

## Descriptions

A **Bevel Gear Machine Screw Jack** is a type of screw jack that incorporates bevel gears within its housing to facilitate linear motion for lifting, lowering, or positioning loads. Load capacities include **1 ton, 3 ton, 5 ton, 10 ton, 15 ton and 20 ton**.

### Key Characteristics and Benefits:

- **Efficient and High-Speed Operation:** Bevel gears are generally more efficient than worm gears and typically have lower ratios, which translate to higher speeds and travel rates compared to worm gear screw jacks.
- **Multiple Jack Systems:** Bevel gear screw jacks are well-suited for multiple jack configurations due to their flexible input/output shaft configurations (single, double, or triple shafts).
- **Elimination of Right-Angle Gearboxes:** The bevel gear design can eliminate the need for separate right-angle gearboxes in multi-jack systems.
- **Positional Accuracy:** Bevel gear screw jacks, offer good positional accuracy and repeatability.
- **Higher Duty Cycles:** Due to their efficiency, bevel gear machine screw jacks can be used in heavier duty cycle applications.

### Potential Considerations:

- **Self-Locking:** While some bevel gear jacks with trapezoidal screws can be self-locking, don't require a brake or motor with sufficient holding torque to prevent back-driving.
- **Cost:** Bevel gear jacks are typically priced slightly higher than worm gear machine screw jacks, although the ability to reduce components in multi-jack systems can help balance the difference in price.

### Typical Applications:

- **Bevel gear machine screw jacks are used in various applications where precise linear motion and positioning are required, including:**
  - \* Raising and lowering theatre stages
  - \* High-speed carriages for loading and unloading products
  - \* Automated assembly line applications
  - \* Positioning and tilting solar panels or antennas
  - \* Adjusting conveyor heights

## Materials

We use the best materials to guarantee the performance and lifetime of the screw jacks you purchased.

### Spiral Bevel Gears

- Lapped together in pairs, high quality alloy steel, case hardened.

### Lifting Screw

- C45 Steel as Standard. Custom Stainless Steel 304 or 316

### Input Shaft (Worm)

- Hardened, alloy steel. Custom Stainless Steel 304 or 316.

### Housing

- High-strength Casting Housing, Ductile Iron

### Travelling Nut / Safety Nut / Drive Sleeve

- High strength bronze ZQA19-4 (Casting aluminum bronze) as Standard.  
Custom bronze ZCuSn10Pb1(Casting tin bronze).

### Bearing

- Anti-friction Tapered Roller Bearings. Custom Stainless Steel 304.





Selection Guide

Selection Notes

- (01) Bevel Gear Screw Jacks and Lifting Systems are for industrial use only, not recommended for transporting personnel.
  - (02) Carefully consider bevel gear jack ratings before making a selection. Be sure that the dynamic or static load carried or sustained by jack does not exceed its maximum capacity.
  - (03) Carefully consider the combination of screw shaft speed (rpm) and rated load. Also, take extra care in verifying rated buckling load and screw shaft speed (rpm). Exceeding the data provided in this catalog can cause major damage to the system.
  - (04) Make sure that the surface temperature of the housing does not exceed temperature of -15°C to +80°C during operation. If using a traveling nut jack, measure the traveling nut surface temperature. Make sure all the rotating parts are completely stopped before proceeding to measure.
  - (05) The maximum input speed is 1500 rpm as long as the input power does not exceed the jack's maximum allowable input power.
  - (06) Bevel Gear Jack can not be operated continuously. Duty cycle based on 30 minutes.
    - **Note:** Below duty cycles are based on ambient temperatures 20°C. For ambient temperatures higher than 20 °C, the duty cycle (ED) must be reduced.
      - \* Screw Jack with Trapezoidal Screw (Bevel Gear Machine Screw Jack) duty cycle ≤ 35%ED.
      - \* Screw Jack with Ball Screw (Bevel Gear Ball Screw Jack) duty cycle ≤ 60%ED.
    - **Note:** For operation longer than that mentioned above or for any continuous operation, the jacks temperature must be monitored and should not exceed 80°C maximum in order to determine its duty cycle.
- Duty Cycle (%ED) = [1 Duty Cycle / (1 Duty Cycle + 1 Rest Cycle)] x 100%**
- (07) Be sure not to exceed the maximum input torque for multiple screw jack systems by verifying the rated input torque for each jack.
  - (08) Be sure that starting torque is 200% or more of required running torque.
  - (09) Be sure that ample driving power is available to drive the jack when using in temperatures below 0°C. Low temperatures decrease the jack's efficiency due to the increased grease viscosity inside the jack's gearbox.

Selection Guide

- (10) Although Screw Jack with **Single-start** Trapezoidal Screw (Bevel Gear Machine Screw Jack) has self-locking feature, vibration and shock may affect its efficiency, in which case a brake motor or extra braking device is required. Screw Jack with **Double-start** Trapezoidal Screw (Bevel Gear Machine Screw Jack) is considered not self-locking will require a brake or other holding device. Screw Jack with Ball Screw (Bevel Gear Ball Screw Jack) can backdrive because of their extremely high efficiencies and require some means of holding the load, such as a brake motor.
- (11) When jacks are working, can not force to stop, may result in the jacks damage or injury personnel.
- (12) When Bevel Gear Ball Screw Jack are under loads, can not change the motor drive to manual operation. Because the loads will cause the input shaft to rotate very dangerously.
- (13) Mechanical stops (Stop Nuts) are not provided on the lifting screw unless requested. Therefore, it is possible to drive the screw out of the jack's housing
- (14) Never approach or touch the rotary parts (input shaft, etc.) or the lifting screw during operation.
- (15) Bellows Boots and Protective Tubes should be used to protect and keep the lifting screw clean in dusty or abrasive environments.

Unit Converter

- 1 ft = 304.8 mm
- 1 in = 25.4 mm
- 1 m = 10 dm = 100 cm = 1000 mm
- 1 in-lb = 0.113 Nm
- 1 Nm = 0.737 ft-lb
- 1 ft-lb = 1.356 Nm
- 1 lb = 0.454 kg
- 1 kg = 2.205 lb = 1000 g
- 1 N = 0.1 kg
- 1 t = 1000 kg = 10 kN = 2000 lb
- 1 m/min = 1000 mm/min = 16.7 mm/sec
- 1 in/sec = 25.4 mm/sec
- 1 ft/sec = 304.8 mm/sec
- 1 hp = 0.75 kW
- °C = (°F-32) / 1.8
- °F = °C x 1.8 + 32



**Selection Guide**

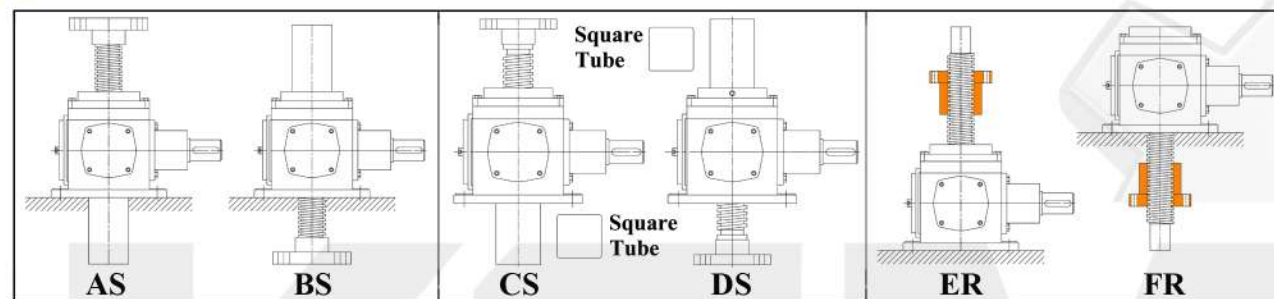
**Sample Part Number ( Example ):**

**KME1T2.5AS300FE2SRZB**

**(1) Models and Gear Ratios**

KME1T( Tr24x4 ) <b>2.5 : 1 ratio</b>	KME3T( Tr32x6 ) <b>2.5 : 1 ratio</b>	KME5T( Tr40x7 ) <b>3 : 1 ratio</b>
KME10T( Tr50x10 ) <b>3 : 1 ratio</b>	KME15T( Tr65x12 ) <b>3 : 1 ratio</b>	KME20T( Tr80x12 ) <b>3 : 1 ratio</b>

**(2) Basic Designs and Configurations**



**2.1) "AS" and "BS" are Bevel Gear Machine Screw Jacks.** A translating jack has a lifting screw that moves through the gearbox. A nut is integrated with the bevel gear such that the bevel gear and nut rotate together. When the lifting screw is held to prevent rotation through the use of guides (guided load) or by attaching a common load across multiple jacks, the lifting screw will move linearly through the gearbox to move the load. Most applications use this jack design

**2.2) "CS" and "DS" are Anti-rotation Bevel Gear Machine Screw Jacks.**

An anti-rotation jack is attached Square Guide Tube for non-rotation. A square guide tube is attached to either the top or bottom of the Screw Jack. A square nut is attached to the end of the Lifting Screw which is then fitted inside the tube, preventing rotation. The Square Guide Tube is supplied with lube fittings. It is ideal for use in applications where a single jack must extend to meet and move a load to which it is not attached (unguided).

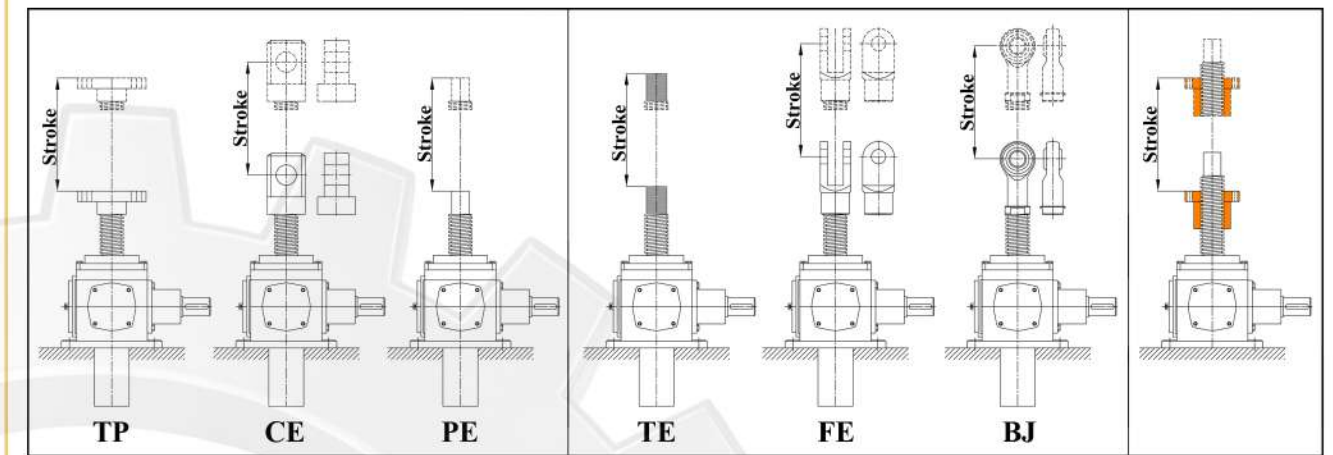
The anti-rotating jacks are mostly used on larger jacks and where the lifting force is high in relationship to the nominal capacity or where the travel is long.

• **Note:** Input torque required will increase by approximately 8%.

**2.3) "ER" and "FR" are Bevel Gear Machine Screw Jacks.** A rotating jack has a lifting screw that moves a nut as it turns. It is important to restrain the rotation of the traveling nut by Applying a significant load, or more commonly by guiding the load or attaching the load across multiple jacks. The lifting screw is fixed to the bevel gear. This causes the load, which is attached to the travel nut, to move along the lifting screw. The Rotating Jacks mount flush and they are ideal for applications where the physical space does not allow the lifting screw to extend below or above the housing.

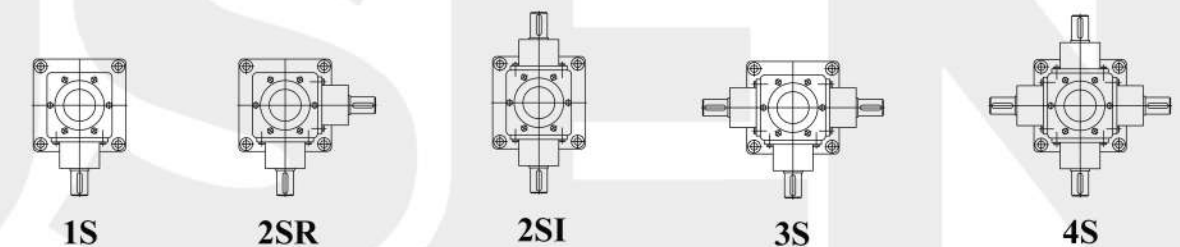
**Selection Guide**

**(3) Stroke and Screw End Fittings**

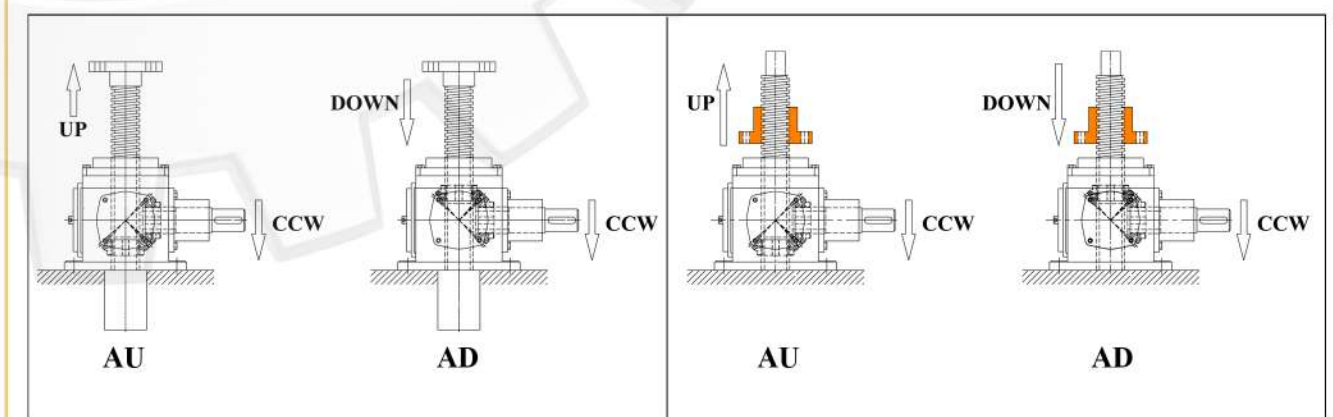


- Stroke is travel expressed in millimeter(mm) or inches and not the actual screw length.
- Standard Lifting Screw End Fittings: (TP)Top Plate , (CE)Clevis End , (PE)Plain End , (TE)Threaded End , (FE)Forked End and (BJ)Rod End . Custom End Fittings are acceptable.

**(4) Input Shafts Codes and Motor Flange Adapters Codes (Top View)**



**(5) Gears Mounting Postions**



**Selection Guide**
**Sample Part Number**
**(6) Accessories**

**Specifications**
**Remarks:**

- 1) Overall efficiency is under grease lubrication.
- 2) Self-locking under single lead screw and static conditions.
- 3) They maximum dynamic load is under Euler II(fully guided).

Model	KME1T	KME3T	KME5T	KME10T	KME15T	KME20T
Maximum static load capacity (kgf)	1000	3000	5000	10000	15000	20000
Maximum dynamic load capacity (kgf)	300	1000	1500	2500	3500	5000
Trapezoidal screw sizes (mm)	Tr24 x 4	Tr32 x 6	Tr40 x 7	Tr50 x 10	Tr65 x 12	Tr80 x 12
Gear ratio	2.5:1	2.5:1	3:1	3:1	3:1	3:1
One Turn of Input Shaft, Travel (mm)	1.6	2.4	2.33	3.33	4	4
Overall Efficiency %	30%					
Travel Nut Material	Aluminum Bronze					
Housing material	Ductile Iron					

## Screw Jack System Configurations

### Two Jacks



### Four Jacks



### Six Jacks



### Eight Jacks

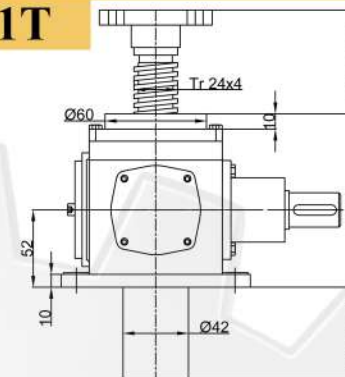


### Fourteen Jacks

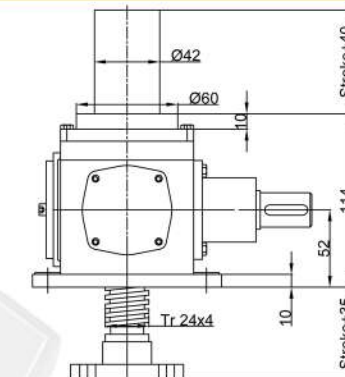


## Overall Dimensions

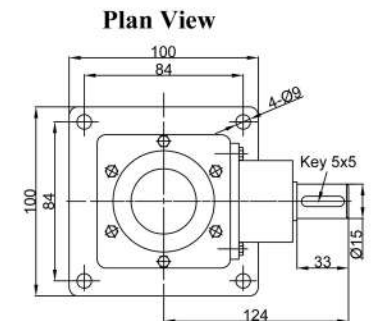
### KME1T



Upright

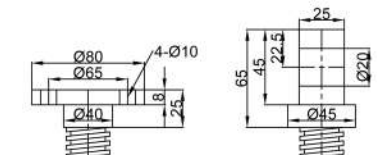


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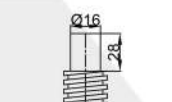
Plan View

#### Screw End Types and Dimensions

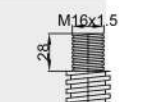


I Top Plate

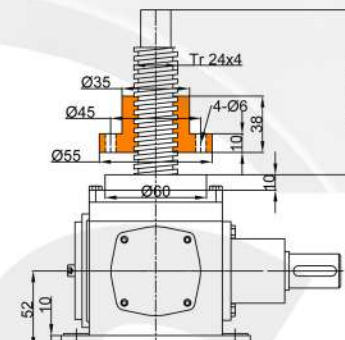
II Clevis End



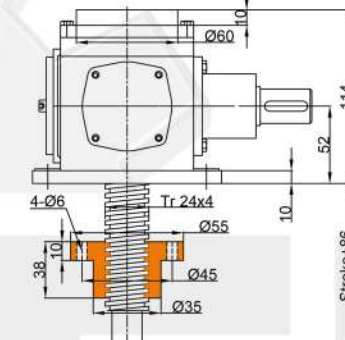
III Plain End



IV Thread End

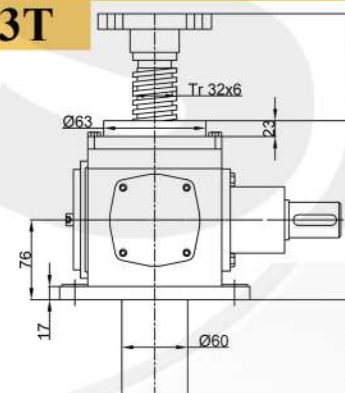


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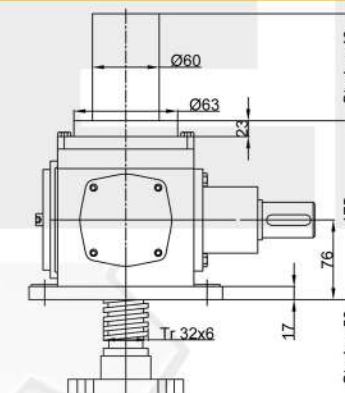


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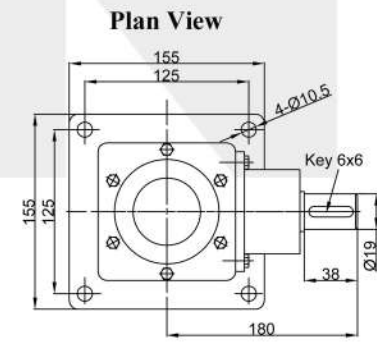
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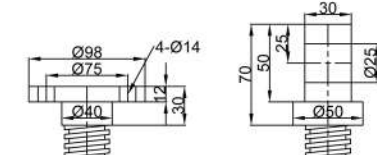


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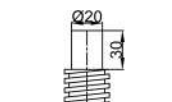
Plan View

#### Screw End Types and Dimensions

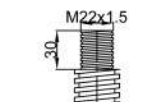


I Top Plate

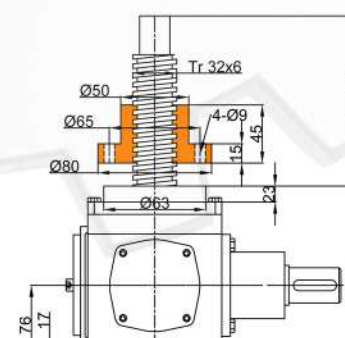
II Clevis End



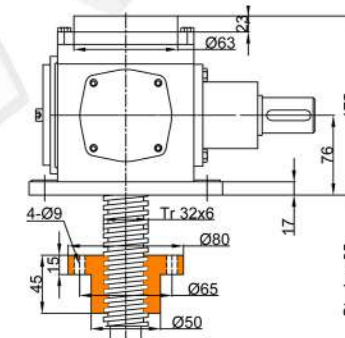
III Plain End



IV Thread End



Upright

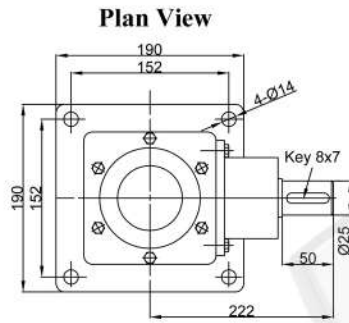
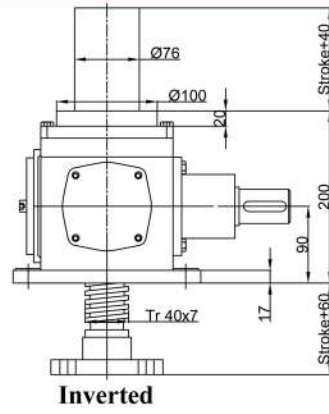
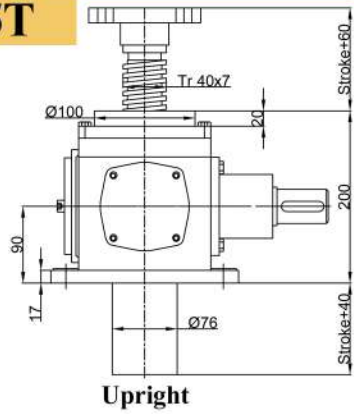


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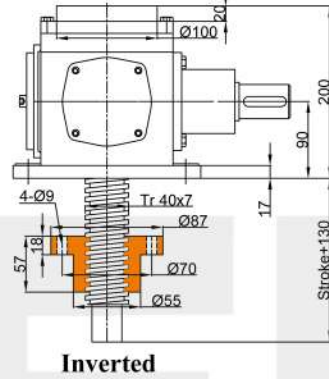
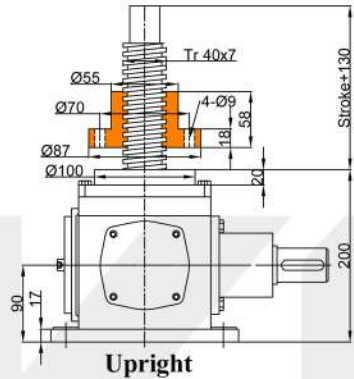
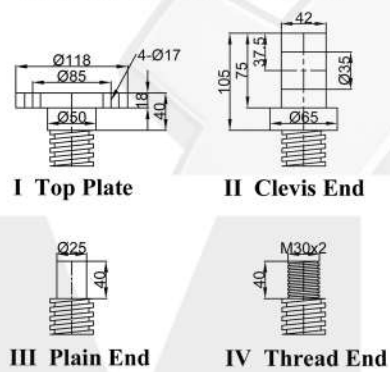
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## Overall Dimensions

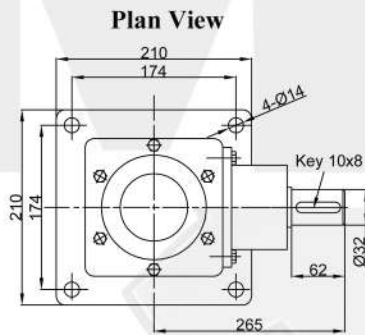
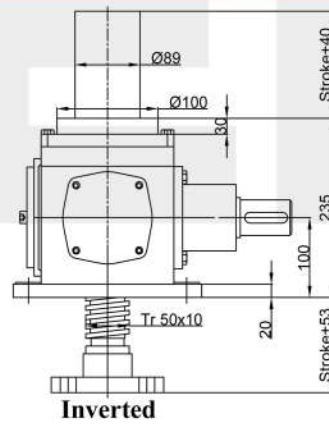
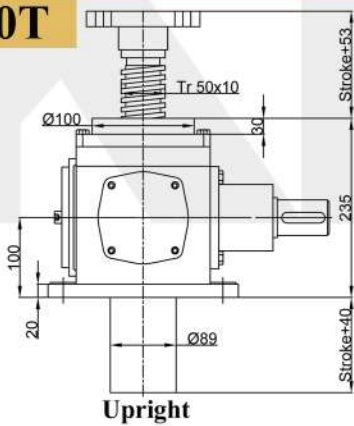
### KME5T



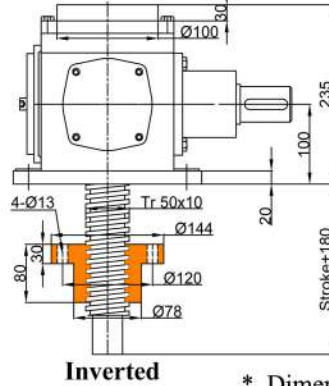
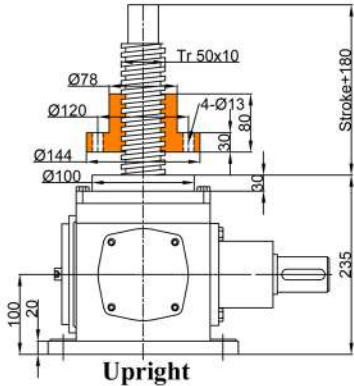
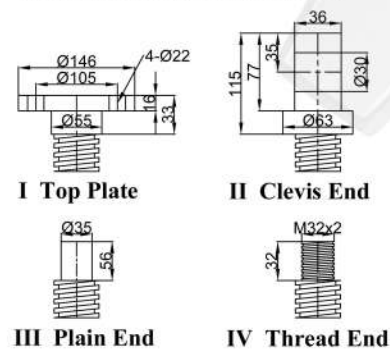
#### Screw End Types and Dimensions



### KME10T



#### Screw End Types and Dimensions

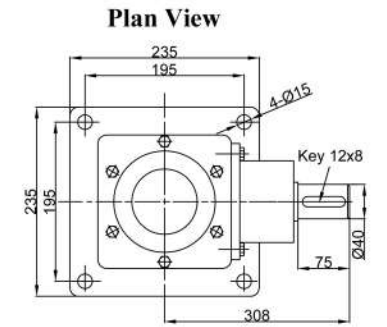
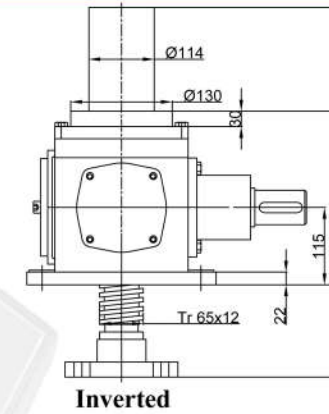
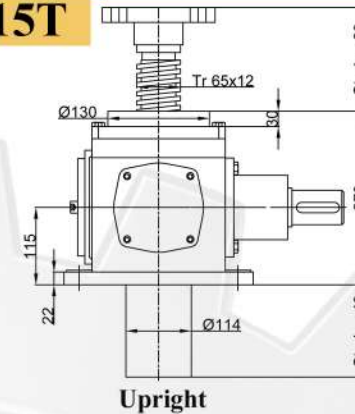


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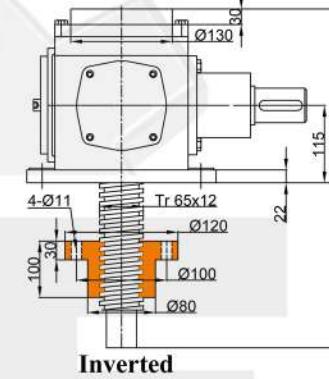
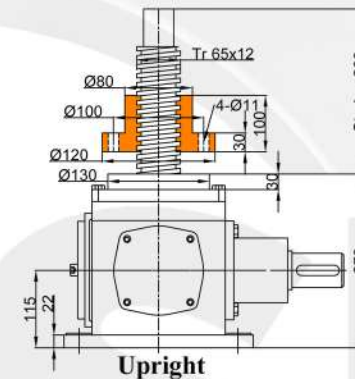
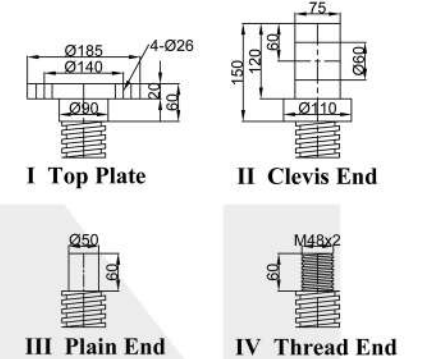


## Overall Dimensions

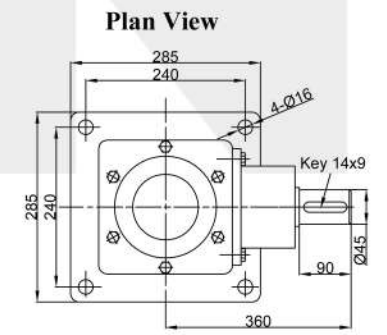
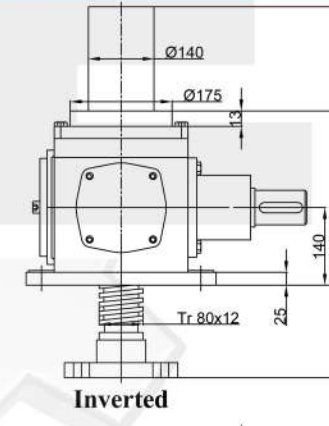
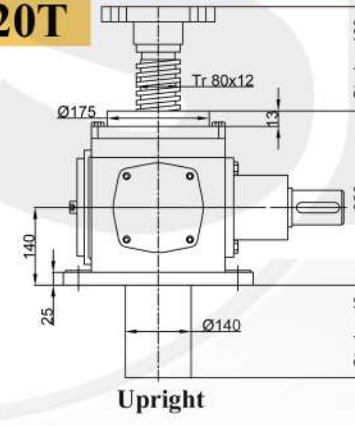
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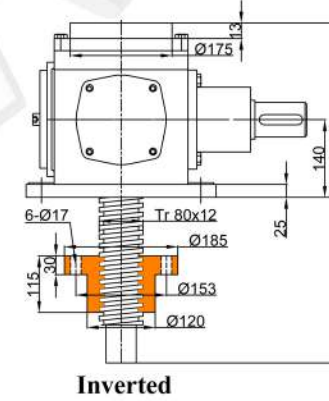
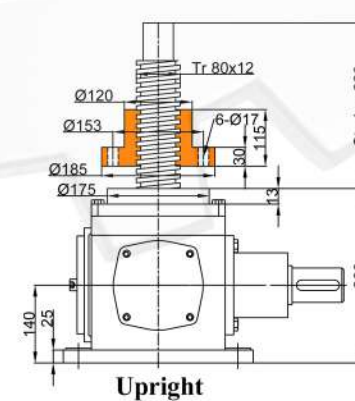
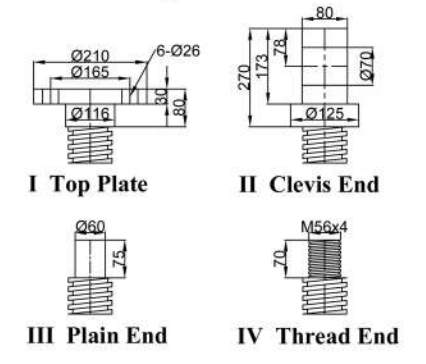
#### Screw End Types and Dimensions



### KME20T



#### Screw End Types and Dimensions



\*. Dimensions are subject to change without notice

