

JTH

Cubic Screw Jack

[Through Holes]

Descriptions	001
Materials	001 - 002
Selection Guide	003 - 008
Selection Notes	003
Unit Converter	004
Sample Part Number	005
Specifications	009
Overall Dimensions	010 - 012
JTH10 - JTH25	010
JTH50 - JTH100	011
JTH150 - JTH200	012
Other Products	013 - 016
Contact Us	017

Contents





Descriptions

JTH Series Cubic Machine Screw Jack (Through-hole Mounting) are high quality engineering products for precise lifting, lowering and pivoting of loads, and are, under normal operation, maintenance free. The use of high quality ductile iron and aluminium alloy in the production of the housings guarantees a long life and a high operating margin. All housings have a cubic form and are machined on all faces. The cubic design offers modern aesthetics and versatile mounting on two faces of the gearbox, while eliminating the need for upright and inverted variants. In the absence of vibration load, they have self locking and precisely position loads, will hold loads without backdriving, and no need any brake mechanism or locking system.

Key Features

- 6 Sizes in three gear ratios (high ratio, medium ratio, slow ratio).
- Static load capacities from 10 kN to 200 kN as Standard.
- Self locking Trapezoidal screw, precise positioning, and uniform speed.
- Basic designs: Translating screw, Keyed screw, and Rotating screw.
- Upright or Inverted mounting. Available in tension or compression loads.
- Standard with 1-start thread screw, custom 2-starts threads screw which offers increased travel speed and require a brake or external locking device to hold position.
- Power source: manual operation with hand wheel, electrically by motor driven.
- Can be applied either individually use or combined into a exactly synchronized lifting system(multiple jack systems), linked by connecting shafts, bevel gearboxes, couplings, electric motors, gear reducers, limit switches and pillow blocks etc.
- Custom double clevis screw jack, trunnion mount screw jack, and anti-backlash screw jack.
- Can be used as alternatives to hydraulic and pneumatic systems.

Materials

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

Housing

- Aluminum alloy with Anodizing (JTH10, JTH25)
- High-strength Casting Housing, Ductile Iron (JTH50 - JTH200).

Lifting Screw

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

Input Shaft (Worm)

- C45 Steel in high frequency heat treatment process. Custom Stainless Steel 304 or 316.

Worm Gear / Travelling Nut / Safety Nut

- High Strength Bronze ZQA19-4 (Casting aluminum bronze) as Standard,
- Custom High Strength Bronze ZCuSn10Pb1(Casting tin bronze)

Bearing

- Anti-friction Ball Thrust Bearings for Worm Gear. Anti-friction Ball Bearings for Input Shaft(worm).
- Custom Stainless Steel 304.

Motor Flange Adapter

- High-strength Casting Motor Adapter, Ductile Iron. Custom Stainless Steel 304 or 316.

Lubricants

- Synthetic Grease, Extreme Pressure EP2 Lithium Grease.

Materials





Selection Guide

Selection Notes

- (01) Screw Jacks and Lifting Systems are for industrial use only, not recommended for transporting personnel.
- (02) Carefully consider 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 dose not exceed the jack's maximum allowable input power.
- (06) Screw 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 (Machine Screw Jack) duty cycle $\leq 20\%ED$.
 - * Screw Jack with Ball Screw (Ball Screw Jack) duty cycle $\leq 30\%ED$.
 - **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 (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 (Machine Screw Jack) is considered not self-locking will require a brake or other holding device. Screw Jack with Ball Screw (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 Ball Screw Jacks 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):

JTH50 - US - 300 - H - I - C - PP
 (1) (2) (3) (4) (5) (6) (7)

(1) Models & (4) Gear Ratios

JTH10 (Tr22x5) H=1:4 M=1:16 L=1:24	JTH25 (Tr30x6) H=1:6 M=1:18 L=1:24	JTH50 (Tr40x7) H=1:7 M=1:14 L=1:28	JTH100 (Tr55x9) H=1:7 M=1:14 L=1:28
JTH150 (Tr60x12) H=1:8 M=1:24 L=1:32	JTH200 (Tr70x12) H=1:7 L=1:28	H: High ratio M: Medium Ratio L: Slow ratio	

1.1) **Model Note 1:** the model indicates the maximum static load of this screw jack, but not the Maximum dynamic load. The dynamic load depends on the lifting speed, travel length and others working conditions.

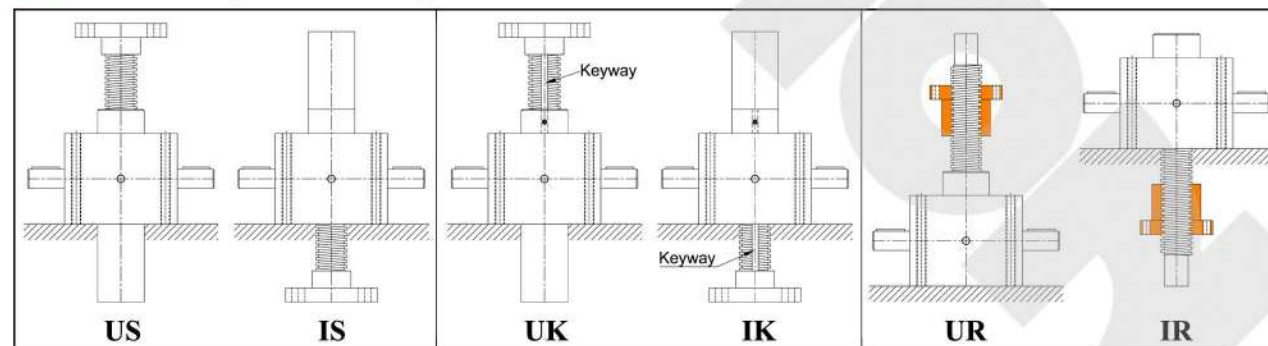
1.2) **Model Note 2:** The slower the lifting speed, the greater the dynamic load.

1.3) **Model Note 3:** In the case of compressed loads and long strokes, please calculate maximum critical buckling force.

1.4) **Gear Ratio Note 1:** Screw jacks with gear ratios between 24:1, 28:1 and 32:1, are self-locking and, in the absence of vibration, will hold loads without backdriving. All other ratios may require a brake to prevent backdriving.

1.5) **Gear Ratio Note 2:** Every screw jack model with 3 gear ratios as a standard. Custom others gear ratios.

(2) Basic Designs and Configurations



2.1) **“US” and “IS” are Translating Screw Jacks**, they are the most commonly specified jack. All that is required for proper function is to restrain the rotation of the lifting screw and apply torque to the input shaft. This is often achieved through the use of guides (guided load) or by attaching a common load across multiple jacks. Most applications use this jack design.

Selection Guide

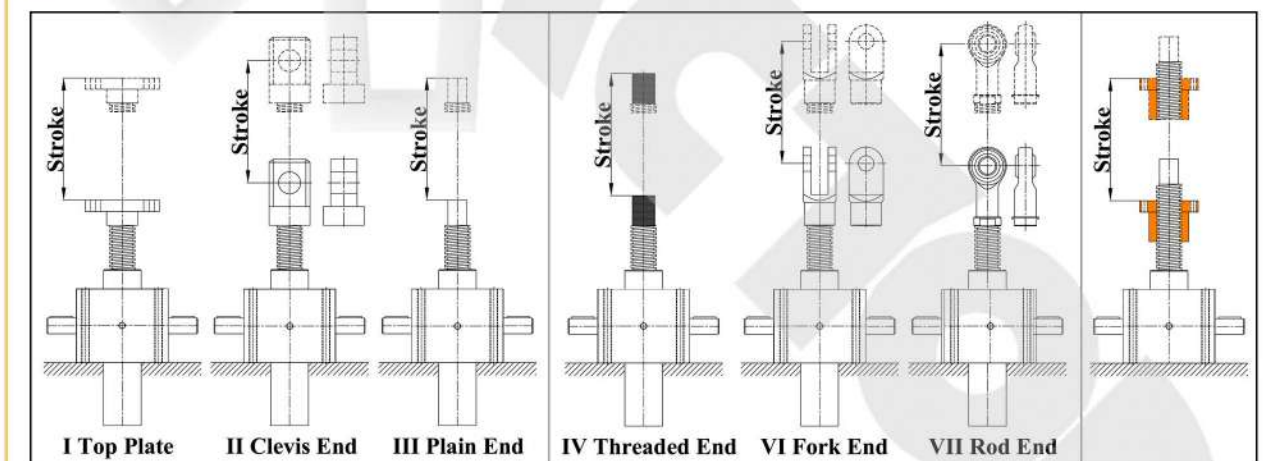
2.2) **“UK” and “IK” are Keyed Screw Jacks**, they are keyed for non-rotation. It is ideal for use in applications where a single jack must extend to meet and move a load to which it is not attached (unguided). Keyed jacks are commonly used in single jack applications where it would not otherwise be possible to restrain the rotation of the jack screw.

- **Note:** Input torque required will increase by approximately 8%.
- **Note:** Custom square protective tube for Anti-rotation Screw Jacks, a square nut is attached to the end of the lifting screw which is then fitted inside the tube, to prevent rotation.

2.3) **“UR” and “IR” are Rotating Screw Jacks**, they are also called travelling nut screw jack. 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 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.

2.4) **Custom double clevis screw jacks, trunnion mount screw jacks and anti-backlash nut screw jacks.**

(3) Stroke and (5) Screw End Fittings



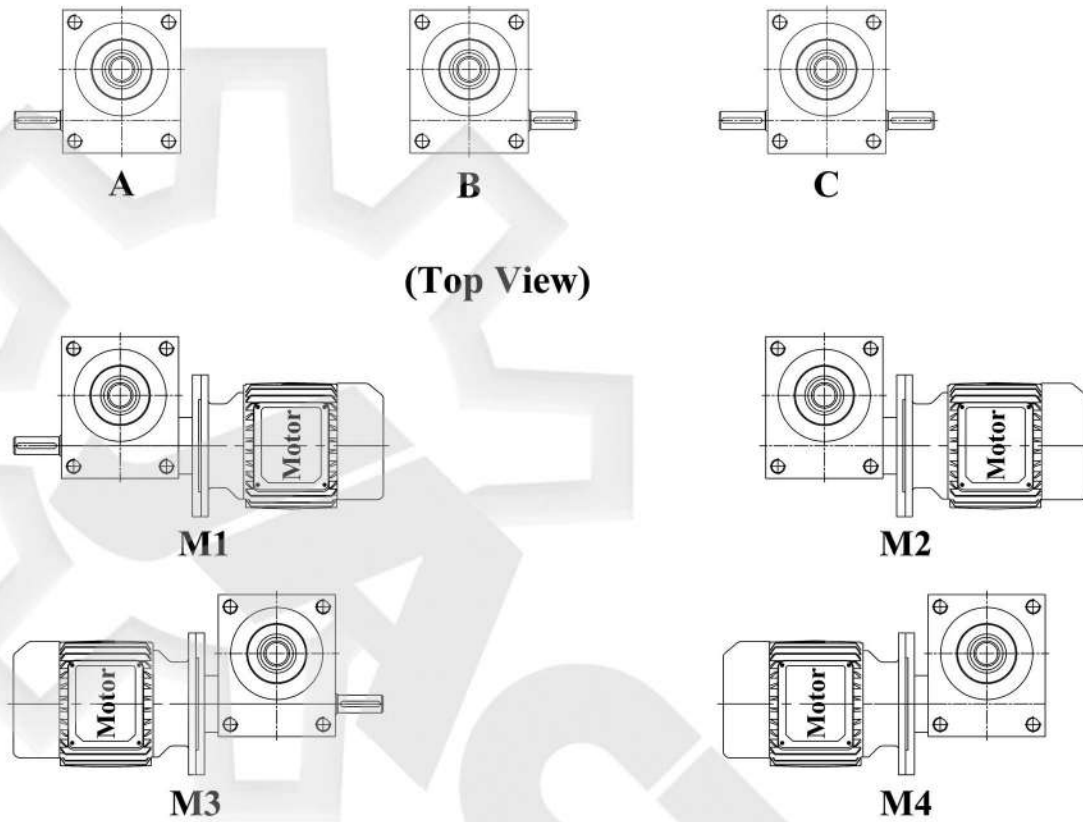
- Stroke is travel expressed in millimeter(mm) or inches and not the actual screw length.
- Standard Lifting Screw End Fittings: Top Plate (I), Clevis End (II), Plain End (III), Threaded End (IV), Forked End (VI) and Rod End (VII). Custom End Fittings are acceptable.



Selection Guide

Sample Part Number

(6) Input Shafts Codes and Motor Flange Adapters Codes (Top View)



6.1) **A**: Single Input, Left Side Shaft.

6.2) **B**: Single Input, Right Side Shaft.

6.3) **C**: Double Input Shafts

6.4) **M1**: Left Side Shaft, Right Side Motor Flange Adapter (Motor Mounts).

6.5) **M2**: Right Side Motor Flange Adapter (Motor Mounts).

6.6) **M3**: Right Side Shaft, Left Side Motor Flange Adapter (Motor Mounts).

6.7) **M4**: Left Side Motor Flange Adapter (Motor Mounts).

Note: Screw Jacks with IEC Motor Flange Adapter as a standard. Custom NEMA Motor Flange Adapter(Stepper Motor), Servo Motor Flange Adapter and Other Non-standard Motor Flange Adapters.

Selection Guide

(7) Accessories





Specifications

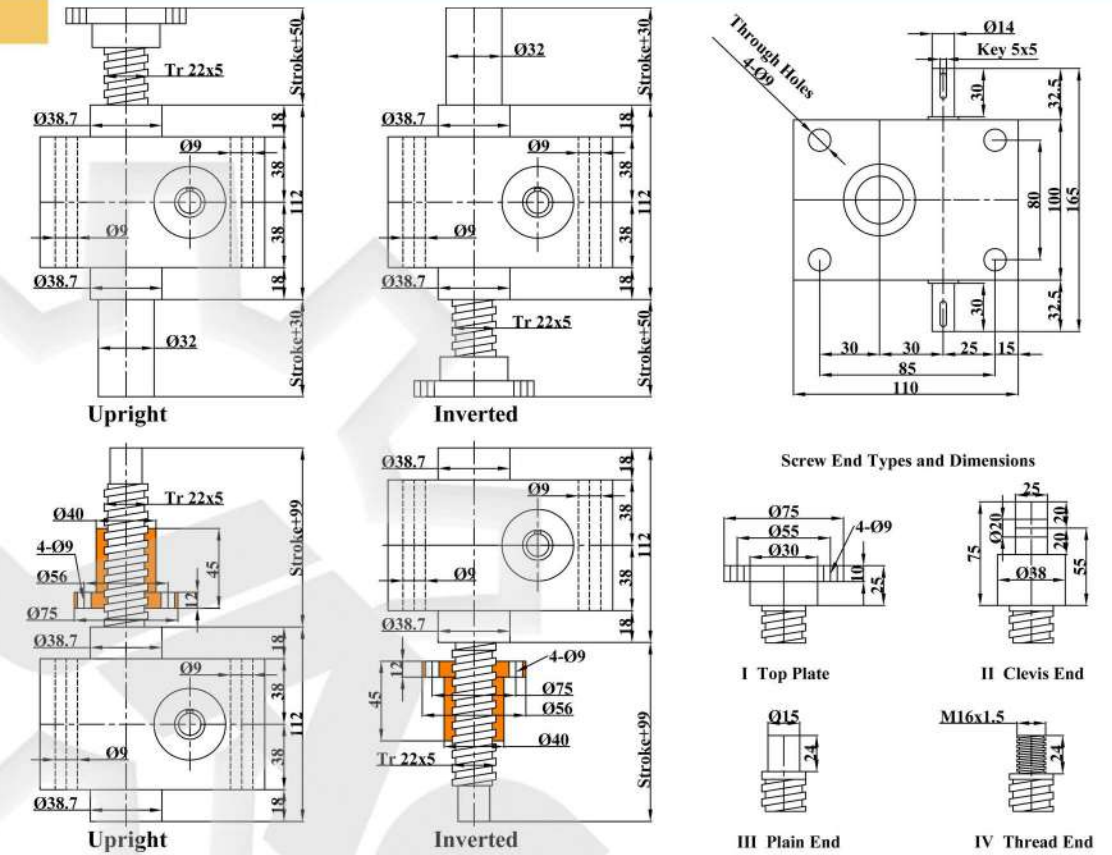
• **Remarks:**

- 1) H: high ratio, M: medium ratio, L: slow ratio
- 2) Max. allowable power is under the conditions that ambient temperature 20 degree C, duty cycle 20%/h and input speed 1500rpm
- 3) Overall efficiency is under grease lubrication.
- 4) Self-locking under static conditions.

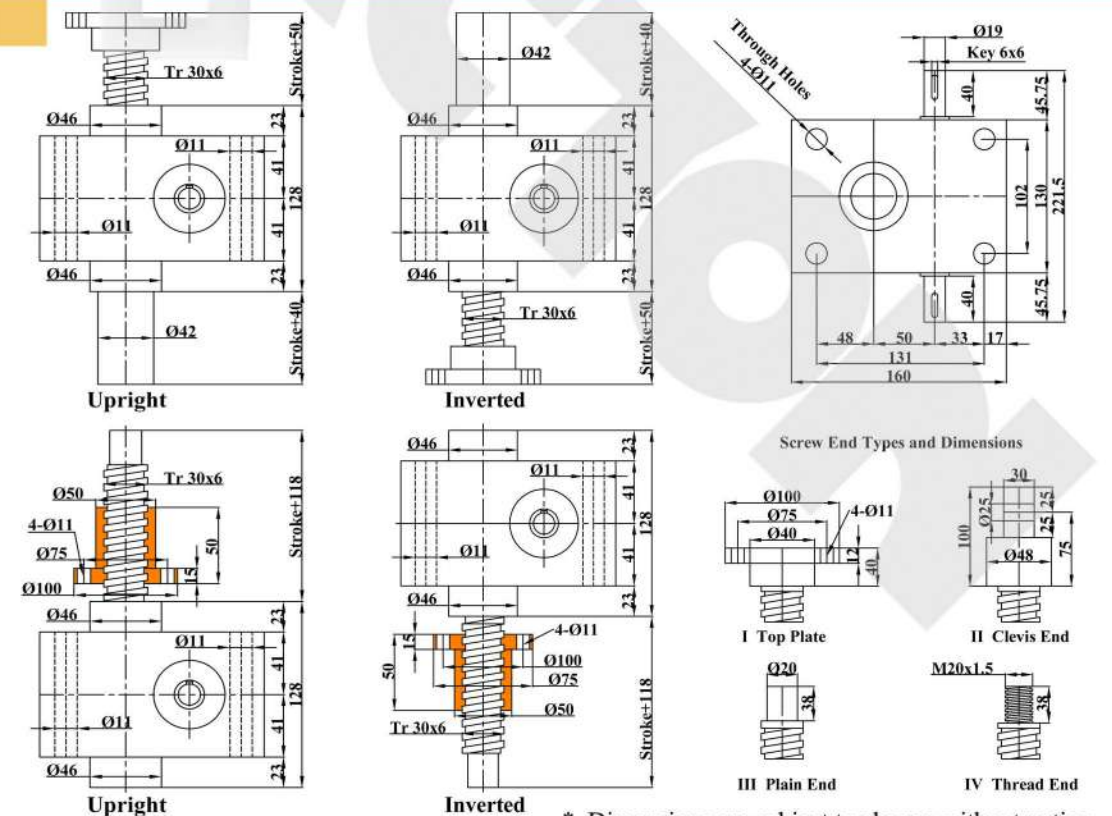
Model	JTH10	JTH25	JTH50	JTH100	JTH150	JTH200	
Load Capacity (kN), (push - pull)	10	25	50	100	150	200	
Lifting Screw Sizes (mm)	Tr 22 x 5	Tr 30 x 6	Tr 40 x 7	Tr 55 x 9	Tr 60 x 12	Tr 70 x 12	
Worm Gear Center Distance (mm)	30	50	63	63	80	90	
Gear Ratio	H	4:1	6:1	7:1	8:1	7:1	
	M	16:1	18:1	14:1	14:1	24:1	
	L	24:1	24:1	28:1	28:1	32:1	28:1
Lifting Screw Travel (mm), Per Turn of Input Shaft	H	1.25	1	1	1.28	1.71	
	M	0.31	0.33	0.5	0.64	0.5	
	L	0.21	0.25	0.25	0.32	0.375	0.43
Max. Permissible Operating Power (kW)	H	0.5	1.1	2.2	2.3	2.8	3.8
	M	0.2	0.6	1.5	1.6	2.5	
	L	0.15	0.5	1.1	1.1	2.1	3
Total Efficiency %	H	22	21	20	19	18	16
	M	20	19	18	16	15	
	L	15	14	13	12	12	12
Starting Torque (Nm) on Input Shaft at Max. Load	H	9	20	44	113	174	325
	M	3.5	8.3	25	68	83	
	L	2.5	7.6	18	46	69	125
Reactive Torque (Nm) on Lifting Screw Required at Max. Load	20	65	165	460	800	1200	
Gearbox Material	Aluminum Alloy		Ductile Iron				

Overall Dimensions

JTH10



JTH25

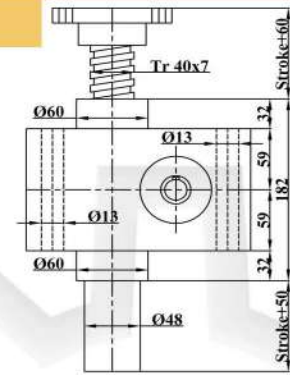


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Overall Dimensions

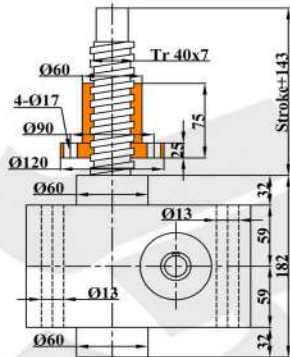
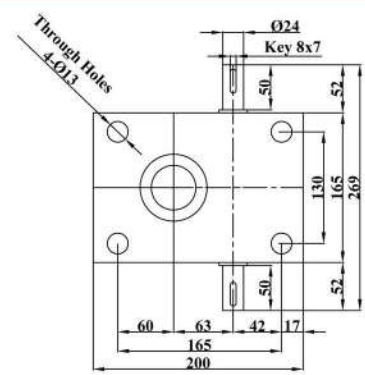
JTH50



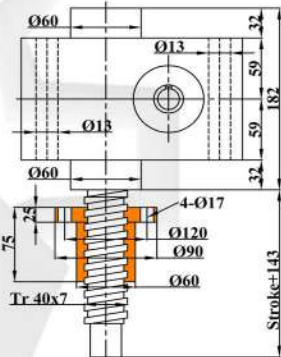
Upright



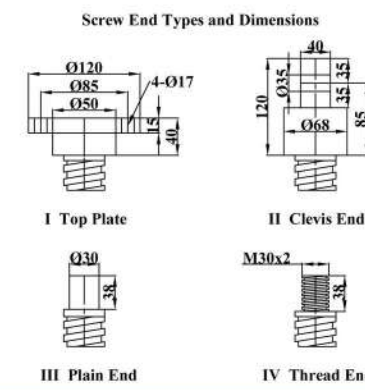
Inverted



Upright



Inverted



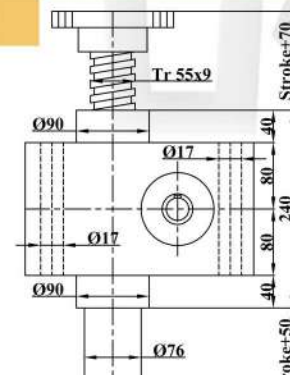
I Top Plate

II Clevis End

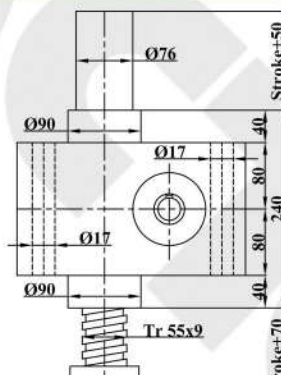
III Plain End

IV Thread End

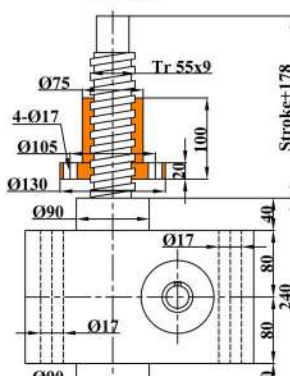
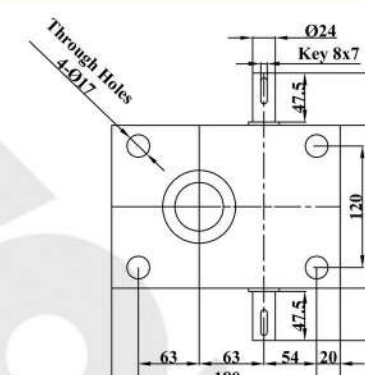
JTH100



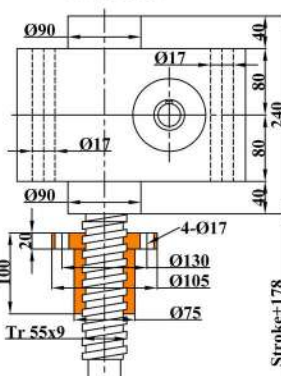
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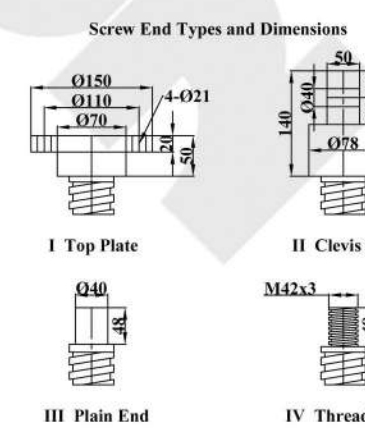
Inverted



Upright



Inverted



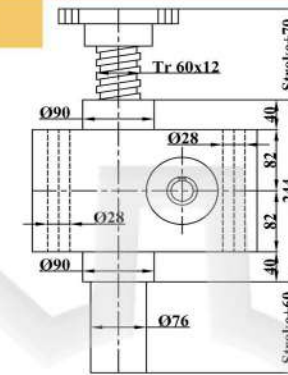
I Top Plate

II Clevis End

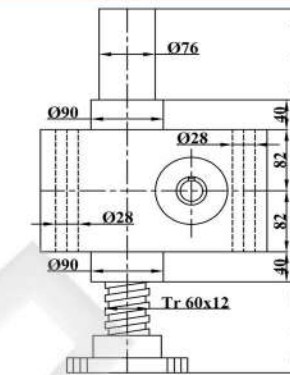
III Plain End

IV Thread End

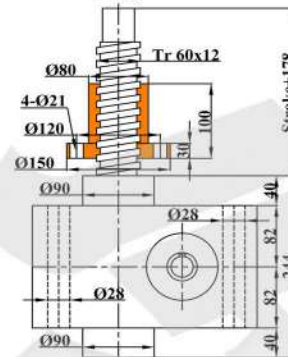
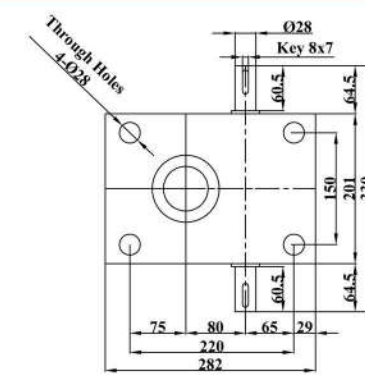
JTH150



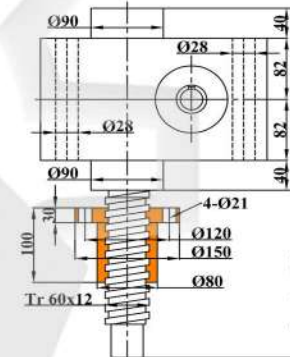
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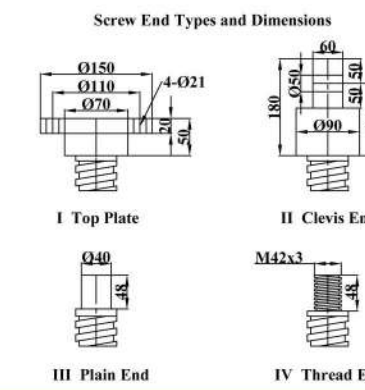
Inverted



Upright



Inverted



I Top Plate

II Clevis End

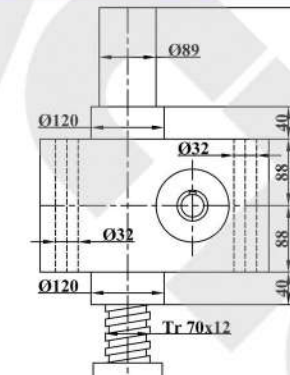
III Plain End

IV Thread End

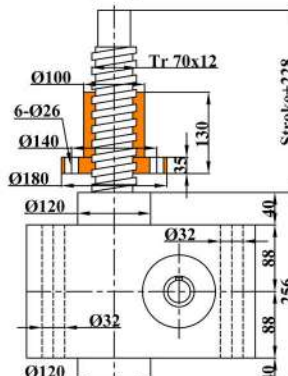
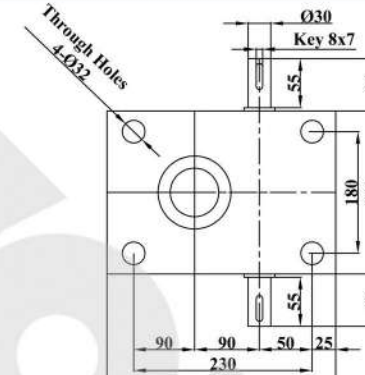
JTH200



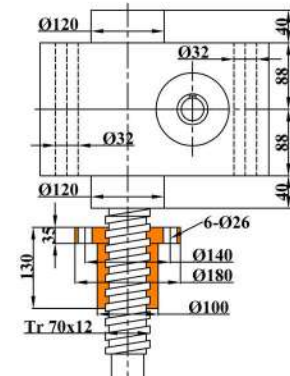
Upright



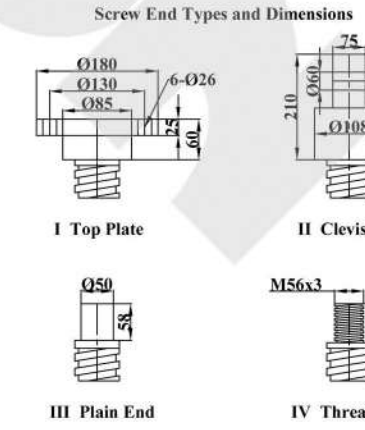
Inverted



Upright



Inverted



I Top Plate

II Clevis End

III Plain End

IV Thread End

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*. Dimensions are subject to change without notice



Other Products

Cubic Machine Screw Jack

- Cubic design permits any mounting position.
- High static loads, best for slow movement and low duty cycles.
- Static load capacities from 2.5 kN to 500 kN as Standard.
- Translating, Anti-rotation (keyed) and Rotating Screw configurations.
- Self locking trapezoidal screw offers maximum stroke of 7500 mm.
- Power source: Manual operation, Motor drive.
- Single jack, or synchronization of multiple jacks arrangement



Cubic Ball Screw Jack

- Cubic design permits any mounting position.
- High duty cycle, high precision, high speed, less power and long service life.
- Static load capacities from 10 kN to 350 kN as Standard.
- Translating, Anti-rotation and Rotating Screw configurations.
- Not self-locking ball screw offers maximum stroke of 6000 mm.
- Power source: Brake motor drive. Not suited for manual operation.
- Single jack, or synchronization of multiple jacks arrangements.



Classic Machine Screw Jack

- Classic design, no need to attach any construction elements to the housing.
- High static loads, best for slow movement and low duty cycles.
- Static load capacities from 0.5 ton to 100 tons as Standard.
- Translating, Anti-rotation (keyed) and Rotating Screw configurations.
- Self locking trapezoidal screw offers maximum stroke of 7500 mm.
- Power source: Manual operation, Motor drive.
- Single jack, or synchronization of multiple jacks arrangements.



Stainless Steel Screw Jack

- Classic design, no need to attach any construction elements to
- Complete Stainless Steel Screw Jack design.
- High static loads, best for slow movement and low duty cycles.
- Static load capacities from 1 ton to 20 tons as Standard.
- Translating, Anti-rotation (keyed) and Rotating Screw configurations.
- Self locking Stainless Steel trapezoidal screw offers maximum stroke of 7500 mm.
- Power source: Manual operation, Motor drive.
- Single jack, or synchronization of multiple jacks arrangements.



Other Products

Classic Ball Screw Jack

- Classic design, no need to attach any construction elements to the housing.
- High duty cycle, high precision, high speed, less power and long service life.
- Static load capacities from 1 ton to 35 tons as Standard.
- Translating, Anti-rotation and Rotating Screw configurations.
- Not self-locking ball screw offers maximum stroke of 6000 mm.
- Power source: Brake motor drive. Not suited for manual operation
- Single jack, or synchronization of multiple jacks arrangements.



Bevel Gear Machine Screw Jack

- High efficiency, high lifting speed, high duty cycle, long lifespan.
- Spiral bevel gear mechanism are used, with 2:1, 2.5:1 and 3:1 ratios.
- Static load capacities from 400 Kg to 3500 Kg as Standard.
- Translating, Anti-rotation (keyed) and Rotating Screw configurations.
- Self locking trapezoidal screw offers maximum stroke of 6000 mm.
- Power source: Manual operation, Motor drive.
- Single jack, or synchronization of multiple jacks arrangement



Bevel Gear Ball Screw Jack

- Higher efficiency, higher lifting speed, higher duty cycle, longer lifespan.
- Spiral bevel gear mechanism are used, with 2:1, 2.5:1 and 3:1 ratios.
- Static load capacities from 400 Kg to 3500 Kg as Standard.
- Translating, Anti-rotation and Rotating Screw configurations.
- Not self-locking ball screw offers maximum stroke of 6000 mm.
- Power source: Brake motor drive. Not suited for manual operation.
- Single jack, or synchronization of multiple jacks arrangements.



Screw Jack Lifting Systems

- Lifting systems are not limited to the number of screw jacks. Commonly used are 2, 4, 6, 8 jack systems.
- Full synchronization, self-locking, precision positioning, easy installation and operation, maintenance free.
- From a few kilograms to heavy-duty several hundred tons.
- Complete lifting systems with geared motors, shafting and couplings available.
- Power source: Synchronized drive from a single electric motor.
- With Inverter driven motor, soft start and stop, variable lifting speeds are all available.





Other Products

Cubic Bevel Gearbox

- Modular design spiral bevel gearboxes with cubic housing.
- Ultra Compact Design. All-round tapped holes for universal mounting, 6 possible mounting positions.
- Gear ratios of 1:1, 2:1, 3:1, 4:1 and 5:1 are actual ones.
- Power Ratings up to 156 kW. Torque Ratings up to 1199 N.m.
- Gear transmission average efficiency up to 94%.
- 2-way, 3-way and 4-way Configurations.
- Solid Shaft, Hollow Shaft, and Direct motor mount or via motor flanges.
- High efficiency, high transmission capacity, low backlash, Noiseless operation, low running temperature and long service life.



Classic Bevel Gearbox

- Used in pairs case hardened alloy steel spiral bevel gears.
- Gear ratios of 1:1, 1.5:1, 2:1, 2.5:1, 3:1, 4:1 and 5:1 are actual ones.
- Power Ratings up to 335 kW. Torque Ratings up to 5713 N.m.
- Gear transmission average efficiency up to 94%.
- 2-way, 3-way and 4-way Configurations.
- Solid Shaft, Hollow Shaft, and Direct motor mount or via motor flanges.
- Various Shafts Arrangements, Rotation Directions and Mounting Positions available.
- High efficiency, high transmission capacity, low backlash, noiseless operation, low running temperature and long service life.



Lightweight Bevel Gearbox (Aluminium Alloy)

- Quality finished casing by die-casting, in lightweight aluminium alloy.
- Compact design, small-sized, ultra-lightweight, universal mounting.
- Utilizing carburized case-hardened spiral bevel gears
- Gear ratios of 1:1 and 2:1 are actual ones.
- Power Ratings up to 4.94 kW. Torque Ratings up to 40 N.m.
- Gear transmission average efficiency up to 94%
- 2-way and 3-way Configurations.
- High efficiency, low backlash, quiet operation, maintenance free, low running temperature and long service life.



Other Products

Electric Cylinders

- Be basically screw jacks with travelling nut, but with lifting cylinder design.
- High static loads, best for slow movement and low duty cycles.
- Static load capacities from 2.5 ton to 10 tons as Standard.
- Self-locking, precise positioning, and uniform speed.
- Power source: Manual operation, Motor drive.
- Single unit, or synchronization of multiple units.
- A better choice over hydraulic actuators or pneumatic cylinders with this clean alternative, simpler to install, control, low maintenance and a quieter solution.



Electric Linear Actuators

- Parallel or In-Line drive configurations.
- Self-locking ACME screw and nut, driven by an electric motor, through a reduction gearbox.
- Low maintenance due to high-quality grease and enclosed design.
- Load capacities from 100 Kgf to 15 tons as Standard (Parallel)
- Load capacities from 10 Kgf to 1000 Kgf as Standard (In-Line).
- Low noise system, higher dynamic capacity, higher speed capability and longer life.
- Low power consumption and running costs, no oil leaks, contamination or fire risk.
- Easy installation with two trunnion mounting feet, no pipework, powerpack and valves.
- Be a real alternative to pneumatic and hydraulic cylinders.



Customized and molded products

