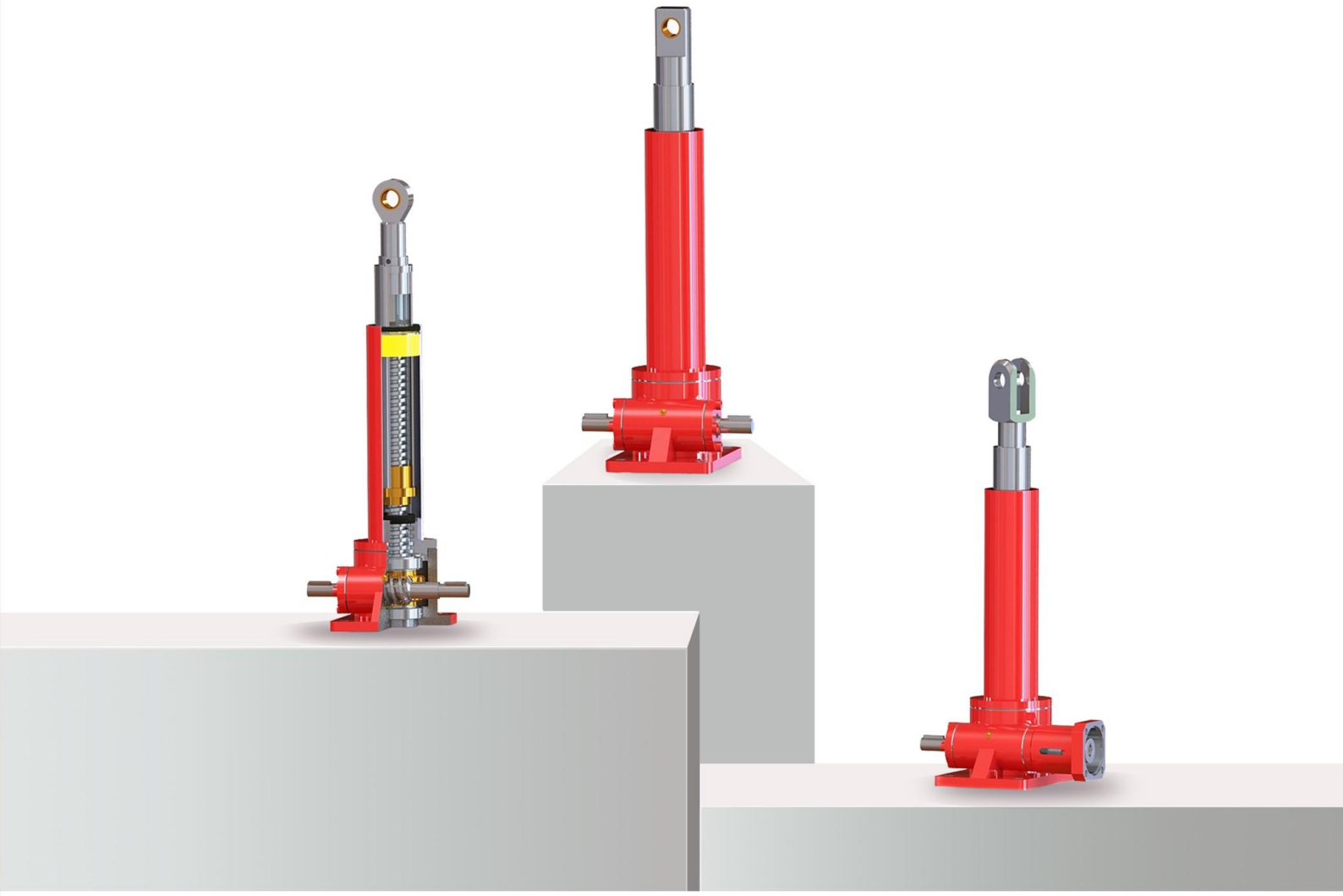
LINEAR MOTION



LUDE TRANSMISSION

LDTG Series Electric Cylinder

Product Introduction

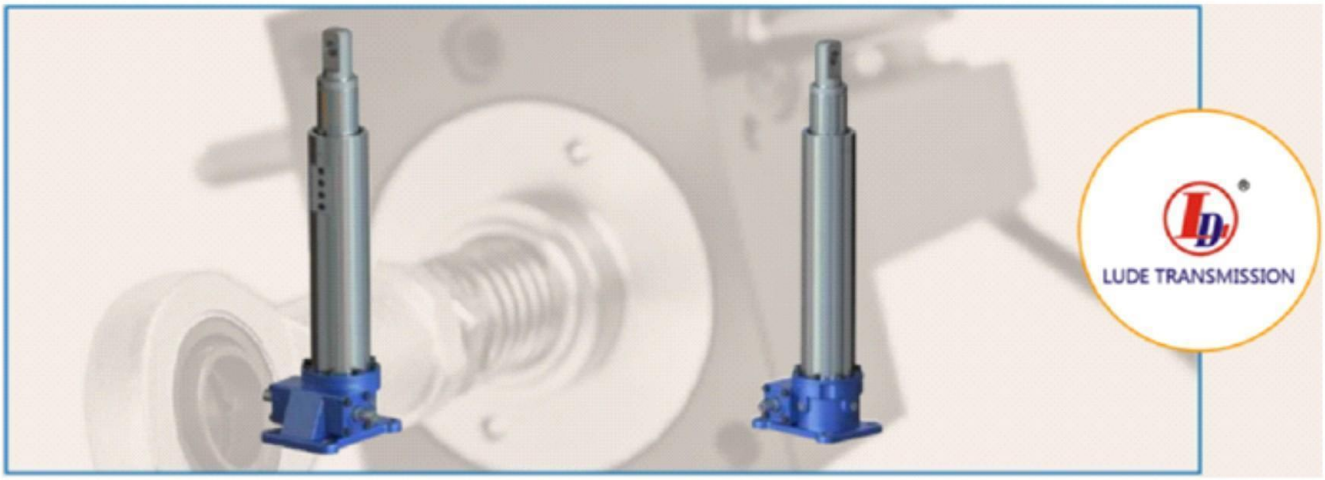
LUDE transmission research and development new products LDTG series electric linear actuator, provide for the linear motion of the heavy load new mature solution.

Combined the advantages of Linear actuator and Screw Jack to achieve the high load lifting in industry application.The sealed and high protection class allow the actuator work even in harsh environments. Which is a good solution for Hydraulic and Pneumatic replacement to reduce cost and pollution.

Synchronized Lifting, 2-10 pieces Actuator could be driven by one motor for Synchronized lifting with 0.1mm accuracy. Simple operation but reliable. Please contact LUDE transmission engineering for synchronized lifting system design.

Alternative LDTGB ball screw actuator and LDTG trapezoidal screw actuator. Load capacity from 2 ton to 20 ton , could be classified as 2 ton, 5ton , 10 ton , 20 ton unit. Max. speed and stroke could reach 50mm/s and 2.5m. Duty cycle 50%.

The LDTG series Actuator can be ordered to accept the motor type of your choice, whether gear motor,or AC motor etc. The LDTG series offers flexibility in order to accept any type to meet your requirement.



Features of LDTG series actuator:

- Load capacity range from 2ton to 20 ton
- The unique spheroidal graphite iron casting rectangle fluted housing improved the mechanical performance.
- Special design of guided bearing increase the stability and side loading capacity.
- Anti-rotate device
- Self-locking , provided equipment security.
- Double seal to prevent abrasive particles and contaminants from entering the actuator critical mechanisms, and assures trouble-free operation even in most severe environments.
- Protection class IP55, Optional IP56
- Precise positioning control , control accuracy reach 0.1mm
- High stiffness to resist shock load.
- Long life time , low noise , simple maintenance
- Synchronized lifting

Application of LDTG series actuator:

The lifting device of the deep-frying machine, freezing machinery, photovoltaic industry.
The lifting device of the monocrystalline silicon, polysilicon ingot furnace.
Medical instruments, woodworking machinery, food machinery, various actuators.
Aerospace, national defense, military astronomical telescopes, remote control actuators.
Vehicle manufacturing, flexible tooling and welding lifts, etc.

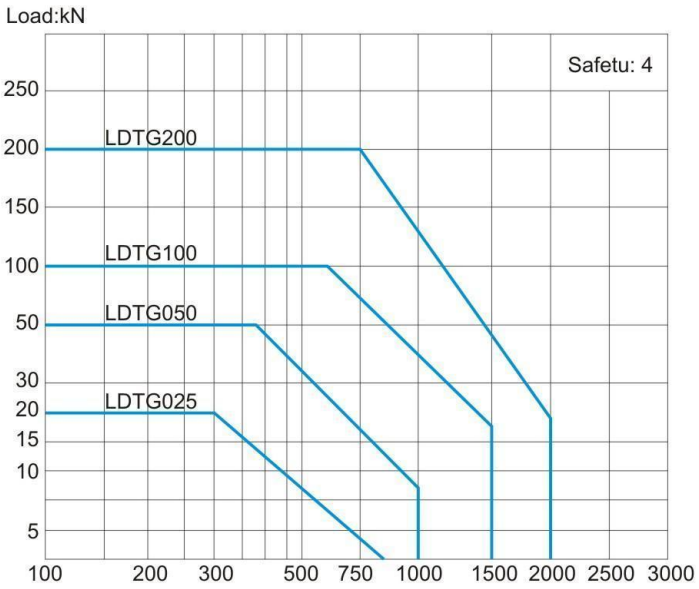
Applications of synchronized lifting

LUDE transmission provided complete system design and components, Which including Actuator , motor, gear box, shaft, coupling , brake , clutch etc.Customer just need let us know your requirement of total load capacity, speed, stroke and dimension,LUDE transmission's engineers will provided you a design scheme with calculation process and components selection, CAD drawing is also available.

coding

series	size	ratio	stroke	front atta chment	input versions	accessories
LDTG series	025 050 100 200	P M	customized	NF:standard male thread TS:ball joint TF:rod end FL:flange end FO:clevis end	P1:single input shaft P2:double input shaft P3:motor flange P4:flange and extend shaft	FCH:Limit switch box FCP:Inductive proximity switches (PNP normally closed) FCG:Cam limit switch B:Bellows SZ:Stainless out tube SA:Stainless steel screw SW:Stainless steel protective tube HBP:Hinged bearing plate IRE:Encoder GE:Gear motor Power RPM Mounting direction MO:Motor FMP:Foot mounting

Critical Bucking Force Graphs



The rated static load of Screw jack is 1.5 time of the rated Dynamic Load. The extreme wreck load is 2.5-4 time of rated Dynamic load, and screw length etc. will affect that. Screw Jack working in tension load are not need for stability checking. The primary screw jack size selection factor is the bucking resistance of screw,also know as Euler cures,the graphs above give safety operating state for each size of screw jack. Buckling limits are relevant for compressive load only.

Max allowed axial load L=Lk × fk

Lk theoretical critical bucking force

fk correction value

Model selection guide

◆ Duty cycle is working percentage in 10 min.

LDTGB series duty cycle 50%

LDTG series duty cycle 30%

◆ Max. Input revolution 1500 rpm

◆ Please check the stability curve when stroke exceed 500mm

◆ Adjust the safety coefficient according to the load, 1.0-1.2 for the even load; 1.3-1.5 for the moderate load; 1.6-2.5 for the heavy load.

◆ For the normal performance, the input power should not exceed the max input power, input power

◆ Working temperature : -20℃ ~ + 40℃ (Special for -40℃ ~ +100℃)

◆ For the application of synchronous lifting platform, the combination coefficient should be considered, the losing of combination should also be reckoned in calculating the total power. The combination coefficient varies according to the quantity of screw jacks in the synchronous platform:

For 2 PCS screw jack in a platform, the combination coefficient is 0.95

For 3 PCS screw jack in a platform, the combination coefficient is 0.9

For 4 PCS screw jack in a platform, the combination coefficient is 0.85

For 6-8 PCs screw jack in a platform, the combination coefficient is 0.8

It is recommended to increase the combination coefficients appropriately if the double clevis mounting of the screw jack is adopted.

◆ The trapezoidal screw actuator with ratio M possess the self-locking function, while that with ratioP has uncertain self-locking, the brake needs to be equipped in the safety and vibrating application.The axial error of the trapezoidal screw LDTG series are 0.1 mm within 300mm stroke, Ball screw LDTGB series are 0.05-0.02mm within 300mm stroke.

Lifetime calculation

Life time of trapezoidal screw actuator LDTG series base on the wear of worm and nut, and the working condition, side load etc. Please contact local office for support.

The lifetime of Ball screw actuator LDTGB series depends on the lifetime of ball screw and worm gear and shaft, we just need to calculate the lifetime of screw, worm gear and shaft will wear but normally lifetime is longer than screw.

Theoretically Ball screw lifetime L10 is 90% of stroke ability that screw could reach before metal fatigue, Unit is million millimeter.

Theoretically lifetime is not guarantee lifetime. In order to reach max. Lifetime the screw need been appropriate maintenance and lubricate.

If the theoretically lifetime need higher than 90%, need multiply follow coefficient.

95%: L10x62%　　96%: L10x53%　　97%: L10x44%

98%: L10x33%　　99%: L10x21%

Nut lifetime calculation:

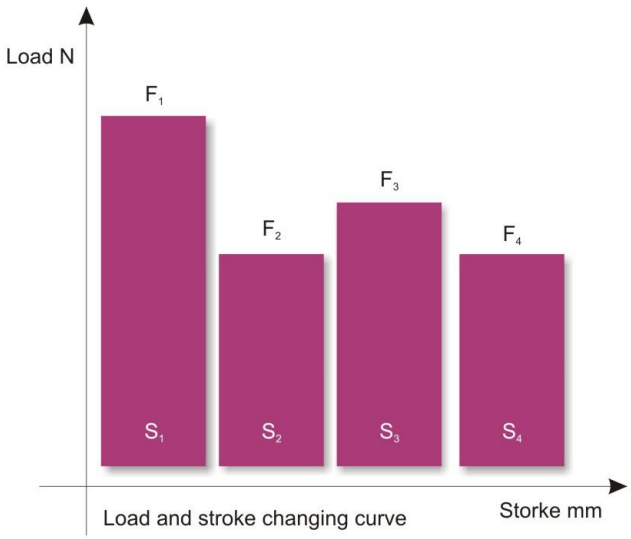
$L10=(C / Fm)^3 \times S$

L10: theoretic lifetime　km　Fm: mean load　N

C: Rated dynamic load　N　S: Ball screw lead　mm

Fm mean load calculation:

$$Fm=\sqrt[3]{\frac{F_1^3S_1+F_2^3S_2+F_3^3S_3+F_4^3S_4}{S_1+S_2+S_3+S_4}}$$



Load and stroke changing curve

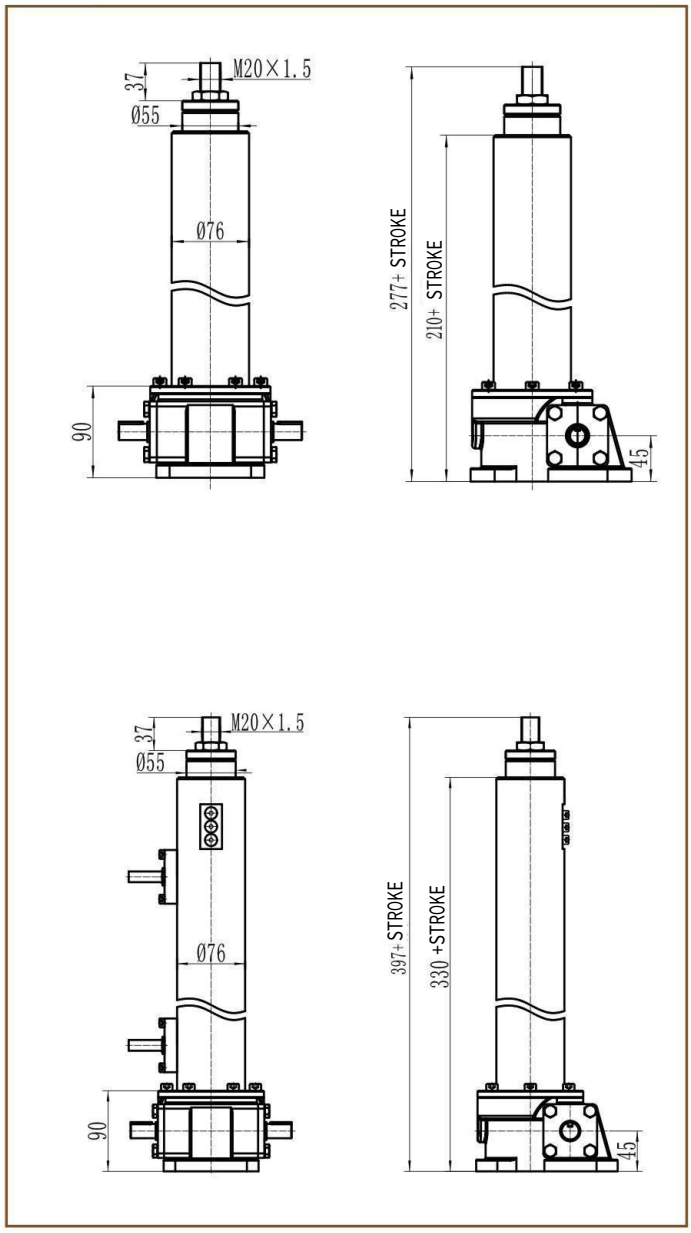
LDTG series actuator parameters:

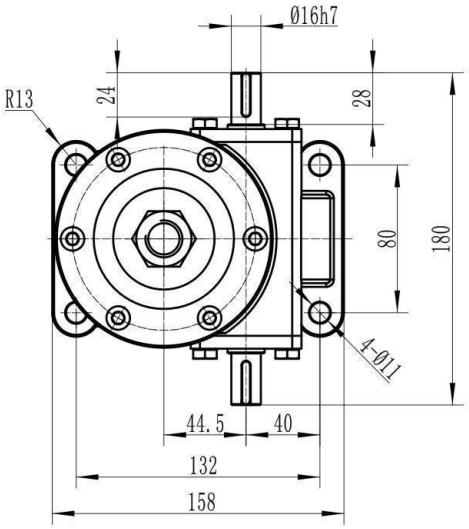
Model		LDTG 025	LDTG 050	LDTG 100	LDTG 200
Max. load kN		24.5	49.0	98.0	196
Outer diameter of screw mm		26	40	50	65
Small diameter of screw mm		19.7	30.5	38.4	51.3
Pitch of screw mm		5	8	10	12
Ratio	P	6	6	8	8
	M	24	24	24	24
Integrated efficiency	P	0.21	0.22	0.22	0.20
	M	0.12	0.14	0.15	0.13
Permissible output max power kW	P	1.0	2.0	2.8	5.0
	M	0.46	0.63	1.4	3.2
Non-load torque Nm		0.62	1.4	2.0	3.9
Permissible torque of input shaft Nm *		49.0	153.9	292.0	292.0
Required torque of input shaft at max. load Nm **	P	16.1	48.7	90.7	238.1
	M	7.4	20.0	45.3	124.0
Axial jonrney of screw when input shaft rotate a circl. mm	P	0.83	1.33	1.25	1.50
	M	0.21	0.33	0.42	0.50
Permissible rotat ional speed of screw shaft at max. load. rpm	P	600	400	300	200
	M	600	300	300	250
Rotational torque of screw at max. load Nm		65.1	201.5	503.6	1287.7

*Permissible torque of shaft of reducer.

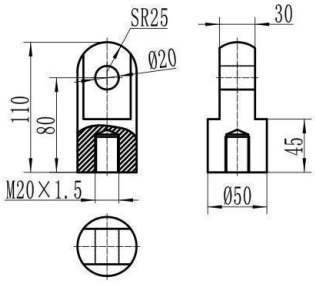
**Include torque under the condition of non-load operating.

LDTG025 Dimension:





FO
Clevis end



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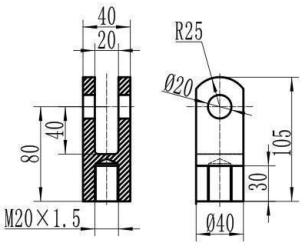

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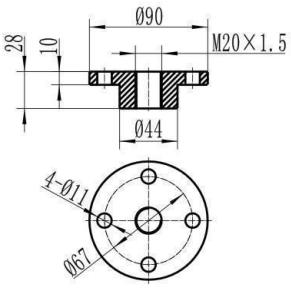
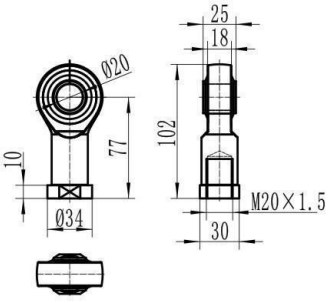


TS
Ball joint end



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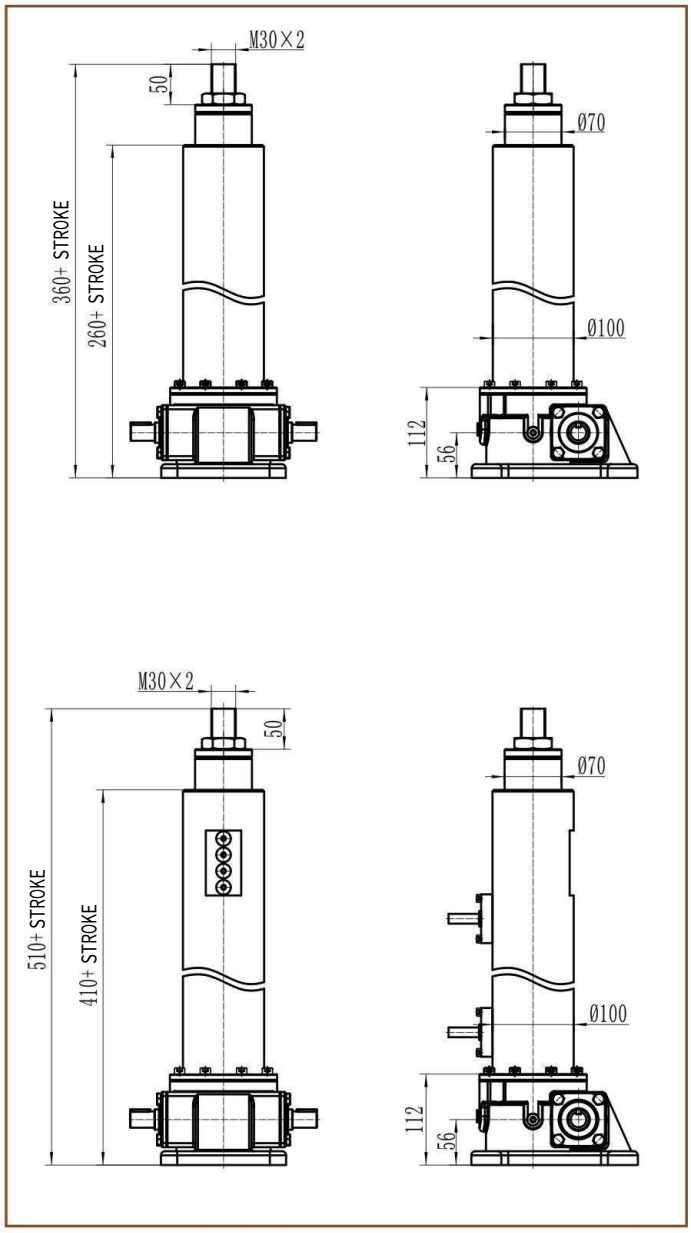

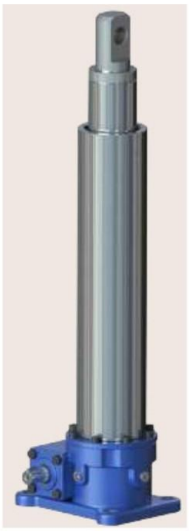

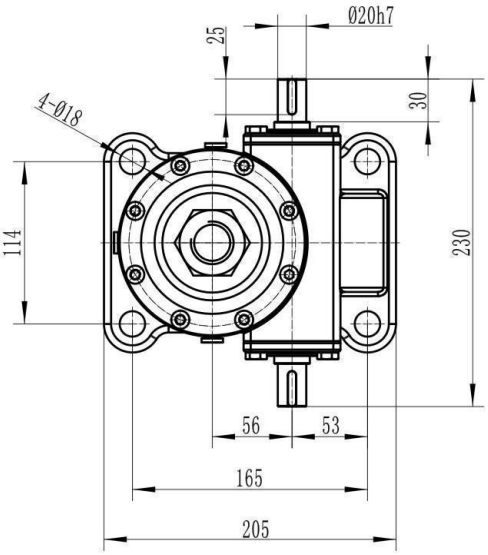

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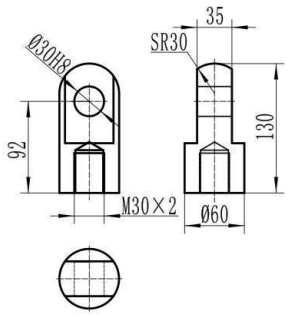

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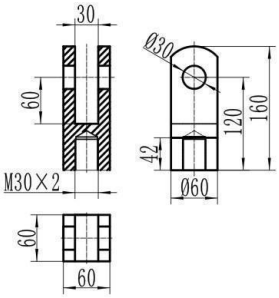

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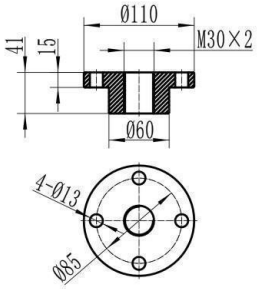

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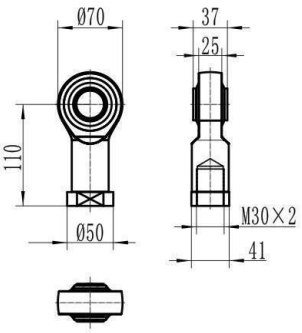
Ball joint end



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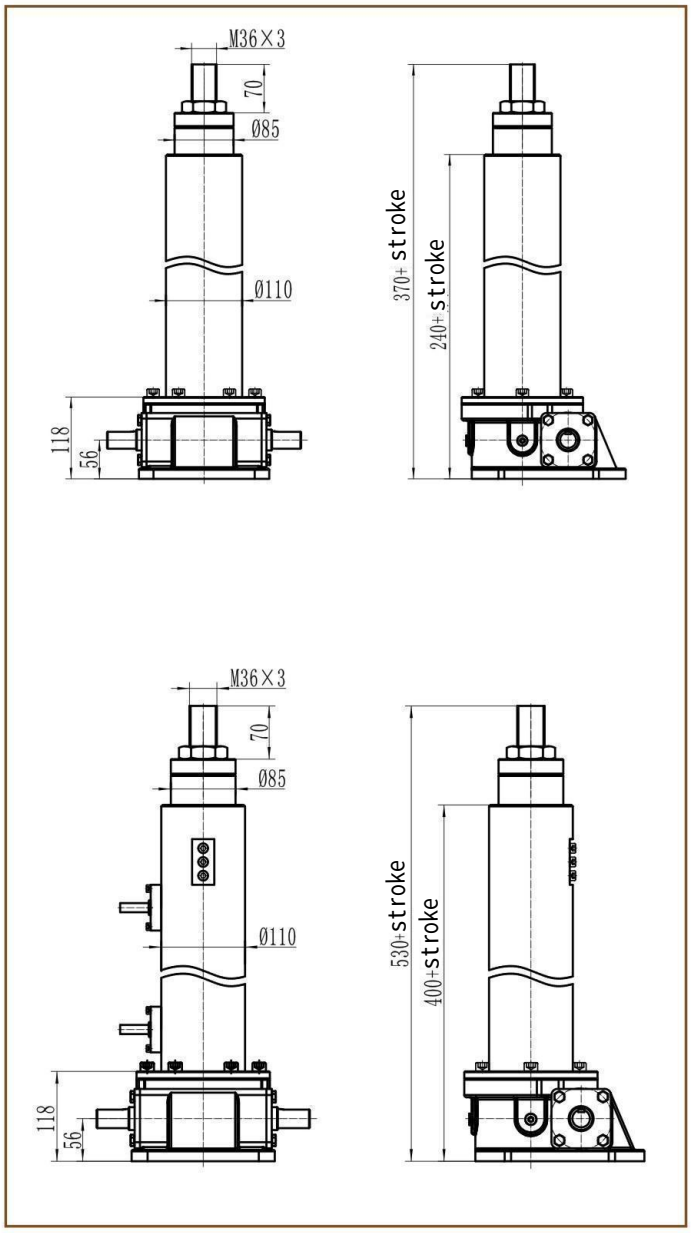

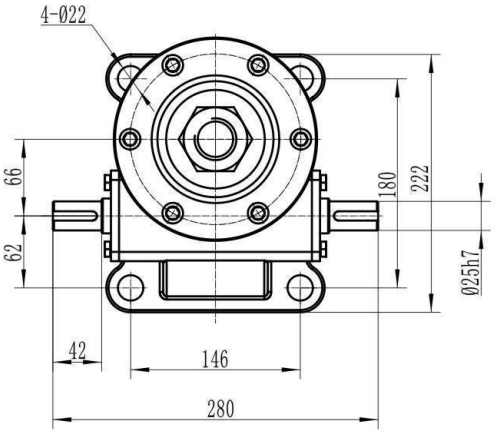

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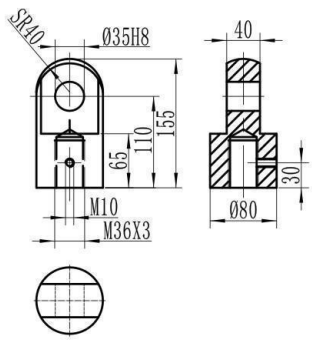

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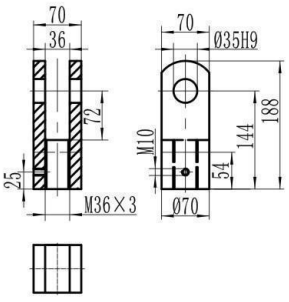

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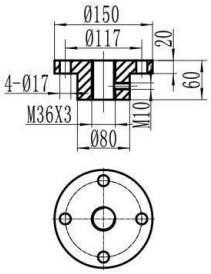

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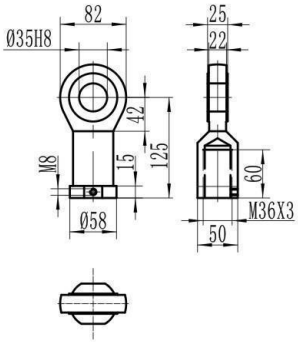

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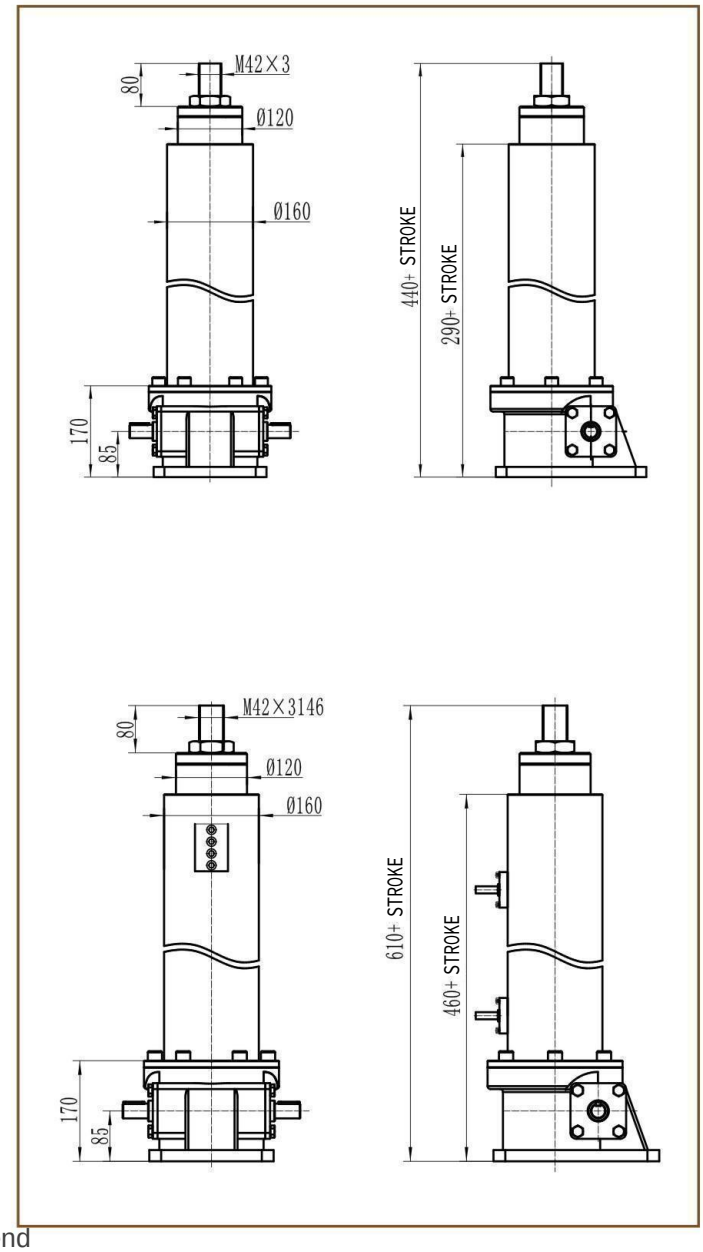

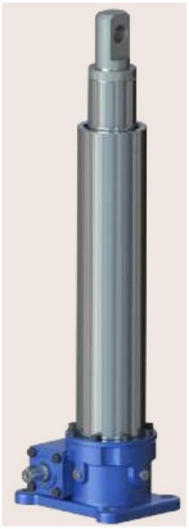

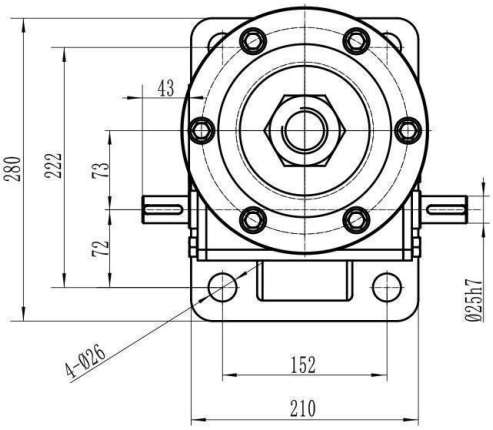

Flange end

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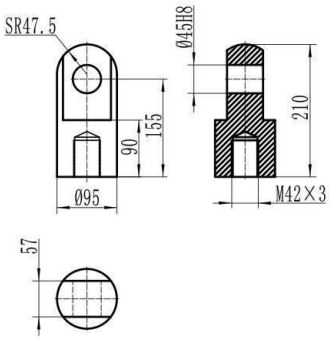
Clevis end



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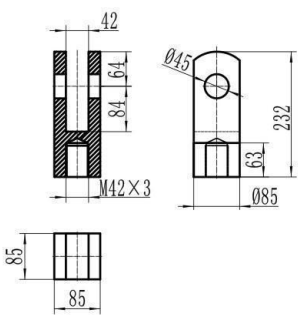

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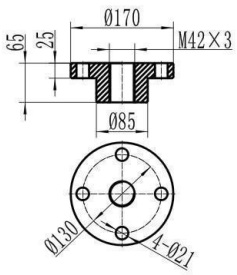

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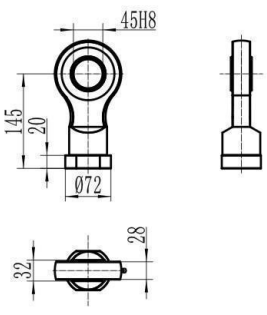

LINEAR MOTION

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