Descriptions

A **Square Machine Screw Jack** is a type of screw jack that features a square shaped housing. This design offers advantages in terms of versatility and adaptability. Load capacities include **2.5kN, 5kN, 10kN, 25kN, 50kN, 100kN, 150kN, 200kN, 250kN, 350kN and 500kN**.

Key Features of Square Screw Jacks:

- **Square-shaped housing:** Provides flexible mounting options and can be easily integrated into various machine designs.
- **Worm gear drive:** Utilizes a worm gear to convert rotational motion into linear motion.
- **High load capacity:** Can handle significant loads, typically ranging from a few hundred pounds up to fifty tons.
- **Precision and repeatability:** Offers controlled and accurate positioning, crucial for applications requiring precise alignment.
- **Self-locking capability:** Many square screw jacks employ acme screws with a self-locking feature that holds the load in position without continuous power.
- **Versatility:** Available in different configurations and can be customized to suit specific requirements, such as load capacity, screw pitch, and materials.
- **Durability:** Constructed with sturdy materials like high-quality steel, making them suitable for demanding industrial environments.

Benefits of Square Screw Jacks:

- **Flexible mounting options:** The cubic design allows for mounting from multiple sides, offering greater flexibility in system integration.
- **Clean and smooth surface:** The cube shape is easy to clean, making it suitable for applications in industries like food processing where hygiene is important.
- **Adaptability:** Easily configured with accessories like motor mounts and mounting feet.
- **Reliability:** Typically have fewer moving parts compared to other lifting systems like hydraulics, leading to reduced maintenance needs.

Applications of Square Screw Jacks:

Square screw jacks are used in various industrial applications, including material handling, automated assembly, heavy machinery adjustments, lifting and lowering platforms, and synchronized lifting systems.

Materials

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

Housing

- Aluminum alloy with Anodizing (KMA2.5 - KMA25).
  High-strength Casting Housing, Ductile Iron (KMA25 - KMA500).

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 ZQAl9-4 (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 -15ºC to +80ºC 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 20ºC. For ambient temperatures higher than 20ºC, the duty cycle (ED) must be reduced.
  * Screw Jack with Trapezoidal Screw (Machine Screw Jack) duty cycle ≤ 20%ED.
  * Screw Jack with Ball Screw (Ball Screw Jack) duty cycle ≤ 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 80ºC 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 0ºC. 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

Calculation Formulas

(01) Calculate Total Load Ws (N)

$$Ws = W \times sf$$

Ws = Total Load (N)   W = Maximum Load (N)   sf = Safety Factor (**Table 1.**)

Table 1. Safety Factor sf

Load Conditions	Example Purposes	Safety Factor (sf)
Smooth movement with no shock, Light load	Opening and closing a valve, Adjusting a conveyor	1.0 ~ 1.3
Light shock, Medium load	Use with various kinds of transporting equipment and lifters	1.3 ~ 1.5
Severe shock and/or vibration, Heavy load	Use with large transporting carriages, Holding the position of a press roller	1.5 ~ 3.0

- **Note:** The above table is for general reference only. Consider particular operating conditions under which you operate before selecting a safety factor.

(02) Calculate Load Per Jack Wn (N)

$$W_n = Ws / (N_o \times fd \times \eta_g)$$

- **Note:** For a synchronous drive, use a synchronous drive coefficient (Table 2).
- **Note:** Don't ignore spiral bevel gearbox efficiency 94%.

W_n = Load Per Jack (N)   Ws = Total Load (N)

N_o = Number of jacks   fd = Multiple jacks system coefficient (**Table 2.**)

η_g = **Bevel Gearbox** efficiency = 94%

Table 2. Multiple Jacks System Coefficient fd

No. of jacks	1	2	3	4	5 ~ 8
Coefficient	1	0.95	0.9	**0.85**	0.8

(03) Jack Selection

Follow these steps to make a preliminary jack selection.

Points of preliminary jack selection

- Select (temporary) worm speed ratio by adjusting the screw shaft rpm. If difficult to select, inspect by H speed.
- Consider traveling space when selecting stroke.
- Select options based on your needs.

Selection Guide

(04) Verifying Allowable Buckling Load P_{CR} (N)

For a compressive load, verify that it does not exceed the allowable buckling load. If it does, increase jack size and recalculate.

$$P_{CR} = fm \times (d^2 / L)^2, \text{ Make Sure } P_{CR} > W_n \times sf \ (sf = 4 \text{ as usual})$$

P_{CR} = Allowable buckling load (N)   fm = Support coefficient (**Table 4.**)

L = Distance between load-supporting plane(point) and mounting plane(point) (mm)

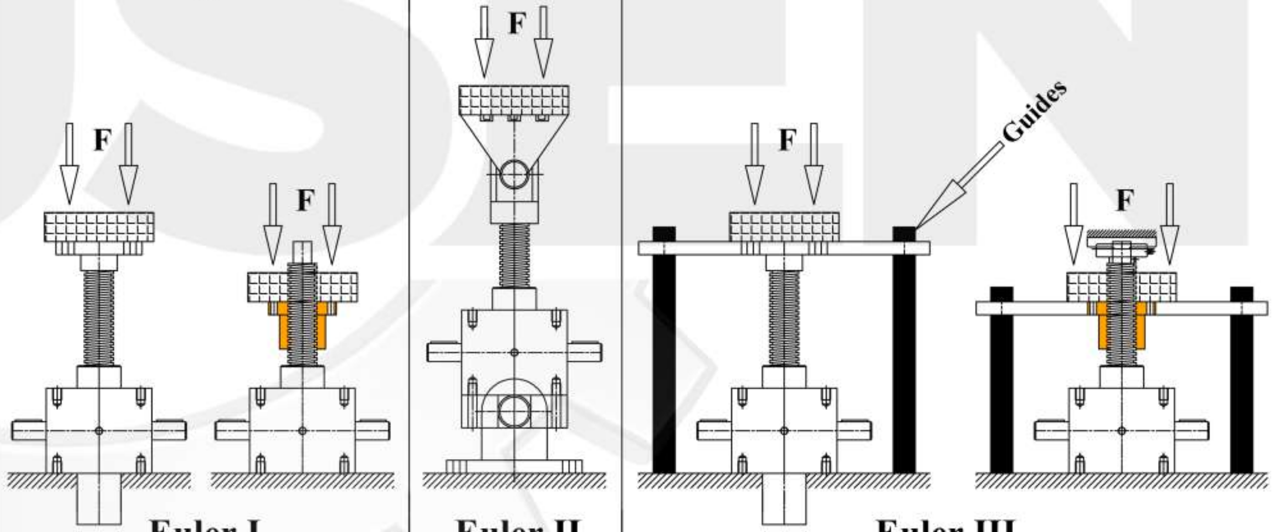
d = Screw shaft root diameter (mm) = D - TP - 2 x ac   TP = Screw pitch (mm)

W_n = Load Per Jack (N)   D = Screw diameter (mm)   ac = Assembly clearance (**Table 3.**)

Table 3. Assembly Clearance ac

Screw Pitch (mm)	ac
1.5 - 5	0.25
6 - 12	0.5
14 - 44	1

Table 4. Support Coefficient fm



Euler I (Unguided)   Euler II (Trunnion)   Euler III (Guided)

- **Euler I (fm = 2.5 x 10⁴):** Screw jack housing fixed to the base (foot-mounted). Lifting screw end (or travelling nut) lifting **the free load (unguided).**
- **Euler II (fm = 1 x 10⁵):** Screw jack housing and lifting screw end (or travelling nut) are trunnion mounted by pin or joint for **pivot drive.**
- **Euler III (fm = 2 x 10⁵):** Screw jack housing fixed to the base (foot-mounted). Lifting screw end (or travelling nut) lifting **the fixed load (guided).**

Selection Guide

Calculation Formulas

(05) Verifying Allowable Screw Speed N_C (rpm)

- **Note:** Only for Screw Jack with Traveling Nut (Rotating Screw Jack), verify that it does not exceed the allowable screw shaft rpm. If it does, increase jack size and recalculate.

$$N_C = (96 \times fn \times d \times 10^6) / L^2, \text{ Make Sure } N_C > n2,\ n2 = n1 / i$$

N_C = Allowable screw shaft speed (rpm) fn = Shaft end support coefficient **(Table 5.)**

L = Distance between load-supporting plane and mounting plane (mm) (Table 5.)

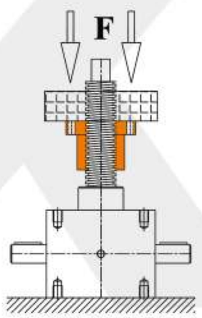
d = Screw shaft root diameter (mm) = D-TP-2xac TP = Screw pitch (mm)

D = Screw diameter (mm) ac = Assembly clearance **(Table 3.)**

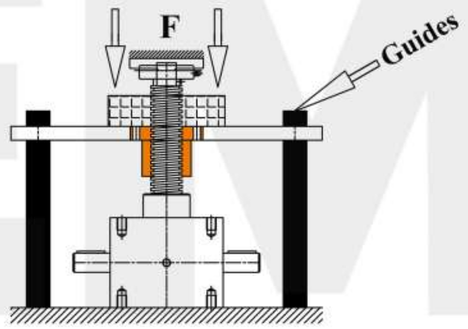
n2 = Output speed of screw shaft (rpm) n1 = Input speed of worm shaft (rpm)

i = Gear ratio

Table 5. Shaft End Support Coefficient fn



Euler I (Unguided)



Euler III (Guided)

- **Euler I (fn = 0.36):** Screw jack housing fixed to the base (foot-mounted). Travelling nut lifting **the free load (unguided).**
- **Euler III (fn = 1.56):** Screw jack housing fixed to the base (foot-mounted). Travelling nut lifting **the fixed load (guided).**

(06) Confirming Required Input Speed n1 (rpm)

Determine the required input rpm, using the required screw shaft speed.

- **Note:** Input speed should not exceed 1500 rpm.

$$n1 = v \times i / TP$$

v = Lifting speed (mm/min) n1 = Input speed of worm shaft (rpm)

TP = Screw pitch (mm) i = Gear ratio

Selection Guide

(07) Verifying Required Input Torque per T (Nm)

$$T = (F_{dyn} \times TP) / (2 \times \pi \times \eta \times i) + T_o$$

F_{dyn} = Dynamic axial force (= lifting force) (kN) F_{stat} = Static axial force (= retention force) (kN)

TP = Screw pitch (mm) $\pi = 3.1416$

η = Screw jack efficiency (see the Specifications of Jack Series)

* For Machine Screw Jacks, normal $\eta = 0.15$ (H ratio), $\eta = 0.12$ (L ratio)
* For Ball Screw Jacks, normal $\eta = 0.3 \sim 0.35$ (H ratio), $\eta = 0.22$ (L ratio)

i = Gear ratio

T_o = Idling torque (Nm) (see the Specifications of Jack Series)

(08) Verifying Required Input Power P (kW)

$$P = W1 \times v1 / (6000 \times \eta)$$

P = Input power (kW) W1 = Lifting force (kgf) v1 = Lifting speed (m/min)

η = Screw jack efficiency (see the Specifications of Jack Series)

* For Machine Screw Jacks, normal $\eta = 0.15$ (H ratio), $\eta = 0.12$ (L ratio)
* For Ball Screw Jacks, normal $\eta = 0.3 \sim 0.35$ (H ratio), $\eta = 0.22$ (L ratio)

(09) Other Calculation Formulas

09.01) Lifting Speed: $v = n1 \times TP / i$

09.02) Stroke / Revolution: $SR = TP / i$

09.03) Input Torque: $T = 9550 \times P / n1 + T_o$

09.04) Input Power: $P = P = T \times n1 / 9550$

09.05) Starting Torque per Jack: $T_{st} \approx T \times 1.3$

09.06) Hand Wheel Turning Force: $W_{hw} = T / R_{hw}$

09.07) Input Power of Multiple Jacks System: $P_s = P \times N_o / (fd \times \eta_g)$

09.08) Input Torque of Multiple Jacks System: $T_s = T \times N_o / (fd \times \eta_g)$

09.09) Screw Shaft Pitch Diameter: $d_2 = D - 0.5 \times TP$

09.10) Screw Shaft Torque: $T_{hub} = F_{dyn} \times (d_2 / 2) \times \tan(\alpha \pm \varphi)$, $\varphi \approx 6°$

09.11) Lead Angle: $\alpha = \arctan[TP / (d_2 \times \pi)]$

- **Note:** A prerequisite is a vibration-free operation
  * Self-locking at standstill (Static): $2.4^0 < \alpha < 4.5^0$, may require brake motor
  * Self-locking from movement (Dynamic): $\alpha < 2.4^0$, don't require brake motor
  * No self-locking: $\alpha > 4.5^0$, require brake motor

Selection Guide

Calculation Formulas

09.12) Duty cycle based on 1 hour: ED = [S x As x 5 / (3 x v)] x 100%

09.13) Ball Screw Service Life in Hours: $L_h = (C_{dyn} / F_{dyn})^3 \times 10^6 / (n2 \times 60)$, n2 = n1 / i

- **Note:** Trapezoidal Screw Service Life cannot be determined by the formula used to calculate a Ball Screw wear life. Use the information below as a reference.
  50kN(5 ton) and below models average expected life 5000 meters.
  100kN(10 ton) and above average expected life 1000 meters.

v = Lifting speed (mm/min)
n1 = Input speed of worm shaft (rpm)
n2 = Output speed of screw shaft (rpm)
TP = Screw pitch (mm)
i = Gear ratio
SR = Stroke / Revolution (mm)
N_o = Number of jacks
fd = Multiple jacks system coefficient **(Table 2.)**
η_g = Bevel Gearbox efficiency, $\eta_g \approx 94\%$
P = Input power per jack (kW)
P_s = Input power of multiple jacks system (kW)
T_o = Idling torque (Nm)
T = Input torque per jack (Nm)
T_s = Input torque of multiple jacks system (Nm)
T_{st} = Starting torque per jack (Nm)
T_{hub} = Screw Shaft Torque (Nm)
L_h = Ball screw service life in hours (h)
C_{dyn} = Dynamic load capacity of ball screw (kN)
F_{dyn} = Dynamic axial force (= lifting force) (kN)
α = Lead Angle (°)
φ = Dynamic friction angle (°)
d_2 = Pitch diameter (mm)
D = Screw shaft diameter (mm)
W_{hw} = Hand wheel turning force (N)
R_{hw} = Hand wheel radius (m)
π = 3.1416
ED = Duty Cycle (%/hr)
S = Length of Stroke (mm)
As = Number of load cycles (up and down movement).
 * **Example:** 5 times in and out movement of the screw shaft equals 10 double strokes.

Selection Guide

Sample Part Number (Example):

KMA25HBS300TPSLRZB

(1) Models and Gear Ratios

KMA2.5 (Tr14x4) **H**=1:5 **L**=1:20	KMA5 (Tr18x4) **H**=1:5 **L**=1:20	KMA10 (Tr20x4) **H**=1:5 **L**=1:20	KMA25 (Tr30x6) **H**=1:6 **L**=1:24	KMA50 (Tr40x7) **H**=1:7 **L**=1:28	KMA100 (Tr55x9) **H**=1:9 **L**=1:36
KMA150 (Tr60x9) **H**=1:9 **L**=1:36	KMA200 (Tr70x10) **H**=1:10 **L**=1:40	KMA250 (Tr80x10) **H**=1:10 **L**=1:40	KMA350 (Tr100x10) **H**=1:10 **L**=1:40	KMA500 (Tr120x14) **H**=1:14 **L**=1:56	**H**: High 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.

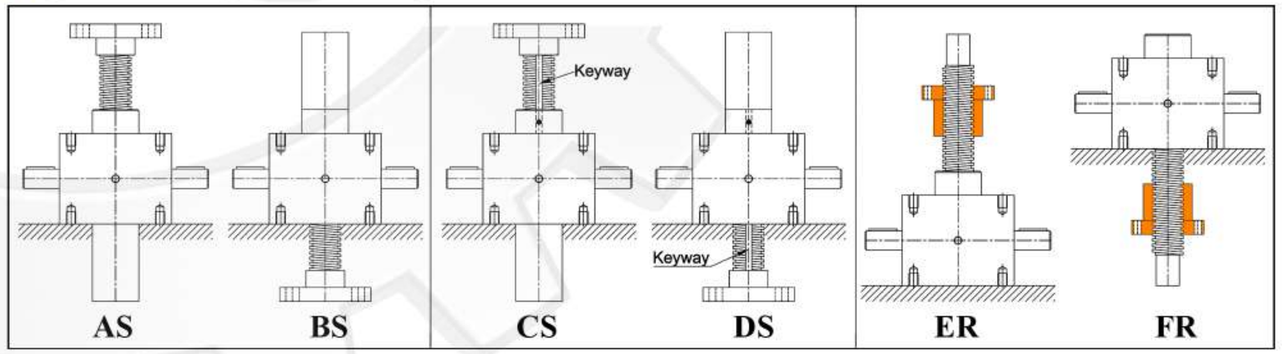
1.2) Model Note 2: The slower the lifting speed, the greater the dynamic load.

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 20:1 and 56:1, 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 2 gear ratios as a standard. Custom others gear ratios.

(2) Basic Designs and Configurations



2.1) "AS" and"BS"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

Sample Part Number

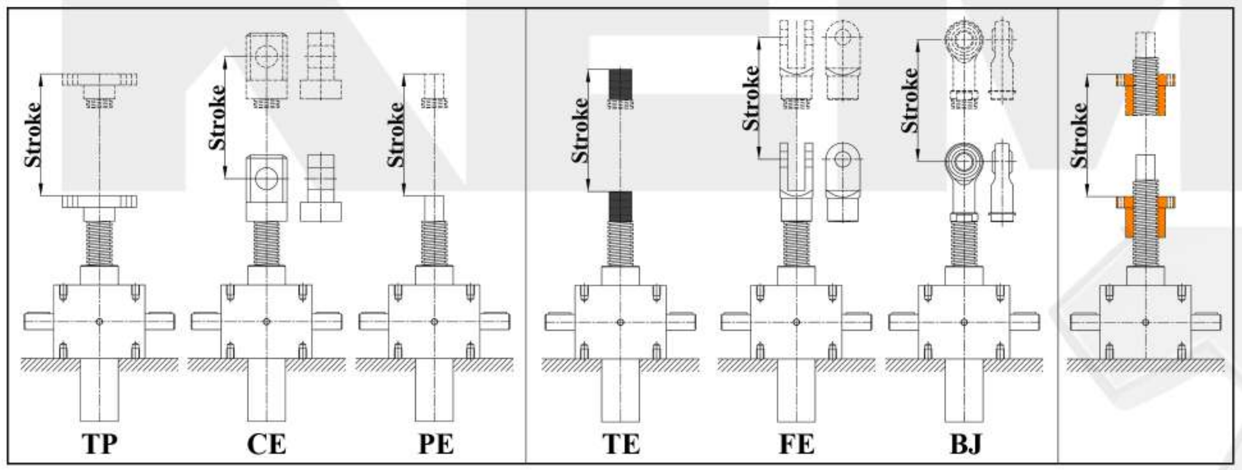
2.2) “CS”and “DS” are **Keyed Screw Jacks**, they are keyed for non-rotation. It is ideal for use in applications where a single jack must extend to meet and move a load to which it is not attached (unguided). Keyed jacks are commonly used in single jack applications where it would not otherwise be possible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

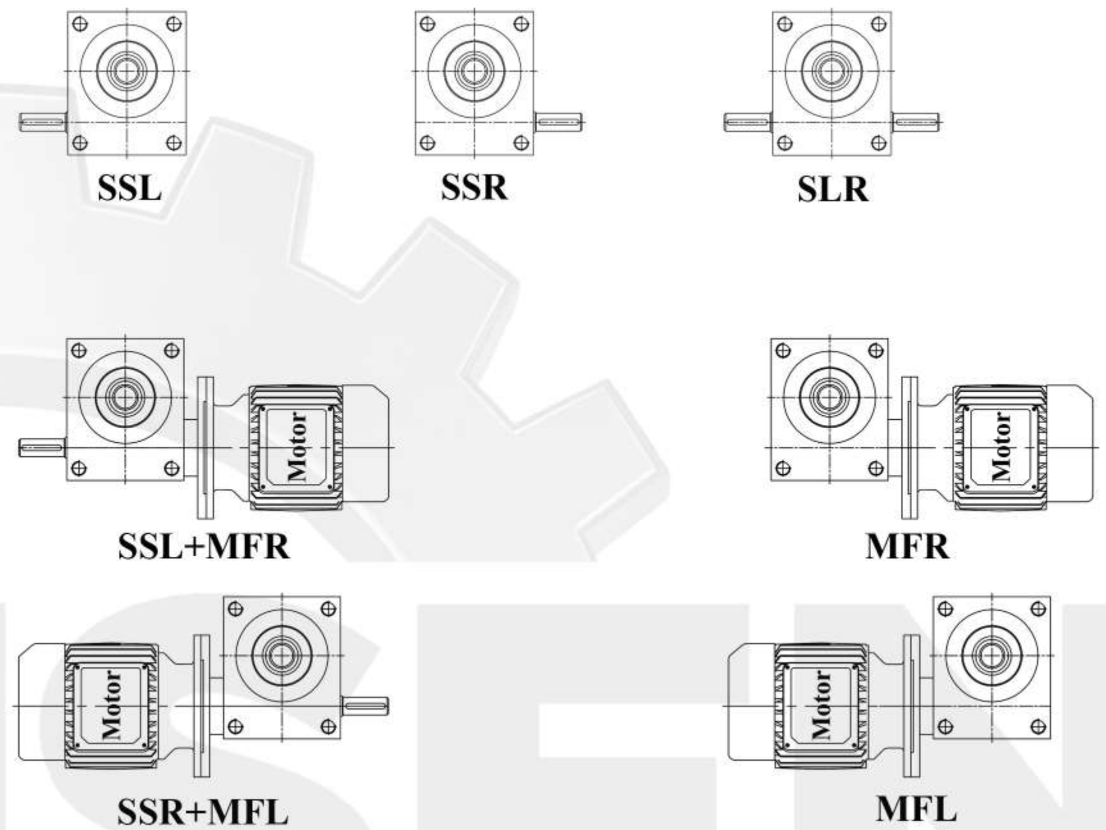
(3) Stroke and Screw End Fittings



- 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.

Selection Guide

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



4.1) SSL: Single Input, Left Side Shaft.

4.2) SSR: Single Input, Right Side Shaft.

4.3) SLR: Double Input Shafts

4.4) SSL+MFR: Left Side Shaft, Right Side Motor Flange Adapter (Motor Mounts).

4.5) MFR: Right Side Motor Flange Adapter (Motor Mounts).

4.6) SSR+MFL: Right Side Shaft, Left Side Motor Flange Adapter (Motor Mounts).

4.7) MFL: 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

Sample Part Number

(5) Accessories

C
Flex Coupling

U
Universal Joint

T
Telescopic Universal Joint

L
Connecting Shaft

BJ
Rod End

FE
Fork End

PB
Pillow Blocks

FB
Flange Blocks

Z
Protective Tube

B
Bellows Boots

SN
Stop Nut

MF
Motor Flange

SP
Trunnion Mount Plate

SF
Safety Nut

DZ
Double Clevis Protective Tube

FZ
Square Protective Tube

M
Electric Motor

R
Geared Motor

K
Bevel Geared Motor

RV
Worm Gearbox

DC
DC Motor

SM1
Stepper Motor

SM2
Servo Motor

CH
Hand Wheel

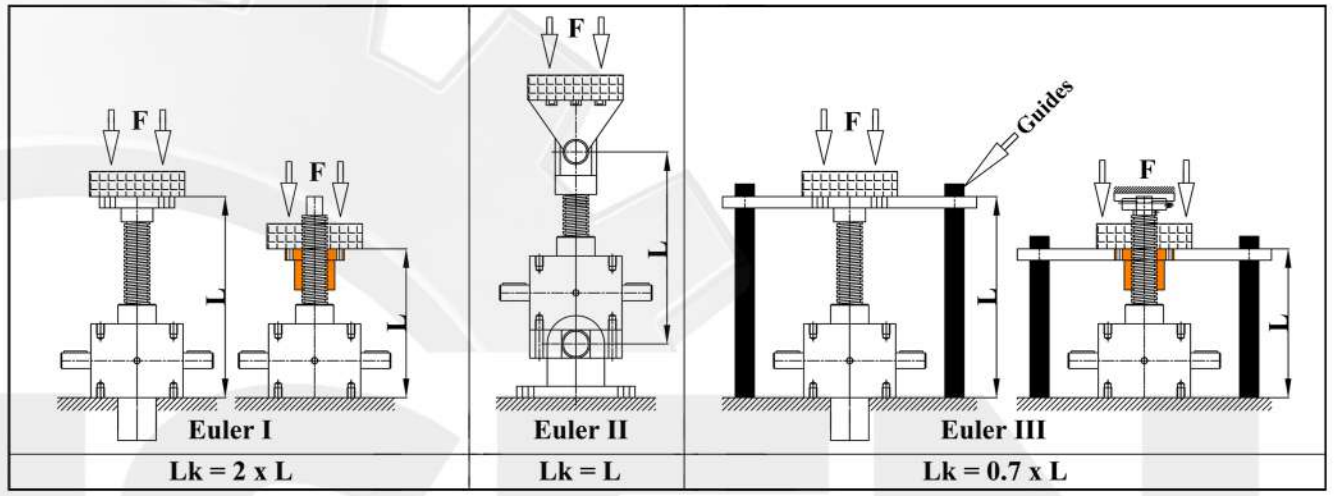
EN
Rotary Encoder

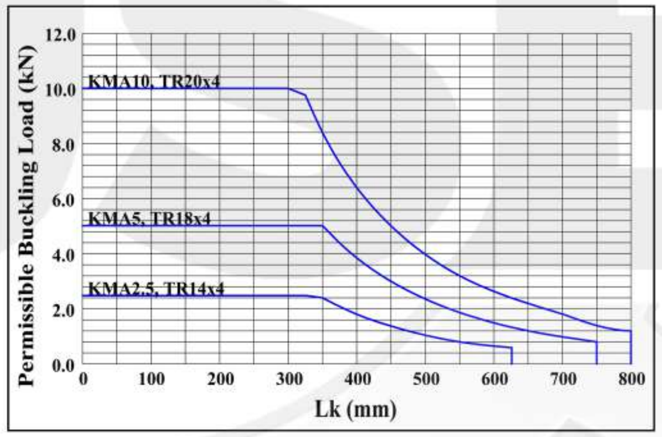
P
Proximity Switch

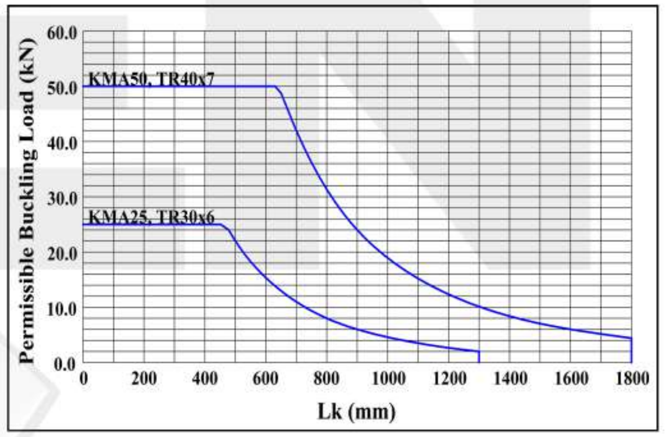
Permissible Buckling Load

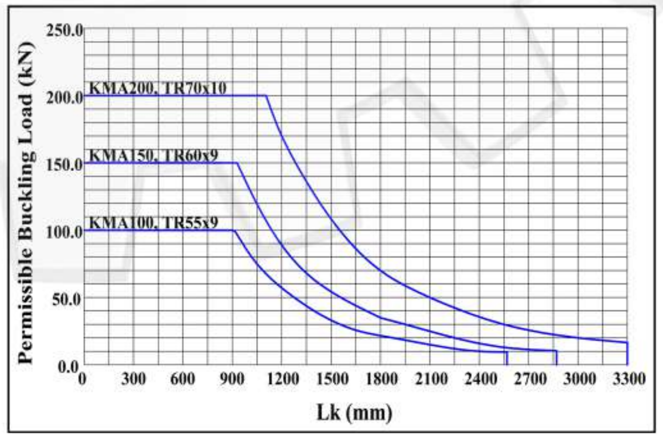
If the lifting screw is loaded in tension,the buckling can be avoided,and hence be highly economical. In case of compression load, even occasional, it is necessary to check the buckling structure. Because the thin lifting screws may buckle sideways when subjected to compressive loads.

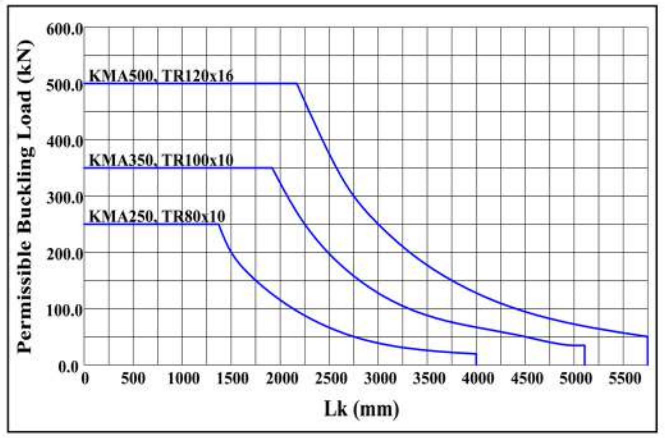
The permissible buckling load for trapezoidal-screw and ball-screw can be verified using the following bend diagrams. Verify that it does not exceed the permissible buckling load. If it does, increase jack size and recalculate.











Specifications

- **Remarks:**
  1) H: high 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		KMA2.5	KMA5	KMA10	KMA25	KMA50	KMA100	KMA150	KMA200	KMA250	KMA350	KMA500
Load Capacity (kN), (push - pull)		2,5	5	10	25	50	100	150	200	250	350	500
Lift screw sizes (mm)		Tr14 x 4	Tr18 x 4	Tr20 x 4	Tr30 x 6	Tr40 x 7	Tr55 x 9	Tr60 x 9	Tr70 x 10	Tr80 x 10	Tr100 x 10	Tr120 x 14
Max. permissible power (kw)		0.18	0.3	0.5	1.1	2.2	3	5	7	9	11	20
Gear ratio	H	5:1	5:1	5:1	6:1	7:1	9:1	9:1	10:1	10:1	10:1	14:1
	L	20:1	20:1	20:1	24:1	28:1	36:1	36:1	40:1	40:1	40:1	56:1
Lift screw travel (mm), per turn of input shaft	H	0.8	0.8	0.8	1	1	1	1	1	1	1	1
	L	0.2	0.2	0.2	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total Efficiency %	H	30	24	25	19	18	17	18	17	18	15	15
	L	16	16	15	15	15	14	14	14	14	12	11
Lift screw torque (Nm) at max lifting force		3.2	7.5	16	60	153	325	437	955	1390	2312	4100
Max. permissible torque (Nm) at worm shaft		1.5	3.4	7.1	18	38	85	100	165	240	340	570
Idling torque (Nm)	H	0.06	0.11	0.29	0.40	0.84	1.85	1.90	2.64	2.84	3.24	3.96
	L	0.04	0.09	0.18	0.29	0.59	1.12	1.20	1.94	2.10	2.20	2.84
Gear housing material		Aluminum Alloy(Anodized)			Ductile Iron							
Lubricant (kg)		0.03	0.08	0.14	0.24	0.8	0.9	1.5	1.9	2.0	2.7	3.2
Weight without stroke (kg)		0.6	1.2	2.1	3.5(Alu.) 8.5(Iron)	21	36	41	57	57	85	160
Weight of screw (kg), per 100 mm stroke		0.15	0.35	0.5	0.7	1.2	2	2.5	3.5	4.2	6.6	10.3

Performance Tables

- **Note:** The dark gray figures in the tables indicates operational restrictions due to thermal limits. Static only (dynamic not permitted).Selection of screw jacks using these figures should only be carried out in consultation with our engineers. When your selection is made within the areas dark gray, you will need to reduce duty cycle or choose larger model screw jacks in order to allow effective heat dissipation.
- **Conditions:** Duty cycle 20%/h or 30%/10min, 20 °C ambient temperature.
- **Gear Ratios: H:** high ratio, **L:** slow ratio.
- **Nm:** Input torque required, **kW:** Input power required.

KMA2.5 (Tr14x4)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=2.5 kN		F=2 kN		F=1.5 kN		F=1 kN		F=0.75 kN		F=0.5 kN		F=0.25 kN	
			H 1.2Nm	L 0.4Nm	H 0.9Nm	L 0.3Nm	H 0.7Nm	L 0.2Nm	H 0.5Nm	L 0.2Nm	H 0.4Nm	L 0.1Nm	H 0.2Nm	L 0.1Nm	H 0.1Nm	L 0.0Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1200	300	0.18	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
1000	800	200	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
750	600	150	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
600	480	120	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
500	400	100	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
300	240	60	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
100	80	20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
50	40	10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

KMA5 (Tr18x4)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=5 kN		F=4 kN		F=3 kN		F=2.5 kN		F=2 kN		F=1.5 kN		F=1 kN	
			H 2.7Nm	L 0.9Nm	H 2.1Nm	L 0.7Nm	H 1.6Nm	L 0.5Nm	H 1.3Nm	L 0.4Nm	H 1.1Nm	L 0.3Nm	H 0.8Nm	L 0.3Nm	H 0.5Nm	L 0.2Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1200	300	0.41	0.10	0.33	0.10	0.25	0.10	0.21	0.10	0.17	0.10	0.10	0.10	0.10	0.10
1000	800	200	0.27	0.10	0.22	0.10	0.17	0.10	0.14	0.10	0.10	0.10	0.10	0.10	0.10	0.10
750	600	150	0.20	0.10	0.16	0.10	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
600	480	120	0.17	0.10	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
500	400	100	0.14	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
300	240	60	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
100	80	20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
50	40	10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Performance Tables

KMA10 (Tr20x4)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=10 kN		F=8 kN		F=6 kN		F=4 kN		F=3 kN		F=2 kN		F=1 kN	
			H 5.7Nm	L 1.9Nm	H 4.5Nm	L 1.5Nm	H 3.4Nm	L 1.1Nm	H 2.3Nm	L 0.8Nm	H 1.7Nm	L 0.6Nm	H 1.1Nm	L 0.4Nm	H 0.6Nm	L 0.2Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1200	300	0.89	0.30	0.71	0.24	0.54	0.18	0.36	0.10	0.27	0.10	0.20	0.10	0.10	0.10
1000	800	200	0.60	0.20	0.48	0.16	0.36	0.12	0.24	0.10	0.18	0.10	0.10	0.10	0.10	0.10
750	600	150	0.45	0.15	0.36	0.12	0.27	0.10	0.18	0.10	0.13	0.10	0.10	0.10	0.10	0.10
600	480	120	0.36	0.12	0.29	0.10	0.21	0.10	0.14	0.10	0.10	0.10	0.10	0.10	0.10	0.10
500	400	100	0.30	0.10	0.24	0.10	0.18	0.10	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10
300	240	60	0.18	0.10	0.14	0.10	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
100	80	20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
50	40	10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

KMA25 (Tr30x6)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=25 kN		F=20 kN		F=15 kN		F=10 kN		F=5 kN		F=2.5 kN		F=1 kN	
			H 14.7Nm	L 5.2Nm	H 11.8Nm	L 4.2Nm	H 8.8Nm	L 3.1Nm	H 5.9Nm	L 2.1Nm	H 2.9Nm	L 1.0Nm	H 1.5Nm	L 0.5Nm	H 0.6Nm	L 0.2Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	2.31	0.82	1.85	0.66	1.39	0.49	0.93	0.33	0.46	0.20	0.20	0.10	0.10	0.10
1000	1000	250	1.54	0.55	1.23	0.44	0.93	0.33	0.62	0.22	0.31	0.10	0.20	0.10	0.10	0.10
750	750	187.5	1.16	0.41	0.93	0.33	0.69	0.25	0.46	0.16	0.23	0.10	0.10	0.10	0.10	0.10
600	600	150	0.93	0.33	0.74	0.26	0.56	0.20	0.37	0.13	0.19	0.10	0.10	0.10	0.10	0.10
500	500	125	0.77	0.27	0.62	0.22	0.46	0.16	0.31	0.11	0.15	0.10	0.10	0.10	0.10	0.10
300	300	75	0.46	0.16	0.37	0.13	0.28	0.10	0.19	0.10	0.10	0.10	0.10	0.10	0.10	0.10
100	100	25	0.15	0.10	0.12	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
50	50	12.5	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Performance Tables

KMA50 (Tr40x7)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=50 kN		F=40 kN		F=30 kN		F=20 kN		F=10 kN		F=5 kN		F=2.5 kN	
			H 31.8Nm	L 11.1Nm	H 25.5Nm	L 8.8Nm	H 19.1Nm	L 6.6Nm	H 12.7Nm	L 4.4Nm	H 6.4Nm	L 2.2Nm	H 3.2Nm	L 1.1Nm	H 1.6Nm	L 0.6Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	5.00	1.70	4.00	1.40	3.00	1.00	2.00	0.70	1.00	0.30	0.50	0.20	0.30	0.10
1000	1000	250	3.30	1.20	2.70	0.90	2.00	0.70	1.30	0.50	0.70	0.20	0.30	0.20	0.20	0.10
750	750	187.5	2.50	0.90	2.00	0.70	1.50	0.50	1.00	0.35	0.50	0.20	0.30	0.20	0.10	0.10
600	600	150	2.00	0.70	1.60	0.60	1.20	0.40	0.80	0.30	0.40	0.10	0.20	0.20	0.10	0.10
500	500	125	1.70	0.60	1.30	0.50	1.00	0.30	0.70	0.20	0.30	0.10	0.20	0.20	0.10	0.10
300	300	75	1.00	0.30	0.80	0.30	0.60	0.20	0.40	0.10	0.20	0.10	0.10	0.20	0.10	0.10
100	100	25	0.30	0.10	0.30	0.10	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10
50	50	12.5	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.10

KMA100 (Tr55x9)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=100 kN		F=80 kN		F=60 kN		F=50 kN		F=40 kN		F=20 kN		F=10 kN	
			H 67.2Nm	L 21.5Nm	H 53.9Nm	L 17.3Nm	H 40.6Nm	L 13.1Nm	H 34.5Nm	L 11.5Nm	H 27.4Nm	L 8.9Nm	H 14.1Nm	L 4.7Nm	H 7.5Nm	L 2.6Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	10.55	3.37	8.47	2.71	6.38	2.05	5.35	1.82	4.30	1.40	2.22	0.74	1.17	0.41
1000	1000	250	7.03	2.25	5.65	1.81	4.26	1.37	3.65	1.22	2.87	0.93	1.48	0.49	0.78	0.27
750	750	187.5	5.28	1.69	4.23	1.36	3.19	1.03	2.74	0.91	2.15	0.70	1.11	0.37	0.59	0.20
500	500	125	3.52	1.12	2.82	0.90	2.13	0.68	1.82	0.61	1.43	0.47	0.74	0.25	0.39	0.14
300	300	75	2.50	0.55	1.60	0.55	1.23	0.39	1.09	0.36	0.82	0.30	0.45	0.15	0.15	0.10
100	100	25	0.65	0.18	0.55	0.20	0.45	0.16	0.36	0.12	0.30	0.10	0.15	0.10	0.10	0.10
50	50	12.5	0.30	0.10	0.30	0.10	0.25	0.10	0.18	0.10	0.15	0.10	0.10	0.10	0.10	0.10

Performance Tables

KMA150 (Tr60x9)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=150 kN		F=100 kN		F=80 kN		F=60 kN		F=40 kN		F=20 kN		F=10 kN	
			H 125Nm	L 42.6Nm	H 83.8Nm	L 28.4Nm	H 67Nm	L 22.7Nm	H 50.3Nm	L 17.1Nm	H 33.5Nm	L 11.4Nm	H 16.8Nm	L 5.7Nm	H 8.4Nm	L 2.8Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	19.70	6.70	13.20	4.50	10.50	3.60	7.90	2.70	5.30	1.80	2.60	0.90	1.30	0.40
1000	1000	250	13.20	4.50	8.80	3.00	7.00	2.40	5.30	1.80	3.50	1.20	1.80	0.60	0.90	0.30
750	750	187.5	9.90	3.30	6.60	2.20	5.30	1.80	3.90	1.30	2.60	0.90	1.30	0.40	0.70	0.20
600	600	150	7.90	2.70	5.30	1.80	4.20	1.40	3.20	1.10	2.10	0.70	1.10	0.40	0.50	0.20
500	500	125	6.60	2.20	4.40	1.50	3.50	1.20	2.60	0.90	1.80	0.60	0.90	0.30	0.40	0.10
300	300	75	3.90	1.30	2.60	0.90	2.10	0.70	1.60	0.50	1.10	0.40	0.50	0.20	0.30	0.10
100	100	25	1.30	0.40	0.90	0.30	0.70	0.20	0.50	0.20	0.40	0.10	0.20	0.10	0.10	0.10
50	50	12.5	0.70	0.20	0.40	0.10	0.40	0.10	0.30	0.10	0.20	0.10	0.10	0.10	0.10	0.10

KMA200 (Tr70x10)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=200 kN		F=150 kN		F=100 kN		F=75 kN		F=50 kN	
			H 133Nm	L 46.5Nm	H 105Nm	L 35Nm	H 67.6Nm	L 23.5Nm	H 51Nm	L 18Nm	H 34.5Nm	L 12.3Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	22.50	7.50	17.25	5.66	11.56	3.73	7.90	2.83	5.41	1.94
1000	1000	250	15.00	5.00	11.50	3.77	7.08	2.48	5.34	1.89	3.61	1.29
750	750	187.5	11.00	3.75	8.62	2.83	5.31	1.86	4.01	1.42	2.71	0.97
500	500	125	7.50	2.50	5.60	1.89	3.54	1.24	2.67	0.94	1.80	0.65
300	300	75	4.50	1.50	3.50	1.10	2.12	0.75	1.60	0.57	1.08	0.39
100	100	25	1.50	0.50	1.20	0.37	1.42	0.50	1.06	0.38	0.72	0.26
50	50	12.5	0.75	0.25	0.60	0.20	0.70	0.25	0.53	0.19	0.36	0.13

Performance Tables

KMA250 (Tr80x10)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=250 kN		F=200 kN		F=150 kN		F=100 kN		F=80 kN		F=60 kN		F=40 kN	
			H 209Nm	L 71.1Nm	H 167Nm	L 56.8Nm	H 125Nm	L 42.6Nm	H 83.8Nm	L 28.4Nm	H 67Nm	L 22.7Nm	H 50.3Nm	L 17.1Nm	H 33.5Nm	L 11.4Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	32.90	11.20	26.30	8.90	19.70	6.70	13.20	4.50	10.50	3.60	7.90	2.70	5.30	1.80
1000	1000	250	21.90	7.40	17.50	6.00	13.20	4.50	8.80	3.00	7.00	2.40	5.30	1.80	3.50	1.20
750	750	187.5	16.40	5.60	13.20	4.50	9.90	3.30	6.60	2.20	5.30	1.80	3.90	1.30	2.60	0.90
600	600	150	13.20	4.50	10.50	3.60	7.90	2.70	5.30	1.80	4.20	1.40	3.20	1.10	2.10	0.70
500	500	125	11.00	3.70	8.80	3.00	6.60	2.20	4.40	1.50	3.50	1.20	2.60	0.90	1.80	0.60
300	300	75	6.60	2.20	5.30	1.80	3.90	1.30	2.60	0.90	2.10	0.70	1.60	0.50	1.10	0.40
100	100	25	2.20	0.70	1.80	0.60	1.30	0.40	0.90	0.30	0.70	0.20	0.50	0.20	0.40	0.10
50	50	12.5	1.10	0.40	0.90	0.30	0.70	0.20	0.40	0.10	0.40	0.10	0.30	0.10	0.20	0.10

KMA350 (Tr100x10)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=350 kN		F=300 kN		F=250 kN		F=200 kN		F=150 kN		F=100 kN		F=50 kN	
			H 371Nm	L 126Nm	H 318Nm	L 108Nm	H 265Nm	L 90.4Nm	H 212Nm	L 72.3Nm	H 159Nm	L 54.3Nm	H 106Nm	L 36.2Nm	H 53.1Nm	L 18.1Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1500	1500	375	58.30	19.90	50.00	17.00	41.70	14.20	33.30	11.40	25.00	8.50	16.70	5.70	8.30	2.80
1000	1000	250	38.90	13.30	33.30	11.10	27.80	9.50	22.20	7.60	16.70	5.70	11.10	3.80	5.60	1.90
750	750	187.5	29.20	9.90	25.00	8.50	20.80	7.10	16.70	5.70	12.50	4.30	8.30	2.80	4.20	1.40
600	600	150	23.30	8.00	20.00	6.80	16.70	5.70	13.30	4.50	10.00	3.40	6.70	2.30	3.30	1.10
500	500	125	19.40	6.60	16.70	5.70	13.90	4.70	11.10	3.80	8.30	2.80	5.60	1.90	2.80	0.90
300	300	75	11.70	4.00	10.00	3.40	8.30	2.80	6.70	2.30	5.00	1.70	3.30	1.10	1.70	0.60
100	100	25	3.90	1.30	3.30	1.10	2.80	0.90	2.20	0.80	1.70	0.60	1.10	0.40	0.60	0.20
50	50	12.5	1.90	0.70	1.70	0.60	1.40	0.50	1.10	0.40	0.80	0.30	0.60	0.20	0.30	0.10

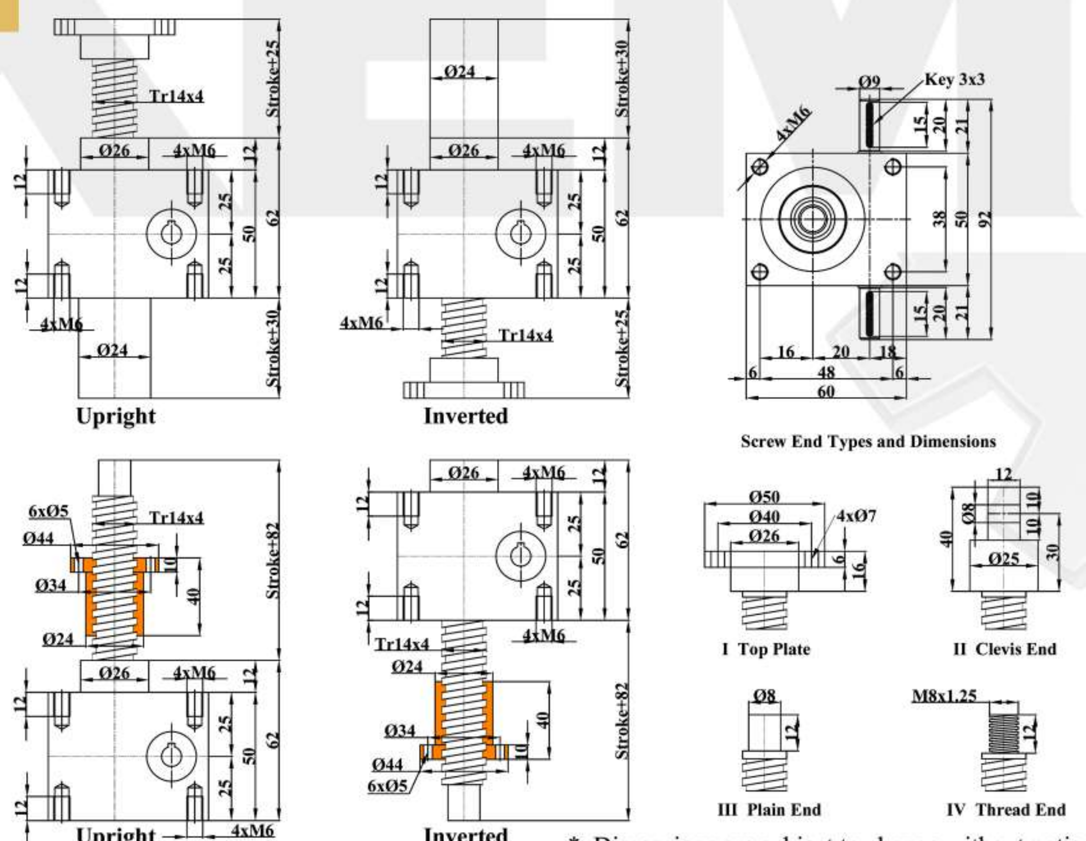
Performance Tables

KMA500 (Tr120x14)

Input Speed (RPM)	Lifting Speed (MM/MIN)		F=500 kN		F=400 kN		F=300 kN		F=200 kN		F=150 kN		F=100 kN		F=50 kN	
			H 531Nm	L 181Nm	H 424Nm	L 145Nm	H 318Nm	L 108Nm	H 212Nm	L 72Nm	H 159Nm	L 54Nm	H 106Nm	L 36Nm	H 53Nm	L 18Nm
	H	L	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1000	1000	250	55.60	18.90	44.40	15.20	33.30	11.40	22.20	7.60	16.70	5.70	11.10	3.80	5.60	1.90
750	750	187.5	41.70	14.20	33.30	11.40	25.00	8.50	16.70	5.70	12.50	4.30	8.30	2.80	4.20	1.40
600	600	150	33.30	11.40	26.70	9.10	20.00	6.80	13.30	4.50	10.00	3.40	6.70	2.30	3.30	1.10
500	500	125	27.30	9.50	22.20	7.60	16.70	5.70	11.10	3.80	8.30	2.80	5.60	1.90	2.80	0.90
300	300	75	16.70	5.70	13.30	4.50	10.00	3.40	6.70	2.30	5.00	1.70	3.30	1.10	1.70	0.60
100	100	25	5.60	1.90	4.40	1.50	3.30	1.10	2.20	0.80	1.70	0.60	1.10	0.40	0.60	0.20
50	50	12.5	2.80	0.90	2.20	0.80	1.70	0.60	1.10	0.40	0.80	0.30	0.60	0.20	0.30	0.10

Overall Dimensions

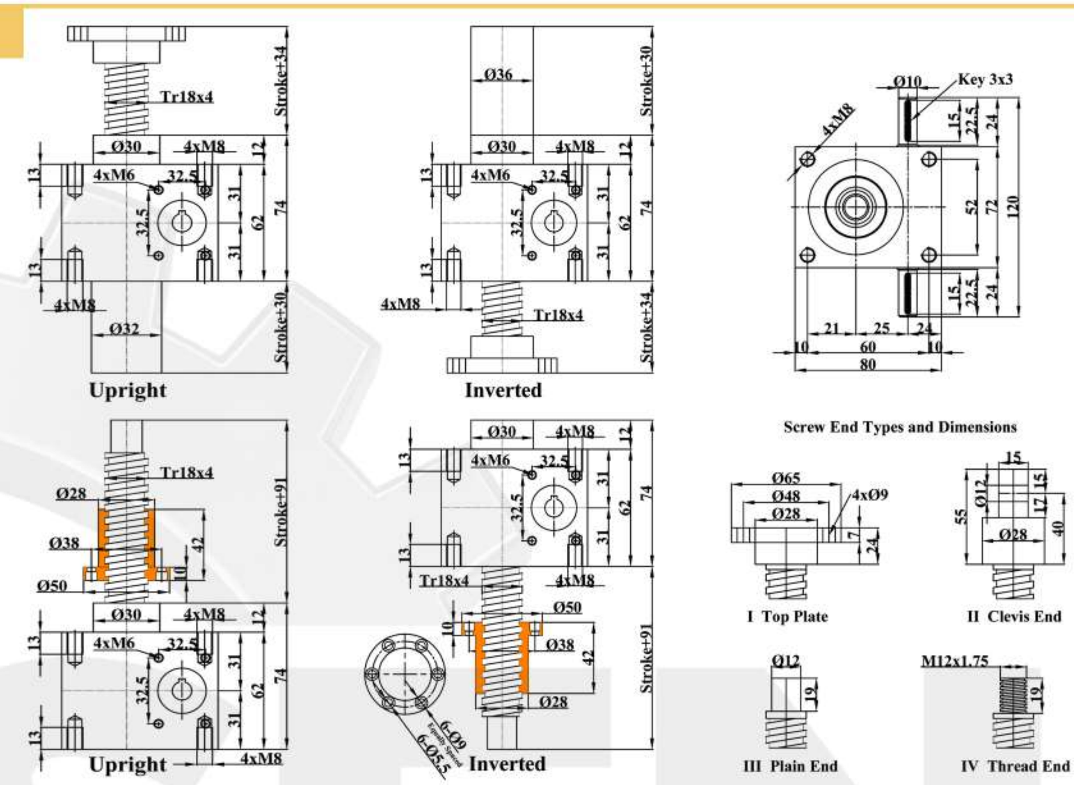
KMA2.5



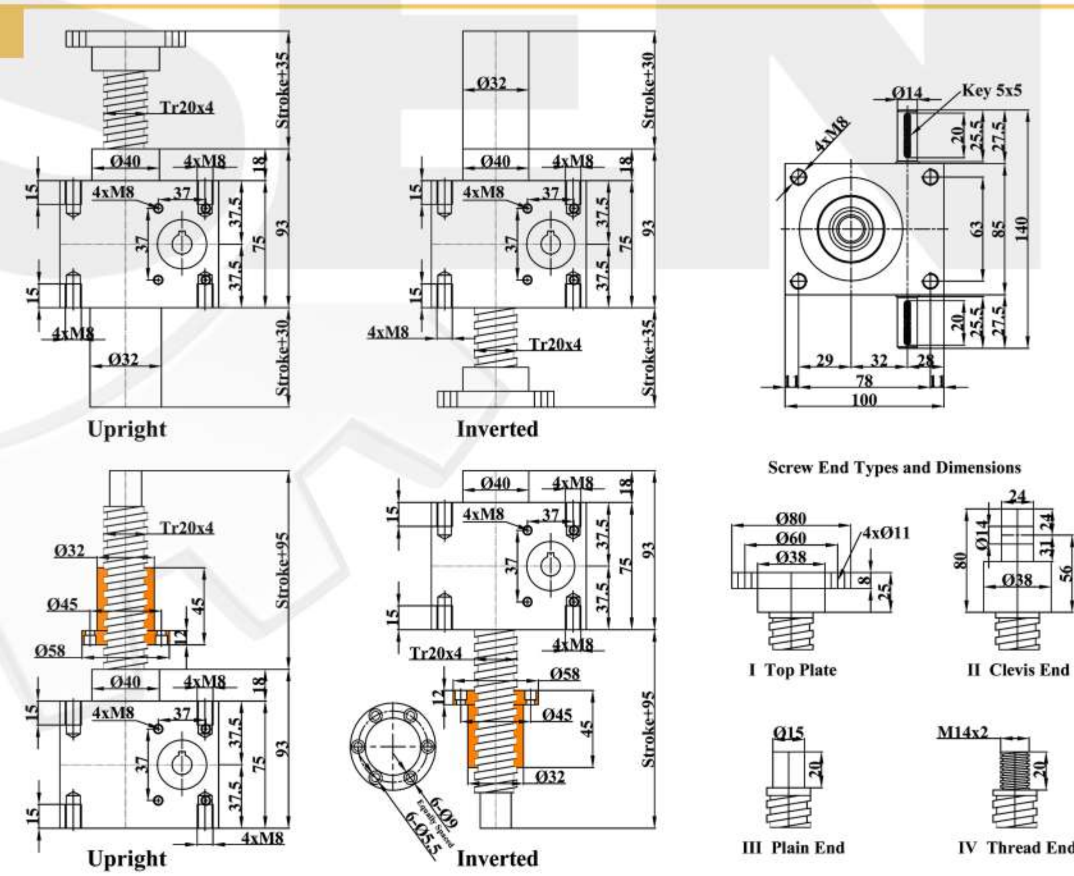
*. Dimensions are subject to change without notice

Overall Dimensions

KMA5



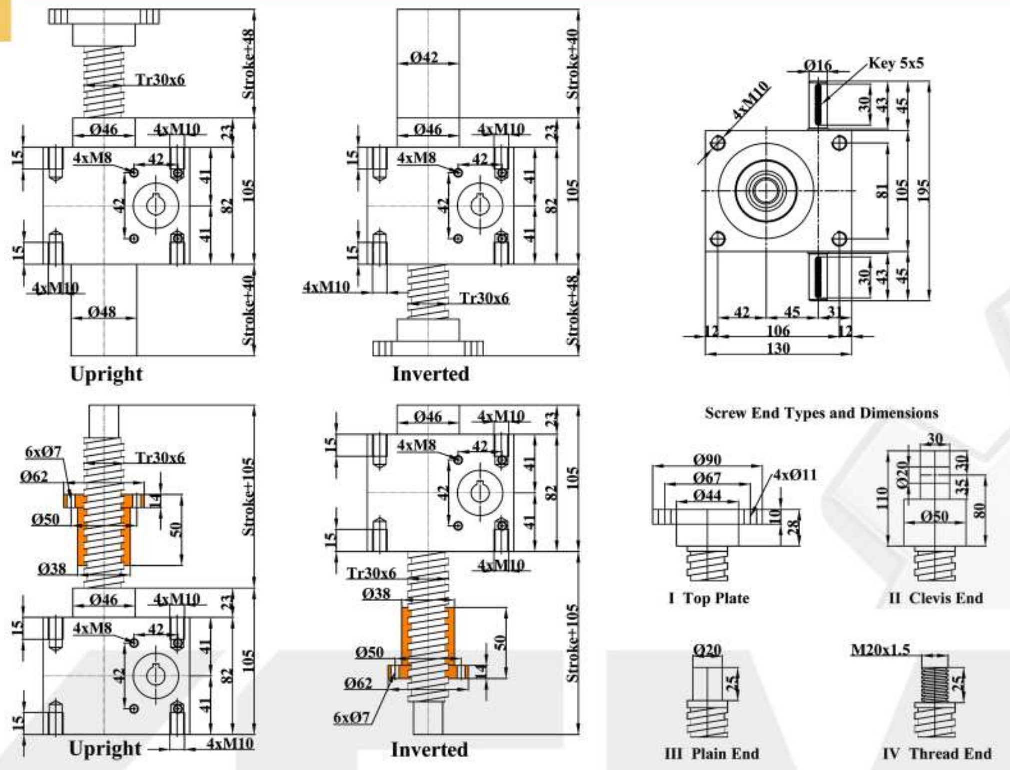
KMA10



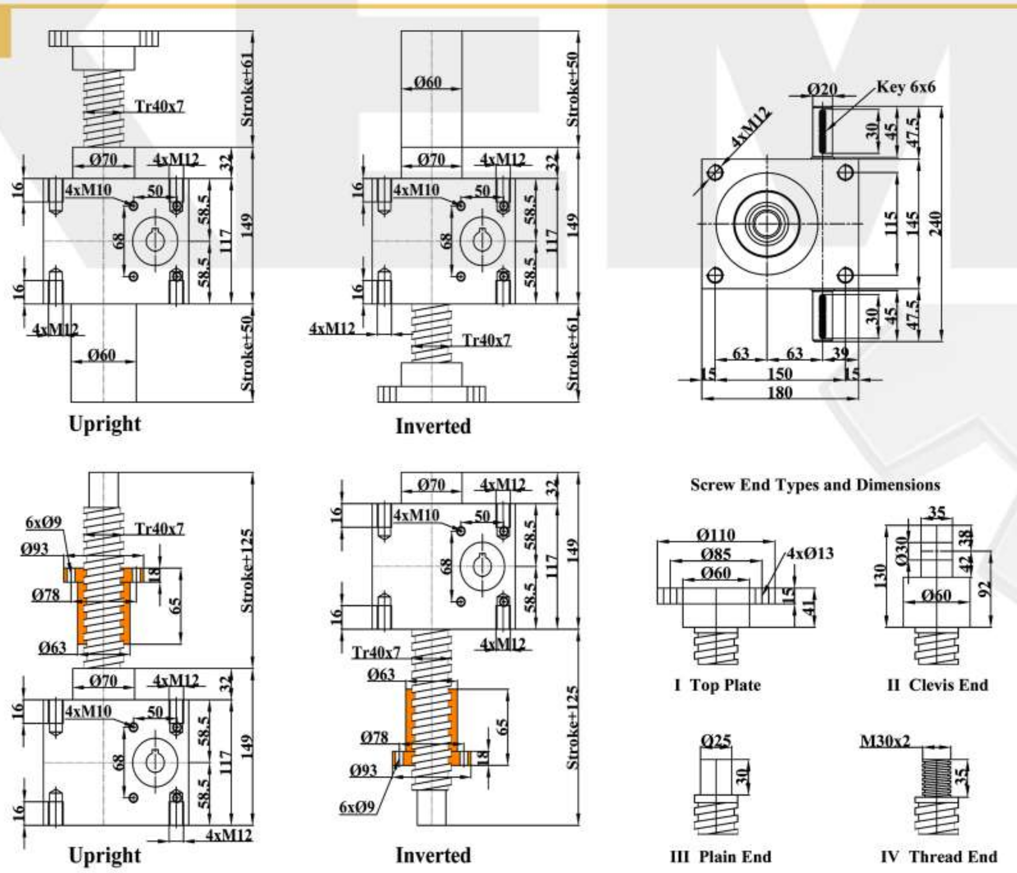
*. Dimensions are subject to change without notice

Overall Dimensions

KMA25



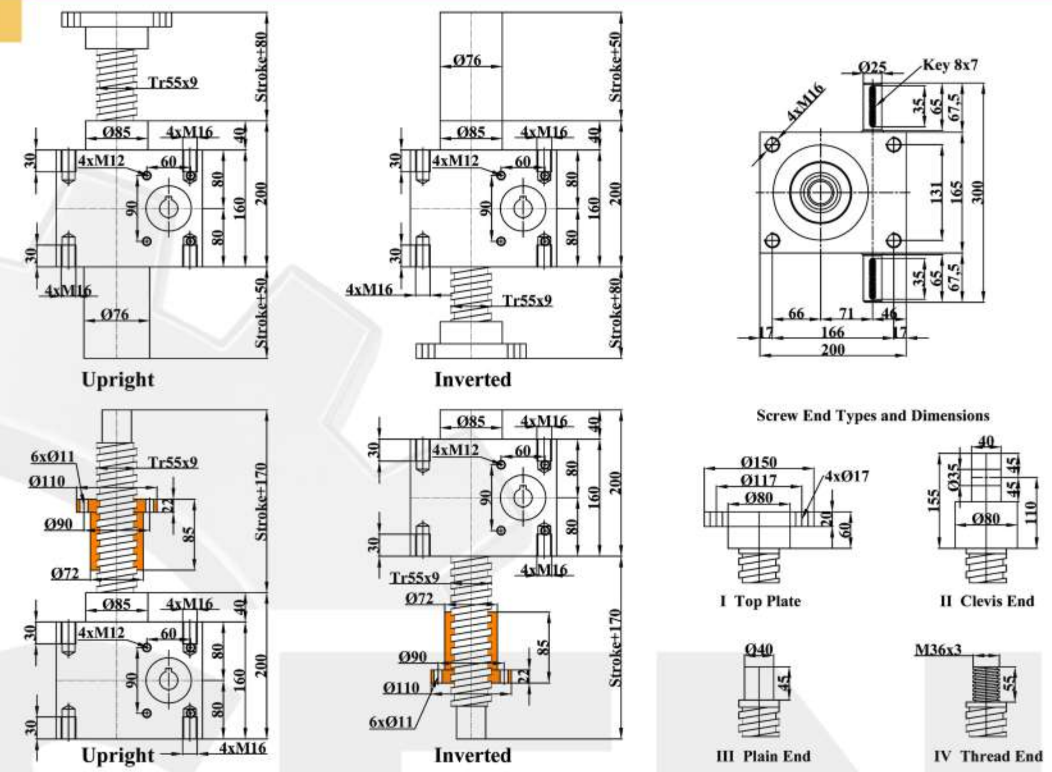
KMA50



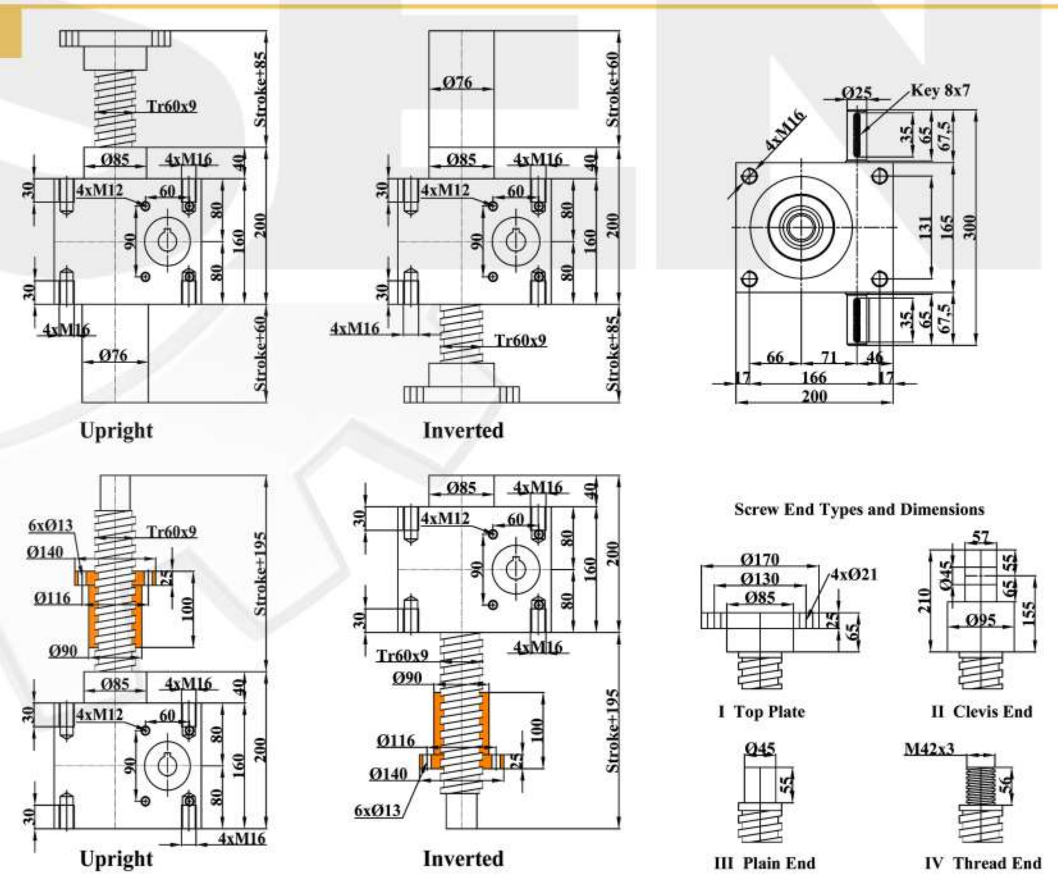
*. Dimensions are subject to change without notice

Overall Dimensions

KMA100



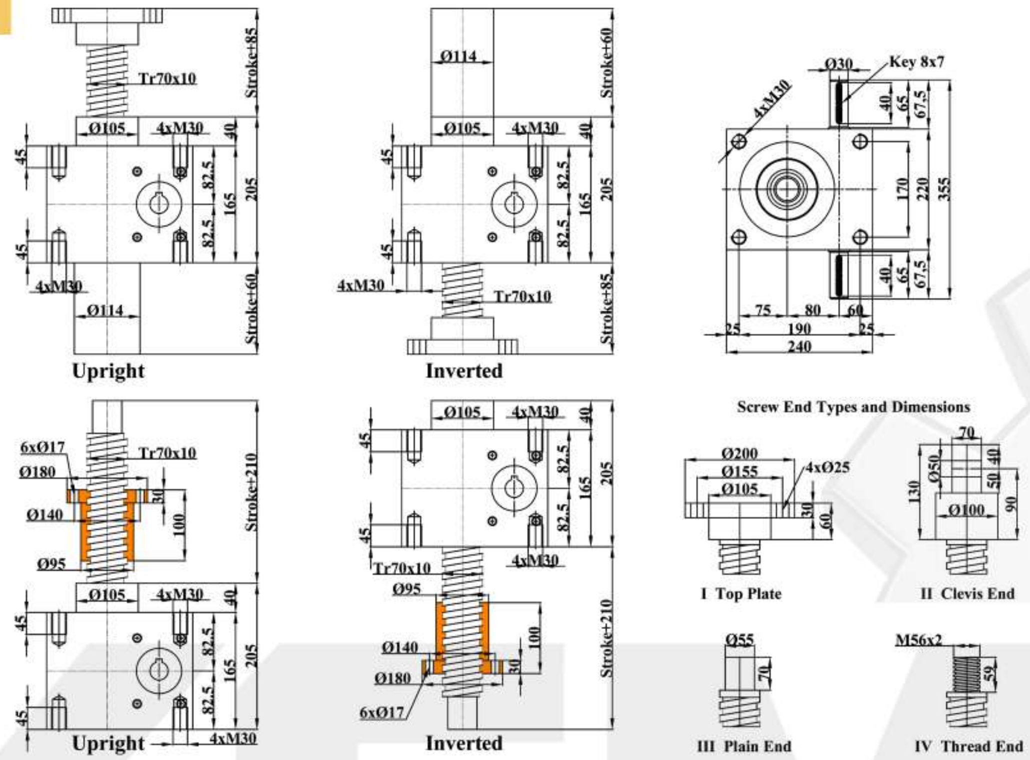
KMA150



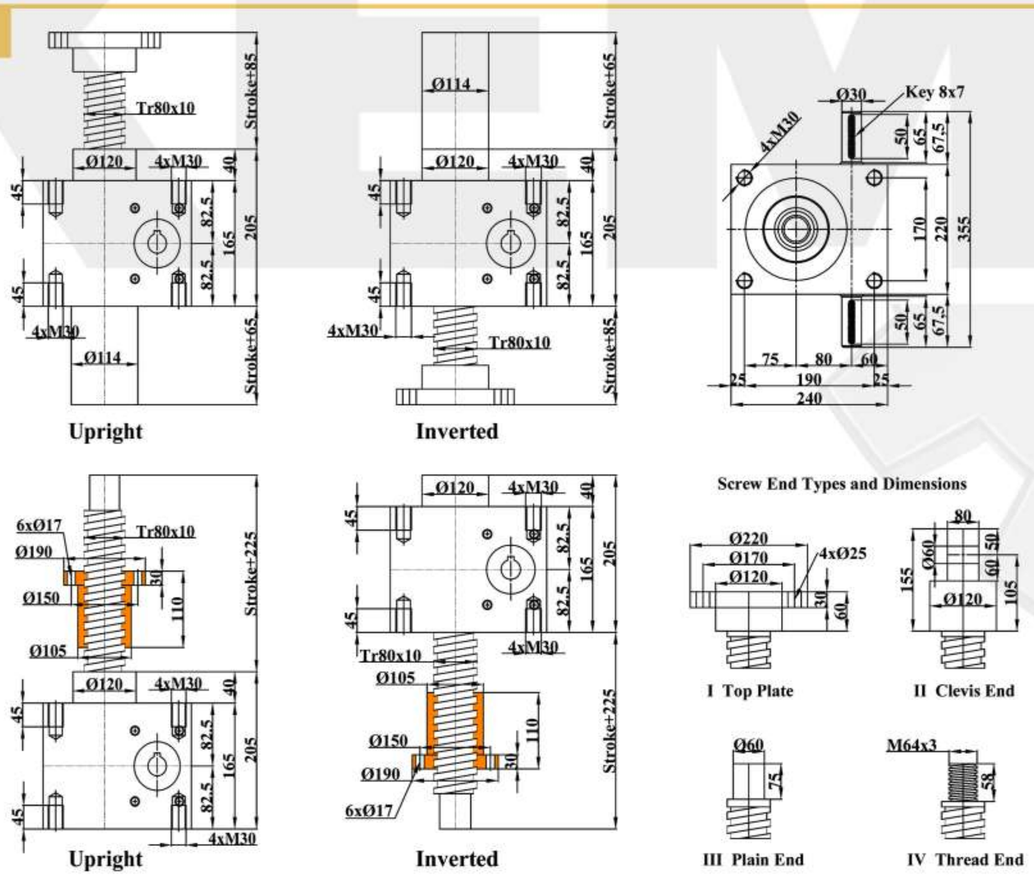
*. Dimensions are subject to change without notice

Overall Dimensions

KMA200



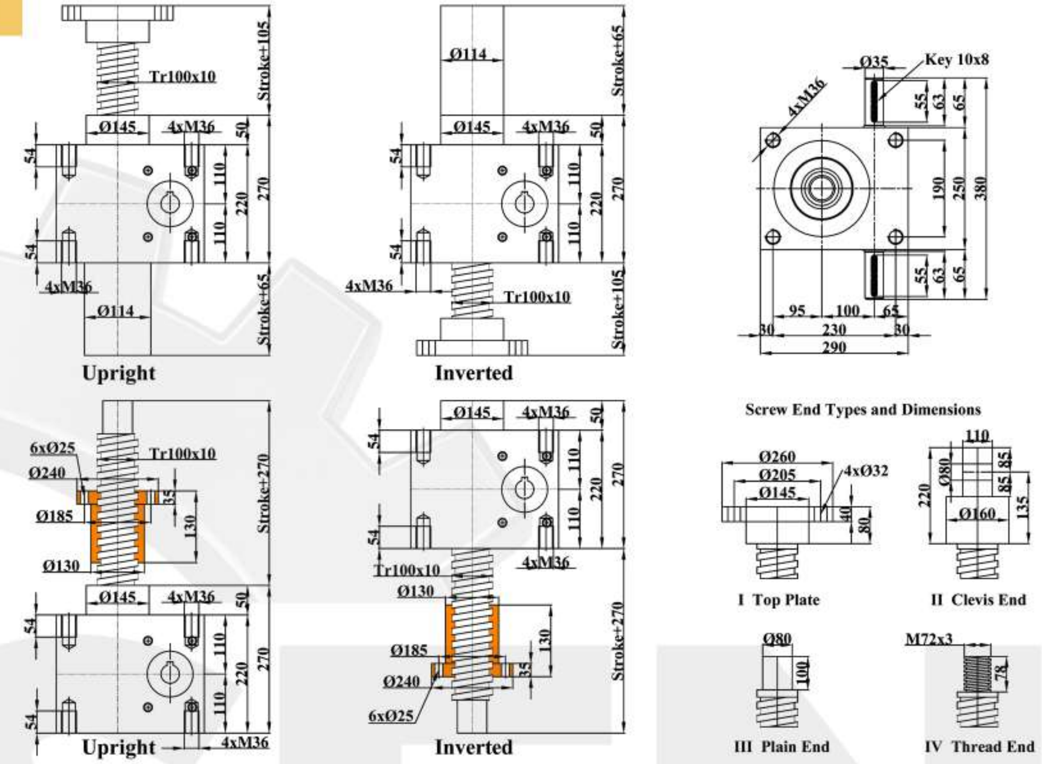
KMA250



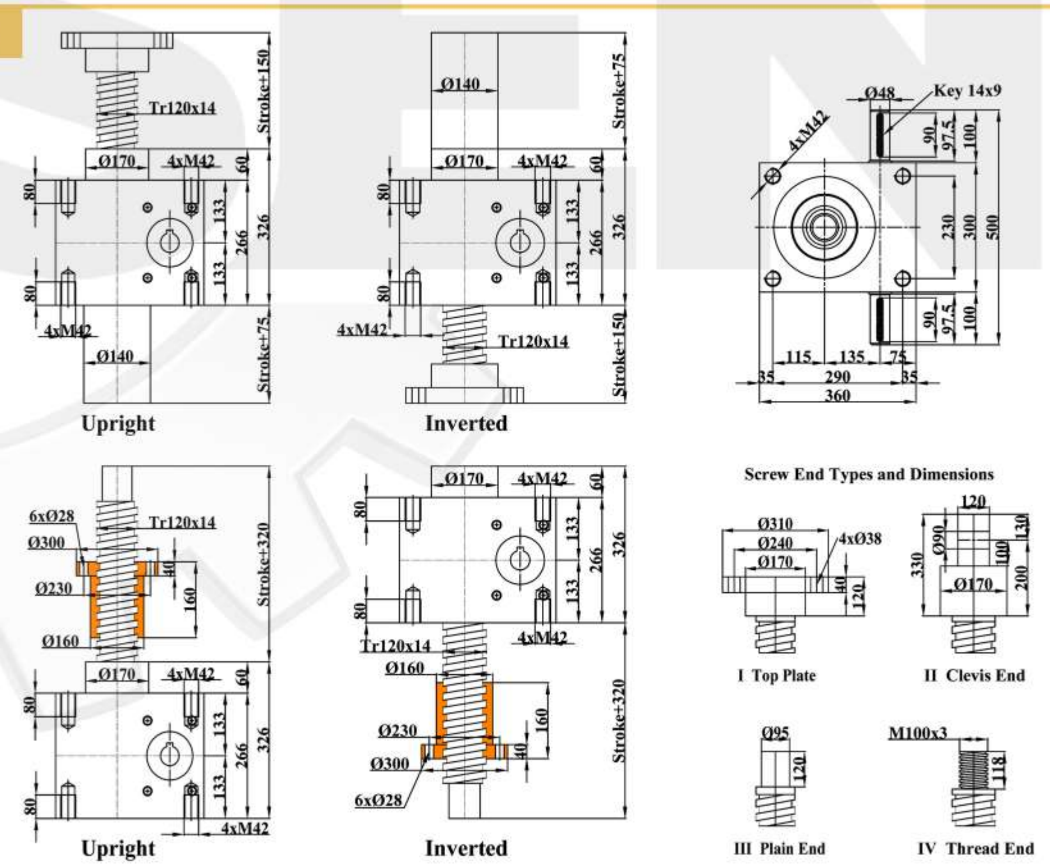
*. Dimensions are subject to change without notice

Overall Dimensions

KMA350



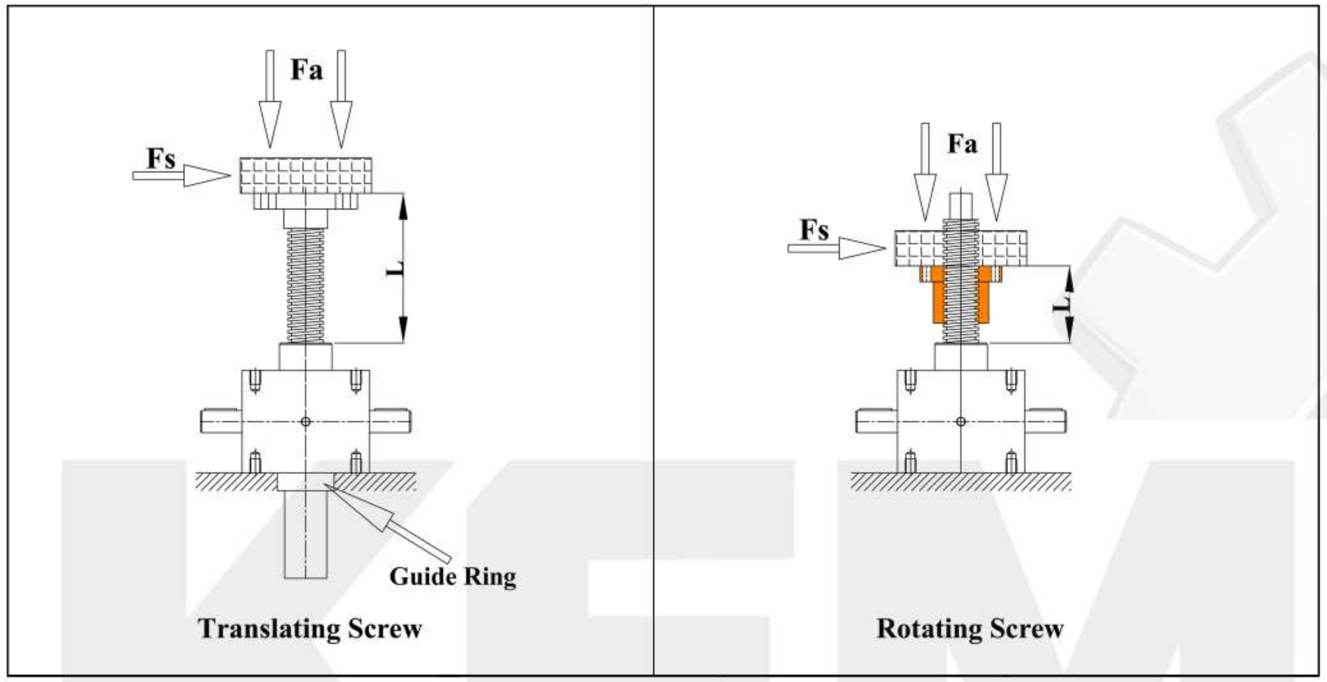
KMA500



*. Dimensions are subject to change without notice

Permitted Lateral Force On the Lifting Screw Fs (N)

Lateral forces are to be prevented by constructive measures. The Lateral forces on lifting Screws or travelling nuts exercise a reinforced edge compression on the movement thread,leading to increased wear and a shortened service life.



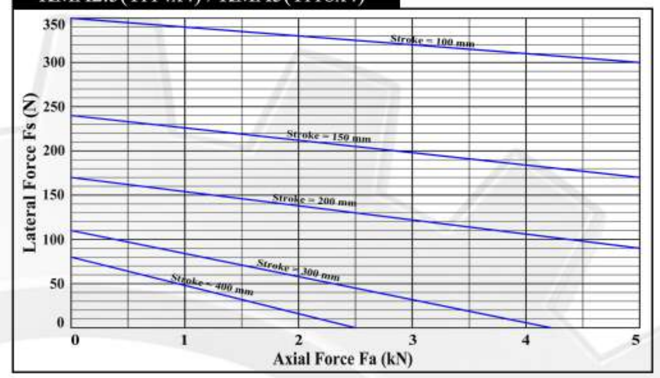
The permitted lateral force (Fs) on the lifting screw depends on the axial force (Fa). the diameter of the screw (d) and the length of the lifting screw L. As compression and buckling force exercise negative influence, these factors were taken into account when determining this permitted lateral force (Fs). The maximum length of the lifting screw (L) is limited by the value generally used in mechanical engineering applications: "unguided lifting screw length = 4x free clamping length".

- **Note:** Lateral force on the lifting screw is only permitted on screw jacks fitted with **two guide rings**.
- **Note:** For rotating screw jack, The permitted lateral force (Fs) is in static configuration only.

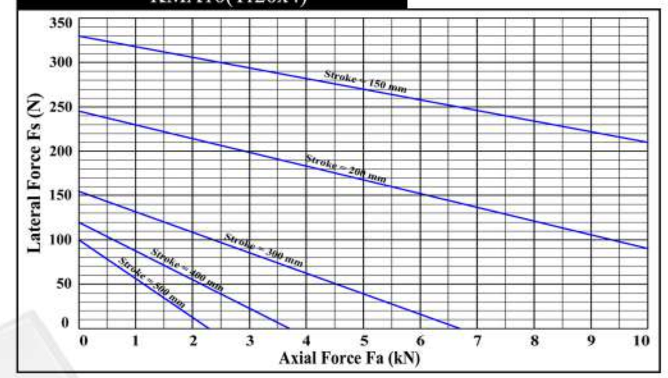
Permitted Lateral Force On the Lifting Screw Fs (N)

For compressive load applications,please use the following diagrams to determine the maximum permitted lateral force.

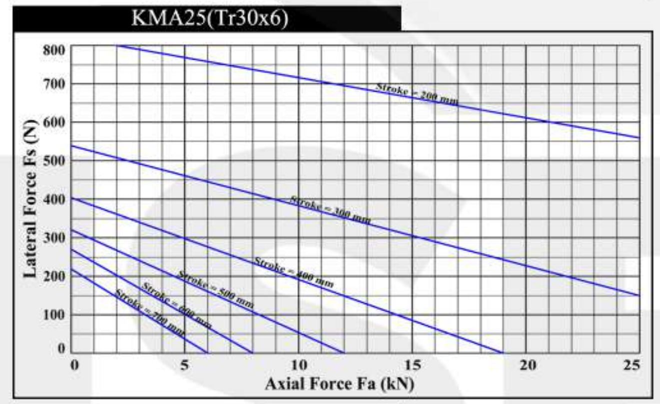
KMA2.5(Tr14x4) / KMA5(Tr18x4)



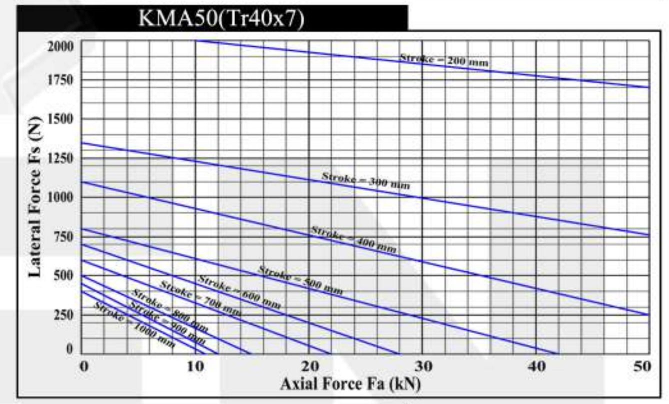
KMA10(Tr20x4)



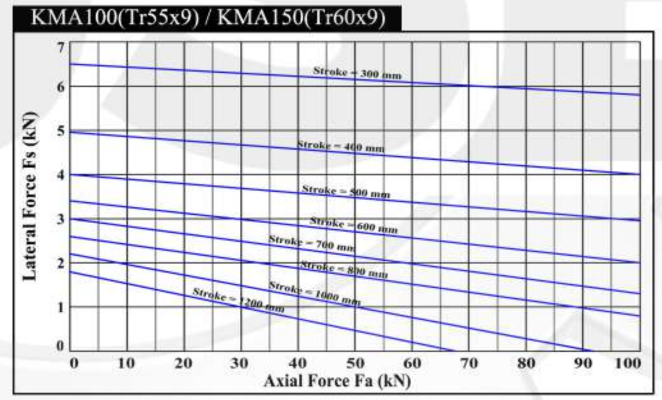
KMA25(Tr30x6)



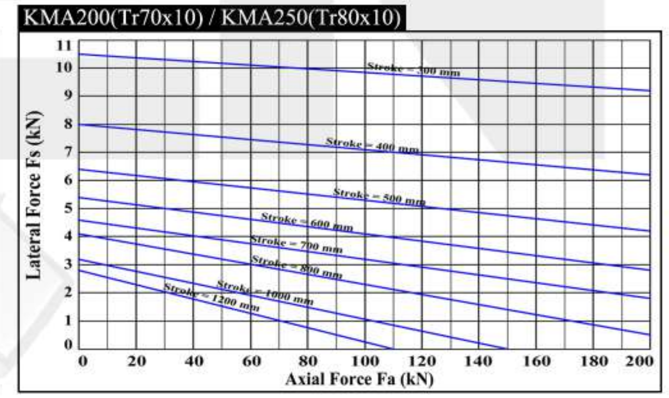
KMA50(Tr40x7)



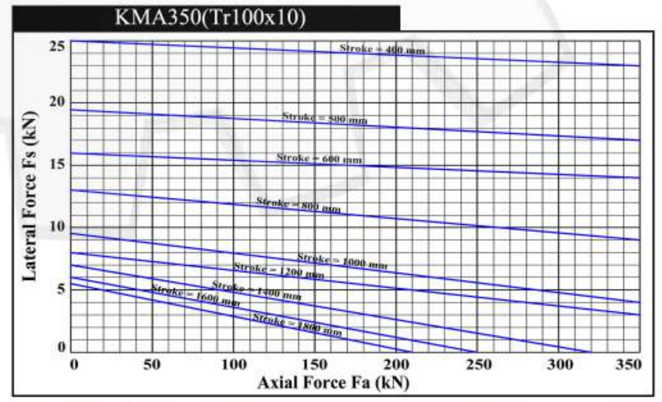
KMA100(Tr55x9) / KMA150(Tr60x9)



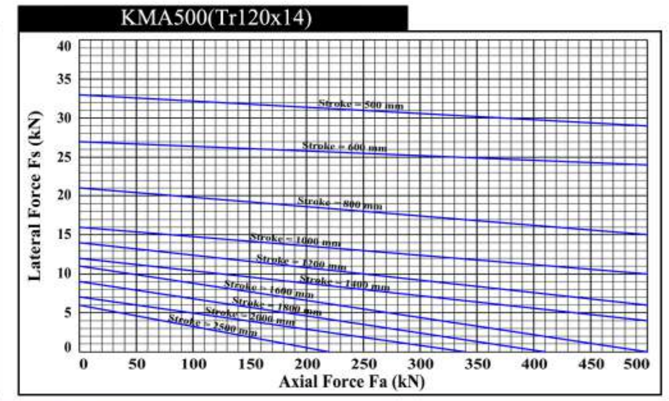
KMA200(Tr70x10) / KMA250(Tr80x10)



KMA350(Tr100x10)



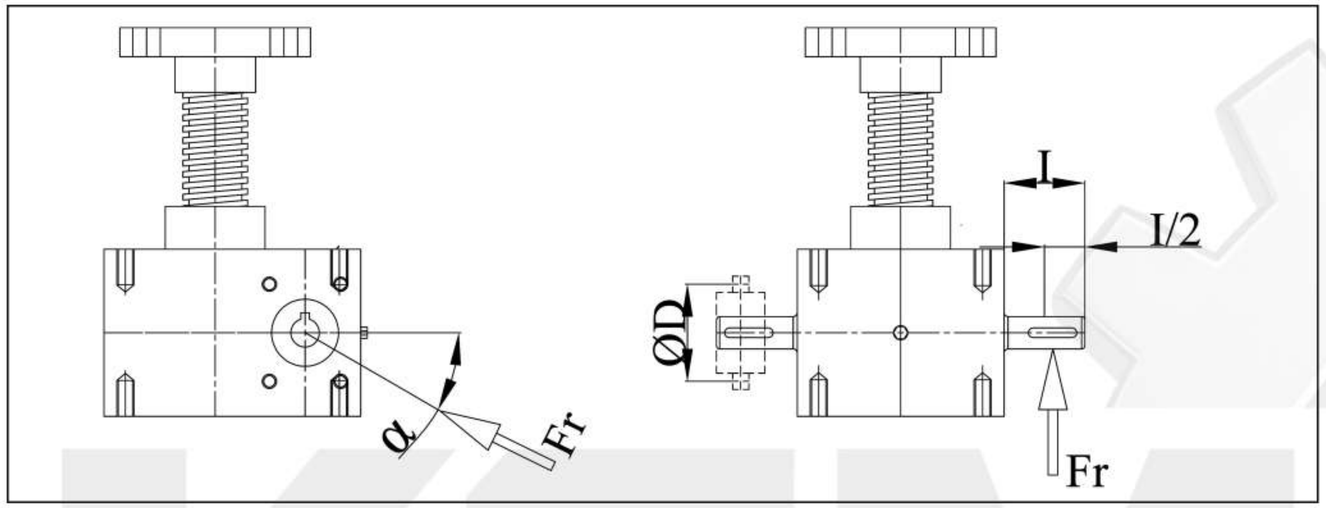
KMA500(Tr120x14)



Permitted Radial Force On Input Shaft Fr (N)

Toothed and/or chain wheels along with pulley wheels bring radial forces to bear on the drive shaft of the worm gear screw jacks. The maximum permitted value depends on the lifting force and size of the jacking element.

The table is calculated for α ~ 30° or 330°. This is the least-favorable bearing with respect to application of the lifting force and turning direction.



- **Permitted radial force (Fr) on application of force in l/2**
- **Minimum diameter (D) for toothed wheel or pulleys:**

$$D_{min} = (19100 \times P) / (Fr \times n) = 2 \times T / Fr$$

P= Power rating (kW) **Fr=** Max. Radial force (N) **n=** Input speed (rpm) **T=** input torque (Nm)

Model	Fr max (N)	T max (Nm)
KMA2.5	70	1.5
KMA5	100	3.4
KMA10	200	7.1
KMA25	300	18
KMA50	500	38
KMA100	800	93
KMA150	800	148
KMA200	1300	178
KMA250	1400	240
KMA350	2100	340
KMA500	3100	570