Free JAX V2 Software

Your complete source for jack selection and engineering data

You can get the latest version of Joyce’s industry-leading JAX® linear motion design software just by asking.

Windows®-based JAX® V2 program includes all the information you need to specify the right components for your applications – and will even select the right jack for you. The CD also includes 2D CAD drawings, application solutions and an electronic version of the Joyce catalog.

JAX® V2 features include:

• Custom System Configurations – Design your own system, and generate a bill of material automatically
• 3D Solid Models – View or download 2D or 3D models
• Request a Quote – With just two clicks of your mouse
• Automatic Updates – You’ll always have the latest data

FREE download at www.joycedayton.com

Call now and get JAX® V2 free:
800-523-5204
Fax us a request:
937-297-7173
Email a request to:
sales@joycedayton.com
# TABLE OF CONTENTS

## Engineering Information
- Wormgear Style cutaway view ........................................... 4
- Bevel Gear Style cutaway view .......................................... 5
- Quick Reference Guide ..................................................... 6
- Options Overview .......................................................... 7
- Selection Guide Worksheets .............................................. 8
- Product Selection Factors ................................................ 10
- Column Load ................................................................. 11
- Jack Designs ................................................................. 12
- Torque and Horsepower .................................................. 13
- Options and Controls ...................................................... 14
- FAQ ............................................................................... 16

## Machine Screw Jacks ....................................................... 18
- Ordering Information ....................................................... 20

## Machine Screw ComDRIVEs® ........................................... 45
- Ordering Information ....................................................... 46

## Stainless Steel Screw Jacks ............................................. 58
- Ordering Information ....................................................... 60

## Metric Screw Jacks ......................................................... 71
- Ordering Information ....................................................... 72

## Ball Screw Jacks ........................................................... 80
- Ordering Information ....................................................... 82

## Ball Screw ComDRIVEs® .................................................. 102
- Ordering Information ....................................................... 104

## Electric Cylinders ........................................................ 118
- Ordering Information ....................................................... 120

## Integrated Actuators ....................................................... 135
- Ordering Information ....................................................... 137

## Linear Actuators .......................................................... 143
- Ordering Information ....................................................... 144

## Bevel Gear Jacks .......................................................... 148
- Ordering Information ....................................................... 150

## Bevel Ball Actuators ....................................................... 159
- Ordering Information ....................................................... 160

## Options, Accessories & Controls ....................................... 168
- Protective Boots ........................................................... 170
- Trunnion Mounts ........................................................... 173
- Limit Switches ............................................................... 174
- Potentiometers ............................................................... 176
- Hand Wheels and Counters ............................................. 177
- Encoders ..................................................................... 178
- Special Finishes ............................................................. 179
- Anti-backlash Devices .................................................... 180
- Miter Gear Boxes .......................................................... 182
- Motor Mounts and Stock Motors ..................................... 185
- Pillow Blocks and Flange Blocks ..................................... 186
- Couplings .................................................................... 188
- Shafting ....................................................................... 190
- Motor Starter Controls ................................................... 192
- VSPS Controls ............................................................... 193
- Linear Actuator Controls ............................................... 194
- System Arrangements .................................................... 195

## Engineering Information
- MACHINE SCREW JACKS
- MACHINE SCREW ComDRIVEs®
- STAINLESS STEEL SCREW JACKS
- METRIC SCREW JACKS
- BALL SCREW JACKS
- BALL SCREW ComDRIVEs®
- ELECTRIC CYLINDERS
- INTEGRATED ACTUATORS
- LINEAR ACTUATORS
- BEVEL GEAR JACKS
- BEVEL BALL ACTUATORS
- OPTIONS, ACCESSORIES AND CONTROLS
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 1000 and larger).

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

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

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

Sleeve (housing)
Material varies based on size of jack. See note below.

Wormgear
Made from aluminum bronze material.

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.

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
This graphic shows a Joyce Bevel Gear® jack (BG). Bevel ball actuators (BB) also use a bevel gear set. See pages 148 - 167 for more information.
<table>
<thead>
<tr>
<th>Product</th>
<th>Prefix</th>
<th>Capacity Range (tons)</th>
<th>Typical Lifting Speeds (IPM)</th>
<th>Input Shaft</th>
<th>Predictable Life</th>
<th>Inherently Self-Locking</th>
<th>Corrosion Resistant</th>
<th>Enclosed Screw</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Screw Jack (pp. 18-44)</td>
<td>WJ RWJ DWJ DRWJ</td>
<td>1/8-250</td>
<td>14-55</td>
<td>A</td>
<td>WJ, RWJ</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine Screw ComDRiVE® (pp. 45-57)</td>
<td>CD CCD</td>
<td>2-30</td>
<td>2-35</td>
<td>A</td>
<td>CD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stainless Steel Jack (pp. 58-70)</td>
<td>SWJ RSWJ DSWJ DRSWJ</td>
<td>2-25</td>
<td>14-55</td>
<td>A</td>
<td>SWJ, RSWJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metric Jack (pp. 71-79)</td>
<td>MWJ</td>
<td>1-10 (100-100 Kn)</td>
<td>14-55 (6-23 mm/sec)</td>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball Screw Jack (pp. 80-101)</td>
<td>WBL HWBL WB HWB</td>
<td>1-50</td>
<td>14-300</td>
<td>Screw Only</td>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball Screw ComDRiVE® (pp. 102-117)</td>
<td>CDB COBL</td>
<td>2-30</td>
<td>2-55</td>
<td>Screw Only</td>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Cylinder - Standard (pp. 118-134)</td>
<td>ECA ECB</td>
<td>2 1/2-20</td>
<td>15-540</td>
<td></td>
<td>ECA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Cylinder - Motor Mount (pp. 118-134)</td>
<td>ECA ECB</td>
<td>2 1/2-20</td>
<td>18-540</td>
<td>Screw Only</td>
<td></td>
<td>ECA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Cylinder - ComDRiVE® (pp. 118-134)</td>
<td>ECA ECB</td>
<td>2 1/2-20</td>
<td>15-104</td>
<td>Screw Only</td>
<td></td>
<td>ECA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Actuator (pp. 135-142)</td>
<td>IA DIA BIA HBIA</td>
<td>1</td>
<td>15-350</td>
<td></td>
<td></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear Actuator (pp. 143-147)</td>
<td>LA</td>
<td>3/4</td>
<td>15-70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bevel Gear Jack (pp. 148-158)</td>
<td>BG</td>
<td>5-60</td>
<td>50-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bevel Ball Actuator (pp. 159-167)</td>
<td>BB</td>
<td>5-60</td>
<td>15-600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A: Jacks with single lead screws (except WJ500) are self-locking. Double lead screw jacks may lower under load.
B: ECA jacks that are ≤ 30% efficient are self-locking.
C: Joyce/Dayton offers a variety of finishes and modifications that resist corrosion. (p. 179)
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 (pp. 170-172)
- Protection from dirt and dust
- Guard against moisture
- Guard against corrosive contaminants
- Neoprene coated nylon (std)
- Special materials available

Motor Mounts (p. 185)
- Available on 2-ton to 20-ton wormgear jacks and electric cylinders
- Included on integrated actuators
- NEMA motor mounts
- Special mounts available

Anti-backlash Devices (pp. 180-181)
- Available for machine screw jacks
- Available for metric (trapezoidal) jacks
- Limits lifting screw movement

Oversized Ball Bearings
- Available for ball screw jacks
- Limits screw backlash to 0.003" +

Lubrication
- Standard operating (40°F to 220°F)
- Low temperature option
- High temperature option
- Food grade option

Motor Mounts (p. 185)
- Available on 2-ton to 20-ton wormgear jacks and electric cylinders
- Included on integrated actuators
- NEMA motor mounts
- Special mounts available

Hand Wheels (p. 177)
- 4" – 12" dia. (standard)
- Aluminum (standard)
- Stainless steel available

Ball Screw Options
- Right hand thread standard
- Left hand thread available on many models
- Special pitch/lead available
- Special finishes available
- Special machining options

Wormgear Sets
- Right hand gear set standard
- Left hand available on many models
- 25:1 ratio option available on several models

Limit Switches (pp. 174-175)
- Rotary cam (2-7 switches)
- SPDT standard
- DPDT available
- Explosion proof available

Encoders (p. 178)
- Standard 200 PPR, quadrature mount on input shaft
- Ring Style 60 PPR, quadrature mounts to C-faced motor flange

ComDRIVE® Options (pp. 47 & 105)
- Special reducer ratios available
- Special mounting positions available
- Special motor adapters available
- Mount limit switch to gear reducers

Mechanical Counters (p. 177)
- 0.001" increments (CNT0)

Screw Stops
- Standard on ComDRIVEs
- Bolt- on

Finishes (p. 179)
- Enamel finish (standard)
- Epoxy finish
- Epoxy finish – STEEL IT epoxy
- Outdoor paint process
- Custom finishes available
- Anodized (250-lb to 1-ton)
- Nickel, Xylan®, Armoloy®

Thrust Rings
- Used in applications where static loads exceed jack capacity

Follower Nuts (p. 17)
- For KFTN jack
- For translating jack

Custom products are available • Contact Joyce/Dayton with your requirements
800-523-5204 sales@joycedayton.com joycedayton.com
SELECTiON guiDE WORkSHEET  JACKS AND ACTuATORS

Name __________________________________________ Title __________________________________________
Company __________________________________________
Address __________________________________________
Phone __________________________ Fax __________________________ Email __________________________

Jacks To Be Specified – Refer to page 6 for a Quick Reference Guide or contact Joyce/Dayton.

☐ Machine Screw Jacks   ☐ Machine Screw ComDRiVeS®   ☐ Electric Cylinders
☐ Ball Screw Jacks      ☐ Ball Screw ComDRiVeS®   ☐ Linear Actuators
☐ Stainless Steel Jacks ☐ Metric Screw Jacks       ☐ Integrated Actuators
☐ Bevel Gear Jacks      ☐ Bevel Ball Actuators

System Considerations

Number of jacks ___________________ Total system load ___________________ Load per jack ___________________
Jacks are mounted in ☐ Tension ☐ Compression ☐ Both Tension & Compression
Jack mounting ☐ Upright ☐ Inverted
Screw orientation ☐ Vertical ☐ Horizontal
Rise/Stroke ___________________ ☐ Inches or ☐ Millimeters
Travel Speed ___________________ ☐ in/min or ☐ mm/sec
Is static side load present? ☐ No ☐ Yes, specify amount _________
How will jacks be operated? ☐ Electrically – Voltage _______ Cycles _______ Phase _______ ☐ Manually ☐ Other

Environmental and Other Considerations

Temperature Range _____________ ☐ °F ☐ °C
Environment ☐ Dust ☐ Dirt ☐ Oil ☐ Sand ☐ Water ☐ Wash Down ☐ Outdoor
Describe any vibration or shock loading: __________________________
Duty Cycle ☐ Cycles per minute _______ ☐ Cycles per hour _______ ☐ Cycles per day _______
Describe one complete cycle: __________________________
How frequently will the system cycle? __________________________
What is the dwell time between cycles? __________________________
How will the system lift the load? ☐ Full stroke ☐ Partial stroke ☐ Incrementally
How will the system lower the load? ☐ Full stroke ☐ Partial stroke ☐ Incrementally

Options, Accessories and Controls – Refer to page 7 for an options overview or contact Joyce/Dayton.

☐ Protective Boots ☐ Anti-backlash Device ☐ Motor Mount ☐ Trunnion
☐ Limit Switches ☐ Encoder ☐ Ring Encoder ☐ Geared Potentiometer
☐ Hand Wheel ☐ Mechanical Counter ☐ Shafting ☐ Couplings
☐ Miter Gear Box ☐ Gear Reducer ☐ Pillow Block Support ☐ Flange Block Support
☐ Motor Starter ☐ Synchronizing Controls ☐ Programmable Controls ☐ Custom Controls

Other Considerations

Please list in detail any other specific features desired:

Complete this worksheet and fax or email to Joyce/Dayton. Please include a sketch or JAX layout of your proposed installation. JAX software is available as a free download from www.joycedayton.com.
**SELECTION GUIDE WORKSHEET CONTROLS**

Name ________________________________________ Title ______________________________
Company _____________________________________
Address ______________________________________
Phone __________________ Fax __________________ Email _____________________________

**System Information**
Number of Jacks ________ Number of Motors ________
Are Jacks: ☐ Mechanically Synchronized ☐ Electrically Synchronized ☐ Independently Operated

<table>
<thead>
<tr>
<th>System Environment</th>
<th>Enclosure Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Indoor/General Purpose</td>
<td>☐ NEMA 1</td>
</tr>
<tr>
<td>☐ Outdoor</td>
<td>☐ NEMA 4</td>
</tr>
<tr>
<td>☐ Wash Down</td>
<td>☐ NEMA 4X</td>
</tr>
<tr>
<td>☐ Hazardous/Outdoor</td>
<td>☐ NEMA 12</td>
</tr>
<tr>
<td>☐ Coastal/Salt Spray</td>
<td>☐ Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What aspect of operation needs to be controlled?</th>
<th>Motor Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Position</td>
<td>Horsepower ________</td>
</tr>
<tr>
<td>☐ Travel Speed</td>
<td>Frequency ________</td>
</tr>
<tr>
<td>☐ Both Position and Travel Speed</td>
<td>Voltage ________</td>
</tr>
<tr>
<td>☐ Other (Leveling)</td>
<td>Brake required ☐ YES ☐ NO</td>
</tr>
<tr>
<td></td>
<td>Phase ________</td>
</tr>
<tr>
<td></td>
<td>Brake Voltage ________</td>
</tr>
<tr>
<td></td>
<td>Brake Wiring ☐ Internal</td>
</tr>
<tr>
<td></td>
<td>☐ External (for variable frequency drives)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor Operation</th>
<th>Motor Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Variable Speed</td>
<td>☐ Totally Enclosed TEFC</td>
</tr>
<tr>
<td>☐ Constant Speed</td>
<td>☐ Wash Down</td>
</tr>
<tr>
<td>☐ Multiple Speed (preset)</td>
<td>☐ Explosion Proof</td>
</tr>
<tr>
<td>☐ Inch/Jog (stepper)</td>
<td></td>
</tr>
<tr>
<td>☐ Synchronous</td>
<td></td>
</tr>
</tbody>
</table>

**Primary Control Requirement**

| ☐ Momentary Operation | ☐ Maintained Operation |
| ☐ Constant Torque | ☐ Synchronized Travel |
| ☐ Programmable Positions | Tolerance _____+/- inch mm |
| ☐ One to Four | ☐ Variable Speed |
| ☐ More than Four | Range of frequency ______ |
| ☐ Accuracy for Positioning | ☐ Soft Start Operation |
| _____+/- inch mm | Rate (in/min²) |
| | Number of starts/hour |

<table>
<thead>
<tr>
<th>Control Options</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Alarms</td>
<td>Please list in detail any other specific features desired:</td>
</tr>
<tr>
<td>☐ Indicators</td>
<td></td>
</tr>
<tr>
<td>☐ Pendant Control</td>
<td></td>
</tr>
<tr>
<td>☐ Wireless Control</td>
<td></td>
</tr>
<tr>
<td>☐ HMI/Touch Screen</td>
<td></td>
</tr>
</tbody>
</table>

Complete this worksheet and fax or email to Joyce/Dayton.  
Joyce/Dayton Corp. • P.O. Box 1630 • Dayton, Ohio 45401  
800-523-5204 • 937-294-6261 • (Fax) 937-297-7173  
sales@joycedayton.com
1. **Maximum Input RPM** – Limited to 1750 RPM for jacks and actuators. Maximum input RPM may be slower than 1750 RPM depending on the dynamic load and other factors specific to the application. Refer to the JAX® selection software and information located in the product section for more detail or contact Joyce/Dayton and talk with an application engineer.

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/Dayton 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. Contact Joyce/Dayton and talk with an application engineer about your requirements.

4. **Self-Locking Jacks** – Screw jacks that require power to raise or lower. Exceptions include WJ500, 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/Dayton 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 position.

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 selection software for more detail or contact Joyce/Dayton and 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 or use the JAX selection software. Contact Joyce/Dayton 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 is required, specify ball screw jacks, ball screw ComDRIVEs®, ball screw electric cylinders, ball screw integrated actuators, or bevel ball actuators. Contact Joyce/Dayton for more information.

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). It can be obtained using JAX software available as a free download from our website, or by contacting Joyce/Dayton 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/Dayton for more information.

11. **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. Contact Joyce/Dayton for more information.

12. **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. Please contact Joyce/Dayton for more information.

13. **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 www.joycedayton.com.

14. **Lubrication of Bevel Gear Jacks** – Bevel Gear jacks use both NLGI grade #1 grease and oil. The upper bearing and jack screw 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. Contact Joyce/Dayton for more information.

15. **Horizontal Mounting** – When jacks are mounted horizontally, Joyce/Dayton 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 should not be mounted horizontally. Please contact a Joyce/Dayton application engineer to discuss horizontal applications.

16. **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. Contact a Joyce/Dayton application engineer to discuss applications that require high screw RPM and long screw lengths.
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/Dayton 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/Dayton.

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 worm gear, 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 that 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 and WJ500)
- 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 worm gear 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
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:

\[
\frac{350 \text{ RPM} \times 2000 \text{ lb} \times 0.009 + 4 \text{ in. lbs}}{63,025} = 0.10 \text{ HP}
\]

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® Software or fill out a selection guide (page 8) and contact Joyce/Dayton.

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:
   
   \(0.025 \text{ in. lbs. x 7,000} + 10 \text{ in. lbs} = 185 \text{ in. lbs}\)

C. Determine the input horsepower for one jack:
   
   \(\frac{352 \text{ rpm} \times 185 \text{ in. lbs}}{63,025} = 1.03 \text{ HP per jack}\)

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

   \(2.06 \text{ HP} / .9 = 2.29 \text{ HP} \text{ required into miter box of Section 1.} \text{ Since Sections 1 and 2 are identical, Section 2 also requires 2.29 HP.}\)

E. Determine horsepower required for Sections 1 and 2:
   
   \(2.29 \text{ HP} + 2.29 \text{ HP} = 4.58 \text{ HP}\)

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

\(4.58 \text{ HP} / 0.9 = 5.08 \text{ HP} \text{ required to operate this system}\)
**SHAFT MOUNTED OPTIONS**

- **Rotary Cam Limit Switches**  
  See pages 174-175

- **Encoders 200 PPR Standard**  
  See page 178

- **String Encoder and other Linear Displacement devices**  
  Contact Joyce/Dayton

- **Proximity Switches**  
  Contact Joyce/Dayton

- **Mechanical Counters**  
  See page 177

- **Geared Potentiometer 0-10V or 4-20Ma**  
  See page 176

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 pages 186-187

- **Shafts and Couplings**  
  See pages 188-191

- **Miter Gear Boxes**  
  See pages 182-184

- **Speed Reducers**  
  Contact Joyce/Dayton
DRIVE OPTIONS

Hand Wheels
See page 177

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

Direct Drives
- Stock AC Motor Mounts
  See page 185
- Special Adapters
  Contact Joyce/Dayton
- Ring Encoders
  Contact Joyce/Dayton

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 102-117
- Electric Cylinder ComDRIVE®
  See pages 118-134

MOTOR CONTROLS

Variable Speed Positioning System (VSPS)
- 10 Programmable Preset positions
  See page 193

Custom Controls include Synchronized Systems, Positioning Systems, and Leveling Systems
- See the back cover of catalog

Motor Starters
- Momentary Contact Motor Starters
  See page 192

Actuator Controls
- 120 VAC - 120 VAC
- 120 VAC - 12 VDC
- 12 VDC - 12 VDC
  See page 194
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:
     CW rotation of right input shaft extends the lifting screw.
     CCW rotation of the left shaft extends lifting screw.
   - For an Inverted jack:
     CCW rotation of right input shaft extends the lifting screw.
     CW 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 ComDRIVE®s, ball screw jacks and ComDRIVE®s, 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/Dayton 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/Dayton 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.

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.
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 Joyce/Dayton 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, WJ500 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 Joyce/Dayton 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® program or contact Joyce/Dayton for more information.

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. Refer to catalog pages 180-181 or contact Joyce/Dayton for more information.

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/Dayton 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/Dayton 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.


- 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.
- Contact Joyce/Dayton for more information.

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/Dayton with your requirements. See page 179.

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/Dayton 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 (pages 180 and 181) 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 Joyce/Dayton.

Joyce/Dayton can customize machine screw jacks to meet your specifications.
MACHINE SCREW JACKS

Joyce/Dayton 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.

<table>
<thead>
<tr>
<th>Miniature</th>
<th>1-Ton</th>
<th>2-Ton</th>
<th>2-Ton Reverse Base</th>
<th>3-Ton</th>
<th>5-Ton</th>
<th>10-Ton</th>
<th>15-Ton</th>
<th>20-Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>WJ250</td>
<td>WJ51</td>
<td>WJT62</td>
<td>WJ242</td>
<td>WJ63</td>
<td>WJT65</td>
<td>WJ810</td>
<td>WJ815</td>
<td>WJ820</td>
</tr>
<tr>
<td>WJ500*</td>
<td>WJ201</td>
<td>WJ122</td>
<td>WJT122</td>
<td>WJ73</td>
<td>WJ735</td>
<td>WJ2410</td>
<td>WJ2415</td>
<td>WJ2420</td>
</tr>
<tr>
<td>WJ1000</td>
<td></td>
<td>WJ242</td>
<td>WJ342</td>
<td>WJ253</td>
<td></td>
<td>WJ2915</td>
<td></td>
<td>WJ2930</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WJ252</td>
<td>WJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWJ62*</td>
<td>DWJ122</td>
<td>DWJ242</td>
<td>DWJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWJ122*</td>
<td>DWJ242</td>
<td>DWJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWJ122*</td>
<td>DWJ242</td>
<td>DWJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWJ252*</td>
<td>DWJ122</td>
<td>DWJ242</td>
<td>DWJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWJ252*</td>
<td>DWJ122</td>
<td>DWJ242</td>
<td>DWJ252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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**

For optional shaft codes, see page 21.

**Right Side Shaft Code**

For optional shaft codes, see page 21.

**Machine 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 173)*
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. 170-172)
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.

Hand Wheels (p. 177)
- HW04=4" dia
- HW06=6" dia
- HW08=8" dia
- HW10=10" dia Recommended for self-locking jacks only.
- HW12=12" dia

Geared Potentiometers (p. 176)
- POTA=0-10V (IP65)
- POTB=4-20MA (IP65)
- POTC=0-10V w/2 switches*
- POTD=4-20MA w/2 switches*
*Optional IP65 rating available

Motors for Systems and Direct Drives (p. 185)
- 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

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 HP</td>
<td>K</td>
</tr>
<tr>
<td>1/3 HP</td>
<td>A</td>
</tr>
<tr>
<td>1/2 HP</td>
<td>B</td>
</tr>
<tr>
<td>3/4 HP</td>
<td>C</td>
</tr>
<tr>
<td>1 HP</td>
<td>D</td>
</tr>
<tr>
<td>1-1/2 HP</td>
<td>E</td>
</tr>
<tr>
<td>2 HP</td>
<td>F</td>
</tr>
<tr>
<td>3 HP</td>
<td>L</td>
</tr>
<tr>
<td>5 HP</td>
<td>G</td>
</tr>
<tr>
<td>7-1/2 HP</td>
<td>H</td>
</tr>
<tr>
<td>10 HP</td>
<td>I</td>
</tr>
<tr>
<td>15 HP</td>
<td>J</td>
</tr>
</tbody>
</table>

Motors for Systems and Direct Drives

- MMA=56C
- MMB=140TC
- MMC=180TC
- MMD=210TC
Motor code from chart at left

Mechanical Limit Switches (pp. 174-175)

Ordering Example: LA13

<table>
<thead>
<tr>
<th>Models</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LT</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

Number of DPDT Switches (see p. 175)

<table>
<thead>
<tr>
<th>Available Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

| 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/Dayton with your requirements.

Motor Mounts (p. 185)

- CNT0=0.001” Increments
- Note: Contact Joyce/Dayton for availability and options.

Encoders and Electronic Limit Switches
- ENCX=Encoder (p. 178)
- ELS2=2 Position Electronic Switch
- ELS4=4 Position Electronic Switch
- ELS6=6 Position Electronic Switch

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.

Screw Lifts (p. 10)

<table>
<thead>
<tr>
<th>Models</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LT</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

Number of DPDT Switches (see p. 175)

<table>
<thead>
<tr>
<th>Available Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

| 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/Dayton with your requirements.
## MACHINE SCREW JACKS

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Screw Diameter (Inches)</th>
<th>Thread Pitch/Lead</th>
<th>Worm Gear Ratio</th>
<th>Worm Shaft Turns for 1&quot; Travel</th>
<th>Starting Torque (Inch Lbs.)</th>
<th>Operating Torque (Inch Lbs.)</th>
<th>Efficiency Rating % Approx.</th>
<th>Screw Torque (Inch Lbs.)</th>
<th>Basic Jack Weight (Lbs.)</th>
<th>Jack Weight per Inch Travel (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WJ250</td>
<td>250 lbs.</td>
<td>1/2</td>
<td>1/25 pitch STUB ACME</td>
<td>5:1</td>
<td>50</td>
<td>.025W*</td>
<td>.016W* @ 500 RPM</td>
<td>23.0</td>
<td>.050W*</td>
<td>1.2</td>
<td>0.1</td>
</tr>
<tr>
<td>WJ500</td>
<td>500 lbs.</td>
<td>5/8</td>
<td>1/25 pitch STUB ACME</td>
<td>5:1</td>
<td>20</td>
<td>.041W*</td>
<td>.030W* @ 500 RPM</td>
<td>27.2</td>
<td>.076W*</td>
<td>1.3</td>
<td>0.1</td>
</tr>
<tr>
<td>WJ1000</td>
<td>1,000 lbs.</td>
<td>5/8</td>
<td>1/25 pitch STUB ACME</td>
<td>5:1</td>
<td>40</td>
<td>.030W*</td>
<td>.021W* @ 500 RPM</td>
<td>19.9</td>
<td>.059W*</td>
<td>1.3</td>
<td>0.1</td>
</tr>
<tr>
<td>WJ51</td>
<td>1 ton</td>
<td>3/4</td>
<td>1/25 pitch ACME 2C</td>
<td>5:1</td>
<td>25</td>
<td>.038W*</td>
<td>.026W* @ 500 RPM</td>
<td>25.0</td>
<td>.075W*</td>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td>WJ201</td>
<td>2 ton</td>
<td>1</td>
<td>1/25 pitch ACME 2C</td>
<td>5:1</td>
<td>48</td>
<td>.041W*</td>
<td>.025W* @ 500 RPM</td>
<td>24.2</td>
<td>.088W*</td>
<td>15</td>
<td>0.3</td>
</tr>
<tr>
<td>(R)WJ62</td>
<td>3 ton</td>
<td>1</td>
<td>1/25 pitch ACME 2C</td>
<td>5:1</td>
<td>24</td>
<td>.040W*</td>
<td>.020W* @ 500 RPM</td>
<td>24.3</td>
<td>.086W*</td>
<td>17</td>
<td>0.4</td>
</tr>
<tr>
<td>WJ63</td>
<td>5 ton</td>
<td>1/2</td>
<td>1/25 pitch ACME 2C</td>
<td>5:1</td>
<td>48</td>
<td>.040W*</td>
<td>.020W* @ 500 RPM</td>
<td>24.3</td>
<td>.086W*</td>
<td>17</td>
<td>0.4</td>
</tr>
<tr>
<td>WJ123</td>
<td>10 ton</td>
<td>2</td>
<td>1/25 pitch ACME 2C</td>
<td>5:1</td>
<td>24</td>
<td>.045W*</td>
<td>.029W* @ 500 RPM</td>
<td>23.9</td>
<td>.161W*</td>
<td>43</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**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 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.

Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to our JAX® program 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.
## MACHINE SCREW JACKS SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Screw Diameter (Inches)</th>
<th>Thread Pitch/Lead</th>
<th>Worm Gear Ratio</th>
<th>Worm Shaft Turns for 1&quot; Travel</th>
<th>Tare Torque (Inch Lbs.)</th>
<th>Operating Torque (Inch Lbs.)</th>
<th>Efficiency Rating %</th>
<th>Screw Torque (Inch Lbs.)</th>
<th>Basic Jack Weight (Lbs.)</th>
<th>Jack Weight per Inch Travel (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WJ815</td>
<td>15 ton</td>
<td>2 1/4</td>
<td>.500 pitch</td>
<td>8:1</td>
<td>16</td>
<td>.069W² @ 200 RPM</td>
<td>.079W² @ 200 RPM</td>
<td>21.1</td>
<td>.210W²</td>
<td>50</td>
<td>1.4</td>
</tr>
<tr>
<td>WJ2415</td>
<td>20 ton</td>
<td>2 1/2</td>
<td>.500 pitch</td>
<td>8:1</td>
<td>16</td>
<td>.075W² @ 200 RPM</td>
<td>.085W² @ 200 RPM</td>
<td>19.6</td>
<td>.227W²</td>
<td>77</td>
<td>1.9</td>
</tr>
<tr>
<td>WJ2515</td>
<td>25 ton</td>
<td>3 3/8</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>9.5</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>164</td>
<td>3.1</td>
</tr>
<tr>
<td>DWJ815</td>
<td>20 ton</td>
<td>2 1/2</td>
<td>.375 pitch</td>
<td>8:1</td>
<td>1.067</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>25.1</td>
<td>.384W²</td>
<td>240</td>
<td>3.4</td>
</tr>
<tr>
<td>DWJ2420</td>
<td>30 ton</td>
<td>3 1/2</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>9.5</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>164</td>
<td>3.0</td>
</tr>
<tr>
<td>DWJ2525</td>
<td>35 ton</td>
<td>3 3/4</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>9.5</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>164</td>
<td>3.0</td>
</tr>
<tr>
<td>DWJ3325</td>
<td>50 ton</td>
<td>4 1/2</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>9.5</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>387</td>
<td>6.1</td>
</tr>
<tr>
<td>WJ1175</td>
<td>75 ton</td>
<td>5</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>16</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>610</td>
<td>6.5</td>
</tr>
<tr>
<td>WJ3275</td>
<td>100 ton</td>
<td>6</td>
<td>.750 pitch</td>
<td>12:1</td>
<td>16</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>1010</td>
<td>10.0</td>
</tr>
<tr>
<td>WJ36100</td>
<td>150 ton</td>
<td>7</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>12</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>1350</td>
<td>12.2</td>
</tr>
<tr>
<td>WJ50250</td>
<td>250 ton</td>
<td>9</td>
<td>1.00 pitch</td>
<td>12:1</td>
<td>12</td>
<td>.088W² @ 200 RPM</td>
<td>.098W² @ 200 RPM</td>
<td>18.3</td>
<td>.313W²</td>
<td>3415</td>
<td>21.0</td>
</tr>
</tbody>
</table>

### 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 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.

Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to our JAX® program 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.
Machine Screw Jack Column Loading Chart


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 - 1/2" SCREW

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

WJ 500

**500 POUND - 5/8" SCREW**

- **Upright**
  - 1/16 x 45° CHAMFER
  - Ø1/2
  - Ø2 1/4
  - 1/2-20 UNF-2A CHAMFER
  - 1/8 x 45° CHAMFER

- **Type 1 Plain End**
  - RISE + 7/16
  - Ø27/32

- **Type 2 Load Pad**
  - TYPE 2 LOAD PAD

- **Type 3 Threaded End**
  - TYPE 3 THREADED END

- **Type 4 Male Clevis End**
  - TYPE 4 MALE CLEVIS END

**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

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.

2D and 3D models available on website • Ordering information on pages 20 and 21

800-523-5204
sales@joycedayton.com
joycedayton.com
MACHINE SCREW JACKS

1 TON - 3/4" SCREW

WJ 51 / WJ 201

**Upright**

<table>
<thead>
<tr>
<th>Type</th>
<th>Diagram</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain End</td>
<td><img src="image1" alt="Diagram" /></td>
<td>RISE - 1/8</td>
</tr>
<tr>
<td>Load Pad</td>
<td><img src="image2" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>Threaded End</td>
<td><img src="image3" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>Male Clevis End</td>
<td><img src="image4" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>

**Typical Plan View**

![Diagram](image5)

**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 TDN - 1" SCREW

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

Upright

1/4 (3) BOLTS
Ø1 7/8 B.C., Ø688 .687

1 1/16
7/16
5 5/16
5 7/16
5 7/16
5 1/2
4 1/8
1 1/2

RISE - 1/4

Ø1 21/32

TYPE 1
PLAIN END

TYPE 2
LOAD PAD

TYPE 3
THREADED END

TYPE 4
MALE CLEVIS END

Inverted

1 1/16
1 3/8
1 9/16
1 3/8
1 11/16

RISE - 1/4

Ø1 3/4

Double Clevis

1/4 X 45° CHAMFER

Ø3/8

13/32 (4) HOLES
Ø3/4 SPOTFACE

1/8 X 1/16 X 1 3/16 LG.
KEYWAY BOTH ENDS

Left Side

Right Side

Typical Plan View

Inverted traveling nut

1 1/2
1
3 1/4

RISE + 7 5/8

623

3/8 B.C.

1 1/16
1/2

Left Side

Right Side

Upright traveling nut

13/32 (4) HOLES
Ø2 3/8 B.C.

1 1/16
1/2

RISE + 7 5/8

END CONDITIONS
SHOWN AT MINIMUM
CLOSED DIMENSIONS

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

2D and 3D models available on website • Ordering information on pages 20 and 21

800-523-5204 sales@joycedayton.com joycedayton.com
MACHINE SCREW JACKS

2 TON REVERSE BASE - 1" SCREW

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

Typical Plan View*

Right Side

Left Side

Upright

Inverted

Upright traveling nut

Inverted traveling nut

Double Clevis

Inverted keyed

Typical Plan View*

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

Ideal for DD motor mounts or for large diameter couplings.

*Rise conditions (shown at minimum closed dimensions)

*Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Inverted keyed jack

Upright keyed jack

Double Clevis

Inverted traveling nut

Upright traveling nut

Inverted

Upright

Typical Plan View

Right Side

Left Side

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

Typical Plan View

END CONDITIONS (SHOWN AT MINIMUM CLOSED DIMENSIONS)

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

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

Typical Plan View

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

Upright

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

Typical Plan View

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

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

Upright keyed

Upright traveling nut

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

Inverted

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

Inverted keyed

Typical Plan View

Double Clevis

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

Upright traveling nut

Inverted

Inverted keyed

Typical Plan View

Double Clevis

Right Side

Left Side

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**

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

---

2D and 3D models available on website • Ordering information on pages 20 and 21

800-523-5204  
sales@joycedayton.com  
joycedayton.com
MACHINE SCREW JACKS

25 TON - 3 3/8" SCREW

WJ 1125 / DWJ 1125
WJ 3225 / DWJ 3225

Typical Plan View

Upright

Typical Plan View

Inverted

Typical Plan View

Upright keyed

Typical Plan View

Inverted keyed

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

END CONDITIONS (SHOWN AT MINIMUM CLOSED DIMENSIONS)

WJ 1130 / DWJ 1130
WJ 3230 / DWJ 3230

Typical Plan View

Right Side

Left Side

Double Clevis

Inverted keyed
MAchine Screw jacks

35 ton - 3 3/4" screw

WJ 1135
WJ 3235

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

Typical Plan View

FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE/DAYTON

Inverted keyed

Inverted traveling nut

Inverted

Upright traveling nut

Upright

Upright keyed

Inverted traveling nut

WJ 1135
WJ 3235

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.

Typical Plan View

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE/DAYTON

2D and 3D models available on website • Ordering information on pages 20 and 21

800-523-5204

sales@joycedayton.com

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

Typical Plan View

Inverted keyed

Inverted traveling nut

Inverted

Upright keyed

Upright traveling nut

Typical Plan View

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

Upright

Typical Plan View

Inverted

Upright keyed

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 JACKS

250 TON - 9" SCREW

WJ 50250

Typical Plan View

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.
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/Dayton can customize ComDRIVEs to meet your specifications. Ask about larger size ComDRIVEs.
Instructions: Select a model number from this chart.

<table>
<thead>
<tr>
<th>2-Ton</th>
<th>3-Ton</th>
<th>5-Ton</th>
<th>10-Ton</th>
<th>15-Ton</th>
<th>20-Ton</th>
<th>25-Ton</th>
<th>30-Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD62</td>
<td>CD122</td>
<td>CD242</td>
<td>CD63</td>
<td>CD123</td>
<td>CD243</td>
<td>CD65</td>
<td>CD125</td>
</tr>
<tr>
<td>CD245</td>
<td>DCD62*</td>
<td>DCD122*</td>
<td>DCD242*</td>
<td>DCD63*</td>
<td>DCD123*</td>
<td>DCD243*</td>
<td>DCD65*</td>
</tr>
<tr>
<td>DCD245*</td>
<td>DCD810*</td>
<td>DCD2410*</td>
<td>DCD815*</td>
<td>DCD2415*</td>
<td>DCD820*</td>
<td>DCD2420*</td>
<td>DCD1125*</td>
</tr>
<tr>
<td>DCD3225*</td>
<td>DCD1130*</td>
<td>DCD3230*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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/Dayton.)

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

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 Design Options

- **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 173)

JoyceDayton.com • Contact Joyce/Dayton with your requirements

joycedayton.com

sales@joycedayton.com

800-523-5204
**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. 170-172)**
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. 177)**
CNT0=0.001” Increments
Note: Contact Joyce/Dayton for availability and options.

**Geared Potentiometers (p. 176)**

<table>
<thead>
<tr>
<th>Code</th>
<th>1</th>
<th>2*</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6*</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Available Positions**

- **Model:** Custom products are available. Contact Joyce/Dayton with your requirements.
- **Code:** sales@joycedayton.com joycedayton.com

800-523-5204

The horizontal portion of each line represents the jack's maximum dynamic capacity. Under static conditions, these lines can be exceeded. Please contact the factory for assistance.

Machine Screw ComDRIVE® Column Loading Chart

Screw Length (inches)

Screw Length (inches)

Machine Screw ComDRIVE® Column Loading Chart

Screw Length (inches)
### MACHINE SCREW ComDRiVEs® SPECIFICATIONS

#### 2 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD62</th>
<th>CD122</th>
<th>CD242</th>
<th>CD62</th>
<th>CD122</th>
<th>CD242</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1/2 HP</td>
<td>1/2 HP</td>
<td>1/2 HP</td>
<td>1/2 HP</td>
<td>1/2 HP</td>
<td>1/2 HP</td>
</tr>
</tbody>
</table>

#### 3 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD63</th>
<th>CD123</th>
<th>CD243</th>
<th>CD63</th>
<th>CD123</th>
<th>CD243</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
</tr>
</tbody>
</table>

#### 5 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD65</th>
<th>CD125</th>
<th>CD245</th>
<th>CD65</th>
<th>CD125</th>
<th>CD245</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
</tr>
</tbody>
</table>

#### 10 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD810</th>
<th>CD2410</th>
<th>CD810</th>
<th>CD2410</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
</tr>
</tbody>
</table>

#### 15 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD815</th>
<th>CD2415</th>
<th>CD815</th>
<th>CD2415</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
</tr>
</tbody>
</table>

#### 20 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD820</th>
<th>CD2420</th>
<th>CD820</th>
<th>CD2420</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
<td>1 HP</td>
</tr>
</tbody>
</table>

#### 25 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD1125</th>
<th>CD3225</th>
<th>CD1125</th>
<th>CD3225</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>3 HP</td>
<td>3 HP</td>
<td>3 HP</td>
<td>3 HP</td>
</tr>
</tbody>
</table>

#### 30 Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CD1130</th>
<th>CD3230</th>
<th>CD1130</th>
<th>CD3230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed IPM</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lifting Capacity, Lbs.</td>
<td>3 HP</td>
<td>3 HP</td>
<td>3 HP</td>
<td>3 HP</td>
</tr>
</tbody>
</table>

**Important Note:** DCD models may lower under load. Brake motors or external locking systems are recommended.
2 TON - 1" SCREW

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

Upright

Upright traveling nut

Inverted traveling nut

Inverted

Typical Plan View

Left Side

Right Side

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

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

Typical Plan View

Left Side

Right Side

NOTE: FOR LIFTING CAPACITIES SEE PAGE 49
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

Inverted

Typical Plan View

Left Side

Right Side

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

Upright traveling nut

Inverted traveling nut

Inverted

REDUCER DIMENSIONS

<table>
<thead>
<tr>
<th>HP</th>
<th>1</th>
<th>1 1/2</th>
<th>2</th>
<th>3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8 1/2</td>
<td>8 1/2</td>
<td>8 1/2</td>
<td>8 1/2</td>
<td>8 1/2</td>
</tr>
<tr>
<td>B</td>
<td>11 1/2</td>
<td>11 1/2</td>
<td>11 1/2</td>
<td>11 1/2</td>
<td>11 1/2</td>
</tr>
<tr>
<td>C</td>
<td>1 3/4</td>
<td>1 3/4</td>
<td>1 3/4</td>
<td>1 3/4</td>
<td>1 3/4</td>
</tr>
<tr>
<td>E</td>
<td>8 7/16</td>
<td>8 7/16</td>
<td>8 7/16</td>
<td>8 7/16</td>
<td>8 7/16</td>
</tr>
<tr>
<td>G</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
</tr>
<tr>
<td>H</td>
<td>3 1/16</td>
<td>3 1/16</td>
<td>3 1/16</td>
<td>3 1/16</td>
<td>3 1/16</td>
</tr>
<tr>
<td>J</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td>4 15/32</td>
</tr>
</tbody>
</table>

Typical Plan View

NOTE: FOR LIFTING CAPACITIES SEE PAGE 49

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
**MACHINE SCREW ComDRIVEs**

**2D TON - 2 1/2" SCREW**

**CD 820 / DCD 820**

**CD 2420 / DCD 2420**

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

**Typical Plan View**

**Left Side**

**Right Side**

**Reducer Shown Rotated 180° From Plan View**

**END CONDITIONS SHOWN AT MINIMUM CLOSED DIMENSIONS**

**NOTE FOR LIFTING CAPACITIES SEE PAGE 49**
30 TON - 3 1/2" SCREW

CD 1130 / DCD 1130
CD 3230 / DCD 3230

Upright

CD 1130 / DCD 1130
CD 3230 / DCD 3230

REDUCER DIMENSIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>CD/DCD 1130</th>
<th>CD/DCD 3230</th>
<th>CD/DCD 1130</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATIO 5:1</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10:1</td>
<td>5</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>20:1</td>
<td>10</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

RISE + 1/4" CHAMFER

CD 1130 / DCD 1130
CD 3230 / DCD 3230

Typical Plan View

NOTE: FOR LIFTING CAPACITIES SEE PAGE 41

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.

- 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 (pages 180 and 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/Dayton 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
Joyce/Dayton 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.

<table>
<thead>
<tr>
<th>2-Ton</th>
<th>2-Ton Reverse Base</th>
<th>5-Ton</th>
<th>10-Ton</th>
<th>15-Ton</th>
<th>20-Ton</th>
<th>25-Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWJ62</td>
<td>RSWJ62*</td>
<td>SWJ65</td>
<td>SWJ10</td>
<td>SWJ15</td>
<td>SWJ20</td>
<td>SWJ115</td>
</tr>
<tr>
<td>SWJ122</td>
<td>RSWJ122*</td>
<td>SWJ125</td>
<td>SWJ2410</td>
<td>SWJ2415</td>
<td>SWJ2420</td>
<td>SWJ3325</td>
</tr>
<tr>
<td>SWJ242</td>
<td>RSWJ242*</td>
<td>SWJ245</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ62*</td>
<td>DRSWJ62*</td>
<td>DSWJ65*</td>
<td>DSWJ10*</td>
<td>DSWJ15*</td>
<td>DSWJ20*</td>
<td>DSWJ115*</td>
</tr>
<tr>
<td>DSWJ122*</td>
<td>DRSWJ122*</td>
<td>DSWJ125*</td>
<td>DSWJ2410*</td>
<td>DSWJ2415*</td>
<td>DSWJ2420*</td>
<td>DSWJ3325*</td>
</tr>
<tr>
<td>DSWJ242*</td>
<td>DRSWJ242*</td>
<td>DSWJ245*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ65*</td>
<td></td>
<td>DSWJ65*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ125*</td>
<td></td>
<td>DSWJ125*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ245*</td>
<td></td>
<td>DSWJ245*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ810*</td>
<td></td>
<td>DSWJ810*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ2410*</td>
<td></td>
<td>DSWJ2410*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ815*</td>
<td></td>
<td>DSWJ815*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ2415*</td>
<td></td>
<td>DSWJ2415*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ820*</td>
<td></td>
<td>DSWJ820*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ2420*</td>
<td></td>
<td>DSWJ2420*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ1125*</td>
<td></td>
<td>DSWJ1125*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSWJ3225*</td>
<td></td>
<td>DSWJ3225*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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/Dayton.)

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

**Jack Configuration**

**End Conditions**

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

**Jack Designs**

S = Translating
K = Keyed for Non Rotation
N = Traveling Nut
D = Double Clevis*
A = KFTN Trunnion*  
T = Trunnion*

*Contact Joyce/Dayton with your requirements.
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. 170-172)
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.

Motor Code from chart at left

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

Ordering Example:

Motor Mounts (p. 185)

- MMA
- Motor code from chart at left

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LT</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

Available Positions

<table>
<thead>
<tr>
<th>1</th>
<th>2*</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6*</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Side Shaft Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right Side Shaft Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 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/Dayton with your requirements. Note: Limit switch housings are not stainless steel. Choose Steel It epoxy paint option instead.
Stainless Steel Screw Jack Column Loading Chart


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

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Screw Diameter (inches)</th>
<th>Thread Pitch/Lead</th>
<th>Screw Gear</th>
<th>Worm Shaft Turns for 1” Travel</th>
<th>Tare Torque (Inch Lbs.)</th>
<th>Starting Torque (Inch Lbs.)</th>
<th>Operating Torque (Inch Lbs.)</th>
<th>Efficiency Rating % Approx</th>
<th>Screw Torque (Inch Lbs.)</th>
<th>Basic Jack Weight (Lbs.)</th>
<th>Jack Weight per Inch Travel (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(R)SWJ62</td>
<td>2 ton</td>
<td>1</td>
<td>.250 pitch</td>
<td>6:1</td>
<td>24</td>
<td>.0411”</td>
<td>.029W” @ 500 RPM</td>
<td>.098W”</td>
<td>24.2</td>
<td>.025W”</td>
<td>15</td>
<td>0.3</td>
</tr>
<tr>
<td>(R)SWJ122</td>
<td>5 ton</td>
<td>1 1/2</td>
<td>.375 pitch</td>
<td>8:1</td>
<td>16</td>
<td>.061W”</td>
<td>.043W” @ 300 RPM</td>
<td>.195W”</td>
<td>23.1</td>
<td>.030W”</td>
<td>43</td>
<td>1.3</td>
</tr>
<tr>
<td>(R)SWJ242</td>
<td>10 ton</td>
<td>2</td>
<td>.500 pitch</td>
<td>8:1</td>
<td>12</td>
<td>.072W”</td>
<td>.050W” @ 300 RPM</td>
<td>.228W”</td>
<td>29.4</td>
<td>.035W”</td>
<td>79</td>
<td>1.4</td>
</tr>
<tr>
<td>(R)SWJ62</td>
<td>15 ton</td>
<td>2 1/4</td>
<td>.500 pitch</td>
<td>8:1</td>
<td>16</td>
<td>.065W”</td>
<td>.044W” @ 300 RPM</td>
<td>.218W”</td>
<td>21.1</td>
<td>.035W”</td>
<td>59</td>
<td>1.4</td>
</tr>
<tr>
<td>(R)SWJ122</td>
<td>20 ton</td>
<td>2 1/2</td>
<td>.375 pitch</td>
<td>8:1</td>
<td>16</td>
<td>.075W”</td>
<td>.051W” @ 200 RPM</td>
<td>.227W”</td>
<td>19.9</td>
<td>.030W”</td>
<td>77</td>
<td>1.9</td>
</tr>
<tr>
<td>(R)SWJ242</td>
<td>25 ton</td>
<td>3 3/8</td>
<td>.666 pitch</td>
<td>11:1</td>
<td>16</td>
<td>.088W”</td>
<td>.055W” @ 200 RPM</td>
<td>.313W”</td>
<td>18.3</td>
<td>.032W”</td>
<td>164</td>
<td>3.1</td>
</tr>
</tbody>
</table>

**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 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.

Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to our JAX® program 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.

---

**800-523-5204 sales@joycedayton.com joycedayton.com**

2D and 3D models available on website • Ordering information on pages 60 and 61
STAINLESS STEEL JACKS

2 TON - 1" SCREW

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

Inverted keyed

Upright

Upright traveling nut

Inverted

Typical Plan View

Right Side

Left Side

Double Clevis

Inverted keyed

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

joycedayton.com

2D and 3D models available on website • Ordering information on pages 60 and 61

sales@joycedayton.com

800-523-5204
STAINLESS STEEL JACKS

2 TON REVERSE BASE - 1" SCREW

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

Upright

Upright traveling nut

Inverted

Inverted keyed

Typical Plan View

Right Side

Left Side

Double Clevis

Inverted traveling nut

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

800-523-5204
sales@joycedayton.com
joycedayton.com

2D and 3D models available on website • Ordering information on pages 60 and 61
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.

END CONDITIONS (SHOWN AT MINIMUM CLOSED DIMENSIONS)

Typical Plan View

Right Side

Left Side

Double Clevis

Inverted

Inverted keyed

Upright

Upright keyed

Upright traveling nut

Inverted traveling nut

Typical Plan View

Right Side

Left Side

Double Clevis

Inverted

Inverted keyed

Upright

Upright keyed

Upright traveling nut

Inverted traveling nut

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

800-523-5204 sales@joycedayton.com joycedayton.com

2D and 3D models available on website • Ordering information on pages 60 and 61

67
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

نتاج:
- Drawings are artist's conception — not for certification; dimensions are subject to change without notice.
- Dimensional accuracies in the model shown above may be identical to the actual model.
- Dimensions are subject to change without notice.

Typical Plan View

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.

Joycedayton.com
2D and 3D models available on website • Ordering information on pages 60 and 61
sales@joycedayton.com 800-523-5204
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 (pages 180 and 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/Dayton can customize metric screw jacks to meet your specifications.
**METRIC SCREW JACKS ORDERING INFORMATION**

**Instructions:** Select a model number from this chart.

<table>
<thead>
<tr>
<th>10 kN</th>
<th>25 kN</th>
<th>50 kN</th>
<th>100 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWJ65</td>
<td>MWJ122.5</td>
<td>MWJ125</td>
<td>MWJ810</td>
</tr>
<tr>
<td>MWJ201</td>
<td>MWJ122.5</td>
<td>MWJ245</td>
<td>MWJ2410</td>
</tr>
</tbody>
</table>

Sample Part Number: **MWJ65U2S-300-STDX-STDX-B**

**Jack Configuration**
- **U** = Upright
- **I** = Inverted

**End Conditions**
- **T1** (plain end)
- **T2** (load pad)
- **T3** (threaded end)
- **T4** (male clevis)

**Left Side Shaft Code**
- **XXXX** = Remove
- **STDX** = Standard
- (see below)

**Right Side Shaft Code**
- **XXXX** = Remove
- **STDX** = Standard
- (see below)

**Metric Screw Jack Rise**
- Rise is travel expressed in millimeters and not the actual screw length.

**Jack Designs**
- **S** = Translating
- **K** = Keyed for Non Rotation
- **N** = Traveling Nut
- **D** = Double Clevis*
- **A** = KFTN Trunnion* (see below)
- **T** = Trunnion*

**Additional Options**
- **X** = Standard Jack, no additional options
- **S** = Additional Specification Required (comment as necessary)
- **Anti-Backlash** p. 180
- **A** = Split Nut
- **A90** = A90 Design
- **A95** = A95 Design
- **Protective Boots** pp. 170-172
- **B** = Protective Boot
- **D** = Dual Protective Boot
- **Finishes** p. 179
- **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
- **Grease/Seals**
- **H1** = High Temperature Operation
- **H2** = Food Grade
- **Screw Stops**
- **ST0** = Extending
- **ST1** = Retracting
- **ST2** = Both
- *Specify as many options as needed*

*Contact Joyce/Dayton with your requirements.*
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.

Motor Mounts (p. 185)

• 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 for Systems and Direct Drives (p. 185)

Hand Wheels (p. 177)

<table>
<thead>
<tr>
<th>Hand Wheel Code</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW04</td>
<td>4&quot; (102 mm)</td>
</tr>
<tr>
<td>HW06</td>
<td>6&quot; (152 mm)</td>
</tr>
<tr>
<td>HW08</td>
<td>8&quot; (203 mm)</td>
</tr>
<tr>
<td>HW10</td>
<td>10&quot; (254 mm)</td>
</tr>
<tr>
<td>HW12</td>
<td>12&quot; (305 mm)</td>
</tr>
</tbody>
</table>

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.

Geared Potentiometers (p. 176)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTA</td>
<td>0-10V (IP65)</td>
</tr>
<tr>
<td>POTB</td>
<td>4-20MA (IP65)</td>
</tr>
<tr>
<td>POTC</td>
<td>0-10V w/2 switches*</td>
</tr>
<tr>
<td>POTD</td>
<td>4-20MA w/2 switches*</td>
</tr>
</tbody>
</table>

*Optional IP65 rating available.

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LI</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

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

Mechanical Counters (p. 177)

CNT0=0.025 mm increments

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMA</td>
<td>Motor code from chart at left</td>
</tr>
<tr>
<td>MMB</td>
<td>140TC</td>
</tr>
<tr>
<td>MMC</td>
<td>180TC</td>
</tr>
<tr>
<td>MMD</td>
<td>210TC</td>
</tr>
</tbody>
</table>

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

Screw Stops (p. 10) and Boots (pp. 170-172)

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 Limit Switches (pp. 174-175)

<table>
<thead>
<tr>
<th>Models</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LI</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

Ordering Example: LA13

Mechanical Limit Switches (pp. 174-175)

Ordering Example: LA13

Available Positions

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2*</th>
<th>3</th>
<th>4*</th>
<th>5</th>
<th>6*</th>
<th>7*</th>
<th>8*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Side Shaft Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right Side Shaft Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• 25 kN, 50 kN, and 100 kN metric jacks are available with positions #1, #3, and #5.
*These positions are not standard. Contact Joyce/Dayton with your requirements.
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Screw Diameter (mm)</th>
<th>Thread Pitch/Lead</th>
<th>Worm Gear Ratio</th>
<th>Worm Shaft Turns for 1mm Travel</th>
<th>Tare Torque (Nm)</th>
<th>Starting Torque (Nm)</th>
<th>Operating Torque (Nm)</th>
<th>Efficiency Rating % Approx.</th>
<th>Screw Torque (Nm)</th>
<th>Basic Jack Weight (Kg)</th>
<th>Jack Weight (Kg) per 25mm Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWJ51</td>
<td>10kN</td>
<td>20</td>
<td>5mm</td>
<td>5:1</td>
<td>1</td>
<td>0.33</td>
<td>0.95W*</td>
<td>0.7W* @ 500 RPM</td>
<td>22.7</td>
<td>2W*</td>
<td>2.7</td>
<td>0.14</td>
</tr>
<tr>
<td>MWJ201</td>
<td>20kN</td>
<td>25</td>
<td>6mm</td>
<td>6:1</td>
<td>1</td>
<td>0.67</td>
<td>1.01W*</td>
<td>0.81W* @ 500 RPM</td>
<td>19.6</td>
<td>3W*</td>
<td>6.8</td>
<td>0.18</td>
</tr>
<tr>
<td>MWJ62.5</td>
<td>25kN</td>
<td>30</td>
<td>6mm</td>
<td>6:1</td>
<td>1</td>
<td>0.4W*</td>
<td>0.62W*</td>
<td>0.45W* @ 500 RPM</td>
<td>17.8</td>
<td>3W*</td>
<td>6.8</td>
<td>0.18</td>
</tr>
<tr>
<td>MWJ242.5</td>
<td>30kN</td>
<td>40</td>
<td>9mm</td>
<td>6:1</td>
<td>0.67</td>
<td>1.1W*</td>
<td>1.64W*</td>
<td>1.14W* @ 300 RPM</td>
<td>20.9</td>
<td>4W*</td>
<td>14.5</td>
<td>0.32</td>
</tr>
<tr>
<td>MWJ125</td>
<td>50kN</td>
<td>40</td>
<td>9mm</td>
<td>12:1</td>
<td>0.67</td>
<td>1.03W*</td>
<td>1.06W*</td>
<td>0.64W* @ 300 RPM</td>
<td>18.7</td>
<td>5W*</td>
<td>19.5</td>
<td>0.59</td>
</tr>
<tr>
<td>MWJ245</td>
<td>60kN</td>
<td>40</td>
<td>12mm</td>
<td>24:1</td>
<td>1.33</td>
<td>2.67</td>
<td>.74W*</td>
<td>.39W* @ 300 RPM</td>
<td>15.2</td>
<td>5W*</td>
<td>19.5</td>
<td>0.59</td>
</tr>
<tr>
<td>MWJ65</td>
<td>100kN</td>
<td>55</td>
<td>12mm</td>
<td>8:1</td>
<td>0.67</td>
<td>2.26</td>
<td>1.53W*</td>
<td>1.18W* @ 200 RPM</td>
<td>20.2</td>
<td>5W*</td>
<td>19.5</td>
<td>0.59</td>
</tr>
<tr>
<td>MWJ2410</td>
<td>120kN</td>
<td>55</td>
<td>12mm</td>
<td>24:1</td>
<td>2</td>
<td>1.76W*</td>
<td>.49W*</td>
<td>.49W* @ 200 RPM</td>
<td>16.1</td>
<td>5W*</td>
<td>19.5</td>
<td>0.59</td>
</tr>
</tbody>
</table>

*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.

**Note:** If your actual input RPM is 20% higher or lower than the listed RPM, please refer to our JAX® program 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: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
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.
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.

2D and 3D models available on website • Ordering information on pages 72 and 73

800-523-5204 sales@joycedayton.com joycedayton.com
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/Dayton can customize ball screw jacks to meet your specifications.
Joyce/Dayton 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.

<table>
<thead>
<tr>
<th>1-Ton Standard</th>
<th>2-Ton Standard</th>
<th>2-Ton Reverse Base Standard</th>
<th>5-Ton Standard</th>
<th>10-Ton Standard</th>
<th>10-Ton Heavy Duty</th>
<th>20-Ton Standard</th>
<th>30-Ton Standard</th>
<th>50-Ton Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB51</td>
<td>WB52</td>
<td>RWB62</td>
<td>WBL85</td>
<td>WBL810</td>
<td>WBL810</td>
<td>WBL20</td>
<td>WBL130</td>
<td>WB1150</td>
</tr>
<tr>
<td>WB201</td>
<td>WB202</td>
<td>RWB122</td>
<td>WBL2410</td>
<td>WBL2420</td>
<td>WBL2410</td>
<td>WBL2420</td>
<td>WBL3230</td>
<td>WBL3250</td>
</tr>
</tbody>
</table>

**1-Ton Heavy Duty**

| WB51           | RWB62         | RWB122                      | RWB65         | RWB125         | RWB125           | RWB245         | RWB810         | RWB810         |
| WB201          | RWB242        | RWB122                      | RWB242        | RWB245         | RWB245           | RWB242         | RWB2410        | RWB2410         |

**Important Note:** *Not self-locking, may lower under load. Brake motors or external locking systems are required.
H: indicates High lead (2-ton, 5-ton and 10-ton only).
R: Reverse Base Jack (2-ton and 50-ton only).

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

**Jack Configuration**

- **Left Side**
  - Shaft Code (see below)
  - XXXX=Remove STDX
  - Standard
  - For optional shaft codes, see page 83.

- **Right Side**
  - Shaft Code (see below)
  - XXXX=Remove STDX
  - Standard
  - For optional shaft codes, see page 83.

**Jack Designs**

- S=Translating
- K=Keyed for Non Rotation**
- N=Traveling Nut
- D=Double Clevis
- A=KFTN Trunnion*
- T=Trunnion*

**Ball Screw Jack Rise**

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

**Important Note:**

- Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 173)
- **Keyed for non-rotation** is not a standard option. Contact Joyce/Dayton with your requirements.

**Instructions:**

- Select a model number from this chart.
- Contact Joyce/Dayton with your requirements.
- Custom products are available.
**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. 170-172)**

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. 176)**

- **POTA**: 0-10V (IP65)
- **POTB**: 4-20MA (IP65)
- **POTC**: 4-20MA w/2 switches*
- **POTD**: 0-10V w/2 switches*
  *Optional IP65 rating available.

**Encoders and Electronic Limit Switches**

- **ENCX**: Encoder (p. 178)
- **ELS2**: 2 Position Electronic Switch
- **ELS4**: 4 Position Electronic Switch
- **ELS6**: 6 Position Electronic Switch

**Motors for Systems and Direct Drive (p. 185)**

- 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**

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 HP</td>
<td>K</td>
</tr>
<tr>
<td>1/3 HP</td>
<td>A</td>
</tr>
<tr>
<td>1/2 HP</td>
<td>B</td>
</tr>
<tr>
<td>3/4 HP</td>
<td>C</td>
</tr>
<tr>
<td>1 HP</td>
<td>D</td>
</tr>
<tr>
<td>1-1/2 HP</td>
<td>E</td>
</tr>
<tr>
<td>2 HP</td>
<td>F</td>
</tr>
<tr>
<td>3 HP</td>
<td>L</td>
</tr>
<tr>
<td>5 HP</td>
<td>G</td>
</tr>
<tr>
<td>7-1/2 HP</td>
<td>H</td>
</tr>
<tr>
<td>10 HP</td>
<td>I</td>
</tr>
<tr>
<td>15 HP</td>
<td>J</td>
</tr>
</tbody>
</table>

**Motor Mounts (p. 185)**

- **MMA**: 56C
- **MMB**: 140TC
- **MMC**: 180TC
- **MMD**: 210TC

Standard motor adapters are aluminum.

**Mechanical Limit Switches (pp. 174-175)**

**Ordering Example:** **LA13**

**Available Positions**

<table>
<thead>
<tr>
<th>Left Side Shaft Options</th>
<th>Right Side Shaft Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2*</td>
</tr>
</tbody>
</table>

Number of DPDT Switches (see p. 175)

NOTE: Will always be 0 for LS7 models

*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/Dayton with your requirements.

---

Custom products are available • Contact Joyce/Dayton with your requirements

800-523-5204 sales@joycedayton.com joycedayton.com
Ball Screw Jacks Column Loading Chart


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 Turn for 1" Travel | Tare Torque Inch Lbs. | Starting Torque Inch Lbs. | Operating Torque Inch lbs. | Efficiency Rating % Approx | Screw Torque Inch lbs. | Operating Torque Inch lbs. | Tare Torque Inch lbs. | Operating Torque Inch lbs. | Efficiency Rating % Approx | Screw Torque Inch lbs. | Operating Torque Inch lbs. | Efficiency Rating % Approx | Screw Torque Inch lbs. | Operating Torque Inch lbs. | Efficiency Rating % Approx |
| WBL51 | 1 ton | 3/4 | 0.2 | 25 | 3 | .014W* | .012W* @ 500 RPM | 51.7 | .006W* | 108 | 8 | 0.25 |
| WBL201 | 2 ton | 1 | 0.25 | 24 | 4 | .015W* | .013W* @ 500 RPM | 52.1 | .007W* | 642 | 18 | 0.4 |
| WB51 | 5 ton | 1 1/2 | 1.0 | 12 | 12 | .014W* | .012W* @ 500 RPM | 51.7 | .006W* | 180 | 8 | 0.25 |
| WB201 | 10 ton | 2 | 0.5 | 16 | 20 | .023W* | .019W* @ 200 RPM | 50.7 | .009W* | 127 | 58 | 0.9 |
| (R)WB62 | 20 ton | 2 1/4 | 0.5 | 16 | 40 | .024W* | .020W* @ 200 RPM | 50.7 | .009W* | 121 | 105 | 2.6 |
| (R)WB122 | 30 ton | 3 | 0.66 | 16 | 60 | .027W* | .024W* @ 200 RPM | 48 | .009W* | 343 | 220 | 3.2 |
| (R)WB122 | 50 ton | 4 | 1.0 | 11 | 100 | .036W* | .032W* @ 200 RPM | 48 | .009W* | 614 | 460 | 4.8 |

### 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.
- Note: If your actual input RPM is 20% higher or lower than the listed RPM, please refer to our JAX® program 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).
- 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.
1 TON - 3/4" SCREW STANDARD DUTY

WBL 51 / WBL 201

Upright

Typical Plan View

Inverted traveling nut

Inverted

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

Upright

Inverted traveling nut

Inverted

Typical Plan View

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE/DAYTON

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

WB 62 / WB 122 / WB 242

2D and 3D models available on website • Ordering information on pages 82 and 83

joycedayton.com sales@joycedayton.com 800-523-5204
BALL SCREW JACKS

2 TON REVERSE BASE - 1" SCREW STANDARD

RWB 62 / RWB 122 / RWB 242

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

Typical Plan View

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE/DAYTON

2D and 3D models available on website • Ordering information on pages 82 and 83

800-523-5204 sales@joycedayton.com joycedayton.com
BALL SCREW JACKS

2 TON - 1" SCREW HIGH LEAD

HWB 62 / HWB 122 / HWB 242

Upright

1/4 (3) BOLTS 1 7/8 B.C.
1 1/8
1.755
1.745
1/2
3 1/2
RISE + 7/16

TOP OF JACK

O3 3/4

O3 1/2

O1 1/8

O500

O1/2

1/4 X 45° CHAMFER

O1/2

3/4-16 UNF 2A

3/4

7/16

END CONDITIONS (SHOWN AT MINIMUM CLOSED DIMENSIONS)

Upright traveling nut

O750 .748

O750 .728

1 1/8

8 7/8 + RISE

3 1/2

5/8

4 1/8

O1 3/4

BUSHING

Inverted

9/16 + RISE

6 1/2

O1 3/4

1 1/2 SQ.

VIEW A-A

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE/DAYTON

Typical Plan View

1/8 X 1/16 X 1 3/16 LG

KEYWAY BOTH ENDS

O13/32 (4) HOLES

O3/4 SPOTFACE

O13/32 (4) HOLES

O7/32

O3/4

O3 1/4

O17/64 (4) HOLES

O2 3/4 B.C.

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

Inverted traveling nut

Upright traveling nut

Inverted

Typical Plan View

FOR DOUBLE CLEVIS DESIGN
CONTACT JOYCE/DAYTON

Right Side

Left Side

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 HIGH LEAD**

**HWB 65 / HWB 125 / HWB 245**

---

**Typical Plan View**

- **Right Side**
  - 3/16 X 3/32 X 1-7/16 LG. KEYWAY BOTH ENDS
  - Ø1 1/4 SPOTFACE

- **Left Side**
  - 4 3/16
  - Ø1.750
  - Ø1.748
  - 2.188

---

**Upright**

- Ø3 3/4
- 0.331 / 0.322
- TOP OF JACK
- 1/4 (3) BOLTS ON Ø3 3/4 B.C.
- 8 5/8
- 2.255
- 2.245
- 1/2
- Ø2 3/8
- RISE + 9/16

---

**Inverted traveling nut**

- Ø1.000 / 0.998
- 1 1/8
- RISE + 10 29/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 5 1/2

---

**Upright traveling nut**

- Ø1.000 / 0.998
- 1 1/8
- RISE + 10 29/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 1 1/32
- 5 1/2

---

**Inverted**

- Ø4 1/2
- 1 1/16 + RISE
- 8 5/8
- Ø2 1/2

---

**BASE OF JACK**

- 11/16
- 2 1/16

---

**FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE/DAYTON**

---

**Note:** Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
BALL SCREW JACKS

10 TON - 1 1/2” SCREW STANDARD

WBL 810 / WBL 2410

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
BALL SCREW JACKS

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

HWBL 810 / HWBL 2410

Upright

Inverted traveling nut

Inverted

Typical Plan View

FOR DOUBLE CLEVIS DESIGN CONTACT JOYCE/DAYTON

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**

**Upright**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø5 25/32</td>
<td>1.437, 1.436</td>
</tr>
<tr>
<td>Ø2 7/8</td>
<td>2.596</td>
</tr>
<tr>
<td>Rise + 3/8</td>
<td></td>
</tr>
</tbody>
</table>

**Upright traveling nut**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø3 1/4</td>
<td>1.437, 1.436</td>
</tr>
<tr>
<td>Rise + 14 7/16</td>
<td>2.596</td>
</tr>
</tbody>
</table>

**Inverted**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rise +11/16</td>
<td></td>
</tr>
</tbody>
</table>

**Typical Plan View**

- 1/4 x 1/8 x 1 1/4 LG KEYWAY BOTH ENDS
- Ø13/16 THRU Ø1 3/8 S'FACE TYP (4)

**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

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

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

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
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/Dayton can customize ball screw ComDRIVEs to meet your specifications. Ask about larger size ComDRIVEs.

Joyce/Dayton 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.
BALL SCREW ComDRIVEs
Instructions: Select a model number from this chart.

<table>
<thead>
<tr>
<th>2-Ton Standard</th>
<th>5-Ton Standard</th>
<th>10-Ton Standard</th>
<th>10-Ton Heavy Duty</th>
<th>20-Ton Standard</th>
<th>30-Ton Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB62</td>
<td>CDB85</td>
<td>CDBL810</td>
<td>CDB810</td>
<td>CDB820</td>
<td>CDB1130</td>
</tr>
<tr>
<td>CDB122</td>
<td>CDB125</td>
<td>CDBLB2410</td>
<td>CDB2410</td>
<td>CDB2420</td>
<td></td>
</tr>
<tr>
<td>CDB242</td>
<td>CDB245</td>
<td></td>
<td></td>
<td></td>
<td>CDB3230</td>
</tr>
</tbody>
</table>

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

- XXXX = Remove
- STDX = Standard
- For optional shaft codes, see page 105.

Right Side Shaft Code

- XXXX = Remove
- STDX = Standard
- For optional shaft codes, see page 105.

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*

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).

*Standard trunnion mounts available on 2-ton through 20-ton jacks. (See page 173)

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

Joyce/Dayton

Custom products are available • Contact Joyce/Dayton with your requirements

joycedayton.com sales@joycedayton.com 800-523-5204
**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. 170-172)
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. 176)

- **POTA=** 0-10V (IP65)
- **POTB=** 4-20MA (IP65)
- **POTC=** 0-10V w/2 switches*
- **POTD=** 4-20MA w/2 switches*

*Optional IP65 rating available.

### Encoders and Electronic Limit Switches

- **ENCX=** Encoder (p. 178)
- **ELS2=** 2 Position Electronic Switch
- **ELS4=** 4 Position Electronic Switch
- **ELS6=** 6 Position Electronic Switch

### ComDrive Reducers (pp. 107-117)

**Ordering Example:** P2AC  
Motor code from chart at right

<table>
<thead>
<tr>
<th>Mounting Positions</th>
<th>Code</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Side Shaft Positions</td>
<td></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Right Side Shaft Positions</td>
<td></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

**Ratio:**
- 5:1 Code A
- 7.5:1 Code B
- 10:1 Code C

### Motors

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 HP</td>
<td>K</td>
</tr>
<tr>
<td>1/3 HP</td>
<td>A</td>
</tr>
<tr>
<td>1/2 HP</td>
<td>B</td>
</tr>
<tr>
<td>3/4 HP</td>
<td>C</td>
</tr>
<tr>
<td>1 HP</td>
<td>D</td>
</tr>
<tr>
<td>1-1/2 HP</td>
<td>E</td>
</tr>
<tr>
<td>2 HP</td>
<td>F</td>
</tr>
<tr>
<td>3 HP</td>
<td>L</td>
</tr>
<tr>
<td>5 HP</td>
<td>G</td>
</tr>
<tr>
<td>7-1/2 HP</td>
<td>H</td>
</tr>
</tbody>
</table>

### Encoders and Electronic Limit Switches

**Models**

<table>
<thead>
<tr>
<th>Models</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LI</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

**Available Positions**

<table>
<thead>
<tr>
<th>Number of DPDT Switches (see p. 175)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Left Side Shaft Options</strong></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Right Side Shaft Options</strong></td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

- 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/Dayton with your requirements.

---

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/Dayton for other options.
### Ball Screw ComDRIVES® Column Loading Chart

<table>
<thead>
<tr>
<th>Screw Length (inches)</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
<th>700</th>
<th>800</th>
<th>900</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>guided</td>
<td>2</td>
<td>9</td>
<td>15</td>
<td>24</td>
<td>31</td>
<td>39</td>
<td>48</td>
<td>57</td>
<td>68</td>
<td>77</td>
</tr>
<tr>
<td>trunnion</td>
<td>2</td>
<td>8</td>
<td>14</td>
<td>22</td>
<td>28</td>
<td>36</td>
<td>44</td>
<td>52</td>
<td>62</td>
<td>70</td>
</tr>
<tr>
<td>unguided</td>
<td>4</td>
<td>7</td>
<td>11</td>
<td>14</td>
<td>18</td>
<td>22</td>
<td>26</td>
<td>31</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>


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

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CDB62</th>
<th>CDB122</th>
<th>CDB242</th>
<th>CDHB62</th>
<th>CDHB122</th>
<th>CDHB242</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>7 1/2</td>
</tr>
<tr>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>7 1/2</td>
</tr>
<tr>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>7 1/2</td>
</tr>
<tr>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>5</td>
<td>7 1/2</td>
<td>10</td>
<td>7 1/2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Capacity, Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3 HP</td>
</tr>
<tr>
<td>4000</td>
</tr>
<tr>
<td>4000</td>
</tr>
<tr>
<td>4000</td>
</tr>
<tr>
<td>4000</td>
</tr>
<tr>
<td>4000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Travel Speed IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.88</td>
</tr>
<tr>
<td>9.50</td>
</tr>
<tr>
<td>7.04</td>
</tr>
<tr>
<td>6.94</td>
</tr>
<tr>
<td>4.75</td>
</tr>
<tr>
<td>3.47</td>
</tr>
<tr>
<td>2.38</td>
</tr>
<tr>
<td>1.76</td>
</tr>
<tr>
<td>55.50</td>
</tr>
<tr>
<td>38.00</td>
</tr>
<tr>
<td>28.16</td>
</tr>
<tr>
<td>19.00</td>
</tr>
<tr>
<td>13.88</td>
</tr>
<tr>
<td>9.50</td>
</tr>
<tr>
<td>7.04</td>
</tr>
</tbody>
</table>

### 5-Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CDB65</th>
<th>CDB125</th>
<th>CDB245</th>
<th>CDHB65</th>
<th>CDHB125</th>
<th>CDHB245</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Capacity, Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 HP</td>
</tr>
<tr>
<td>6,770</td>
</tr>
<tr>
<td>10,000</td>
</tr>
<tr>
<td>10,000</td>
</tr>
<tr>
<td>10,000</td>
</tr>
<tr>
<td>10,000</td>
</tr>
</tbody>
</table>

| 1 1/2 HP              |
| 10,000                |

<table>
<thead>
<tr>
<th>Travel Speed IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.29</td>
</tr>
<tr>
<td>13.34</td>
</tr>
<tr>
<td>6.67</td>
</tr>
<tr>
<td>3.34</td>
</tr>
<tr>
<td>55.50</td>
</tr>
<tr>
<td>28.16</td>
</tr>
<tr>
<td>14.08</td>
</tr>
<tr>
<td>7.04</td>
</tr>
</tbody>
</table>

### 10-Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CDBL810</th>
<th>CDBL2410</th>
<th>CDHBL810</th>
<th>CDHBL2410</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Capacity, Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 HP</td>
</tr>
<tr>
<td>8,555</td>
</tr>
<tr>
<td>16,425</td>
</tr>
<tr>
<td>20,000</td>
</tr>
<tr>
<td>20,000</td>
</tr>
<tr>
<td>20,000</td>
</tr>
</tbody>
</table>

| 1 1/2 HP              |
| 13,390                |
| 20,000                |

| 2 HP                  |
| 18,210                |
| 8,625                 |
| 20,000                |

| 3 HP                  |
| 20,000                |

| 3 HP                  |
| 20,000                |

<table>
<thead>
<tr>
<th>Travel Speed IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.72</td>
</tr>
<tr>
<td>10.00</td>
</tr>
<tr>
<td>6.57</td>
</tr>
<tr>
<td>3.34</td>
</tr>
<tr>
<td>41.63</td>
</tr>
<tr>
<td>21.13</td>
</tr>
<tr>
<td>13.88</td>
</tr>
<tr>
<td>7.04</td>
</tr>
</tbody>
</table>

### 20-Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CDB820</th>
<th>CDB2420</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Capacity, Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 HP</td>
</tr>
<tr>
<td>6,965</td>
</tr>
<tr>
<td>14,285</td>
</tr>
<tr>
<td>16,720</td>
</tr>
</tbody>
</table>

| 1 1/2 HP              |
| 11,480                |
| 27,550                |

| 2 HP                  |
| 15,980                |
| 38,360                |

| 3 HP                  |
| 25,330                |
| 40,000                |

| 3 HP                  |
| 40,000                |

<table>
<thead>
<tr>
<th>Travel Speed IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.81</td>
</tr>
<tr>
<td>10.56</td>
</tr>
<tr>
<td>6.94</td>
</tr>
<tr>
<td>3.52</td>
</tr>
</tbody>
</table>

### 30-Ton Model Number

<table>
<thead>
<tr>
<th>Reducer Ratio</th>
<th>CDB1130</th>
<th>CDB3230</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting Capacity, Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 HP</td>
</tr>
<tr>
<td>24,295</td>
</tr>
<tr>
<td>46,000</td>
</tr>
</tbody>
</table>

| 5 HP                  |
| 42,165                |
| 60,000                |

| 7 1/2 HP              |
| 60,000                |

<table>
<thead>
<tr>
<th>Travel Speed IPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.80</td>
</tr>
<tr>
<td>10.46</td>
</tr>
<tr>
<td>6.87</td>
</tr>
<tr>
<td>3.49</td>
</tr>
</tbody>
</table>

---

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 82**
**CDB 122**
**CDB 242**

Upright

![Diagram of Upright](image1)

Upright traveling nut

![Diagram of Upright Traveling Nut](image2)

Inverted traveling nut

![Diagram of Inverted Traveling Nut](image3)

Inverted

![Diagram of Inverted Nut](image4)

Double clevis

![Diagram of Double Clevis](image5)

Typical Plan View

![Plan View Diagram](image6)

Left Side

![Left Side Diagram](image7)

Right Side

![Right Side Diagram](image8)

**NOTE:** FOR LIFTING CAPACITIES SEE PAGE 107.

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

---

108

joycedayton.com  sales@joycedayton.com  800-523-5204

2D and 3D models available on website • Ordering information on pages 104 and 105
BALL SCREW ComDRIVEs®

2 TDN REVERSE BASE - 1" SCREW HIGH LEAD

CDHB 62
CDHB 122
CDHB 242

2D and 3D models available on website • Ordering information on pages 104 and 105

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

Typical Plan View

Left Side

Right Side

Reducer Shown
Rotated 180°
From Plan View

2D and 3D models available on website • Ordering information on pages 104 and 105

800-523-5204 sales@joycedayton.com joycedayton.com
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.

Note: For lifting capacities see page 107.
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.

Note: For lifting capacities see page 107.
10 TON - 2' SCREW HEAVY DUTY

CB 810
CB 2410

Upright

Double clevis

Left Side

Right Side

Typical Plan View

Left Side

Right Side

Reducer Shown Rotated 180° From Plan View

Type 1 Plan End

Type 2 Load Pad

Type 3 Threaded End

Type 4 Male Clevis End

Typical Plan View

Drawing are artist’s conception — not for certification; dimensions are subject to change without notice.

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

Note: For lifting capacities see page 107.
BALL SCREW ComDRIVEs®

10 TON - 2° SCREW HEAVY DUTY HIGH LEAD

CDHB 810
CDHB 2410

Upright

Double clevis

Inverted traveling nut

Inverted

Typical Plan View

Left Side

Right Side

NOTE: FOR LIFTING CAPACITIES SEE PAGE 107.

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

Type 1: Plain End
Type 2: Load Pad
Type 3: Threaded End
Type 4: Male Clevis End

Reducer Shown
Rotated 180°
From Plan View

Typical Plan View

Left Side
Right Side

REDUCER DIMENSIONS

<table>
<thead>
<tr>
<th>HP</th>
<th>1</th>
<th>1 1/2</th>
<th>2</th>
<th>3</th>
<th>3 1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8 11/32</td>
<td>8 29/32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>11 21/32</td>
<td>13 19/32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1 3/4</td>
<td>2 5/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>3 3/8</td>
<td>4 7/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>8 7/16</td>
<td>11 1/16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2 7/8</td>
<td>3 7/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>4 15/32</td>
<td>4 15/32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>8 7/16</td>
<td>11 1/16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>4 11/16</td>
<td>5 3/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>3 11/32</td>
<td>4 5/16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END CONDITIONS SHOWN AT MINIMUM CLOSED DIMENSIONS

Note: For lifting capacities see page 107.
## BALL SCREW ComDRIVEs®

### 30 TON - 3" SCREW STANDARD

**CDB 1130**

**CDB 3230**

---

**Upright**

**Upright traveling nut**

**Inverted traveling nut**

**Inverted**

**Double clevis**

---

### Reducer Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>CDB 1130</th>
<th>CDB 3230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio</td>
<td>5.1</td>
<td>5.1</td>
</tr>
<tr>
<td>HP</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>13 1/32</td>
<td>13 29/32</td>
</tr>
<tr>
<td>C</td>
<td>2 5/8</td>
<td>3 1/4</td>
</tr>
<tr>
<td>D</td>
<td>4 7/16</td>
<td>5 1/2</td>
</tr>
<tr>
<td>E</td>
<td>11 9/16</td>
<td>12 3/4</td>
</tr>
<tr>
<td>F</td>
<td>3 9/16</td>
<td>4 1/2</td>
</tr>
<tr>
<td>G</td>
<td>5 1/2</td>
<td>5 1/2</td>
</tr>
<tr>
<td>H</td>
<td>0</td>
<td>1/2</td>
</tr>
<tr>
<td>J</td>
<td>4 11/16</td>
<td>6 3/4</td>
</tr>
<tr>
<td>K</td>
<td>3 11/32</td>
<td>4 5/16</td>
</tr>
</tbody>
</table>

---

**Typical Plan View**

**Left Side**

**Right Side**

---

**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/Dayton can customize electric cylinders to meet your specifications.
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/Dayton 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.

<table>
<thead>
<tr>
<th>2.5-Ton ACME Screw</th>
<th>2.5-Ton Ball Screw</th>
<th>3-Ton ACME Screw</th>
<th>3-Ton Ball Screw</th>
<th>5-Ton ACME Screw</th>
<th>5-Ton Ball Screw</th>
<th>10-Ton ACME Screw</th>
<th>10-Ton Ball Screw</th>
<th>20-Ton ACME Screw</th>
<th>20-Ton Ball Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECAL242.5</td>
<td>ECBL2.5</td>
<td>ECAH122.5</td>
<td>ECAH242.5</td>
<td>ECAL65</td>
<td>ECBL125</td>
<td>ECAH810</td>
<td>ECBL810</td>
<td>ECAL240</td>
<td>ECBL240</td>
</tr>
<tr>
<td>ECAL65</td>
<td>ECAL125</td>
<td>ECAL243</td>
<td>ECAH65</td>
<td>ECAH125</td>
<td>ECBM65</td>
<td>ECAH810</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
</tr>
<tr>
<td>ECAL65</td>
<td>ECAL125</td>
<td>ECAL243</td>
<td>ECAH65</td>
<td>ECAH125</td>
<td>ECBM65</td>
<td>ECAH810</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
</tr>
<tr>
<td>ECAL65</td>
<td>ECAL125</td>
<td>ECAL243</td>
<td>ECAH65</td>
<td>ECAH125</td>
<td>ECBM65</td>
<td>ECAH810</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
<td>ECAH2410</td>
</tr>
</tbody>
</table>

**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.

**Left Side Shaft Code**
- XXXX=Remove
- STDX=Standard

For optional shaft codes, see page 121.

**Right Side Shaft Code**
- XXXX=Remove
- STDX=Standard

For optional shaft codes, see page 121.

**Base Designs**
- F=Flange Base
- C=Clevis Base
- R=Rotated Clevis Base

**Additional Options**
- X=Standard, no additional options
- S=Additional Specification Required (comment as necessary)

**Finishes p. 179**
- 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

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

*Specify as many options as needed*
ELECTRIC CYLINDERS

SHAF T CO DES

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.

Hand Wheels (p. 177)
HW04=4" dia
HW06=6" dia
HW08=8" dia
HW10=10" dia
HW12=12" dia

Not recommended for cylinders that are ≥ 30% efficient.

Geared Potentiometers (p. 176)
POTA=0-10V (IP65)
POTB=4-20MA (IP65)
POTC=0-10V w/2 switches*
POTD=4-20MA w/2 switches*

*Optional IP65 rating available.

Mechanical Counters (p. 177)
CNTD=0.001" Increments
Note: Contact Joyce/Dayton for availability and options.

Encoders and Electronic Limit Switches
ENCX=Encoder (p. 178)
ELS2=2 Position Electronic Switch
ELS4=4 Position Electronic Switch
ELS6=6 Position Electronic Switch

ComDrive Reducers (pp. 125-134)
Ordering Example: P2AC
Motor code from chart at right

Mounting Positions
<table>
<thead>
<tr>
<th>Code</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Side Shaft Positions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right Side Shaft Positions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Motor code from chart at right

Motor Mounts (p. 185)
Ordering Example: MMA A
Motor code from chart at left

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

Standard motor adapters are aluminum.

Motors
<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 HP</td>
<td>K</td>
</tr>
<tr>
<td>1/3 HP</td>
<td>A</td>
</tr>
<tr>
<td>1/2 HP</td>
<td>B</td>
</tr>
<tr>
<td>3/4 HP</td>
<td>C</td>
</tr>
<tr>
<td>1 HP</td>
<td>D</td>
</tr>
<tr>
<td>1-1/2 HP</td>
<td>E</td>
</tr>
<tr>
<td>2 HP</td>
<td>F</td>
</tr>
<tr>
<td>3 HP</td>
<td>L</td>
</tr>
<tr>
<td>5 HP</td>
<td>G</td>
</tr>
</tbody>
</table>

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/Dayton options that are not listed.

Electrical Limit Switches (pp. 174-175)
Ordering Example: LA13

Models
<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LI</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
</tr>
</tbody>
</table>

Available Positions
<table>
<thead>
<tr>
<th>Number of DPDT Switches (see p. 175)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

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

Custom products are available • Contact Joyce/Dayton with your requirements
800-523-5204
sales@joycedayton.com
joycedayton.com

121
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 185.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Static Capacity</th>
<th>Screw Diameter</th>
<th>Thread Pitch/Lead</th>
<th>Wormgear Ratio</th>
<th>Warm Shaft Torque (in Travel)</th>
<th>Tare Torque (in lbf)</th>
<th>Starting Torque (in lbf)</th>
<th>Operating Torque (in lbf)</th>
<th>Translating Tube Torque (in lbf)</th>
<th>Base Weight</th>
<th>Weight per Inch Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECA24L2.5</td>
<td>2.5 ton 1</td>
<td>96</td>
<td>.25 pitch ACME 2C</td>
<td>24:1</td>
<td>.016W* @ 500 RPM</td>
<td>.010W* @ 500 RPM</td>
<td>.016W* @ 500 RPM</td>
<td>.016W* @ 500 RPM</td>
<td>.016W* @ 500 RPM</td>
<td>24</td>
<td>1.5</td>
</tr>
<tr>
<td>ECAH24L2.5</td>
<td>2.5 ton 1</td>
<td>96</td>
<td>.5 lead ACME 2C</td>
<td>24:1</td>
<td>.025W* @ 500 RPM</td>
<td>.017W* @ 500 RPM</td>
<td>.017W* @ 500 RPM</td>
<td>.017W* @ 500 RPM</td>
<td>.017W* @ 500 RPM</td>
<td>30</td>
<td>1.5</td>
</tr>
<tr>
<td>ECB24L2.5</td>
<td>.5 lead ball</td>
<td>6:1</td>
<td>96</td>
<td>6:1</td>
<td>.010W* @ 500 RPM</td>
<td>.009W* @ 500 RPM</td>
<td>.010W* @ 500 RPM</td>
<td>.010W* @ 500 RPM</td>
<td>.010W* @ 500 RPM</td>
<td>30</td>
<td>1.5</td>
</tr>
<tr>
<td>ECD24L2.5</td>
<td>.5 lead ball</td>
<td>6:1</td>
<td>12</td>
<td>6:1</td>
<td>.033W* @ 500 RPM</td>
<td>.026W* @ 500 RPM</td>
<td>.033W* @ 500 RPM</td>
<td>.033W* @ 500 RPM</td>
<td>.033W* @ 500 RPM</td>
<td>164</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**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.
## 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.

### Clevis Pin with Retaining Rings

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

### Female Clevis Bracket

Female clevis brackets are available as options.

#### Cylinder Capacity | Part Number | Dimensions (Inches) | Load Capacity (Lbs.)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 &amp; 3</td>
<td>FRC-30</td>
<td>3/4 3/4 5/8 1 1/4 2 3/8 1 1/6 3/4-16</td>
<td>11,200</td>
</tr>
<tr>
<td>5 &amp; 10</td>
<td>FRC-100</td>
<td>1 1 3/4 1 1/2 3 1/8 1 5/8 1-14 19,500</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>FRC-200</td>
<td>1 3/8 1 3/8 1 2 4 1/8 2 1 1/4-12 33,500</td>
<td></td>
</tr>
</tbody>
</table>

#### Cylinder Capacity | Part Number | Dimensions (Inches) | Load Capacity (Lbs.)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 &amp; 3</td>
<td>CP-30</td>
<td>3/4 2 5/8</td>
<td>19,300</td>
</tr>
<tr>
<td>5 &amp; 10</td>
<td>CP-100</td>
<td>1 3 1/8 2 1/4 3/4 1 4.95 6 1 21/32 1 1/2 34,300</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>CP-200</td>
<td>1 3/8 4 1/8</td>
<td>65,000</td>
</tr>
</tbody>
</table>

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 130. Contact Joyce/Dayton with questions regarding the proper selection of electric cylinders.

### 2.5-Ton Thrust Capacity Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Static Capacity (tons)</th>
<th>Screw Lead (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3HP</td>
</tr>
<tr>
<td>ECAL242.5</td>
<td>2.5</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>14%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECHL242.5</td>
<td>2.5</td>
<td>0.250</td>
<td>3.18</td>
<td>7.5</td>
<td>19%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECAh242.5</td>
<td>2.5</td>
<td>0.500</td>
<td>4.76</td>
<td>7.5</td>
<td>21%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECAH122.5</td>
<td>2.5</td>
<td>0.500</td>
<td>7.06</td>
<td>10</td>
<td>25%</td>
<td>4,234</td>
</tr>
<tr>
<td>ECHL122.5</td>
<td>2.5</td>
<td>0.500</td>
<td>9.52</td>
<td>7.5</td>
<td>26%</td>
<td>3,219</td>
</tr>
<tr>
<td>ECALH2.5</td>
<td>2.5</td>
<td>0.500</td>
<td>14.12</td>
<td>10</td>
<td>28%</td>
<td>2,374</td>
</tr>
<tr>
<td>ECAL242.5</td>
<td>2.5</td>
<td>0.250</td>
<td>18.23</td>
<td>Direct drive</td>
<td>21%</td>
<td>756</td>
</tr>
<tr>
<td>ECHL2.5</td>
<td>2.5</td>
<td>0.500</td>
<td>19.04</td>
<td>7.5</td>
<td>29%</td>
<td>1,787</td>
</tr>
<tr>
<td>ECAH2.5</td>
<td>2.5</td>
<td>0.500</td>
<td>27.78</td>
<td>5</td>
<td>30%</td>
<td>1,213</td>
</tr>
<tr>
<td>ECHL242.5</td>
<td>2.5</td>
<td>0.500</td>
<td>36.46</td>
<td>Direct drive</td>
<td>30%</td>
<td>525</td>
</tr>
<tr>
<td>ECAH122.5</td>
<td>2.5</td>
<td>0.500</td>
<td>72.92</td>
<td>Direct drive</td>
<td>33%</td>
<td>555</td>
</tr>
<tr>
<td>ECAH2.5</td>
<td>2.5</td>
<td>0.500</td>
<td>145.83</td>
<td>Direct drive</td>
<td>36%</td>
<td>512</td>
</tr>
<tr>
<td>Ball Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3HP</td>
</tr>
<tr>
<td>ECDL242.5</td>
<td>2.5</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>30%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL2.5</td>
<td>2.5</td>
<td>0.250</td>
<td>2.38</td>
<td>7.5</td>
<td>32%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL122.5</td>
<td>2.5</td>
<td>0.250</td>
<td>3.53</td>
<td>10</td>
<td>38%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL62.5</td>
<td>2.5</td>
<td>0.250</td>
<td>4.76</td>
<td>7.5</td>
<td>40%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL62.5</td>
<td>2.5</td>
<td>0.250</td>
<td>7.06</td>
<td>10</td>
<td>43%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL2.5</td>
<td>2.5</td>
<td>0.250</td>
<td>9.52</td>
<td>7.5</td>
<td>45%</td>
<td>5,000</td>
</tr>
<tr>
<td>ECDL2.5</td>
<td>2.5</td>
<td>0.250</td>
<td>13.89</td>
<td>5</td>
<td>47%</td>
<td>3,752</td>
</tr>
<tr>
<td>ECDL122.5</td>
<td>2.5</td>
<td>0.250</td>
<td>18.23</td>
<td>Direct drive</td>
<td>46%</td>
<td>1,624</td>
</tr>
<tr>
<td>ECDM62.5</td>
<td>2.5</td>
<td>0.500</td>
<td>19.04</td>
<td>7.5</td>
<td>45%</td>
<td>2,763</td>
</tr>
<tr>
<td>ECDM62.5</td>
<td>2.5</td>
<td>0.500</td>
<td>27.78</td>
<td>5</td>
<td>47%</td>
<td>1,876</td>
</tr>
<tr>
<td>ECDM122.5</td>
<td>2.5</td>
<td>0.250</td>
<td>38.46</td>
<td>Direct drive</td>
<td>52%</td>
<td>762</td>
</tr>
<tr>
<td>ECDM62.5</td>
<td>2.5</td>
<td>1.000</td>
<td>38.08</td>
<td>7.5</td>
<td>45%</td>
<td>1,381</td>
</tr>
<tr>
<td>ECDM2.5</td>
<td>2.5</td>
<td>1.000</td>
<td>35.56</td>
<td>5</td>
<td>47%</td>
<td>938</td>
</tr>
<tr>
<td>ECDM122.5</td>
<td>2.5</td>
<td>0.250</td>
<td>72.92</td>
<td>Direct drive</td>
<td>55%</td>
<td>833</td>
</tr>
<tr>
<td>ECDM62.5</td>
<td>2.5</td>
<td>0.500</td>
<td>145.83</td>
<td>Direct drive</td>
<td>55%</td>
<td>791</td>
</tr>
<tr>
<td>ECDM62.5</td>
<td>2.5</td>
<td>1.000</td>
<td>291.67</td>
<td>Direct drive</td>
<td>55%</td>
<td>583</td>
</tr>
</tbody>
</table>
| 2.5-Ton Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum Rise Vertical Operation</th>
<th>Cylinder Tube Torque Vertical Operation (in*lb) Per Pound Thrust</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td>28”</td>
<td>.098</td>
</tr>
<tr>
<td>ECAH</td>
<td>21”</td>
<td>.139</td>
</tr>
<tr>
<td>Ball Screw</td>
<td>41”</td>
<td>.045</td>
</tr>
<tr>
<td>ECDM</td>
<td>31”</td>
<td>.089</td>
</tr>
</tbody>
</table>

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

### 3-Ton Thrust Capacity Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Static Capacity (tons)</th>
<th>Screw Lead (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAL243</td>
<td>3</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>12%</td>
<td>6,000</td>
</tr>
<tr>
<td>ECAL243</td>
<td>3</td>
<td>0.250</td>
<td>2.38</td>
<td>7.5</td>
<td>13%</td>
<td>6,000</td>
</tr>
<tr>
<td>ECAL123</td>
<td>3</td>
<td>0.250</td>
<td>3.53</td>
<td>10</td>
<td>15%</td>
<td>5,183</td>
</tr>
<tr>
<td>ECAL123</td>
<td>3</td>
<td>0.250</td>
<td>4.76</td>
<td>7.5</td>
<td>16%</td>
<td>3,026</td>
</tr>
<tr>
<td>ECAL63</td>
<td>3</td>
<td>0.250</td>
<td>7.06</td>
<td>10</td>
<td>17%</td>
<td>2,906</td>
</tr>
<tr>
<td>ECAL63</td>
<td>3</td>
<td>0.250</td>
<td>9.52</td>
<td>7.5</td>
<td>18%</td>
<td>2,179</td>
</tr>
<tr>
<td>ECAL63</td>
<td>3</td>
<td>0.250</td>
<td>13.89</td>
<td>5</td>
<td>18%</td>
<td>1,498</td>
</tr>
<tr>
<td>ECAL243</td>
<td>3</td>
<td>0.250</td>
<td>18.23</td>
<td>Direct drive</td>
<td>18%</td>
<td>1,215</td>
</tr>
<tr>
<td>ECAL63</td>
<td>3</td>
<td>0.250</td>
<td>72.92</td>
<td>Direct drive</td>
<td>22%</td>
<td>899</td>
</tr>
</tbody>
</table>

| Ball Screw  |                            |                 |                        |                        |                      |                             |
|-------------|----------------------------|-----------------|------------------------|                        |                      |                             |
| ECL243      | 3                          | 0.200           | 1.41                   | 10                     | 30%                  | 6,000                       |
| ECL243      | 3                          | 0.200           | 1.90                   | 7.5                    | 32%                  | 6,000                       |
| ECL123      | 3                          | 0.200           | 2.82                   | 10                     | 38%                  | 6,000                       |
| ECL123      | 3                          | 0.200           | 3.81                   | 7.5                    | 49%                  | 6,000                       |
| ECH243      | 3                          | 0.025           | 4.41                   | 10                     | 30%                  | 6,000                       |
| ECHL63      | 3                          | 0.025           | 5.65                   | 10                     | 43%                  | 6,000                       |
| ECH243      | 3                          | 0.025           | 5.95                   | 7.5                    | 32%                  | 6,000                       |
| ECHL63      | 3                          | 0.020           | 7.62                   | 7.5                    | 45%                  | 6,000                       |
| ECHB123     | 3                          | 0.025           | 8.82                   | 10                     | 38%                  | 5,183                       |
| ECHB63      | 3                          | 0.020           | 11.11                  | 5                      | 47%                  | 4,587                       |
| ECHB123     | 3                          | 0.025           | 11.90                  | 7.5                    | 40%                  | 4,026                       |
| ECHB243     | 3                          | 0.020           | 14.58                  | Direct drive           | 46%                  | 1,686                       |
| ECHB63      | 3                          | 0.025           | 17.85                  | 10                     | 43%                  | 2,906                       |
| ECHB63      | 3                          | 0.025           | 23.80                  | 7.5                    | 45%                  | 2,179                       |
| ECHB123     | 3                          | 0.025           | 29.17                  | Direct drive           | 52%                  | 1,952                       |
| ECHB63      | 3                          | 0.025           | 34.72                  | 5                      | 47%                  | 1,488                       |
| ECHB243     | 3                          | 0.025           | 45.57                  | Direct drive           | 46%                  | 1,215                       |
| ECHB63      | 3                          | 0.020           | 58.33                  | Direct drive           | 55%                  | 937                         |
| ECHB123     | 3                          | 0.025           | 91.15                  | Direct drive           | 52%                  | 1,187                       |
| ECHB63      | 3                          | 0.025           | 182.29                 | Direct drive           | 55%                  | 899                         |

### 3-Ton Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Vertical Operation</th>
<th>Horizontal Operation</th>
<th>Cylinder Tube Torque (in*lb) Per Pound Thrust</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAL</td>
<td>48&quot;</td>
<td>35&quot;</td>
<td>.113</td>
</tr>
<tr>
<td>Ball Screw</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECLB</td>
<td>55&quot;</td>
<td>42&quot;</td>
<td>.936</td>
</tr>
<tr>
<td>ECBH</td>
<td>46&quot;</td>
<td>34&quot;</td>
<td>.111</td>
</tr>
</tbody>
</table>

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.
Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 132.

Contact Joyce/Dayton with questions regarding the proper selection of electric cylinders.

5-Ton Thrust Capacity Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Static Capacity (tons)</th>
<th>Screw Load (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAL245</td>
<td>5</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>11%</td>
<td>6,895</td>
</tr>
<tr>
<td>ECAM245</td>
<td>5</td>
<td>0.375</td>
<td>2.65</td>
<td>10</td>
<td>14%</td>
<td>5,891</td>
</tr>
<tr>
<td>ECAH245</td>
<td>5</td>
<td>0.500</td>
<td>3.53</td>
<td>10</td>
<td>16%</td>
<td>5,193</td>
</tr>
<tr>
<td>ECAM125</td>
<td>5</td>
<td>0.375</td>
<td>5.29</td>
<td>10</td>
<td>17%</td>
<td>3,661</td>
</tr>
<tr>
<td>ECAH125</td>
<td>5</td>
<td>0.500</td>
<td>7.06</td>
<td>10</td>
<td>20%</td>
<td>3,227</td>
</tr>
<tr>
<td>ECAH65</td>
<td>5</td>
<td>0.500</td>
<td>10.59</td>
<td>10</td>
<td>19%</td>
<td>2,631</td>
</tr>
<tr>
<td>ECAH125</td>
<td>5</td>
<td>0.500</td>
<td>14.12</td>
<td>10</td>
<td>23%</td>
<td>1,790</td>
</tr>
<tr>
<td>ECAL245</td>
<td>5</td>
<td>0.250</td>
<td>18.23</td>
<td>Direct drive</td>
<td>16%</td>
<td>1,471</td>
</tr>
<tr>
<td>ECAAM65</td>
<td>5</td>
<td>0.375</td>
<td>20.83</td>
<td>5</td>
<td>21%</td>
<td>1,634</td>
</tr>
<tr>
<td>ECAM245</td>
<td>5</td>
<td>0.375</td>
<td>27.34</td>
<td>Direct drive</td>
<td>21%</td>
<td>1,257</td>
</tr>
<tr>
<td>ECAH65</td>
<td>5</td>
<td>0.500</td>
<td>27.78</td>
<td>5</td>
<td>25%</td>
<td>1,441</td>
</tr>
<tr>
<td>ECAH245</td>
<td>5</td>
<td>0.500</td>
<td>36.46</td>
<td>Direct drive</td>
<td>24%</td>
<td>1,108</td>
</tr>
<tr>
<td>ECAH125</td>
<td>5</td>
<td>0.375</td>
<td>54.58</td>
<td>Direct drive</td>
<td>23%</td>
<td>1,085</td>
</tr>
<tr>
<td>ECAH65</td>
<td>5</td>
<td>0.250</td>
<td>72.92</td>
<td>Direct drive</td>
<td>19%</td>
<td>1,144</td>
</tr>
<tr>
<td>ECAH125</td>
<td>5</td>
<td>0.375</td>
<td>140.38</td>
<td>Direct drive</td>
<td>25%</td>
<td>1,429</td>
</tr>
<tr>
<td>ECAH65</td>
<td>5</td>
<td>0.500</td>
<td>145.83</td>
<td>Direct drive</td>
<td>29%</td>
<td>1,259</td>
</tr>
</tbody>
</table>

Ball Screw

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Static Capacity (tons)</th>
<th>Screw Load (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECBL245</td>
<td>5</td>
<td>0.474</td>
<td>3.34</td>
<td>10</td>
<td>30%</td>
<td>10,000</td>
</tr>
<tr>
<td>ECBL125</td>
<td>5</td>
<td>0.474</td>
<td>6.69</td>
<td>10</td>
<td>38%</td>
<td>6,441</td>
</tr>
<tr>
<td>ECBL65</td>
<td>5</td>
<td>1.000</td>
<td>7.06</td>
<td>10</td>
<td>39%</td>
<td>4,910</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>1.875</td>
<td>13.24</td>
<td>10</td>
<td>30%</td>
<td>2,618</td>
</tr>
<tr>
<td>ECHB65</td>
<td>5</td>
<td>0.474</td>
<td>13.37</td>
<td>10</td>
<td>43%</td>
<td>3,572</td>
</tr>
<tr>
<td>ECHB125</td>
<td>5</td>
<td>1.000</td>
<td>14.12</td>
<td>10</td>
<td>38%</td>
<td>3,051</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>1.875</td>
<td>26.47</td>
<td>10</td>
<td>38%</td>
<td>1,627</td>
</tr>
<tr>
<td>ECHB65</td>
<td>5</td>
<td>0.474</td>
<td>26.32</td>
<td>5</td>
<td>47%</td>
<td>1,678</td>
</tr>
<tr>
<td>ECHB125</td>
<td>5</td>
<td>1.000</td>
<td>28.23</td>
<td>10</td>
<td>43%</td>
<td>1,692</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>0.474</td>
<td>34.54</td>
<td>Direct drive</td>
<td>46%</td>
<td></td>
</tr>
<tr>
<td>ECHB125</td>
<td>5</td>
<td>1.000</td>
<td>55.56</td>
<td>5</td>
<td>47%</td>
<td>1,382</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>0.474</td>
<td>69.08</td>
<td>Direct drive</td>
<td>52%</td>
<td>1,162</td>
</tr>
<tr>
<td>ECHB125</td>
<td>5</td>
<td>1.000</td>
<td>72.92</td>
<td>Direct drive</td>
<td>46%</td>
<td>1,046</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>1.000</td>
<td>104.17</td>
<td>5</td>
<td>47%</td>
<td>1,171</td>
</tr>
<tr>
<td>ECHB65</td>
<td>5</td>
<td>0.474</td>
<td>138.16</td>
<td>Direct drive</td>
<td>55%</td>
<td>1,729</td>
</tr>
<tr>
<td>ECHB125</td>
<td>5</td>
<td>0.000</td>
<td>145.83</td>
<td>Direct drive</td>
<td>52%</td>
<td>1,162</td>
</tr>
<tr>
<td>ECHB245</td>
<td>5</td>
<td>1.875</td>
<td>273.44</td>
<td>Direct drive</td>
<td>52%</td>
<td>1,237</td>
</tr>
<tr>
<td>ECHB65</td>
<td>5</td>
<td>1.000</td>
<td>561.67</td>
<td>Direct drive</td>
<td>55%</td>
<td>1,191</td>
</tr>
<tr>
<td>ECHB65</td>
<td>5</td>
<td>1.875</td>
<td>548.88</td>
<td>Direct drive</td>
<td>55%</td>
<td>1,036</td>
</tr>
</tbody>
</table>

5-Ton Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum Rise</th>
<th>Cylinder Tube Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vertical Operation</td>
<td>Horizontal Operation (in*lb) Per Pound Thrust</td>
</tr>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECA</td>
<td>59%</td>
<td>44%</td>
</tr>
<tr>
<td>ECAM</td>
<td>63%</td>
<td>47%</td>
</tr>
<tr>
<td>ECAM</td>
<td>59%</td>
<td>44%</td>
</tr>
<tr>
<td>Ball Screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECBL</td>
<td>54%</td>
<td>40%</td>
</tr>
<tr>
<td>ECBM</td>
<td>54%</td>
<td>40%</td>
</tr>
<tr>
<td>ECBH</td>
<td>59%</td>
<td>44%</td>
</tr>
</tbody>
</table>

Note: For proper model selection refer to Selection Guidelines on page 126.
### 10-Ton Thrust Capacity Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. Static Capacity (tons)</th>
<th>Screw Lead (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECAL2410</td>
<td>10</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>10%</td>
<td>--</td>
</tr>
<tr>
<td>ECAM2410</td>
<td>10</td>
<td>0.500</td>
<td>3.53</td>
<td>10</td>
<td>16%</td>
<td>4,468</td>
</tr>
<tr>
<td>ECAM2410</td>
<td>10</td>
<td>0.500</td>
<td>3.42</td>
<td>10</td>
<td>17%</td>
<td>3,811</td>
</tr>
<tr>
<td>ECAH2410</td>
<td>10</td>
<td>0.666</td>
<td>4.76</td>
<td>10</td>
<td>18%</td>
<td>3,011</td>
</tr>
<tr>
<td>ECAH2410</td>
<td>10</td>
<td>0.666</td>
<td>4.55</td>
<td>10</td>
<td>19%</td>
<td>2,612</td>
</tr>
<tr>
<td>ECAL810</td>
<td>10</td>
<td>0.250</td>
<td>5.29</td>
<td>10</td>
<td>12%</td>
<td>2,134</td>
</tr>
<tr>
<td>ECAL810</td>
<td>10</td>
<td>0.250</td>
<td>5.13</td>
<td>10</td>
<td>13%</td>
<td>2,000</td>
</tr>
<tr>
<td>ECAM810</td>
<td>10</td>
<td>0.500</td>
<td>10.59</td>
<td>10</td>
<td>20%</td>
<td>3,043</td>
</tr>
<tr>
<td>ECAM10</td>
<td>10</td>
<td>0.500</td>
<td>10.25</td>
<td>10</td>
<td>21%</td>
<td>2,612</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>14.10</td>
<td>10</td>
<td>24%</td>
<td>2,000</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>14.10</td>
<td>10</td>
<td>24%</td>
<td>1,800</td>
</tr>
<tr>
<td>ECAL2410</td>
<td>10</td>
<td>0.250</td>
<td>18.23</td>
<td>Direct drive</td>
<td>14%</td>
<td>2,440</td>
</tr>
<tr>
<td>ECAM10</td>
<td>10</td>
<td>0.500</td>
<td>20.83</td>
<td>5</td>
<td>22%</td>
<td>2,367</td>
</tr>
<tr>
<td>ECAM10</td>
<td>10</td>
<td>0.500</td>
<td>21.88</td>
<td>5</td>
<td>23%</td>
<td>11,011</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>27.75</td>
<td>5</td>
<td>25%</td>
<td>2,019</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>29.14</td>
<td>5</td>
<td>26%</td>
<td>1,800</td>
</tr>
<tr>
<td>ECAL10</td>
<td>10</td>
<td>0.250</td>
<td>36.46</td>
<td>Direct drive</td>
<td>23%</td>
<td>2,012</td>
</tr>
<tr>
<td>ECAL10</td>
<td>10</td>
<td>0.250</td>
<td>34.46</td>
<td>Direct drive</td>
<td>24%</td>
<td>2,012</td>
</tr>
<tr>
<td>ECAL10</td>
<td>10</td>
<td>0.250</td>
<td>34.46</td>
<td>Direct drive</td>
<td>25%</td>
<td>2,012</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>54.69</td>
<td>Direct drive</td>
<td>49%</td>
<td>4,562</td>
</tr>
<tr>
<td>ECAH10</td>
<td>10</td>
<td>0.666</td>
<td>54.69</td>
<td>Direct drive</td>
<td>50%</td>
<td>4,562</td>
</tr>
<tr>
<td>ECAL10</td>
<td>10</td>
<td>0.250</td>
<td>103.62</td>
<td>Direct drive</td>
<td>56%</td>
<td>2,999</td>
</tr>
<tr>
<td>ECAL10</td>
<td>10</td>
<td>0.250</td>
<td>103.62</td>
<td>Direct drive</td>
<td>57%</td>
<td>2,999</td>
</tr>
</tbody>
</table>

### 10-Ton Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum Rise</th>
<th>Cylinder Tube Torque (in*lb) Per Pound Thrust</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME</td>
<td>ACAL</td>
<td>84 * .161</td>
</tr>
<tr>
<td></td>
<td>ECAM</td>
<td>60 * .195</td>
</tr>
<tr>
<td></td>
<td>ECAH</td>
<td>76 * .228</td>
</tr>
<tr>
<td>Ball</td>
<td>EGBL</td>
<td>38 * .084</td>
</tr>
<tr>
<td></td>
<td>EGBM</td>
<td>38 * .178</td>
</tr>
<tr>
<td></td>
<td>EGBH</td>
<td>41 * .332</td>
</tr>
</tbody>
</table>

Note: For proper model selection refer to Selection Guidelines on page 129.
Use the following charts to select the electric cylinder that best fits your application. Refer to drawings on page 134. Contact Joyce/Dayton with questions regarding the proper selection of electric cylinders.

### 20-Ton Thrust Capacity Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Static Capacity (tons)</th>
<th>Screw Lead (in)</th>
<th>Linear Speed (in/min)</th>
<th>External Gearbox Ratio</th>
<th>Estimated Efficiency</th>
<th>Max Dynamic Load at HP (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAL2420</td>
<td>20</td>
<td>0.250</td>
<td>1.76</td>
<td>10</td>
<td>8%</td>
<td>6,459</td>
</tr>
<tr>
<td>ECAL2420</td>
<td>20</td>
<td>0.250</td>
<td>1.71</td>
<td>10</td>
<td>8%</td>
<td>10,813</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>3.53</td>
<td>10</td>
<td>13%</td>
<td>5,484</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>3.42</td>
<td>10</td>
<td>14%</td>
<td>9,161</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>5.29</td>
<td>10</td>
<td>16%</td>
<td>4,560</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>5.13</td>
<td>10</td>
<td>17%</td>
<td>7,634</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>6.94</td>
<td>5</td>
<td>15%</td>
<td>4,305</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>7.29</td>
<td>5</td>
<td>15%</td>
<td>6,621</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>10.59</td>
<td>10</td>
<td>17%</td>
<td>5,276</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>10.25</td>
<td>10</td>
<td>18%</td>
<td>19,447</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>15.38</td>
<td>10</td>
<td>22%</td>
<td>4,387</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>14.89</td>
<td>10</td>
<td>23%</td>
<td>16,170</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>18.23</td>
<td>Direct drive</td>
<td>11%</td>
<td>4,701</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>20.83</td>
<td>5</td>
<td>19%</td>
<td>4,127</td>
</tr>
<tr>
<td>ECM2420</td>
<td>20</td>
<td>0.500</td>
<td>21.88</td>
<td>5</td>
<td>19%</td>
<td>19,447</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>31.25</td>
<td>5</td>
<td>23%</td>
<td>23,176</td>
</tr>
<tr>
<td>ECAH2420</td>
<td>20</td>
<td>0.750</td>
<td>32.81</td>
<td>5</td>
<td>24%</td>
<td>4,935</td>
</tr>
<tr>
<td>Ball Screw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECBL2420</td>
<td>20</td>
<td>0.500</td>
<td>3.53</td>
<td>10</td>
<td>33%</td>
<td>7,425</td>
</tr>
<tr>
<td>ECBL2420</td>
<td>20</td>
<td>0.500</td>
<td>3.42</td>
<td>10</td>
<td>35%</td>
<td>13,710</td>
</tr>
<tr>
<td>ECBL2420</td>
<td>20</td>
<td>0.500</td>
<td>6.94</td>
<td>5</td>
<td>37%</td>
<td>7,725</td>
</tr>
<tr>
<td>ECBL2420</td>
<td>20</td>
<td>0.500</td>
<td>7.29</td>
<td>5</td>
<td>39%</td>
<td>12,053</td>
</tr>
<tr>
<td>ECBL820</td>
<td>20</td>
<td>0.500</td>
<td>10.59</td>
<td>10</td>
<td>43%</td>
<td>4,876</td>
</tr>
<tr>
<td>ECBL820</td>
<td>20</td>
<td>0.500</td>
<td>10.25</td>
<td>10</td>
<td>43%</td>
<td>8,857</td>
</tr>
<tr>
<td>ECBL820</td>
<td>20</td>
<td>0.500</td>
<td>20.83</td>
<td>5</td>
<td>47%</td>
<td>10,317</td>
</tr>
<tr>
<td>ECBL820</td>
<td>20</td>
<td>0.500</td>
<td>21.88</td>
<td>5</td>
<td>48%</td>
<td>13,189</td>
</tr>
<tr>
<td>ECBL2420</td>
<td>20</td>
<td>0.500</td>
<td>36.46</td>
<td>Direct drive</td>
<td>49%</td>
<td>4,697</td>
</tr>
<tr>
<td>ECBL820</td>
<td>20</td>
<td>0.500</td>
<td>109.38</td>
<td>Direct drive</td>
<td>55%</td>
<td>6,665</td>
</tr>
</tbody>
</table>

### 20-Ton Electric Cylinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum Rise</th>
<th>Cylinder Tube Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME Screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAL</td>
<td>109&quot;</td>
<td>75&quot;</td>
</tr>
<tr>
<td>ECAM</td>
<td>78&quot;</td>
<td>58&quot;</td>
</tr>
<tr>
<td>ECAH</td>
<td>68&quot;</td>
<td>66&quot;</td>
</tr>
<tr>
<td>Ball Screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECBL</td>
<td>72&quot;</td>
<td>54&quot;</td>
</tr>
</tbody>
</table>

### 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.
ELECTRIC CYLINDERS

2 1/2 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

STANDARD

MOTOR MOUNT

ComDRIVE*

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

NOTE: FOR CAPACITY AND MAXIMUM RISE SEE PAGE 125.
ELECTRIC CYLINDERS

3 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECD (BALL SCREW)

STANDARD

BALL SCREW = 14 9/16 + (RISE x 1 1/4)
ACME SCREW = 12 5/8 + (RISE x 1 1/4)
RETRACTED

Motor Mount

OPTIONAL THREAD END
3/4"-16 UNF-2A x 1 1/8" Lt.

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)
ECD (BALL SCREW)

STANDARD

BALL SCREW = 16 1/8 x (RISE x 1 1/4)
ACME SCREW = 15 3/8 x (RISE x 1 1/4)
RETRACTED

BALL SCREW = 8 5/8 x (RISE x 1 1/4)
ACME SCREW = 5 13/16 x (RISE x 1 1/4)

MOTOR MOUNT

Optional Threaded End
1”-14 UNS-2A x 1 3/8” Lg.

ComDRIVE®

For motor dimensions see page 165

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.

joycedayton.com
sales@joycedayton.com
800-523-5204
ELECTRIC CYLINDERS

10 TON ELECTRIC CYLINDER

ECA (ACME SCREW)
ECB (BALL SCREW)

STANDARD

BALL SCREW = 8 5/8 + (RISE x 1 1/4)
ACME SCREW = 6 1/4 + (RISE x 1 1/4)

RETRACTED

BALL SCREW = 18 1/4 + (RISE x 1 1/4)
ACME SCREW = 15 7/8 + (RISE x 1 1/4)

MOTOR MOUNT

Optional Threaded End
1"-14 UNS-2A x 1 5/8" Lg.

ComDRIVE®

REDUCER DIMENSIONS

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**

**ECB (BALL SCREW)**

**STANDARD**

**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.
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/Dayton can customize integrated actuators to meet your specifications.

Joyce/Dayton offers Integrated Actuators in the following designs:

- Translating tube
- Traveling nut

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

Integrated Actuator
(IA51TN-6-LJ02-MMAA-S)

CP-30
Pivot pin with retaining rings

MMAA-S
1/3 HP, 115/230 VAC, 1 ph, 60 Hz motor

LJ02
LS7-402 limit switch in position 2

Cast Aluminum Housing
With integral 56 C motor mount

08040368
Eye Bracket

08040369
Clevis Bracket
INTEGRATED ACTUATORS ORDERING INFORMATION

Instructions: Select a model number from this chart.

<table>
<thead>
<tr>
<th>Integrated Actuator Configuration</th>
<th>Left Side Shaft Code</th>
<th>Right Side Shaft Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT Translating Tube</td>
<td>XXXX=Remove Shaft</td>
<td>RMMT=Remove Motor</td>
</tr>
<tr>
<td>TN Keyed for Traveling Nut</td>
<td>STDX=Standard</td>
<td>MMA=Standard</td>
</tr>
</tbody>
</table>

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

Limit Switches
Position 1 2 3 4
Left side Shaft
Code LJ10 LJ20 LJ30 LJ40

Standard Motors
<table>
<thead>
<tr>
<th>Voltage</th>
<th>Speed (rpm)</th>
<th>1/4 HP</th>
<th>1/3 HP</th>
<th>1/2 HP</th>
<th>3/4 HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>115/230 VAC Single Phase</td>
<td>1140</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>115/230 VAC Single Phase</td>
<td>1725</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>115/230 VAC Single Phase w/brake</td>
<td>1725</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>230/460 VAC Three Phase</td>
<td>1140</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>230/460 VAC Three Phase</td>
<td>1725</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12 VDC Permanent Magnet</td>
<td>1800</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>24 VDC Permanent Magnet</td>
<td>1800</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>90 VDC Permanent Magnet</td>
<td>1750</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>180 VDC Permanent Magnet</td>
<td>1750</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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.

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

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

Custom products are available • Contact Joyce/Dayton with your requirements
800-523-5204
317
sales@joycedayton.com
joycedayton.com
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
See pages 7 and 178.
Contact Joyce/Dayton with your requirements.

Clevis Accessories

Limit Switch (LS7 ONLY)

Limit Switch Position Nos.

Clevis Bracket #08040369

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>IA51TT</th>
<th>DIA51TT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA201TT</td>
<td>DIA201TT</td>
<td></td>
</tr>
</tbody>
</table>

ACME Threaded Lifting Screw

|                   | 1" diameter       | 1" diameter       |
|                   | .25" pitch        | .25" pitch        |
|                   | .50" lead         | .50" lead         |

Wormgear Ratio

|                   | 5:1               | 5:1               |

Worm Shaft Turns/1" Travel

|                   | 20                | 10                |

Motor RPM

|                   | 1140              | 1140              |

Lifting Speed (Inches/Minute)

|                   | 57                | 14                |

1/3 HP Motor

|                   | 1775              | 14                |

1/2 HP Motor

|                   | 850               | 1800              |

3/4 HP Motor

|                   | 1250              | 2000              |

Rated Loads (Lbs.)

|                   | 550               | 2000              |

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

800-523-5204
sales@joycedayton.com
joycedayton.com
INTEGRATED ACTUATORS

250-2000 POUND INTEGRATED ACME SCREW

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

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

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**

An Illustration and ordering information are on pages 136 and 137

---

**Model Number**

<table>
<thead>
<tr>
<th>BIA51TT*</th>
<th>HBIA51TT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIA201TT*</td>
<td>—</td>
</tr>
</tbody>
</table>

**Ball Screw**

<table>
<thead>
<tr>
<th></th>
<th>1” diameter .250” lead ball screw</th>
<th>1” diameter 1.000” lead ball screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>2”</td>
<td>2”</td>
</tr>
<tr>
<td>Lead</td>
<td>.250”</td>
<td>1”</td>
</tr>
<tr>
<td>Length</td>
<td>2000”</td>
<td>2000”</td>
</tr>
</tbody>
</table>

**Wormgear Ratio**

<table>
<thead>
<tr>
<th></th>
<th>5:1</th>
<th>5:1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio</td>
<td>20:1</td>
<td>20:1</td>
</tr>
<tr>
<td>Worm Shaft</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>

**Motor RPM**

<table>
<thead>
<tr>
<th></th>
<th>1140</th>
<th>1725</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

**Lifting Speed**

<table>
<thead>
<tr>
<th></th>
<th>57</th>
<th>86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>228</td>
<td>345</td>
</tr>
<tr>
<td>(Inches/Minute)</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

**Rated Loads (Lbs.)**

<table>
<thead>
<tr>
<th></th>
<th>1/4 HP Motor</th>
<th>1/3 HP Motor</th>
<th>1/2 HP Motor</th>
<th>3/4 HP Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque</td>
<td>925</td>
<td>1225</td>
<td>1850</td>
<td>2000</td>
</tr>
<tr>
<td>Speed</td>
<td>1250</td>
<td>300</td>
<td>450</td>
<td>700</td>
</tr>
<tr>
<td>(1750)</td>
<td>300</td>
<td>450</td>
<td>700</td>
<td>650</td>
</tr>
</tbody>
</table>

**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:** *BIA & HBIA models are not self-locking. Brake motors or external locking systems are required.*

---

An Illustration and ordering information are on pages 136 and 137

---

800-523-5204 sales@joycedayton.com joycedayton.com
INTEGRATED ACTUATORS

100-2000 POUND INTEGRATED BALL SCREW

BIA 51TN / HBIA 51TN
BIA 201TN

---

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: *BIA & HBIA models are not self-locking. Brake motors or external locking systems are required.

---

**Model Number**

<table>
<thead>
<tr>
<th>BIA51TN*</th>
<th>HBIA51TN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIA201TN*</td>
<td>—</td>
</tr>
</tbody>
</table>

**Ball Screw**

<table>
<thead>
<tr>
<th>1&quot; diameter 250° lead ball screw</th>
<th>1&quot; diameter 1,000° lead ball screw</th>
</tr>
</thead>
</table>

**Wormgear Ratio**

<table>
<thead>
<tr>
<th>5:1</th>
<th>5:1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>20:1</th>
<th>—</th>
</tr>
</thead>
</table>

**Worm Shaft Turns/1" Travel**

<table>
<thead>
<tr>
<th>20</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>—</td>
</tr>
</tbody>
</table>

**Motor RPM**

<table>
<thead>
<tr>
<th>1 1/4 HP Motor</th>
<th>1/3 HP Motor</th>
<th>1/2 HP Motor</th>
<th>3/4 HP Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1140 1725 1140 1725</td>
<td>1225 825 200 200</td>
<td>1850 1250 450 300</td>
<td>2000 1875 700 450</td>
</tr>
</tbody>
</table>

**Lifting Speed**

<table>
<thead>
<tr>
<th>57</th>
<th>86</th>
<th>228</th>
<th>345</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>21</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Rated Loads (Lbs.)**

<table>
<thead>
<tr>
<th>1/4 HP Motor</th>
<th>1/3 HP Motor</th>
<th>1/2 HP Motor</th>
<th>3/4 HP Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>925 625 225 100</td>
<td>1225 825 300 200</td>
<td>1850 1250 450 300</td>
<td>2000 1875 700 450</td>
</tr>
</tbody>
</table>

---

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Joyce linear actuators are designed to lift and precisely position loads of up to 1500 pounds. They are built with cast aluminum housings, include motors (120 VAC or 12 VDC), and are best suited for use in environments that are protected from the elements. A spring brake ensures that the actuators hold position when power is off. The maximum speed, which varies with load, is about 50 inches per minute (LA155).

Joyce linear actuators are designed for either double clevis or trunnion mounting. Standard travel lengths include 3, 6, 12, 18, and 24 inches. The restraining torque for the translating tube is 190 inch-pounds.

Specifications for AC models LA155L & LA155P:
• 120 VAC
• Limit switch available (LA155L)
• Limit switch and potentiometer available (LA155P)
• Approximate weight, 25 lbs + 0.5 lbs per inch of travel

Specifications for 12 VDC models LA152L & LA152C:
• 12 VDC
• Limit switch available (LA152L)
• Overload clutch available (LA125C)
• Approximate weight, 19 lbs + 0.5 lbs per inch of travel

Joyce/Dayton offers Linear Actuators in several designs including:
• 120 VAC with limit switch
• 120 VAC with limit switch and potentiometer
• 12 VDC with limit switch
• 12 VDC with clutch
A guide for ordering is on page 144.
**LINEAR ACTUATORS ORDERING INFORMATION**

**Instructions:** Select a model number from this chart.

<table>
<thead>
<tr>
<th>1500-Pound Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA152 (12VDC)</td>
</tr>
<tr>
<td>LA155 (115VAC)</td>
</tr>
</tbody>
</table>

**Sample Part Number:** **LA152-L-SC-CL-12**

### Options

**LA152 (DC)**

- **L**=Limit Switch
- **C**=Clutch

**LA155 (AC)**

- **L**=Limit Switch
- **P**=Potentiometer and Limit Switch

### Screw End

- **CL**=Clevis End
- **TE**=Threaded End

<table>
<thead>
<tr>
<th>Rise</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>03</td>
</tr>
<tr>
<td>6&quot;</td>
<td>06</td>
</tr>
<tr>
<td>12&quot;</td>
<td>12</td>
</tr>
<tr>
<td>18&quot;</td>
<td>18</td>
</tr>
<tr>
<td>24&quot;</td>
<td>24</td>
</tr>
</tbody>
</table>

### Mounting Style

**LA152 (DC)**

- **SC**=Standard Clevis

**LA155 (AC)**

- **TM**=Trunnion Mount

---

Custom products are available • Contact Joyce/Dayton with your requirements

joycedayton.com  
sales@joycedayton.com  
800-523-5204
LINEAR ACTUATORS

1500 POUND DC WITH LIMIT SWITCH

LA 132L

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

2D and 3D models available on website • Ordering information on page 144

800-523-5204 sales@joycedayton.com joycedayton.com

145
LINEAR ACTUATORS

1500 POUND DC WITH SLIP CLUTCH

LA 152C

Optional Threaded End
6/8"-18 UNF 2A
7/8" Min. Full Thrust.

Optional Transmisson Mount
1/2"-20 UNF-2B Thread x 1" Deep (2)

1 1/16 Across Flats

1/2" NPT.

7 13/16 ±1/8

Circuit Breaker

12 VDC
Permanent Magnet Motor

RET = Retract

EXT = Extend

User Supplied
Reversing Switch
DPDT

WIRING DIAGRAM

Lifting Speed (in/Min)

Load (lbs)

Current Draw (amperes)

Load (lbs)

Duty Cycle (hrs)

Load (lbs)

Duty Cycle ratings represent total travel per hour with equally timed intervals between cycles.

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

1500 POUND AC WITH LIMIT SWITCH

LA 155L
LA 155P

Optional Threaded End
5/8"-18 UNF 2A Thread
7/8" Minimum Full Thread

Optional Trunnion Mount
1/2"-20 UNF-2B Thread x 1" Deep (2)

Limit Switch Housing
(Adjustable Switches)

Capacitor Housing

1/2" NPT,

Aluminum Gear Housing

115 VAC Motor

Optional 2" Trunnion Mount

Limit Switch Housing

Vent

Travel

Translating Tube Ø 1 1/2

1 1/2" Wide Across Flats

Manual Override Access

Lifting Speed (in/min)

54
50
46
42
38
500 750 1000 1250 1500

Load (lbs)

Current Draw (amps)

7
6
5
4
3
2
1
0
500 750 1000 1250 1500

Load (lbs)

Duty Cycle (rnm)

650
600
550
500
450
500 750 1000 1250 1500

Load (lbs)

Duty Cycle ratings represent total travel per hour with equally timed intervals between cycles.

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
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 195 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/Dayton can customize bevel gear jacks to meet your requirements.

To properly size jacks, follow the design tips on page 151 and refer to the Thermal Graphs and Column Load charts (pages 152 to 154). Use JAX® software to determine dynamic capacity of jacks or contact Joyce/Dayton.
Joyce/Dayton 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 150.
BEVEL GEAR JACKS ORDERING INFORMATION

Instructions: Select a model number from this chart.

<table>
<thead>
<tr>
<th>Joyce Bevel Gear® Jacks</th>
<th>Bevel Gear Jack Rise</th>
<th>Screw Stops (p. 10) and Boots (p. 170)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B6150S</td>
<td>B6150D</td>
<td>Rise is travel expressed in inches and not the actual screw length.</td>
</tr>
<tr>
<td>B6250S</td>
<td>B6250D</td>
<td>Screw stops are optional on Bevel gear jacks. When specified, the closed height of the jack and protection tube length may be increased.</td>
</tr>
<tr>
<td>B6375S</td>
<td>B6375D</td>
<td></td>
</tr>
<tr>
<td>B6450S</td>
<td>B6450D</td>
<td></td>
</tr>
</tbody>
</table>

Follow the design tips (pp. 151-154). Detailed product information (pp. 155-158). Right hand screw threads standard.

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)

Jack Design

- S=Translating
- K=Keyed for Non Rotation
- N=Traveling Nut

Encoders and Electronic Limit Switches

- ENCX=Encoder (p. 178)
- ELS2=2 Position Electronic Switch
- ELS4=4 Position Electronic Switch
- ELS6=6 Position Electronic Switch

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

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

XXXX-STDX-XXXX

Shaft 1 Code
Shaft 2 Code
Shaft 3 Code

Additional Options

- X=Standard Jack, no additional options
- S=Additional Specification Required (comment as necessary)
- B=Protective Boot
- D=Dual Protective Boot
- 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

Mechanical Limit Switches (pp. 174-175)

Ordering Example: LA13

Models | Code  | Available Positions |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-402</td>
<td>LI</td>
<td>Number of DPDT Switches (see p. 175)</td>
</tr>
<tr>
<td>LS8-402</td>
<td>LA</td>
<td></td>
</tr>
<tr>
<td>LS8-404</td>
<td>LB</td>
<td></td>
</tr>
<tr>
<td>LS9-502</td>
<td>LC</td>
<td></td>
</tr>
<tr>
<td>LS9-503</td>
<td>LD</td>
<td></td>
</tr>
<tr>
<td>LS9-504</td>
<td>LE</td>
<td></td>
</tr>
<tr>
<td>LS9-505</td>
<td>LF</td>
<td></td>
</tr>
<tr>
<td>LS9-506</td>
<td>LG</td>
<td></td>
</tr>
<tr>
<td>LS9-507</td>
<td>LH</td>
<td></td>
</tr>
</tbody>
</table>

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

joycedayton.com

Custom products are available • Contact Joyce/Dayton with your requirements

sales@joycedayton.com

800-523-5204
## BEVEL GEAR JACKS
### SPECIFICATIONS AND DESIGN TIPS

<table>
<thead>
<tr>
<th>Model</th>
<th>Static Lead Capacity</th>
<th>Screw</th>
<th>Bevel Gear Ratio</th>
<th>Pinion Turns for 1 Travel</th>
<th>Pinion Torque (In. Lbs.)</th>
<th>Screw Torque</th>
<th>Jack Efficiency</th>
<th>Jack Cooling Time</th>
<th>Base Weight (Lbs.)</th>
<th>Add for Each Inch of Travel (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG150-S</td>
<td>14,000 lbs.</td>
<td>1 1/2</td>
<td>.375P STUB ACME</td>
<td>2.69:1</td>
<td>7.18</td>
<td>.059W*</td>
<td>.151W*</td>
<td>38.5%</td>
<td>38 min.</td>
<td>42</td>
</tr>
<tr>
<td>BG150-D*</td>
<td>14,000 lbs.</td>
<td>1 1/2</td>
<td>.500P / .500L ACME 2C</td>
<td>2.69:1</td>
<td>5.38</td>
<td>.060W*</td>
<td>.109W*</td>
<td>45.6%</td>
<td>38 min.</td>
<td>42</td>
</tr>
<tr>
<td>BG250-S</td>
<td>30,000 lbs.</td>
<td>2 1/2</td>
<td>.500P ACME 2C</td>
<td>2.15:1</td>
<td>4.31</td>
<td>.111W*</td>
<td>.227W*</td>
<td>34.2%</td>
<td>82 min.</td>
<td>140</td>
</tr>
<tr>
<td>BG250-D*</td>
<td>30,000 lbs.</td>
<td>2 1/2</td>
<td>.375F / .750L ACME 2C</td>
<td>2.15:1</td>
<td>2.87</td>
<td>.133W*</td>
<td>.272W*</td>
<td>42.6%</td>
<td>82 min.</td>
<td>140</td>
</tr>
<tr>
<td>BG375-S</td>
<td>66,000 lbs.</td>
<td>3 3/4</td>
<td>.666P ACME 2C</td>
<td>3.52:1</td>
<td>5.29</td>
<td>.098W*</td>
<td>.329W*</td>
<td>31.5%</td>
<td>192 min.</td>
<td>230</td>
</tr>
<tr>
<td>BG375-D*</td>
<td>66,000 lbs.</td>
<td>3 3/4</td>
<td>.666P / 1.333L STUB ACME</td>
<td>3.52:1</td>
<td>2.64</td>
<td>.134W*</td>
<td>.448W*</td>
<td>46.0%</td>
<td>192 min.</td>
<td>230</td>
</tr>
<tr>
<td>BG450-S</td>
<td>218,000 lbs.</td>
<td>4 1/2</td>
<td>.500P ACME 2C</td>
<td>3:1</td>
<td>6</td>
<td>.125W*</td>
<td>.356W*</td>
<td>21.9%</td>
<td>262 min.</td>
<td>650</td>
</tr>
<tr>
<td>BG450-D*</td>
<td>200,000 lbs.</td>
<td>4 1/2</td>
<td>.500P / 1.00L ACME 2C</td>
<td>3:1</td>
<td>3</td>
<td>.154W*</td>
<td>.438W*</td>
<td>35.5%</td>
<td>262 min.</td>
<td>650</td>
</tr>
</tbody>
</table>

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

**Double Lead Screws.**

**Single Lead Screws.** These jacks are self-locking.

**W:** Load in Pounds.

**S:** Lead.

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

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

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

**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).**

**Efficiency:** due to increased efficiency while offering the same (100º below dropping point of grease).

**Limiting the lifting nut temperature rise from 70ºF to 200ºF graphs on pages 152 and 153.**

**Graphs on pages 152 and 153.**

**Application. The continuous running time should not exceed the corresponding T (time) value. Refer to instructions and graphs on pages 152 and 153.**

**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).**

**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.**

**Bevel gear jacks are furnished with one input shaft in position #1. Jacks may be ordered with up to three input shafts located at any combination of positions #1, 2, or 3.**

**System horsepower and torque – also see item #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® software will not do this).** Contact Joyce/Dayton for assistance.

6. When selecting multiple bevel gear jacks for an interconnected row or system (page 195) 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 150.**

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/Dayton for lubrication and other instructions.**

---

**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 152 and 153.

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® 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 154)
   - 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® software will not do this). Contact Joyce/Dayton for assistance.

---

**2D and 3D models available on website • Ordering information on page 150**

800-523-5204 sales@joycedayton.com joycedayton.com

151
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.

\[ PV = \frac{load \times velocity}{1000} \]

**Step 5** Calculate cooling time (T).

\[ T = \text{Cooling time (p. 151)} \times \frac{\text{time on}}{\text{time off}} \]

**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. 151).

**Step 7** Calculate horsepower.

\[ RPM = \frac{Velocity \times 12 \times \text{input turns per one-inch travel}}{12} \]

\[ \text{Horsepower} = \text{Pinion torque (from chart)} \times \text{load} \times \text{RPM} \]

---

**Note:** PV = load x velocity (fpm) / 1000

T = the maximum running time in minutes before a complete cooling time is required.
**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** \( PV = \frac{(5000 \times 10)}{1000} = 50 \)

**Step 5** \( T = 38 \) (for BG150) \( \times \) \( \frac{0.5}{2.5} = 7.6 \)

**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 150 S, therefore BG 150 D is appropriate. (reference BG150 chart on p. 152)

**Step 7** RPM = 10 \( \times \) 12 \( \times \) 5.38 = 645.6
Horsepower = \( \frac{(0.066 \times 5000 \times 646)}{63,025} = 3.38 \)

**Note:** PV = load \( \times \) velocity (fpm) / 1000

\( T \) = the maximum running time in minutes before a complete cooling time is required.
Joyce Bevel Gear® Jacks Column Loading Chart


The horizontal portion of each line represents the jack’s maximum static capacity.
BEVEL GEAR JACKS

BG 150 - 1 1/2° SCREW

Upright

Typical Plan View

Inverted

END CONDITIONS (SHOWN AT MINIMUM CLOSED POSITION)

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

2D and 3D models available on website • Ordering information on page 150

800-523-5204 sales@joycedayton.com joycedayton.com 155
BEVEL GEAR JACKS

BG 250 - 2 1/2" SCREW

Upright

Typical Plan View

Inverted

Inverted keyed

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.
Joyce high-efficiency bevel ball actuators (BB) are designed for near-continuous duty operation. BB series actuators 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 ball actuators 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 and clevis ends are also available. KFTN designs have a plain turned end condition.

Bevel ball actuators 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 195 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/Dayton can customize bevel ball actuators to meet your requirements.

Joyce/Dayton offers Bevel Ball Actuators in the following designs:
- Translating
- Keyed for traveling nut (KFTN)

A guide for ordering is on page 160.
**BEVEL BALL ACTUATORS**

**Ordering Information**

**Instructions:** Select a model number from this chart.

### Joyce Bevel Ball Actuators

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB150</td>
<td></td>
</tr>
<tr>
<td>BB225</td>
<td></td>
</tr>
<tr>
<td>BB300</td>
<td></td>
</tr>
<tr>
<td>BB400</td>
<td></td>
</tr>
</tbody>
</table>


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

**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

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

XXXX-STDX-XXXX.

**End Conditions**

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

**Actuator Configuration**

- **U** = Upright
- **I** = Inverted

**Actuator Design**

- **T** = Translating
- **K** = Keyed for Non Rotation (not a standard option)
- **N** = Traveling Nut

**Encoders and Electronic Limit Switches**

- **ENCX** = Encoder (p. 178)
- **ELS2** = 2 Position Electronic Switch
- **ELS4** = 4 Position Electronic Switch
- **ELS6** = 6 Position Electronic Switch

**Ordering Example:** LA13

**Available Positions**

<table>
<thead>
<tr>
<th>Number of DPDT Switches (see p. 175)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Mechanical Limit Switches (pp. 174-175)**

**Note:** All BB actuators are available with all mounting positions.
**BEVEL BALL ACTUATORS**

**SPECIFICATIONS AND DESIGN TIPS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Static Capacity (Lbs)</th>
<th>Screw Dia./Lead</th>
<th>Pinion Turns for 1&quot; Travel</th>
<th>Actuator Efficiency</th>
<th>Base Weight (Lbs)</th>
<th>Add for each inch of travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB150</td>
<td>15,000 15,000</td>
<td>1.50/25</td>
<td>2.69:1</td>
<td>10.77</td>
<td>72.2%</td>
<td>52 0.7</td>
</tr>
<tr>
<td>BB225</td>
<td>30,000 30,000</td>
<td>2.25/50</td>
<td>2.15:1</td>
<td>4.31</td>
<td>72.2%</td>
<td>200 2.6</td>
</tr>
<tr>
<td>BB300</td>
<td>42,500 70,000</td>
<td>3.75/66</td>
<td>3.52:1</td>
<td>5.34</td>
<td>72.2%</td>
<td>360 3.2</td>
</tr>
<tr>
<td>BB400</td>
<td>200,000 200,000</td>
<td>4.00/1.00</td>
<td>3:1</td>
<td>3.00</td>
<td>72.2%</td>
<td>740 4.8</td>
</tr>
</tbody>
</table>

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

**Design Tips**

1. Determine the load to each actuator.
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 162)
   - The allowable dynamic load for a given rise
   - Ball nut life (or use Life Expectancy of the ball screw chart on page 163)
   - 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 will not do this). Contact Joyce/Dayton for assistance.
5. When selecting bevel ball actuators for an interconnected row or system (p. 195), careful attention must be given to the input and output shaft rotations. For example, if the input shaft rotation on the first actuator is clockwise, the output shaft(s) on that same actuator will rotate counter-clockwise. To insure all actuators raise and lower in unison, alternating actuators must be specified with right and left hand ball screw threads. For example, if you need five actuators interconnected in a straight line and the first actuator is right hand, the third and fifth actuator will also need to be ordered as right hand and the second and fourth actuator will need to be ordered as left hand. Bevel ball actuators 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 actuator part number as shown on page 160.
6. Bevel ball actuators are not self-locking. They will lower under load. A brake motor or other external locking system is required.
7. Bevel ball actuators are furnished with one input shaft (pinion) in position #2. Actuators may be ordered with up to three input shafts located at any combination of positions #1, 2, or 3.
8. Translating bevel ball actuators 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 actuators are mounted upright with the jack base plate parallel to the horizon. If the base plate is oriented any other way, contact Joyce/Dayton for lubrication and other instructions.
This chart includes a 2.1 Factor-of-Safety based on the Euler-Johnson equation for column loading (Berg, Eiko 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.
Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
BEVEL BALL ACTUATORS

BB 225 - 2 1/4” SCREW

Typical Plan View

Inverted traveling nut

Inverted

Upright traveling nut

Upright

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
BEVEL BALL ACTUATORS

BB 300 - 3" SCREW

Upright

Inverted travel nut

Typical Plan View

Inverted

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

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/Dayton 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/Dayton has been designing systems for decades. Our experienced application engineers can help you put it all together. Contact us today.
OPTIONS, ACCESSORIES
AND CONTROLS

Boots 170-172
Trunnion Mounts 173
Limit Switches 174-175
Potentiometers 176
Hand Wheels and Counters 177
Encoders 178

Special Finishes 179
Anti-backlash Devices 180-181
Miter Gear Boxes 182-184
Motor Mounts and Stock Motors 185
Pillow Blocks and Flange Blocks 186-187
Couplings 188-189

Shafting 190-191
Motor Starter Controls 192
VSPS Controls 193
Linear Actuator Controls 194
System Arrangements 195
For Translating and Keyed Design Machine Screw Jacks

Joyce boots protect the screw from dust, dirt, and help maintain proper lubrication. Standard boots, fabricated from neoprene-coated nylon, also guard against moisture and corrosive contaminants. For travel distances up to 24 inches, boots are designed in 3 inches increments; for travel distances over 24 inches boots are designed for the specific travel distance (rise).

Adding protective boots may increase the closed height of the jack depending on the end condition and the amount of travel (rise) required. For instance, the chart below indicates that the closed height of a one-ton upright jack with a T2 end will increase only if the travel is greater than 9 inches.

Contact Joyce/Dayton for:
- Zippered boots
- Boots for extreme temperatures (-40°F – 500°F)
- Boots for corrosive atmospheres
- Boots for bevel gear jacks and bevel ball actuators

### OPTIONS
**PROTECTIVE BOOTS**

#### Jack Capacity

<table>
<thead>
<tr>
<th>Jack Capacity</th>
<th>A - Closed Height for Upright Jack</th>
<th>Max. Travel Without Increasing Closed Height - Upright Type 2**</th>
<th>B - Closed Height for Inverted Jack</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type 1*</td>
<td>Type 2</td>
<td>Type 3*</td>
<td>Type 4*</td>
<td>Type 1*</td>
</tr>
<tr>
<td>250/500 Lb.</td>
<td>4 1/2</td>
<td>4</td>
<td>4 1/2</td>
<td>3 3/4</td>
<td>12</td>
</tr>
<tr>
<td>1,000 Lb.</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>1 Ton</td>
<td>5 3/8</td>
<td>4 1/2</td>
<td>5 3/8</td>
<td>5 3/8</td>
<td>9</td>
</tr>
<tr>
<td>2 Ton</td>
<td>6</td>
<td>5 5/16</td>
<td>6</td>
<td>6 1/4</td>
<td>3</td>
</tr>
<tr>
<td>3 Ton</td>
<td>5 15/16</td>
<td>5 1/4</td>
<td>5 15/16</td>
<td>6 3/4</td>
<td>3</td>
</tr>
<tr>
<td>5 Ton</td>
<td>7 3/4</td>
<td>7 1/16</td>
<td>7 3/4</td>
<td>8 1/4</td>
<td>6</td>
</tr>
<tr>
<td>10 Ton</td>
<td>8</td>
<td>7 1/4</td>
<td>8</td>
<td>8 11/16</td>
<td>9</td>
</tr>
<tr>
<td>15 Ton</td>
<td>8 3/4</td>
<td>8</td>
<td>8 3/4</td>
<td>9 7/16</td>
<td>9</td>
</tr>
<tr>
<td>20 Ton</td>
<td>9 15/16</td>
<td>9 1/4</td>
<td>9 15/16</td>
<td>10 3/4</td>
<td>9</td>
</tr>
<tr>
<td>25 Ton</td>
<td>11 3/8</td>
<td>11</td>
<td>12 1/4</td>
<td>12 3/4</td>
<td>9</td>
</tr>
<tr>
<td>30 Ton</td>
<td>11 15/16</td>
<td>11 1/2</td>
<td>11 3/16</td>
<td>17 1/16</td>
<td>21</td>
</tr>
<tr>
<td>35 Ton</td>
<td>13 5/8</td>
<td>12</td>
<td>13 5/8</td>
<td>13 5/8</td>
<td>0</td>
</tr>
<tr>
<td>50 Ton</td>
<td>18</td>
<td>14 3/8</td>
<td>18</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>75 Ton</td>
<td>20 1/2</td>
<td>16 1/2</td>
<td>20 1/2</td>
<td>20 1/2</td>
<td>0</td>
</tr>
<tr>
<td>100 Ton</td>
<td>20 1/4</td>
<td>19</td>
<td>20 1/4</td>
<td>21 1/4</td>
<td>0</td>
</tr>
</tbody>
</table>

150-ton and 250-ton dimensions supplied upon request.

* Closed height given must be increased by 0.071" for each 1” of travel.
** Upright Type 2 closed height must be increased by 0.071” for each 1” over the maximum given.

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
For Translating Design Ball Screw Jacks

Joyce boots protect the screw from dust, dirt, and help maintain proper lubrication. Standard boots, fabricated from neoprene-coated nylon, also guard against moisture and corrosive contaminants. For travel distances up to 24 inches, boots are designed in 3 inches increments; for travel distances over 24 inches, boots are designed for the specific travel distance (rise).

Adding protective boots may increase the closed height of the jack depending on the end condition and the amount of travel (rise) required. For instance, the chart below indicates that the closed height of a one-ton (WBL) upright jack with a T4 end will increase only if the travel is greater than 6 inches.

Contact Joyce/Dayton for:
- Zippered boots
- Boots for extreme temperatures (-40°F – 500°F)
- Boots for corrosive atmospheres
- Boots for bevel gear jacks and bevel ball actuators

<table>
<thead>
<tr>
<th>Jack Capacity</th>
<th>A - Closed Height for Upright Jack</th>
<th>B - Closed Height for Inverted Jack</th>
<th>C - Type 4*</th>
<th>D Collar Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type 1*</td>
<td>Type 2*</td>
<td>Type 3*</td>
<td>Type 4*</td>
</tr>
<tr>
<td>1 Ton WBL</td>
<td>6 7/16</td>
<td>6 1/4</td>
<td>6 7/16</td>
<td>7 1/4</td>
</tr>
<tr>
<td>1 Ton WB</td>
<td>7 7/16</td>
<td>7 1/4</td>
<td>7 7/16</td>
<td>8 1/4</td>
</tr>
<tr>
<td>2 Ton</td>
<td>8 3/8</td>
<td>7 3/4</td>
<td>8 3/8</td>
<td>9 5/8</td>
</tr>
<tr>
<td>5 Ton</td>
<td>10 1/2</td>
<td>11</td>
<td>10 1/2</td>
<td>13 3/8</td>
</tr>
<tr>
<td>10 Ton WBL/ HWBL</td>
<td>11 1/4</td>
<td>10 5/16</td>
<td>11 1/4</td>
<td>13 1/16</td>
</tr>
<tr>
<td>10 Ton WB/HWB</td>
<td>15</td>
<td>14 1/2</td>
<td>15</td>
<td>16 3/4</td>
</tr>
<tr>
<td>30 Ton</td>
<td>23 1/4</td>
<td>22 9/16</td>
<td>23 1/4</td>
<td>28 5/16</td>
</tr>
<tr>
<td>50 Ton</td>
<td>27 3/16</td>
<td>26 7/16</td>
<td>27 3/16</td>
<td>32 1/2</td>
</tr>
</tbody>
</table>

* Closed height given must be increased by 0.071" for each 1” of travel.
** Type 4 closed height must be increased by 0.071" for each 1” over the maximum given.

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
For Traveling Nut Design Machine and Ball Screw Jacks

Joyce boots for Traveling Nut (KFTN, rotating screw) Jacks protect the screw from dust, dirt, and help maintain proper lubrication. Standard boots, fabricated from neoprene-coated nylon, also guard against moisture and corrosive contaminants.

KFTN design jacks require an upper and lower boot to cover the rotating lifting screw. Diagrams of upright and inverted machine screw jacks are shown. Refer to the chart below to find the outside boot diameter, sleeve diameter, and the large and small diameter of the traveling nut. (When mounting boots to ball screw jacks, do not attach them to the small traveling nut diameter.)

Adding dual protective boots increases the closed height and screw length of KFTN jacks. Since many mounting configurations exist, customers will need to provide additional mounting detail.

Contact Joyce/Dayton for:
- Specific mounting options for ball screw jacks
- Specific mounting options for machine screw jacks
- Zippered boots
- Boots for extreme temperatures (-40°F – 500°F)
- Boots for corrosive atmospheres
- Boots for bevel gear jacks and bevel ball actuators

<table>
<thead>
<tr>
<th>Jack Capacity</th>
<th>A - O.D. of Boot</th>
<th>B - Collar Diameter</th>
<th>C - Collar Diameter</th>
<th>D - Collar Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACME Nut</td>
<td>Ball Nut</td>
</tr>
<tr>
<td>250/500 Lb.</td>
<td>3</td>
<td>2 5/16</td>
<td>2 1/4</td>
<td>1</td>
</tr>
<tr>
<td>1,000 Lb.</td>
<td>3</td>
<td>2 5/16</td>
<td>2 1/4</td>
<td>1</td>
</tr>
<tr>
<td>1 Ton</td>
<td>5</td>
<td>2 3/4</td>
<td>3 1/4</td>
<td>2 5/8</td>
</tr>
<tr>
<td>2 Ton</td>
<td>5</td>
<td>3 3/4</td>
<td>3 1/4</td>
<td>3 1/4</td>
</tr>
<tr>
<td>3 Ton</td>
<td>5 1/2</td>
<td>3 3/4</td>
<td>3 1/4</td>
<td></td>
</tr>
<tr>
<td>5 Ton</td>
<td>5 1/2</td>
<td>4 3/4</td>
<td>4</td>
<td>4 15/16</td>
</tr>
<tr>
<td>10 Ton</td>
<td>6 1/2</td>
<td>5 3/4</td>
<td>6</td>
<td>5 3/8</td>
</tr>
<tr>
<td>15 Ton</td>
<td>6 1/2</td>
<td>5 3/4</td>
<td>6 1/2</td>
<td></td>
</tr>
<tr>
<td>20 Ton</td>
<td>6 1/2</td>
<td>6</td>
<td>7 1/2</td>
<td>5 3/8</td>
</tr>
<tr>
<td>25 Ton</td>
<td>8</td>
<td>7 1/2</td>
<td>8 1/2</td>
<td></td>
</tr>
<tr>
<td>30 Ton</td>
<td>8</td>
<td>8 1/4</td>
<td>7 3/8</td>
<td>7 3/8</td>
</tr>
<tr>
<td>35 Ton</td>
<td>10</td>
<td>8 1/2</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>50 Ton</td>
<td>10</td>
<td>11 5/8</td>
<td>10</td>
<td>9 3/4</td>
</tr>
<tr>
<td>75 Ton</td>
<td>13</td>
<td>13 1/2</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>100 Ton</td>
<td>14 1/2</td>
<td>15</td>
<td>12 3/4</td>
<td></td>
</tr>
</tbody>
</table>

**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.
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.

<table>
<thead>
<tr>
<th>Machine Screw</th>
<th>Jack Model</th>
<th>Common Dimensions</th>
<th>Upright - Inverted</th>
<th>Upright - Inverted Traveling Nut</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A B C D E F G H J K L M N P R S T U V W X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ball Screw</td>
<td>2 Ton RWB/RHBW</td>
<td>7 1/4 3 1/4 1 1/4</td>
<td>.7491 .7491</td>
<td>1 1/4</td>
</tr>
<tr>
<td></td>
<td>5 Ton W/J/DWJ</td>
<td>8 1/4 5 3/4 1 1/2</td>
<td>.9979 .9979</td>
<td>1 1/2</td>
</tr>
<tr>
<td></td>
<td>10 Ton W/J/DWJ</td>
<td>9 1/4 2 2 1/4</td>
<td>1.2598</td>
<td>0.9979</td>
</tr>
<tr>
<td></td>
<td>15 Ton W/JD/WJ</td>
<td>9 1/2 2 1/4</td>
<td>1.4988</td>
<td>1.4978</td>
</tr>
<tr>
<td></td>
<td>20 Ton WJ/DWJ</td>
<td>11 1/4 8 2 1/4</td>
<td>1.4988</td>
<td>1.4978</td>
</tr>
<tr>
<td>Ball Screw</td>
<td>5 Ton WBJ</td>
<td>8 1/4 5 3/4 1 1/2</td>
<td>.9979</td>
<td>1 1/2</td>
</tr>
<tr>
<td></td>
<td>5 Ton W/HDWJ</td>
<td>9 1/4 2 2 1/4</td>
<td>1.2598</td>
<td>0.9979</td>
</tr>
<tr>
<td></td>
<td>10 Ton WBJ</td>
<td>9 1/4 2 2 1/4</td>
<td>1.2598</td>
<td>0.9979</td>
</tr>
<tr>
<td></td>
<td>10 Ton W/HDWJ</td>
<td>9 1/4 2 2 1/4</td>
<td>1.2598</td>
<td>0.9979</td>
</tr>
<tr>
<td></td>
<td>20 Ton WBJ</td>
<td>11 1/4 8 2 1/4</td>
<td>1.4988</td>
<td>1.4978</td>
</tr>
</tbody>
</table>

Trunnion adapter mounted to inverted jacks will decrease the minimum closed dimension and may shorten the travel.

*Contact Joyce/Dayton 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.
OPTIONS LIMIT SWITCHES

Rugged Joyce limit switches allow you to set precise travel limits and stops 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, actuators, 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 — 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 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 NEMA 4 rated enclosure — rated for dust, rain and hose directed water. Simply loosen a cam detent screw and rotate the switch trip cam to the desired position to achieve switch adjustment.

**LS9 Limit Switch**

The LS9 limit switch is recommended for general-purpose applications that require two to seven switches. Similar to the LS8 model, the LS9 offers the same high quality NEMA 4 rated enclosure. Five models are available, from the two-switch LS9 502 to the seven-switch LS9 507. Switch adjustment is accomplished with screwdriver adjustment of a self-locking wormgear connected to the switch cam. Switches can be either all SPDT or all DPDT.
**OPTIONS LIMIT SWITCHES**

Rotation positions shown looking into end of shaft.

- Machine Screw Jacks (p. 18)
- Machine screw ComDRIVEs® (p. 45)
- Stainless Steel Jacks (p. 58)
- Metric Screw Jacks (p. 71)
- Ball Screw Jacks (p. 80)
- BallScrew ComDRIVEs (p. 102)
- Electric Cylinders (p. 118)
- Integrated Actuators (p. 135)

2, 3, 5, 10, 15 and 20-ton jacks are available with limit switch positions #1, #3 and #5. 25, 30, 35, 50 and 75-ton jacks are available with limit switch positions #1, #4, #7 and #8. *Refer to specific product drawing.

---

**Dimensions**

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7 402</td>
<td>3.81</td>
<td>6.13</td>
<td>1.75</td>
<td>5.44</td>
<td>5.00</td>
<td>5.63</td>
<td>1/2 NPT</td>
<td>7.63</td>
<td>9.00</td>
<td>10.13</td>
<td>15.22</td>
<td>7.0</td>
<td>3.28</td>
<td>3.88</td>
</tr>
<tr>
<td>LS8 404</td>
<td>6.50</td>
<td>8.38</td>
<td>2.00</td>
<td>8.50</td>
<td>6.25</td>
<td>8.25</td>
<td>1 NPT</td>
<td>8.62</td>
<td>10.00</td>
<td>11.19</td>
<td>16.47</td>
<td>9.62</td>
<td>4.53</td>
<td>5.25</td>
</tr>
<tr>
<td>LS8 502 – 507</td>
<td>6.31</td>
<td>9.25</td>
<td>1.50</td>
<td>8.69</td>
<td>7.25</td>
<td>8.81</td>
<td>1/2 NPT</td>
<td>9.31</td>
<td>10.75</td>
<td>11.88</td>
<td>16.78</td>
<td>10.19</td>
<td>4.84</td>
<td>5.50</td>
</tr>
</tbody>
</table>

**LS8 (400 Series) and LS9 (500 Series) Switch Combination Chart**

<table>
<thead>
<tr>
<th>Switch Quantity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. P. T.</td>
<td>0</td>
<td>402/502</td>
<td>503</td>
<td>404/504</td>
<td>505</td>
<td>506</td>
<td>507</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>402</td>
<td>404</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>402/502</td>
<td>404</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>503</td>
<td>404</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>404/504</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>505</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

---

Custom products are available • Contact Joyce/Dayton with your requirements

800-523-5204  sales@joycedayton.com  joycedayton.com

175
Joyce geared potentiometers are ideal for precise 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.

<table>
<thead>
<tr>
<th>Order Codes</th>
<th>Rating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>POTA</td>
<td>0-10 V</td>
<td>IP65</td>
</tr>
<tr>
<td>POTB</td>
<td>4-20mA</td>
<td>IP65</td>
</tr>
<tr>
<td>POTC</td>
<td>0-10 V 2 limit switches</td>
<td>IP52*</td>
</tr>
<tr>
<td>POTD</td>
<td>4-20mA 2 limit switches</td>
<td>IP52*</td>
</tr>
</tbody>
</table>

* IP65 available as an option

### Geared Potentiometer Electrical Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>10 kΩ</td>
</tr>
<tr>
<td>Resistance Tolerance</td>
<td>+/- 5 %</td>
</tr>
<tr>
<td>Linearity Tolerance</td>
<td>+/- 0.25%</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>2 W at 70°C</td>
</tr>
<tr>
<td>Standard Residual End Point Resistance</td>
<td>Greater of 0.2% or 1Ω</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20°C to 80°C</td>
</tr>
<tr>
<td>Expected Service Life (shaft rev)</td>
<td>2 x 10⁶</td>
</tr>
<tr>
<td>Housing</td>
<td>Aluminum</td>
</tr>
</tbody>
</table>

### Instrument Transformer Characteristics POTB and POTD

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage (+U)</td>
<td>24 VDC +/- 20%</td>
</tr>
<tr>
<td>Max. Load Impedance (R)</td>
<td>&lt;500 Ω</td>
</tr>
<tr>
<td>Output Current (IMESS)</td>
<td>4-20 mA 24 V DC +/- 20 %, with load ≤ 500</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20°C to 80°C</td>
</tr>
<tr>
<td>4-20mA signal increases as screw extends</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jack Capacity</th>
<th>POTA and POTB “A”</th>
<th>POTC and POTD “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Ton</td>
<td>8 1/4</td>
<td>10 7/8</td>
</tr>
<tr>
<td>2.5 Ton</td>
<td>8 7/8</td>
<td>10 7/8</td>
</tr>
<tr>
<td>3 Ton</td>
<td>9</td>
<td>10 7/8</td>
</tr>
<tr>
<td>5 Ton</td>
<td>10 7/8</td>
<td>12 4/8</td>
</tr>
<tr>
<td>10 Ton</td>
<td>12 1/4</td>
<td>14 1/8</td>
</tr>
<tr>
<td>15 Ton</td>
<td>14 1/8</td>
<td>16 1/8</td>
</tr>
<tr>
<td>20 Ton</td>
<td>16 1/8</td>
<td>18 1/8</td>
</tr>
<tr>
<td>25 Ton</td>
<td>18 1/8</td>
<td>20 1/8</td>
</tr>
<tr>
<td>30 Ton</td>
<td>20 1/8</td>
<td>22 1/8</td>
</tr>
</tbody>
</table>

### Instrument Transformer: Connection Examples

**Load against ground**

**Load against +**

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

HAND WHEELS AND COUNTERS

Hand Wheel Dimensions

<table>
<thead>
<tr>
<th>Jack Capacity</th>
<th>Dimension</th>
<th>4&quot; Diameter HW04</th>
<th>6&quot; Diameter HW06</th>
<th>8&quot; Diameter HW08</th>
<th>10&quot; Diameter HW10</th>
<th>12&quot; Diameter HW12</th>
</tr>
</thead>
<tbody>
<tr>
<td>250, 500 Lb. and 1,000 Lb.</td>
<td>A</td>
<td>4 5/8</td>
<td>6 1/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>3/8</td>
<td>5/8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Ton</td>
<td>A</td>
<td>5 3/8</td>
<td>6 7/8</td>
<td>7 5/8</td>
<td>8 1/2</td>
<td>8 7/8</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1 1/2</td>
<td>1 1/2</td>
<td>2 1/2</td>
<td>3 1/2</td>
<td>4 1/2</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1/2</td>
<td>1 3/8</td>
<td>1 7/8</td>
<td>2 1/4</td>
<td></td>
</tr>
<tr>
<td>2 Ton Standard Base</td>
<td>A</td>
<td>5 7/8</td>
<td>7 1/4</td>
<td>8</td>
<td>9</td>
<td>9 1/4</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1/4</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>3 1/4</td>
<td>4 1/4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>0</td>
<td>3/8</td>
<td>3/4</td>
<td>1 1/4</td>
<td>1 5/8</td>
</tr>
<tr>
<td>2 Ton Reverse Base</td>
<td>A</td>
<td>5 3/4</td>
<td>7 1/4</td>
<td>8</td>
<td>9</td>
<td>9 1/4</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>3 1/4</td>
<td>4 1/4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 3/4</td>
<td>1 3/4</td>
<td>2 1/8</td>
<td>3</td>
<td>3 3/8</td>
</tr>
<tr>
<td>Reverse Base</td>
<td>2.5 Ton</td>
<td>A</td>
<td>5 3/4</td>
<td>7 1/4</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1/4</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>3 1/4</td>
<td>4 1/4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 1/2</td>
<td>1 7/8</td>
<td>2 1/4</td>
<td>2 3/4</td>
<td>3 1/8</td>
</tr>
<tr>
<td>3 Ton</td>
<td>A</td>
<td>5 3/4</td>
<td>7 1/4</td>
<td>8</td>
<td>9</td>
<td>9 1/4</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1/4</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>3 1/4</td>
<td>4 1/4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 1/2</td>
<td>1 7/8</td>
<td>2 1/4</td>
<td>2 3/4</td>
<td>3 1/8</td>
</tr>
<tr>
<td>5 Ton</td>
<td>A</td>
<td>6 3/8</td>
<td>7 3/4</td>
<td>8 3/4</td>
<td>9 1/2</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>0</td>
<td>3/4</td>
<td>1 3/4</td>
<td>2 3/4</td>
<td>3 3/4</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 1/8</td>
<td>1 1/2</td>
<td>1 7/8</td>
<td>2 3/8</td>
<td>2 3/4</td>
</tr>
<tr>
<td>10 Ton</td>
<td>A</td>
<td>9 3/8</td>
<td>10 1/4</td>
<td>10 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1 3/4</td>
<td>2 3/4</td>
<td>3 3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 7/8</td>
<td>2 3/8</td>
<td>2 3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Ton</td>
<td>A</td>
<td>9 3/8</td>
<td>10 1/4</td>
<td>10 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>3 1/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 3/4</td>
<td>2 1/4</td>
<td>2 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 Ton</td>
<td>A</td>
<td>9 3/8</td>
<td>10 1/4</td>
<td>10 5/8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>3/4</td>
<td>1 3/4</td>
<td>2 3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 1/2</td>
<td>2</td>
<td>2 3/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hand wheels are recommended for self-locking jacks. They are aluminum.

Counter Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Jack Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Ton</td>
<td>2.5 Ton</td>
</tr>
<tr>
<td>D</td>
<td>4 1/2</td>
</tr>
</tbody>
</table>

Standard count increases as lifting screw extends. Longer wormshafts are available, contact Joyce/Dayton.

Ordering information is found within specific product sections.

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
**Precise Position Sensing**

Joyce can equip machine screw jack models between 2-ton and 150-ton capacity, 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.

Joyce's shaft-mounted encoder offers easy installation, proven reliability and virtually maintenance-free operation. It includes a six-pin electrical connector, worm shaft coupling, and mounting adapter. Standard encoders are 200 pulses per revolution.

Mating connector cables can be purchased separately. Contact Joyce/Dayton for more information.

**6-Pin Connector**

For open connector and pull-up resistor units, Pin A and Pin F are tied together. Either pin may be used for common.

**A** Power supply and output common  
**B** + Volts DC  
**C** Open  
**D** Output A  
**E** Output B  
**F** Power supply and output common

**Note:** Ring encoders are also available. Contact Joyce/Dayton with your requirements. Complete ordering information is available within the product sections.

**Dimensions**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Ton</td>
<td>5.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Ton</td>
<td>6.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Ton</td>
<td>6.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Ton</td>
<td>6.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Ton</td>
<td>7.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Ton</td>
<td>7.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 Ton</td>
<td>8.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 Ton</td>
<td>8.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 Ton</td>
<td>8.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 Ton</td>
<td>8.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 Ton</td>
<td>10.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 Ton</td>
<td>12.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 Ton</td>
<td>12.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 Ton</td>
<td>12.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Encoder Specifications**

<table>
<thead>
<tr>
<th>Speed Range</th>
<th>0-1750 rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>12 Volts DC</td>
</tr>
<tr>
<td>Current</td>
<td>60 mA–115 mA</td>
</tr>
<tr>
<td>Output Drive</td>
<td>250 mA/channel continuous</td>
</tr>
<tr>
<td>Maximum Load</td>
<td>50 ohms per channel</td>
</tr>
</tbody>
</table>

**Typical line driver wave form. Arrow indicates Channel A leads Channel B for clockwise rotation.**

**NPN Open Collector Output**

O VDC PIN B  
O OUTPUT (PIN D or E)  
O COMMON PIN A and F

**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), actuators, electric cylinders, and integrated actuators.
- Miniature jacks with aluminum housings (WJ250, WJ500, WJ1000, WJ51, WJ201, WBL51, WB51, WBL201, & WB201) 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 actuators, 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 housings, it provides superior corrosion resistance and improved wear resistance, while having little effect on the fit of mating components.

**Material and Finishes for Lifting Screws**

- Stainless steel lifting screws are standard on 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, increases resistance to wear and corrosion, and improves 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.

**Finishes for Input Shafts, Clevis Ends, and Other Components**

- Stainless steel worm shafts, standard on WJ250, WJ500, WJ1000, and all stainless steel jacks, are available as an option on most wormgear style jacks.
- Armoloy, a thin, dense chrome finish increases wear and corrosion resistance, and improves 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").

To order special finishes and materials, contact Joyce/Dayton.

**Options Finishes**

- Standard Enamel Finish
- STEEL IT Epoxy
- Standard Epoxy
- Electroless Nickel Finish

Custom products are available • Contact Joyce/Dayton with your requirements

800-523-5204 sales@joycedayton.com joycedayton.com
What are anti-backlash devices?
Anti-backlash devices are internal jack components used to minimize backlash (free movement between the lifting screw and nut) in machine screw jacks.

Why are anti-backlash devices needed?
Anti-backlash devices are typically used in reversing load applications where the lifting screw position is critical.

How many anti-backlash devices do you offer and how do they work?
Joyce/Dayton offers three unique anti-backlash designs, each use the same concept of clamping two independent nut halves against the lifting screw threads. Contact Joyce/Dayton to determine the best anti-backlash design for your requirements.

Where are anti-backlash devices used?
Anti-backlash 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 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 these high wind conditions, anti-backlash devices minimize the lifting screw movement.

Will the anti-backlash device require adjustment?
When the internal nut threads begin to wear, lifting screw backlash increases. Subsequent adjustment of the anti-backlash device compensates for the nut wear and allows the user to limit the backlash to the recommended value. Adjustment frequency will vary depending on load, duty cycle, and temperature. The anti-backlash device should be replaced when no further adjustment is possible due to thread wear.

What effect do anti-backlash devices have on torque requirements?
Torque requirements for screw jack operation are affected by the clearance between the lifting screw and nut thread. Adjusting anti-backlash devices (within recommended values for each design) will not increase the torque to move a given load. If the backlash is set below the recommended values, torque values will increase significantly and thread wear will accelerate.

Can anti-backlash devices be used on ball screw jacks and bevel ball actuators?
No. Rather, the use of oversized ball bearings in ball nut assemblies is recommended to reduce endplay in ball screw jacks and bevel ball actuators. Contact Joyce/Dayton for more information.
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 and KFTN models, 500-pound to 75-ton (upright and inverted).
- Available on some keyed models. Contact Joyce/Dayton.
- 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.
- 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.
- 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.
Joyce miter gear boxes are specifically engineered for use with Joyce jacks and actuators in multiple jacks 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.

All standard Joyce miter gear boxes are 1:1 ratio, other ratios are available in the RC series units. Four-shaft units are also available in the RC-18 through RC-204 and the MK series.

Assembly No. 7 and 8 availability:
RC-18  RC-38
RC-99  RC-204
MKA

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 Specifications

| Model No. | Maximum Torque Rating* (In. Lbs.) | Max. HP | Max. RPM | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Approx. Wt. (Lbs.) |
|-----------|----------------------------------|---------|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------|
| RC-6      | 36                               | 0.21    | 5,000    | 4 5/16 | 2 15/16 | 1 1/4 | 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      | 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-12     | 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 |

* 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 Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Maximum Torque Rating* (In. Lbs.)</th>
<th>Max. HP</th>
<th>Max. RPM</th>
<th>Approx. Wt. (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC-15</td>
<td>498</td>
<td>3.16</td>
<td>2,800</td>
<td>5</td>
</tr>
</tbody>
</table>

* Torque @ 100 RPM and 750 hours of life.

---

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

**IMITER GEAR BOXES**

**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

Dimensions are representative of 1:1 ratio miter boxes.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Maximum Torque Rating* (In. Lbs.)</th>
<th>Max. HP@400 RPM</th>
<th>Max. RPM</th>
<th>Gears</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Approx. Wt. (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC-18</td>
<td>1,803</td>
<td>11.53</td>
<td>1800</td>
<td>Precision Forged</td>
<td>11</td>
<td>5 1/2</td>
<td>2 1/16</td>
<td>4 1/4</td>
<td>4 1/4</td>
<td>2 3/4</td>
<td>7</td>
<td>3/8-18</td>
<td>.9995</td>
<td>.9980</td>
<td>2</td>
<td>4 1/8</td>
<td>11 1/16</td>
</tr>
<tr>
<td>RC-38</td>
<td>3,873</td>
<td>26.30</td>
<td>1400</td>
<td>Precision Forged</td>
<td>13</td>
<td>6 1/2</td>
<td>2 13/16</td>
<td>4 1/2</td>
<td>4 1/2</td>
<td>2 7/8</td>
<td>8</td>
<td>1/2-13</td>
<td>1.2495</td>
<td>1.2480</td>
<td>2 1/2</td>
<td>5 5/8</td>
<td>7/8</td>
</tr>
<tr>
<td>RC-99</td>
<td>9,927</td>
<td>72.54</td>
<td>1000</td>
<td>Precision Forged</td>
<td>16 1/2</td>
<td>8 1/4</td>
<td>3 3/4</td>
<td>6</td>
<td>6</td>
<td>4 1/8</td>
<td>10 5/8</td>
<td>1/2-13</td>
<td>1.3745</td>
<td>1.3730</td>
<td>2 15/16</td>
<td>7 1/2</td>
<td>1/3</td>
</tr>
<tr>
<td>RC-204</td>
<td>20,400</td>
<td>181.75</td>
<td>800</td>
<td>Precision Forged</td>
<td>19</td>
<td>9 1/2</td>
<td>4 3/4</td>
<td>8</td>
<td>8</td>
<td>4 15/16</td>
<td>13</td>
<td>5/8-11</td>
<td>1.9995</td>
<td>1.9980</td>
<td>3</td>
<td>9 1/2</td>
<td>1 1/4</td>
</tr>
</tbody>
</table>

*Torque @ 100 RPM and 750 hours of life.

**MK SERIES**

**Lubrication**

Units shipped less lubricant.
Fill with EP-90 gear oil.

- Model MKA  1 1/4 pints

| Model No. | Maximum Torque Rating (In. Lbs.) | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Approx. Wt. (Lbs.) |
|-----------|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|----|----|---|--------------|
| MKA       | 3,000                            | 12 | 8 | 2 1/4 | 5 1/2 | 8 | 6 7/8 | 9 9/16 | 11/16 | 1/2 | 1/4 x 1/8 x 1 1/2 | 1.0005 | .9995 | 1 31/32 | 4 9/16 | 2 1/8 | 33  |

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
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/Dayton for information about other types of motor mounts (i.e., IEC, pneumatic, servo motor, etc.).

### Motor Mount Dimensions

<table>
<thead>
<tr>
<th>Capacity</th>
<th>NEMA Frame Size</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ton</td>
<td>56C</td>
<td>7.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td>7.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>180TC</td>
<td>8.00</td>
<td>.63</td>
</tr>
<tr>
<td>10 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>180TC</td>
<td>9.00</td>
<td>.63</td>
</tr>
<tr>
<td>15 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>180TC</td>
<td>9.00</td>
<td>.63</td>
</tr>
<tr>
<td>20 ton</td>
<td>56C</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>140TC</td>
<td>8.25</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>180TC</td>
<td>9.00</td>
<td>.63</td>
</tr>
<tr>
<td></td>
<td>210TC</td>
<td>9.75</td>
<td>.88</td>
</tr>
</tbody>
</table>

### Motor Dimensions

<table>
<thead>
<tr>
<th>HP</th>
<th>NEMA Frame Size</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3</td>
<td>56C</td>
<td>7.06</td>
<td>9.31</td>
<td>5.94</td>
<td>4.25</td>
</tr>
<tr>
<td>1/2</td>
<td>56C</td>
<td>7.06</td>
<td>9.31</td>
<td>5.94</td>
<td>4.25</td>
</tr>
<tr>
<td>3/4</td>
<td>56C</td>
<td>7.06</td>
<td>9.31</td>
<td>5.94</td>
<td>4.25</td>
</tr>
<tr>
<td>1</td>
<td>143TC</td>
<td>7.19</td>
<td>10.25</td>
<td>6.34</td>
<td>4.56</td>
</tr>
<tr>
<td>1 1/2</td>
<td>145TC</td>
<td>7.19</td>
<td>10.25</td>
<td>6.34</td>
<td>4.56</td>
</tr>
<tr>
<td>2</td>
<td>145TC</td>
<td>7.19</td>
<td>11.25</td>
<td>6.34</td>
<td>4.56</td>
</tr>
<tr>
<td>3</td>
<td>182TC</td>
<td>9.06</td>
<td>17.38</td>
<td>7.50</td>
<td>4.56</td>
</tr>
<tr>
<td>5</td>
<td>184TC</td>
<td>9.06</td>
<td>18.75</td>
<td>7.50</td>
<td>4.56</td>
</tr>
<tr>
<td>7 1/2</td>
<td>213TC</td>
<td>10.85</td>
<td>15.81</td>
<td>7.50</td>
<td>8.25</td>
</tr>
</tbody>
</table>

Note: All dimensions are approximate, for clearance purposes only.

- All standard motors are 3-phase, 60 Hz., 208-230/460 VAC or 230/460 VAC. Other motor options are available. Maximum 1750 RPM input.
- 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® software may not accurately calculate horsepower required for systems having direct drive motors. Contact Joyce/Dayton for assistance.

Ordering information is found within specific product sections.
# ACCESSORIES: PILLOW BLOCKS

Joyce ductile iron pillow 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 block supports are suitable for shaft supports and bearing supports for rotary screws on keyed for traveling nut jacks under normal duty operation. Contact Joyce/Dayton technical support for your specific application.

---

![Pillow Block Diagram](image)

## 2 Bolt Pillow Blocks – Ductile Iron Housing – For Low Shaft Height – Setscrew Lock – Wide Inner Ring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PB-050</td>
<td>1/2</td>
<td>1/2</td>
<td>2/8</td>
<td></td>
<td></td>
<td>3/32</td>
<td>1/8</td>
<td>4/8</td>
<td>1/8</td>
<td>1/8</td>
<td>33/64</td>
<td>3/8</td>
<td>1/2</td>
<td>0.626</td>
<td>1.079</td>
</tr>
<tr>
<td>PB-063</td>
<td>5/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PB-075</td>
<td>3/4</td>
<td>1/4</td>
<td>1/2</td>
<td></td>
<td></td>
<td>3/32</td>
<td>1/2</td>
<td>4/8</td>
<td>1/2</td>
<td>1/2</td>
<td>33/64</td>
<td>3/8</td>
<td>1/2</td>
<td>0.720</td>
<td>1.220</td>
</tr>
<tr>
<td>PB-100</td>
<td>1</td>
<td>5/16</td>
<td>5/8</td>
<td></td>
<td></td>
<td>25/32</td>
<td>2/4</td>
<td>4/8</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>19/32</td>
<td>3/8</td>
<td>1/2</td>
<td>0.776</td>
</tr>
<tr>
<td>PB-125</td>
<td>1 1/4</td>
<td>13/16</td>
<td>3/32</td>
<td></td>
<td></td>
<td>27/32</td>
<td>13/16</td>
<td>5/16</td>
<td>6/16</td>
<td>1/2</td>
<td>1/2</td>
<td>45/64</td>
<td>1/2</td>
<td>1/2</td>
<td>1.000</td>
</tr>
<tr>
<td>PB-144</td>
<td>1 7/16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PB-150</td>
<td>1 1/2</td>
<td>15/16</td>
<td>3/32</td>
<td></td>
<td></td>
<td>25/32</td>
<td>15/16</td>
<td>5/16</td>
<td>7/16</td>
<td>1/2</td>
<td>1/2</td>
<td>27/32</td>
<td>1/2</td>
<td>1/2</td>
<td>1.189</td>
</tr>
<tr>
<td>PB-169</td>
<td>1 11/16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PB-175</td>
<td>1 3/4</td>
<td>2/16</td>
<td>1/8</td>
<td></td>
<td></td>
<td>17/32</td>
<td>2/16</td>
<td>5/16</td>
<td>7/16</td>
<td>1/2</td>
<td>1/2</td>
<td>25/32</td>
<td>1/2</td>
<td>1/2</td>
<td>1.189</td>
</tr>
</tbody>
</table>

---

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Joyce ductile iron 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. Flange block supports are suitable for shaft supports and bearing supports for rotary screws on keyed for traveling nut jacks under normal duty operation. Contact Joyce/Dayton technical support for your specific application.

### 4 Bolt Flange Blocks – Ductile Iron Housing – Setscrew Lock – Wide Inner Ring

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FB-050</td>
<td>1/2</td>
<td>3</td>
<td>3</td>
<td>.969</td>
<td>2 3/32</td>
<td>2 1/8</td>
<td>7/16</td>
<td>3/8</td>
<td>1 7/32</td>
<td>31/32</td>
<td>1.079</td>
<td>1.0</td>
</tr>
<tr>
<td>FB-075</td>
<td>7/8</td>
<td>3 21/32</td>
<td>3 57/64</td>
<td>1.339</td>
<td>2 3/4</td>
<td>2 3/4</td>
<td>19/32</td>
<td>7/16</td>
<td>1 17/32</td>
<td>1 3/16</td>
<td>1.339</td>
<td>1.9</td>
</tr>
<tr>
<td>FB-088</td>
<td>1</td>
<td>4 9/16</td>
<td>5 1/8</td>
<td>1.843</td>
<td>3 9/16</td>
<td>3 5/8</td>
<td>11/16</td>
<td>1/2</td>
<td>1 27/32</td>
<td>1 3/8</td>
<td>1.689</td>
<td>4.4</td>
</tr>
<tr>
<td>FB-100</td>
<td>1 1/4</td>
<td>5 3/32</td>
<td>5 43/64</td>
<td>2.063</td>
<td>4 1/32</td>
<td>4</td>
<td>11/16</td>
<td>1/2</td>
<td>2 1/8</td>
<td>1 17/32</td>
<td>1.837</td>
<td>5.6</td>
</tr>
<tr>
<td>FB-125</td>
<td>1 7/16</td>
<td>5 5/16</td>
<td>5 27/32</td>
<td>2.260</td>
<td>4 1/4</td>
<td>4 1/8</td>
<td>23/32</td>
<td>1/2</td>
<td>2 1/8</td>
<td>1 9/16</td>
<td>1.837</td>
<td>6.0</td>
</tr>
</tbody>
</table>

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

Custom products are available • Contact Joyce/Dayton with your requirements

800-523-5204 sales@joycedayton.com joycedayton.com
Joyce Model S and Model F geared couplings offer greater torque capacity than jaw couplings. 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.

### ACCESSORIES FLEXIBLE COUPLINGS

Joyce Model S and Model F geared couplings offer greater torque capacity than jaw couplings. 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.

### 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.

\[ 1 \quad 63 = 1 \text{ 5/8" dia. bore} \]

<table>
<thead>
<tr>
<th>shaft</th>
<th>shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>diameter</td>
<td>diameter</td>
</tr>
<tr>
<td>in</td>
<td>decimal</td>
</tr>
</tbody>
</table>

### 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**

<table>
<thead>
<tr>
<th>10</th>
<th>S</th>
<th>163</th>
<th>F</th>
<th>125</th>
<th>F</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>coupling size</td>
<td>coupling type</td>
<td>large diameter hub code</td>
<td>hub type</td>
<td>small diameter hub code</td>
<td>hub type</td>
<td>fit type</td>
</tr>
</tbody>
</table>

**Example: for jaw type**

<table>
<thead>
<tr>
<th>09</th>
<th>J</th>
<th>100</th>
<th>88</th>
</tr>
</thead>
<tbody>
<tr>
<td>coupling size</td>
<td>coupling type</td>
<td>large diameter hub code</td>
<td>small diameter hub code</td>
</tr>
</tbody>
</table>

### Model S Sleeve-Type

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. Bore (In.)</th>
<th>HP/100 RPM</th>
<th>Torque (In. Lbs. x 10^3)</th>
<th>Max. Offset Capacity (In.)</th>
<th>Lube Capacity</th>
<th>Dimension — Inch</th>
<th>WL Solid Hubs (Lbs.)</th>
<th>WR Solid Hubs (Lb. In.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6S</td>
<td>1/16</td>
<td>4.5</td>
<td>2.84</td>
<td>19.0</td>
<td>.009</td>
<td>3/32 oz.</td>
<td>2.0</td>
<td>.86</td>
</tr>
<tr>
<td>8S</td>
<td>1/5/8</td>
<td>7.0</td>
<td>4.41</td>
<td>16.0</td>
<td>.009</td>
<td>5/16 oz.</td>
<td>3.3</td>
<td>2.4</td>
</tr>
<tr>
<td>10S</td>
<td>1 5/8</td>
<td>15.5</td>
<td>9.77</td>
<td>12.6</td>
<td>.015</td>
<td>11/32 oz.</td>
<td>6.1</td>
<td>8.1</td>
</tr>
<tr>
<td>12S</td>
<td>1 15/16</td>
<td>22</td>
<td>13.9</td>
<td>11.5</td>
<td>.015</td>
<td>3/8 oz.</td>
<td>8.7</td>
<td>13.5</td>
</tr>
<tr>
<td>15S</td>
<td>2</td>
<td>31</td>
<td>19.5</td>
<td>11.0</td>
<td>.039</td>
<td>7/8 oz.</td>
<td>11.5</td>
<td>21.1</td>
</tr>
<tr>
<td>20S</td>
<td>2 5/8</td>
<td>51</td>
<td>32.1</td>
<td>8.8</td>
<td>.045</td>
<td>1 5/8 oz.</td>
<td>21.5</td>
<td>60.8</td>
</tr>
</tbody>
</table>

**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.
ACCESSORIES FLEXIBLE COUPLINGS

Model F Flange-Type

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. Bore (In.)</th>
<th>Load Capacity</th>
<th>Max. Load Capacity (RPM x 10^3)</th>
<th>Lube Capacity</th>
<th>Dimension — Inch</th>
<th>Wt. Solid Hubs (Lbs.)</th>
<th>WR² Solid Hubs (Lb. In.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10F</td>
<td>1 5/8</td>
<td>2 1/8</td>
<td>15.5</td>
<td>9.77</td>
<td>6.5</td>
<td>.6 oz.</td>
<td>1/32 pt.</td>
</tr>
<tr>
<td>15F</td>
<td>2</td>
<td>2 3/4</td>
<td>31</td>
<td>19.5</td>
<td>5.3</td>
<td>1 1/8 oz.</td>
<td>1/16 pt.</td>
</tr>
<tr>
<td>20F</td>
<td>2 5/8</td>
<td>3 3/8</td>
<td>51</td>
<td>32.1</td>
<td>5.0</td>
<td>2 1/2 oz.</td>
<td>1/8 pt.</td>
</tr>
</tbody>
</table>

Note: Torque values based on nitrile insert, other insert material available upon request.

Model F Coupling

Model J Jaw-Type

<table>
<thead>
<tr>
<th>Size</th>
<th>Max. Bore (In.)</th>
<th>Load Capacity</th>
<th>Dimension — Inch</th>
<th>Wt. Solid Hubs (Lbs.)</th>
<th>WR² Solid Hubs (Lb. In.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>03J</td>
<td>.375</td>
<td>3.5</td>
<td>.62</td>
<td>.81</td>
<td>.27</td>
</tr>
<tr>
<td>05J</td>
<td>.563</td>
<td>26.3</td>
<td>1.08</td>
<td>1.72</td>
<td>.48</td>
</tr>
<tr>
<td>07J</td>
<td>.750</td>
<td>43.2</td>
<td>1.36</td>
<td>2.00</td>
<td>.50</td>
</tr>
<tr>
<td>08J</td>
<td>.875</td>
<td>90.0</td>
<td>1.75</td>
<td>2.12</td>
<td>.50</td>
</tr>
<tr>
<td>09J</td>
<td>1.000</td>
<td>144.0</td>
<td>2.11</td>
<td>2.12</td>
<td>.50</td>
</tr>
</tbody>
</table>

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.

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.
Joyce shafting matches perfectly with Joyce jacks and couplings to meet a wide range of system requirements. Shafts are made from cold-finished 1018 steel, with ends machined to ANSI-standard keyways. For further information on common jack system arrangements, refer to page 195.

### Dimensions and Minimum Shaft Length

<table>
<thead>
<tr>
<th>Model</th>
<th>S50</th>
<th>S63</th>
<th>S75</th>
<th>S88</th>
<th>S100</th>
<th>S113</th>
<th>S125</th>
<th>S138</th>
<th>S150</th>
<th>S163</th>
<th>S175</th>
<th>S188</th>
<th>S200</th>
<th>S213</th>
<th>S225</th>
<th>S238</th>
<th>S250</th>
<th>S262</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange Minimum Shaft Length “L”</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Sleeve Minimum Shaft Length “L”</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Shaft Diameter “D”</td>
<td>Nominal</td>
<td>1/2</td>
<td>5/8</td>
<td>3/4</td>
<td>7/8</td>
<td>1</td>
<td>1 1/8</td>
<td>1 1/4</td>
<td>1 3/8</td>
<td>1 1/2</td>
<td>1 5/8</td>
<td>1 3/4</td>
<td>1 7/8</td>
<td>2</td>
<td>2 1/8</td>
<td>2 1/4</td>
<td>2 3/8</td>
<td>2 1/2</td>
</tr>
<tr>
<td>Shaft Diameter “D”</td>
<td>Actual</td>
<td>.500</td>
<td>.525</td>
<td>.625</td>
<td>.750</td>
<td>.875</td>
<td>1.000</td>
<td>.988</td>
<td>1.125</td>
<td>1.250</td>
<td>1.375</td>
<td>1.500</td>
<td>1.625</td>
<td>1.750</td>
<td>1.875</td>
<td>2.000</td>
<td>2.125</td>
<td>2.250</td>
</tr>
<tr>
<td>Keyway Flat Length “FL”</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.25</td>
<td>1.5</td>
<td>1.5</td>
<td>1.75</td>
<td>1.75</td>
<td>1.75</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*These are the minimum shaft lengths that can be ordered when Joyce Model “S” sleeve or “F” flange-type couplings are selected. See pages 188 and 189 for coupling information.
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

<table>
<thead>
<tr>
<th>Shaft Torque (Inch/Lbs.)</th>
<th>Nominal Shaft Diameter* (Inches)</th>
<th>Maximum** Distance Between Supports (Inches)</th>
<th>Maximum Allowable RPMs***</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.51</td>
<td>54.6</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>0.73</td>
<td>61.3</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>0.81</td>
<td>65.5</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>0.87</td>
<td>68.8</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.92</td>
<td>71.4</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>1.01</td>
<td>76.3</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>1.09</td>
<td>80.1</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>1.15</td>
<td>83.1</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>1.21</td>
<td>85.7</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>1.25</td>
<td>87.9</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>1.30</td>
<td>89.9</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>1.34</td>
<td>91.7</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>1.37</td>
<td>93.3</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>1.44</td>
<td>96.2</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>1.49</td>
<td>98.7</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>1.54</td>
<td>100.9</td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>1.59</td>
<td>102.6</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>1.63</td>
<td>104.7</td>
<td></td>
</tr>
<tr>
<td>1250</td>
<td>1.72</td>
<td>108.7</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>1.80</td>
<td>112.0</td>
<td></td>
</tr>
<tr>
<td>1750</td>
<td>1.92</td>
<td>114.9</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>1.94</td>
<td>117.5</td>
<td></td>
</tr>
<tr>
<td>2250</td>
<td>2.00</td>
<td>119.8</td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>2.05</td>
<td>122.0</td>
<td></td>
</tr>
<tr>
<td>3000</td>
<td>2.15</td>
<td>125.7</td>
<td></td>
</tr>
<tr>
<td>3250</td>
<td>2.19</td>
<td>127.4</td>
<td></td>
</tr>
<tr>
<td>3500</td>
<td>2.23</td>
<td>129.0</td>
<td></td>
</tr>
<tr>
<td>4000</td>
<td>2.31</td>
<td>131.9</td>
<td></td>
</tr>
<tr>
<td>4500</td>
<td>2.38</td>
<td>134.5</td>
<td></td>
</tr>
<tr>
<td>5000</td>
<td>2.44</td>
<td>136.9</td>
<td></td>
</tr>
<tr>
<td>6000</td>
<td>2.55</td>
<td>141.1</td>
<td></td>
</tr>
<tr>
<td>7000</td>
<td>2.65</td>
<td>144.8</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal</td>
<td>.00</td>
<td>.06</td>
<td>.13</td>
<td>.19</td>
<td>.25</td>
<td>.31</td>
<td>.38</td>
<td>.44</td>
<td>.50</td>
<td>.56</td>
<td>.63</td>
<td>.69</td>
<td>.75</td>
<td>.81</td>
<td>.88</td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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
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 end-of-travel limits
- 1/3 - 15 HP motors standard
- 200, 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, 200 volt motor.

<table>
<thead>
<tr>
<th>Motor HP Starter Part Number Suffix</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200</td>
</tr>
<tr>
<td>1/3</td>
<td>-1</td>
</tr>
<tr>
<td>1/2</td>
<td>-5</td>
</tr>
<tr>
<td>3/4</td>
<td>-9</td>
</tr>
<tr>
<td>1</td>
<td>-13</td>
</tr>
<tr>
<td>1 1/2</td>
<td>-17</td>
</tr>
<tr>
<td>2</td>
<td>-21</td>
</tr>
<tr>
<td>3</td>
<td>-25</td>
</tr>
<tr>
<td>5</td>
<td>-29</td>
</tr>
<tr>
<td>7 1/2</td>
<td>-33</td>
</tr>
<tr>
<td>10</td>
<td>-37</td>
</tr>
<tr>
<td>15</td>
<td>-41</td>
</tr>
</tbody>
</table>

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

Note: Drawings are artist's conception — not for certification; dimensions are subject to change without notice.
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 end-of-travel limits
- Speed control dial (real time)
- Emergency stop push button
- 1/3 – 3 HP motor control standard
- 200, 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

<table>
<thead>
<tr>
<th>Motor HP</th>
<th>Voltage</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200</td>
<td>230</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>1/3</td>
<td>-1</td>
<td>-2</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td>-5</td>
<td>-6</td>
<td>-7</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>-9</td>
<td>-10</td>
<td>-11</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-13</td>
<td>-14</td>
<td>-15</td>
<td></td>
</tr>
<tr>
<td>1 1/2</td>
<td>-17</td>
<td>-18</td>
<td>-19</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-21</td>
<td>-22</td>
<td>-23</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-25</td>
<td>-26</td>
<td>-27</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Dimensions**

<table>
<thead>
<tr>
<th>Item</th>
<th>Motor HP</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC Box</td>
<td>1/3 - 3</td>
<td>12”</td>
<td>12”</td>
<td>6”</td>
</tr>
<tr>
<td>VFD Box</td>
<td>1/3 - 3</td>
<td>20”</td>
<td>20”</td>
<td>10”</td>
</tr>
</tbody>
</table>

**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

Note: Drawings are artist’s conception — not for certification; dimensions are subject to change without notice.
Joyce/Dayton offers a variety of control options for linear actuators and small horsepower systems. See the charts below for specific information describing various offerings.

**Features Include:**
- NEMA 12 CSA approved enclosure
- Rocker-type contact switch
- Momentary contact for extend/retract
- Terminal strip for motor and incoming power connections

Controls for Joyce 1500 pound linear actuators are shown below.

### LA152 - 1500 Lb DC Actuator Controls

<table>
<thead>
<tr>
<th>Input – Output</th>
<th>Amp rating</th>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VDC – 12 VDC with wired relays</td>
<td>35 amp</td>
<td>07990812</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

### LA155 - 1500 Lb AC Actuator Controls

<table>
<thead>
<tr>
<th>Input – Output</th>
<th>Amp Rating</th>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC - 120 VAC with wired relays</td>
<td>15 amp</td>
<td>07990762-1</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

### General purpose actuator controls

#### 12 VDC Controls

<table>
<thead>
<tr>
<th>Input – Output</th>
<th>Amp Rating</th>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VDC – 12 VDC</td>
<td>8.5 amp</td>
<td>07990938</td>
<td>8&quot;</td>
<td>8&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td></td>
<td>25 amp</td>
<td>07990939</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37 amp</td>
<td>07990940</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 120 VAC to 12 VDC Controls

<table>
<thead>
<tr>
<th>Input – Output</th>
<th>Amp Rating</th>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC – 12 VDC</td>
<td>8.5 amp</td>
<td>07990931</td>
<td>16 3/8&quot;</td>
<td>10 3/4&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td></td>
<td>25 amp</td>
<td>07990932</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37 amp</td>
<td>07990933</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 120 VAC Controls

<table>
<thead>
<tr>
<th>Input – Output</th>
<th>Amp Rating</th>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 AC – 120 VAC</td>
<td>15 amp</td>
<td>07990964</td>
<td>6&quot;</td>
<td>6&quot;</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

Note: All packaged controls include a terminal strip and are internally wired, ready for connection to the power source. All connections must be made according to the instructions accompanying each control package.

---

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 U System

Wormgear I System
Features ComDRIVE®

Wormgear H System

Wormgear T System

Bevel Gear U System

Left Hand Screw

Right Hand Screw

Right Hand Screw

Left Hand Screw
Start with Quality Lifting Products from Joyce
- From machine screw jacks to bevel ball actuators
- From 250-pounds to 250-tons
- Standard products or customized to meet your requirements

Develop a Solid Design
- Use JAX® Software to guide your selection
- Use the system designer for your initial layout

Consult Experts
Joyce/Dayton application engineers are:
- Knowledgeable
- Experienced
- Available

Build a Complete System
Select from our extensive line of options and accessories.

Finish with the Right Controls Package
- Standard controls
- Synchronized motor controls
- Wireless controls
- Variable Speed Control
- Soft start
- Multiple motor starting systems
- Linear positioning systems
- Custom controls

Joyce/Dayton Corp.
P.O. Box 1630
Dayton, Ohio 45401
Toll Free (800) 523-5204
Phone (937) 294-6261
Fax (937) 297-7173
E-mail sales@joycedayton.com
www.joycedayton.com

FBC-46 01/13/7.5M Printed in U.S.A.