | 8 7/8 | 14 1/2 | 15 |

150-ton and 250-ton dimensions supplied upon request.

* Closed height given must be increased by about 0.071" for each 1" of travel.

** Upright Type 2 closed height must be increased by about 0.071" for each 1" over the maximum given.

A and B dimensions generally increase when boots are added to jacks.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# OPTIONS BOOTS FOR BALL SCREW JACKS

**For Translating Design Ball Screw Jacks**

When boots are included on Joyce jacks or actuators, Joyce sizes them as part of our service to you.

Adding boots to most jacks will increase their retracted (closed) height, "A" or "B". The diagrams and chart below are provided as a reference to help you understand how the addition of standard boots increases the closed height of those jacks.

The retracted (closed) height, "A", or "B", is based on the jack capacity and it changes based on the length of travel (rise), and end condition of the lifting screw. For instance, an upright 2-ton jack with a T3 end condition and 12 inches of rise will have a greater closed dimension than the same 2-ton jack with just 3 inches of rise. Standard boot outside diameter, "C", and collar diameter at the base of the jack, "D" are listed in the chart below for reference.

Although Joyce provides the stainless steel clamps needed to secure all boots in place, customers must provide a mounting ring of the standard diameter "D" to mount the boots on inverted jacks.

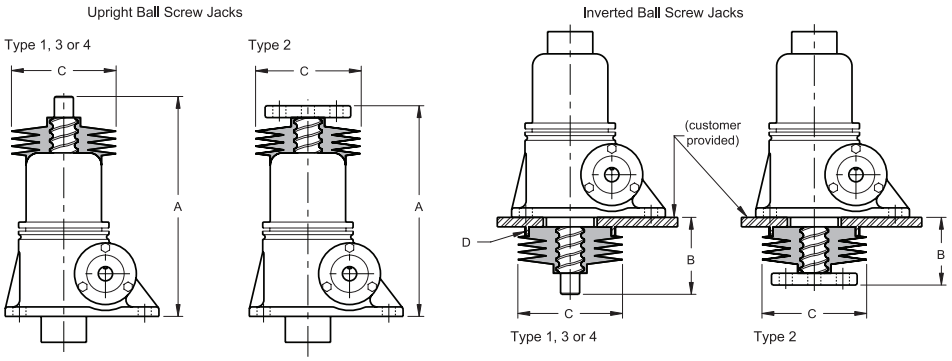
When you use Joyce 2D/3D online software to specify jacks with boots the drawings will accurately depict the added screw length needed to accomodate the boot, however the actual boot will not be shown on the drawing.

Common Boot Options:

• Zippered boots • Boots for high temperatures • Boots for corrosive atmospheres

Contact Joyce for more information about these and other custom boot applications or boots for Bevel Gear Jacks.






△ The closed height of Type 4 jacks remains the same up to the maximum travel given in the chart below.

| Jack Capacity | A - Closed Height for Upright Jack | | | | ▲ - Type 4** | B - Closed Height for Inverted Jack | | | | ▲ - Type 4** | C O.D. of Boot | D O.D. of Boot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Type 1* | Type 2* | Type 3* | Type 4* | | Type 1* | Type 2* | Type 3* | Type 4* | | | |
| 1 Ton WBL | 6 7/16 | 6 1/4 | 6 7/16 | 7 1/4 | 6 | 2 5/8 | 2 1/4 | 2 5/8 | 2 7/8 | 0 | 5 | 2 3/4 |
| 1 Ton WB | 7 7/16 | 7 1/4 | 7 7/16 | 8 1/4 | 9 | 2 5/8 | 2 1/4 | 2 5/8 | 2 7/8 | 0 | 5 | 2 3/4 |
| 2 Ton | 8 3/8 | 7 3/4 | 8 3/8 | 9 5/8 | 12 | 3 1/4 | 2 9/16 | 3 1/4 | 3 5/8 | 0 | 5 | 2 3/4 |
| 5 Ton | 10 1/2 | 11 | 10 1/2 | 13 3/8 | 18 | 3 13/16 | 3 5/16 | 3 13/16 | 5 3/16 | 0 | 5 1/2 | 4 3/4 |
| 10 Ton WBL/ HWBL | 11 1/4 | 10 5/16 | 11 1/4 | 13 1/16 | 15 | 4 7/16 | 3 7/16 | 4 7/16 | 5 3/16 | 0 | 6 1/2 | 5 3/4 |
| 10 Ton WB/HWB | 15 | 14 1/2 | 15 | 16 3/4 | 18 | 4 15/16 | 3 3/4 | 4 15/16 | 5 1/2 | 0 | 6 1/2 | 5 3/4 |
| 20 Ton | 17 3/16 | 16 5/8 | 17 3/16 | 20 5/16 | 27 | 4 3/4 | 3 7/16 | 4 3/4 | 6 1/2 | 9 | 6 1/2 | 6 |
| 30 Ton | 23 1/4 | 22 9/16 | 23 1/4 | 28 5/16 | 42 | 6 1/4 | 4 | 6 1/4 | 10 | 24 | 8 | 8 1/4 |
| 50 Ton | 27 3/16 | 26 7/16 | 27 3/16 | 32 1/2 | 45 | 6 11/16 | 4 15/16 | 6 11/16 | 10 1/4 | 21 | 13 | 11 5/8 |

* Closed height given must be increased by about 0.071" for each 1" of travel.

** Type 4 closed height must be increased by about 0.071" for each 1" over the maximum given.

A and B dimensions generally increase when boots are added to jacks.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# OPTIONS BOOTS FOR KFTN JACKS

**For Traveling Nut Design Machine and Ball Screw Jacks**

Adding single or dual boots to cover the fixed-length rotating screw on KFTN jacks usually increases the base-to-end of screw dimension due to boot stack up*. Other factors that affect boot specification include:

- Jack orientation – Upright or inverted
- Travel distance and maximum height of jack with boots (Base-to-end of screw)
- Traveling Nut (TN) orientation – TN mounted toward the jack or away from the jack
- Position and thickness of the load – Mounted above or below the flange
- Choice of dual boots, single upper boot, or single lower boot

The chart below lists standard boot diameter dimensions based on jack capacity. Working from this reference and input provided by customers about their applications, Joyce customizes boots to meet specific requirements. Please complete the worksheet on page 169 to help us understand your requirements more fully.

Although Joyce provides the stainless steel clamps needed to secure all boots in place, customers must provide mounting rings to mount boots to their structures. These customer provided mounting diameters must also be communicated to Joyce to ensure that boot collars are compatibly sized.

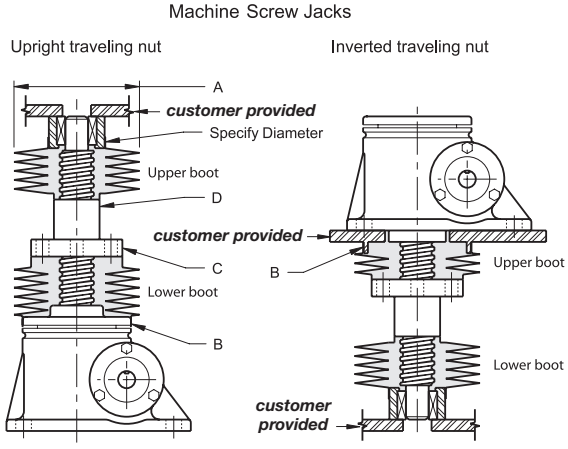
Common bellows boot options:

• Zippered boots • Boots for high temperatures • Boots for harsh environments

Contact Joyce for more information about these and other custom boot applications or boots for Bevel Gear® jacks.

*Boot stack up is the space required to accommodate retracted bellows boots. It can be estimated by multiplying the maximum amount of travel by 0.071". If the KFTN jack has dual boots the stack up of both boots must be considered. Contact Joyce for additional information.






See selection guide worksheet on page 173

| Jack Capacity | A O.D. of Boot | B Collar Diameter | C - Flange Collar Diameter | | D - Nut Collar Diameter Machine Screw Jacks Only** |
|---|---|---|---|---|---|
| | | | ACME Nut | Ball Nut | |
| 250/500 Lb. | 3.5 | 2 5/16 | 2 1/4 | | 1 |
| 1,000 Lb. | 3.5 | 2 5/16 | 2 1/4 | | 1 |
| 1 Ton | 5 | 2 3/4 | 3 1/4 | 2 5/8 | 1 1/2 |
| 2 Ton | 5 | 3 3/4 | 3 1/4 | 3 1/4 | 1 1/2 |
| 3 Ton | 5 1/2 | 3 3/4 | 3 1/4 | | 2 |
| 5 Ton | 5 1/2 | 4 3/4 | 4 | 4 15/16 | 2 |
| 10 Ton | 6 1/2 | 5 3/4 | 6 | 5 3/8 | 3 |
| 15 Ton | 6 1/2 | 5 3/4 | 6 1/2 | | 3 1/2 |
| 20 Ton | 6 1/2 | 6 | 7 1/2 | 5 3/8 | 3 3/4 |
| 25 Ton | 8 | 7 1/2 | 8 1/2 | | 4 1/2 |
| 30 Ton | 8 | 8 1/4 | 7 3/8 | 7 3/8 | 4 1/2 |
| 35 Ton | 10 | 8 1/2 | 9 | | 5 |
| 50 Ton | 10 | 11 5/8 | 10 | 9 3/4 | 6 |
| 75 Ton | 13 | 13 1/2 | 12 | | 7 |
| 100 Ton | 14 1/2 | 15 | 12 3/4 | | 8 |

**Boot collars do not fit small end of ball nuts.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# SELECTION GUIDE WORKSHEET BOOTS FOR KFTN JACKS

Name _____ Title _____

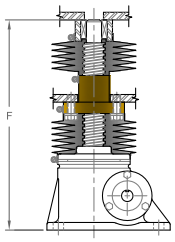
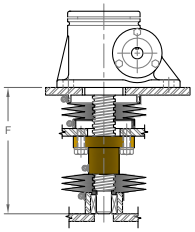
Company _____ Project _____

Address _____

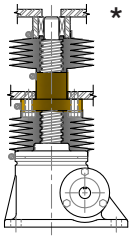
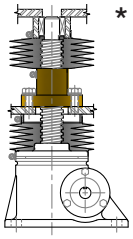
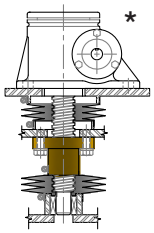
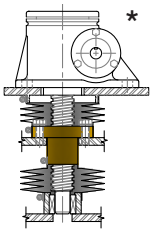
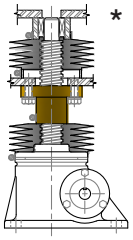
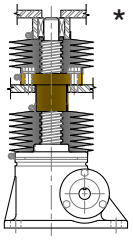
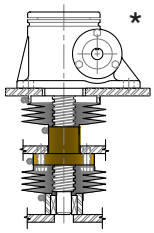
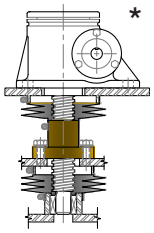
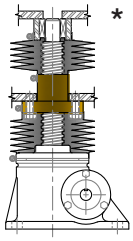
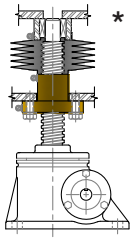
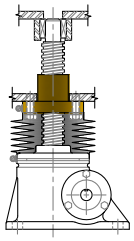
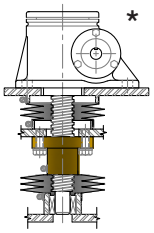
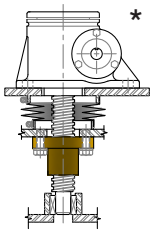
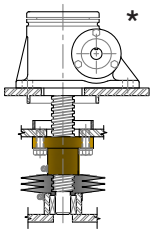
Phone _____ Fax _____ Email _____

Sizing boots for KFTN jacks requires additional input because many mounting configurations are possible. This worksheet is designed to help define and communicate your boot requirements. Complete the form below and submit to sales@joycedayton.com along with a sketch of your application.

Scan the QR Code to view these PDF guides online.

| Upright Jack | Inverted Jack |
|---|---|
|   |   |
| Travel Distance_____<br>(F) Base-to-end of screw dimension_____ | Travel Distance_____<br>(F) Base-to-end of screw dimension_____ |

**Choose the image that best represents your application**

| | | | |
|---|---|---|---|
|  * |  * |  * |  * |
| ☐ Flange toward jack<br>Load above | ☐ Flange toward jack<br>Load below | ☐ Flange toward jack<br>Load above | ☐ Flange toward jack<br>Load below |
|  * |  * |  * |  * |
| ☐ Flange away from jack<br>Load above | ☐ Flange away from jack<br>Load below | ☐ Flange away from jack<br>Load above | ☐ Flange away from jack<br>Load below |
|  * |  * |  |  * |  * |  * |
| ☐ Dual boot | ☐ Upper boot | ☐ Lower boot | ☐ Dual boot | ☐ Upper boot | ☐ Lower boot |

*Some customer provided dimensions are required from diagram on page 168.

# OPTIONS LIMIT SWITCHES

Rugged Joyce limit switches allow you to set precise travel limits on Joyce jacks and actuators. They are also ideal in any application where rotary motion of a machine component can be used to indicate linear motion of another part. They are compatible with 2-ton through 150-ton jacks, electric cylinders, and integrated actuators.



### LS7 Limit Switch



The LS7 limit switch has two Single-Pole, Double-Throw (SPDT) switch contacts. This switch offers a NEMA 4 rated enclosure which is rated for dust, rain and hose-directed water. To set switches, first remove the cover plate and "L" bracket, then manually rotate the cams to desired positions. This switch is also compatible with integrated actuators.

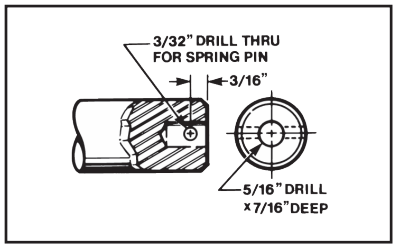
### LS8 Limit Switch



The LS8 limit switch is best suited for general-purpose applications requiring up to four switch contacts for operating motors, lights and other accessories. It is available in two models: the LS8 402 (two-switch model) and the LS8 404 (four-switch model). Both LS8 models offer a NEMA 4 rated enclosure which is rated for dust, rain and hose directed water. To set the limit switches simply loosen a cam detent screw and rotate the switch trip cam to the desired position.

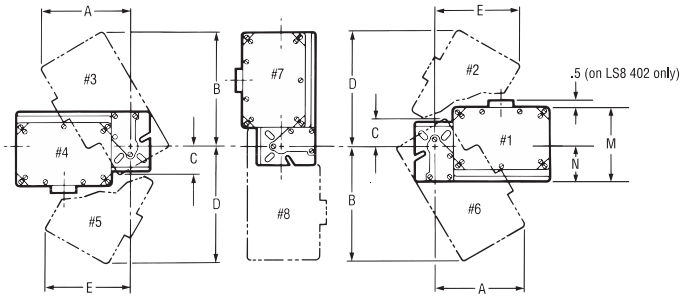
Note: "How to" videos can be found at joycedayton.com.

### Shaft Detail

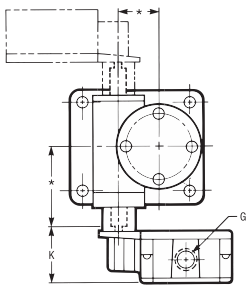



| Dimensions | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | A | B | C | D | E | F | G | H BG150 BB150 | H BG250 BB225 | H BG375 BB300 | H BG450 BB400 | J | K | M | N |
| LS7 402 | 3.81 | 6.13 | 1.75 | 5.44 | 5.00 | 5.63 | 1/2 NPT | 7.63 | 9.00 | 10.13 | 15.22 | 7.0 | 3.28 | 3.88 | 2.63 |
| LS8 402 | 5.50 | 6.62 | 2.00 | 6.75 | 5.25 | 6.25 | 3/4 NPT | 7.88 | 9.25 | 10.38 | 15.47 | 7.62 | 3.53 | 5.25 | 2.46 |
| LS8 404 | 6.50 | 8.38 | 2.00 | 8.50 | 6.25 | 8.25 | 1 NPT | 8.62 | 10.00 | 11.19 | 16.47 | 9.62 | 4.53 | 5.25 | 2.46 |

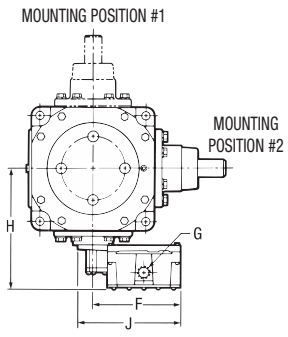
| LS8 (400 Series) Switch Combination Chart | | | | | | |
|---|---|---|---|---|---|---|
| Switch Quantity | | Single Pole Double Throw (SPDT) | | | | |
| | | 0 | 1 | 2 | 3 | 4 |
| D.P.D.T. | 0 | | | 402 | | 404 |
| | 1 | | 402 | | 404 | |
| | 2 | 402 | | 404 | | |
| | 3 | | 404 | | | |
| | 4 | 404 | | | | |




Rotation positions shown looking into end of shaft.




RIGHT SIDE MOUNTING
(ROTATION POS #1 SHOWN)




**Note:**

- 2, 2.5, 3, 5, 10, 15 and 20-ton jacks or electric cylinders are available with limit switch positions #1, #3, and #5.
- 25, 30, 35, 50 and 75-ton jacks are available in with limit switch positions #1, #4, #7 and #8.
- Limit switches on Bevel Gear® jacks may be mounted in any position.

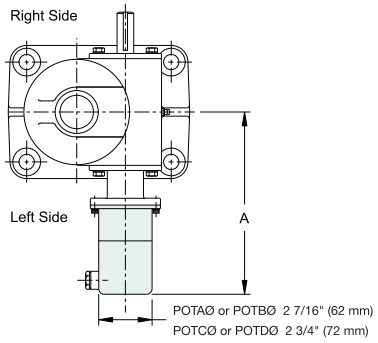
# OPTIONS GEARED POTENTIOMETERS

Joyce geared potentiometers are ideal for precise, accurate positioning applications. Using a 10-turn potentiometer, a signal is provided as either a change in resistance or current (when supplied with a 4-20 mA instrument transformer), which is proportional to the actual position of the screw. Geared potentiometers are commonly needed when PLCs or computers control jacks.

Geared potentiometers are available on wormgear design jacks of 2-ton to 150-ton capacity. They include a slip clutch to prevent damage due to over-rotation but should always be inspected during installation to ensure that a full range of motion is available throughout the jack travel.

As an additional option, geared potentiometers are available with upper and lower mechanical limit switches. These are common SPDT cam operated switches used for end of travel limits or set points. The standard operating voltage is less than or equal to 48 V (an operating voltage of greater than 48 V is available upon request).

Ordering information is found within specific product sections.




| Jack Capacity | POTA and POTB "A" | POTC and POTD "A" |
|---|---|---|
| 2 Ton | 6 3/8 | 8 1/4 |
| 2.5 Ton | 6 1/4 | 8 |
| 3 Ton | 6 1/4 | 8 |
| 5 Ton | 7 | 8 7/8 |
| 10 Ton | 7 7/8 | 9 7/8 |
| 15 Ton | 7 7/8 | 9 7/8 |
| 20 Ton | 8 1/4 | 10 1/4 |
| 25 Ton | 9 | 10 7/8 |
| 30 Ton | 9 | 10 7/8 |
| 35 Ton | 9 | 10 7/8 |
| 50 Ton | 10 7/8 | 12 3/4 |
| 75 Ton | 12 1/4 | 14 1/8 |
| 100 Ton | 12 1/4 | 14 1/8 |
| 150 Ton | 12 1/4 | 14 1/8 |

| Order Codes | Descriptions | Rating |
|---|---|---|
| POTA | 0-10 V | IP65 |
| POTB | 4-20 mA | IP65 |
| POTC | 0-10 V with 2 limit switches | IP65 |
| POTD | 4-20 mA with 2 limit switches | IP65 |

| Instrument Transformer Characteristics (POTB and POTD) | |
|---|---|
| Supply Voltage ($+U_B$) | 24 VDC +/- 20% |
| Max. Load Impedance ($R_B$) | <500 Ω |
| Output Current ($I_{MESS}$) | 4-20 mA 24 V DC ±20 %, with load ≤500* |
| *Standard output signal increases as screw extends | |

| Geared Potentiometer Electrical Characteristics | |
|---|---|
| Resistance | 10 kΩ |
| Resistance Tolerance | +/- 5 % |
| Linearity Tolerance | +/- 0.25% |
| Load Capacity | 2 W at 70°C |
| Standard Residual End Point Resistance | Greater of 0.2% or 1Ω |
| Operating Temperature | -20°C to 80°C |



**POTA – 0-10 VDC / POTB – 4-20mA**

- 10-turn geared potentiometer with integrated slip clutch
- Model ratio is selected to maximize resolution and match shaft direction of rotation for each application at time of order
- Housing: Reinforced plastic with aluminum
- Shaft: Stainless steel
- Connector: Cable gland is standard
- Temperature rating: -4°F to 176°F (-20°C to 80°C)
- IP65 rating



**POTC – 0-10 VDC / POTD – 4-20mA**
**With limit switches**

- 10-turn geared potentiometer with integrated slip clutch
- Includes 2 adjustable cam-operated limit switches
- Model ratio is selected to maximize resolution and match shaft direction of rotation for each application at time of order
- Housing: Aluminum
- Shaft: Browned steel
- Connector: Cable gland is standard
- Temperature rating: -4°F to 176°F (-20°C to 80°C)
- IP65 rating

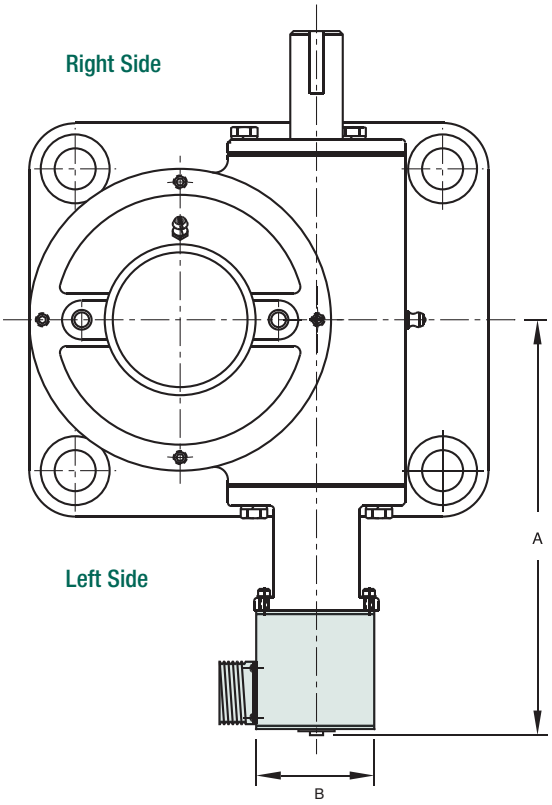
**Precise Position Sensing**

Joyce can equip machine screw jacks and electric cylinders with an encoder to allow accurate position sensing within increments of 0.001 inches. The encoder combines with your control system to monitor screw travel, number of revolutions, and travel limits.

Choose from a variety of shaft-mounted encoder options, each with proven reliability and requiring virtually no maintenance. For best results, specify encoders for jacks and electric cylinders and have them factory mounted to meet your requirements.

Consider and compare encoder options on page 173 then select the best one for your application. Mating connector cables can be purchased separately. For custom options contact Joyce.

Complete ordering information is available within product sections.




| Jack or Electric Cylinder Capacity | ENCA & ENCB | | ENCC & ENCD | | ENCS | | ENCX & ENCY | |
|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B |
| 2 Ton | 5.38 | 2.31 Dia. | 6.34 | 2.5 Dia. | 5.84 | 2.0 Dia. | 5.84 | 2.25 Sq. |
| 2.5 Ton | 6.38 | 2.31 Dia. | 7.38 | 2.5 Dia. | 6.88 | 2.0 Dia | 6.88 | 2.25 Sq. |
| 3 Ton | 6.38 | 2.31 Dia. | 7.38 | 2.5 Dia. | 6.88 | 2.0 Dia | 6.88 | 2.25 Sq. |
| 5 Ton | 6.38 | 2.31 Dia. | 7.38 | 2.5 Dia. | 6.88 | 2.0 Dia | 6.88 | 2.25 Sq. |
| 10 Ton | 7.50 | 2.31 Dia. | 8.44 | 2.5 Dia. | 7.94 | 2.0 Dia | 7.94 | 2.25 Sq. |
| 15 Ton | 7.50 | 2.31 Dia. | 8.44 | 2.5 Dia. | 7.94 | 2.0 Dia | 7.94 | 2.25 Sq. |
| 20 Ton | 7.88 | 2.31 Dia. | 8.81 | 2.5 Dia. | 8.31 | 2.0 Dia | 8.31 | 2.25 Sq. |
| 25 Ton | 8.38 | 2.31 Dia. | 9.38 | 2.5 Dia. | 8.88 | 2.0 Dia | 8.88 | 2.25 Sq. |
| 30 Ton | 8.38 | 2.31 Dia. | 9.38 | 2.5 Dia. | 8.88 | 2.0 Dia | 8.88 | 2.25 Sq. |
| 35 Ton | 8.38 | 2.31 Dia. | 9.38 | 2.5 Dia. | 8.88 | 2.0 Dia | 8.88 | 2.25 Sq. |
| 50 Ton | 10.50 | 2.31 Dia. | 11.44 | 2.5 Dia. | 10.94 | 2.0 Dia | 10.94 | 2.25 Sq. |
| 75 Ton | 11.75 | 2.31 Dia. | 12.63 | 2.5 Dia. | 12.13 | 2.0 Dia | 12.13 | 2.25 Sq. |
| 100 Ton | 11.75 | 2.31 Dia. | 12.69 | 2.5 Dia. | 12.19 | 2.0 Dia | 12.19 | 2.25 Sq. |
| 150 Ton | 11.75 | 2.31 Dia. | 12.69 | 2.5 Dia. | 12.19 | 2.0 Dia | 12.19 | 2.25 Sq. |

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

### Absolute Encoder with Programmable Operating Ranges
### ENCA / ENCB



- ENCA 0-10 VDC output, M12 connection (A-coded)
- ENCB 4-20mA output, M12 connection (A-coded)
- Multi-turn absolute analog encoder with 12-bit resolution over the measuring range
- Programmable operating ranges
- A single model has universal application up to 65,536 turns of the jack or actuator
- Stainless steel (nickelized) housing: Stainless steel shaft
- IP64
- Temperature rating: -40° F to 185° F (-40°C to 85°C)

ENCA/ENCB

| Function 5-pin M12 | Pin Connections |
|---|---|
| I out/U out | 1 |
| + UB | 2 |
| Ground | 3 |
| Limit 1 | 4 |
| Limit 2 | 5 |

### Absolute Encoder
### ENCC / ENCD



- ENCC ( Binary) CAN open output, 5-pin M12 connection
- ENCD (Gray) SSI output, 8-pin M12 connection
- Model selected based on required number of turns up to 262,144
- Multi-turn absolute encoder with 18-bit resolution
- Black non-corrosive finish on housing: 303 Stainless steel shaft
- IP67
- Temperature rating: -40° F to 176° F (-40°C to 80°C)

ENCC (Absolute)

| Function 5-pin M12 | Pin Connections |
|---|---|
| | CAN open – Binary |
| CAN GND/shield | 1 |
| + VDC | 2 |
| Ground | 3 |
| CAN high | 4 |
| CAN low | 5 |

ENCD (Absolute)

| Function 8-pin M12 | Pin Connections |
|---|---|
| | SSI -Gray |
| Ground | 1 |
| +VDC | 2 |
| SSI CLK+ | 3 |
| SSI CLK- | 4 |
| SSI Data + | 5 |
| SSI Data - | 6 |
| Preset | 7 |
| DIR | 8 |

### Stainless Steel Incremental Encoder
### ENCS



- ENCS 1024 PPR, Quadrature output, 5-pin M12 connection
- Multi-turn encoder
- This encoder model permits an unlimited number of turns
- Compatible with most programmable controllers
- 316 Stainless steel housing: 316 Stainless steel shaft
- IP67
- Temperature rating: -40° F to 158°F (-40°C to 70°C)

ENCS (Incremental)

| Function 5-pin M12 | Pin Connections |
|---|---|
| + VDC | 1 |
| B | 2 |
| Common | 3 |
| A | 4 |
| Z index | 5 |

### Standard Incremental Encoder
### ENCX / ENCY



- ENCX 200 PPR, Quadrature output, 6- Pin M5 connection
- ENCY 1024 PPR, Quadrature output, 6-pin M5 connection
- Multi-turn Encoder
- This encoder model permits an unlimited number of turns
- Black non-corrosive finish on housing: 303 Stainless steel shaft
- 6-pin MS connection
- Temperature rating: 32° F to 158 °F (0°C to 70°C)

ENCX & ENCY (Incremental)

| Function 6-pin MS | Pin Connections |
|---|---|
| Common | A, F |
| +VDC | B |
| A | D |
| B | E |
| Z | C |

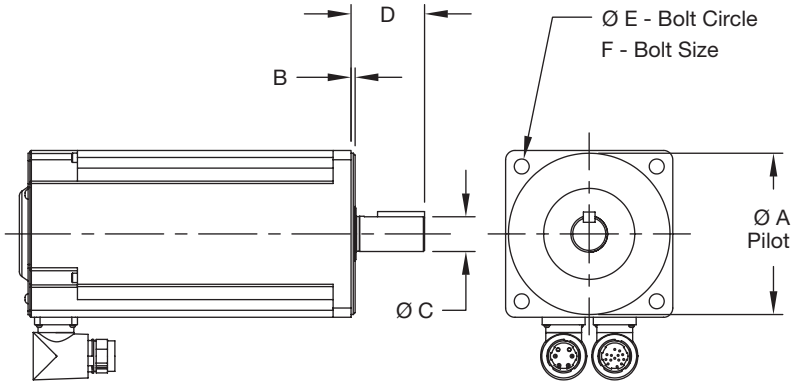
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

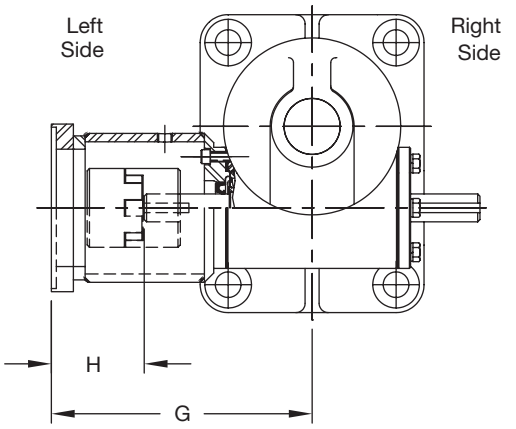
# OPTIONS SERVO MOTOR MOUNTS

Joyce offers servo motor mounts for 2, 2-1/2, 3, 5, and 10-ton worm gear screw jacks and electric cylinders. Easily attach the motor of your choice to either side of your jack. These mounts are compatible with various servo motors but Joyce can provide servo motor mounts to meet your exact specifications.

Contact Joyce today and allow us to provide motor mounts that meet your servo motor specifications.






| Motor Frame Dimensions (mm) | | | | | | |
|---|---|---|---|---|---|---|
| Shaft Code | A | B | C | D | E | F |
| SM01 | 80.0 | 2.74 | 16.0 | 40.0 | 100.0 | M6x1.00 |
| SM02 | 95.0 | 2.74 | 19.0 | 40.0 | 115.0 | M8x1.25 |
| SM03 | 110.0 | 2.74 | 24.0 | 50.0 | 130.0 | M8x1.25 |
| SM04 | 110.0 | 2.74 | 24.0 | 50.0 | 130.0 | M8x1.25 |
| SM05 | 130.0 | 3.12 | 28.0 | 60.0 | 165.0 | M10x1.50 |
| SM06 | 130.0 | 3.12 | 28.0 | 60.0 | 165.0 | M10x1.50 |

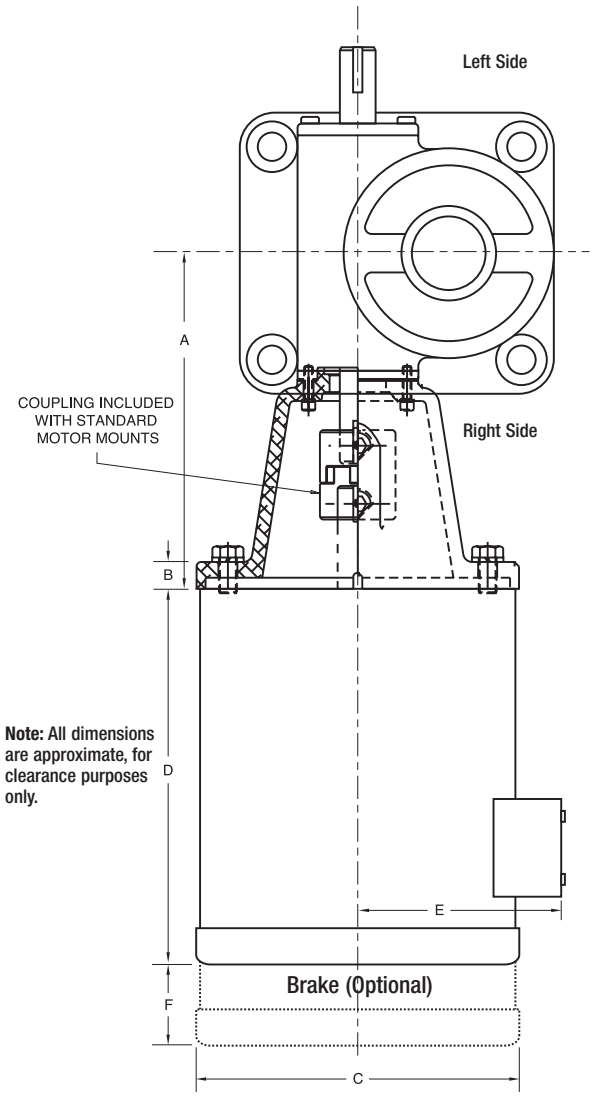
| Jack Dimensions (mm) | | | | |
|---|---|---|---|---|
| Jack Model | Shaft Code | G | H | Max. Coupling Torque N-m |
| 2 Ton Reverse Base, 2-1/2, & 3 Ton | SM01 | 137.0 | 52.8 | 15.2 |
| | SM02 | 142.0 | 53.0 | 24.4 |
| | SM03 | 152.0 | 63.0 | 32.8 |
| | SM04 | 157.0 | 68.0 | 60.0 |
| | SM05 | 161.8 | 72.9 | 32.8 |
| | SM06 | 167.8 | 78.9 | 60.0 |
| 5 Ton | SM01 | 162.7 | 52.6 | 15.2 |
| | SM02 | 167.6 | 53.3 | 24.4 |
| | SM03 | 177.8 | 63.4 | 32.8 |
| | SM04 | 182.8 | 68.5 | 60.0 |
| | SM05 | 187.5 | 73.2 | 32.8 |
| | SM06 | 193.4 | 79.1 | 160.0 |
| 10 Ton | SM02 | 193.4 | 53.7 | 24.4 |
| | SM04 | 207.8 | 68.1 | 60.0 |
| | SM05 | 213.2 | 73.5 | 32.8 |
| | SM06 | 219.2 | 79.5 | 160.0 |

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# OPTIONS MOTOR MOUNTS AND STOCK MOTORS

Joyce motor mounts allow direct coupling to the motor shaft on either the right (shown) or left side jack input shaft. For easy installation 2-ton through 20-ton wormgear style jacks are available with motor mount adapters for standard NEMA C-Face motors. Jacks supplied with motor mounts are available with and without NEMA C-Faced motors. When motors are included they come with the necessary hardware and coupling keys. Contact Joyce for information about other types of motor mounts (i.e., IEC, pneumatic, etc.).

| Motor Mount Dimensions | | | |
|---|---|---|---|
| Capacity | NEMA Frame Size | A | B |
| 2 ton | 56C | 6.25 | .50 |
| | 140TC | | |
| 2.5 ton | 56C | 6.25 | .50 |
| | 140TC | | |
| 3 ton | 56C | 6.25 | .50 |
| | 140TC | | |
| 5 ton | 56C | 7.25 | .50 |
| | 140TC | 7.25 | .50 |
| | 180TC | 8.00 | .63 |
| 10 ton | 56C | 8.25 | .50 |
| | 140TC | 8.25 | .50 |
| | 180TC | 9.00 | .63 |
| 15 ton | 56C | 8.25 | .50 |
| | 140TC | 8.25 | .50 |
| | 180TC | 9.00 | .63 |
| 20 ton | 56C | 8.25 | .50 |
| | 140TC | 8.25 | .50 |
| | 180TC | 9.00 | .63 |
| | 210TC | 9.75 | .88 |




| Motor Dimensions | | | | | |
|---|---|---|---|---|---|
| HP | NEMA Frame Size | C | D | E | F |
| 1/3 | 56C | 7.06 | 9.31 | 5.94 | 4.25 |
| 1/2 | 56C | 7.06 | 9.31 | 5.94 | 4.25 |
| 3/4 | 56C | 7.06 | 9.31 | 5.94 | 4.25 |
| 1 | 143TC | 7.19 | 10.25 | 6.34 | 4.56 |
| 1 1/2 | 145TC | 7.19 | 10.25 | 6.34 | 4.56 |
| 2 | 145TC | 7.19 | 11.25 | 6.34 | 4.56 |
| 3 | 182TC | 9.06 | 17.38 | 7.50 | 4.56 |
| 5 | 184TC | 9.06 | 18.75 | 7.50 | 4.56 |
| 7 1/2 | 213TC | 10.85 | 15.81 | 7.50 | 8.25 |

Ordering information is found within specific product sections.

- All standard motors are 3-phase, 60 Hz., 208-230/460 VAC or 230/460 VAC. Other motor options are available. Contact Joyce for motor speeds that exceed 1750 RPM.
- It is important to consider the input torque a direct drive motor must deliver at start up.
- Brake motors (M2) are recommended for double lead jacks, ball screw jacks and actuators, and electric cylinders that are more than 30% efficient.
- If the motor frequency will be varied to provide a “soft” start, an inverter duty motor may be needed.

  NOTE: JAX® Online software may be used to size direct-drive motors, but users are advised to evaluate motor start-up torque requirements and adjust motor horsepower accordingly. Contact Joyce for assistance.

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.

# OPTIONS HAND WHEELS AND COUNTERS

| Hand Wheel Dimensions | | | | | | |
|---|---|---|---|---|---|---|
| Jack Capacity | Dimension | 4" Diameter HW04 | 6" Diameter HW06 | 8" Diameter HW08 | 10" Diameter HW10 | 12" Diameter HW12 |
| 250, 500 Lb. and 1,000 Lb. | A | 4 5/8 | 6 1/8 | | | |
| | B | 1 | 2 | | | |
| | C | 3/8 | 3/4 | | | |
| 1 Ton | A | 5 3/8 | 6 7/8 | 7 5/8 | 8 1/2 | 8 7/8 |
| | B | 1/2 | 1 1/2 | 2 1/2 | 3 1/2 | 4 1/2 |
| | C | 5/8 | 1 | 1 3/8 | 1 7/8 | 2 1/4 |
| 2 Ton Standard Base | A | 5 7/8 | 7 1/4 | 8 | 9 | 9 1/4 |
| | B | 1/4 | 1 1/4 | 2 1/4 | 3 1/4 | 4 1/4 |
| | C | 0 | 3/8 | 3/4 | 1 1/4 | 1 5/8 |
| 2 Ton Reverse Base | A | 5 3/4 | 7 1/4 | 8 | 9 | 9 1/4 |
| | B | 1/4 | 1 1/4 | 2 1/4 | 3 1/4 | 4 1/4 |
| | C | 1 3/4 | 2 1/8 | 2 1/2 | 3 | 3 3/8 |
| 2.5 Ton | A | 5 3/4 | 7 1/4 | 8 | 9 | 9 1/4 |
| | B | 1/4 | 1 1/4 | 2 1/4 | 3 1/4 | 4 1/4 |
| | C | 1 1/2 | 1 7/8 | 2 1/4 | 2 3/4 | 3 1/8 |
| 3 Ton | A | 5 3/4 | 7 1/4 | 8 | 9 | 9 1/4 |
| | B | 1/4 | 1 1/4 | 2 1/4 | 3 1/4 | 4 1/4 |
| | C | 1 1/2 | 1 7/8 | 2 1/4 | 2 3/4 | 3 1/8 |
| 5 Ton | A | 6 3/8 | 7 3/4 | 8 3/4 | 9 1/2 | 10 |
| | B | 0 | 3/4 | 1 3/4 | 2 3/4 | 3 3/4 |
| | C | 1 1/8 | 1 1/2 | 1 7/8 | 2 3/8 | 2 3/4 |
| 10 Ton | A | | | 9 3/8 | 10 1/4 | 10 5/8 |
| | B | | | 1 3/4 | 2 3/4 | 3 3/4 |
| | C | | | 1 7/8 | 2 3/8 | 2 3/4 |
| 15 Ton | A | | | 9 3/8 | 10 1/4 | 10 5/8 |
| | B | | | 1 1/4 | 2 1/4 | 3 1/4 |
| | C | | | 1 3/4 | 2 1/4 | 2 5/8 |
| 20 Ton | A | | | 9 3/8 | 10 1/4 | 10 5/8 |
| | B | | | 3/4 | 1 3/4 | 2 3/4 |
| | C | | | 1 1/2 | 2 | 2 3/8 |

These aluminum hand wheels are only recommended for self-locking jacks.

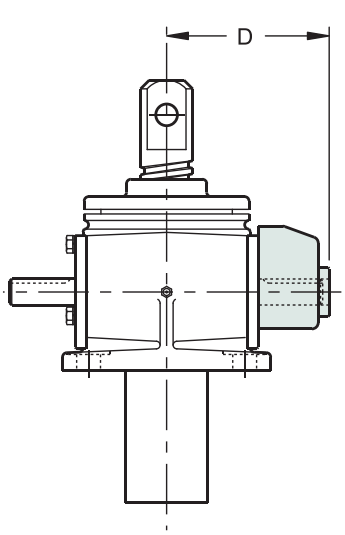


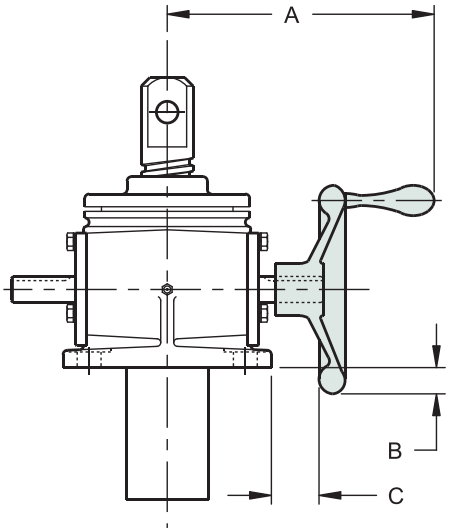


| Counter Dimensions | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dimension | Jack Capacity | | | | | | |
| | 2 Ton | 2.5 Ton | 3 Ton | 5 Ton | 10 Ton | 15 Ton | 20 Ton |
| D | 4 1/2 | 4 1/2 | 4 1/2 | 5 | 5 7/8 | 5 7/8 | 6 |

Standard count increases as lifting screw extends, longer worm shafts are available.
Ordering information is found within specific product sections.





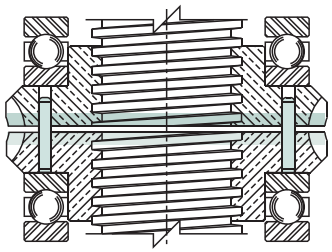

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

### Anti-Backlash Designs

Anti-backlash devices are internal jack components used to minimize backlash (free movement between the lifting screw and nut) in machine screw jacks. These devices are used in reversing load applications where the lifting screw position is critical.

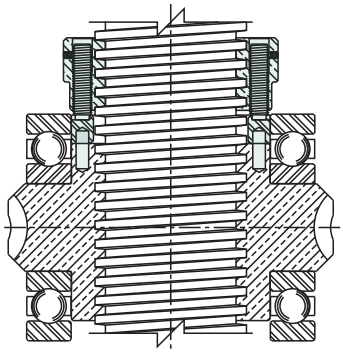
These devices are frequently used in steel mill applications where the screw jacks are used to set and maintain the position of the movable upper roll of a rolling mill. In operation, the initial weight of the roll pulls the lifting screw to one side of the internal nut. When steel passes through the rolls, the load reverses on the lifting screw and movement in the opposite direction is limited by the anti-backlash device.

Other common applications include screw jacks used to position communication antennas and solar panels. In these applications, directional changes in the wind can buffet the panels thus affecting the position of the lifting screw. During high wind conditions, anti-backlash devices minimize the lifting screw movement.



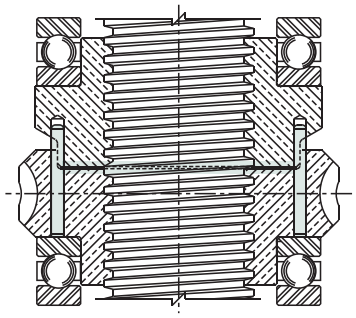
### A-Split Gear Design

- Best suited for light dynamic loads (1/3 jack capacity or less) and full jack capacity for static loads.
- A split gear and dowel pins maintain gear alignment.
- Adjustments are made by tightening the sleeve (housing) cap.
- Typically reduces endplay to 0.010" — 0.015" without increased torque.*
- Available on translating models, 500-pound to 75-ton (upright and inverted) jacks.
- Available on some keyed models. Contact Joyce.
- Order using an “A” designation in the suffix of the part number.



### A90 Design

- Best suited for medium dynamic loads (1/2 to 3/4 jack capacity) and full jack capacity for static loads.
- This design incorporates a hardened steel plate pinned to the top of the internal gear and a secondary nut placed above the steel plate.
- Setting the backlash is accomplished by tightening the dog point set screws located inside the secondary nut. The set screws are externally adjustable.
- Typically reduces endplay to 0.008" — 0.012" without increased torque.*
- Available on upright translating models, 25-ton to 100-ton capacity jacks.
- Available on some keyed models. Contact Joyce.
- Order using an “A90” designation in the suffix of the part number.



### A95 Design

- Capable of handling full jack capacity in dynamic as well as static conditions.
- This design allows the gear teeth to remain intact and therefore retain their full load carrying capacity.
- Adjust endplay by tightening the sleeve (housing) cap.
- Typically reduces endplay to 0.008" — 0.012" without increased torque.*
- Available on upright and inverted translating models, 2-ton to150-ton capacity jacks.
- Order using an “A95” designation in the suffix of the part number.

*If the backlash is set below the recommended values, torque values will increase significantly and thread wear will accelerate.
**Ordering information is found within specific product sections.**

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.

# OPTIONS FINISHES

### Finishes for Jack Housings

- Gray enamel is the standard finish for Joyce jacks (2-ton and larger) and electric cylinders.
- Miniature jacks with aluminum housings (WJ250, WJ500, WJ1000, WJ51, WJ201, WBL51, WB51, WBL201, & WB201), linear acutators, and integrated actuators are unpainted.
- Standard epoxy (F2) is comprised of a two-component polyamide primer, and a two-component low VOC, polyurethane topcoat (available in green and white).
- STEEL IT® epoxy finish provides a hard, non-toxic finish. It is comprised of a two-part, lead-free epoxy primer with a two-part polyamide epoxy topcoat (which incorporates 316 stainless steel leafing pigment). Approved by USDA for use where incidental food contact may occur.
- Joyce outdoor paint process (F3), is an exclusive paint process that protects against corrosion due to harsh outdoor environments. It incorporates rigorous surface preparation with a premium epoxy primer and topcoat and stainless steel hardware resulting in a durable, corrosion-resistant finish that is in high demand on antenna jacks, solar jacks, mining industry jacks and jacks used in coastal installations.
- Clear coat anodizing is a uniform coating process that increases the corrosion resistance and wear properties of aluminum housings. It will not flake or peel.
- Electroless nickel plating is a thin, uniform coating. When applied to jack housing, it provides superior corrosion resistance and improved wear resistance, while having little effect on the fit of mating components.



Standard Enamel Finish



STEEL IT® Epoxy

### Material and Finishes for Lifting Screws

- Stainless steel lifting screws are standard on WJ250, WJ500, WJ1000, and for all stainless steel jacks. They are available for machine screw jacks, bevel gear jacks, metric jacks, and traveling nut (TN) style integrated actuators.
- Armoloy®, a thin, dense chrome finish, intended to increase wear and corrosion resistance, and improve lubricity. It can also be applied to stainless steel components for superior corrosion resistance. This thin coating (0.0001" — 0.0003") has little effect on the fit of mating components.
- Xylan® coating, which uses a combination of fluoropolymer lubricants and resin binders, significantly reduces the coefficient of friction of components and offers excellent corrosion protection and good chemical resistance. The application of this coating (0.0002" — 0.0007") has little effect on the fit of mating parts.



Standard Epoxy

### Finishes for Input Shafts, Clevis Ends, and Other Components

- Stainless steel worm shafts, standard on WJ250, WJ500, WJ1000, and for all stainless steel jacks, are available as an option on most wormgear style jacks.
- Armoloy®, a thin, dense chrome finish, intended to increase wear and corrosion resistance, and improve lubricity. It can also be applied to stainless steel components for superior corrosion resistance. This thin coating (0.0001" — 0.0003") has little effect on the fit of mating components.
- Electroless nickel plating is a thin, uniform coating. When applied to worm and pinion input shafts, it provides superior corrosion resistance and improved wear resistance, while having little effect on the fit of mating components.
- Zinc coating provides protection against corrosion, increases surface lubricity, and improves the aesthetic appearance of components. The effect it has on the fit of mating components is dependent on the thickness of its application (0.0002" — 0.0010").



Electroless Nickel Finish

To order special finishes and materials, contact Joyce.

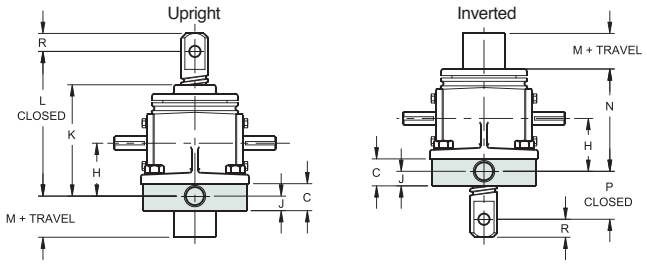
### Options – Trunnion Mounting Adapters

Trunnion adapter plates bolt to the base of 2-ton through 20-ton jacks. They include precision bores for trunnion pins. These are frequently used in installations where a single* jack moves through an arc during operation. This jack is often configured with a motor mount or as a ComDRIVE®.

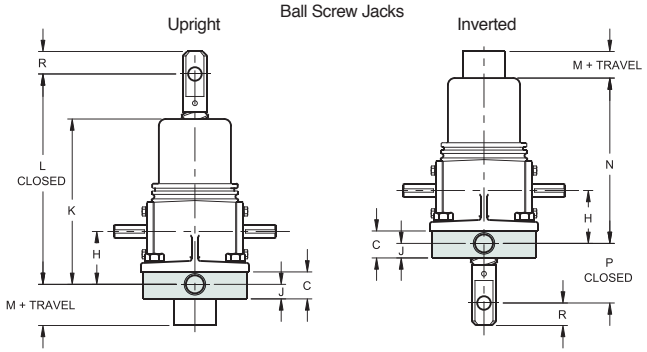
### Design Information

The customer supplied trunnion pins should be ground to the "D" diameter shown in the table below. These pins should be made of steel with hardness greater than 30 HRC, a yield strength greater than 60,000 psi and be supported to within 1/16 inch of the trunnion adapter plate. Therefore, the distance between the customer's mounting surfaces should be no more than "A" + 0.13 inch.

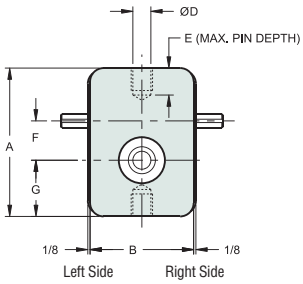
Machine Screw Jacks



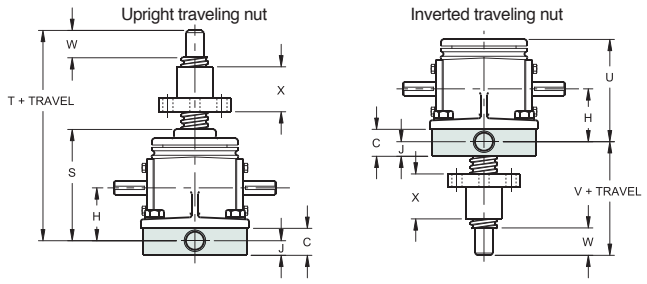

Ball Screw Jacks




Trunnion Bottom View
Machine Screw and
Ball Screw Jacks




Machine and Ball Screw Jacks




| | Jack Model | Common Dimensions | | | | | | | | | Upright - Inverted | | | | | | Upright - Inverted Traveling Nut | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | J | K | L | M | N | P | R | S | T | U | V | W | X |
| Machine Screw | 2 Ton RWJT/DRWJ | 7 1/4 | 3 1/4 | 1 1/4 | .7491 .7479 | 1 1/4 | 1.703 | 3 1/8 | 2 5/16 | 11/16 | 4 11/16 | 5 3/8 | 0 | 4 5/16 | 2 1/16 | 11/16 | 4 11/16 | 8 3/16 | 4 3/4 | 4 13/16 | 1 1/16 | 1 1/2 |
| | 3 Ton WJ/DWJ | 6 1/2 | 3 7/8 | 1 1/4 | .7491 .7479 | 1 1/4 | 1.750 | 2 1/2 | 2 5/16 | 11/16 | 4 3/8 | 6 5/8 | 1/8 | 4 3/8 | 2 3/8 | 3/4 | 4 3/8 | 8 1/8 | 4 3/8 | 5 1/8 | 3/4 | 2 |
| | 5 Ton WJT/DWJ | 8 1/4 | 5 3/4 | 1 1/2 | .9991 .9979 | 1 1/2 | 2.188 | 3 1/8 | 2 15/16 | 13/16 | 6 3/16 | 7 3/16 | 0 | 5 11/16 | 1 13/16 | 1 | 6 3/16 | 11 3/16 | 6 3/16 | 6 13/16 | 1 1/2 | 2 1/2 |
| | 10 Ton WJ/DWJ | 9 | 7 1/4 | 2 | 1.2488 1.2472 | 1 1/2 | 2.598 | 3 | 3 1/8 | 1 1/8 | 6 1/8 | 7 1/2 | 0 | 6 | 2 1/2 | 1 5/16 | 6 1/8 | 13 1/8 | 6 1/8 | 8 7/8 | 1 31/32 | 3 |
| | 15 Ton WJ/DWJ | 9 1/2 | 7 1/2 | 2 1/4 | 1.4988 1.4972 | 1 3/4 | 2.598 | 3 1/2 | 3 3/4 | 1 1/4 | 7 | 8 3/8 | 0 | 6 7/8 | 2 5/8 | 1 5/16 | 7 | 13 | 7 | 7 11/16 | 1 31/32 | 3 |
| | 20 Ton WJ/DWJ | 11 1/4 | 8 | 2 1/4 | 1.4988 1.4972 | 1 3/4 | 2.598 | 4 1/4 | 4 1/4 | 1 1/4 | 8 1/4 | 9 5/8 | 0 | 8 1/4 | 2 5/8 | 1 3/8 | 8 1/4 | 14 1/4 | 8 1/4 | 8 | 1 15/16 | 3 |
| Ball Screw | 2 Ton RWB/RHWB | 7 1/4 | 3 1/4 | 1 1/4 | .7491 .7479 | 1 1/4 | 1.703 | 3 1/8 | 2 5/16 | 11/16 | 7 | 9 7/16 | 9/16 | 7 | 2 9/16 | 3/4 | 4 11/16 | 9 7/16 | 4 11/16 | 6 1/16 | 1 1/8 | 3 1/8 |
| | 5 Ton WB | 8 1/4 | 5 3/4 | 1 1/2 | .9991 .9979 | 1 1/2 | 2.188 | 3 1/8 | 2 15/16 | 13/16 | 9 7/16 | 12 3/4 | 11/16 | 9 7/16 | 4 3/4 | 1 1/4 | 6 3/16 | 12 3/16 | 6 3/16 | 7 1/2 | 1 1/8 | 4 1/2 |
| | 5 Ton HWB | 8 1/4 | 5 3/4 | 1 1/2 | .9991 .9979 | 1 1/2 | 2.188 | 3 1/8 | 2 15/16 | 13/16 | 9 7/16 | 12 3/4 | 11/16 | 9 7/16 | 4 3/4 | 1 1/4 | 6 3/16 | 11 5/8 | 6 3/16 | 6 15/16 | 1 1/8 | 3 25/32 |
| | 10 Ton WBL | 9 | 7 1/4 | 2 | 1.2488 1.2472 | 1 1/2 | 2.598 | 3 | 3 1/8 | 1 1/8 | 9 9/16 | 12 3/4 | 11/16 | 9 9/16 | 3 | 1 1/4 | 6 1/8 | 12 3/4 | 6 1/8 | 8 7/16 | 1 3/4 | 4 1/2 |
| | 10 Ton HWBL | 9 | 7 1/4 | 2 | 1.2488 1.2472 | 1 1/2 | 2.598 | 3 | 3 1/8 | 1 1/8 | 9 9/16 | 12 3/4 | 11/16 | 9 9/16 | 3 | 1 1/4 | 6 1/8 | 12 3/16 | 6 1/8 | 7 7/8 | 1 3/4 | 3 25/32 |
| | 10 Ton WB/HWB | 9 | 7 1/4 | 2 | 1.2488 1.2472 | 1 1/2 | 2.598 | 3 | 3 1/8 | 1 1/8 | 13 1/8 | 16 3/8 | 11/16 | 13 1/8 | 3 1/8 | 1 1/4 | 6 1/8 | 15 5/16 | 6 1/8 | 10 3/8 | 2 | 6 5/8 |
| | 20 Ton WB | 11 1/4 | 8 | 2 1/4 | 1.4988 1.4972 | 1 3/4 | 2.598 | 4 1/4 | 4 1/4 | 1 1/4 | 15 3/16 | 19 7/8 | 3/8 | 15 3/16 | 4 | 1 1/2 | 8 1/4 | 18 1/4 | 8 1/4 | 12 | 2 3/4 | 6 3/4 |

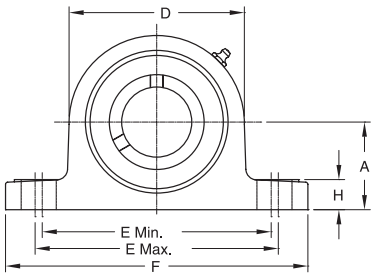
Trunnion adapters mounted to inverted jacks will decrease the minimum closed dimension and may shorten the travel.

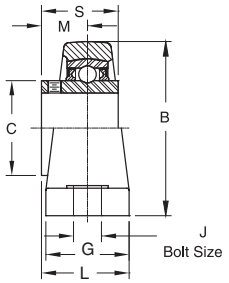
*Contact Joyce if multiple trunnion-mounted jacks will be used in a system.
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ACCESSORIES PILLOW BLOCKS AND FLANGE BLOCKS

Joyce ductile iron pillow blocks and flange blocks include self-aligning replaceable bearings that are pre-lubricated with lithium grease. They include steel retainers and nitrile rubber seals with steel guards.

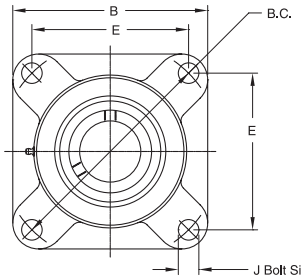
Pillow blocks and flange blocks are suitable for shaft supports and bearing supports for rotary screws on KFTN jacks under normal duty operation.

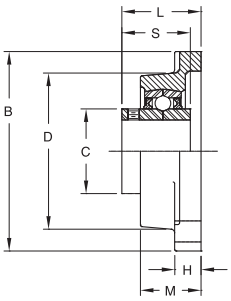





| 2 Bolt Pillow Blocks – Ductile Iron Housing – For Low Shaft Height – Setscrew Lock – Wide Inner Ring | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | Shaft Size | A | B | C | D | E Min. | E Max. | F | G | H | J | L | M | S | Wt. Lbs. |
| PB-050 | 1/2 | 1 1/16 | 2 1/8 | 0.969 | 2 1/4 | 3 3/8 | 3 5/8 | 4 3/4 | 1 3/8 | 33/64 | 3/8 | 1 5/16 | 0.626 | 1.079 | 1.2 |
| PB-063 | 5/8 | | | | | | | | | | | | | | |
| PB-075 | 3/4 | 1 1/4 | 2 1/2 | 1.142 | 2 5/8 | 3 3/4 | 3 31/32 | 5 1/32 | 1 1/2 | 35/64 | 3/8 | 1 15/32 | 0.720 | 1.220 | 1.9 |
| PB-100 | 1 | 1 5/16 | 2 5/8 | 1.339 | 2 25/32 | 4 | 4 1/4 | 5 1/2 | 1 9/16 | 19/32 | 3/8 | 1 9/16 | 0.776 | 1.339 | 2.4 |
| PB-125 | 1 1/4 | 1 13/16 | 3 19/32 | 1.843 | 3 27/32 | 4 13/16 | 5 3/16 | 6 9/16 | 1 7/8 | 45/64 | 1/2 | 1 15/16 | 1.000 | 1.689 | 3.8 |
| PB-144 | 1 7/16 | | | | | | | | | | | | | | |
| PB-150 | 1 1/2 | 1 15/16 | 3 27/32 | 2.063 | 4 3/16 | 5 5/16 | 5 11/16 | 7 1/8 | 2 1/16 | 3/4 | 1/2 | 2 7/32 | 1.189 | 1.937 | 4.8 |
| PB-169 | 1 11/16 | 2 1/16 | 4 1/8 | 2.260 | 4 17/32 | 5 9/16 | 5 15/16 | 7 7/16 | 2 1/8 | 25/32 | 1/2 | 2 1/4 | 1.189 | 1.937 | 5.4 |
| PB-175 | 1 3/4 | | | | | | | | | | | | | | |
| PB-200 | 2 | 2 7/16 | 4 27/32 | 2.705 | 5 5/16 | 6 7/8 | 7 3/8 | 9 1/8 | 2 3/8 | 29/32 | 5/8 | 2 1/2 | 1.315 | 2.189 | 8.7 |





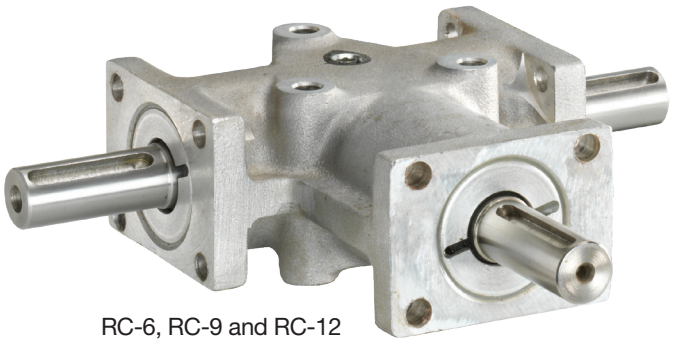

| 4 Bolt Flange Blocks – Ductile Iron Housing – Setscrew Lock – Wide Inner Ring | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | Shaft Size | B | B.C. | C | D | E | H | J | L | M | S | Wt. Lbs. |
| FB-050 | 1/2 | 3 | 3 | .969 | 2 3/32 | 2 1/8 | 7/16 | 3/8 | 1 7/32 | 31/32 | 1.079 | 1.0 |
| FB-063 | 5/8 | | | | | | | | | | | |
| FB-075 | 3/4 | 3 3/8 | 3 5/8 | 1.142 | 2 3/8 | 2 1/2 | 19/32 | 3/8 | 1 15/32 | 1 5/32 | 1.220 | 1.5 |
| FB-088 | 7/8 | 3 21/32 | 3 57/64 | 1.339 | 2 3/4 | 2 3/4 | 19/32 | 7/16 | 1 17/32 | 1 3/16 | 1.339 | 1.9 |
| FB-100 | 1 | | | | | | | | | | | |
| FB-125 | 1 1/4 | 4 9/16 | 5 1/8 | 1.843 | 3 9/16 | 3 5/8 | 11/16 | 1/2 | 1 27/32 | 1 3/8 | 1.689 | 4.4 |
| FB-144 | 1 7/16 | | | | | | | | | | | |
| FB-150 | 1 1/2 | 5 3/32 | 5 43/64 | 2.063 | 4 1/32 | 4 | 11/16 | 1/2 | 2 1/8 | 1 17/32 | 1.937 | 5.6 |
| FB-175 | 1 3/4 | 5 5/16 | 5 27/32 | 2.260 | 4 1/4 | 4 1/8 | 23/32 | 1/2 | 2 1/8 | 1 9/16 | 1.937 | 6.0 |

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ACCESSORIES MITER GEAR BOXES

Joyce miter gear boxes are specifically engineered for use with Joyce jacks and actuators in multiple jack systems. Miter gear boxes used in such systems effectively raise unevenly distributed loads. When driven shaft turns per inch of travel are the same, total synchronization is assured because all models have a uniform lifting speed. Arrows in assembly drawings below indicate shaft rotation.

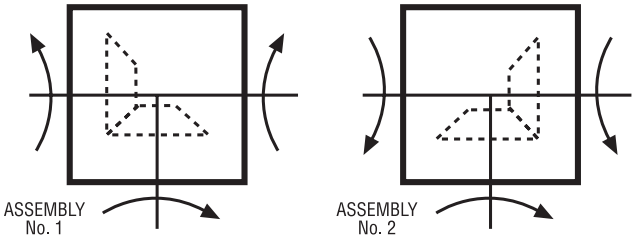
Standard Joyce miter gear boxes are available in 1:1 and 2:1 ratios. Other ratios are available in the RC series units. Four-shaft units are also available in the RC-18 through RC-204.

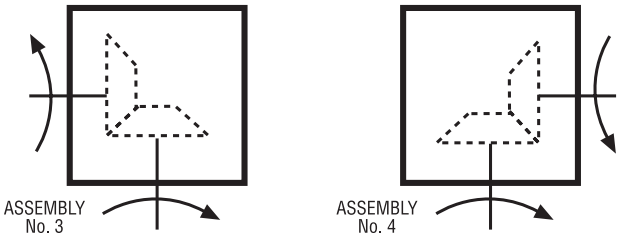


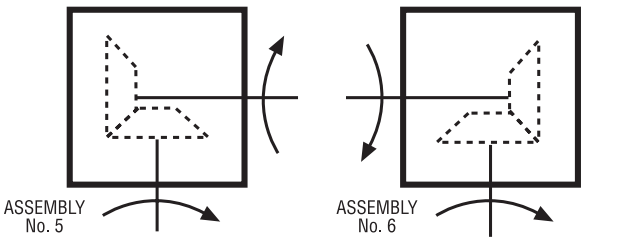
RC-6, RC-9 and RC-12

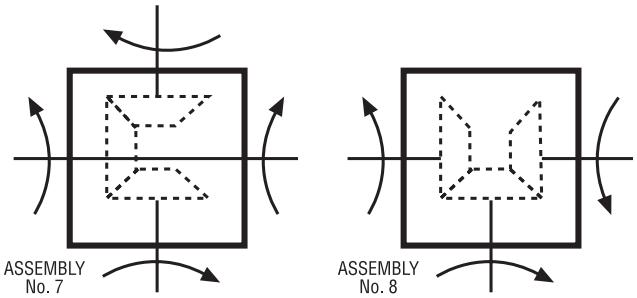


RC-15 through RC-204




Assembly No. 7 and 8 availability:
RC-18 RC-38
RC-99 RC-204

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.
When ordering miter gear boxes specify model numbers and assembly numbers.

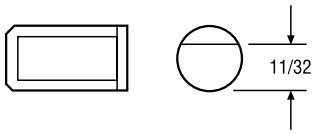
## RC-6 THROUGH RC-12

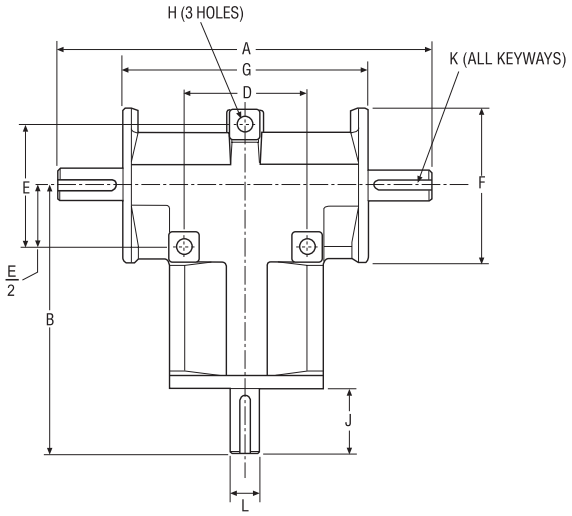
### Lubrication

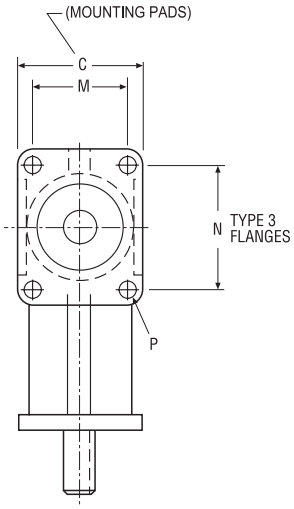
Units are lifetime lubricated.

RC-6 shafts feature flats (shown below).

RC-9 and RC-12 models have keyways.




| Model No. | Ratio | Max. Torque Rating (In. Lbs.)* | Max. HP @ 400 RPM | Max. RPM | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Approx. Wt. (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC-6 | 1:1 | 36 | 0.21 | 5,000 | 4 5/16 | 2 15/16 | 1 1/4 | 1 5/16 | 1 5/16 | 1 5/8 | 2 3/4 | 7/32 | 25/32 | | 3/8 | 7/8 | 1 3/16 | 3/16 | 3/4 |
| RC-6 | 2:1 | 12 | 0.06 | 5,000 | 4 5/16 | 2 15/16 | 1 1/4 | 1 5/16 | 1 5/16 | 1 5/8 | 2 3/4 | 7/32 | 25/32 | | 3/8 | 7/8 | 1 3/16 | 3/16 | 3/4 |
| RC-9 | 1:1 | 130 | 0.75 | 5,000 | 7 3/8 | 4 13/16 | 2 | 1 7/8 | 1 7/8 | 2 1/2 | 4 1/4 | 9/32 | 1 9/16 | 3/16 x 1 3/8 | 5/8 | 1 3/8 | 1 7/8 | 9/32 | 3 |
| RC-9 | 2:1 | 51 | 0.30 | 5,000 | 7 3/8 | 4 13/16 | 2 | 1 7/8 | 1 7/8 | 2 1/2 | 4 1/4 | 9/32 | 1 9/16 | 3/16 x 1 3/8 | 5/8 | 1 3/8 | 1 7/8 | 9/32 | 3 |
| RC-12 | 1:1 | 382 | 2.17 | 5,000 | 9 1/8 | 6 9/16 | 3 | 3 | 3 | 3 7/8 | 6 | 3/8 | 1 9/16 | 3/16 x 1 3/8 | 3/4 | 2 1/4 | 3 | 3/8 | 8 |
| RC-12 | 2:1 | 148 | 0.85 | 5,000 | 9 1/8 | 6 9/16 | 3 | 3 | 3 | 3 7/8 | 6 | 3/8 | 1 9/16 | 3/16 x 1 3/8 | 3/4 | 2 1/4 | 3 | 3/8 | 8 |

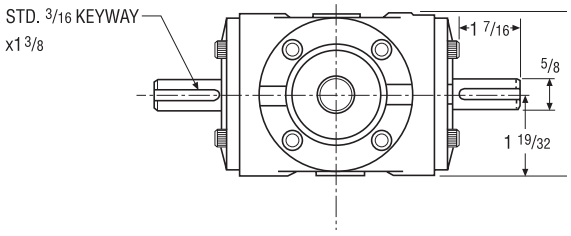
* Torque @ 100 RPM and 750 hours of life.

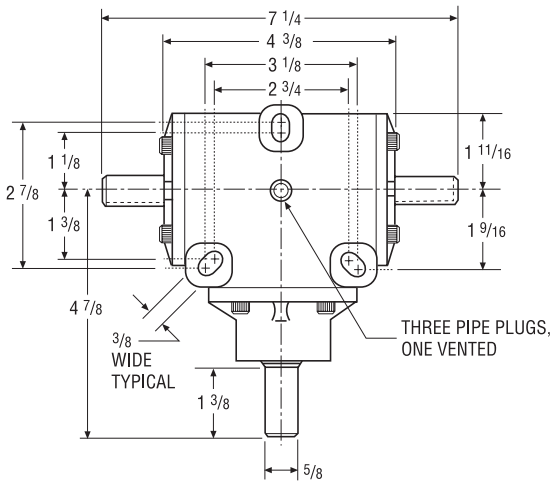
## RC-15

### Lubrication

Fill with 6 ounces. EP-90 gear oil for normal operation. Units are shipped less lubricant.

Dimensions are representative of 1:1 ratio miter boxes.




| Model No. | Ratio | Max. Torque Rating (In. Lbs.)* | Max. HP @ 400 RPM | Max. RPM | Approx. Weight (Lbs.) |
|---|---|---|---|---|---|
| RC-15 | 1:1 | 357 | 2.03 | 5,000 | 5 |
| RC-15 | 2:1 | 151 | 0.87 | 5,000 | 5 |

* Torque @ 100 RPM and 750 hours of life.

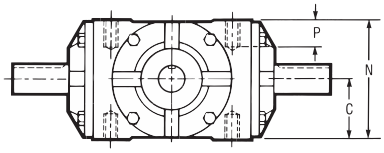
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

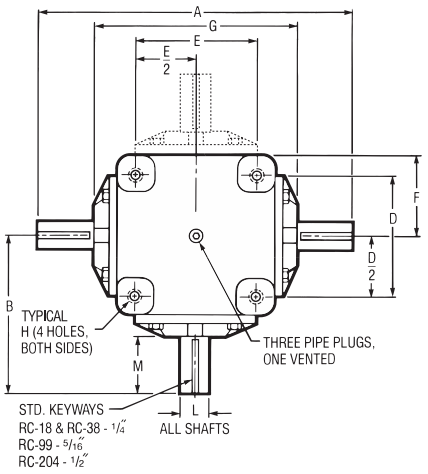
## RC-18 THROUGH RC-204

### Lubrication

Units shipped less lubricant.
Fill with EP-90 gear oil.

| | |
|---|---|
| Model RC-18 | 1 pint |
| Model RC-38 | 1 1/2 pints |
| Model RC-99 | 4 1/2 pints |
| Model RC-204 | 8 pints |




| Model No. | Ratio | Max. Torque Rating (In. Lbs.)* | Max. HP @ 400 RPM | Max. RPM | A | B | C | D | E | F | G | H | L | M | N | P | Approx. Wt. (Lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC-18 | 1:1 | 2154 | 10.78 | 3000 | 11 | 5 1/2 | 2 1/16 | 4 1/4 | 4 1/4 | 2 3/4 | 7 | 3/8 - 16 | .9950<br>.9980 | 2 | 4 1/8 | 11/16 | 26 |
| RC-18 | 2:1 | 569 | 3.24 | 5000 | 11 | 7 3/8 | 2 1/16 | 4 1/4 | 4 1/4 | 2 3/4 | 7 | 3/8 - 16 | .9950<br>.9980 | 2 | 4 1/8 | 11/16 | 26 |
| RC-38 | 1:1 | 4776 | 23.08 | 2200 | 13 | 6 1/2 | 2 13/16 | 4 1/2 | 4 1/2 | 2 7/8 | 8 | 1/2 - 13 | 1.2495<br>1.2480 | 2 1/2 | 5 5/8 | 7/8 | 39 |
| RC-38 | 2:1 | 1211 | 6.85 | 4400 | 13 | 8 3/8 | 2 13/16 | 4 1/2 | 4 1/2 | 2 7/8 | 8 | 1/2 - 13 | 1.2495<br>1.2480 | 2 1/2 | 5 5/8 | 7/8 | 39 |
| RC-99 | 1:1 | 13300 | 69.78 | 1600 | 16 1/2 | 8 1/4 | 3 3/4 | 6 | 6 | 4 1/8 | 10 5/8 | 1/2 - 13 | 1.3745<br>1.3730 | 2 15/16 | 7 1/2 | 1 3/8 | 72 |
| RC-99 | 2:1 | 3446 | 19.24 | 3100 | 16 1/2 | 11 11/16 | 3 3/4 | 6 | 6 | 4 1/8 | 10 5/8 | 1/2 - 13 | 1.3745<br>1.3730 | 2 15/16 | 7 1/2 | 1 3/8 | 72 |
| RC-204 | 1:1 | 29035 | 155.76 | 1200 | 19 | 9 1/2 | 4 3/4 | 8 | 8 | 4 15/16 | 13 | 5/8 - 11 | 1.9995<br>1.9980 | 3 | 9 1/2 | 1 1/4 | 172 |
| RC-204 | 2:1 | 8156 | 45.05 | 2300 | 19 | 9 1/2 | 4 3/4 | 8 | 8 | 4 15/16 | 13 | 5/8 - 11 | 1.9995<br>1.9980 | 3 | 9 1/2 | 1 1/4 | 172 |

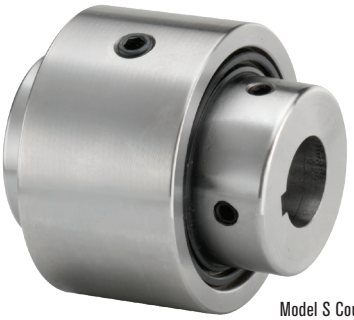
*Torque @ 100 RPM and 750 hours of life.

Joyce Model S and Model F geared couplings offer greater torque capacity than jaw couplings. With more gear teeth around the inner circumference of the coupling, plus high torsional, radial and angular stiffness mean that you get a more durable coupling.

Joyce Model S sleeve-type gear couplings are available in flex/rigid and flex/flex configurations.

Model F flange-type gear couplings offer superior radial-misalignment capability and radial flexibility.

Model J jaw-type couplings are ideal for many general industrial applications, require no lubrication and are resistant to oil, grease, moisture and other contaminants.



Model S Coupling

**Specifying Information**

When specifying hub sizes, please refer to the table to determine the three digit code. The first digit is the whole number of inches in shaft diameter, while the next two digits give the decimal equivalents of fractional inches.

| 1 | 63 | = 1 5/8" dia. bore |
|---|---|---|
| shaft diameter in inches | shaft diameter decimal | |

| Fraction | Dec. Code | Fraction | Dec. Code |
|---|---|---|---|
| 0 | 00 | 1/2 | 50 |
| 1/16 | 06 | 9/16 | 56 |
| 1/8 | 13 | 5/8 | 63 |
| 3/16 | 19 | 11/16 | 69 |
| 1/4 | 25 | 3/4 | 75 |
| 5/16 | 31 | 13/16 | 81 |
| 3/8 | 38 | 7/8 | 88 |
| 7/16 | 44 | 15/16 | 94 |

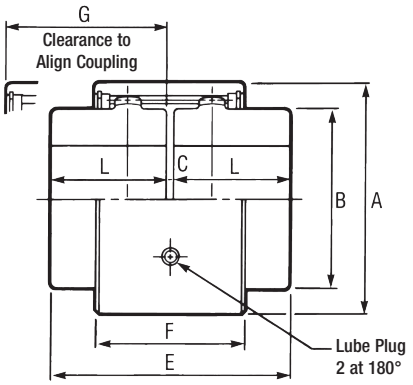
**Ordering Information —** Order must indicate coupling size, coupling type (S = sleeve; F = flange; J = jaw), large diameter hub code, hub type (F = flex; R = rigid), small diameter hub code, hub type (F or R), and fit type (S = slip; I = interference).

Example: for sleeve and flange type

| 10 | S | 163 | F | 125 | F | S |
|---|---|---|---|---|---|---|
| coupling size | coupling type | large diameter hub code | hub type | small diameter hub code | hub type | fit type |

Example: for jaw type

| 09 | J | 100 | 88 |
|---|---|---|---|
| coupling size | coupling type | large diameter hub code | small diameter hub code |




**Model S Sleeve-Type**

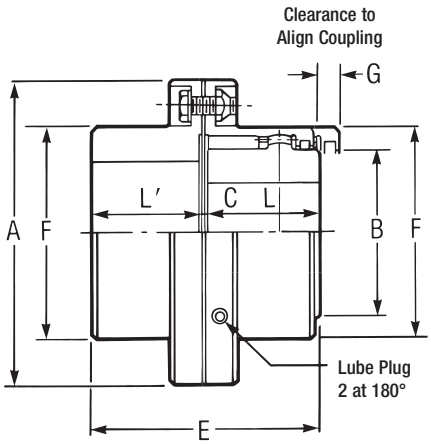
| Size | Max. Bore (In.) | Load Capacity | | Max. (RPM x $10^3$) | Parallel Offset Capacity (In.) | Lube Capacity | | | Dimension — Inch | | | | | | | Wt. Solid Hubs (Lbs.) | $WR^2$ Solid Hubs (Lb. $In.^2$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HP/100 (RPM) | Torque (In. Lbs. x $10^3$) | | | Grease | | Oil Volume | A | B | L | C | E | F | G | | |
| | | | | | | Weight | Volume | | | | | | | | | | |
| 6S | 1 1/16 | 4.5 | 2.84 | 19.0 | .009 | 3/32 oz. | .006 pt. | .002 pt. | 2 3/8 | 1 9/16 | 1 3/16 | 3/32 | 2 15/32 | 1 13/32 | 1 1/2 | 2.0 | .86 |
| 8S | 1 5/16 | 7.0 | 4.41 | 16.0 | .009 | 5/16 oz. | .019 pt. | .006 pt. | 2 13/16 | 1 31/32 | 1 13/32 | 3/32 | 2 29/32 | 1 13/32 | 1 1/2 | 3.3 | 2.4 |
| 10S | 1 5/8 | 15.5 | 9.77 | 12.6 | .015 | 11/32 oz. | .020 pt. | .006 pt. | 3 9/16 | 2 3/8 | 1 9/16 | 3/32 | 3 7/32 | 1 27/32 | 1 7/8 | 6.1 | 8.1 |
| 12S | 1 15/16 | 22 | 13.9 | 11.5 | .015 | 3/8 oz. | .022 pt. | .007 pt. | 3 15/16 | 2 25/32 | 1 25/32 | 3/32 | 3 21/32 | 1 27/32 | 1 15/16 | 8.7 | 13.5 |
| 15S | 2 | 31 | 19.5 | 11.0 | .039 | 7/8 oz. | 1/16 pt. | 1/64 pt. | 4 1/8 | 2 15/16 | 1 15/16 | 1/8 | 4 | 2 25/32 | 2 29/32 | 11.5 | 21.1 |
| 20S | 2 5/8 | 51 | 32.1 | 8.8 | .045 | 1 5/8 oz. | 1/8 pt. | 1/32 pt. | 5 1/8 | 3 3/4 | 2 7/16 | 1/8 | 5 | 3 3/16 | 3 5/16 | 21.5 | 60.8 |

Notes: 1. Load capacities listed are the ratings based on full 1° misalignment per gear mesh.
2. Maximum bore listed are based on using a square key.
3. Speeds shown are without dynamic balancing.
4. Slip fit is standard.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

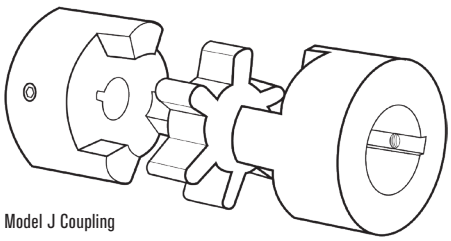


Model F Coupling

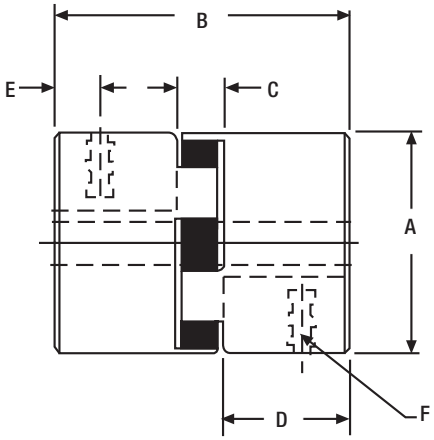



| Model F Flange-Type | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | Max. Bore (In.) | | Load Capacity | | Max. (RPM x $10^3$) | Lube Capacity | | | Dimension — Inch | | | | | | | | Wt. Solid Hubs (Lbs.) | $WR^2$ Solid Hubs (Lb. $In.^2$) |
| | Flex. Half | Rigid Half | HP/100 (RPM) | Torque (In. Lbs. x $10^3$) | | Grease | | Oil Volume | A | B | L | L´ | C | E | F | G | | |
| | | | | | | Weight | Volume | | | | | | | | | | | |
| 10F | 1 5/8 | 2 1/8 | 15.5 | 9.77 | 6.5 | .6 oz. | 1/32 pt. | 1/64 pt. | 4 9/16 | 2 27/64 | 1 11/16 | 1 9/16 | 3/16 | 3 7/16 | 3 7/64 | 7/16 | 9.4 | 18.2 |
| 15F | 2 | 2 3/4 | 31 | 19.5 | 5.3 | 1 1/8 oz. | 1/16 pt. | 1/32 pt. | 6 | 2 15/16 | 1 15/16 | 1 27/32 | 5/32 | 3 15/16 | 3 29/32 | 13/32 | 18.8 | 66 |
| 20F | 2 5/8 | 3 3/8 | 51 | 32.1 | 5.0 | 2 1/2 oz. | 1/8 pt. | 1/16 pt. | 7 | 3 3/4 | 2 7/16 | 2 9/32 | 5/32 | 4 7/8 | 4 7/8 | 1/2 | 31.4 | 142 |

Notes: 1. Load capacities listed are the ratings based on full 1° misalignment per gear mesh.
2. Shrouded bolt designs are standard, but exposed will be furnished upon request.
3. Maximum bore listed are based on using a square key.
4. Speeds shown are without dynamic balancing.
5. Slip fit is standard.



Model J Coupling



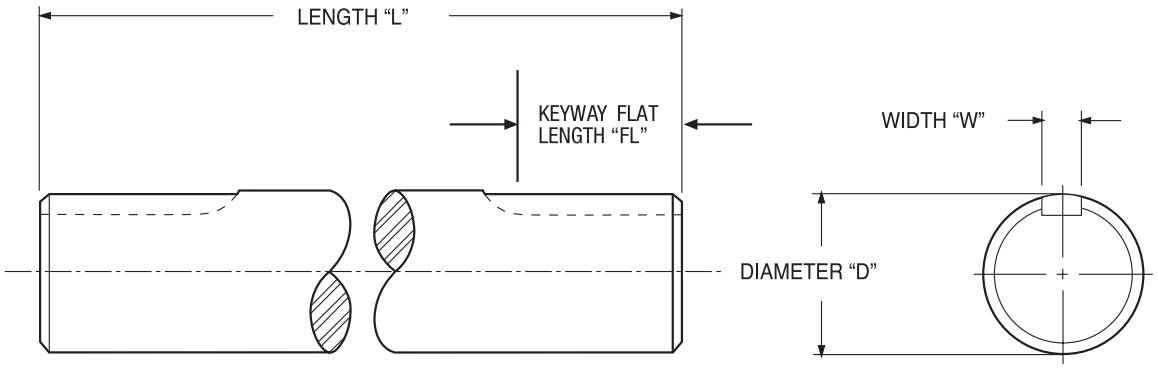

| Model J Jaw-Type | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size | Max. Bore (In.) | Load Capacity | Dimension — Inch | | | | | | Wt. Solid Hubs (Lbs.) | $WR^2$ Solid Hubs (Lb. $In.^2$) |
| | | Torque (In. Lbs.) | A | B | C | D | E | F | | |
| 03J | .375 | 3.5 | .62 | .81 | .27 | .27 | .13 | #6-32 | .1 | .003 |
| 05J | .563 | 26.3 | 1.08 | 1.72 | .48 | .62 | .31 | 1/4-20 | .3 | .054 |
| 07J | .750 | 43.2 | 1.36 | 2.00 | .50 | .75 | .38 | 1/4-20 | .6 | .115 |
| 08J | .875 | 90.0 | 1.75 | 2.12 | .50 | .81 | .31 | 1/4-20 | 1.0 | .388 |
| 09J | 1.000 | 144.0 | 2.11 | 2.12 | .50 | .81 | .44 | 1/4-20 | 1.5 | .772 |

Note: Torque values based on nitrile insert, other insert material available upon request.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# ACCESSORIES SHAFTING

Joyce shafting matches perfectly with Joyce jacks and couplings to meet a wide range of system requirements. Shafting is made from cold-finished 1018 steel, with ends machined to ANSI-standard keyways. For further information on common jack system arrangements, refer to page 190.




**Dimensions and Minimum Shaft Length**

| Model | | S50 | S63 | S75 | S88 | S100 | S113 | S125 | S138 | S150 | S163 | S175 | S188 | S200 | S213 | S225 | S238 | S250 | S262 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum Shaft Length* "L" | Flange | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 10 | 10 | 10 | 10 | 10 |
| | Sleeve | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 8 | 10 | 10 | 10 | 10 | 10 |
| Shaft Diameter "D" Inches | Nominal | 1/2 | 5/8 | 3/4 | 7/8 | 1 | 1 1/8 | 1 1/4 | 1 3/8 | 1 1/2 | 1 5/8 | 1 3/4 | 1 7/8 | 2 | 2 1/8 | 2 1/4 | 2 3/8 | 2 1/2 | 2 5/8 |
| | Actual | .500<br>.498 | .625<br>.623 | .750<br>.748 | .875<br>.873 | 1.000<br>.998 | 1.125<br>1.123 | 1.250<br>1.248 | 1.375<br>1.373 | 1.500<br>1.498 | 1.625<br>1.623 | 1.750<br>1.748 | 1.875<br>1.872 | 2.000<br>1.997 | 2.125<br>2.122 | 2.250<br>2.247 | 2.375<br>2.372 | 2.500<br>2.497 | 2.625<br>2.621 |
| Keyway Width "W" | | 1/8 | 3/16 | 3/16 | 3/16 | 1/4 | 1/4 | 1/4 | 5/16 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 5/8 |
| Keyway Flat Length "FL" | | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.5 | 1.5 | 1.75 | 1.75 | 1.75 | 2 | 2 | 2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |

*These are the minimum shaft lengths that can be ordered when Joyce Model "S" sleeve type couplings or "F" flange-type couplings are selected. See pages 184 and 185 for coupling information.

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

**To use this chart, follow these steps:**

1. Find a "Shaft Torque" value in the far left column that is greater than, or equal to, your calculated torque value.
2. Move to the second column to find your "Nominal Shaft Diameter" (round up to arrive at an offered shaft size).
3. The third column shows the maximum allowable shaft span before supports (pillow blocks) are required.
4. Compare your actual shaft speed (RPM) with the maximum allowable speed (RPM) for the shaft you have chosen. If you are above the allowable shaft speed, then increase the shaft size until it falls into the allowable range.

| Diameter Selection Chart | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shaft Torque (Inch/Lbs.) | Nominal Shaft Diameter* (Inches) | Maximum** Distance Between Supports (Inches) | Maximum Allowable RPMs*** Shaft Lengths (Inches) | | | | | | | | | | |
| | | | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 |
| 20 | 0.51 | 54.6 | 1802 | 1014 | 649 | 450 | 331 | 253 | 200 | 162 | 134 | 113 | 96 |
| 40 | 0.73 | 61.3 | 2143 | 1205 | 771 | 536 | 394 | 301 | 238 | 193 | 159 | 134 | 114 |
| 50 | 0.81 | 65.5 | 2372 | 1334 | 854 | 593 | 436 | 333 | 264 | 213 | 176 | 148 | 126 |
| 80 | 0.87 | 68.8 | 2548 | 1433 | 917 | 637 | 468 | 358 | 283 | 229 | 190 | 159 | 136 |
| 100 | 0.92 | 71.4 | 2695 | 1516 | 970 | 674 | 495 | 379 | 299 | 243 | 200 | 168 | 143 |
| 150 | 1.01 | 76.3 | 2982 | 1677 | 1074 | 746 | 548 | 419 | 331 | 268 | 222 | 186 | 159 |
| 200 | 1.09 | 80.1 | 3204 | 1802 | 1154 | 801 | 589 | 451 | 356 | 288 | 238 | 200 | 171 |
| 250 | 1.15 | 83.1 | 3388 | 1906 | 1220 | 847 | 622 | 476 | 376 | 305 | 252 | 212 | 180 |
| 300 | 1.21 | 85.7 | 3546 | 1995 | 1277 | 887 | 651 | 499 | 394 | 319 | 264 | 222 | 189 |
| 350 | 1.25 | 87.9 | 3686 | 2073 | 1327 | 921 | 677 | 518 | 410 | 332 | 274 | 230 | 196 |
| 400 | 1.30 | 89.9 | 3811 | 2144 | 1372 | 953 | 700 | 536 | 423 | 343 | 283 | 238 | 203 |
| 450 | 1.34 | 91.7 | 3925 | 2208 | 1413 | 981 | 721 | 552 | 436 | 353 | 292 | 245 | 209 |
| 500 | 1.37 | 93.3 | 4029 | 2266 | 1451 | 1007 | 740 | 567 | 448 | 363 | 300 | 252 | 215 |
| 600 | 1.44 | 96.2 | 4217 | 2372 | 1518 | 1054 | 775 | 593 | 469 | 380 | 314 | 264 | 225 |
| 700 | 1.49 | 98.7 | 4383 | 2465 | 1578 | 1096 | 805 | 616 | 487 | 394 | 326 | 274 | 233 |
| 800 | 1.54 | 100.9 | 4532 | 2549 | 1631 | 1133 | 832 | 637 | 504 | 408 | 337 | 283 | 241 |
| 900 | 1.59 | 102.9 | 4667 | 2625 | 1680 | 1167 | 857 | 656 | 519 | 420 | 347 | 292 | 249 |
| 1000 | 1.63 | 104.7 | 4792 | 2695 | 1725 | 1198 | 880 | 674 | 532 | 431 | 356 | 299 | 255 |
| 1250 | 1.72 | 108.7 | 5067 | 2250 | 1824 | 1267 | 931 | 712 | 563 | 456 | 377 | 317 | 270 |
| 1500 | 1.80 | 112.0 | 5303 | 2983 | 1909 | 1326 | 974 | 746 | 589 | 477 | 394 | 331 | 282 |
| 1750 | 1.92 | 114.9 | 5511 | 3100 | 1984 | 1378 | 1012 | 775 | 612 | 496 | 410 | 344 | 293 |
| 2000 | 1.94 | 117.5 | 5698 | 3205 | 2051 | 1425 | 1047 | 801 | 633 | 513 | 424 | 356 | 303 |
| 2250 | 2.00 | 119.8 | 5869 | 3301 | 2113 | 1467 | 1078 | 825 | 652 | 528 | 437 | 367 | 313 |
| 2500 | 2.05 | 122.0 | 6025 | 3389 | 2169 | 1506 | 1107 | 847 | 669 | 542 | 448 | 377 | 321 |
| 3000 | 2.15 | 125.7 | 6306 | 3547 | 2270 | 1577 | 1158 | 887 | 701 | 568 | 469 | 394 | 336 |
| 3250 | 2.19 | 127.4 | 6434 | 3619 | 2316 | 1608 | 1182 | 905 | 715 | 579 | 479 | 402 | 343 |
| 3500 | 2.23 | 129.0 | 6554 | 3687 | 2359 | 1639 | 1204 | 922 | 728 | 590 | 487 | 410 | 349 |
| 4000 | 2.31 | 131.9 | 6776 | 3812 | 2440 | 1694 | 1245 | 953 | 753 | 610 | 504 | 424 | 361 |
| 4500 | 2.38 | 134.5 | 6979 | 3926 | 2512 | 1745 | 1282 | 981 | 775 | 628 | 519 | 436 | 372 |
| 5000 | 2.44 | 136.9 | 7165 | 4030 | 2579 | 1791 | 1315 | 1008 | 796 | 645 | 533 | 448 | 382 |
| 6000 | 2.55 | 141.1 | 7499 | 4218 | 2700 | 1875 | 1377 | 1055 | 833 | 675 | 558 | 469 | 399 |
| 7000 | 2.65 | 144.8 | 7794 | 4384 | 2806 | 1949 | 1432 | 1096 | 866 | 701 | 580 | 487 | 415 |

Note: Shaded area exceeds maximum distance between supports. Pillow blocks are required.

*Shaft diameter is based on 0.08 degrees twist per foot of length.

**Maximum distance between supports is based on a maximum allowable deflection of 0.01 inches per foot of length.

***Maximum allowable RPMs is based on 80% of critical shaft speed.

### Length Specifying Information

Joyce shafts can be ordered in 1/16 inch increments of length. When specifying shaft length, please refer to the table below to determine the decimal code for fractions of length.

| Fraction | 0 | 1/16 | 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 11/16 | 3/4 | 13/16 | 7/8 | 15/16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decimal | .00 | .06 | .13 | .19 | .25 | .31 | .38 | .44 | .5 | .56 | .63 | .69 | .75 | .81 | .88 | .94 |

### Ordering Information

Example: A. For a 1/2" dia. x 33 3/8" long — Part Number = **S50-33.38**
B. For a 1 1/4" dia. x 110" long — Part Number = **S125-110.00**
C. For a 2 1/4" dia. x 58 7/16" long — Part Number = **S225-58.44**

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# CONTROLS MOTOR STARTERS

Joyce motor starters are the heart of a basic control system for a motorized jack, actuator, electric cylinder, or ComDRIVE® system. Motor starters include extend and retract push buttons for momentary operation; an illuminated power-on light lets operators easily determine if there is power to the system.



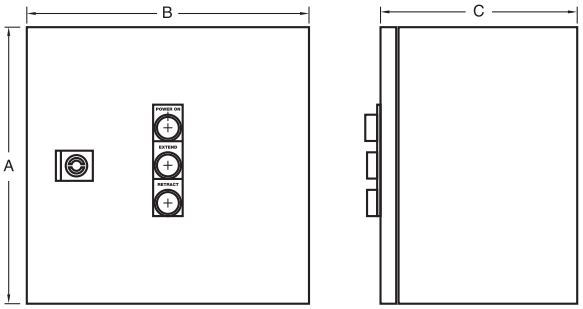

**Other standard features:**

- Limit switch terminals for two LS8-402 end-of-travel limits
- 1/3 - 15 HP motors standard
- 208, 230, 460, and 575 volts standard, three-phase power requirements
- NEMA 4 enclosure
- All three-phase motor starters include IEC motor overload protection

**Ordering information:**

Each model's part number begins with the prefix 07990377. To this prefix, add the appropriate suffix from the chart below. For example: 07990377-17 refers to a motor starter for a 1 1/2 horsepower, 208 volt motor.

| Motor HP Starter Part Number Suffix | | | | |
|---|---|---|---|---|
| Motor HP | Voltage | | | |
| | 208 | 230 | 460 | 575 |
| 1/3 | -1 | -2 | -3 | -4 |
| 1/2 | -5 | -6 | -7 | -8 |
| 3/4 | -9 | -10 | -11 | -12 |
| 1 | -13 | -14 | -15 | -16 |
| 1 1/2 | -17 | -18 | -19 | -20 |
| 2 | -21 | -22 | -23 | -24 |
| 3 | -25 | -26 | -27 | -28 |
| 5 | -29 | -30 | -31 | -32 |
| 7 1/2 | -33 | -34 | -35 | -36 |
| 10 | -37 | -38 | -39 | -40 |
| 15 | -41 | -42 | -43 | -44 |




**Many options are available including:**

- NEMA 4X enclosure
- 50 Hz motors
- International voltages
- Single-phase motors
- Multiple starters in a single enclosure
- Starters for larger horsepower motors
- Explosion-proof enclosure
- Maintained contact control
- Stack lights
- Audible alarm
- Wiring for LS7 and LS8-404 and other limits

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

# CONTROLS VARIABLE SPEED POSITIONING SYSTEM

Joyce Variable Speed Positioning System (VSPS) is a programmable controller that increases the capability of motorized jacks by allowing the operator to easily program up to ten stopping positions.

It is housed in two NEMA 4 enclosures, one for the VFD the other for the PLC (as shown). The VSPS includes an HMI display that indicates the current position as well as the stopping location.



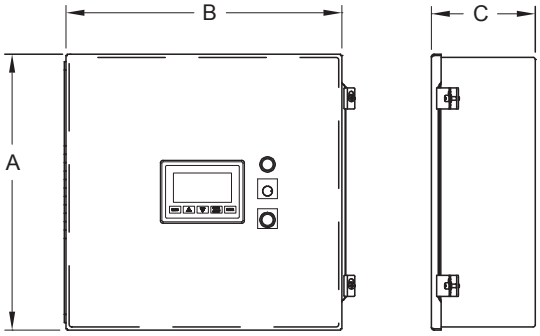

**Other standard features:**

- Limit switch terminals for two LS8-402 end-of-travel limits
- Speed control dial (real time)
- Emergency stop push button
- 1/3 – 3 HP motor control standard
- 208, 230, 460 and 575 volts standard, three-phase power requirements
- 3" HMI display
- Manual jog

**Ordering information:**

Each model's part number begins with the prefix 07990951. To this prefix add the appropriate suffix from the chart below. For example: 07990951-2 refers to a VSPS control for a 1/3 horsepower, 230 volt motor.

| Motor HP Starter Part Number Suffix | | | |
|---|---|---|---|
| Motor HP | Voltage | | |
| | 208 | 230 | 460 |
| 1/3 | -1 | -2 | -3 |
| 1/2 | -5 | -6 | -7 |
| 3/4 | -9 | -10 | -11 |
| 1 | -13 | -14 | -15 |
| 1 1/2 | -17 | -18 | -19 |
| 2 | -21 | -22 | -23 |
| 3 | -25 | -26 | -27 |




**Many options are available including:**

- NEMA 4X enclosure
- 50 Hz motors
- International voltages
- Single-phase motors
- 5 horsepower and larger
- Pendant controls
- Maintained contact control
- Stack lights
- Audible alarm
- Wiring for LS7 and LS8-404 and other limits

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.

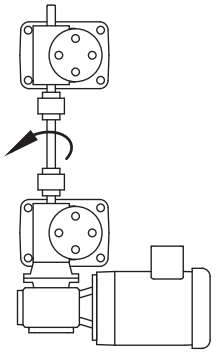
# COMMON SYSTEM ARRANGEMENTS

Joyce jacks, miter gear boxes, couplings and motorized ComDRIVEs® can be used in a number of system arrangements. Several are shown here.

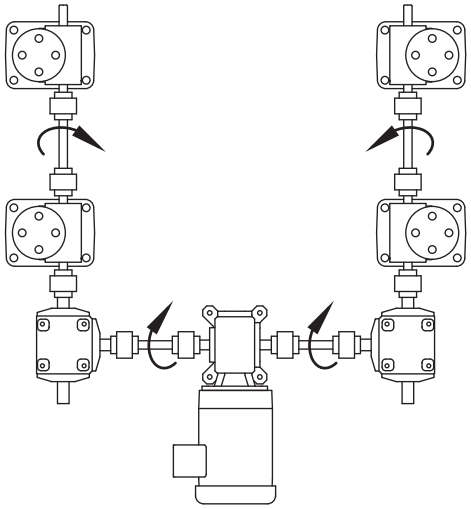
Because jacks selected for systems have uniform lifting speeds and are fully synchronized, unevenly distributed loads can be raised, lowered, and positioned in unison. Jacks of differing capacities may be used in the same system as long as driven shafts turns per 1" of travel are the same.

Arrows indicate the rotational direction to raise the load.

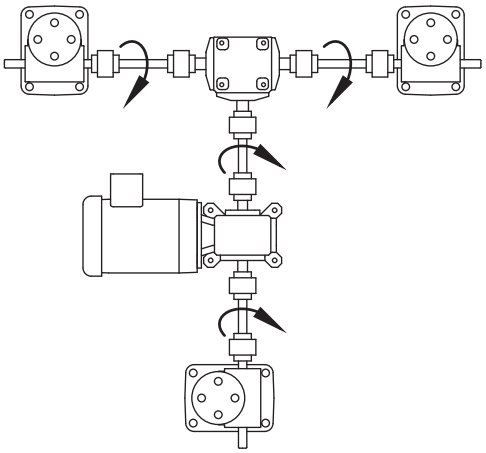
**Wormgear I System**
**Features ComDRIVE®**



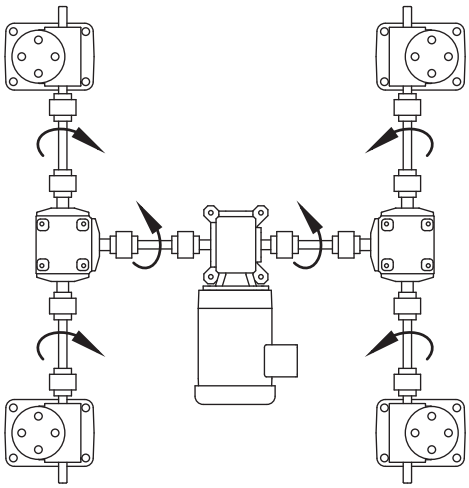
**Wormgear U System**



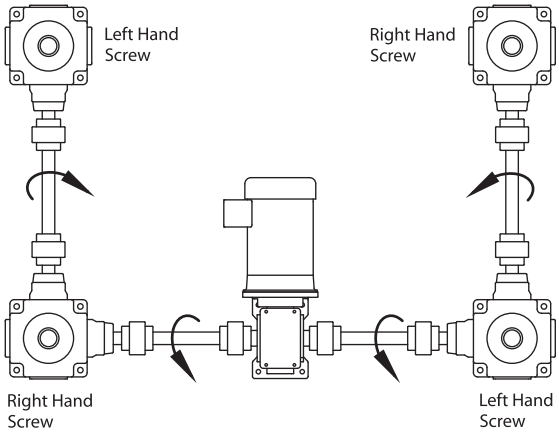
**Wormgear T System**



**Wormgear H System**



**Bevel Gear U System**



# ABOUT US

## Your Partner in Linear Motion.

Joyce/Dayton is a leading manufacturer of linear motion solutions for OEMs worldwide.

From our industry-leading screw jacks, known for rugged construction and reliable lifting, to our advanced EDrive electric actuators, engineered for high precision in tough industrial automation, our products are built to perform.




**Our state-of-the-art manufacturing facility in Portland, Indiana.** A major expansion in 2025 significantly increased our production capacity, allowing us to combine advanced technology with our expert team to build the rugged, reliable jacks our customers depend on.

### More Than a Part. A Solution.

**Expert Customization:** We can customize any standard jack to fit your exact system requirements. From special end fittings to unique travel lengths or specific materials, we build solutions, not just parts.

**System Integration:** Whether you need a single jack or a complex, multi-jack system with motors and controls, our team can help you design, select, and configure every component for a perfect fit.

**Fast, Dependable Service:** Our efficient manufacturing processes and dedicated team mean we can deliver the products you need, when you need them, to keep your projects on schedule.

### Ready to Get Started?

Our team of engineers is ready to help you select the right jack or build a complete, customized system.

**Contact us today to start your next project.**

**Phone:** +1 (937) 294-6261
**Email:** sales@joycedayton.com
**Website:** joycedayton.com
**Scan the QR Code to find your local representative.**

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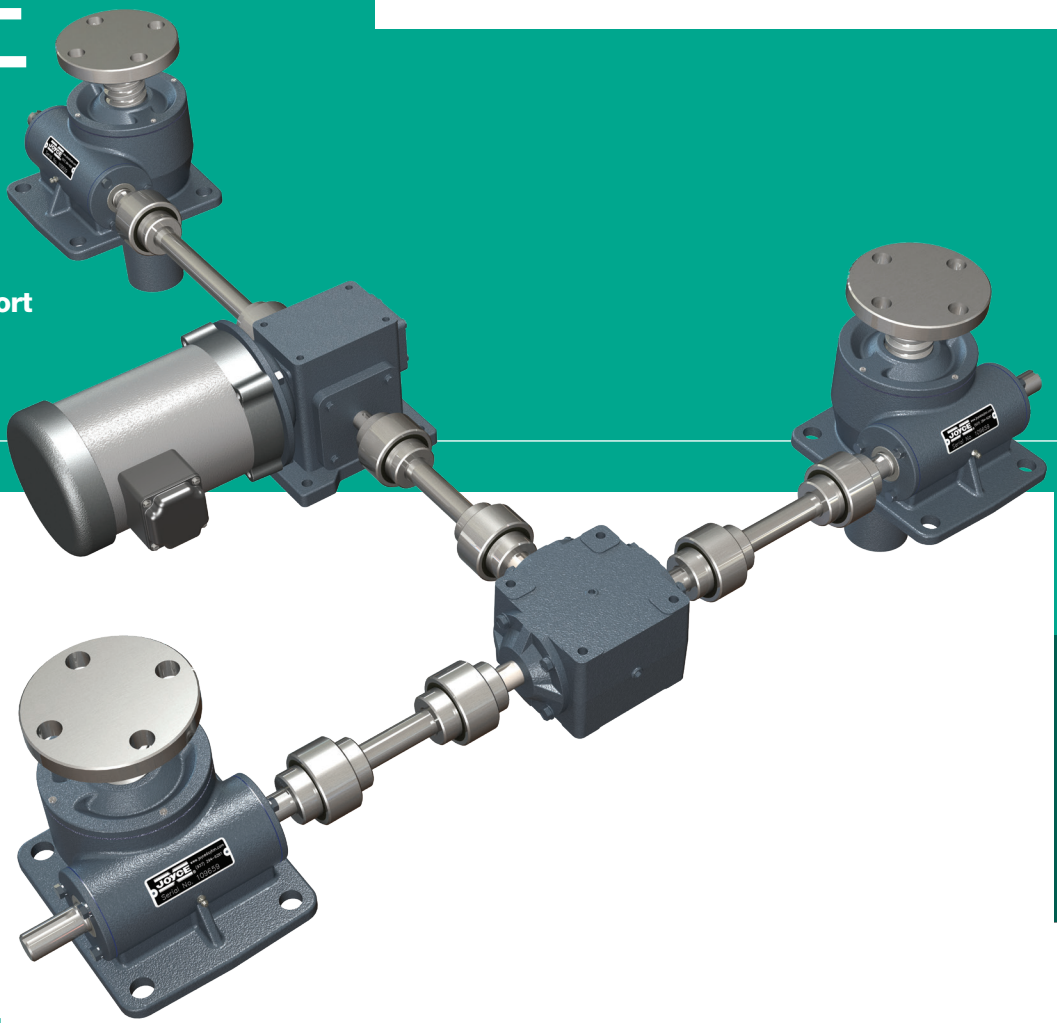
JOYCE®

# START TO FINISH WITH JOYCE

**Choose Joyce for quality industrial screw jacks, actuators, and custom lifting systems. Experience our unmatched Engineering Support and Customer Service.**

## Joyce Offers More Than A Catalog Of Standard Products.

We customize our standard products to meet your requirements and specify complete systems according to your application needs.
Contact an Application Engineer today!



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