502

UNI-LIFT®

POWERFUL SCREWJACK SOLUTIONS

UNI-LIFT®

Jacks & Systems

Section Index

Model Number Index

www.uniliftjacks.com

Visit the UNI-LIFT Website to find:

- New product information
- Product manuals
  (instruction and repair part sheets)
- Integrated Solutions applications
  from around the world
- Ordering instructions to request
  product catalogs

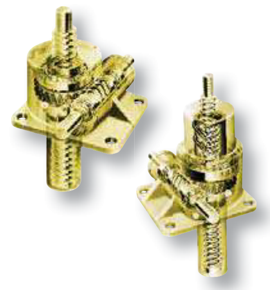
CONTACT INFORMATION:

Customer Service: (630) 408-9349
Toll Free: (888) 984-1924

PO Box 2108
Dayton, Ohio 45401

sales@uniliftjacks.com

Manufactured in an
ISO 9001:2015
Certified Facility



UNI-LIFT offers a complete range of high force tools and equipment for all industrial applications, with local availability and after sale service.

The UNI-LIFT product line is an engineered solution offering precision control in a mechanical package. Design principals integrate a power screw which converts rotary motion to linear movement. Configurations in either standard or custom designs cover a wide range of applications and use.

UNI-LIFT Screw Jacks provide force up to 250 tons, travel lengths up to 20 feet and speeds up to 175 in/min. Each Screw Jack utilizes a high-strength rolled screw and hardened gear nut to provide maximum durability. The housings are constructed with aluminum alloy or ductile iron material coupled with corrosion-resistant plating to withstand the most demanding and rigorous environments.

In addition, UNI-LIFT offers a comprehensive range of accessories to complete your system arrangement for added flexibility.

Machine Screw Jacks

UNI-LIFT M-Series, Machine Screw Jacks, offer positive locking, precise positioning and uniform lifting speeds.

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Ball Screw Jacks

UNI-LIFT B-Series, Ball Screw Jacks, provide a high speed, high cycle precision lift system.

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UNI-LIFT System Accessories

UNI-LIFT provides all power transmission components for your positioning applications.

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Engineers utilized two (2) UNI-LIFT 100-ton Screw Jacks with 15' of travel to raise and lower the ramp on each ferry dock along the Mississippi River, USA. The Department of Transportation engineers needed a way of lifting and lowering ramps during high and low tide conditions, while holding up to the harsh environmental conditions of the Gulf Coast.

When engineers needed a quick and compact way of opening the large doors of these plating tanks, they selected a UNI-LIFT solution. The application utilizes two 5-ton double-clevis Screw Jacks, with a motor and a limit switch box mounted on each. The operator just pushes a button to open the doors and pushes another to close them. This method greatly enhances operator safety and helps prevent cross-contamination between tanks.

UNI-LIFT Screw Jacks are used extensively in a variety of material handling applications. Whether used to position conveyer belts, place tension on overhead beams or to move heavy-duty equipment, UNI-LIFT Screw Jacks are the ideal solution for many jacking, tensioning, and positioning applications. Whether you have one or multiple lifting points, UNI-LIFT Screw Jacks are the perfect solution for many different OEM material handling and motion-control applications.

Model Type

- M-Series Machine Screw
- B-Series Ball Screw

Mounting Styles

- Inverted
- Upright
- Double Clevis

Screw Configurations

- Rotating
- Translating
- Keyed
- Anti-Backlash (applicable models)

Gear Ratios *(Ratios vary with tonnage)*

- Low
- Medium
- High

End Configurations

- Threaded
- Plain
- Clevis
- Top Plate

Drive Options

- Couplers
- Motors
- Motor Adaptors
- Worm Gear Reducers
- Mitre Gear Boxes
- Shafting
- Hand Wheels

Control Options

- Limit Switches
- Control Boxes / Encoders
- Transducers
- Digital Displays

Protective Options

- Boots
- Stop Nuts

Key Points to Consider When Properly Sizing an Screw Jack

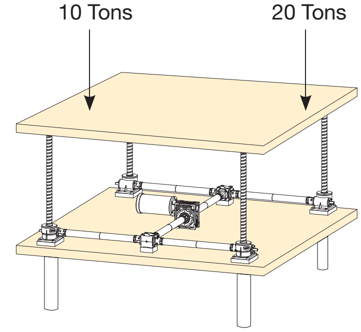
- Total system load
- Application loading conditions
- Operating intervals of the screw jack
- Linear velocity requirements
- Ambient temperature
- Environmental conditions
- Mounting position requirements
- Load screw configuration
- Screw length requirements
- End mounting requirements
- System components needed

Refer to technical specifications on pages 14 & 36.

Total Load Requirements

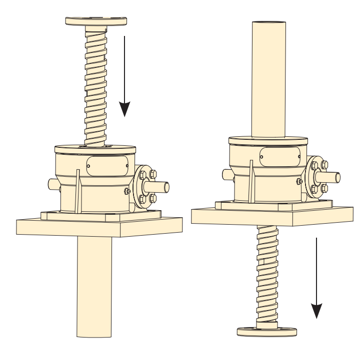
UNI-LIFT Screw Jacks can be used individually or in combination with each other to move a load.

- When a single screw jack is used, the maximum load is the highest force value the screw jack will have to sustain in a particular application.
- When more than one screw jack is used, the load can be evenly distributed or unbalanced where one or more screw jacks in the system are subjected to a higher force in the system.
- The maximum load in an unbalanced system is equal to the highest force applied to a single screw jack in the system. In the case of an unbalanced load, size the screw jack based on the maximum force applied to a single screw jack.



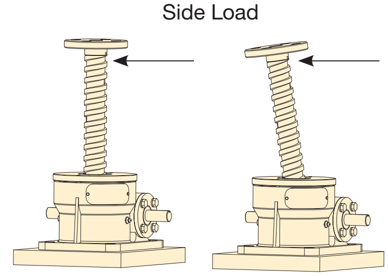
Application Loading Conditions

Loading conditions are factors that can affect the load screw during the operation. The orientation of the screw jack to the load can cause the load screw to be axially loaded in compression or tension. If the load screw will see both compression and tension loads, the use of the anti-backlash design is recommended. *Refer to page 72.*



- **Guided loads** describe a loading condition where proper alignment between the screw jack and the load is maintained by external guiding in the structure. With longer columns guided loads allow you to double your load screw length for a given load.
- **Unguided loads** describe a loading condition where the screw jacks must rely on the load screw to maintain alignment of the system. Side loads are not recommended in an unguided system.

Refer to the Technical Information Section 71 & 76 for Column Buckle information to properly size your screw jack.



Usage Requirements

- **Operating Cycle Requirements**
  To determine the type and size of the screw jack, calculate the required duty and operating cycles.

Refer to the Technical Information Section 70 & 75 for Duty Cycle information to properly size your screw jack.

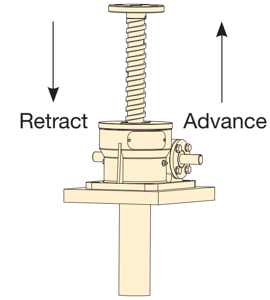
- **Linear Velocity Requirements**
  Linear velocity is the speed that the screw jack moves the load based on the output speed of the motor. Turns Per Inch (TPI) is the number of rotations of the screw jack's input shaft required for one-inch of travel. Screw Jacks are available in two to three different gear ratios.

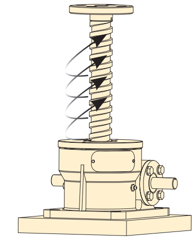
- **Operating Temperature**
  To determine the duty cycle limit you will need the maximum temperature the screw jack will be exposed to. For severe conditions, UNI-LIFT offers seal and grease options capable of operating in temperatures from -40° F to 400° F.

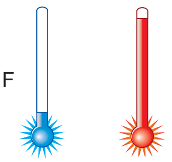
For detailed information on Safety, Installation and Maintenance refer to page 80 of the Technical Information Section .

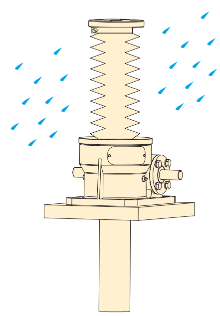
- **Environmental Conditions**
  The screw jack may require a boot to protect the load screw. Boots are used when the load screw may be exposed to contamination, corrosive environments, where an exposed screw is viewed as a hazard or where it is critical to ensure lubrication is retained
  within the screw jack to meet cleanliness requirements.

Refer to Accessory page 62 for detailed information on Boot Sizing.









Determine Which Screw Jack Best Suits the Application

- **M-Series Machine Screw Jack**
  General applications where the load screw uses a precision rolled acme, self locking screw thread that requires no cribbing to hold load into position.

- **B-Series Ball Screw Jack**
  Used in high cycle applications, the load screw uses a precision rolled ball screw. A ball screw is 90% efficient, offering a smoother, faster operation. A mechanical break is required to hold position.

Refer to M- and B-Series Overview pages 12 and 36 for detailed information on screw jack models.

M Series

B Series

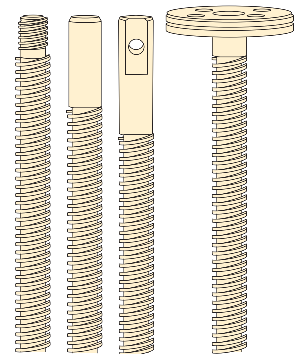
End Configurations

- **Threaded End (1)**
  The end of the load screw is machined to include a standard unified V-thread form strong enough to sustain the load capacity of the screw jack. This option can be used to attach customer supplied mounting configurations.

- **Plain End (2)**
  The end of the load screw is machined to provide a smooth, unthreaded portion suitable for engaging pillow blocks or other bearing supports. Bearing supports are highly recommended when long load screws are used. This option is only available with the Rotating design.

- **Clevis End (3)**
  The end of the load screw features a cross hole for mounting with a pinned connection. This option is used in applications that require a pivoting mount.

- **Top Plate (4)**
  The end of the load screw is adapted with a flange to provide mounting to surfaces perpendicular to the load screw. This option will easily adapt to mounting structures.



Determine The Mounting Style

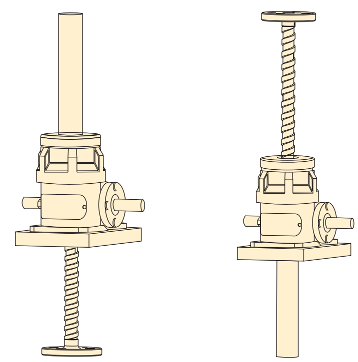
- **Inverted Configuration**
  The load screw protrudes from the same side as the machined mounting face on the housing.

- **Upright Configuration**
  The load screw protrudes from side opposite the machined mounting face on the housing.

- **Double Clevis Configuration**
  The mounting points for the housing and the screw are clevis and pin type. (Illustration not shown.)

Inverted

Upright



Determine Load Screw Configuration

- **Translating Design**
  The load screw is threaded into the driven gear. Rotation of the input shaft turns the driven gear which moves the load screw in and out of housing.

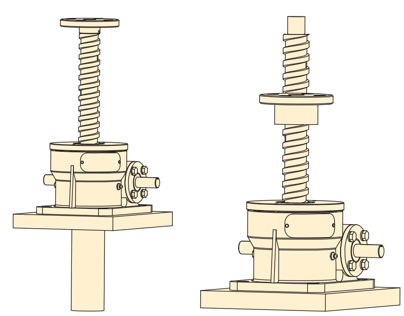
- **Rotating Design**
  The load screw is pinned to the driven gear. Rotation of the input shaft turns the driven gear which rotates the load screw. An auxiliary nut travels the exposed length of the load screw.

- **Keyed Screw Design**
  A key prevents the load screw rotation. Due to the inefficiency of this design, they are down rated to 25% of the load rated capacity. (Illustration not shown.)

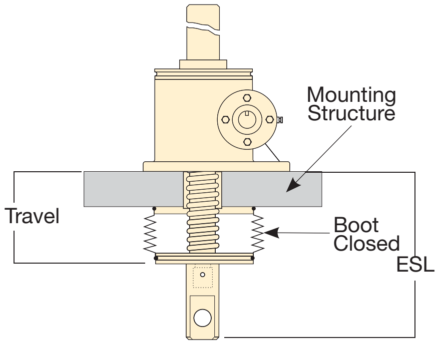
- **Anti-Backlash Design**
  An adjustable nut on the load screw eliminates axial endplay. (Illustration not shown.)
  Refer to page 72 for details.

Translating

Rotating



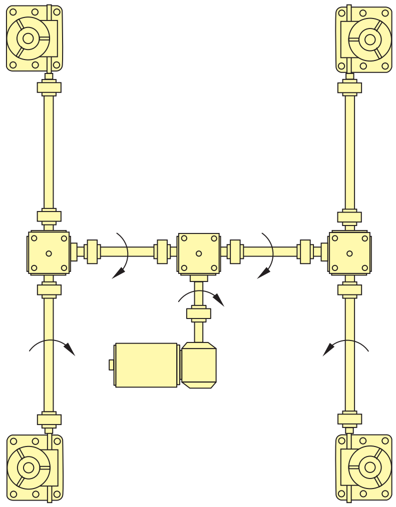
Determine The Extended Screw Length (ESL)



The length of screw that is needed to achieve the required movement, and allow for boot closed heights, traveling nuts, stop nuts and the thickness of the supporting structure between the screw jack and the load.

Refer to the Technical Information Section 71 & 76 for more information on ESL.

System Arrangement



Screw Jacks can be configured in multiple system arrangements to allow synchronized lifting. Even when the loads are unequally distributed, the system can lift uniformly. UNI-LIFT offers a complete line of power transmission equipment that can be used to set up your system.

- Determine the system arrangement that best fits the application. Calculate the required torque and horsepower requirements for the system.
- Select a motor with a power rating greater than the horse power requirement and with starting and running torque capability greater than calculated torque requirements.
- Select system torque transmission equipment (reducers, mitre gear boxes, couplings, etc.) with ratings greater than the torque to be transmitted.
- Size shafting for system starting torque to be transmitted.

Refer to the Technical Information Section for more information on Motor Sizing and

UNI-LIFT understands that no two projects are alike; therefore, we offer specialized engineering and design expertise to complete your system integration. Whether you are driving a single screw jack or a multiple screw jack system, our comprehensive range of control technologies and accessories brings your system together. UNI-LIFT Application Engineers will deliver the precise technical information and support to specify screw jack sizing, motor sizing, controls, reducers, mitre boxes, couplings, shafting and pillow blocks to accommodate any system arrangement.

UNI-LIFT's extensive manufacturing capabilities provides a single source for all of your equipment requirements.

Sample system arrangements are shown to help generate ideas. Additional information is included in the Technical Information Section starting on page 64 or contact UNI-LIFT for assistance.

Machine Screw Jacks

UNI-LIFT M-Series, Machine Screw Jacks offer positive mechanical action and precise positioning.

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Ball Screw Jacks

UNI-LIFT B-Series, Ball Screw Jacks, provide a high speed, high cycle precision lift system.

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UNI-LIFT System Accessories

UNI-LIFT provides all power transmission components for your positioning applications.

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UNI-LIFT Screw Jacks were the ideal choice for adjusting complex scaffolding required in aircraft maintenance. Their precision movement allowed safe, efficient control and positioning.

System Arrangement Reference Numbers

① *UNI-LIFT® Screw Jack*

② *Shafting*

③ *Motor Adaptor*

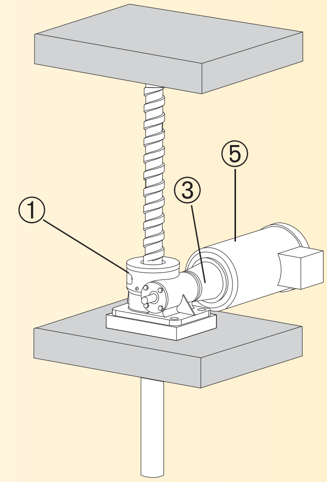
④ *Worm Gear Reducer*

⑤ *Motor*

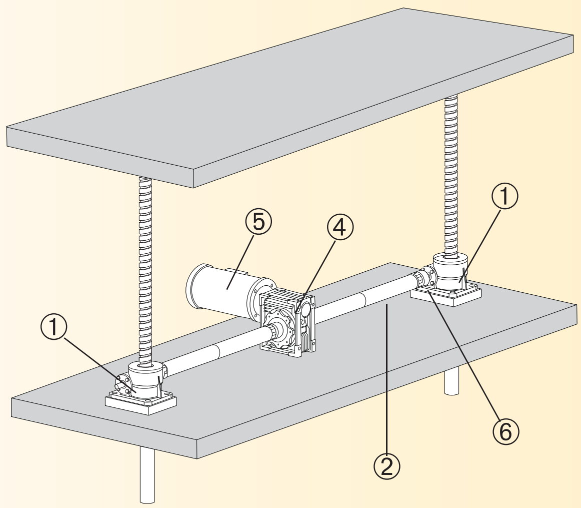
⑥ *Coupler*

⑦ *Mitre Gear Box*

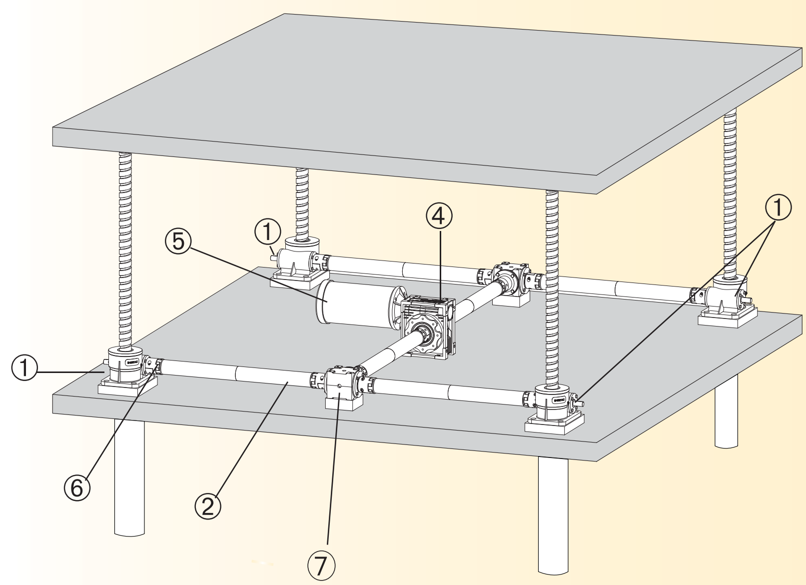
▼ Single Point Screw Jack System



▼ Two Point Screw Jack System

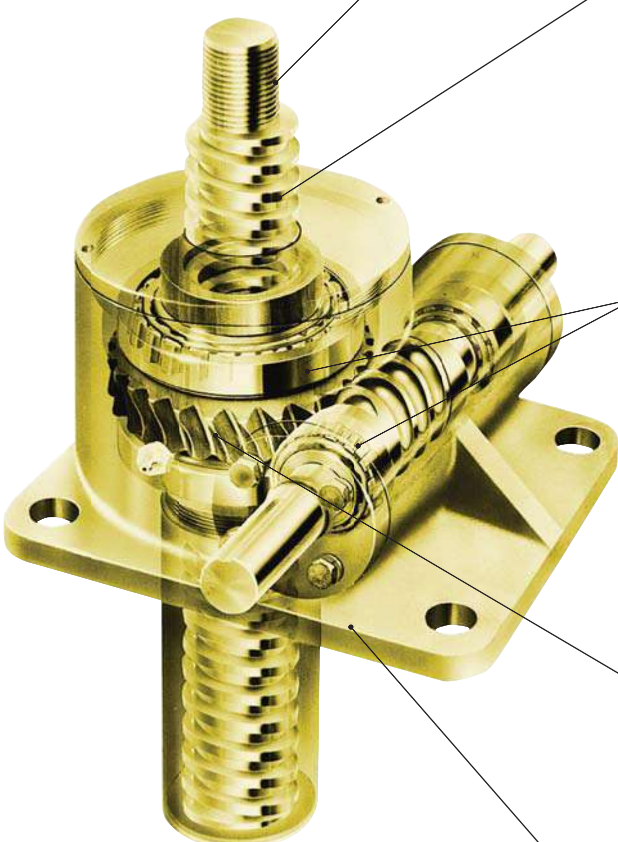


▼ Four Point Screw Jack System



UNI-LIFT Machine Screw Jacks offer precise positioning, uniform lifting speeds and capacity up to 250 tons. Standard model configurations include upright or inverted units with translating or rotating lifting screws. End configurations are available in top plate, plain, threaded or clevis ends.

Machine Screw Cutaway



Screw End Configurations

- Variety of end configurations are available including: threaded, clevis, plain and top plate.

High Strength Roll-Formed Threaded Load Screw

- Provide minimum friction for smooth operation and longer life
- Self-locking, highly accurate lead design to provide positive positioning
- Minimal axial backlash with Class 3G fit

Tapered Roller Bearings

- Preloaded for reduced assembly spring rate and high thrust loads
- Provides excellent support for side loading and horizontal applications
- Maintains exact gear alignment under separating and thrust forces
- Bearings sized for endurance and maximum loading conditions

High Strength Gearing

- Precision gears manufactured to American Gear Standards with close tolerances and minimal backlash
- Heat treated worm gear set provides greater efficiency, higher input speed and extended life

Rugged Housings

- Robust aluminum alloy or ductile iron construction

Contact UNI-LIFT!

Contact UNI-LIFT for advice and technical assistance in the layout of your ideal UNI-LIFT System.

CONTACT INFORMATION:
Customer Service: (630) 408-9349
Toll Free: (888) 984-1924
sales@uniliftjacks.com

Technical Calculations

For Technical Calculations, such as torque and motor sizing please see our "Technical Information Section".

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Frequently Asked Questions

To get answers to frequently asked questions please see our "Technical Information Section".

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M-Series, Machine Screw Jacks

▼ Shown: **Machine Screw Jacks**

- **Precision Rolled Acme Thread allows positioning within thousandths of an inch**
- **Self Locking – No cribbing required when screw jack is subjected to minimal vibration**
- **Hardened Gear Set allows higher efficiency and longer life**
- **Precision Gears allow synchronized lifting in multi-screw jack systems**
- **Rugged housings made of Cast Aluminum Alloy (MA models) or Ductile Iron to safely mount to a variety of structures**

Capacity:
.25-250 ton

Maximum Travel:
232 inches

Maximum Speed:
129 in/min

System Accessories

UNI-LIFT® offers a large array of motors, drive components, and boots to meet any demanding project.

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Customized Solutions

Our experienced sales team and application engineers will deliver the precise support you need to meet the most demanding and unique requirements. We have the capability to design custom built "special" screw jacks to suit each customer's needs.

Visit us at www.uniliftjacks.com

▼ **SELECTION CHART**

Capacity (ton)	**Model Number**	**Load Screw Diameter** (in)	**Lead of Screw** (in)
.25	**MA5**	0.500	0.250
.75	**MA15**	0.625	.250/.125
1	**MA20**	0.750	0.200
1	**M1**	0.750	0.250
2	**M2**	1.000	0.250
3	**M3**	1.000	0.250
4	**M4**	1.500	0.333
5	**M5**	1.500	0.375
8	**M8**	1.750	0.333
10	**M10**	2.000	0.500
15	**M15**	2.250	0.500
20	**M20**	2.500	0.500
25	**M25**	2.750	0.500
30	**M30**	3.375	0.667
40	**M40**	4.250	0.667
50	**M50**	4.250	0.667
75	**M75**	5.000	0.667
100	**M100**	6.000	0.750
150	**M150**	Contact UNI-LIFT®	
250	**M250**		

Configure Your M-Series Machine Screw Jack

If you cannot configure your standard M-Series Screw Jack using the Matrix, please contact UNI-LIFT for further assistance.

Customer Service: (630) 408-9349
Toll Free: (888) 984-1924
sales@uniliftjacks.com

▼ **This is how an M-Series Machine Screw Jack is configured:**

M	1	U	T	0240	L	T	-	A11	B1	L22	M5	N	S2
1	2	3	4	5	6	7		8	9	10	11	12	13

1 Model Type
M = Machine Screw Jack

2 Ton Rating
A5 = .25 Ton (aluminum)
A15 = .75 Ton (aluminum)
A20 = 1 Ton (aluminum)
1 = 1 Ton
2 = 2 Ton
3 = 3 Ton
4 = 4 Ton
5 = 5 Ton
8 = 8 Ton
10 = 10 Ton
15 = 15 Ton
20 = 20 Ton
25 = 25 Ton
30 = 30 Ton
40 = 40 Ton
50 = 50 Ton
75 = 75 Ton
100 = 100 Ton
150 = 150 Ton
250 = 250 Ton

3 Mounting Style
U = Upright
I = Inverted
D = Double Clevis *

4 Screw Configuration
T = Translating
R = Rotating
A = Anti-Backlash**
K = Keyed Translating

5 Extended Screw Length (ESL)
xxx.x = Input Value (in.)
(Do not include decimal in part No. - all data will be based on 1 decimal place)
Example: 12.0" = 0120"

6 Gear Ratio
L = Low
M = Medium
H = High

7 End Configuration
V = Threaded End
C = Clevis End
P = Plain End****
T = Top Plate

8 Motor Adaptor
First Digit
A = Motor Adaptor

Second Digit
1 = Right-Hand Mount
2 = Left-Hand Mount

Third Digit
1 = 56C
2 = 143/145TC
3 = 182/184C
4 = 182/184TC
5 = 213/215C
6 = 213/215TC

9 Boot Specifications***
First Digit
B = Boot

Second Digit
1 = 1 Boot, No Guides
2 = 2 Boots, No Guides
3 = 1 Boot, With Guides
4 = 2 Boots, With Guides

10 Limit Switch Configuration
First Digit
L = Limit Switch

Second Digit
1 = Right Hand Position, 1
2 = Right Hand Position, 2
3 = Right Hand Position, 3
4 = Right Hand Position, 4
5 = Left Hand Position, 1
6 = Left Hand Position, 2
7 = Left Hand Position, 3
8 = Left Hand Position, 4

Third Digit
1 = 2 Circuit Series 360
2 = 2 Circuit Series 1440
3 = 2 Circuit Series 4320

11 Motor Specifications
First Digit
M = Motor

Second & Third Digits
1 = 1/4 hp, 1750 RPM
2 = 1/4 hp, 1140 RPM
3 = 1/3 hp, 1750 RPM
4 = 1/3 hp, 1140 RPM
5 = 1/2 hp, 1750 RPM
6 = 1/2 hp, 1140 RPM
7 = 3/4 hp, 1750 RPM
8 = 3/4 hp, 1140 RPM
9 = 1 hp, 1750 RPM
10 = 1 hp, 1140 RPM
11 = 1.5 hp, 1750 RPM
12 = 1 hp, 1140 RPM
13 = 2 hp, 1750 RPM
14 = 2 hp, 1140 RPM
15 = 3 hp, 1750 RPM
16 = 3 hp, 1140 RPM
17 = 5 hp, 1750 RPM
18 = 5 hp, 1140 RPM
19 = 7.5 hp, 1750 RPM
20 = 10 hp, 1750 RPM

12 Stop Nut
N = Stop Nut

13 Single Shaft
First Digit
S = Shaft

Second Digit
1 = Right Hand
2 = Left Hand

*Double Clevis options are available on models: M2, M3, M4, M5, M8, M10, M15, M20
**Anti-Backlash options are available on models: M2, M5, M10, M15, M20, M30, M50
*** Standard Boot material is Neoprene, alternate materials are available, see page 62 - consult factory for boots on rotating jacks
**** Plain end for rotating jacks only.

Gear Center (in)	Gear Ratio (in)			Turns of Input Shaft - 1 inch			Torque Required to Lift 1 lbs. (in-lbs)			No Load Torque (in-lbs)	Maximum Input RPM	Estimated Weight (lbs)		Radius of Gyration (in)	Model Number
	Low	Med.	High	Low	Med.	High	Low	Med.	High			0" Travel	Per Inch		
0.938	5:1	–	–	20	–	–	0.022	–	–	2.0	2587	2	0.1	0.094	**MA5**
0.938	5:1	–	5:1	20	–	40	0.020	–	0.015	2.0	2587	2	0.1	0.125	**MA15**
1.250	5:1	–	20:1	25	–	100	0.020	–	0.010	4.0	2587	5	0.5	0.154	**MA20**
1.500	5:1	–	10:1	20	–	40	0.021	–	0.013	3.0	2587	9	0.2	0.156	**M1**
1.750	6:1	–	24:1	24	–	96	0.020	–	0.009	5.0	1800	17	0.6	0.218	**M2**
1.831	6:1	8:1	12:1	24	32	48	0.021	0.017	0.013	4.0	1800	13	0.4	0.218	**M3**
2.256	5⅓:1	12:1	24:1	16	36	72	0.030	0.018	0.012	5.0	1800	23	0.7	0.334	**M4**
2.188	6:1	–	24:1	16	–	64	0.028	–	0.011	12.0	1800	30	0.7	0.316	**M5**
3.010	6:1	–	12:1	18	–	36	0.030	–	0.019	7.0	1800	47	0.9	0.396	**M8**
2.598	8:1	–	24:1	16	–	48	0.029	–	0.015	18.0	1800	45	1.1	0.423	**M10**
2.598	8:1	–	24:1	16	–	48	0.031	–	0.015	18.0	1800	55	1.2	0.486	**M15**
2.875	8:1	–	24:1	16	–	48	0.033	–	0.021	36.0	1800	80	1.7	0.566	**M20**
4.005	9:1	–	18:1	18	–	36	0.031	–	0.019	10.0	1450	103	2.1	0.628	**M25**
3.750	10⅔:1	–	32:1	16	–	48	0.034	–	0.017	48.0	1200	145	2.9	0.743	**M30**
5.162	–	–	20:1	–	–	30	–	–	0.024	12.0	1200	230	5.0	0.985	**M40**
5.313	10⅔:1	–	32:1	16	–	48	0.040	–	0.021	96.0	1200	280	5.0	1.074	**M50**
6.003	10⅔:1	–	32:1	16	–	48	0.042	–	0.021	156.0	900	495	6.3	1.149	**M75**
7.500	12:1	–	36:1	16	–	48	0.045	–	0.024	204.0	900	845	7.4	1.387	**M100**
Contact UNI-LIFT®															**M150**
															M250

MA5 Series, Machine Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
.50" dia. X .25" lead	**Low**	5:1	20

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
Aluminum housing is standard on MA5, MA15 and MA20 Screw Jacks.
Please see page 15 for ordering Matrix.

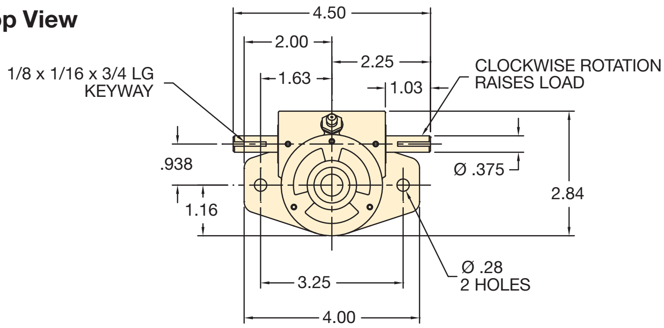
MA5 Series

Capacity:
.25 ton

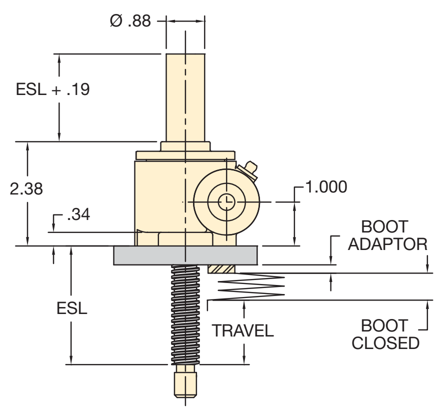
Maximum Travel:
136 inches

Maximum Speed:
129 in/min

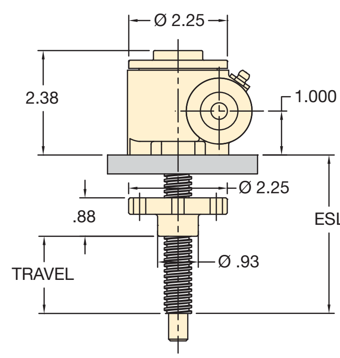
Top View



Inverted Translating

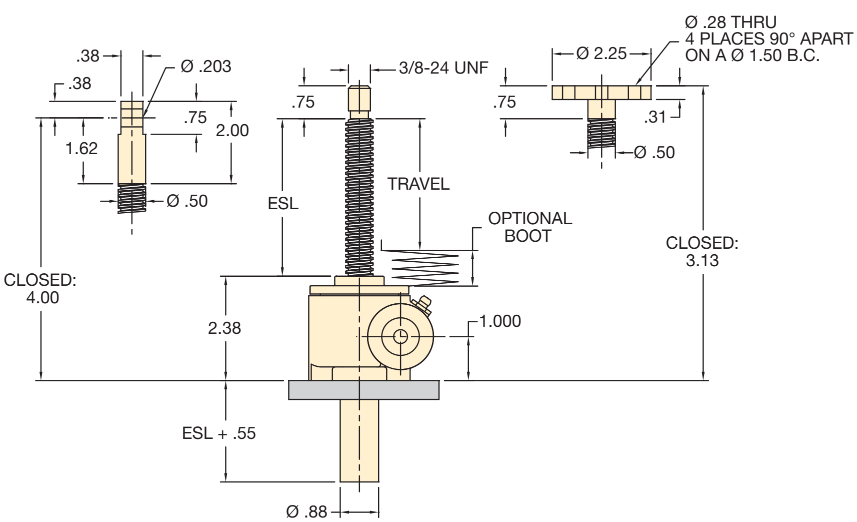


Inverted Rotating



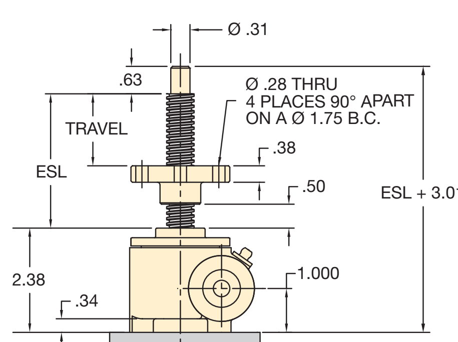
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
5/8" dia. X .25" lead	**Low**	5:1	20
5/8" dia. X .125" lead	**High**	5:1	40

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
**For keyed Screw Jacks, add 0.34" to Screw Jack housing height.
Aluminum housing is standard on MA5, MA15 and MA20 Screw Jacks.
Please see page 15 for ordering Matrix.

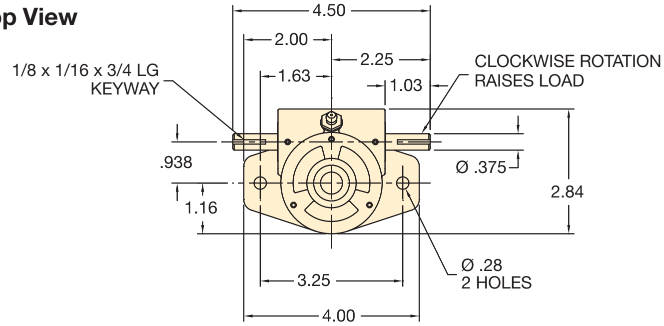
MA15 Series

Capacity:
.75 ton

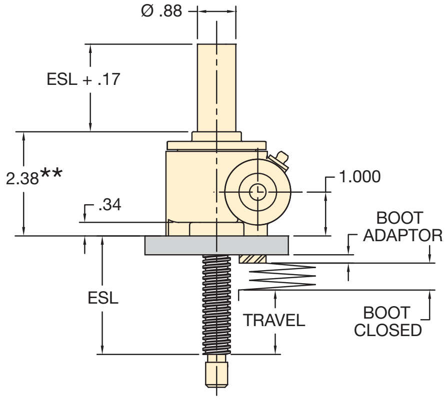
Maximum Travel:
136 inches

Maximum Speed:
129 in/min

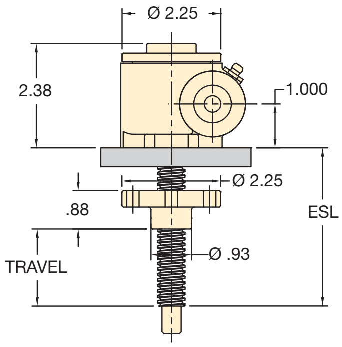
Top View



Inverted Translating

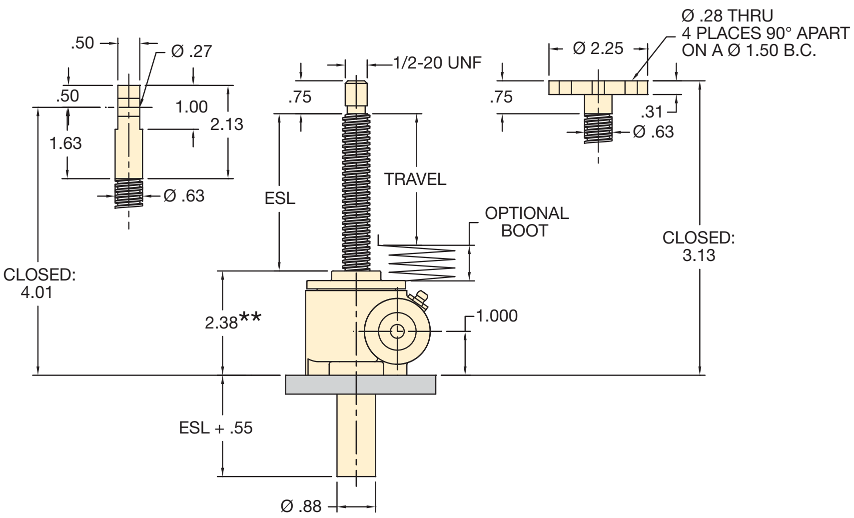


Inverted Rotating



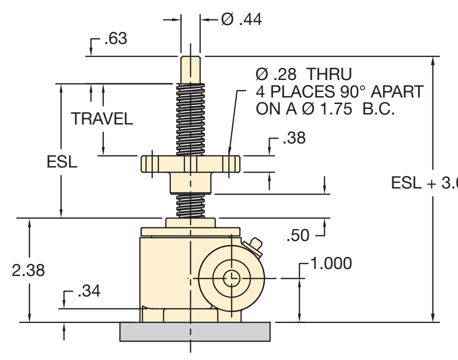
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
3/4" dia. X .200" lead	**Low**	5:1	25
	High	20:1	100

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.0" to the pipe length. ** For keyed Screw Jacks, add 0.57" to Screw Jack housing height.

Aluminum housing is standard on MA5, MA15 and MA20 Screw Jacks.

Please see page 15 for ordering Matrix.

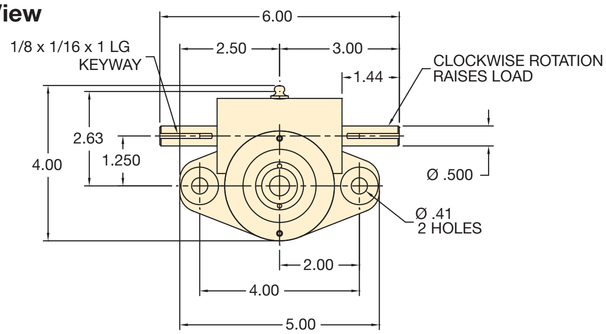
MA20 Series

Capacity:
1 ton

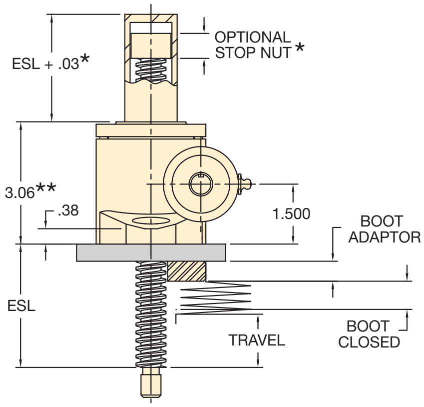
Maximum Travel:
230 inches

Maximum Speed:
104 in/min

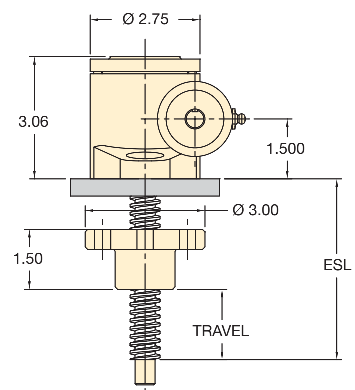
Top View



Inverted Translating

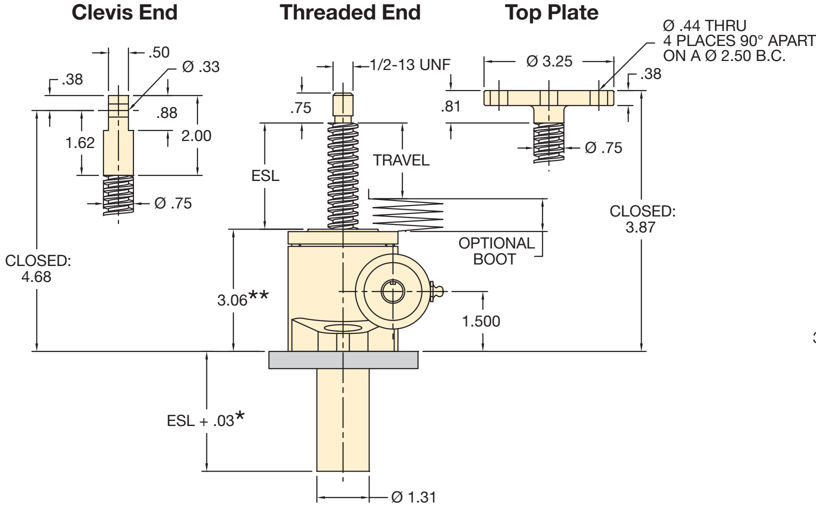


Inverted Rotating



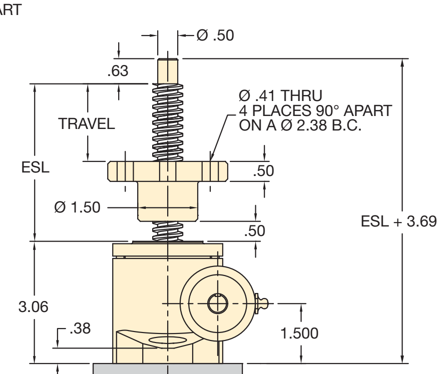
Upright Translating

Clevis End / Threaded End / Top Plate



Upright Rotating

Plain End



▼ **Technical Specifications**

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
3/4" dia. X .250" lead	**Low**	5:1	20
	High	10:1	40

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 1.0" to the pipe length. ** For keyed Screw Jacks, add 0.16" to Screw Jack housing height.
Please see page 15 for ordering Matrix.

M1 Series

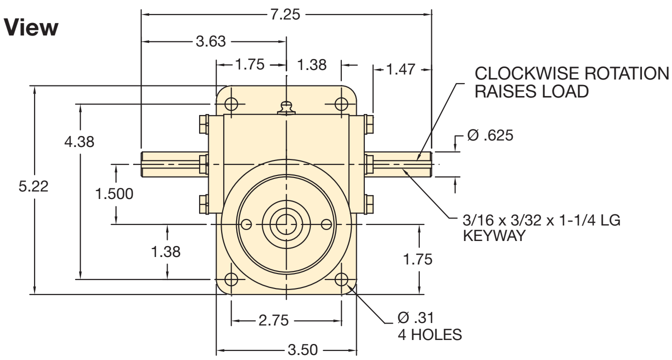
Capacity:
1 ton

Maximum Travel:
230 inches

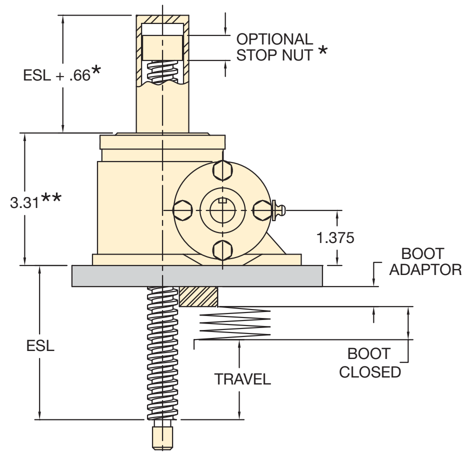
Maximum Speed:
129 in/min

Mounting Flexibility
The M1 provides added flexibility over the MA20 by allowing for direct mount of motor adaptors and rotary limit switches.

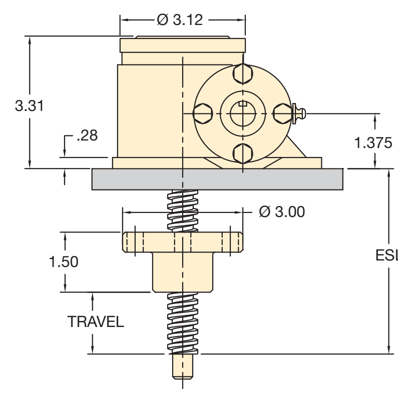
Top View



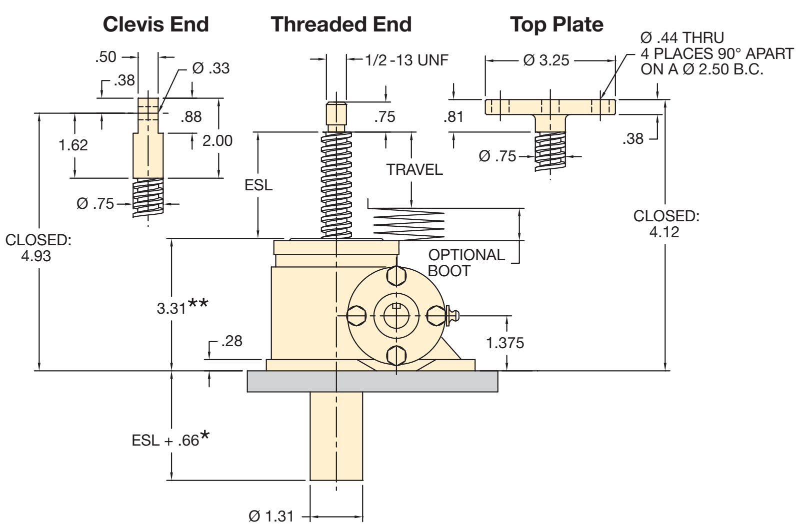
Inverted Translating



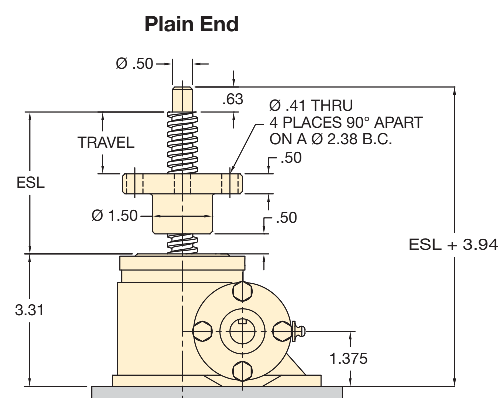
Inverted Rotating



Upright Translating



Upright Rotating



M2 Series, Machine Screw Jack

UNI-LIFT®

▼ Technical Specifications

Screw Specifications	Gear Specifications	Gear Ratio	Turns/Inch
1.00" dia. X .250" lead	**Low**	6:1	24
	High	24:1	96

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.28" to the pipe length. **For keyed Screw Jacks, add 0.06" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

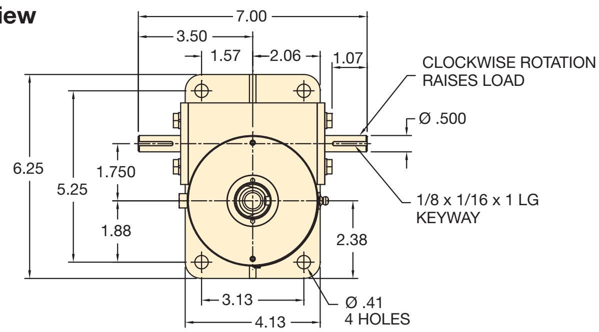
M2 Series

Capacity:
2 ton

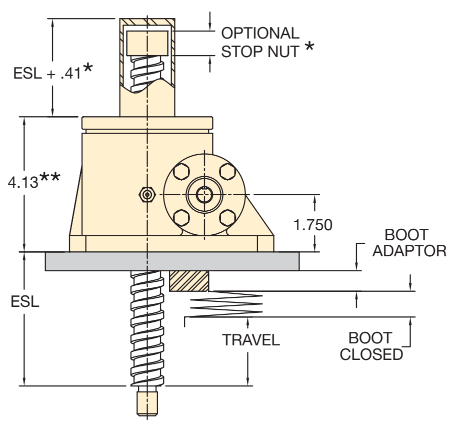
Maximum Travel:
232 inches

Maximum Speed:
75 in/min

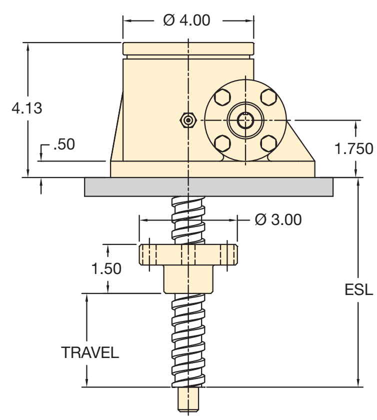
Top View



Inverted Translating

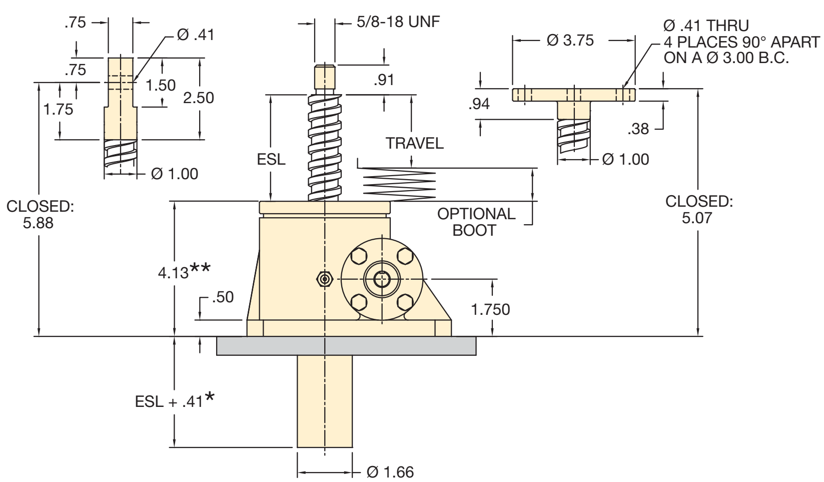


Inverted Rotating



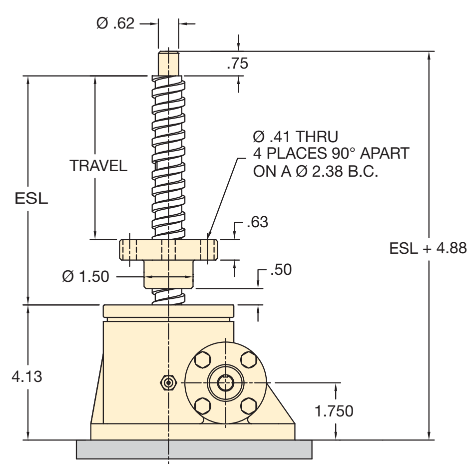
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M3 Series

Capacity:
3 ton

Maximum Travel:
229 inches

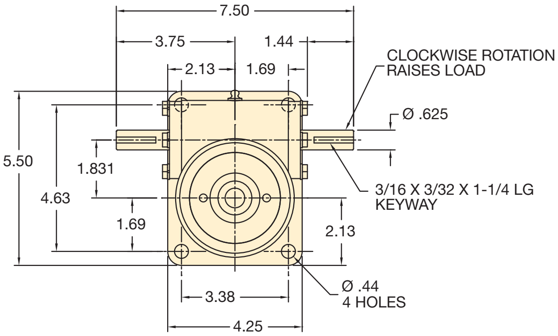
Maximum Speed:
75 in/min

▼ Technical Specifications

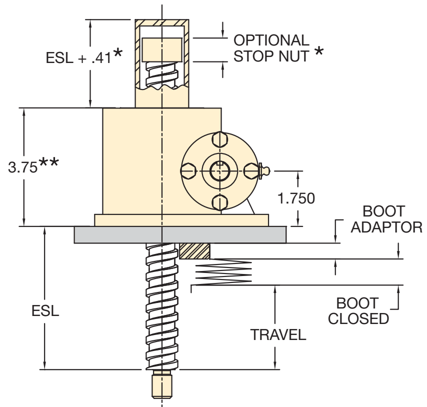
Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1.00" dia. X .250" lead	**Low**	6:1	24
	Medium	8:1	32
	High	12:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 1.28" to the pipe length. ** For keyed Screw Jacks, add 0.31" to Screw Jack housing height. Optional Double Clevis is available.
Please see page 15 for ordering Matrix.

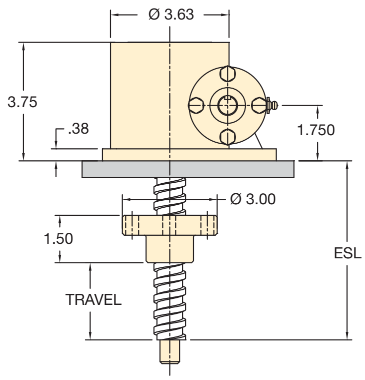
Top View



Inverted Translating

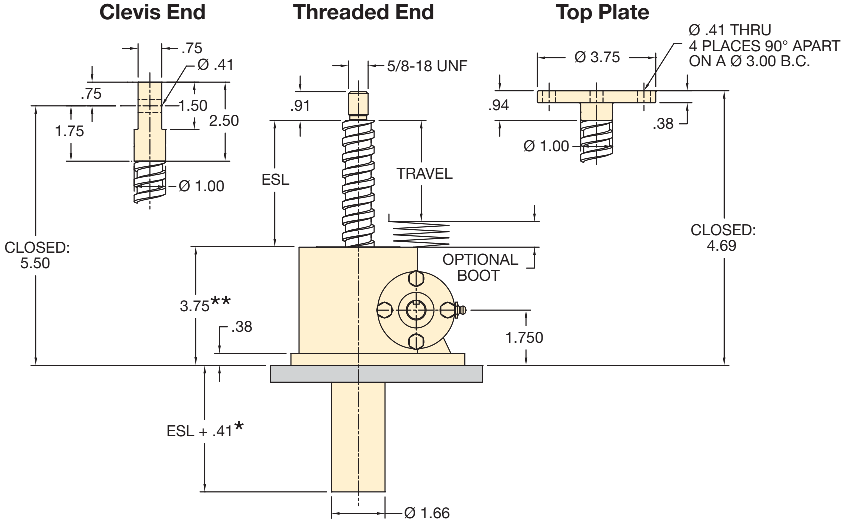


Inverted Rotating



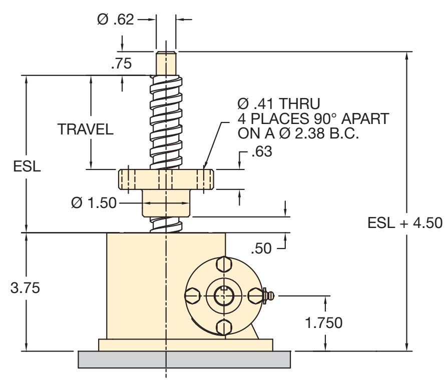
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1-1/2" dia. X .333" lead	**Low**	5⅓:1	16
	Medium	12:1	36
	High	24:1	72

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 1.45" to the pipe length. ** For keyed Screw Jacks, add 0.56" to Screw Jack housing height. Optional Double Clevis is available.
Please see page 15 for ordering Matrix.

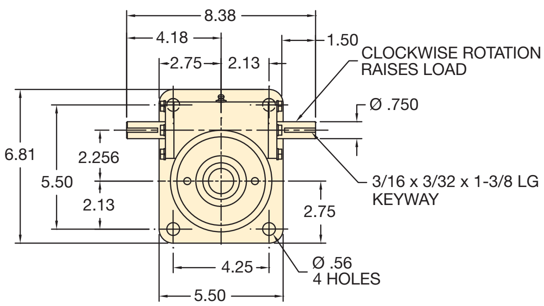
M4 Series

Capacity:
4 ton

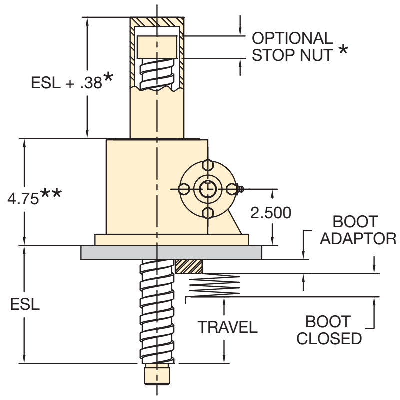
Maximum Travel:
228 inches

Maximum Speed:
113 in/min

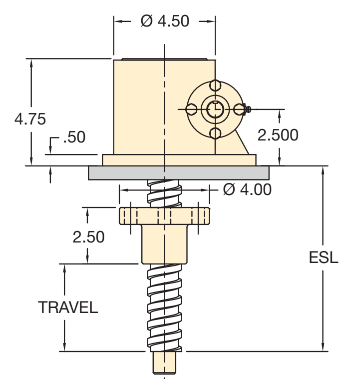
Top View



Inverted Translating

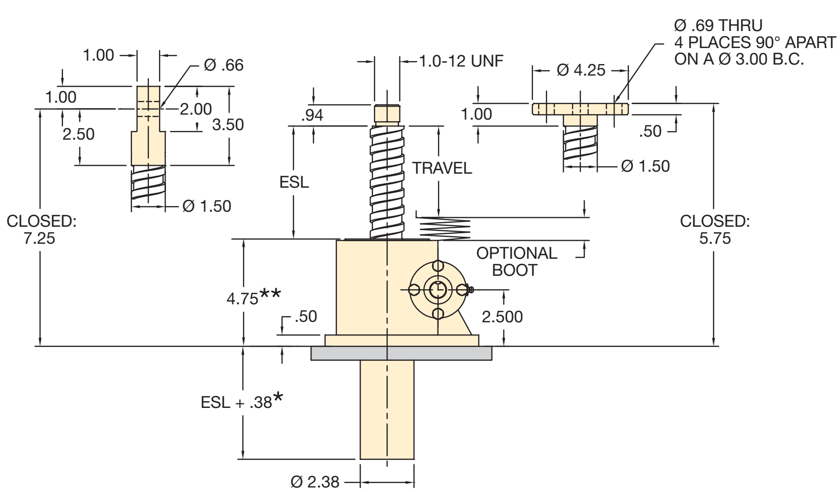


Inverted Rotating



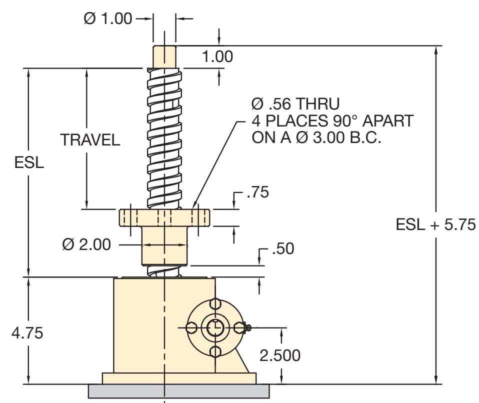
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1-1/2" dia. X .375" lead	**Low**	6:1	16
	High	24:1	64

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.45" to the pipe length. ** For keyed Screw Jacks, add 0.33" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

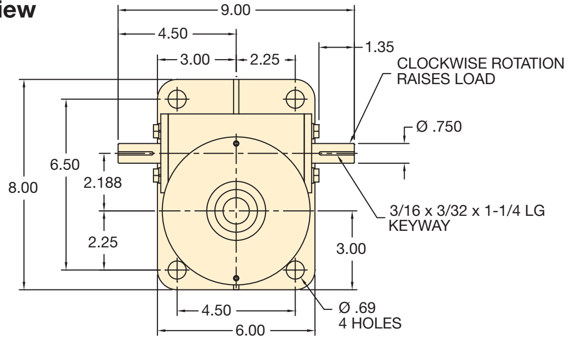
M5
Series

Capacity:
5 ton

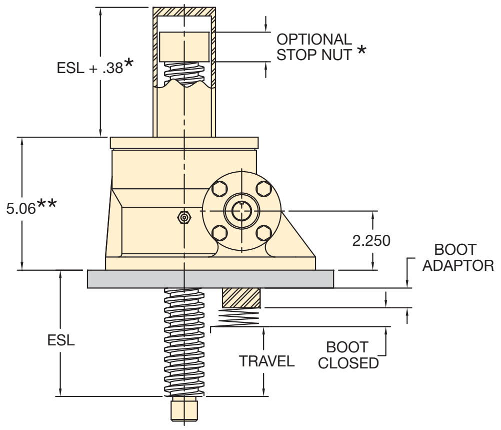
Maximum Travel:
230 inches

Maximum Speed:
113 in/min

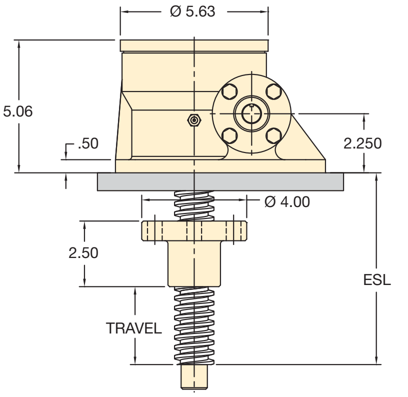
Top View



Inverted Translating

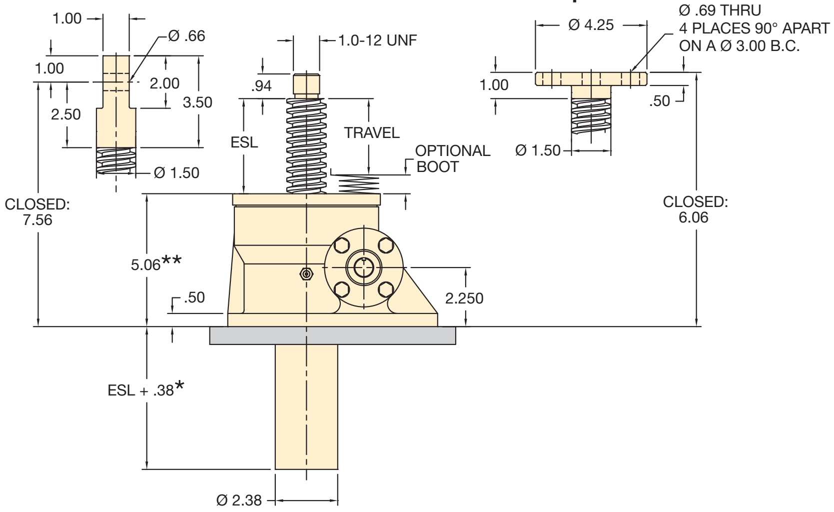


Inverted Rotating



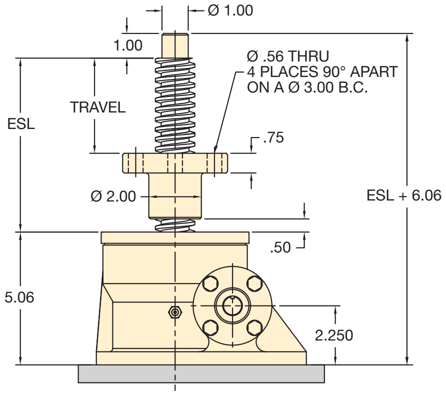
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M8 Series, Machine Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1-3/4" dia. X .333" lead	**Low**	6:1	18
	High	12:1	36

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 2.06" to the pipe length. ** For keyed Screw Jacks, add 0.36" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

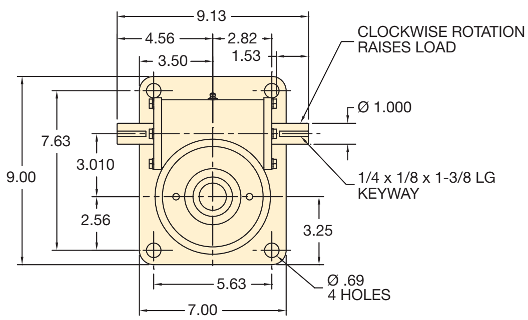
M8 Series

Capacity:
8 ton

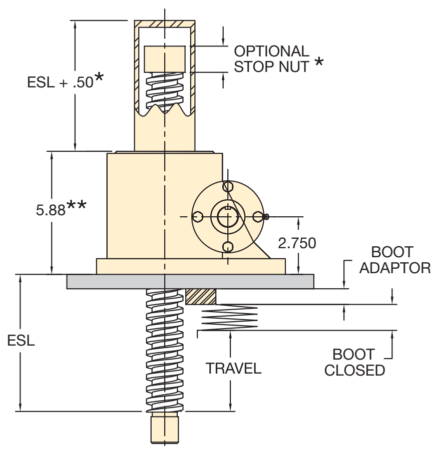
Maximum Travel:
226 inches

Maximum Speed:
100 in/min

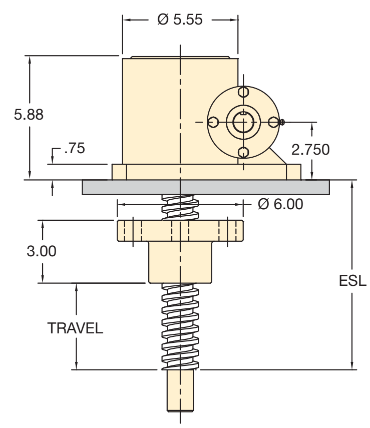
Top View



Inverted Translating

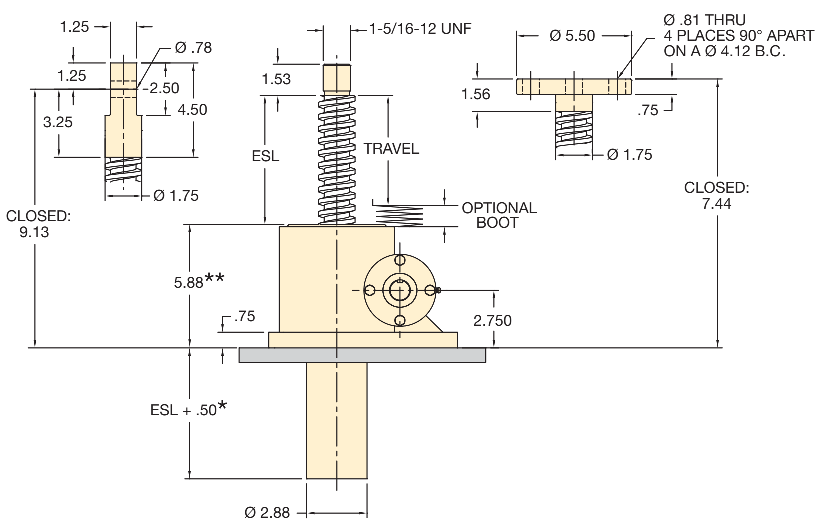


Inverted Rotating



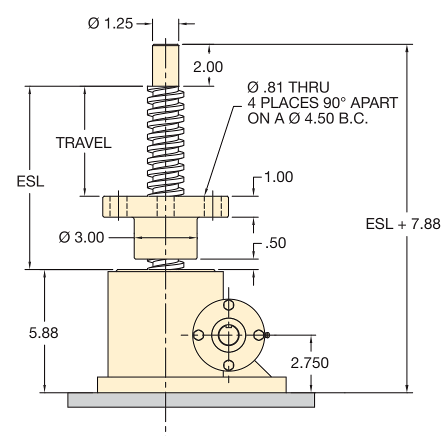
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ **Technical Specifications**

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
2.00" dia. X .500" lead	**Low**	8:1	16
	High	24:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 2.06" to the pipe length. ** For keyed Screw Jacks, add 0.75" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

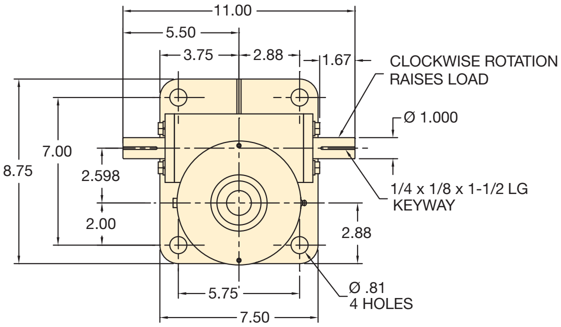
M10 Series

Capacity:
10 ton

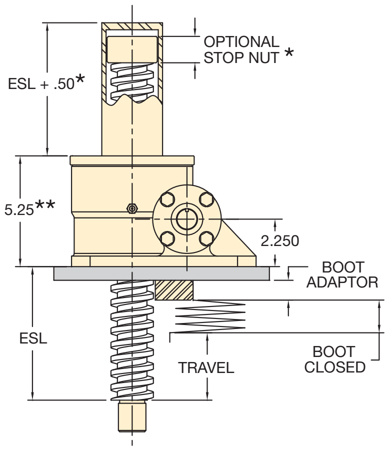
Maximum Travel:
228 inches

Maximum Speed:
113 in/min

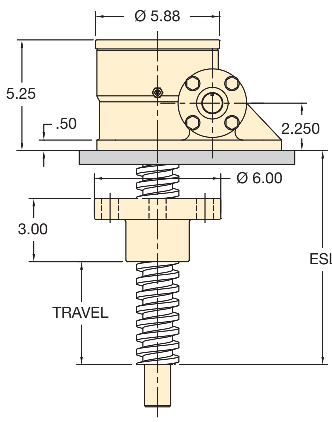
Top View



Inverted Translating

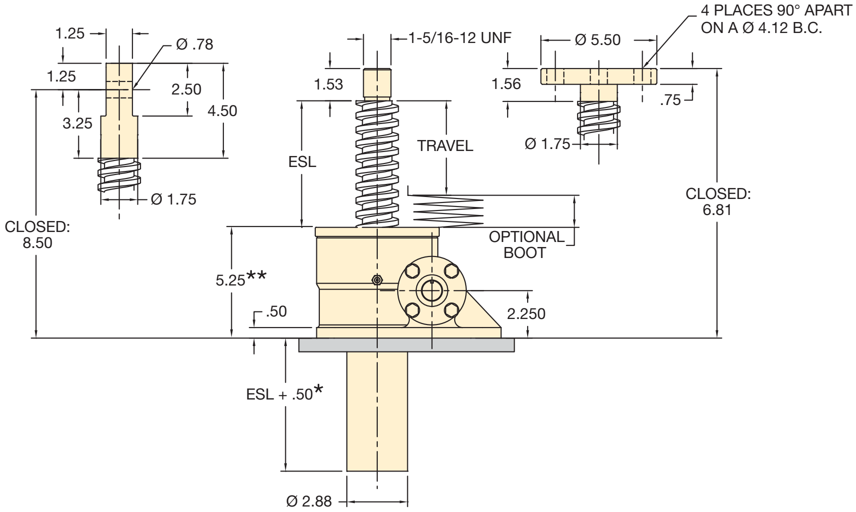


Inverted Rotating



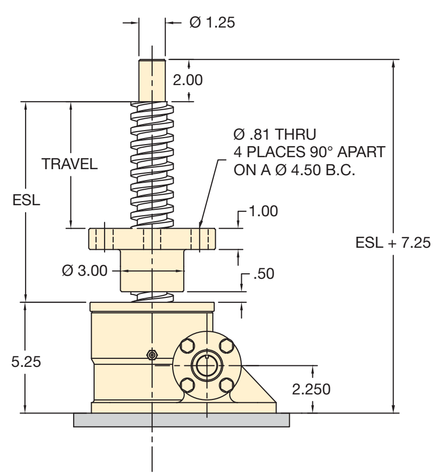
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M15 Series, Machine Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications	Gear Ratio	Turns/Inch
2-1/4" dia. X .500" lead	**Low**	8:1	16
	High	24:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 2.06" to the pipe length. ** For keyed Screw Jacks, add 0.67" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

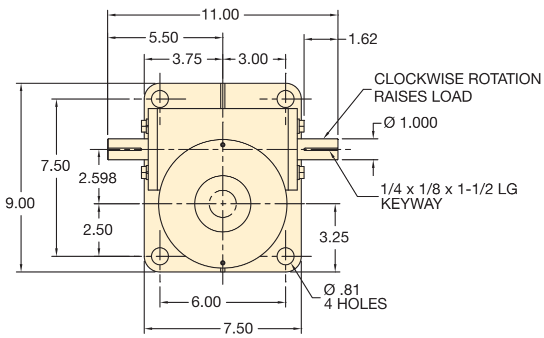
M15
Series

Capacity:
15 ton

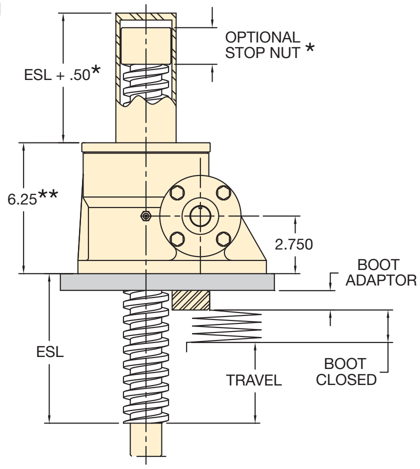
Maximum Travel:
224 inches

Maximum Speed:
113 in/min

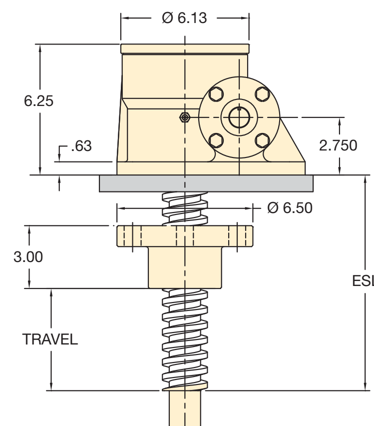
Top View



Inverted Translating

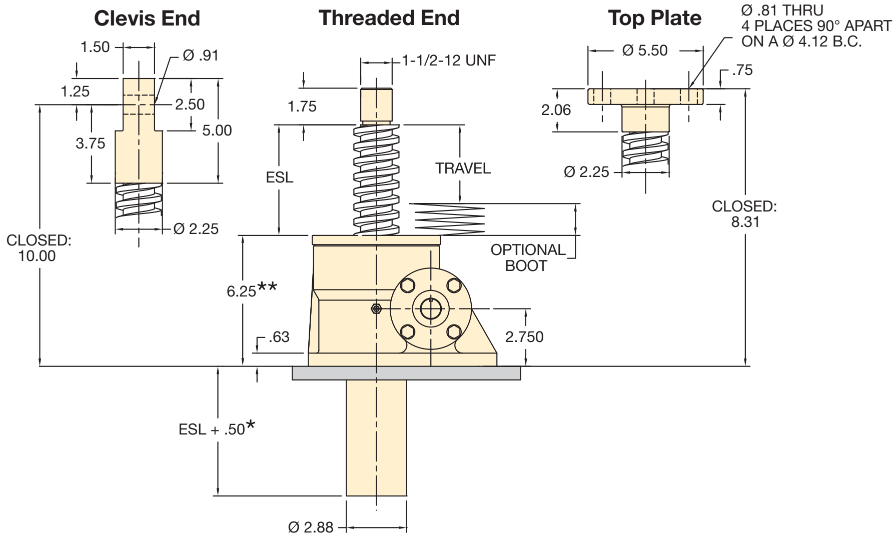


Inverted Rotating



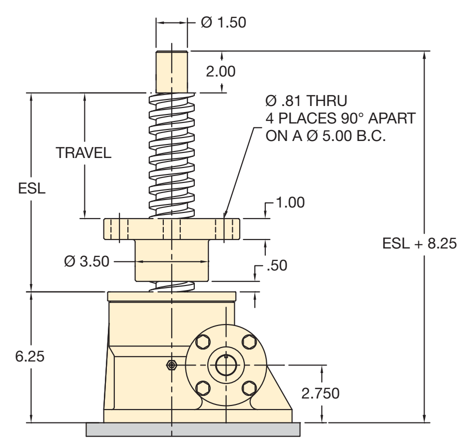
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
2-1/2" dia. X .500" lead	**Low**	8:1	16
	High	24:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 2.05" to the pipe length. ** For keyed Screw Jacks, add 1.08" to Screw Jack housing height. Optional Double Clevis is available.

Please see page 15 for ordering Matrix.

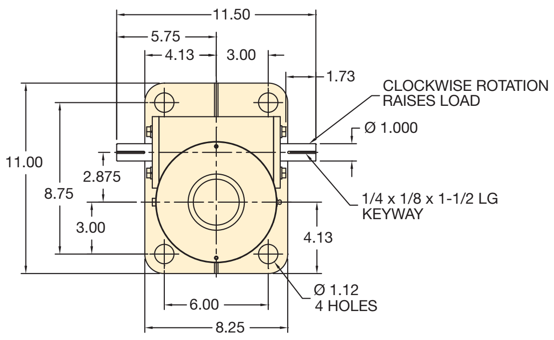
M20 Series

Capacity:
20 ton

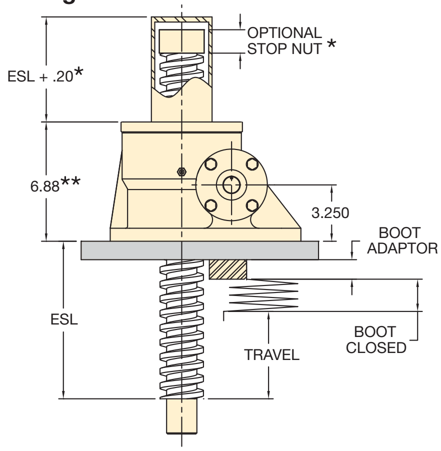
Maximum Travel:
224 inches

Maximum Speed:
113 in/min

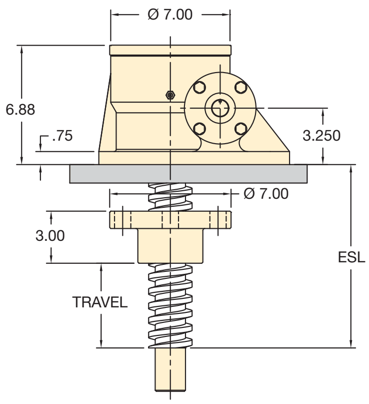
Top View



Inverted Translating

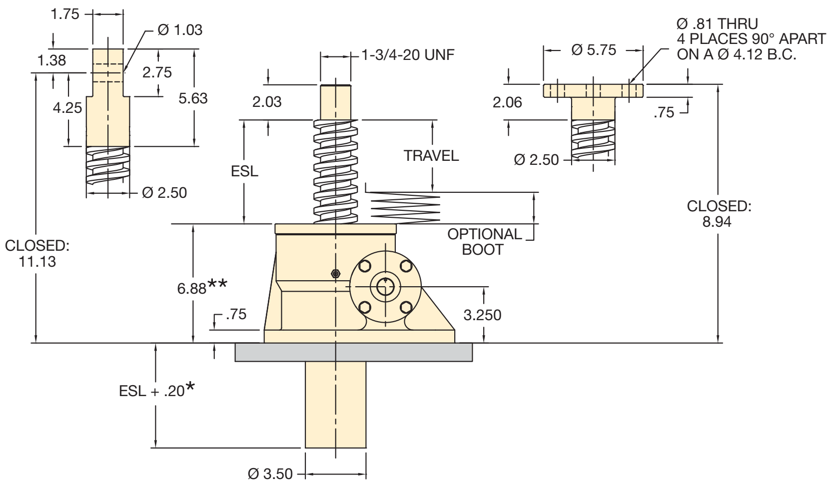


Inverted Rotating



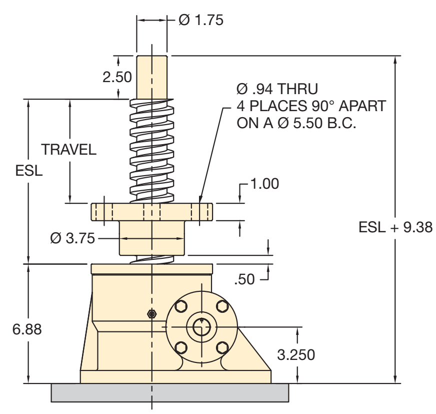
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
2-3/4" dia. X .500" lead	**Low**	9:1	18
	High	18:1	36

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 2.25" to the pipe length.
Please see page 15 for ordering Matrix.

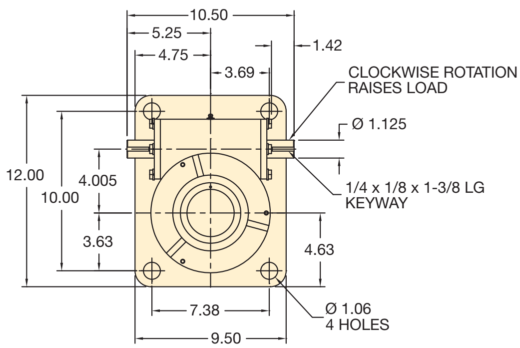
M25
Series

Capacity:
25 ton

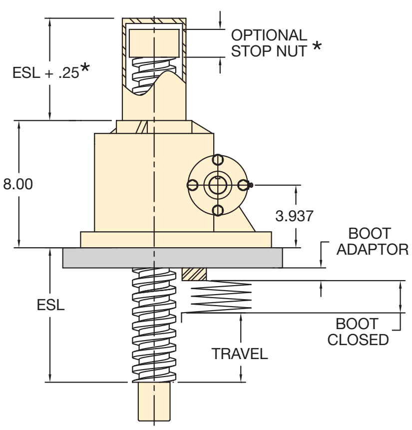
Maximum Travel:
223 inches

Maximum Speed:
81 in/min

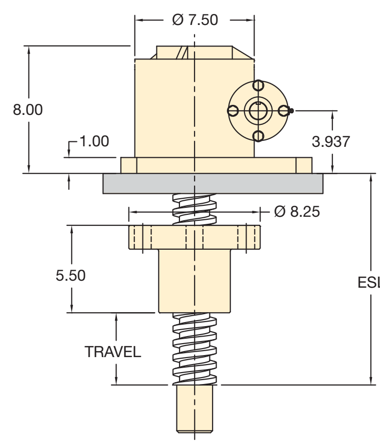
Top View



Inverted Translating

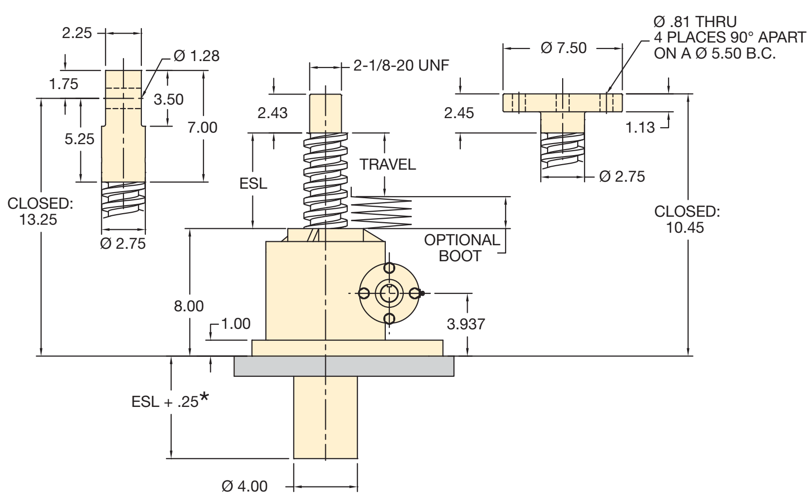


Inverted Rotating



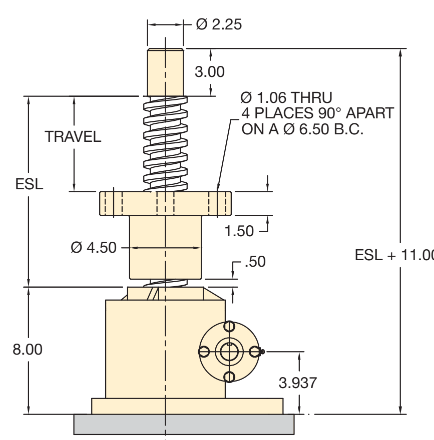
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M30 Series

Capacity:
30 ton

Maximum Travel:
228 inches

Maximum Speed:
75 in/min

▼ Technical Specifications

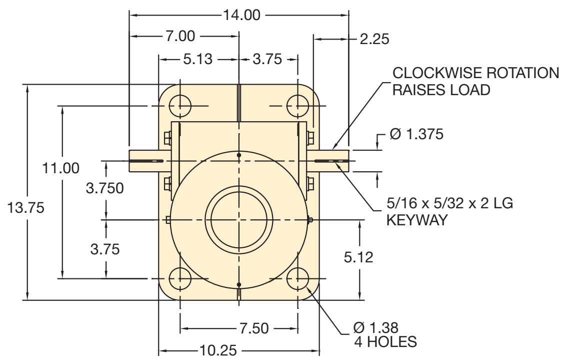
Screw Specifications		Gear Specifications	
		Gear Ratio	Turns/Inch
3-3/8" dia. X .667" lead	**Low**	10⅔:1	16
	High	32:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

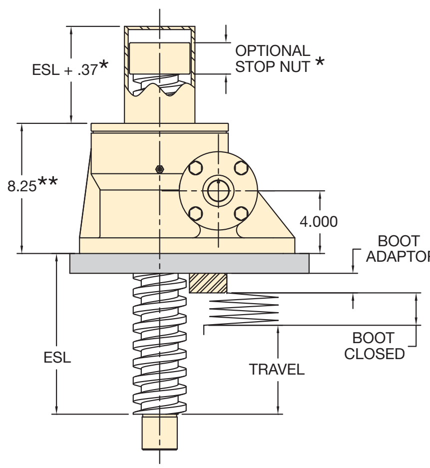
* If optional stop nut is installed, add 2.07" to the pipe length. ** For keyed Screw Jacks, add 1.43" to Screw Jack housing height.

Please see page 15 for ordering Matrix.

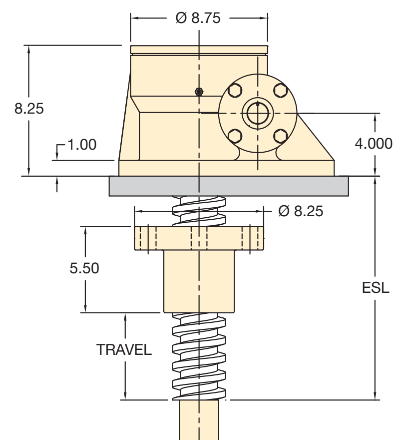
Top View



Inverted Translating

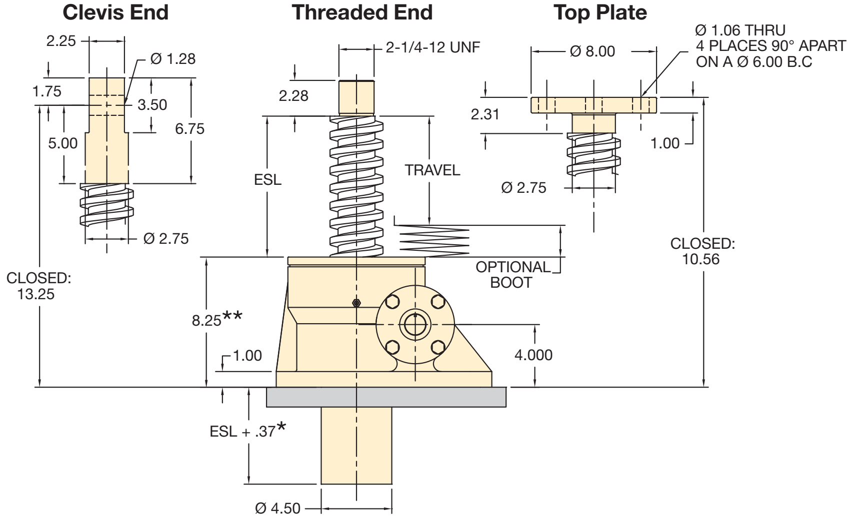


Inverted Rotating



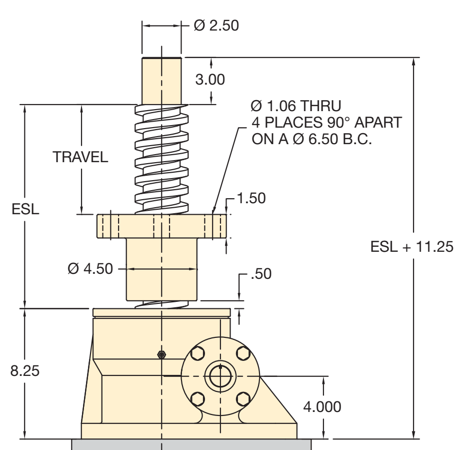
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ **Technical Specifications**

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
4-1/4" dia. X .667" lead	**High**	20:1	30

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.50" to the pipe length.

Please see page 15 for ordering Matrix.

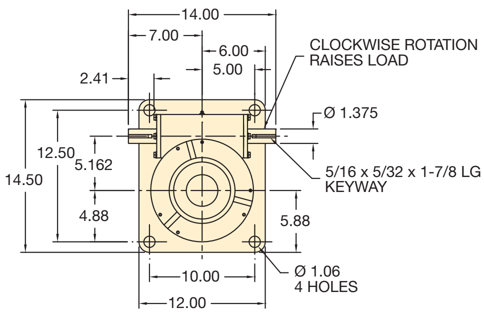
M40 Series

Capacity:
40 ton

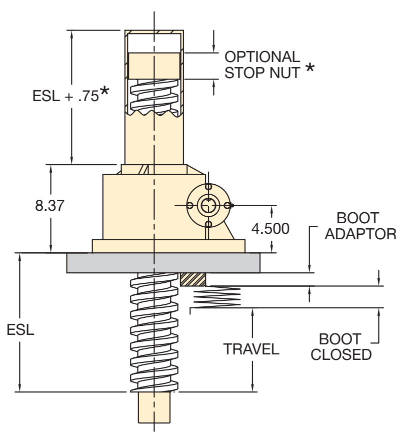
Maximum Travel:
222 inches

Maximum Speed:
40 in/min

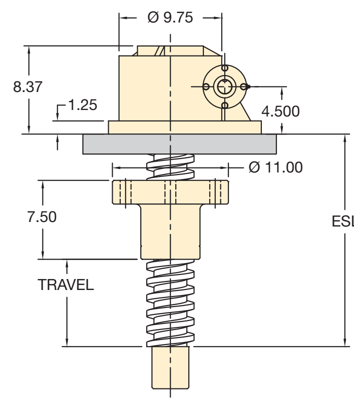
Top View



Inverted Translating

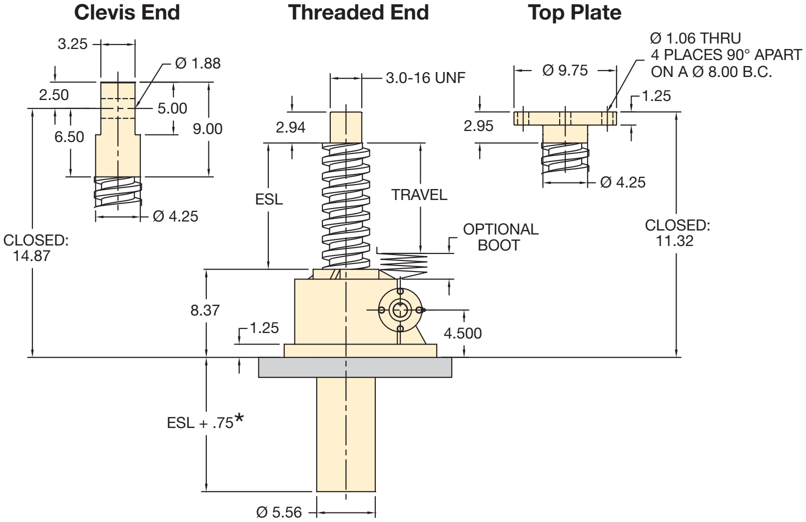


Inverted Rotating



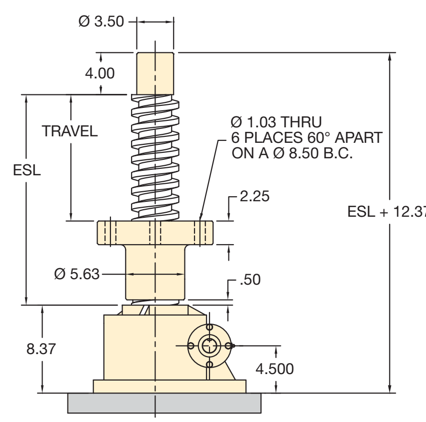
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M50 Series

Capacity:
50 ton

Maximum Travel:
222 inches

Maximum Speed:
75 in/min

▼ Technical Specifications

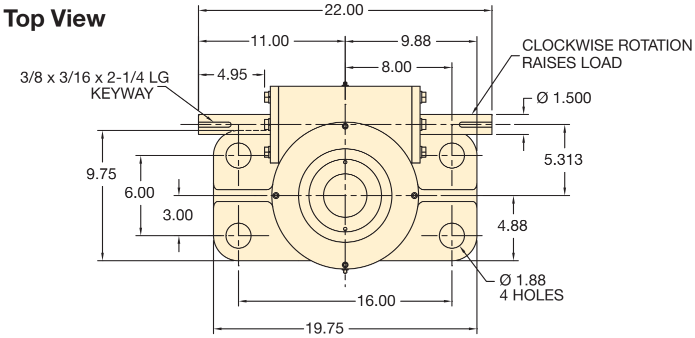
Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
4-1/4" dia. X .667" lead	**Low**	10⅔:1	16
	High	32:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

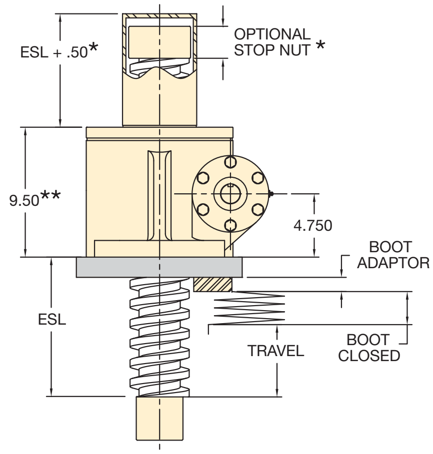
* If optional stop nut is installed, add 2.25" to the pipe length. ** For keyed Screw Jacks, add 2.50" to Screw Jack housing height.

Please see page 15 for ordering Matrix.

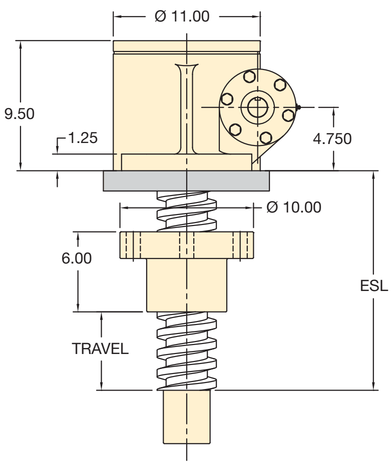
Top View



Inverted Translating

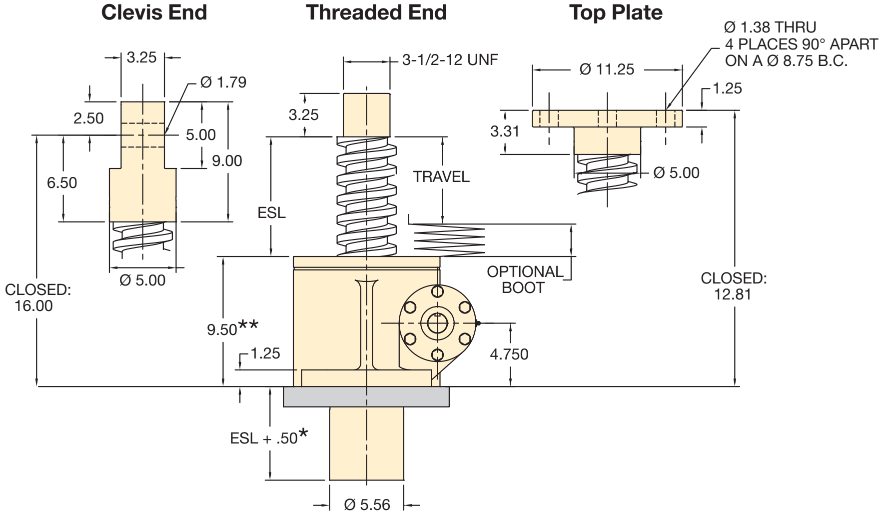


Inverted Rotating



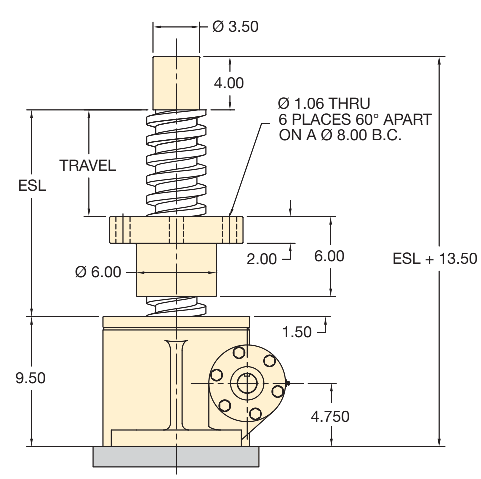
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



M75 Series, Machine Screw Jack

UNI-LIFT®

▼ **Technical Specifications**

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
5.0" dia. X .667" lead	**Low**	10⅔:1	16
	High	32:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 2.11" to the pipe length.
Please see page 15 for ordering Matrix.

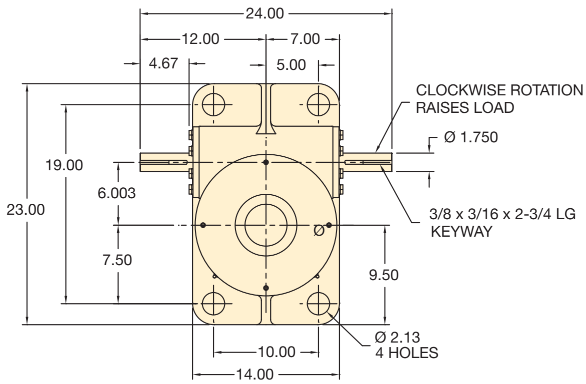
M75 Series

Capacity:
75 ton

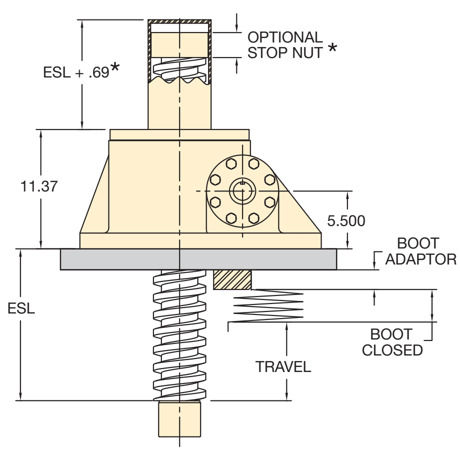
Maximum Travel:
225 inches

Maximum Speed:
56 in/min

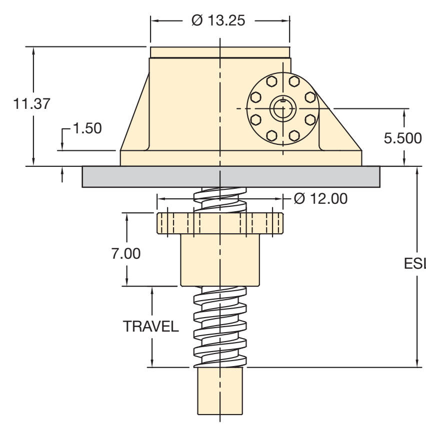
Top View



Inverted Translating

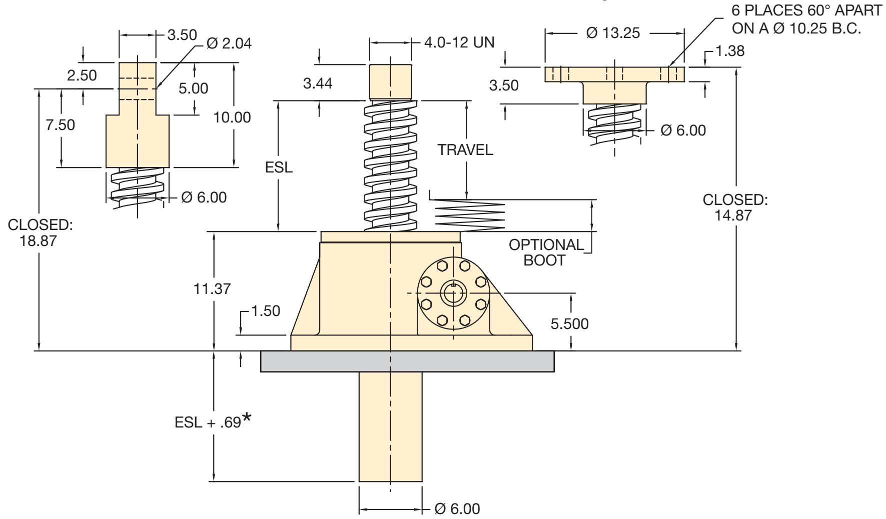


Inverted Rotating



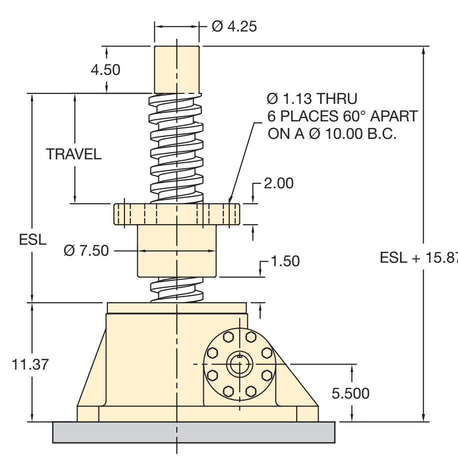
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
6.0" dia. X .750" lead	**Low**	12:1	16
	High	36:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 4.5" to the pipe length.

Please see page 15 for ordering Matrix.

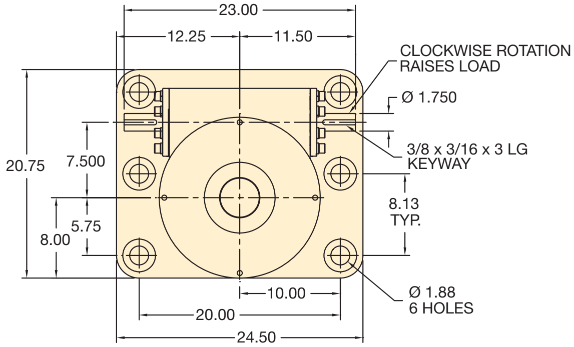
M100 Series

Capacity:
100 ton

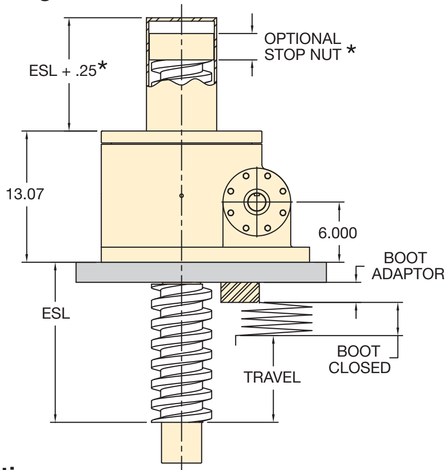
Maximum Travel:
222 inches

Maximum Speed:
56 in/min

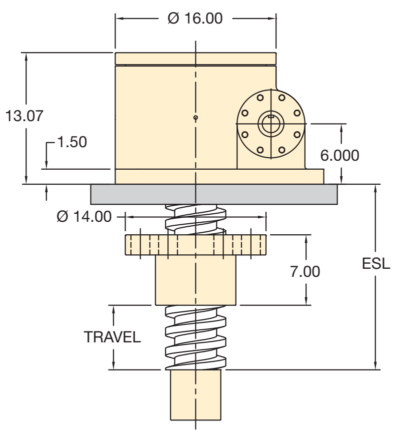
Top View



Inverted Translating

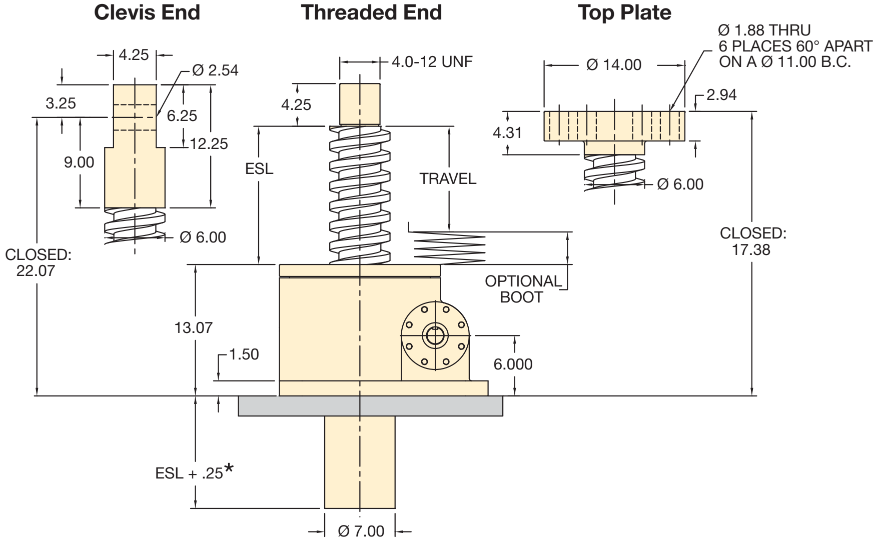


Inverted Rotating



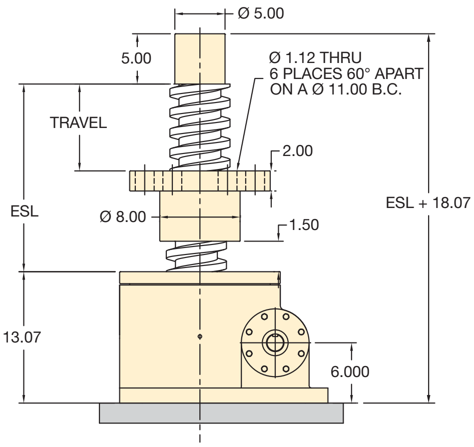
Upright Translating

Clevis End **Threaded End** **Top Plate**



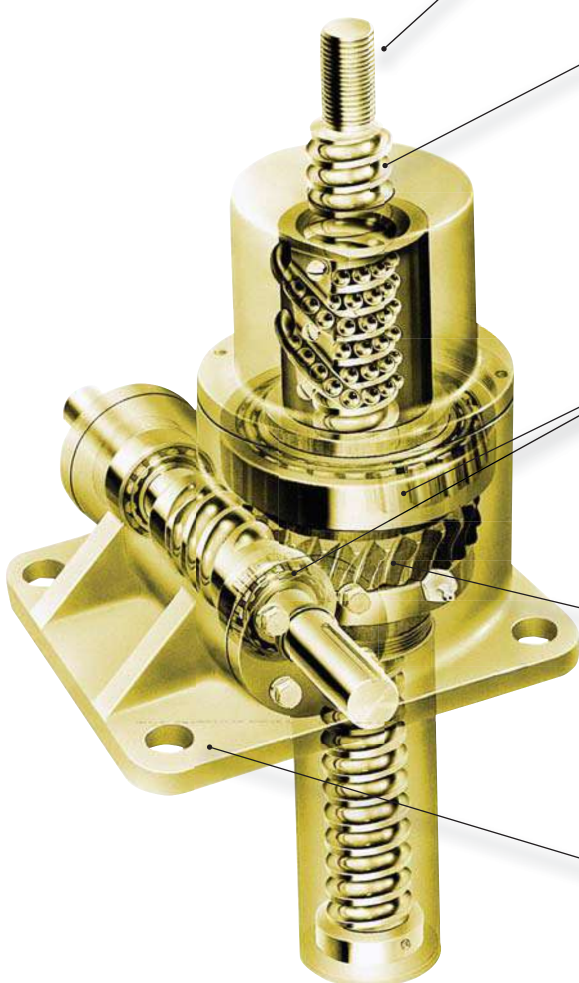
Upright Rotating

Plain End



UNI-LIFT Ball Screw Jacks provide high efficiency and high speed in a linear positioning package up to 100 tons. The low friction ball screw and nut design provides longer life at load and requires less power to achieve a specified thrust and movement. Ball Screw Jacks can be used individually, in tandem or as part of a larger mechanical system. With lifts up to 20 feet, UNI-LIFT Ball Screw Jacks offer the perfect solution to a wide range of linear positioning applications.

Ball Screw Cutaway



Screw End Configurations

- Variety of end configurations are available including: threaded, clevis, plain and top plate.
- Bearing journal on end of load screw for rotating jacks provides better column stability

High Strength Roll-Formed Thread Load Screws

- Provides 95% efficiency for minimum input force to position loads
- Ball Screw is rolled and hardened for strength and wear resistance

Tapered Roller Bearings

- Preloaded for reduced assembly spring rate and high thrust loads
- Provides excellent support for side loading and horizontal applications
- Maintains exact gear alignment under separating and thrust forces
- Bearings sized for endurance and maximum loading conditions

High Strength Gearing

- Precision gears manufactured to American Gear Standards with close tolerances and minimal backlash
- Heat treated worm gear set provides greater efficiency, higher input speed, and extended life

Rugged Housings

- Robust ductile iron construction
- Low closed height design saves space, reduces weight, and allows these Ball Screw Jacks to fit into tight areas

Contact UNI-LIFT!
Contact the UNI-LIFT office nearest to you for advice and technical assistance in the layout of your ideal UNI-LIFT System. You can also ask UNI-LIFT for assistance.

CONTACT INFORMATION:
Customer Service: (630) 408-9349
Toll Free: (888) 984-1924
sales@uniliftjacks.com

Technical Calculations
For Technical Calculations, such as torque and motor sizing please see our "Technical Information Section".
Page: 64

Frequently Asked Questions
To get answers to frequently asked questions please see our "Technical Information Section".
Page: 65

B-Series, Ball Screw Jacks

▼Ball Screw Jacks

Capacity:
1-100 ton

Maximum Travel:
230 inches

Maximum Speed:
175 in/min

- **Ideal for high speeds and continuous cycle applications**
- **Ball screw design allows for reduced horsepower requirements**
- **Reduced friction provides extended service life and lower operating costs**
- **Integrated ball bearing design reduces operating temperatures**
- **Precision screw lead offers exact positioning for multiple Screw Jack systems**

System Accessories

Provides all the additional components you need to complete your system arrangement.

Page: 47

Customized Solutions

Our experienced sales team and application engineers will deliver the precise support you need to meet the most demanding and unique requirements. We have the capability to design custom built "special" screw jacks to suit each customer's needs.

Visit us at www.uniliftjacks.com

Configure Your B-Series Machine Screw Jack

If you cannot configure your standard B-Series Screw Jack using the Matrix, please contact UNI-LIFT for further assistance.

Customer Service: (630) 408-9349
Toll Free: (888) 984-1924
sales@uniliftjacks.com

▼ SELECTION CHART

Capacity (ton)	**Model Number**	**Load Screw Diameter**	**Lead of Screw** (in)
1	**B1**	0.750	0.500
2	**B2**	1.000	0.250
5	**B5**	1.500	0.474
10	**B10**	1.500	0.474
20	**B20**	2.250	0.500
30	**B30**	3.000	0.667
50	**B50**	4.000	1.000
75	**B75**	4.000	1.000
100	**B100**	4.000	1.000

▼ **This is how a B-Series Ball Screw Jack is configured:**

B	1	U	R	0240	L	P	-	A11	B1	L23	M3	N	S2
1	2	3	4	5	6	7		8	9	10	11	12	13

1 Model Type
- **B** = Ball Screw Jack

2 Ton Rating
- **1** = 1 Ton
- **2** = 2 Ton
- **5** = 5 Ton
- **10** = 10 Ton
- **20** = 20 Ton
- **30** = 30 Ton
- **50** = 50 Ton
- **75** = 75 Ton
- **100** = 100 Ton

3 Mounting Style
- **U** = Upright
- **I** = Inverted
- **D** = Double Clevis *

4 Screw Configuration
- **T** = Translating
- **R** = Rotating

5 Extended Screw Length (ESL)

xxx.x = Input Value (in.)
(Do not include decimal in part No. - all data will be based on 1 decimal place)
Example: 12.0" = 0120"

6 Gear Ratio
- **L** = Low
- **H** = High

7 End Configuration
- **V** = Threaded End
- **C** = Clevis End
- **P** = Plain End
- **T** = Top Plate

8 Motor Adaptor

First Digit
- **A** = Motor Adaptor

Second Digit
- **1** = Right-Hand Mount
- **2** = Left-Hand Mount

Third Digit
- **1** = 56C
- **2** = 143/145TC
- **3** = 182/184C
- **4** = 182/184TC
- **5** = 213/215C
- **6** = 213/215TC

9 Boot Specifications**

First Digit
- **B** = Boot

Second Digit
- **1** = 1 Boot, No Guides
- **2** = 2 Boots, No Guides
- **3** = 1 Boot, With Guides
- **4** = 2 Boots, With Guides

10 Limit Switch Configuration

First Digit
- **L** = Limit Switch

Second Digit
- **1** = Right-Hand Position, 1
- **2** = Right-Hand Position, 2
- **3** = Right-Hand Position, 3
- **4** = Right-Hand Position, 4
- **5** = Left-Hand Position, 1
- **6** = Left-Hand Position, 2
- **7** = Left-Hand Position, 3
- **8** = Left-Hand Position, 4

Third Digit
- **1** = 2 Circuit Series 360
- **2** = 2 Circuit Series 1440
- **3** = 2 Circuit Series 4320

11 Motor Specifications

First Digit
- **M** = Brake Motor***

Second & Third Digits
- **1** = 1/4 hp, 1750 RPM
- **2** = 1/4 hp, 1140 RPM
- **3** = 1/3 hp, 1750 RPM
- **4** = 1/3 hp, 1140 RPM
- **5** = 1/2 hp, 1750 RPM
- **6** = 1/2 hp, 1140 RPM
- **7** = 3/4 hp, 1750 RPM
- **8** = 3/4 hp, 1140 RPM
- **9** = 1 hp, 1750 RPM
- **10** = 1 hp, 1140 RPM
- **11** = 1.5 hp, 1750 RPM
- **12** = 1 hp, 1140 RPM
- **13** = 2 hp, 1750 RPM
- **14** = 2 hp, 1140 RPM
- **15** = 3 hp, 1750 RPM
- **16** = 3 hp, 1140 RPM
- **17** = 5 hp, 1750 RPM
- **18** = 5 hp, 1140 RPM
- **19** = 7.5 hp, 1750 RPM
- **20** = 10 hp, 1750 RPM

12 Stop Nut
- **N** = Stop Nut

13 Single Shaft

First Digit
- **S** = Shaft

Second Digit
- **1** = Right Hand
- **2** = Left Hand

*Double Clevis options are available on models: **B2, B5, B10**
**Standard Boot material is Neoprene, alternate materials are available, see page 62 - consult factory for boot options on rotating jacks
*** All B-series jacks use brake motors when configured at the factory

Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position. To determine the required braking torque see page 76.

Rotation Prevention

Rotation of Load Screw or Traveling Nut must be prevented in order to produce travel (linear motion).

Stop Nuts

UNI-LIFT® recommends the use of Stop Nuts to provide a positive stop at the end of travel.

Gear Center (in)	Gear Ratio		Turns of Input Shaft For 1" of Rise		Torque Required to Lift 1 lbs. (in-lb)		Holding Torque (ft-lb)		No Load Torque (in-lbs)	Maximum Input RPM	Estimated Weight (lbs)		Radius of Gyration (in)	Model Number
	Low	High	Low	High	Low	High	Low	High			0" Travel	Per Inch		
1.500	5:1	10:1	10	20	0.024	0.015	1.4	2	4	1800	2.3	0.7	0.154	**B1**
1.750	6:1	24:1	24	96	0.011	0.005	4	1.5	5	1800	17	0.6	0.205	**B2**
2.188	6:1	24:1	12.66	50.66	0.018	0.007	14	5	12	1800	35	0.6	0.285	**B5**
2.598	8:1	24:1	16.88	50.66	0.014	0.007	13	4	18	1800	50	0.8	0.285	**B10**
2.875	8:1	24:1	16	48	0.015	0.007	27	7	36	1800	85	1.5	0.463	**B20**
3.750	10⅔:1	32:1	16	48	0.015	0.008	21	5	48	1200	220	2.4	0.620	**B30**
5.313	10⅔:1	32:1	10.66	32	0.022	0.011	40	10	96	1200	340	2.8	0.835	**B50**
6.000	10⅔:1	32:1	10.66	32	0.022	0.010	107	24	156	900	590	4.6	0.835	**B75**
7.500	12:1	36:1	12	36	0.020	0.010	128	50	204	900	960	4.6	0.835	**B100**

B1 Series, Ball Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
3/4" dia. X .500" lead	**Low**	5:1	10
	High	10:1	20

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 1.0" to pipe length.
Please see page 37 for ordering Matrix.

B1 Series

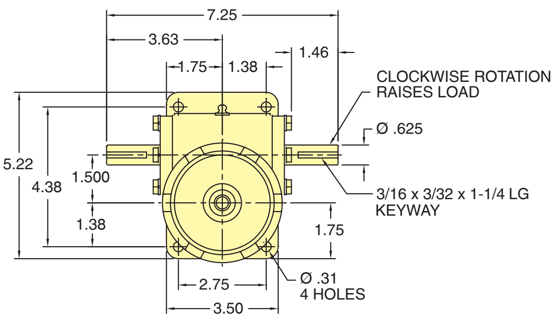
Capacity:
1 ton

Maximum Travel:
223 inches

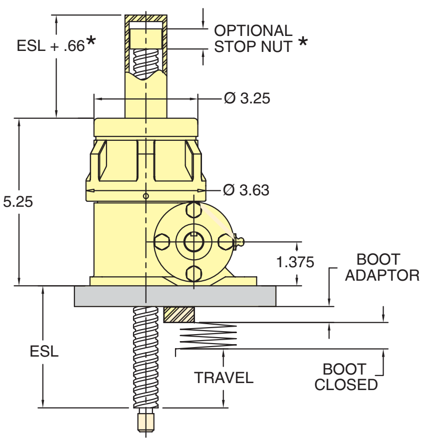
Maximum Speed:
180 in/min

Ball Screw Recommendations
Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

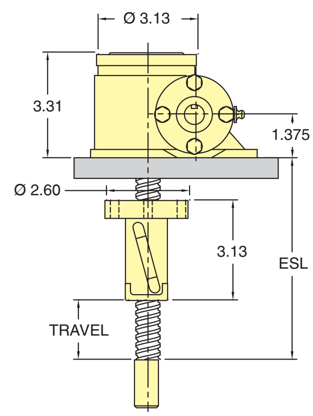
Top View



Inverted Translating

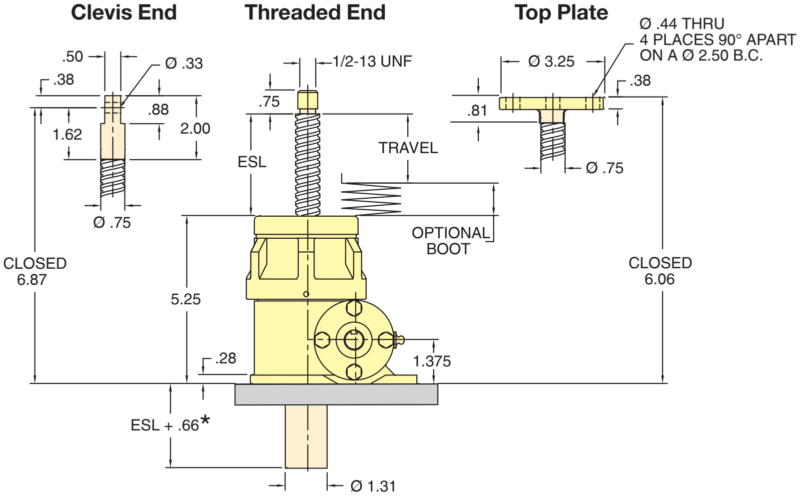


Inverted Rotating



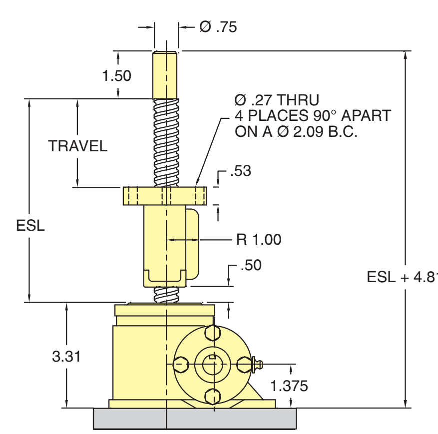
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications		Gear Specifications	
		Gear Ratio	Turns/Inch
1.00 dia. X .250" lead	**Low**	6:1	24
	High	24:1	96

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.28" to pipe length.

Optional Double Clevis is available.

Please see page 37 for ordering Matrix.

B2
Series

Capacity:
2 ton

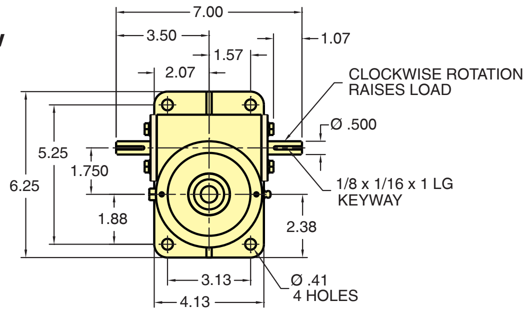
Maximum Travel:
230 inches

Maximum Speed:
75 in/min

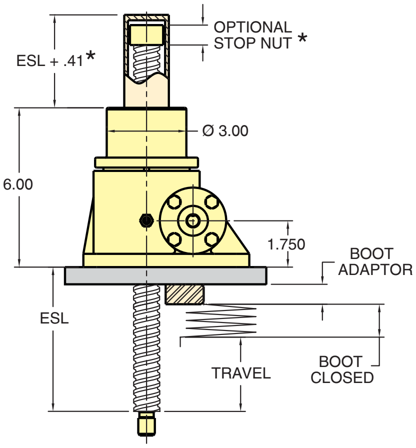
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

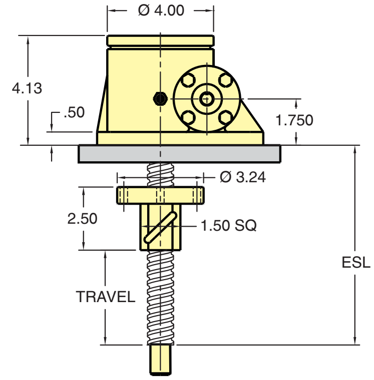
Top View



Inverted Translating

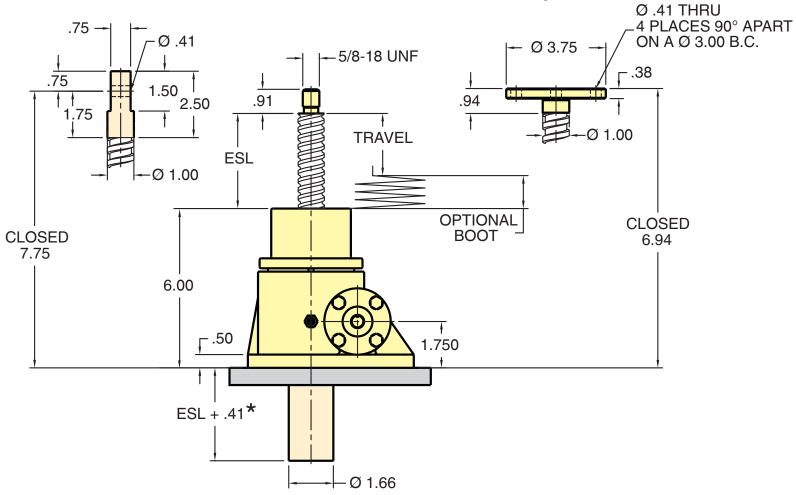


Inverted Rotating



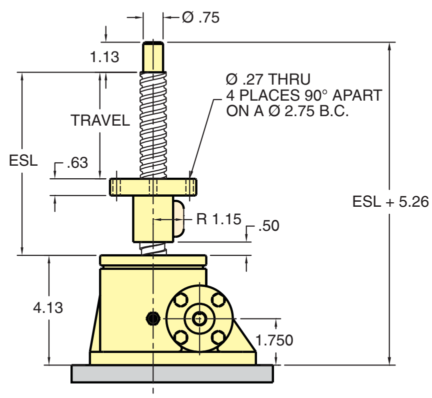
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



B5 Series, Ball Screw Jack

B5 Series

Capacity:
5 ton

Maximum Travel:
227 inches

Maximum Speed:
142 in/min

Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1-1/2" dia. X .474" lead	**Low**	6:1	12.66
	High	24:1	50.66

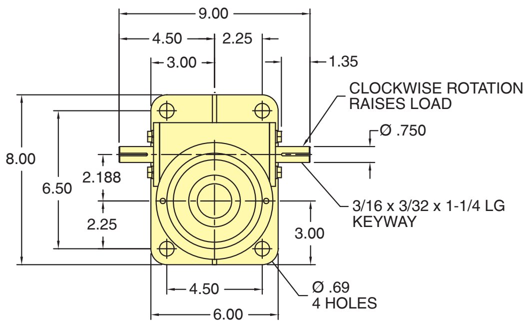
NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.45" to pipe length.

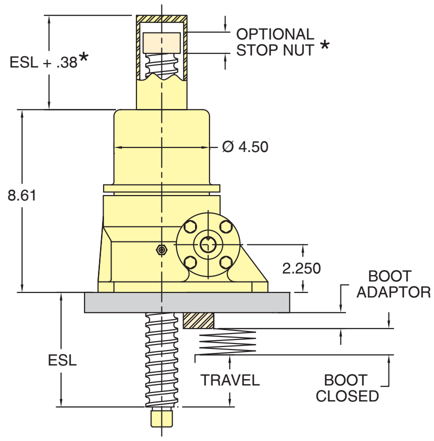
Optional Double Clevis is available.

Please see page 37 for ordering Matrix.

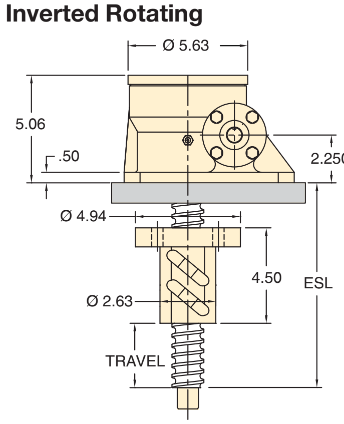
Top View



Inverted Translating

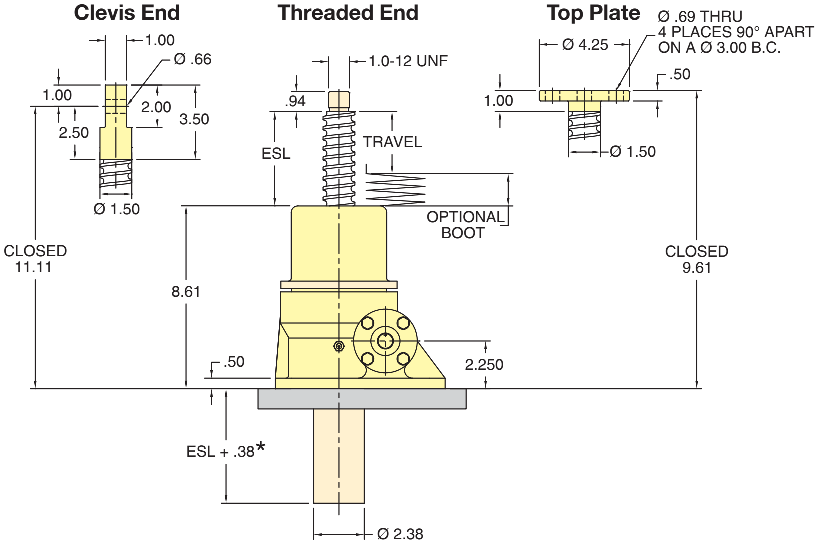


Inverted Rotating



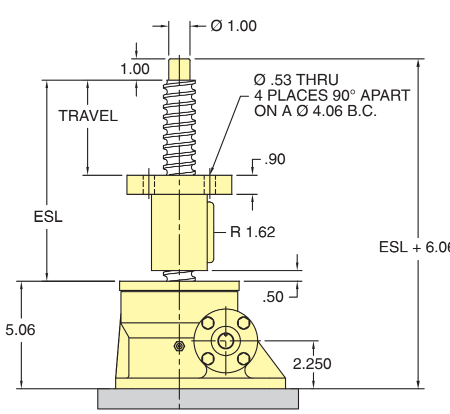
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
1-1/2" dia. X .474" lead	**Low**	8:1	16.88
	High	24:1	50.66

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 1.37" to pipe length.

Optional Double Clevis is available.

Please see page 37 for ordering Matrix.

B10 Series

Capacity:
10 ton

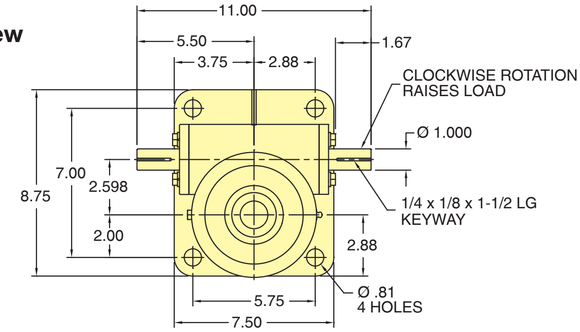
Maximum Travel:
227 inches

Maximum Speed:
107 in/min

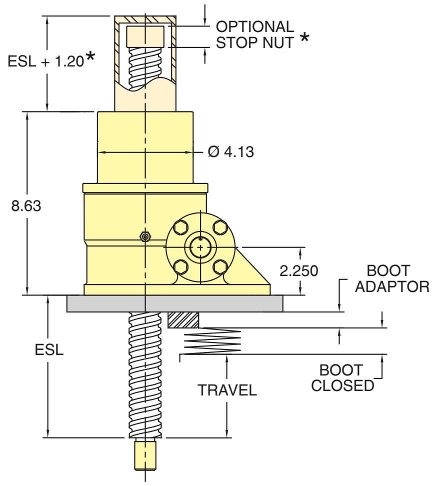
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

Top View



Inverted Translating



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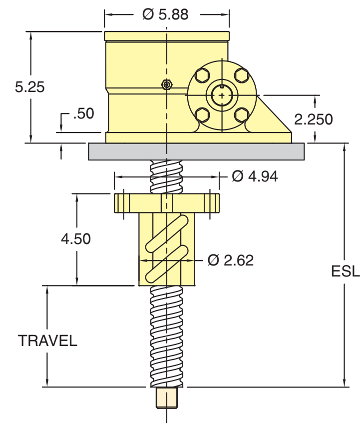
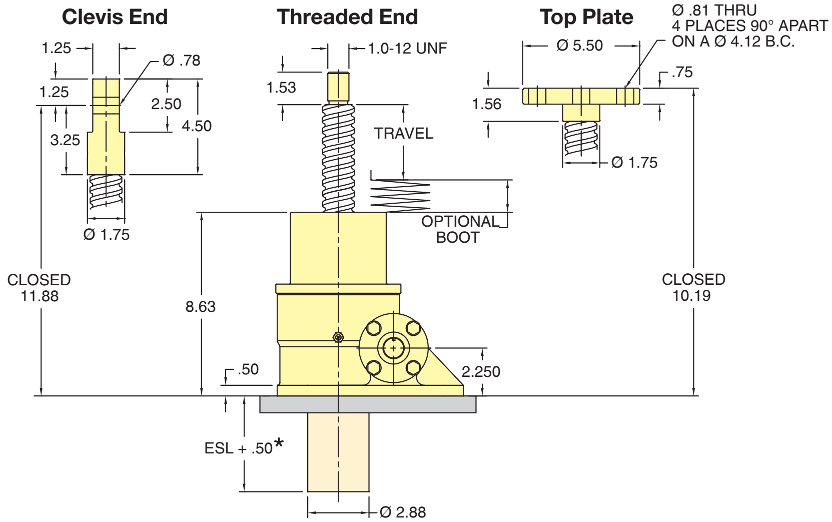
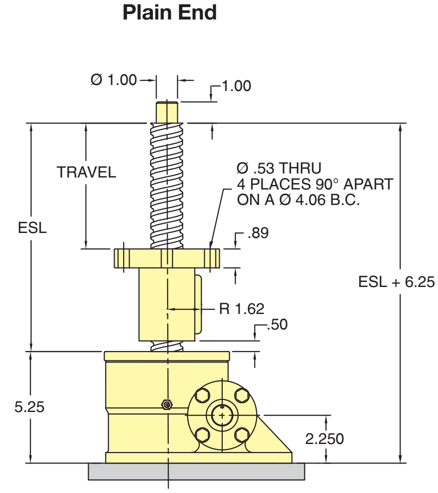


Upright Translating



Upright Rotating



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
2-1/4" dia. X .500" lead	**Low**	8:1	16
	High	24:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 2.52" to pipe length.

Please see page 37 for ordering Matrix.

B20
Series

Capacity:
20 ton

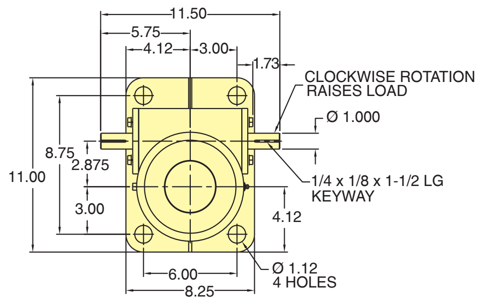
Maximum Travel:
223 inches

Maximum Speed:
113 in/min

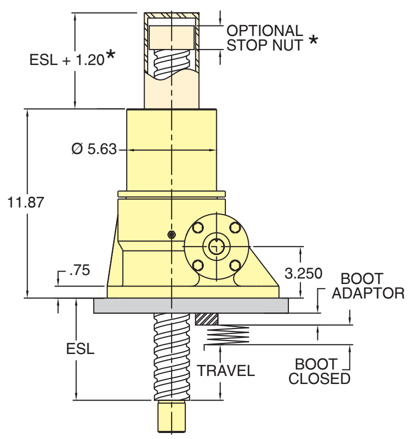
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

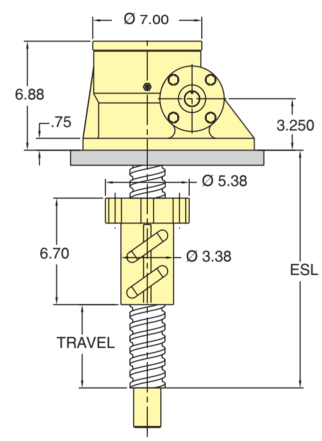
Top View



Inverted Translating

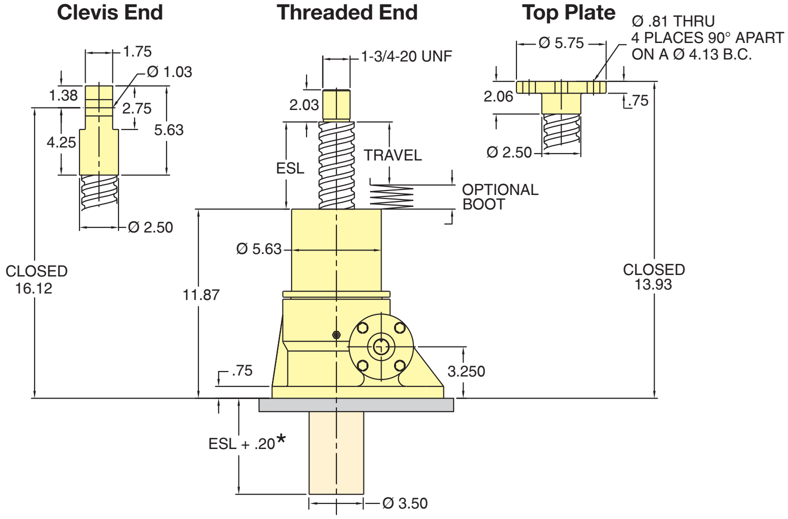


Inverted Rotating



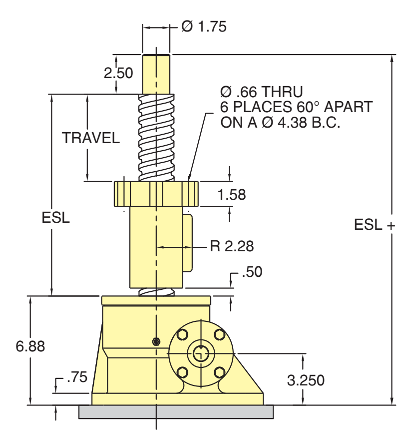
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



B30 Series, Ball Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
3.00" dia. X .667" lead	**Low**	10⅔:1	16
	High	32:1	48

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.
* If optional stop nut is installed, add 3.5" to pipe length.
Please see page 37 for ordering Matrix.

B30 Series

Capacity:
30 ton

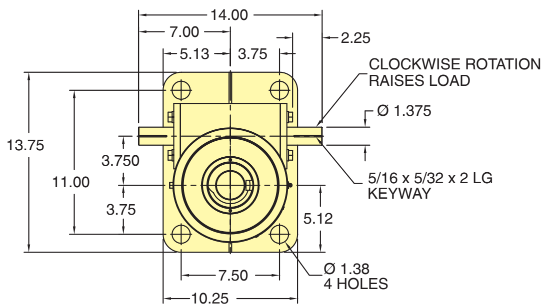
Maximum Travel:
219 inches

Maximum Speed:
75 in/min

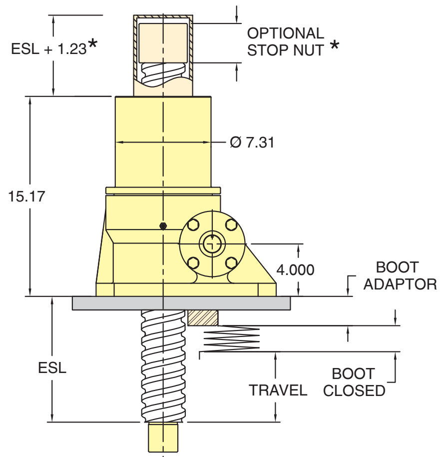
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

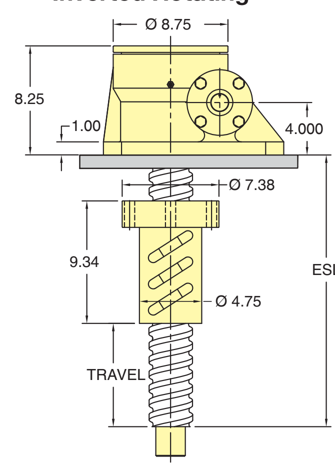
Top View



Inverted Translating

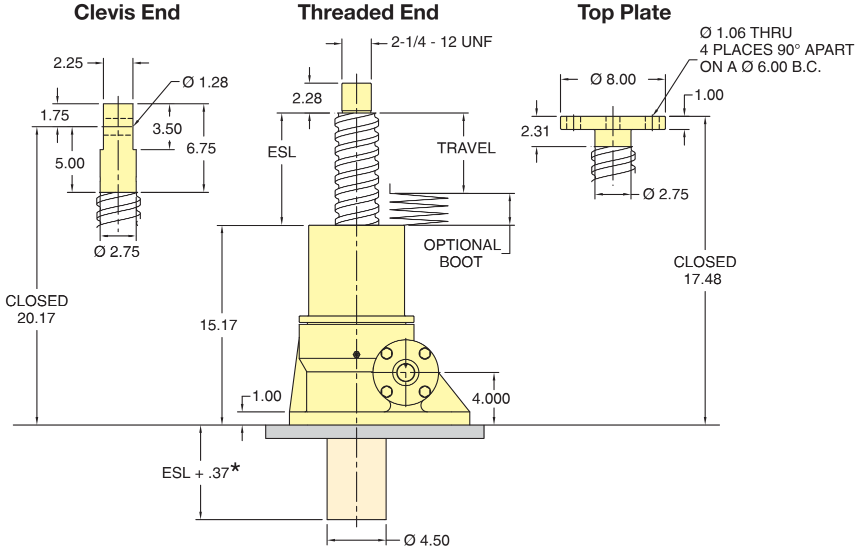


Inverted Rotating



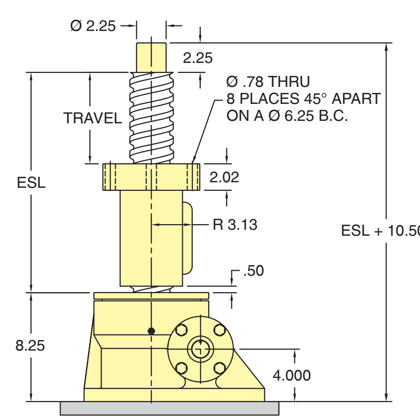
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



B50 Series, Ball Screw Jack

▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
4.00" dia. X 1.0" lead	**Low**	10⅔:1	10.66
	High	32:1	32

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 4.0" to pipe length.

Please see page 37 for ordering Matrix.

B50 Series

Capacity:
50 ton

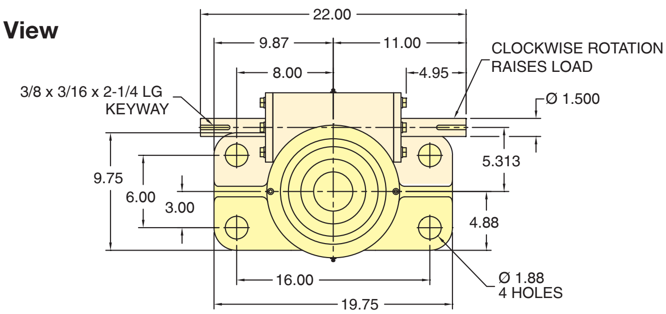
Maximum Travel:
215 inches

Maximum Speed:
113 in/min

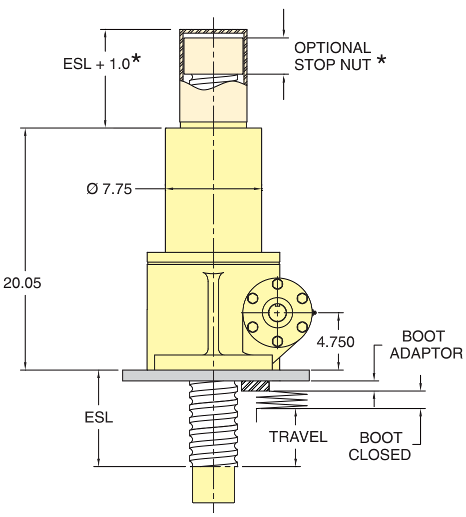
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

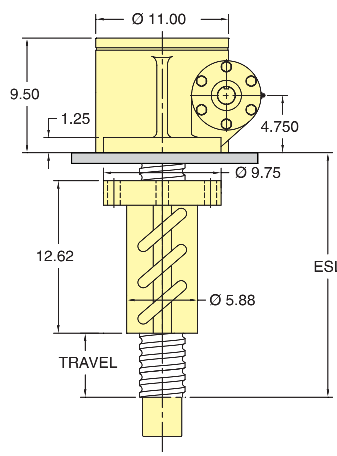
Top View



Inverted Translating

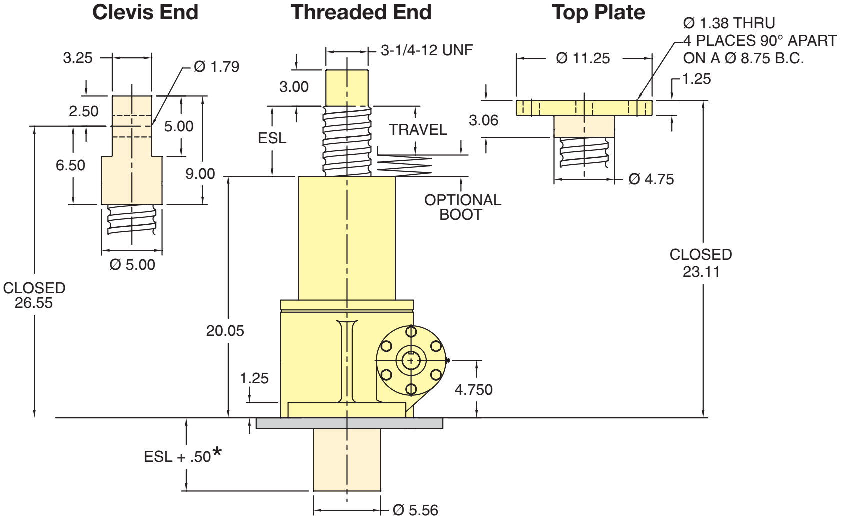


Inverted Rotating



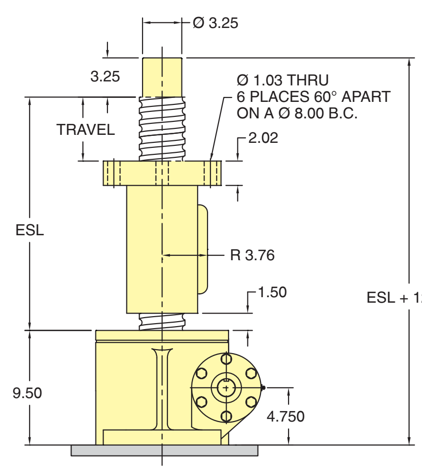
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
4.00" dia. X 1.0" lead	**Low**	10⅔:1	10.66
	High	32:1	32

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 4.0" to pipe length.

Please see page 37 for ordering Matrix.

B75
Series

Capacity:
75 ton

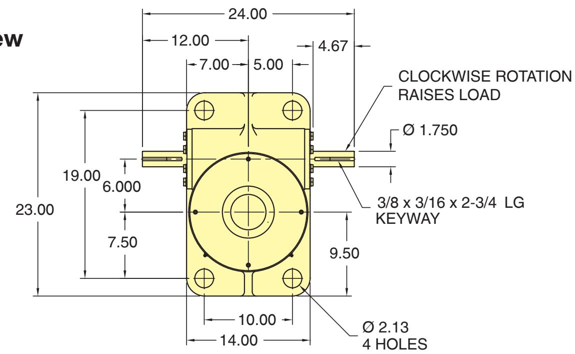
Maximum Travel:
213 inches

Maximum Speed:
84 in/min

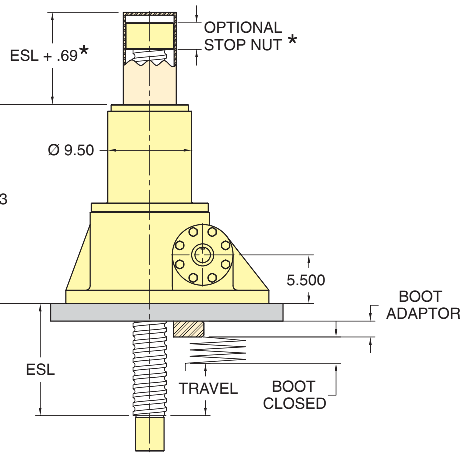
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

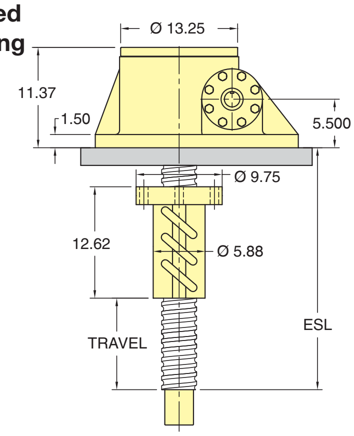
Top View



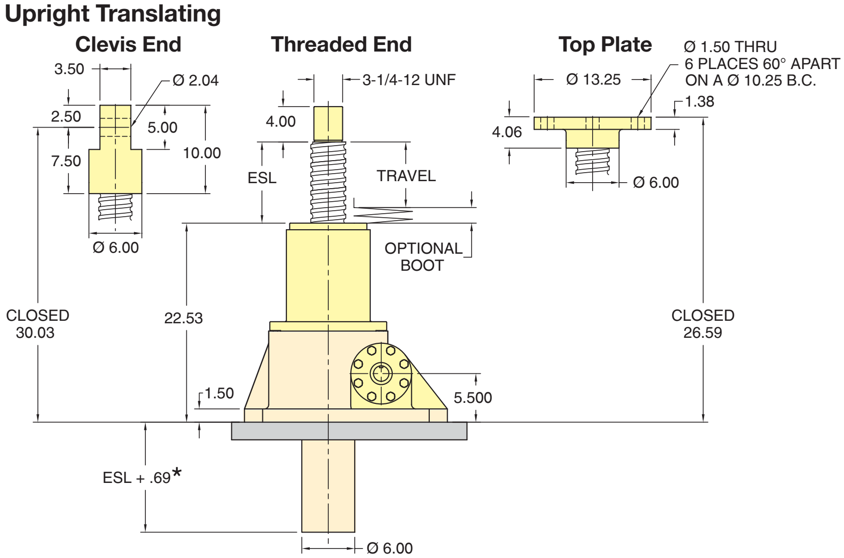
Inverted Translating



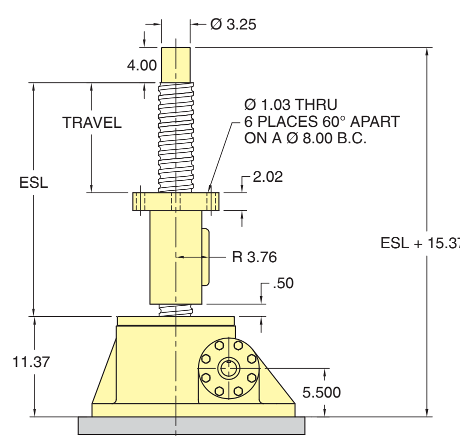
Inverted Rotating



Upright Translating



Upright Rotating



▼ Technical Specifications

Screw Specifications	Gear Specifications		
		Gear Ratio	Turns/Inch
4.00" dia. X 1.00" lead	**Low**	12:1	12
	High	36:1	36

NOTES: For inverted models, add the thickness of the mounting structure to the extended screw length (ESL). All dimensions shown in inches.

* If optional stop nut is installed, add 4.0" to pipe length.

Please see page 37 for ordering Matrix.

B100
Series

Capacity:
100 ton

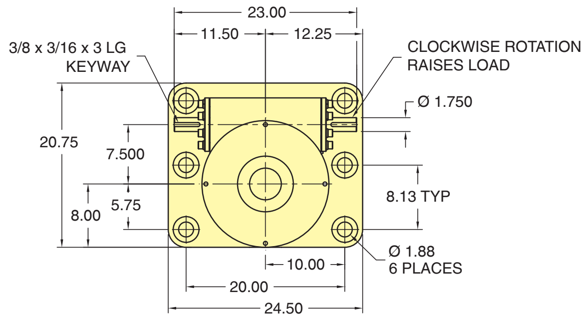
Maximum Travel:
210 inches

Maximum Speed:
75 in/min

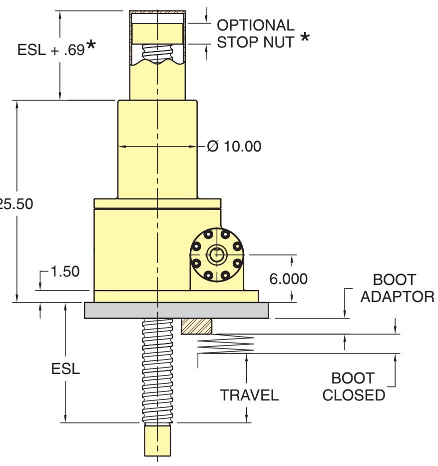
Ball Screw Recommendations

Ball Screw Jacks are non-locking. Brakes must be used to maintain position.

Top View



Inverted Translating



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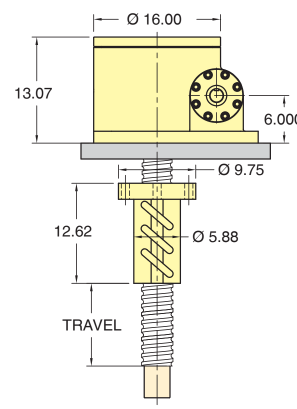
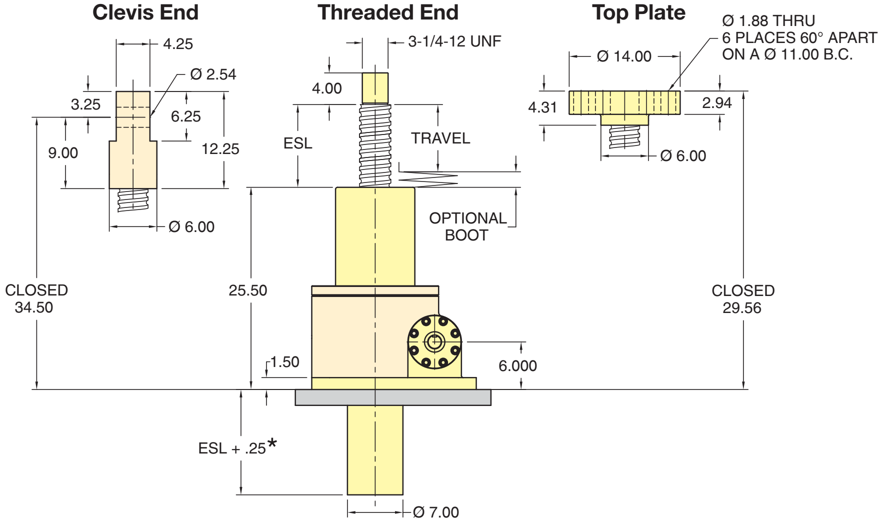


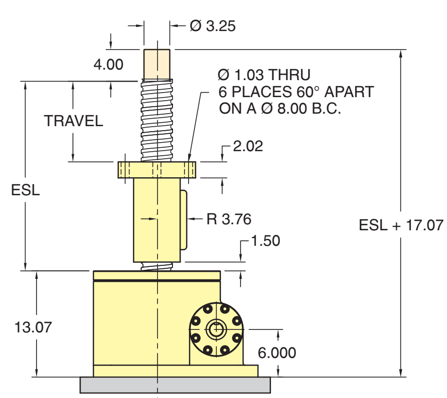
Upright Translating

Clevis End **Threaded End** **Top Plate**



Upright Rotating

Plain End



From a single screw jack to a multi-screw jack system, a comprehensive range of accessories is available to tailor your UNI-LIFT® system to meet your project requirements.

With a complete line of hand wheels, motors, motor adaptors, rotary limit switches, worm gear reducers, mitre gear boxes, couplers, shafting, screw end adapters, pillow blocks, rotary limit switches, electrical controls and boots – UNI-LIFT® can provide the accessories you need to compliment your mechanical screw jack system and to ensure the efficient operation, extended life and safety of your screw jack system.

Components	Series		Page
Hand Wheels	UHW		48
Motors	UM		49
Motor Adaptors	UMA		50
Worm Gear Reducers	UGR		52
Mitre Gear Boxes	UMG		54
Couplers	UC		56
Shafting	US		58
Screw End Adaptors	UT, UCE		59
Electrical Controls	UEC		60
Rotary Limit Switches	UR		61
Boots	UB		62

▼ Shown: **UHW-34**

- **Cast iron with chrome plating or aluminum alloy for rigorous applications**
- **Recessed hub and 3 spoke design provides ample clearance**
- **Revolving handle design for smooth and easy rotation**
- **All hand wheels are bored, keyed, and set-screw drilled to provide easy installation**

UHW
Series

Shaft Sizes:
3/8-3/4 inch

Wheel Diameter:
4-10 inches

Wheel Diameter
As the required input torque increases, a larger wheel diameter reduces the force required from the operator.

Ball Screw Recommendations
Ball Screw Jacks are non-locking. Brakes must be used to hold screw into position.

Special Requests
Aluminum Alloy or larger hand wheels (diameters up to 20") are available upon request. Please contact UNI-LIFT at: **sales@uniliftjacks.com**

▼ *To tension cables, precise positioning in small increments is required. This Hand-Wheel driven 40-ton M-Series UNI-LIFT's® smooth operation was the perfect choice for this application.*

▼ HAND WHEEL SELECTION CHART

Screw Jack	Bore	Hand Wheel Diameter Model Nos.			
	(in)	4 (in)	6 (in)	8 (in)	10 (in)
MA5, MA15	3/8	**UHW34**	–	–	–
MA20, M2	1/2	**UHW44**	**UHW46**	–	–
M1, M3	5/8	**UHW54**	**UHW56**	**UHW58**	–
M4, M5	3/4	–	–	–	**UHW610**

▼ Shown: **UM-5**

UM
Series

Power:
0.25-10 hp

Voltage:
208-230/460 VAC, 3-ph

Motor Adaptors
To close-couple your Screw Jack to the proper motor see our line of Motor Adaptors.

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Ball Screw Recommendations
Ball Screw Jacks are non-locking. Brakes must be used to hold screw into position.

- **Wide range of operating voltages; 208-230/460 VAC, 3-phase**
- **TEFC motor for optimal performance**
- **Robust, industrial grade heavy-steel frame**
- **3-phase motors are ideally suited for reversing direction and speed control**

Horse-power	RPM	Motor Model No.	NEMA Frame	Starting Torque [T_{sm}] (in-lbs)	Running Torque [T_{rm}] (in-lbs)	Brake Motor Model No.	Shaft Diameter (in)	Weight (lbs)
0.25	1750	**UM1**	56C	30	9	**UBM1**	0.625	18
0.25	1140	**UM2**	56C	36	13		0.625	19
0.33	1750	**UM3**	56C	45	12	**UBM3**	0.625	20
0.33	1140	**UM4**	56C	53	18		0.625	21
0.5	1750	**UM5**	56C	63	18	**UBM5**	0.625	22
0.5	1140	**UM6**	56C	74	27		0.625	23
0.75	1750	**UM7**	56C	105	27	**UBM7**	0.625	25
0.75	1140	**UM8**	56C	116	40		0.625	32
1	1750	**UM9**	56HC	85	36	**UBM9**	0.625	31
1	1140	**UM10**	56HC	122	54		0.625	37
1.5	1750	**UM11**	56HC	150	54	**UBM11**	0.625	34
1.5	1140	**UM12**	56HC	134	84		0.625	40
2	1750	**UM13**	56HC	198	72	**UBM13**	0.625	41
2	1140	**UM14**	184TC	252	108		1.125	65
3	1750	**UM15**	182TC	264	108	**UBM15**	1.125	61
3	1140	**UM16**	213TC	409	162		1.375	105
5	1750	**UM17**	184TC	436	180	**UBM17**	1.125	75
5	1140	**UM18**	215TC	783	270		1.375	133
7.5	1750	**UM19**	213TC	488	270	**UBM19**	1.375	123
10	1750	**UM20**	215TC	732	360		1.375	138

▼ Shown: **UMA-1**

Solutions For Direct Mounting

- **Direct mount capabilities up to 30-tons**
- **Designed to NEMA C-Face Standards**
- **Direct couple motor to left or right-hand input shaft**
- **All hardware provided, including coupling**

▼ *Motor Adaptors are the ideal solution to couple the motor directly to the 5-ton Double-Clevis Screw Jacks, with a Motor and a Limit Switch Box mounted on each Screw Jack.*

Larger Capability

For 50-ton and above motor mounting please contact UNI-LIFT at:
sales@uniliftjacks.com

Motors

For the correct motor to power your specific Screw Jack see UNI-LIFT's line of compatible motors.

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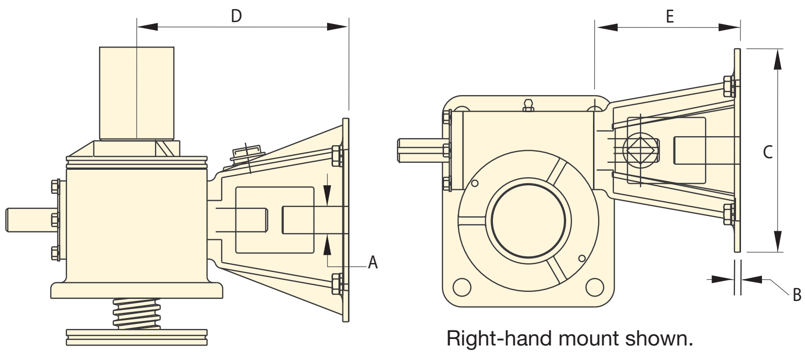
Contact UNI-LIFT!

Contact UNI-LIFT for advice and technical assistance in the layout of your ideal UNI-LIFT System:
sales@uniliftjacks.com

www.uniliftjacks.com

Visit our web site for additional information:
www.uniliftjacks.com
or contact us at sales@uniliftjacks.com



Right-hand mount shown.

UMA Series

Frame:
56C-215TC

▼ **MOTOR DIMENSIONAL CHART**

Screw Jack Model No.	Model No.	Motor Frame	A (in)	B (in)	C (in)	D (in)	E (in)	Weight (lbs)
M1/B1/M3	**UMA1**	56C	0.63	0.19	6.5	6.28	4.72	11
M1/B1/M3	**UMA2**	143TC, 145TC, 182C, 184C	0.88	0.19	6.5	6.28	4.72	11
M2/B2	**UMA3**	56C	0.63	0.19	6.5	6.65	4.73	11
M2/B2	**UMA4**	143TC, 145TC, 182C, 184C	0.88	0.19	6.5	6.65	4.73	11
M4	**UMA5**	56C	0.63	0.19	6.5	6.78	4.69	11
M4	**UMA6**	143TC, 145TC, 182C, 184C	0.88	0.19	6.5	6.78	4.69	11
M4	**UMA7**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	7.28	5.19	11
M5/B5	**UMA8**	56C	0.63	0.19	6.50	7.16	4.28	11
M5/B5	**UMA9**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	7.16	4.28	11
M5/B5	**UMA10**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	8.25	5.37	15
M8	**UMA11**	56C	0.63	0.19	6.50	7.38	4.94	11
M8	**UMA12**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	7.38	4.94	11
M8	**UMA13**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	7.94	5.50	15
M10/B10	**UMA14**	56C	0.63	0.19	6.50	8.31	4.81	11
M10/B10	**UMA15**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	8.31	4.81	11
M10/B10	**UMA16**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	8.87	5.37	15
M15	**UMA17**	56C	0.63	0.19	6.50	8.44	4.81	11
M15	**UMA18**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	8.44	4.81	11
M15	**UMA19**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	9.00	5.37	15
M20/B20	**UMA20**	56C	0.63	0.19	6.50	8.53	4.81	11
M20/B20	**UMA21**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	8.53	4.81	11
M20/B20	**UMA22**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	9.15	5.43	15
M20/B20	**UMA23**	213TC, 215TC	1.38	0.75	9.00	9.15	5.43	15
M25	**UMA24**	56C	0.63	0.19	6.50	8.41	5.25	11
M25	**UMA25**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	8.41	5.25	11
M25	**UMA26**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	8.72	5.53	15
M25	**UMA27**	213TC, 215TC	1.38	0.75	9.00	8.72	5.53	15
M30/B30	**UMA28**	56C	0.63	0.19	6.50	9.15	4.81	11
M30/B30	**UMA29**	143TC, 145TC, 182C, 184C	0.88	0.19	6.50	9.15	4.81	11
M30/B30	**UMA30**	182TC, 184TC, 213C, 215C	1.13	0.75	9.00	9.88	5.55	15
M30/B30	**UMA31**	213TC, 215TC	1.38	0.75	9.00	9.88	5.55	15

▼ Shown: **UGRB**

Increases Precision of Movement

www.uniliftjacks.com
Visit our web site for additional assistance or contact UNI-LIFT at:
sales@uniliftjacks.com

- **Standard NEMA C-Face mounting flange**
- **Aluminum alloy housing with heat sink provides maximum cooling efficiencies**
- **Range from 1/6 – 20 hp @ 1750 RPM**
- **Coated with epoxy-polyester paint throughout the reducer for high corrosion resistance**
- **Hardened worm shaft offers increased durability**
- **Modular construction for easy adaptability**
- **Maintenance free, pre-filled with synthetic oil for extended life**
- **Reduction ratios of up to 100:1 are available upon request**

▼ WORM GEAR DIMENSIONAL CHART

NEMA C Flange	Model Number	A (in)	B (in)	C (in)	D (in)	E (in)
56C	**UGRA**	2.76	3.54	6.50	1.38	2.76
56C	**UGRB**	3.15	4.09	6.50	1.57	3.15
143TC, 145TC	**UGRC**	3.74	5.12	6.50	1.97	3.94
182TC, 184TC	**UGRD**	4.43	6.02	9.00	2.36	4.72
182TC, 184TC	**UGRE**	5.10	6.77	9.00	2.76	5.51
213TC, 215TC	**UGRF**	6.30	8.27	9.00	3.35	6.69

▼ SELECTION CHART

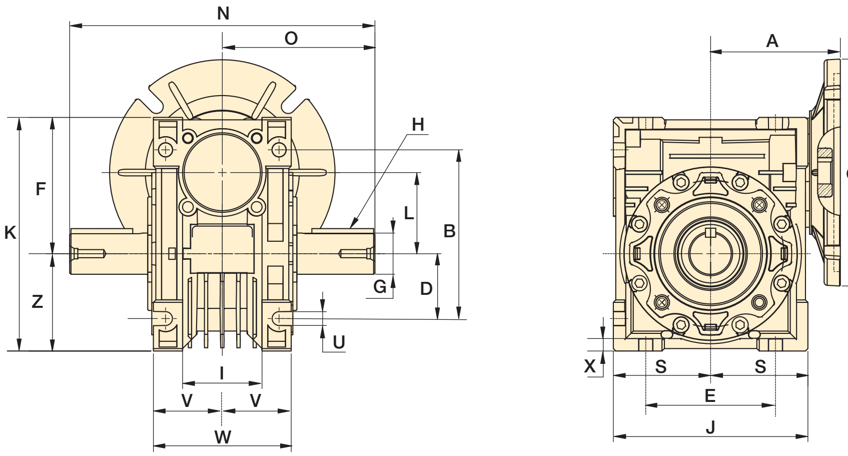
NEMA C Flange	Model Number	Ratio*	1750 RPM Input Output RPM	1750 RPM Input Output Torque (in-lbs)	Input (hp)	1140 RPM Input Output RPM	1140 RPM Input Output Torque (in-lbs)	Input (hp)
56C	UGRA1	5	350	343	1.78	228	403	1.64
	UGRA2	7.5	233	403	1.43	152	444	1.23
	UGRA3	10	175	403	1.10	114	444	0.94
	UGRA4	15	117	403	0.76	76	454	0.67
56C	UGRB1	5	350	625	3.25	228	757	3.08
	UGRB2	7.5	233	716	2.51	152	847	2.32
	UGRB3	10	175	726	1.95	114	847	1.78
	UGRB4	15	117	746	1.40	76	847	1.25
143TC, 145TC	UGRC2	7.5	233	1291	4.53	152	1523	4.18
	UGRC3	10	175	1311	3.49	114	1543	3.21
	UGRC4	15	117	1412	2.63	76	1563	2.27
182TC, 184TC	UGRD2	7.5	233	1866	6.47	152	2169	5.88
	UGRD3	10	175	1967	5.17	114	2320	4.77
	UGRD4	15	117	2017	3.66	76	2370	3.36
182TC, 184TC	UGRE2	7.5	233	2925	10.03	152	3430	9.19
	UGRE3	10	175	3127	8.13	114	3732	7.59
	UGRE4	15	117	3631	6.51	76	4236	5.94
213TC, 215TC	UGRF2	7.5	233	4842	16.60	152	5699	15.28
	UGRF3	10	175	5245	13.64	114	6254	12.71
	UGRF4	15	117	5749	10.32	76	6657	9.34

* Ratios up to 100:1 available upon request.

UGR
Series

NEMA-C Flange Sizes:
56C-215TC

*Ratios:
5:1-15:1

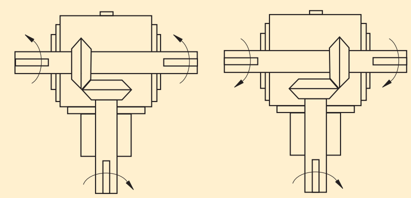


F (in)	G Output Shaft (in)	H Key (in)	I (in)	J (in)	K (in)	L (in)	N (in)	O (in)	S (in)	U (in)	V (in)	W (in)	X (in)	Z (in)	Weight (lbs)	Model Number
2.81	0.75	3/16 x 1.5	1.69	3.98	4.78	1.57	7.24	3.62	1.38	0.26	1.18	2.79	0.26	1.97	10	UGRA
3.31	1.00	1/4 x 1.5	1.93	4.76	5.67	1.97	7.83	3.92	1.57	0.33	1.38	3.35	0.283	2.36	12	UGRB
4.02	1.125	1/4 x 1.88	2.64	5.75	6.85	2.48	9.41	4.70	1.97	0.33	1.67	4.06	0.31	2.83	16	UGRC
4.69	1.25	1/4 x 2.25	2.83	6.85	8.07	2.95	10.51	5.26	2.36	0.45	1.77	4.41	0.39	3.39	33	UGRD
5.31	1.375	5/16 x 2.5	2.91	8.19	9.37	3.54	12.17	6.08	2.76	0.51	1.97	5.12	0.43	4.06	41	UGRE
6.59	1.625	3/8 x 2.75	3.28	9.94	11.61	4.33	13.54	6.77	3.34	0.55	2.26	5.67	0.63	5.02	59	UGRF

▼ Shown: **UMG5 and UMG3**

Interconnect / Drive Screw Jack Systems

Mitre Gear Boxes
Standard units may be inverted to reverse rotation. Input shaft can be rotated in either direction. Other styles and ratios are available on request.



Standard shaft rotational mitre gear boxes. Invert for reverse rotation.

Iron Mitre Box
Iron Mitre Boxes are available with spiral gears if higher speed is required.

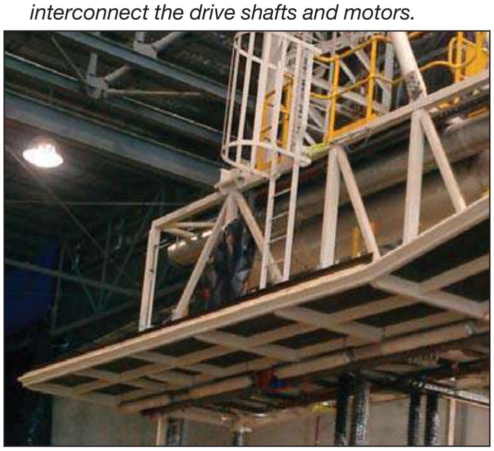
Aluminum Mitre Box

- **Lightweight aluminum housing resists corrosion and provides rigid gear and bearing support**
- **Stainless steel shafts provide resistance to corrosion**
- **Spiral bevel gearing allows higher operating speeds**
- **Lubricated for life to assure trouble free service**
- **Universal mounting (5 surfaces) for maximum design flexibility**

Heavy-Duty Cast Iron Mitre Box

- **Rugged iron housing provides rigid gear and bearing support**
- **Tapered roller bearing for endurance and strength**
- **Double lip, spring loaded seals keeps lubricant in and dirt out**

▼ *Mitre Gear Boxes were used extensively throughout this aircraft scaffolding system to interconnect the drive shafts and motors.*



▼ ALUMINUM MITRE BOX SELECTION CHART

Model No.	Maximum Input RPM	Output Torque @ Maximum RPM (in-lbs)	Input hp @ Maximum RPM	A (in)	B (in)	C (in)
UMG1	3600	32	1.8	3.95	1.98	1.25
UMG2	3600	76	4.3	7.25	3.63	2.00
UMG3	3600	180	10.25	10.00	5.00	3.00

▼ IRON MITRE BOX SELECTION CHART

Model No.	Maximum Input RPM	Output Torque @ Maximum RPM (in-lbs)	Input hp @ Maximum RPM	A (in)	B (in)	C (in)
UMG4	2400	79	3	7.50	3.75	3.19
UMG5	1150	660	12	10.19	5.09	4.13
UMG6	1150	1320	24	12.25	6.13	5.63
UMG7	850	3260	44	15.81	7.91	8.19
UMG8	690	5130	56	16.09	8.05	8.09
UMG9	1750	9039	250	21.50	10.75	9.50

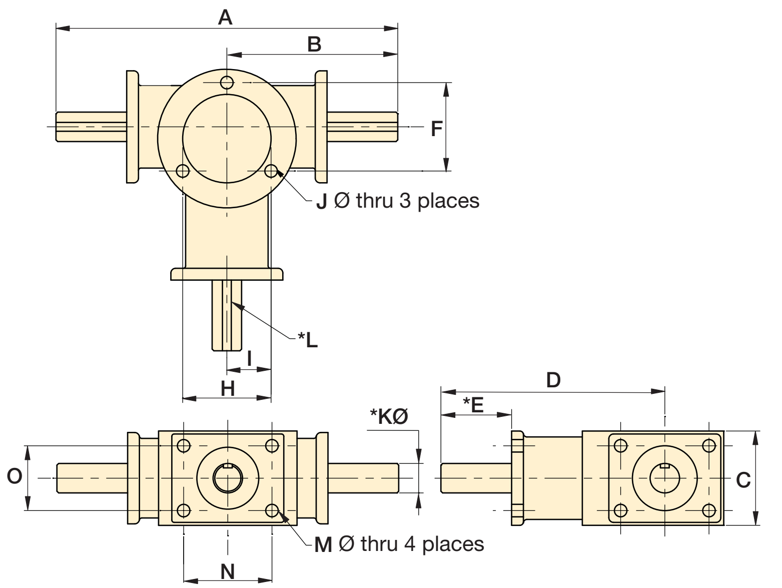
NOTE: Torque ratings are based upon continuous duty service.
Output capacity may be higher for intermittent duty (contact UNI-LIFT®).

UMG Series

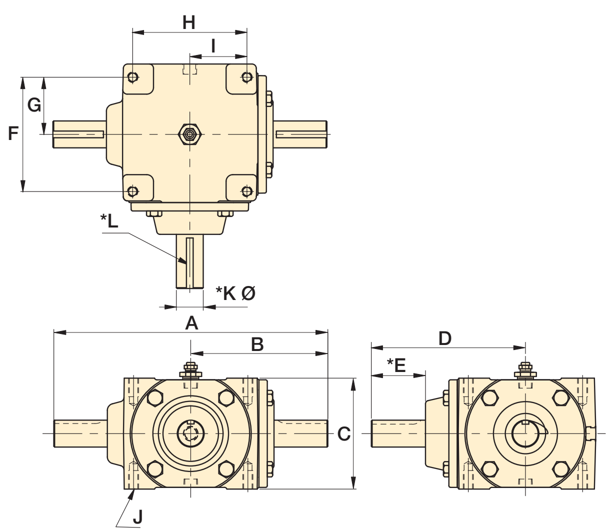
Input Power:
1.8-250 hp

Output Torque Rating @ Max. RPM:
32-9039 in-lbs

Aluminum Mitre Box



Iron Mitre Box



Shafting / Couplers

Complete your system arrangement by selecting your drive options.

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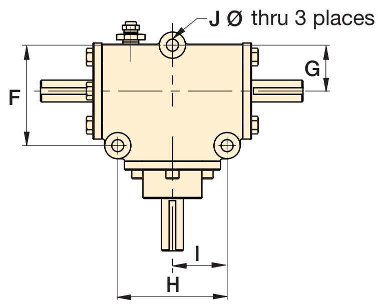
UMG4 Mounting Hole Location



D (in)	E* (in)	F (in)	H (in)	I (in)	J (in)	K* (in)	L* Keyway (in)	M (in)	N (in)	O (in)	Shipping Weight (lbs)	Model No.
2.75	0.59	1.31	1.31	0.66	0.27	0.375	0.47 Lg Flat X 1/32 DP	0.17	1.19	0.88	0.50	**UMG1**
4.75	1.50	1.88	1.88	0.94	0.27	0.625	3/16 x 3/32 x 1 7/32	0.27	1.88	1.38	2.00	**UMG2**
7.00	2.00	3.00	3.00	1.50	0.33	0.750	3/16 x 3/32 x 1 9/16	0.33	3.00	2.25	8.25	**UMG3**

D (in)	E* (in)	F (in)	G (in)	H (in)	I (in)	J (in)	K* (in)	L* Keyway (in)	Shipping Weight (lbs)	Model No.
4.56	1.50	2.88	1.31	3.13	1.56	0.34 Thru	0.625	3/16 x 3/32 x 1 5/32	9.00	**UMG4**
5.72	2.00	4.25	2.13	4.25	2.13	3/8 - NC	1.000	1/4 x 1/8 x 1 25/32	25.00	**UMG5**
8.47	2.50	4.50	2.25	4.50	2.25	1/2 - NC	1.250	1/4 x 1/8 x 1 25/32	48.00	**UMG6**
10.88	3.00	6.50	3.25	6.50	3.25	1/2 - NC	1.375	5/16 x 5/32 x 2 5/16	88.00	**UMG7**
11.48	3.06	6.50	3.25	6.50	3.25	1/2 - NC	1.500	3/8 x 3/16 x 2 1/4	115.00	**UMG8**
15.00	4.00	8.00	4.00	8.00	4.00	1/2 - NC	2.000	1/2 x 1/4 x 3 3/4	175.00	**UMG9**

* Identical for three shafts.

▼ Shown: **Jaw-type couplers**

Your Screw Jack Drive Solution

Contact UNI-LIFT

For complete details and availability, contact UNI-LIFT at: **sales@uniliftjacks.com**

Couplers

- **Couplers offer standard shaft-to-shaft connection for general industrial-duty applications**
- **Fail-safe – will still perform if elastomer fails**
- **Sintered iron jaws provide reliable service for heavy-duty applications**
- **Wide ambient temperature range: -30° to 160° F**
- **Maximum angle offset of 1° allowing easy installation**

▼ JAW TYPE COUPLER SELECTION CHART

Size	Jaw Type Coupler Half Bore Diameter (in)									Jaw Spider (Material)	
	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	Urethane	Hytrel
1	UC1A	UC1B	UC1C	UC1D	UC1E	–	–	–	–	UCU1	UCH1
2	–	UC2A	UC2B	UC2C	UC2D	UC2E	–	–	–	UCU2	UCH2
3	–	–	UC3A	UC3B	UC3C	UC3D	UC3E	–	–	UCU3	UCH3
4	–	–	–	UC4A	UC4B	UC4C	UC4D	–	–	UCU4	UCH4
5	–	–	–	UC5A	UC5B	UC5C	UC5D	UC5E	UC5F	UCU5	UCH5
6	–	–	–	–	–	UC6A	UC6B	UC6C	UC6D	UCU6	UCH6

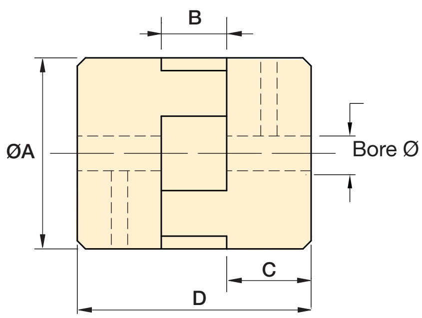
▼ GEAR TYPE COUPLER SELECTION CHART

Size	Gear Type Coupler Half Bore Diameter (in)								Gear Sleeve
	¾	1	1⅛	1¼	1⅜	1½	1⅝	2	
1	UCG1A	UCG1B	UCG1C	UCG1D	–	–	–	–	UCGC1
2	–	UCG2A	UCG2B	UCG2C	UCG2D	UCG2E	UCG2F	UCG2G	UCGC2
3	–	–	–	–	UCG3A	UCG3B	UCG3C	UCG3D	UCGC3
4	–	–	–	–	UCG4A	UCG4B	UCG4C	UCG4D	UCGC4

UC
Series

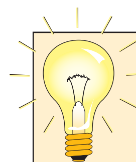
Torque Ratings:
135-30,200 in-lbs

Bore Size:
¼-3⅛ inch



Coupler Ordering

When ordering Couplers, each coupler half and insert/sleeve must be ordered separately.



Shaft Couplings

Balanced shaft couplings compensate for lateral, axial, and angular misalignment.

By using inserts with different durometers (hardness) it is possible to vary the stiffness and dampening effect of the coupling.

Shafting Options

Standard shafting options are also available.

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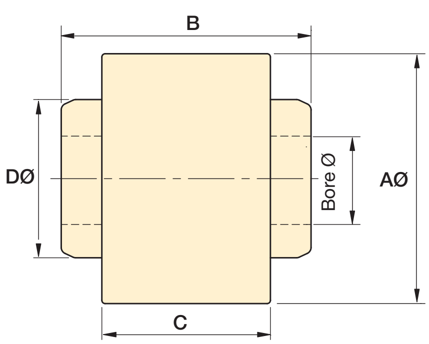
▼ JAW TYPE COUPLER DIMENSIONS

Size	Max. Torque Rating (in-lbs)		Max. Bore (in)	Dimensions (in)			
	Urethane	Hytrel		A	B	C	D
1	135	217	1	1.75	0.50	0.82	2.13
2	216	401	1⅛	2.11	0.52	0.82	2.15
3	291	561	1 3/16	2.11	0.52	1.00	2.51
4	477	792	1⅜	2.54	0.71	1.06	2.84
5	626	1134	1⅝	2.54	0.71	1.38	3.48
6	1188	2268	1⅞	3.32	0.88	1.68	4.22

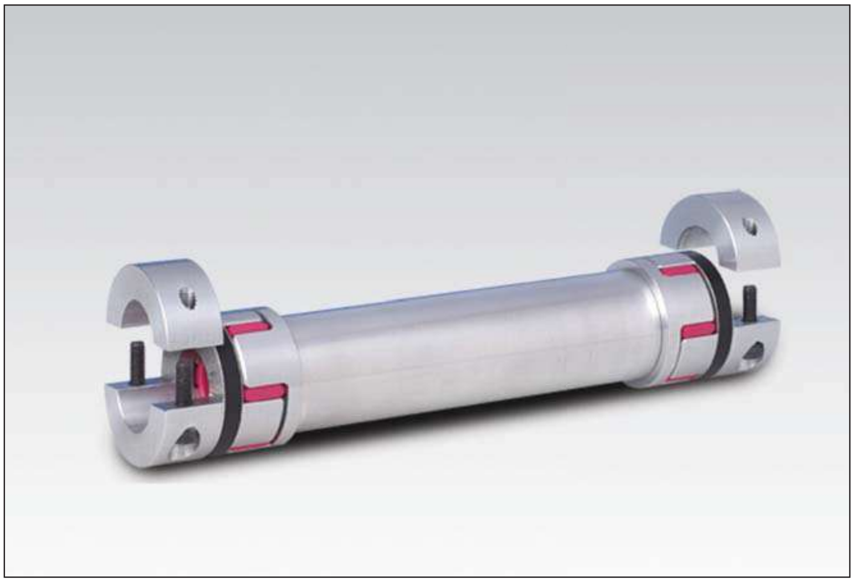


▼ GEAR TYPE COUPLER DIMENSIONS

Size	Max. Torque Rating (in-lbs)	Max. Bore (in)	Dimensions (in)			
			A	B	C	D
1	2500	1¼	3.31	3.13	2.00	2.00
2	7600	1⅝	3.75	3.75	2.53	2.38
3	20,200	2⅛	4.75	4.25	2.56	3.25
4	30,200	2⅝	5.50	4.75	3.06	3.94

UNI-LIFT®

▼ Shown: **Shaft**



US
Series

Torque Ratings:
135-30,200 in-lbs

Bore Size:
¼-3⅛ inch

H **This is how a Shaft is configured:**

US	3	B	0125	C	C
1	2	3	4	5	6

1 = Model Type
US = Shaft

2 = Size
1-7 = See table below for options

3 = Insert
B = High Torsional Resistance

4 = Shaft to Shaft Length (A)
XXX.X = Input Value (in)
Do not include decimal in part number.
All data will be based on 1 decimal place.
Example: 12.5" = 0125

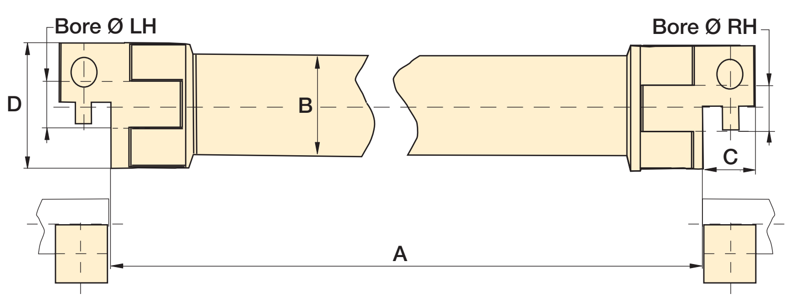
5 = Bore Size LH
A-N = See table below for options

6 = Bore Size RH
A-N = See table below for options

- **Precision balanced shaft reduces vibration**
- **No intermediate support bearing required on flexible shaft assemblies**
- **Spans distances of up to 13 feet**

▼ **DRIVE SHAFTS DIMENSIONS**

Size	Shaft to Shaft Length A (in) (min)	(max)	Tube Diameter B (in)	Hub Length C (in)	Hub Diameter D (in)
1		157.0	1.10	0.66	1.26
2		157.0	1.38	0.74	1.65
3		157.0	1.90	1.26	2.20
4		157.0	2.36	1.46	2.62
5		157.0	2.99	1.66	3.23
6		157.0	3.54	2.05	4.02
7		157.0	4.72	2.44	5.37



Size	Max. Torque Rating (in-lbs)	Bore Code Options Diameter (in) 0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000
1	283	A	B	C	—	—	—	—	—	—	—	—	—	—	—
2	372	A	B	C	D	E	F	—	—	—	—	—	—	—	—
3	1328	—	—	C	D	E	F	G	H	—	—	—	—	—	—
4	3540	—	—	—	D	E	F	G	H	I	—	—	—	—	—
5	7169	—	—	—	D	E	F	G	H	I	J	K	L	—	—
6	11,948	—	—	—	—	—	F	G	H	I	J	K	L	M	N
7	19,028	—	—	—	—	—	—	—	—	I	J	K	L	M	N
	Key Size	0.125	0.125	0.188	0.188	0.188	0.250	0.250	0.250	0.313	0.375	0.375	0.375	0.500	0.500

UT, UCE
Series

▼ Shown: **UCE-005, UT-005**

- **Clevis design allows for a pinned, pivoting application**
- **Top Plate design offers a perpendicular mounting surface to easily connect to your structure**
- **Standard mounting holes assure a secure bolted connection**

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Visit our web site for additional assistance or contact UNI-LIFT at: **sales@uniliftjacks.com**

Screw End Dimensions

Dimensions for Screw End Adaptors can be found in the specific M- and B-Series Screw Jack pages.

▼ *To prevent screw rotation this customer installed a Top Plate Adaptor to mount the 5-ton Screw Jack into the welding fixture.*

▼ SELECTION CHART

Screw Jack Size	Screw End Adaptors Model Nos.	
	Top Plate	Clevis
MA5	**UT005**	**UCE005**
MA15	**UT008F**	**UCE008F**
MA20, M1, B1	**UT008**	**UCE008**
M2, M3, B2	**UT010**	**UCE010**
M4, M5, B5	**UT010**	**UCE100**
B10	**UT101**	**UCE101**
M8, M10	**UT105**	**UCE105**
M15	**UT108**	**UCE108**
M20, B20	**UT112**	**UCE112**
M25	**UT202**	**UCE202**
M30, B30	**UT204**	**UCE204**
M40	**UT300**	**UCE300**
B50	**UT304**	**UCE304**
M50	**UT308**	**UCE308**

▼ Shown: **Electrical Control Box**

UEC
Series

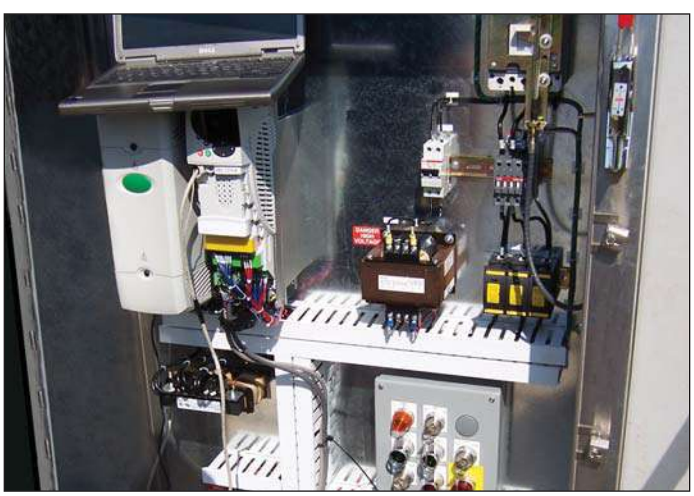
Voltage:
230/460VAC 3 Ph.

Horsepower:
.25-10 hp

Other voltages and single phase options available upon request.

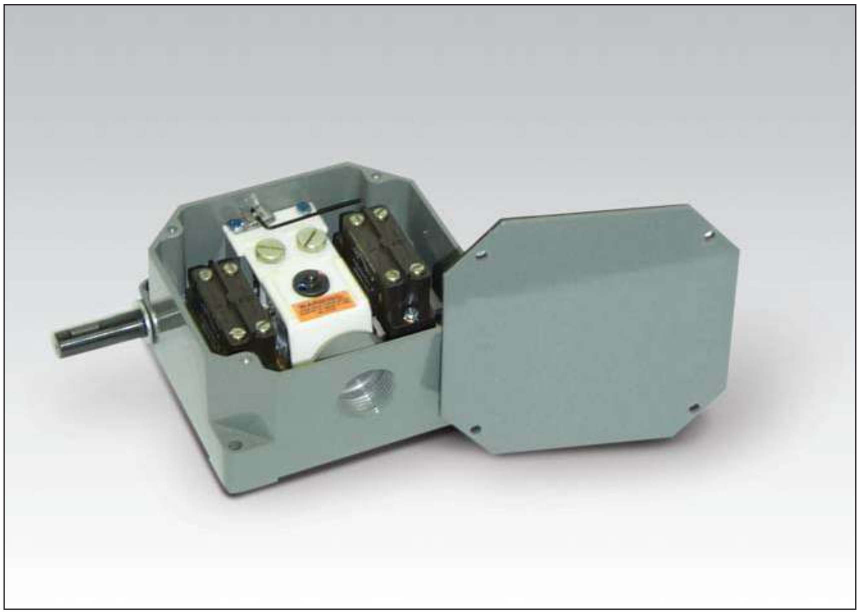
- **All systems feature motor short circuit protection, overload protection, phase loss and a lockable disconnect**
- **Meets NEMA Type 4 Environmental Ratings**
- **Operates in both a JOG mode and MAINTAINED (Limit Switch) mode**
- **Extend, Retract, Stop and E-Stop Pushbuttons**
- **Visible Short Circuit or Overload trip indication, with external reset**
- **Listed UL508a Control Panel, with a maximum SCCR rating of 100KA**
- **UL listed and CE marked components**
- **Full Voltage Reversing Motor Starters are rated for 2.5 million AC-3 Electrical operations**

Contact UNI-LIFT
UNI-LIFT offers a range of custom controls to meet all of your system requirements.
Contact us at:
sales@uniliftjacks.com



◀ *UNI-LIFT® provided onsite support and control to synchronize M-Series, 100-ton Screw Jacks for this ferry docking system.*

▼ Shown: **URS21 Rotary Limit Switch**



UR
Series

Switch Series:
2 Circuit

Voltage:
15A 115VAC/10A 230VAC

Temperature Range:
-20° F to 150° F

- **Geared limit switches monitor the number of revolutions to allow for accurate positioning**
- **2 circuit design allows for a controlled stop in the advance and retract positions**
- **The adjustable cams enable precise positioning of travel limit stops**
- **4 circuit models available for increased position control**

Rotary Limit Switch Sizing

To calculate the required number of turns, utilize the following formula:

TL = TPI x Rise

TPI - Turns of input shaft for 1 inch of travel

Rise - one way travel (in)

Three standard options are available for each tonnage, after determining your required turns select the next highest option from the table on the right. If the required turns or if your UNI-LIFT's load capacity exceeds the values in the selection table please contact UNI-LIFT.

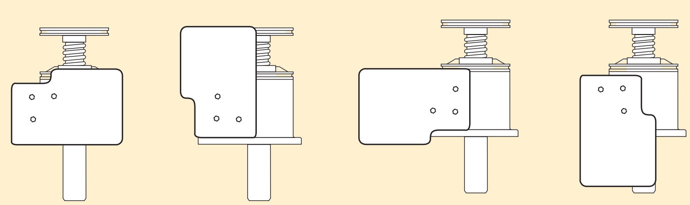
Example:

20-ton screw jack, 8:1 ratio, 72 inches of rise, TPI = 16

16 x 72 = 1152 turns

1152 turns is less than 1440, therefore, select a No.1440 series Limit Switch

Switch can easily be mounted in any one of these positions. When ordering a Rotary Switch in the Matrix please specify right-hand or left-hand and mounting position number.



Position 1 **Position 2** **Position 3** **Position 4**

Encoders and Linear Transducers

For precise system control Encoders and Linear Transducers can be included in your UNI-LIFT System design.

Contact us at:
sales@uniliftjacks.com

Digital Displays

UNI-LIFT can offer precise digital readouts within 0.010".

Contact us at:
sales@uniliftjacks.com

Capacity (ton)	Switch Series 2 Circuit** 1 (360 max. turns)	2 (1440 max. turns)	3 (4320 max. turns)
1*	**URSA11**	**URSA12**	**URSA13**
2	**URSA21**	**URSA22**	**URSA23**
3	**URSA31**	**URSA32**	**URSA33**
4	**URSA41**	**URSA42**	**URSA43**
5	**URSA51**	**URSA52**	**URSA53**
8	**URSA81**	**URSA82**	**URSA83**
10	**URSA101**	**URSA102**	**URSA103**
15	**URSA151**	**URSA152**	**URSA153**
20	**URSA201**	**URSA202**	**URSA203**
25	**URSA251**	**URSA252**	**URSA253**
30	**URSA301**	**URSA302**	**URSA303**

* Not available with the MA5, MA15, MA20 screw jack.
** 4-Circuit available upon request.

▼ Shown: **Assorted Boot Family**

Solutions For Tough Environments

- **Protects the lifting screw from dust, dirt and moisture**
- **Provided with internal or external guides to prevent sagging and with zippers for easy installation or removal**
- **Flange End Boots are provided with an aluminum back-up plate of the same outer diameter to ensure secure mounting**
- **Helps maintain proper lubrication**
- **UNI-LIFT® Boots are constructed of tough, stitched neoprene-coated nylon material to provide maximum protection from abrasive elements and other hostile environmental conditions**
- **Optional special boots for severe duty applications, such as weld splatter and high temperature, are available**

Travel Guides
Horizontal or angled applications require guides for travel greater than 24". These guides will keep the boot centered on the load screw to avoid untimely deterioration. One guide is supplied for each 24" of travel. Boot guides do not require additional load screw length.

Determine the Load Screw Length (ESL)
Extra screw must be included for mounting structure, traveling nut, boot closed height, boot retainer and miscellaneous clearances. To calculate the closed height of the boot, reference boot drawing on the adjacent page.

Material	Temperature Range	Application Comments
Neoprene Coated Nylon	-40° F to 220° F	Good flexibility, resists oils and greases
Hypalon Coated Polyester	-60° F to 300° F	Good chemical and abrasion resistance
Silicone Coated Fiberglass	-40° F to 550° F	High temperature
Aluminized Fiberglass	-40° F to 550° F	High temperature, weld splatter and good abrasion resistance

www.uniliftjacks.com
Visit our web site for additional assistance or contact UNI-LIFT at:
sales@uniliftjacks.com

UB Series

Boot Diameter (outside):
4-9 inch

Lengths:
Up to 20 feet

▼ This is how a Boot is configured:

UB M C A20 N G 013

UB	M	C	A20	N	G	013
1	2	3	4	5	6	7

1 = Boot
UB = Screw Jack

2 = Screw Jack Series
M = Machine Screw
B = Ball Screw

3 = Mounting Style
C = Upright Translating
D = Upright Rotating
E = Upright Keyed
F = Inverted Translating
G = Inverted Rotating
H = Inverted Keyed

4 = Ton Rating
A5 = 500 lbs.
A15 = 1500 lbs.
A20 = 2000 lbs.
1 = 1 Ton
2 = 2 Ton
3 = 3 Ton
4 = 4 Ton
5 = 5 Ton
8 = 8 Ton
10 = 10 Ton
15 = 15 Ton
20 = 20 Ton
30 = 30 Ton
40 = 40 Ton

5 = Material
N = Neoprene Nylon
H = Hypalon
S = Silicone
A = Aluminized

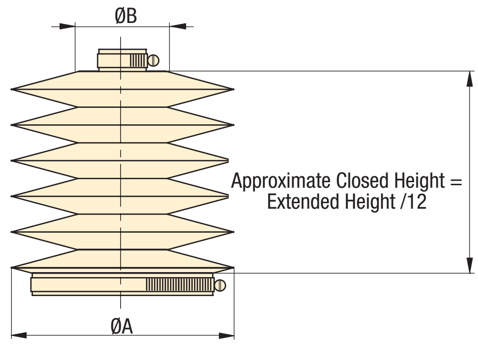
6 = Application Direction
G = Guides
N = No Guides

7 = Extended Height
Input Value
(length in inches,
e.g. 12.3" = 013)

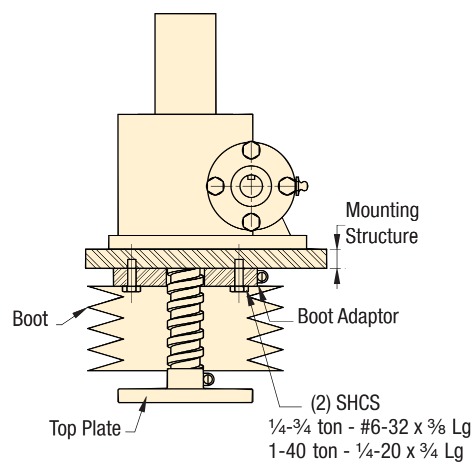
	Screw Jack Model No.	Boot Diameters (in) A Outside	B Inside	Boot Adaptor Model No.
Machine Screw Jacks	MA5	4.00	1.00	**UBPC**
	MA15	4.00	1.00	**UBPC**
	MA20	4.50	1.50	**UBPD**
	M1	4.50	1.50	**UBPD**
	M2	5.00	2.00	**UBPE**
	M3	5.00	2.00	**UBPE**
	M4	5.50	2.50	**UBPF**
	M5	5.50	2.50	**UBPF**
	M8	6.50	3.50	**UBPG**
	M10	6.50	3.50	**UBPG**
	M15	6.50	3.50	**UBPH**
	M20	7.50	4.50	**UBPI**
	M25	8.00	5.00	**UBPJ**
	M30	8.00	5.00	**UBPJ**
	M40	9.00	6.00	**UBPK**
Ball Screw Jacks	B1	4.50	1.50	**UBPD**
	B2	5.00	2.00	**UBPE**
	B5	5.50	2.50	**UBPF**
	B10	5.50	2.50	**UBPG**
	B20	7.50	4.50	**UBPI**
	B30	8.00	5.00	**UBPJ**

Boot Adaptor Plate (including screw)

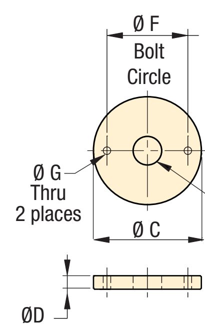
Screw Jack Model No.	Model No.	C (in)	D (in)	E (in)	F (in)	G (in)
MA5, MA15	**UBPC**	2.25	0.19	1.03	1.44	0.19
MA20, M1, B1	**UBPD**	2.75	0.50	0.84	1.75	0.28
M2, M3, B2	**UBPE**	4.00	0.50	1.06	3.00	0.28
M4, M5, B5	**UBPF**	4.50	0.50	1.56	3.50	0.28
M8, M10, B10	**UBPG**	5.88	0.50	2.06	4.25	0.28
M15	**UBPH**	6.13	0.50	2.32	4.50	0.28
M20, B20	**UBPI**	7.00	0.50	2.56	5.00	0.28
M25, M30, B30	**UBPJ**	8.75	0.50	3.44	6.00	0.28
M40	**UBPK**	9.75	0.50	4.32	8.00	0.36



Boot Configuration Detail



Boot Adaptor Plate Detail



UNI-LIFT Technical Information

provides in-depth technical information for UNI-LIFT Screw Jacks.

The technical information pages are designed to help you properly specify the right screw jack for your project. These pages include detailed engineering information that answers frequently asked questions (FAQs), motor sizing guidelines, duty cycle considerations, column buckle and double clevis design information, keyed screw jacks, and much more.

Please take the time to review these pages to ensure your awareness of all necessary information to consider when specifying your screw jack.

GLOBAL LIFETIME WARRANTY STATEMENT

www.uniliftjacks.com
Visit our web site for additional assistance or contact UNI-LIFT at:
sales@uniliftjacks.com

UNI-LIFT products are warranted to be free of defects in materials and workmanship.

This warranty does not cover ordinary wear and tear, abuse, misuse, alterations, or the use of improper fluids. Determination of the authenticity of a warranty claim will be made only by UNI-LIFT.

Manufactured in an ISO 9001 Certified Facility

Content	Page

TABLE OF VARIABLES

ASL = Adjusted screw length (in)
C = Motor brake factor (ft-lbs)
C_d = Dynamic capacity
C_h = Cycles per hour
D = Stopping distance (in)
D_1 = Required duty cycle time per hour
D_2 = Allowable duty cycle time per hour
D_s = Shaft diameter (in)
e_1 = System arrangement efficiency
e_2 = Reducer efficiency
ESL = Extended screw length
F = Column factor multiplier
f = Unit running load proportion factor
hp = Horsepower
HPe = Estimated horsepower
K = Column factor
L = Extended screw length (in)
L_2 = Duty limit service factor
L_{10} = Ball screw life (in)

N = Number of screw jacks in the system
P = Rated capacity of screw jack (lbs)
P_1 = Maximum load (lbs)
P_2 = Total system load (lbs)
P_3 = Maximum system running load (lbs)
P_4 = Maximum running load on one screw jack (lbs)
R = Gear reducer ratio
r = Radius of gyration
Rise = One way travel under load (in)
RPMd = Desired input speed
RPMm = Motor shaft speed
RPMs = System input speed
T = Running torque (in-lbs)
T_1 = Unit running torque (in-lbs)
T_2 = System running torque (in-lbs)
t_2 = Required one way travel time (min)
T_a = Ambient temperature (deg F)

Tb = Motor brake torque (ft-lbs)
Te = Estimated system torque (in-lbs)
Thb = Hold torque (ft-lbs)
TL = Turns of limit switch
T_m = Mitre gear box running torque (in-lbs)
To = No load torque (in-lbs)
Tp = Torque required to lift one lb. (in-lbs)
TPI = Turns of the input shaft for 1 inch of travel
T_{rm} = Motor running torque (in-lbs)
Ts = Static torque (in-lbs)
Ts_2 = System starting torque (in-lbs)
T_{sm} = Motor starting torque (in-lbs)
T[x] = Unit run torque on screw jack (in-lbs)
V = Load screw velocity (in/min)
V_d = Desired load screw velocity (in/min)

1. **Q. What is the difference between a Machine Screw Jack and a Ball Screw Jack?**

   A. The machine screw jack uses an acme threaded screw that is typically self-locking, meaning it will hold its position without a brake. Ball screw jacks use ball screws to convert rotary motion to linear movement, and require 1/3 the horsepower compared to a machine screw jack. Due to the efficiency of the ball screw, brakes must be used to stop and hold the load screw in position. Brakes are also recommended for use on any screw jack if vibration is present.

2. **Q. Why use a Machine Screw vs. a Ball Screw Jack?**

   A. One type of screw jack is usually better suited to the operating conditions. Typically, fast operating speeds and frequent cycle times may be more suited to a ball screw jack, particularly as the load approaches the rated capacity of the screw jack. High load at slower speeds, less frequent cycles and the ability to hold the load in position when the system is at rest may be better suited for a machine screw jack.

3. **Q. What is the input torque requirement for a given output load?**

   A. The input torque for a specific load and screw jack model is calculated using the technical specifications and formulas in the catalog. The input torque (inch pounds) is listed for each screw jack model in the "Selection Chart" titled "Torque Required to Lift One Pound" (see pages 13 and 37).

4. **Q. How do I operate the screw jack?**

   A. Most screw jacks are operated by electric motors, but air motors and hydraulic motors can also be used. Occasionally hand wheels are provided for hand operation.

5. **Q. How do I size motors and calculate required horsepower?**

   A. The horsepower requirement for UNI-LIFT® is calculated using the following equation:

$$\frac{\text{(torque to move the load x input RPM)}}{63025}$$

6. **Q. Can I use a larger motor than required?**

A. Yes, but it is not recommended. The screw jack or system components could be damaged if an oversized motor is used. Electronic position switches or travel limit controls must be used for each end of travel to stop the motor. If using solid mechanical stops, screw jack components can be subject to shock load conditions and oversize motors can cause catastrophic failure of stops and other components.

7. **Q. What is TPI?**

A. TPI stands for turns per inch and is listed in the Technical Specifications for each screw jack model. The value associated with TPI is the number of revolutions required to the input shaft to move the load one inch. This is calculated by dividing the screw jack ratio by the lead of the load screw.

8. **Q. How do I stop the screw jack at the travel limits?**

A. Limit Switches or other controls must be used to shut off the motor when the Screw Jack has reached its full extended or retracted position. The use of Limit Switches or Encoders are recommended to control the extended or retracted position of your Screw Jack travel. Stop Nuts are offered to protect against over extension; however, these are intended for emergency use only. Their continued use can cause severe damage to the screw jack. UNI-LIFT offers, as an option, a standard Rotary Limit Switch for this purpose. Other electronic devices include Encoders and Linear Position Transducers.

9. **Q. Can multiple screw jacks be used in a system?**

A. Yes, but do not exceed 300% of the rated input torque for a given screw jack. Use the standard catalog formulas to determine input torque and motor size.

10. **Q. Can different size screw jacks be used in the same system?**

A. Yes, as long as the input turns for 1-inch of travel are equal. This is sometimes done to accommodate varying load conditions.

11. **Q. What is the system efficiency?**

A. - System Arrangement (e_1)

2 screw jack system: 95%	*4-screw jack system: 80%*
3 screw jack system: 90%	*6 screw jack system: 75%*

Worm Gear Reducers (e_2)

5 to 1 = 92%	*10 to 1 = 87%*
7.5 to 1 = 90%	*15 to 1= 83%*

Right angle mitre efficiency is 95% (e_3)

12. **Q. What is the maximum input speed?**

A. Most UNI-LIFT screw jacks can be run at 1800 RPM (some run up to 2587 RPM). The catalog sizing procedure correlates the Load vs. Input RPM and Duty Limits and Cycle Times. A gear motor, Helical Gear Reducer or a Worm Gear Reducer is used to reduce the input RPM to the screw jack to provide the required travel speed of the load screw (load screw velocity). Many UNI-LIFT Screw Jacks can be driven directly by 1800, 1150 and 900 RPM motors. Motors and reducers are available mounted directly to many UNI-LIFT models.

13. **Q. Can standard UNI-LIFT Screw Jacks be used for continuous duty?**

A. Yes. The standard catalog sizing procedure includes the formula for determining the duty limits for each screw jack model. This unique feature allows you to calculate the duty cycle limits of each UNI-LIFT model for your application.

14. **Q. What is the duty cycle?**

A. Duty cycle is the time it takes the screw jack to heat up under a given set of operating conditions limited to a maximum temperature of 180° F.

15. **Q. What causes heat build up in the screw jack?**

A. The screw jack is a mechanical gearbox assembly. The friction of the gears, load screw, bearings and seals generate heat while the screw jack is operating. The combination of travel, loading, and input speeds all affect the temperature rise of the screw jack. UNI-LIFT sizing calculations take these variables into account to ensure that you select the right screw jack model for your application.

16. **Q. What is the load screw capacity and travel?**

A. This is based on the relationship of the screw diameter and the length. Screws in tension are rated for the full capacity of the screw jack. For screws in compression, capacity is limited by the load screw's column strength. The column strength of a screw is reduced as the screw gets longer. Use the maximum extended screw length (ESL) when using the Column Buckle Charts (page 71 & 76) to determine load screw capacity.

17. **Q. How do I determine the full-extended screw length?**

A. The Extended Screw Length (ESL) is normally equal to the travel. Allowances must be added for the closed height of a boot and the addition of stop nuts or special closed heights. These allowances increase the length of the screw. For inverted screw jacks the thickness of the mounting structure must also be included. This total length (ESL) should be used when determining the column load capacity of the screw jack.

18. **Q. Should the load being positioned be guided?**

A. It is highly recommended that the load be guided; however, it is not necessary. A guided system will provide more column stability and allow longer load screw travel. Column length is greatly reduced on unguided systems. External load forces, common with unguided systems, are detrimental to the life and operation of the UNI-LIFT.

19. Q. Can the screw jack withstand side loading or a bending moment?

A. Yes, but this is not recommended. Consult UNI-LIFT if this condition will be present! These types of loads apply greater forces on the load screw and housing assembly causing premature wear. Guides are highly recommended and should be used to eliminate side and bending loads.

20. Q. Is there backlash between the load screw and gear nut?

A. Yes. This is necessary to allow for sliding or rolling action of the screw through the nut. Anti-Backlash Screw Jacks are available when the backlash needs to be minimized. For further information on Anti-Backlash Screw Jacks refer to page 72. Input torque requirements are greater for Anti-Backlash Design Screw Jacks.

21. Q. Can the screw jack withstand shock loading?

A. This is not recommended. Oversized screw jacks are required to handle shock loads. Solid thrust bearings are also available in many screw jack models when constant vibration and shock are present in an application.

22. Q. What mounting position can the screw jack be mounted?

A. UNI-LIFT can be mounted in any position: vertical, horizontal or in-between. A position other than vertical should be noted on inquires and purchase orders since special accommodations may be required.

23. Q. How is the load screw protected?

A. Standard translating screw jacks are fitted with a screw protection tube that stores the screw when the screw jack is in the closed position. Boots are available and recommended to protect the screw in the extended position. Two (2) boots may be required for rotating screw jacks with traveling nuts.

24. Q. How do I attach the load to be positioned to the load screw?

A. For translating screw jacks, the load screw has a standard threaded end that can be used to attach the load. Top Plates or Clevis Ends are also available. For traveling nut designs, the traveling nut has a flange with mounting holes. The screw jack housing has a mounting base and is also available with a clevis mount for double clevis requirements.

25. Q. Will the load screw rotate on translating screw jacks?

A. Yes. On translating screw jacks you need to prevent the load screw from rotating to produce linear motion. This is usually accomplished by incorporating it into the application. If rotation of the screw cannot be prevented in the application design, a keyed configuration is available. Input torque will increase for keyed screw jacks and the capacity is reduced to 25% of rated capacity.

26. Q. What is the maximum *UNI-LIFT operating* temperature limits?

A. Standard UNI-LIFT Screw Jacks are designed to operate at a temperature range of -20° F to 180° F. However, special grease and seals are available to extend the operating temperature limits to as low as -100° F and as high as 400° F. See page 82 for further information.

27. Q. Can screw jacks be used in food industry applications (USDA)?

A. UNI-LIFT uses USDA approved lubrication for these applications.

28. Q. How do I lubricate a screw jack?

*A. Use the proper grease. Fill the gearbox by pumping grease into the grease fittings supplied in the screw jack housing. The screws should have grease applied directly to them with a rag or paintbrush.
This must be done as part of a regularly scheduled maintenance program.*

29. Q. How do I select the right screw jack?

A. The "Screw Jack Overview" section of this catalog contains an easy to follow guide to Screw Jack selection or contact UNI-LIFT at: sales@uniliftjacks.com

30. Q. What is the position accuracy?

A. 0.010" between activators.

31. Q. What is the best way to contact UNI-LIFT?

*A. Call: 888-984-1924
Email: sales@uniliftjacks.com*

1. **Complete the UNI-LIFT® Worksheet located on page 86.** See Table 1 for complete details on the technical specifications.

2. **Determine the maximum load on one screw jack (P_1, lbs)**

$$P_1 = \frac{P_2}{N}$$

P_2 = Total system load (lbs)
N = Number of Screw Jacks in the system
On multi-screw jack systems where the load is not equally distributed, P_1 equals the maximum load supported by one screw jack.

3. **Select the Screw Jack size**
   - If the screw is in tension, select an screw jack with a rated capacity equal to or greater than maximum load (P_1) on one screw jack.
   - If the load screw is in compression, use the calculation steps, on page 71, to determine the maximum permissible Extended Screw Length (ESL). Select an screw jack that has a load screw length capacity equal to or greater than the length required for the load.

4. **Determine the Load Screw Velocity (V_d, in/min)**

$$V_d = \frac{Rise}{t_2}$$

Rise = One way travel under load (in)
t_2 = Required one way travel time (min)

5. **Determine Desired Input Speed: (RPMd)**

RPMd = TPI x V_d TPI = Turns of the input shaft for 1 inch of rise (see table on page 69).

6. **Determine Load Screw Velocity (V, in/min)**

$$V = \frac{RPM_d}{TPI}$$

From the catalog data (page 52), select the power transmission equipment with an output speed close to the desired input speed (RPM_d). Use the output speed to recalculate the actual load screw velocity.

7. **Required Duty Cycle Time (D_1, min)**

$$D_1 = \frac{(2*Travel*C_h)}{V}$$

C_h = Cycles per hour
Travel = Distance load will move in one direction (in)
Use the calculation steps on page 70 to determine if D_1 is equal to or greater than D_2.
If D_2 is less than D_1 you must:
- reduce the input speed to the screw jack
- reduce the load by adding additional screw jacks to the system
- Use a larger screw jack

MOTOR AND POWER TRANSMISSION SIZING

Calculate the torque and horsepower requirements using the 7 steps on page 69.

- Select a motor with a power rating greater than System hp requirement, a starting torque greater than T_{sm}, and a motor running torque greater than Trm. See page 49 for horsepower and motor ratings.
- Select system Power Transmission equipment (gear reducer, mitre gear boxes, couplings, etc) with ratings greater than the running torque on power transmission equipment (Te), see Application Example on page 80.
- Size shafting for system starting torque T_{sm} to be transmitted, see page 69.

For a quick estimate for torque and motor requirements use the following calculations

$$HPe = \frac{(Te*RPM_S)}{63025} \qquad Te = Tp*P_3$$

HPe = Estimated horsepower
Te = Estimated system torque (in-lbs)
P_3 = Maximum system running load (lbs)
RPM_S = System RPM
RPM_m = Motor RPM
Tp = Torque required to lift 1 lbs. [Table 1]

$$RPMs = \frac{(RPM_m)}{\text{Reducer Ratio}}$$

▼ **TABLE 1**

Capacity [P] (ton)	Model Number	Torque Required to Lift 1 lbs. [Tp] (in-lbs) Low	Med.	High	No Load Torque [To] (in-lbs)	Radius of Gyration [r] (in-lbs)
.25	**MA5**	0.022	—	—	2.0	0.094
.75	**MA15**	0.020	—	0.015	2.0	0.125
1	**MA20**	0.020	—	0.010	4.0	0.154
1	**M1**	0.021	—	0.013	3.0	0.156
2	**M2**	0.020	—	0.009	5.0	0.218
3	**M3**	0.021	0.017	0.013	4.0	0.218
4	**M4**	0.030	0.018	0.012	5.0	0.334
5	**M5**	0.028	—	0.011	12.0	0.316
8	**M8**	0.030	—	0.019	7.0	0.396
10	**M10**	0.029	—	0.015	18.0	0.423
15	**M15**	0.031	—	0.015	18.0	0.486
20	**M20**	0.033	—	0.021	36.0	0.566
25	**M25**	0.031	—	0.019	10.0	0.628
30	**M30**	0.034	—	0.017	48.0	0.743
40	**M40**	–	—	0.024	12.0	0.985
50	**M50**	0.040	—	0.021	96.0	1.074
75	**M75**	0.042	—	0.021	156.0	1.149
100	**M100**	0.045	—	0.024	204.0	1.387
150	**M150**	Contact UNI-LIFT®				
250	**M250**					

Calculating the Torque

1. Determine unit running load proportion factor (f)

$$f = \frac{P_3}{(P*N)}$$

P = Rated capacity of screw jack
P_3 = Maximum system running load
N = Number of Screw Jacks in the system

2. Determine unit running torque (T_1, in-lbs) [Table 2]

$$T_1 = (T * f) + To$$

To = No Load Torque (in-lbs)
T = Running torque (in-lbs)**

3. Find the system running torque (T_2, in-lbs)

$$T_2 = \frac{(T_1 * N)}{e_1}$$

e_1 = System Arrangement Efficiency - see page 66 (question #11)

4. Find system power, (System hp)

$$hp = \frac{(T_2 * RPM_S)}{(63025 * e_2)}$$

RPM_S = Input shaft speed
e_2 = Reducer efficiency - see page 66 (question #11)

5. Determine system starting torque (Ts_2, in-lbs)

$$Ts_2 = \frac{[(Ts*f) + To)*N]}{e_2}$$

Ts= Static Torque (in-lbs) [Table 2]

6. Determine motor starting torque (T_{sm}, in-lbs)

$$T_{sm} = \frac{Ts_2}{(R*e_2)}$$

R = Gear Reducer Ratio

7. Determine motor running torque (Trm, in-lbs)

$$Trm = \frac{T_2}{(R*e_1)}$$

▼ **TABLE 2**

Rated Capacity [P] (ton)	Model Number	Gear Ratio	Turns Per Inch* [TPI]	Static Torque [Ts]	Unit Input Torque at Rated Capacity — T = Running Torque (in-lbs) @ Various RPM_S (theoretical)**								No Load Torque [To] (in-lbs)
					50 RPM	115 RPM	172 RPM	345 RPM	600 RPM	870 RPM	1140 RPM	1750 RPM	
.25	MA5	5:1	20	11	9	8	8	8	7	7	7	6	2
.75	MA15	5:1	20	36	28	26	25	24	23	22	21	20	2
		5:1	40	29	21	20	19	18	17	16	15	14	1.5
1	MA20	5:1	25	48	35	33	32	29	27	26	25	24	4
		20:1	100	22	15	14	13	12	11	10	9	8	4
1	M1	5:1	20	54	39	37	36	32	31	29	28	27	3
		10:1	40	33	23	22	21	19	18	17	16	15	3
2	M2	6:1	24	104	75	70	67	61	57	54	52	49	5
		24:1	96	51	29	27	26	23	21	20	18	17	5
3	M3	6:1	24	171	120	111	105	95	88	84	81	76	4
		8:1	32	141	97	89	85	76	71	67	64	60	4
		12:1	48	111	73	68	64	58	52	49	47	44	4
4	M4	5.33:1	16	342	237	215	202	186	172	163	156	146	5
		12:1	36	211	135	123	117	102	94	88	84	78	5
		24:1	72	155	92	83	78	68	60	55	52	47	5
5	M5	6:1	16	379	270	249	236	217	202	192	185	174	12
		24:1	64	155	100	92	88	79	71	66	63	58	12
8	M8	6:1	18	732	478	429	400	363	333	313	299	276	7
		12:1	36	472	292	264	247	215	196	184	175	162	7
10	M10	8:1	16	831	569	520	492	448	415	393	377	352	18
		24:1	48	443	274	250	236	209	185	173	164	151	18
15	M15	8:1	16	1,356	912	828	773	708	653	616	589	548	18
		24:1	48	723	442	401	377	332	294	273	259	238	18
20	M20	8:1	16	1,920	1,276	1,150	76	982	902	848	809	750	36
		24:1	48	1,003	811	552	519	454	403	375	356	326	36
25	M25	9:1	18	2,371	1,534	1,371	1,279	1,161	1,062	996	948	—	10
		18:1	36	1,528	941	846	792	689	627	586	557	—	10
30	M30	$10\frac{2}{3}$:1	16	3,067	1,982	1,774	1,656	1,502	1,374	1,289	1,228	—	48
		32:1	48	1,694	988	883	824	713	627	581	549	—	48
40	M40	20:1	30	3,226	1,927	1,706	1,581	1,383	1,248	1,160	1,098	—	12
50	M50	$10\frac{2}{3}$:1	16	6,559	3,915	3,382	3,189	2,838	2,556	2,372	2,244	—	96
		32:1	48	3,721	1,995	1,736	1,595	1,333	1,180	1,084	1,019	—	96
75	M75	$10\frac{2}{3}$:1	16	10,171	6,096	5,279	4,975	4,420	3,971	3,676	—	—	156
		32:1	48	5,243	2,920	2,560	2,361	1,998	1,781	1,642	—	—	156
100	M100	12:1	16	15,639	8,767	7,501	7,019	6,165	5,495	5,065	—	—	204
		36:1	48	9,115	4,568	3,893	3,535	2,928	2,568	2,349	—	—	204

* Of Input Shaft for 1" of Rise
** When calculating, if actual RPM_S is between columns, use the column with the lower RPM value.

Duty Limit Service Factor (L_2) = Operating time allowed per hour. The numbers greater than 60 are theoretical values and exceed 100% duty, solely to provide base data for adjusting L_2

The L_2 values are based on screw jacks loaded at rated capacity, operating in an ambient temperature of 80° F with a maximum allowable temperature rise of 100° F. For ambient temperatures above 180° F or below -20° F consult UNI-LIFT. For speeds not shown use the next fastest RPM value.

1. Determine Allowable Duty Cycle Time (D_2)
When the unit load is at rated capacity, and the ambient temperature is at 80° F the L_2 value from the table equals D_2
If not, proceed to step 1A.

<u>Step 1A</u>

For different temperature service, or a unit load less than rated capacity, use the following equation to determine the Allowable Duty Cycle Time (D_2).

$$D_2 = \frac{[(180 - T_a) * P*L_2]}{(100* P_4)}$$

T_a = Ambient temperature (deg F)
P = Rated capacity (lbs)
L_2 - Duty limit service factor (see Table 3)**
P_4 = Maximum running load per unit (lbs)

2. Determine if Duty Cycle Time is acceptable

If D_2 > = 60 minutes the application is rated for continuous duty

If D_2 > = D_1 than the application is acceptable

If $D_2 < D_1$ than the duty cycle limit has been exceeded for this application. You must do one of the following:

- Reduce the input speed to the screw jack
- Reduce load by adding additional screw jack to the system
- Use a larger size screw jack

If you reduce speed you must recalculate V and D_1 from page 68 numbers 6 and 7.

See page 75 for an "Example" calculation.

▼ TABLE 3

Model Number	Gear Ratio	Turns Per Inch* [TPI] (in)	L_2 - Duty Limit Service Factor @ Various RPM_S Input Speeds**								
			50 RPM	115 RPM	172 RPM	345 RPM	600 RPM	870 RPM	1140 RPM	1750 RPM	2587 RPM
MA5	5:1	20	971	461	325	184	119	88	71	52	39
MA15	5:1	20	323	153	108	61	39	29	23	17	13
	5:1	40	325	155	110	64	41	30	24	18	13
MA20	5:1	25	229	109	78	45	29	21	17	12	9
	20:1	100	481	250	181	104	68	52	43	32	23
M1	5:1	20	391	188	134	77	49	36	29	21	16
	10:1	40	647	307	217	122	80	59	48	34	26
M2	6:1	24	263	126	90	53	33	25	20	15	
	24:1	96	589	297	213	123	81	62	52	38	
M3	6:1	24	143	69	50	29	18	14	11	8	
	8:1	32	176	85	60	36	23	17	14	10	
	12:1	48	228	110	78	45	30	22	18	13	
M4	5.33:1	16	109	54	40	23	15	11	9	7	
	12:1	36	186	91	66	39	25	19	16	11	
	24:1	72	236	118	90	55	37	29	24	18	
M5	6:1	16	133	65	47	27	17	13	11	8	
	24:1	64	336	163	117	67	44	34	28	20	
M8	6:1	18	84	42	31	18	11	9	7	5	
	12:1	36	135	67	48	29	19	14	11	8	
M10	8:1	16	81	40	29	17	11	8	6	5	
	24:1	48	155	77	56	33	22	17	14	10	
M15	8:1	16	52	26	19	11	7	5	4	3	
	24:1	48	100	50	36	21	14	11	9	6	
M20	8:1	16	47	24	17	10	6	5	4	3	
	24:1	48	93	46	33	20	13	10	8	6	
M25	9:1	18	46	23	17	9	6	5	4		
	18:1	36	74	37	26	16	10	7	6		
M30	10⅔:1	16	47	23	17	10	6	5	4		
	32:1	48	84	44	32	19	13	10	8		
M40	20:1	30	52	26	19	11	7	5	4		
M50	10⅔:1	16	30	16	11	6	4	3	2		
	32:1	48	52	28	21	13	9	6	5		
M75	10⅔:1	16	30	16	11	6	4	3			
	32:1	48	61	31	23	14	9	7			
M100	12:1	16	31	16	12	7	4	3			
	36:1	48	54	30	22	14	9	5			

* Of Input Shaft for 1" of Rise
** When calculating duty limit service factor, if the actual RPM_S value is between columns, use the next higher RPM value.

The maximum estimated screw length (ESL) values in the chart below are based on a **2:1 factor of safety against column buckle**, and on a standard design with a top plate or a rotating design travel nut. Increased load screw lengths are not shown where the slenderness ratio exceeds 400.

1. **Determine extended screw length (ESL)**

   The ESL is the distance in inches the load screw can extend from the housing. Allowances must be made when using boots and for other miscellaneous clearances. See catalog for the model selected to determine ESL.

2. **Determine the adjusted screw length (ASL)**

   The chart below is for a standard design top plate or the rotating design travel nut. For other design configurations you must adjust the ESL value using the F factor multiplier to determine the adjusted screw length.

   ASL = ESL x F

3. **On the chart below draw a horizontal line to represent the maximum load (P_1).** Using the set of ESL values that apply to your design (guided or unguided), draw a vertical line to represent the ESL or ASL. All of the screw jacks above the point of intersection will be acceptable.

Screw lengths with a column buckle above the dotted line in Chart 1 comply with AISC maximum slenderness ratio specified for design and fabrication of structural steel buildings. This data is for reference only and is not a limiting factor, except as required.

$$\frac{K^*L}{r} <= 200$$

K = Column Factor

L = Extended Screw Length (ESL)

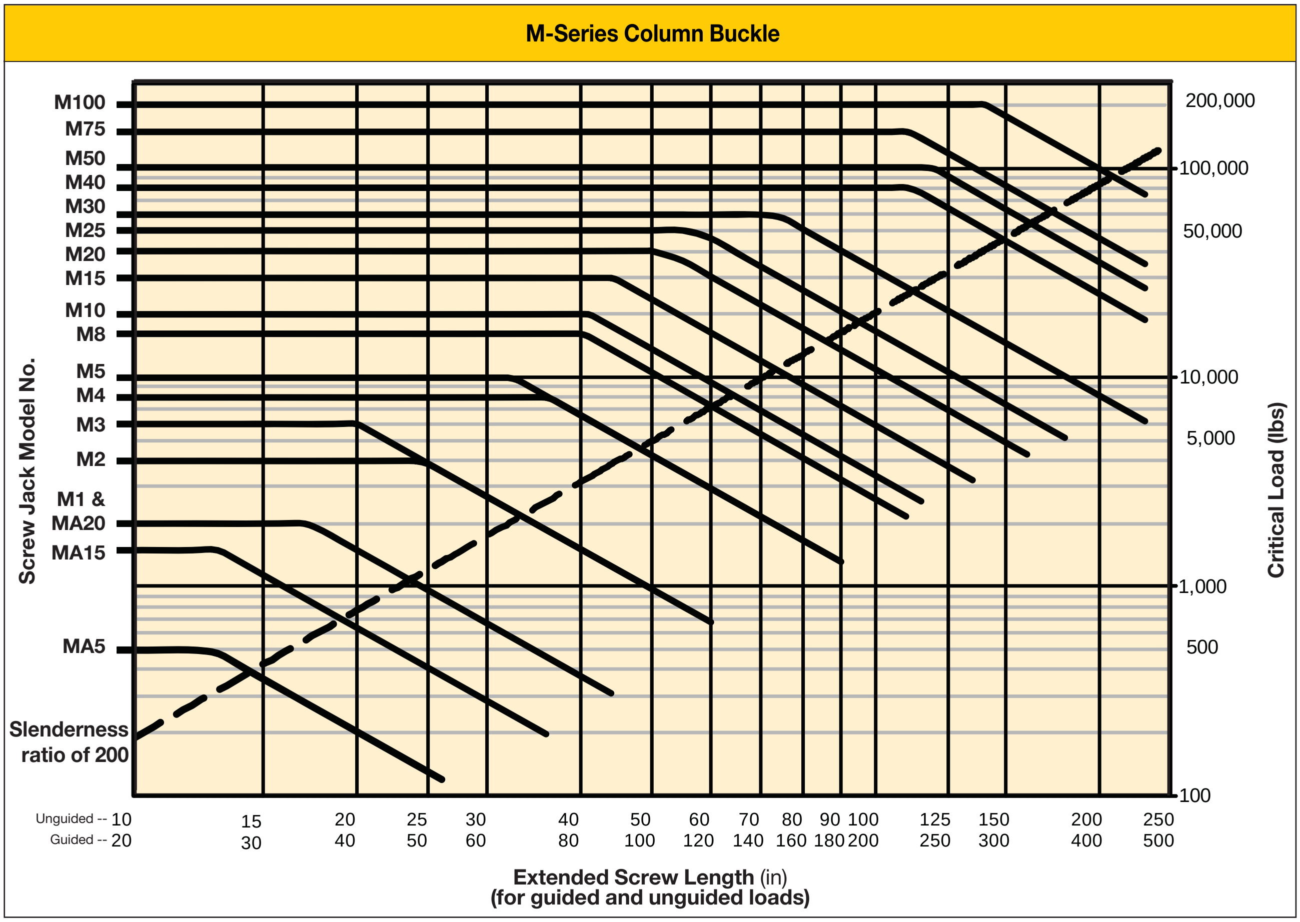
r = Radius of Gyration

See Table on page 68 for r values.

▼ **TABLE 4**

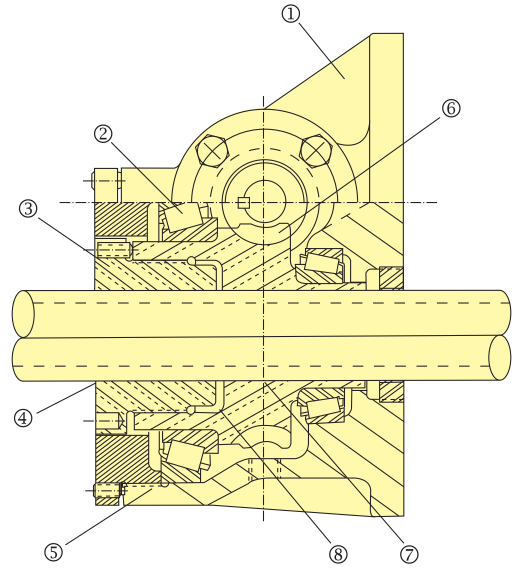
Design Configuration	F Factor	K Factor (Guided)	K Factor (Unguided)
Standard Design Top Plate	1	0.65	1.3
Rotating Design Traveling Nut	1	0.65	1.3
Standard Design Clevis End	1.25	0.80	1.6
Keyed Design Top Plate	1.25	0.65	1.3
Keyed Design Clevis End	2	0.65	1.6

▼ **CHART 1**



Anti-Backlash Designed

The Anti-Backlash design allows the backlash in the lifting screw to be minimized to meet the application requirements by simply adjusting the adjustment plug. Features include: One-piece gear nut, independent adjustment of the thrust bearing preload (to bearing manufacturers recommendations), extra long screw thread engagement, reduced unit spring rate, and full gear tooth contact. This design insures proper bearing alignment and worm gear tooth contact for maximum unit efficiency. The Anti-Backlash is a quality product you can depend on to provide a long operating life.



① Anti-backlash Screw Jack components fit in the same Screw Jack housing with the same mounting footprint as our standard Screw Jacks. Standard units can be field converted.

② Full Bearing Guided Drive Sleeve and Correct Gear Alignment provides longer gear life.

③ Replaceable Anti-Backlash Adjustment Plug can be replaced without disassembly of the main jack housing assembly.

④ True screw backlash can be set without compromising internal housing and bearing backlash tolerances.

⑤ Independent Thrust Bearing Adjustment allows the thrust bearings to be independently preloaded, not free to float or allow backlash in the gear nut.

⑥ Rigid support of the Worm Gear provides proper alignment for the gear mesh providing full tooth contact and smooth torque transfer.

⑦ Long Thread Engagement for both the Drive Sleeve and Adjustment Plug provides long wear life.

⑧ Reduce Unit Spring Rate by Design of Independent Backlash Adjustment reduces the expansion and contraction fluctuations of the internal screw jack components during reversing load conditions.

1. Complete the UNI-LIFT® Worksheet located on page 86. See Table 5 for complete details on the technical specifications.

2. Determine the maximum load on one screw jack (P_1, lbs)

$$P_1 = \frac{P_2}{N}$$

P_2 = Total system load (lbs)

N = Number of Screw Jacks in the system

On multi-screw jack systems where the load is not equally distributed, change P_1 to the maximum load supported by one screw jack.

3. Select the Screw Jack size

For high-cycle applications, use 80% of rated capacity.

- If the screw is tension, select an screw jack with a rated capacity equal to or greater than maximum load (P_1) on one screw jack.
- If the load screw is in compression, use the calculation steps, on page 76, to determine the maximum permissible Extended Screw Length (ESL). Select an screw jack that has a load screw length capacity equal to or greater than the length required for the load.

4. Determine the Load Screw Velocity (V_d, in/min)

$$V_d = \frac{Rise}{t_2}$$

Rise = One way travel under load (in)

t_2 = Required one way travel time (min)

5. Determine Desired Input Speed: (RPMd)

RPMd = TPI x V_d

TPI = Turns of the input shaft for 1 inch of rise (see table on page 74).

6. Determine Load Screw Velocity (V, in/min)

$$V = \frac{RPM_d}{TPI}$$

- From the catalog data (page 52), select the power transmission equipment with an output speed close to the desired input speed (RPM_d). Use the output speed to recalculate the actual load screw velocity.

7. Check the Required Duty Cycle Time (D_1, min)

$$D_1 = \frac{(2*Travel*C_h)}{V}$$

C_h = Cycles per hour

Travel = Distance load will move in one direction (in)

Use the calculation steps on page 75 to determine if D_1 is equal to or greater than D_2.

If D_2 is less than D_1 you must:
- reduce the input speed to the screw jack
- reduce the load by adding additional screw jacks to the system
- Use a larger screw jack

8. Calculate the Ball Screw life in inches of travel ($L_{10,}$in):

C_d = Dynamic capacity based on 1 million inches (lbs)

P_4 = Maximum running load on one screw jack (lbs)

$$L_{10} = \frac{\left(\frac{Cd^3}{P_4^{\,3}}\right)}{1{,}000{,}000}$$

If the application requires longer life select a larger screw jack or increase the number of screw jacks in the system.

L_{10} life is based on a 10% wear factor on the load screw and ball nut.

MOTOR AND POWER TRANSMISSION SIZING

Calculate the torque and horsepower requirements using the 8 steps on page 74.

- Select a motor with a power rating greater than System hp requirement, a starting torque greater than T_{sm}, and a motor running torque greater than Trm. See page 49 for horsepower and motor ratings.
- Select system Power Transmission equipment (gear reducer, mitre gear boxes, couplings, etc) with ratings greater than the running torque on power transmission equipment (Te), see Application Example on page 80.
- Size shafting for system starting torque T_{sm} to be transmitted, see page 74.

For a quick estimate for torque and motor requirements use the following calculations

$$HPe = \frac{(Te*RPM_S)}{63025} \qquad Te = Tp*P_3$$

HPe = Estimated horsepower

Te = Estimated system torque (in-lbs)

P_3 = Maximum system running load

RPM_S = System RPM

RPM_m = Motor RPM

Tp = Torque required to lift 1 lbs. (Table 1)

$$RPMs = \frac{(RPM_m)}{\text{Reducer Ratio}}$$

▼ **TABLE 5**

Capacity [P] (ton)	Model Number	Turns per Inch* [TPI] Low	High	Torque Required to Lift 1 lbs. [Tp] (in-lbs) Low	High	Holding Torque [Thb] (ft-lbs) Low	High	Radius of Gyration [r] (in)	Dynamic Capacity @ 1 Million Inches [Cd] (lbs)
1	**B1**	10.00	20.00	0.024	0.015	1.4	2	0.154	3400
2	**B2**	24.00	96.00	0.011	0.005	4	1.5	0.205	1625
5	**B5**	12.66	50.66	0.018	0.007	14	5	0.285	10,050
10	**B10**	16.88	50.66	0.014	0.007	13	4	0.285	10,050
20	**B20**	16.00	48.00	0.015	0.007	27	7	0.463	19,300
30	**B30**	16.00	48.00	0.015	0.008	21	5	0.620	38,000
50	**B50**	10.66	48.00	0.022	0.011	40	10	0.835	85,000
75	**B75**	10.66	32.00	0.022	0.010	107	24	0.835	85,000
100	**B100**	12.00	36.00	0.020	0.010	128	50	0.835	85,000

* Of Input Shaft for 1" of Rise

B-Series, Torque and Motor Sizing

Calculating the Torque

1. Determine unit running load proportion factor (f)

$$f = \frac{P_3}{(P*N)}$$

P = Rated capacity of screw jack
P_3 = Maximum system running load
N = Number of Screw Jacks in the system

2. Determine unit running torque (T_1, in-lbs) [Table 7]**

$$T_1 = (T * f) + To$$

T_o = No Load Torque (in-lbs)
T = Running torque (in-lbs)

3. Find the system running torque (T_2, in-lbs)

$$T_2 = \frac{(T_1 * N)}{e_1}$$

e_1 = System Arrangement Efficiency - see page 66 (question #11)

4. Find system power, (System hp)

$$hp = \frac{(T_2 * RPM_S)}{(63025 * e_2)}$$

RPM_S = Input shaft speed
e_2 = Reducer efficiency - see page 66 (question #11)

5. Determine system starting torque (Ts_2, in-lbs)

Ts= Static Torque (in-lbs) [Table 7]
See Table 7.

6. Determine motor starting torque (T_{sm}, in-lbs)

$$T_{sm} = \frac{Ts_2}{(R*e_2)}$$

R = Gear Reducer Ratio

7. Determine motor running torque (Trm, in-lbs)

$$Trm = \frac{T_2}{(R*e_1)}$$

8. Determine motor brake torque (Tb, ft-lbs) (required for all Ball Screw Jack applications):

$$\left(Tb = \frac{C}{(TPI*D*R)}\right) + \left(\frac{(TPI*D*R)}{R}\right)$$

C = Motor Brake Factor (ft-lbs) (see Table 6)
Tb = Motor Brake Torque (ft-lbs)
Thb = Hold Torque (ft-lbs) (see page 72)
D = Stopping Distance (in)
N = Number of Screw Jacks
R = Gear Reducer Ratio

TABLE 6
C-Factor for Brake Motor (ft-lbs)

Motor (hp)	1140 RPM	1725 RPM
1/4	3.20	4.1
1/3	4.00	4.9
1/2	5.10	6.1
3/4	7.89	9.2
1	9.18	17.8
1-1/2	11.30	21.6
2	29.50	25.6
3	38	66.5
5	48.3	87.4
7-1/2	69.4	112
10	126	146
15	268	273
20	306	315
25	548	596

▼ TABLE 7

Rated Capacity [P] (ton)	Model Number	Gear Ratio	Turns Per Inch* [TPI]	Static Torque [Ts] (in-lbs)	Unit Input Torque at Rated Capacity: T = Running Torque (in-lbs) @ Various RPM_S (theoretical)** 50 RPM	115 RPM	172 RPM	345 RPM	600 RPM	870 RPM	1140 RPM	1750 RPM	No Load Torque [To] (in-lbs)
1	B1	5:1	10.00	51	44	43	42	41	40	40	39	38	3
		10:1	20.00	32	26	25	24	23	22	22	21	21	
2	B2	6:1	24.00	43	37	36	35	34	34	33	33	32	5
		24:1	96.00	19	14	13	13	12	11	11	10	10	
5	B5	6:1	12.66	196	171	167	164	160	156	154	152	150	12
		24:1	50.66	80	60	57	55	52	49	47	46	44	
10	B10	8:1	16.88	322	270	261	256	247	240	236	233	228	18
		24:1	50.66	172	125	117	112	105	98	94	91	87	
20	B20	8:1	16.00	667	561	543	534	516	502	493	487	479	36
		24:1	48.00	348	255	239	230	215	202	194	189	181	
30	B30	10⅔:1	16.00	1054	864	832	815	784	760	745	736	—	48
		32:1	48.00	582	408	379	363	335	312	298	289	—	
50	B50	10⅔:1	16.00	2700	2150	2058	2011	1929	1870	1836	1814	—	96
		32:1	48.00	1532	1018	932	887	811	755	722	701	—	
75	B75	10⅔:1	10.66	3842	3134	3015	2954	2848	2770	2724	—	—	156
		32:1	32.00	1981	1384	1284	1232	1141	1074	1035	—	—	
100	B100	12:1	16.00	4977	3846	3660	3568	3414	3307	3248	—	—	204
		36:1	48.00	2901	1837	1663	1575	1429	1327	1271	—	—	

* Of Input Shaft for 1" of Rise
** When calculating running torque, if actual RPM_S value is between columns, use column with the lower RPM value.

Duty Limit Service factor (L_2) = Operating time allowed per hour. The numbers greater than 60 are theoretical values and exceed 100% duty, solely to provide base data for adjusting L_2.

The L_2 values are based on screw jacks loaded at rated capacity, operating in an ambient temperature of 80° F with a maximum allowable temperature rise of 100° F.

For ambient temperatures above 180° F or below -20° F consult UNI-LIFT®. For speeds not shown use the next fastest RPM value.

1. Determine Allowable Duty Cycle Time (D_2)

When the unit load is at rated capacity, and the ambient temperature is at 80° F the L_2 value from the table equals D_2. If not, proceed to Step 1A.

Step 1A

For different temperature service, or a unit load less than rated capacity, use the following equation to determine the Allowable Duty Cycle Time factor (D_2).

$$D_2 = \frac{[(180 - T_a)*P*L_2]}{(100*P_4)}$$

T_a = Ambient temperature (deg F)
P = Rated capacity (lbs)
L_2 - Duty limit service factor (see Table 8)**
P_4 = Maximum running load per unit (lbs)

2. Determine if Duty Cycle Time is Acceptable

If $D_2 >= 60$ minutes the application is rated for continuous duty

If $D_2 >= D_1$ than the application is acceptable

If $D_2 < D_1$ than the duty cycle limit has been exceeded for this application. You must do one of the following:

- Reduce the input speed to the screw jack
- Reduce load by adding additional screw jack to the system
- Use a larger size screw jack

If you reduce speed you must recalculate V and D_1 from page 73 numbers 4 and 5.

Example:

Consider for a B-10 low ratio 8:1 operating in 70° F ambient temperature, 10,000 pound load, and 1725 RPM, with a rise of 30 inches and 25 cycles per hour.

$$D_1 = \frac{(2 * Rise * C_h)}{V}$$

$$D_1 = \frac{(2 * 30 * 25)}{102.2}$$

Duty time per hour = 14.7 minutes per hour

$$D_2 = \frac{[(180 - 70) * 20,000 * 26]}{100 * 10,000}$$

Duty cycle limit = 57.2 minutes per hour

Since D_2 is greater than D_1 the application is ok for the duty cycle limit.

▼ TABLE 8

Model Number	Gear Ratio	Turns Per Inch* [TPI]	L_2 - Duty Limit Service Factor @ Various RPM_S Input Speeds**								
			50 RPM	115 RPM	172 RPM	345 RPM	600 RPM	870 RPM	1140 RPM	1750 RPM	2587 RPM
B1	5:1	10.00	874	423	302	170	110	82	66	48	34
	10:1	20.00	925	479	363	212	143	111	92	69	52
B2	6:1	24.00	1500	723	514	289	186	138	112	81	
	24:1	96.00	458	424	384	301	236	198	172	138	
B5	6:1	12.66	665	320	227	127	81	60	48	34	
	24:1	50.66	523	328	261	175	127	102	87	68	
B10	8:1	16.88	439	217	156	90	59	44	36	26	
	24:1	50.66	237	171	142	101	76	62	53	41	
B20	8:1	16.00	327	161	116	66	43	32	26	19	
	24:1	48.00	221	145	117	80	59	47	40	31	
B30	10⅔:1	16.00	306	154	112	65	43	32	26		
	32:1	48.00	119	105	93	71	54	45	39		
B50	10⅔:1	16.00	170	88	65	38	25	19	15		
	32:1	48.00	53	59	54	43	34	28	24		
B75	10⅔:1	10.66	217	110	80	47	30	23			
	32:1	32.00	164	112	91	63	46	37			
B100	12:1	16.00	222	117	87	52	35	26			
	36:1	48.00	71	84	78	61	48	39			

* Of Input Shaft for 1" of Rise
** When calculating duty limit factor, if actual RPM_S value is between columns, use the next higher RPM value.

The maximum estimated screw length (ESL) values in the chart below are based on a **2:1 factor of safety against column buckle**, and on a standard design with a top plate or a rotating design travel nut. Increased load screw lengths are not shown where the slenderness ratio exceeds 400.

1. **Determine extended screw length (ESL)**
   The ESL is the distance in inches the load screw can extend from the housing. See catalog for the model selected to determine ESL.

2. **Determine the adjusted screw length (ASL)**
   The chart below is for a standard design top plate or the rotating design travel nut. For other design configurations you must adjust the ESL value using the F factor multiplier to determine the adjusted screw length.
   ASL = ESL x F

3. **On the chart below draw a horizontal line to represent the maximum load (P_1).**
   Using the set of ESL values that apply to your design (guided or unguided), draw a vertical line to represent the ESL or ASL. All of the screw jacks above the point of intersection will be acceptable.

Screw lengths with a column buckle above the dotted line in Chart 2 below (lower than 200) comply with AISC maximum slenderness ratio specified for design and fabrication of structural steel buildings. This data is for reference only and is not a limiting factor, except as required.

$$\frac{K*L}{r} <= 200$$

K = Column Factor

L = Extended Screw Length (ESL)

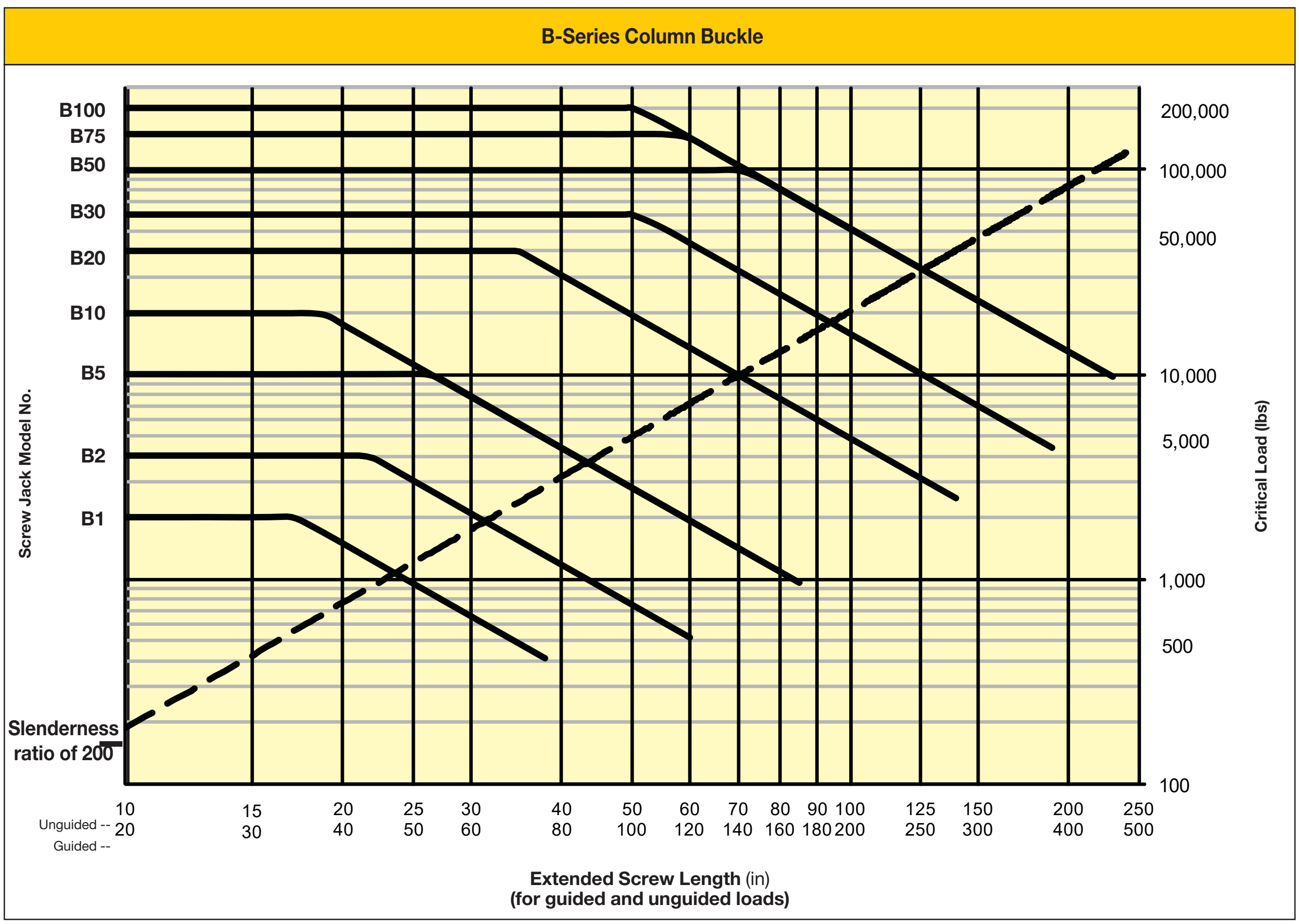
r = Radius of Gyration

See Table on page 73 for r values.

▼ TABLE 9

Design Configuration	F Factor	K Factor (Guided)	K Factor (Unguided)
Standard Design Top Plate	1	0.65	1.3
Rotating Design Traveling Nut	1	0.65	1.3
Standard Design Clevis End	1.25	0.80	1.6
Keyed Design Top Plate	1.25	0.65	1.3
Keyed Design Clevis End	2	0.65	1.6

▼ CHART 2



Key Designed

In applications where rotation cannot be prevented externally, a Keyed Design Screw Jack should be used. These Screw Jacks models are keyed internally to prevent rotation of the screw to produce linear motion.

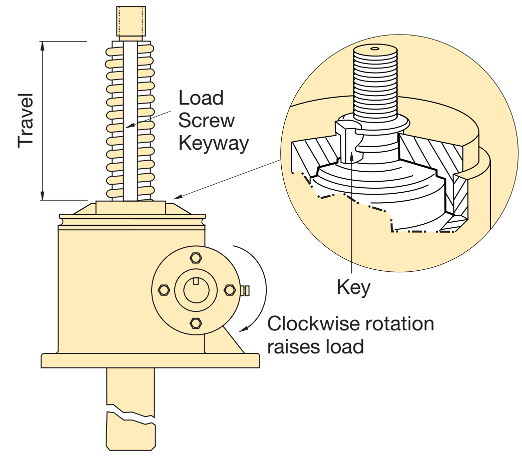
Key Torque

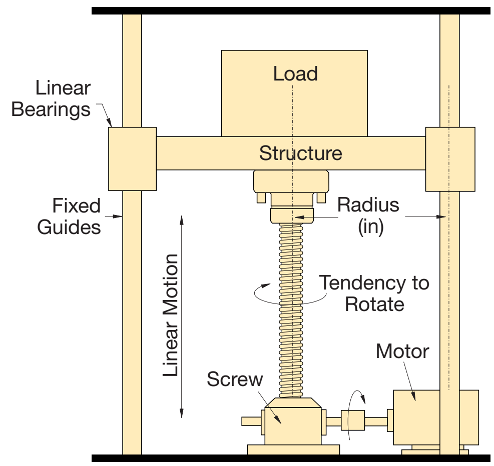
Key torque is the amount of torque measured in in-lbs that must be overcome to prevent load screw rotation.

Three general methods used to overcome key torque

1. Use of external guiding of the load as shown in the illustration below. This method is highly recommended for all applications involving side thrust or column buckle and is mandatory for horizontal applications.
2. Configure a system using two or more screw jacks attached to the load. (A rigid structure bolted to more than one UNI-LIFT® will not rotate.)
3. Using a keyed load screw (keyway full length of Acme Screw). This form of internal guiding is the least preferred method of preventing load screw rotation. Should it become necessary to have a keyed load screw, the load should be no more than 25% of rated capacity in order to minimize key friction problems. Contact UNI-LIFT® for assistance in selecting the properly sized keyed UNI-LIFT® Screw Jack.

Key torque for all screw jacks models is provided below.





$$\text{Guide Thrust} = \frac{\text{(Unit Key Torque From Table) x f}}{\text{(Radius) x Number of Guides}}$$

▼ **Load Screw Key Torque** (output torque at full load)

Capacity (tons)	**Unit Key Torque** (in-lbs)
1/4	38
3/4 (40 TPI)	98
3/4 (20 TPI)	130
1	196
2	479
3	718
4	1399
5	1756
8	3151
10	4694
15	7705
20	11,411
25	15,375
30	22,587
40	37,006
50	49,421
75	78,142
100	123,947

For reduced loads, key torque is reduced proportionately. Multiply table values by load proportion factor.

$$f = \frac{\text{Actual Load (lbs)}}{\text{Rated Capacity (lbs)}}$$

Rotation Prevention

Rotation of Load Screw or Traveling Nut must be prevented in order to produce travel (linear motion).

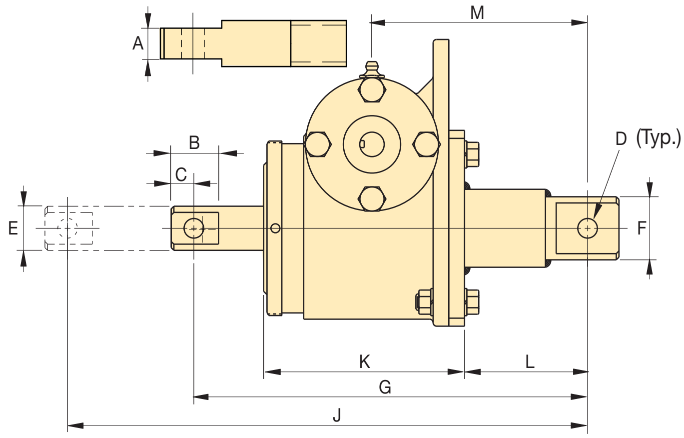
Guide Sizing

Guides must be sized to prevent bending or deflection and aligned in true position with the Screw Jack and the Load Screw. If more then one unit is attached to a common structure, the tendency to rotate is resisted by reaction in the structure, instead of the guides.

WARNING! Keyed Rated Capacity

For keyed applications where operating loads are expected to exceed 25% of rated capacity, contact UNI-LIFT® for technical assistance.

Double Clevis Dimensions



A = Width of flat
B = Length of flat
C = End of clevis to certer line of pin hole
D = Diameter of pin hole
E = Diameter of clevis end
F = Diameter of clevis end (Tube End)
G = Closed height pin to pin
J = Extended height pin-to-pin
K = Height of UNI-LIFT housing
L = Length from pin hole (tube end) to housing
M = Length from pin hole (tube end) to input shaft

▼ DIMENSIONAL CHART

Model Number*	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	J (in)	K (in)	L (in)	M (in)
B2	.75	1.50	.75	41	1.00	1.38	9.25 + Travel	G + Travel	6.31	1.18 + Travel	3.25 + Travel
B5	1.00	2.00	1.00	.66	1.50	2.13	13.62 + Travel	G + Travel	9.04	2.06 + Travel	4.75 + Travel
B10	1.25	2.50	1.25	.78	1.75	2.50	14.79 + Travel	G + Travel	9.19	2.34 + Travel	5.16 + Travel
M2	0.75	1.50	0.75	0.41	1.00	1.38	7.38 + Travel	G + Travel	4.44	1.18 + Travel	3.25 + Travel
M3	0.75	1.50	0.75	0.41	1.00	1.38	7.00 + Travel	G + Travel	4.06	1.18 + Travel	3.25 + Travel
M4	1.00	2.00	1.00	0.66	1.50	2.13	9.75 + Travel	G + Travel	5.18	2.06 + Travel	5.00 + Travel
M5	1.00	2.00	1.00	0.66	1.50	2.13	10.06 + Travel	G + Travel	5.50	2.06 + Travel	4.75 + Travel
M8	1.25	2.50	1.25	0.78	1.75	2.50	12.56 + Travel	G + Travel	6.43	2.34 + Travel	5.66 + Travel
M10	1.25	2.50	1.25	0.78	1.75	2.50	11.41 + Travel	G + Travel	5.68	2.34 + Travel	5.16 + Travel
M15	1.50	2.50	1.25	0.91	2.25	2.50	12.91 + Travel	G + Travel	6.81	2.34 + Travel	5.66 + Travel
M20	1.75	2.75	1.38	1.03	2.50	3.13	17.2 + Travel	G + Travel	7.56	2.69 + Travel	6.63 + Travel

*Double Clevis option limited to model shown above.

The Pin-to-Pin values in the Chart 3 are based on a 2:1 factor of safety against column buckle, on a Double Clevis Screw Jack.

Increased load screw lengths are not shown where the slenderness ratio exceeds 400.

1. Determine maximum extended height pin-to-pin (J)
The maximum extended height is the distance between the clevis pins, in the fully extended position. Refer to page 78.

2. Determine the maximum unit load: (P_1, lbs.)
On multi-unit systems where load is not equally distributed, change P_1 to the greatest load supported by one unit.

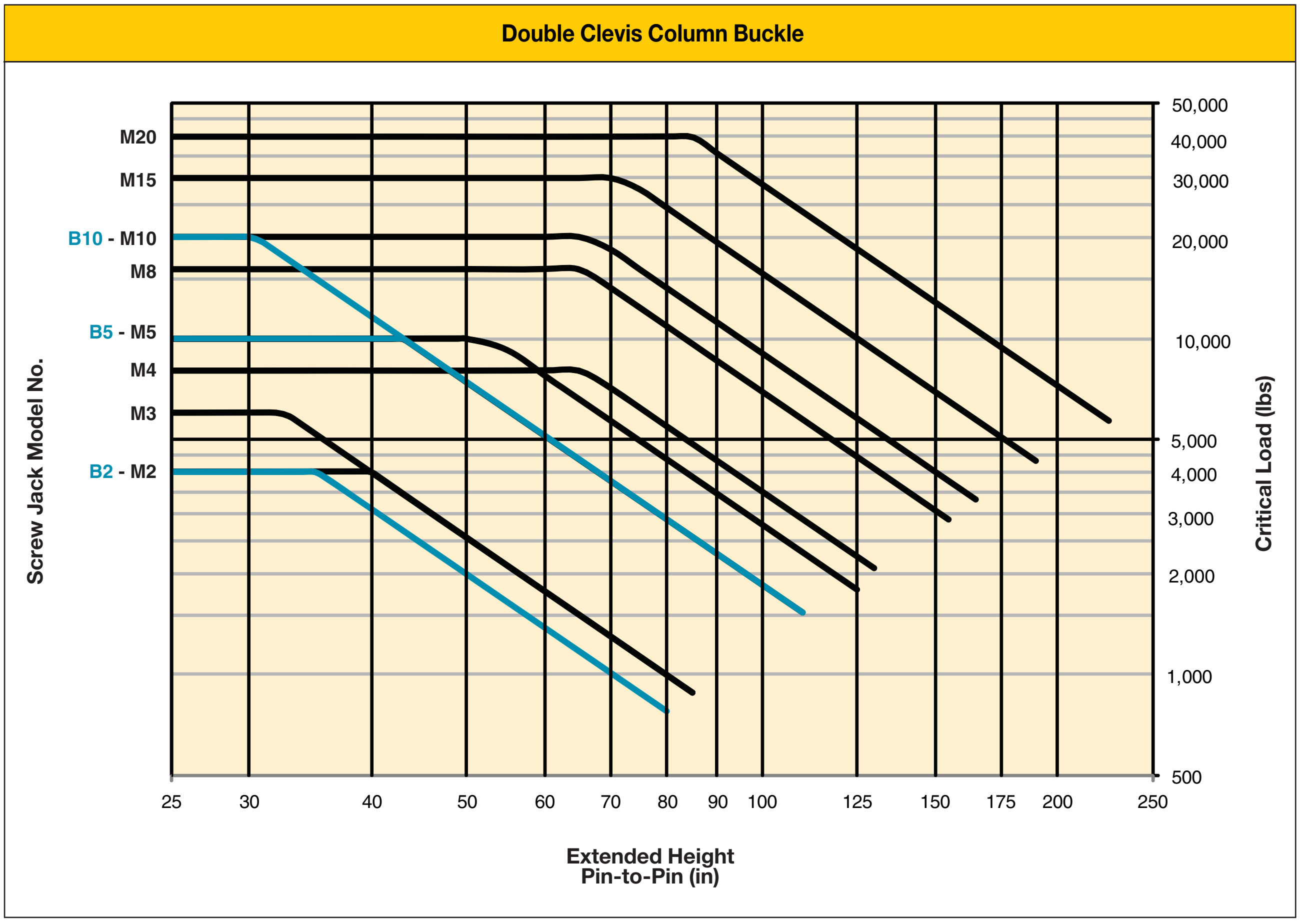
$P_1 = \frac{P_2}{N}$ P_2 = Total system load
N = Number of screw jacks

3. Select correct size screw jack
On the chart below draw a horizontal line to represent the maximum load [P_1]. Draw a vertical line to represent the maximum extended height [J]. All of the screw jacks below the point of intersection will be acceptable.

Contact UNI-LIFT!
Contact UNI-LIFT for advice and technical assistance in the layout of your ideal UNI-LIFT System.

CONTACT INFORMATION:
Customer Service: (630) 408-9349
Toll Free: (888) 984-1924
sales@uniliftjacks.com

▼ **CHART 3**



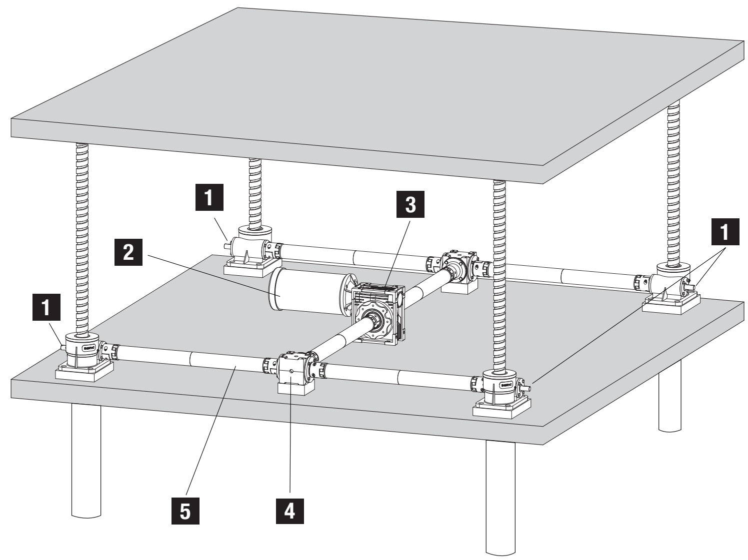
Lift a 30,000 pound Turbine Engine 20 inches in 90 seconds. Lifting will occur three times per hour, once a month, inside a clean factory.

A lifting frame secures the engine and positions the screw jacks so the load is equally distributed. Linear slides handle side loads and a hard stop is part of the frame.

The lifting frame will place the center of the screw jack load screws on a 10 foot square. 460 Volt 3-phase power is available, preference for a standard 1750 RPM motor. The illustration shows an Upright Translating Design with a Top Plate.

They are looking for a complete lift system.

Determine the part numbers for these items:



1 Mechanical Screw Jack

2 Motor

3 Gear Reducer

4 Mitre Gear Box

5 Shafting

1 Mechanical Screw Jack

Determine UNI-LIFT Screw Jack Model

See steps 1-7 on page 68 for detailed explanations.

1. Determine the maximum load on one screw jack (P_1 lbs)

The load is equally distributed.

$$P_1 = \frac{P_2}{N} = \frac{30{,}000}{4} = 7{,}500 \text{ lbs}$$

2. Select the screw jack size

Per the drawing, the screw jacks will be in compression, follow the additional steps 1-3 on page 71.

- No additional allowances are needed for boots and for other miscellaneous clearances.

Travel = 20 inches = ESL

ASL = ESL x F = 20 x 1 = 20 inches

- The load is guided, placing this information on chart 1, page 71, shows screw jacks with a capacity of 4 tons and higher are acceptable. This is not a high cycle application, so 100% of crated capacity will be used. To minimize cost the lowest tonnage is selected as a starting point, this is the **M4.**

3. Determine desired load screw velocity (V_d in/min)

One way travel under load is 20 inches in 1.5 minutes

$$V_d = \frac{\text{Rise}}{t_2} = \frac{20}{1.5} = 13.33 \text{ in/min}$$

4. Determine desired input speed: (RPM_d)

M4 has three different ratios, start with the low ratio, this will generally yield the lowest shaft speed.

TPI = Turns of the input shaft for 1 inch of rise

$RPM_d = TPI \times V_d = 16 \times 13.33 = 213$ RPM

5. Determine actual load screw velocity (V in/min)

The 7.5 to 1 reducer gives us the closest desired input speed.

$$\text{Input Speed} = \frac{1750}{7.5} = 233 \text{ RPM}$$

$$V = \frac{RPM}{TPI} = \frac{233}{16} = 14.58 \text{ in/min}$$

The desired velocity (V_d) is 13.33, this should be acceptable.

6. Calculate the required duty cycle time (D_1 in/min)

In absence of other information, the average ambient temperature inside a factory is assumed to be 80 degrees.

$$D_1 = \frac{(2x\ \text{Travel} \times C_h)}{V} = \frac{(2 \times 20 \times 3)}{14.58} = 8.23 \text{ min/hour}$$

$$D_2 = \frac{(\{180-T_a\} \times P \times L_2)}{100 \times P_4} = \frac{(\{180-80\} \times 8000 \times 23)}{100 \times 7500} = 24.53 \text{ min/hour}$$

$D_1 < D_2$, the M4 low ratio in this application is with in acceptable duty cycle limits

Screw Jack Model Number is M4UT0200LT

2 Motor

Determine Motor

See steps 1-7 on page 69 for detailed explanations.

1. Determine unit running load proportion factor (f)

Check with customer, unless told otherwise, assume $P_2 = P_3$

$$f = \frac{P_3}{(P \times N)} = \frac{30{,}000}{(8000 \times 4)} = 0.94$$

2. Determine unit running torque (T_1, in-lbs)

$$T_1 = (T \times f) + To = (202 \times 0.94) + 5 = 195 \text{ in-lbs}$$

3. Determine system running torque (T_2, in-lbs)

See page 66, question #11, for arrangement efficiency (e_1)

$$T_2 = \frac{(T_1 \times N)}{e_1} = \frac{(195 \times 4)}{0.8} = 975 \text{ in-lbs}$$

4. Determine system power, (System hp)

See page 66, question #11, for reducer efficiency (e_2)

$$hp = \frac{(T_2 \times RPM_s)}{63025 \times e_2} = \frac{(975 \times 233)}{(63025 \times 0.9)} = 4.01 \text{ hp}$$

5. Determine system starting torque (Ts_2, in-lbs)

$$T_{S2} = \frac{([\{T_s \times f\} + To] \times N)}{e_2} = \frac{([\{342 \times .094\} + 5] \times 4)}{0.9} = 1{,}451 \text{ in-lbs}$$

6. Determine motor starting torque (T_{sm}, in-lbs)

$$T_{sm} = \frac{T_{S2}}{(R \times e_2)} = \frac{1451}{(7.5 \times 0.9)} = 215 \text{ in-lbs}$$

7. Determine motor running torque (T_{rm}, in-lbs)

$$T_{rm} = \frac{T_{S2}}{(R \times e_1)} = \frac{975}{(7.5 \times 0.8)} = 163 \text{ in-lbs}$$

8. Select the Motor

See page 49 for motor specifications, select motor with values that are = > the calculated hp, T_{sm}, and T_{rm}

UM17 - 5 hp 1750 RPM 3 Phase 184TC Frame

3 Gear Reducer

See pages 52 and 53 for product details.

1. Determine system running torque (T_2, in-lbs)

See page 66, question #11, for arrangement efficiency (e_1)

The reducer must drive all 4 screw jacks.

$$T_2 = \frac{(T_1 \times N)}{e_1} = \frac{(195 \times 4)}{0.8} = 975 \text{ in-lbs}$$

2. Select the Gear Reducer

See page 53 for gear reducer specifications, select gear reducer with output torque = > system running torque T_2 and match the selected motor frame size.

UGRD2 – Size C Gear 7.5 to 1 ratio

4 Mitre Gear Box

See pages 54 and 55 for product details.

1. Determine mitre gear box torque (T_m in-lbs)

Each mitre box must drive 2 screw jacks

$$T_m = T_1 \times N = 195 \times 2 = 390 \text{ in-lb}$$

2. Select the Mitre Box

See page 54 for mitre box specifications, select mitre box with input hp, output torque, and maximum input RPM = > actual motor hp, calculated mitre box T_m, and actual gear reducer output RPM

UMG5 – Size 5 Mitre Box

5 Shafting

See pages 49, 52 - 54, and 58 for product details. Create drawing of the system layout to help determine shaft dimensions.

1. **Determine Shaft Size**

   Select shaft size with maximum torque rating = > actual motor starting torque (T_{sm}) x ratio.

   T_{sm} actual x ratio = (436 x 7.5) = 3270 in-lbs.

   Shaft Size 4 maximum torque rating of 3540 in-lbs (page 58)

   For ease of installation, use the same size shafting for all positions.

2. **Determine Shaft Model Number for Shaft ER and FR**

   The layout is symmetrical, both shafts will be the same.

   Calculate shaft to shaft distance on drawing

   60 – 5.26 – 5.72 – 2.26 = 46.80 in.

   Indentify Gear Reducer shaft diameter = 1.25 in.

   Indentify Mitre Box shaft diameter = 1.00 in.

   Use Shaft Matrix Chart on page 58 to determine model number

US4B0468FH, quantity 2x

3. **Determine Shaft Model Number for Shaft AE, BE, CF, and DF**

   The layout is symmetrical, all 4 shafts will be the same.

   Calculate shaft to shaft distance on drawing

   60 – 4.18 – 5.09 = 50.73 in.

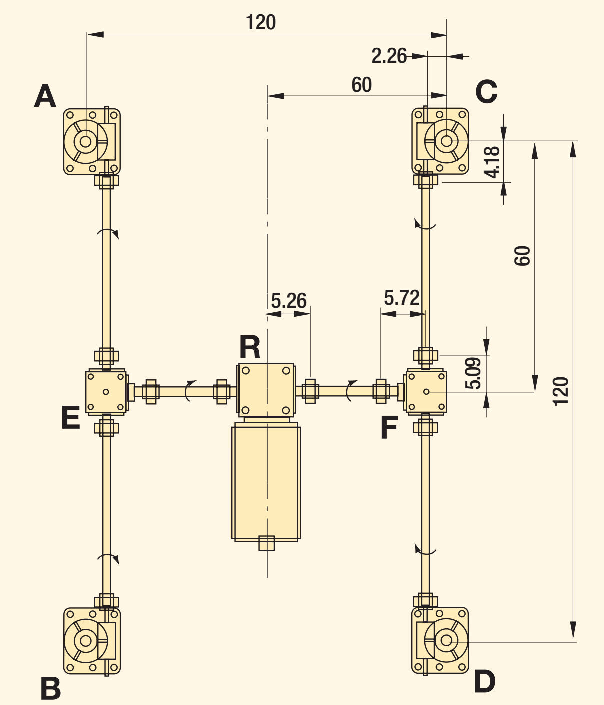
   Indentify Screw Jack shaft diameter = 0.75 in.

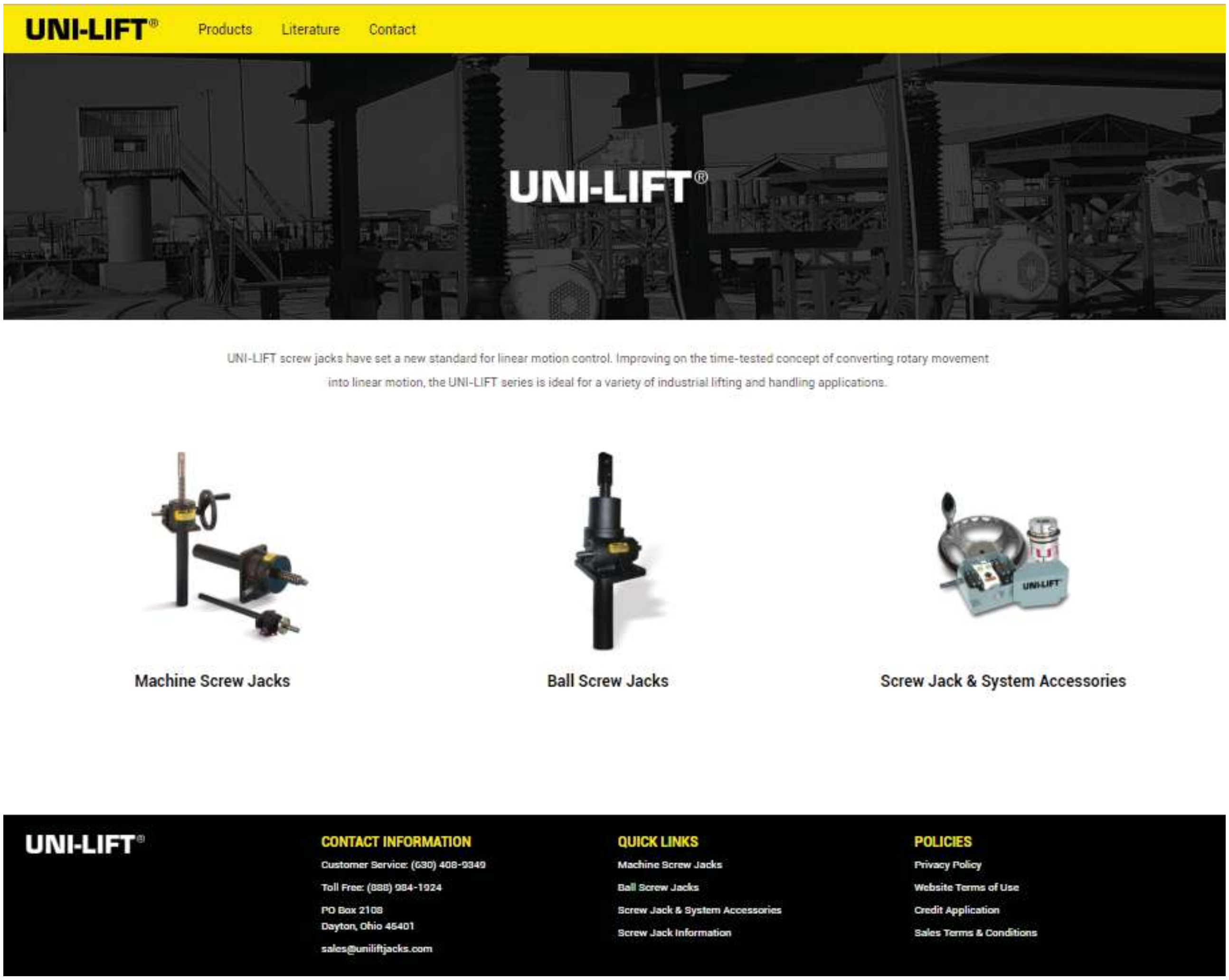
   Indentify Mitre Box shaft diameter = 1.00 in

   Use Shaft Matrix Chart on page 58 to determine model number

US4B0507DF, quantity 4x

Dimensions shown in inches.





www.uniliftjacks.com
Visit our web site for additional assistance or contact UNI-LIFT at:
sales@uniliftjacks.com

Marine

100-Ton UNI-LIFT Screw Jacks help keep the ferry dock running

Engineers utilized two (2) UNI-LIFT 100-ton Screw Jacks with 15' of travel to raise and lower the ramp on each ferry dock along the Mississippi River, USA. The Department of Transportation engineers needed a way of lifting and lowering ramps during high and low tide conditions, while holding up to the harsh environmental conditions of the Gulf Coast.

Aircraft Maintenance

Aircraft docking systems need the flexibility and precision of UNI-LIFT Screw Jacks

UNI-LIFT Screw Jacks are used for scheduled aircraft maintenance overhauls. Engineers at this repair station decided that UNI-LIFT Screw Jacks were the perfect choice to position and adjust the complex scaffolding that was set up around the aircraft. Their precision movement and flexibility has proven to be an asset in getting the job done efficiently and safely.

Material Handling

UNI-LIFT are used in many different material handling applications

UNI-LIFT Screw Jacks are used extensively in a variety of material handling applications. Whether used to position conveyer belts, place tension on overhead beams or to move heavy-duty equipment, UNI-LIFT Screw Jacks are the ideal solution for many jacking, tensioning, and positioning applications. Whether you have one or multiple lifting points, UNI-LIFT Screw Jacks are the perfect solution for many different OEM material handling applications.

Fabrication

UNI-LIFT positions sections of segmental bridge forms

Fabricators use UNI-LIFT 10-Ton Screw Jacks to position fabricated sections of forms used in precast segmental bridge sections. UNI-LIFT Screw Jacks were used due to the harsh environmental location of the casting facility. The engineers were also able to operate the Screw Jacks from an overhead centralized location so that each section came together as needed. This process saves time in the form setup making the job run more efficiently than previous methods.

Motion Control

UNI-LIFT are key to a variety of motion control applications

When controlled motion is required, many design engineers in virtually every industry around the world use UNI-LIFT Mechanical and Ball Screw Jacks for their precision, power and performance. UNI-LIFT accessories provide flexibility and expandability in heavy-duty motion control solutions.

Manufacturing

5-ton Double Clevis Screw Jacks keep the doors of these plating tanks running smoothly

When engineers needed a quick and compact way of opening the large doors of these plating tanks, they selected a UNI-LIFT solution. The application utilizes two 5-ton double-clevis Screw Jacks, with a motor and a limit switch box mounted on each. The operator just pushes a button to open the doors and pushes another to close them. This method greatly enhances operator safety and helps prevent cross-contamination between tanks.

UNI-LIFT® Worksheet

▼ **Complete the following information to select the right products:**

NOTE: This Worksheet is available for print on-line at: www.uniliftjacks.com

Name:______________________ Title: ______________________

Company: ______________ Address:______________________

City: ______________________ State:__________ ZIP: __________

Phone: ______________ Fax: ______________ Email:______________________

Total System Load: ______________ **Is the Load Equally Distributed:** **Yes**________ **No** ________

If No, what is the Maximum Load On One Screw Jack: ______________

No. of Screw Jacks in System: ______________ **Travel Required:**______________________

Travel Speed Required/Min:____________ **Linear Speed Requirements:** Min. ________ Max. ________

Is the Load Guided? Yes____________ No ____________

No Side Thrust Force is Allowed on Screw (Application with side thrust force requires external guiding of load)

Load Condition:

Compressed ________ Tension ________ Both ________

Mounting Style:

Upright ________ Inverted ________ Double Clevis ________

Screw Configuration: (*Keyed Screw Jacks are to be used at 25% of rated capacity)

Translating__________ Rotating __________ *Keyed __________ Anti-Backlash __________

Operating Cycles: Per Hour________ Hours/Day __________ Days/Week __________

Drive:

Manual __________ Electric __________ Air__________ Hydraulic__________

Power Available:

Voltage __________ Phase __________ Cycle (Hz) __________

Environmental: (Check all that apply)

Wet ____ Oil ____ Corrosive ____ Dirt ____ Dust ____ Vibration ____ Explosion Proof ____ Shock/Impact ____

Ambient Temperature: (Specify Range) __________

Ball Screw Application:

Brake Stopping Distance (in)__________ Life Expectancy______________

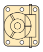
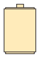
Accessories Required: (Check all that apply)

Top Plate ________ Clevis End ________ Motor Adaptor ________ Stop Nut ________ Limit Switch________

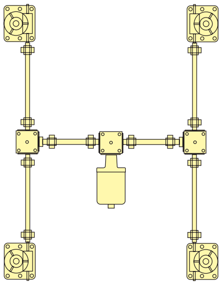
Bellows Boots________ Encoder ________ Hand Wheels ________ Couplings________ Reducers ________

Mitre Gear Boxes____ Shafts ________ Custom Controls ________

Numerically choose the arrangement that best illustrates your application.
Other configurations are available upon request.

Screw Jack = 	Motor = 	Reducer or Mitre Box = 	Coupling = 

1



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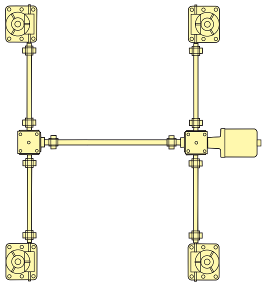

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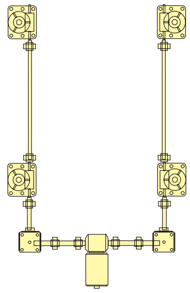

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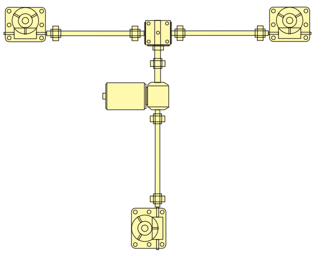

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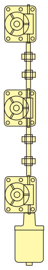

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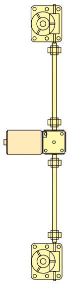

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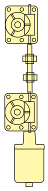
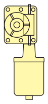


8



NOTE: This Worksheet is available for print on-line at: www.uniliftjacks.com

UNI-LIFT® Offers Other Linear Actuation Products Including…

MACHINE SCREW JACKS

…to suit your application

- 1/4 ton to 250 ton capacities
- Maximum travel (up to) 232 inches
- Maximum speeds (up to) 129 in/min.
- Variety of mounting options

Precision rolled acme threads allow positioning within thousandths of an inch.

BALL SCREW JACKS

…the most complete in the industry

- 1 ton to 100 ton capacity
- Maximum travel (up to) 230 inches
- Maximum speeds (up to) 175 in/min.
- Ideal for high speeds and continuous duty applications

Precision screw lead offers exact positioning for multiple actuator systems.

JACK SYSTEM ACCESSORIES

…for single-or multi-actuator systems

- Hand Wheels
- Electrical Controls
- Rotary Limit Switches
- Couplers
- Motors
- Motor Adapters
- Worn Gear Reducers
- Screw End Adapters
- Boots
- Shafts

Note: Unless specified in the sales order, the services of a field engineer are not included with the purchase of UNI-LIFT Jacks and related equipment. Installation, maintenance and safety instructions must be given to all personnel directly responsible for the installation, maintenance and operation of the UNI-LIFT equipment.

General Guidelines and Installation

The customer is responsible for ensuring that there are no destructive conditions which could affect the UNI-LIFT Jack(s) or complementing equipment. Conditions that may be considered destructive include, but are not limited to:

1. Excessive input speeds
2. Extreme shock loading
3. Mechanical or thermal overloading
4. Exceeding recommended duty cycles
5. Side loading of the load screw

Each UNI-LIFT Jack in the system must be specified in accordance with the stated requirements and precautions contained in this Catalog. All calculations and specifications must be reviewed and approved by the customer's application design engineer in advance of installation.

Be certain that:

- The rated capacity of the UNI-LIFT Jack exceeds the maximum load that may be applied to it during use.
- The maximum allowable input shaft speed (RPM_s) of the UNI-LIFT Jack will not be exceeded.

NOTE: For maximum input speeds and other UNI-LIFT specifications, refer to the Motor Sizing Charts on pages 69 and 74 in this section for your Jack.

- The foundation for the UNI-LIFT Jack is sufficiently rigid to maintain correct alignment with connected machinery and that it has sufficient strength to support the maximum load.
- The foundation has a flat mounting surface to assure uniform support for the UNI-LIFT Jack. Be sure the opening in the foundation for the protective tube or the load screw is as small as possible, so that the unit is supported over the greatest possible area.
- The method of preventing load screw rotation (so that translation will occur) is sufficiently strong. Refer to the Load Screw Key Torque on page 77 for complete details.

Lubrication Procedure

New UNI-LIFT Jacks are shipped with grease in the housing. Lubrication is recommended at regular intervals. Such intervals are determined by the duty cycles of the Jack, but should be performed a minimum of once every 60 days.

Please see the instruction sheet that accompany your UNI-LIFT product for more information.

WARNING !

Never perform any maintenance, lubrication adjustment or repair procedures on a UNI-LIFT Jack or any associated transmission equipment until you are absolutely certain that the prime mover cannot be remotely or automatically started. Always lockout power before beginning procedures. Make sure the load is properly supported before the UNI-LIFT brake or other holding devices are removed.

Lubricant Requirements

The lubricant should not be corrosive to gears or to ball or roller bearings and must be neutral in reaction. In addition, the lubricant must be oxidation resistant and must be non-channeling. Operating temperatures must be considered when selecting lubricants. UNI-LIFT recommends the following extreme pressure greases or their equivalents.

1. For operation up to 180° F [82° C]: Use lithium based grease, it should have a viscosity of 840 to 890 SUS at 100° F, and 76 to 84 SUS at 210° F.
2. For operation up to 400° F [204° C]: Use DuBois MPG-2 Grease, NLGI Grade 2. If another brand of high temperature grease is used, it should have a viscosity of 539 SUS @100° F.
3. For operation down to -100° F [-73° C]: Use Shell Aero Shell Grease 7 (Low temperature aviation synthetic hydrocarbon microgel grease).

   Note: Standard UNI-LIFT models are designed to operate at 80° F [27° C] with a 100° F temperature rise. For higher temperatures, special seals are required. Contact UNI-LIFT for additional information.

Special Requirements

USDA approved grease for food industry applications and special grease for extremely low temperature applications below -100° F [-73° C] is available. Contact UNI-LIFT for additional information.

UNI-LIFT®
POWERFUL SCREWJACK SOLUTIONS

CONTACT INFORMATION:
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