



# Single Axis Robot

Technical Information



### Multi Axis Robot

- Pick-and-place / Assembly / Grinding and Polishing / Semiconductor / Light Industry / Automotive industry / Food industry
- Articulated Robot
  - Delta Robot
  - Movable Delta Robot
  - SCARA Robot
  - Wafer Robot
  - Electric Gripper



### Single Axis Robot

- Precision / Semiconductor / Medical / FPD
- KK, SK
  - KS, KA
  - KU, KE, KC



### Direct Drive Rotary Table

- Aerospace / Medical / Auto industry
- RAB Series
  - RAS Series
  - RCV Series
  - RCH Series



### Ball screw

- Precision Ground / Rolled
- Super S series
  - Super T series
  - Mini Roller
  - Ecological & Economical lubrication Module E2
  - Rotating Nut (R1)
  - Energy-Saving & Thermal-Controlling (C1)
  - Heavy Load Series (RD)



### Linear Guideway

- Automation / Semiconductor / Medical
- Ball Type--HG, EG, WE, MG, CG
  - Quiet Roller Type--QH, QE, QW, QR
  - Other--RG, E2, PG, SE, RC



### Medical Equipment

- Hospital / Rehabilitation centers / Nursing homes
- Robotic Gait Training System
  - Hygiene System
  - Robotic Endoscope Holder



### Bearing

- Machine tools / Robot
- Crossed Roller Bearings
  - Ball Screw Bearings
  - Linear Bearing
  - Support Unit



### AC Servo Motor & Drive

- Semiconductor / Packaging machine / SMT / Food industry / LCD
- Drives-D1, D1-N, D2
  - Motors-50W-2000W



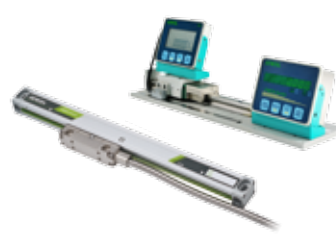
### Torque Motor (Direct Drive Motor)

- Inspection / Testing equipment / Machine tools/ Robot
- Rotary Tables-TMS,TMY,TMN
  - TMRW Series



### Linear Motor

- Automated transport / AOI application / Precision / Semiconductor
- With Iron-core
  - Coreless Type
  - Linear Turbo LMT
  - Planar Servo Motor
  - Air Bearing Platform
  - X-Y Stage
  - Gantry Systems



### Positioning Measurement System

- Cutting machines / Traditional gantry milling machines / Programmable drilling machines
- High Resolution
  - Signal Translator
  - High-precision Enclosed
  - High Efficiency Counter

# Single Axis Robot

## Technical Information

### General Overview

P. 1

### KK Series

P. 9

### SK Series

P. 41

### KA Series

P. 55

### KS Series

P. 91

### KU Series

P. 111

### KE Series

P. 115

### Motor & Driver

P. 123

### Grease

P. 191

### Appendix

P. 195



# Single Axis Robot

## General Overview

### Warning

Single Axis Robots have both electrical and mechanical components, for safety, please read and follow all of the related precautions before selection and use. HIWIN is not held responsible for any malfunctions, damages, or accidents caused by the misuse of the product.

### Personal Safety

- Single Axis Robots are designed for industrial purposes only.
- During operation, the user should stay clear of the Single Axis Robots mechanical range of motion to avoid possible injury.
- When the motor power is ON, people with pacemakers should keep away at least one meter to avoid any disturbance.
- To prevent fires, Single Axis Robots should not be placed near the ignition of flammable gases.

### Storage and Installation

- Avoid any possible collisions or dropping of the product.
- When storing, it is recommended that the product be well packed and laid down flat. Do not expose the product to hot, cold or humid conditions.
- Do not disassemble or modify the products to avoid possible malfunctions or accidents.
- During installation, ensure the product is fixed correctly to avoid any loosening caused by vibrations.
- Take care when selecting the correct coupling and motor hardware for installation and be aware of the alignment to the centerline of the shaft when tightening the screws. Do not force the install.

### Operation

- The operation conditions need to be within the rated values as shown in the technical information.
- Avoid dust, debris and any foreign objects from entering the ball return system.
- Operational temperature should be under 80 °C. In high temperature environments above 80°C, please contact HIWIN sales.
- Confirm first with HIWIN sales if the product can be used in a special environment, such as: vacuum, vibration, clean room, corrosive chemicals, organic solvents, extreme high or low temperatures, humidity, liquid splashes, oil drops or mist, high salt, heavy load, vertical or cantilever installations.
- For vertical installations, when loaded, there is a possibility that the slider may fall. We recommend to adding proper braking and ensure functionality before operation.

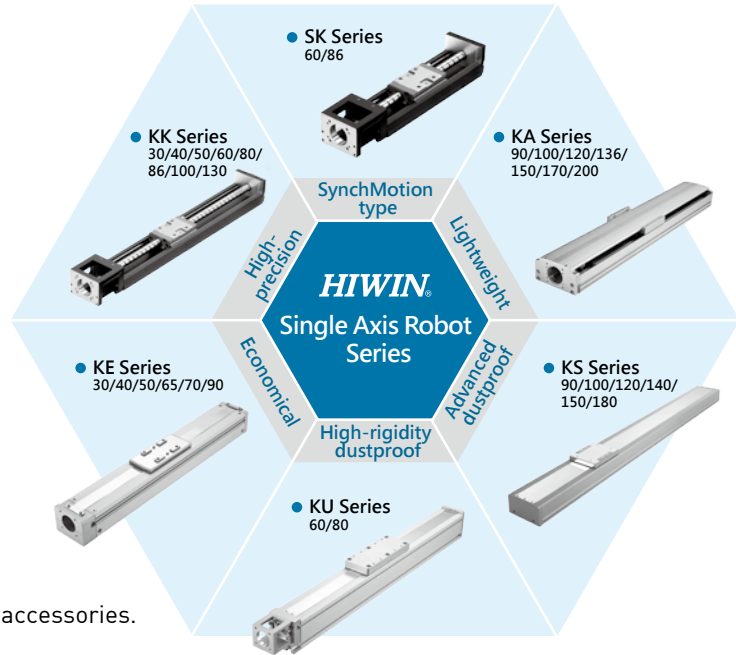
### Maintenance

- Lubricate the product before the initial use. Note the type of grease used and avoid mixing different types together.
- For normal operating conditions, it is recommended to check the operation every 100km, clean and supply grease onto the rail and shaft.



## Introduction

The HIWIN Single Axis Robot module utilizes professional standard manufacturing technology developed over the years, with the ball screw and magnetic slide design module developed and produced by ourselves, HIWIN it is applicable to all types of automation equipment due to its features of easy installation, small size, high-precision and various specifications.



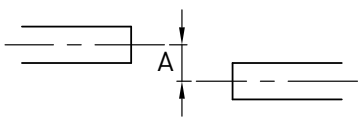
## Features

- Complete selection of Single Axis Robots and accessories.  
Drive Type: ballscrew, toothed belt  
AC motor output: 30W~750W servo motor or stepping motor  
Motor connection type (depends on available space): direct, bottom, internal, left, right  
Max stroke: Max stroke on belt is 3000mm, minimum stroke on KK, KA and KE is smaller than 100mm.
- Easy installation and maintenance.
- Customized designs available.
- Easy transformation into a multi-axis robot.

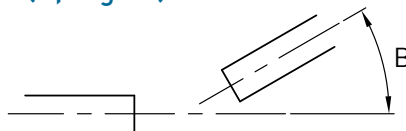
## Installation guide for motor flange, motor and coupling

- Three types of displacement may exist while installing the ballscrew with motor axis, which are shown as below.

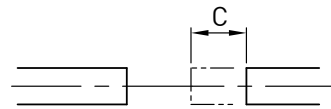
### 1. Radial displacement (A):



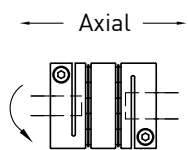
### 2. Angular displacement (B, degree):



### 3. Axial displacement (C):

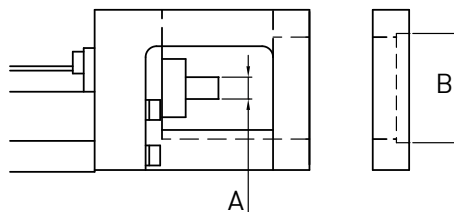


- Confirmation of axial alignment:



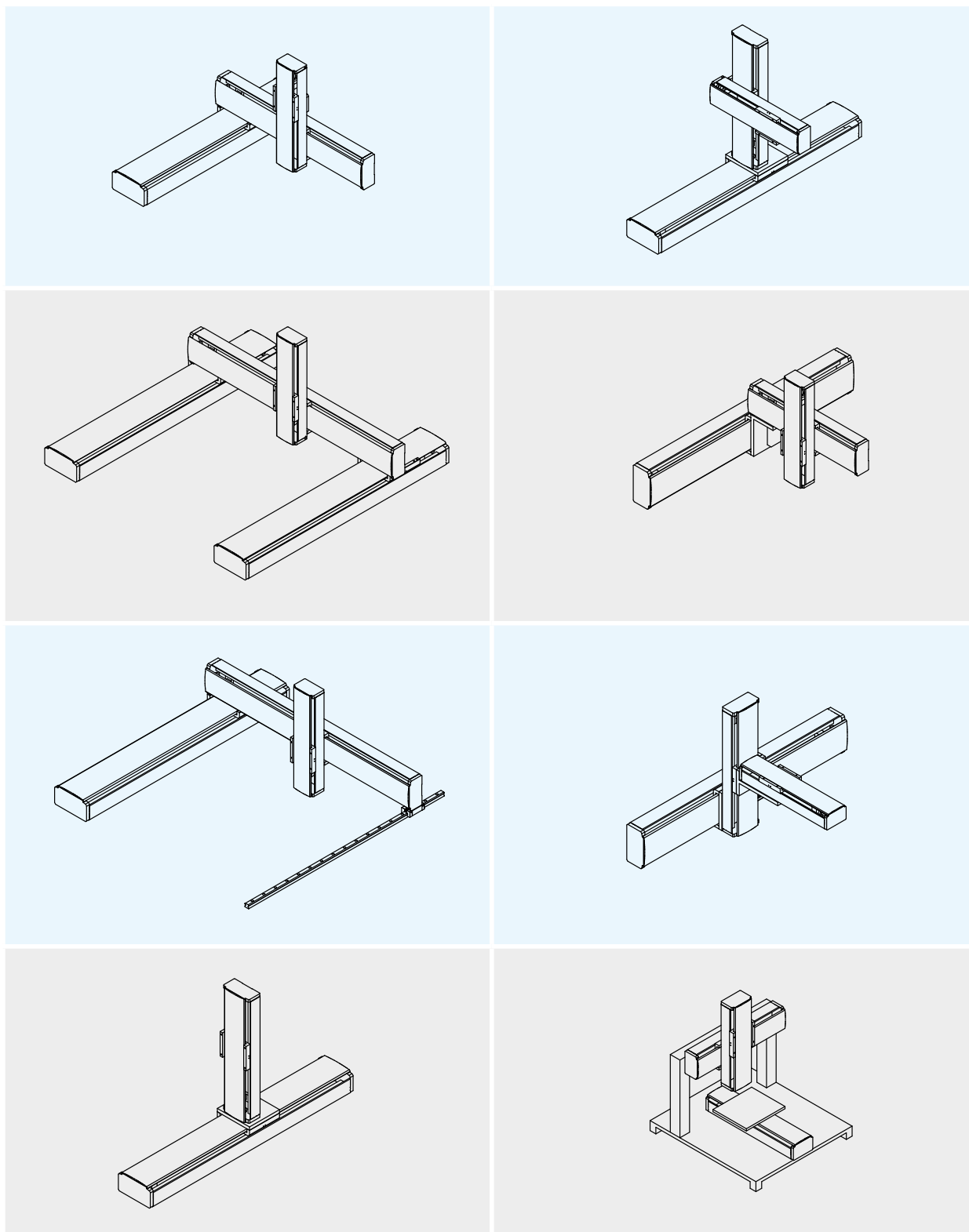
When the ballscrew shaft and motor are connected by a coupling, turn the coupling to confirm if it is capable of rotating without restrictions. This will ensure the concentricity of both axes. The illustration is shown as left.

- The use of a motor mounting jig might be necessary to make sure the ballscrew spindle end (A) and the positioning hole of the motor flange (B) are concentric. The illustration is shown below.



- Precaution:

1. During motor flange mounting, the displacement between ballscrew spindle end and the positioning hole of the motor flange should be controlled and also within the allowable displacement range of the chosen coupling.
2. The ballscrew spindle end could break if the displacement is beyond the allowable range limit or the coupling is mounted incorrectly.
3. Make sure the allowable displacement of the coupling is sufficient for your application, HIWIN recommends a Disk Type coupling. Please contact HIWIN with any questions regarding coupling installation or selection.



## Applications

Single Axis Robots can be used in a wide range of applications. The following are examples of applicable systems: Automatic soldering system, screw feeding machine, adhesive laminating machine, CCD lens shifting, automatic paint spray machine, cutting machine, semiconductor manufacturing equipment, assembly equipment, press machine, spot welding machine, surface processing automation, self adhesive labeling machine, packaging machine, marking press machine, conveying equipment, and more.

## Classification

SPEC	KK High-precision	SK SynchMotion type	KA Lightweight	KS Advanced dustproof	KU High-rigidity dustproof	KE Basic dustproof
30	●					●
40	●					●
50	●					●
60	●	●			●	
65						●
70						●
80	●				●	
86	●	●				
90			●	●		●
100	●		●	●		
120			●	●		
130	●					
136			●			
140				●		
150			●	●		
170			●			
180				●		
200			●			

Note: KA100/136/170 and KS100/140/180 can also be belt driven for applications requiring high speed and long stroke.

## System Components

Single Axis Robot components include a motor, driver, and upper controller as demonstrated below. Our customers may choose from Hiwin's selection of excellent servo motors, stepping motors, and drivers.



## Selection Process

When choosing an Single Axis Robot based on different conditions and restrictions, you may refer to the following selection process:

<p><b>1. User requirements</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Effective stroke</li> <li><input type="radio"/> Location restrictions (width, height, length)</li> <li><input type="radio"/> Installation (horizontal, vertical, side mount)</li> <li><input type="radio"/> Position of gravity, center of loading</li> <li><input type="radio"/> Operating conditions (lead, speed, acceleration and deceleration, duty cycle)</li> <li><input type="radio"/> Environment (high temperature, vibration, oil, water, corrosion)</li> </ul>	<p><b>5. Motor load calculation</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Maximum speed</li> <li><input type="radio"/> Motor resolution</li> <li><input type="radio"/> Motor torque calculation</li> </ul>
<p><b>2. Demand for precision</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Position accuracy</li> <li><input type="radio"/> Repeatability</li> <li><input type="radio"/> Running parallelism</li> </ul>	<p><b>6. Operation analysis</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Acceleration</li> <li><input type="radio"/> Actual operation mode (V-T diagram)</li> </ul>
<p><b>3. Configuration</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Single axis</li> <li><input type="radio"/> Multi axis</li> <li><input type="radio"/> Special combination</li> </ul>	<p><b>7. Other accessories</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> The use of related accessories (limit switches, adapter plate, retractable sheath, the slip ring protection tube)</li> </ul>
<p><b>4. Motor selection</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> AC servo motor</li> <li><input type="radio"/> Stepper motor</li> <li><input type="radio"/> With or without brake (included, plug-in)</li> </ul>	<p><b>8. Final confirmation</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Conditions of use should be confirmed</li> <li><input type="radio"/> Price, deadline</li> <li><input type="radio"/> Alteration</li> <li><input type="radio"/> Special requirements</li> </ul>

For preliminary selection, you may refer to the following Single Axis Robot characteristics:

	KK, SK	KA	KS	KU	KE
Precision	Great (repeatability, positioning, parallelism)	Normal (repeatability)	Normal (repeatability)	Normal (repeatability)	Normal (repeatability)
Load	Heavy	Medium	Medium	Medium	Low
Weight	Heavy	Light	Light	Light	Light
Customized (stroke, platform)	Yes	Yes	Yes	Yes	Yes
Stiffness	Good (steel structure)	Normal (aluminum alloy base)	Normal (aluminum alloy base)	Normal (aluminum alloy base)	Low (guide way base)
Cover	Aluminum	Aluminum	Stainless	Stainless	Stainless
Cleanliness	Normal	Normal	Great (with vacuum)	Good	Good
Dust-proof	Normal	Normal	Good (fully covered)	Good (fully covered)	Good (fully covered)
Drive component	Ballscrew (heavy load, good precision)	Ballscrew, belt (long stroke, high speed)	Ballscrew, belt (long stroke, high speed)	Ballscrew (heavy load, good precision)	Ballscrew (good precision)
Connection between motor and ballscrew	Direct, by side belt	Direct, by side belt	Direct, by side belt	Direct	Direct
Inside motor location	No	Yes	Yes	No	No
Bellow	Yes (standard)	Yes (customized)	No	No	No
Mounting	Top	Bottom (or top)	Bottom	Any position (bottom, side)	Bottom

## Precision

### 1. Positioning accuracy

The maximum difference (absolute value) between the actual arrival distance and the reaching distance based on the original setting.

### 2. Repeatability of round-trip position (precision)

The maximum difference in the entire cycle. The difference in the positioning value measured from a setting position during the round trip movement of the Single Axis Robot's slider.

### 3. Running parallelism

- (1) The parallelism between Single Axis Robot module platform plane and module installation plane. Position the scale at the center of the slider, and then put the pointer on the installation plane. Finally, take the maximum deviation value measured in the full stroke as the result.
- (2) The parallelism between Single Axis Robot module platform and the installation datum. Position the scale at the center of the slider, and put the pointer on the installation datum. Finally, take the maximum deviation value measured in the full stroke as the result.

## Speed

### 1. Maximum linear velocity

The Single Axis Robot's maximum linear velocity (V) is calculated from the ballscrew speed (S) multiplied by the lead (L)  
 $V \text{ (mm/sec)} = S \text{ (rpm)} \div 60 \times L \text{ (mm)}$

### 2. Maximum rotational speed

The maximum allowable rotational speed of the ballscrew is decided by its critical rotational speed. If the ballscrew speed exceeds its critical speed it may result in resonance. Hence, the critical speed is related to the ballscrew length, the critical speed can help to determine the ballscrews effective stroke and total length.  
 The maximum allowable rotational speed of the ballscrew is calculated as follows:

$$N_p = 0.8 \times 2.71 \times 10^8 \times \frac{M_f d_r}{L_t^2}$$

$N_p$  = the maximum allowable rotation speed (rpm)  
 $M_f$  = breakdown of the assembly mounting type; KA uses fixed-support type;  $M_f=0.689$   
 $d_r$  = screw root diameter (mm)  
 $L_t$  = screw span between bearings (mm)

### 3. Acceleration/Deceleration

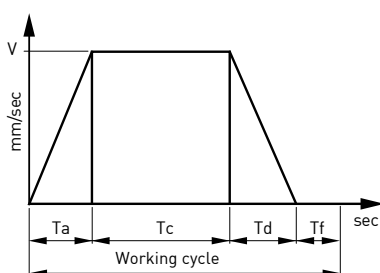
Speed is specified as the working speed of the sliding table. The sliding table must accelerate to the designated speed as it moves to its target position, in opposite, it must decelerate before it comes to a stop.

Acceleration/deceleration is programmed by the operator according to the needed conditions. The acceleration on a KA system is set at : 0.15G calculated for lead = 5, 0.3G is calculated for all other leads. 1G = 9.8m/s<sup>2</sup>, therefore 0.15G = 1470mm/s<sup>2</sup>, 0.3G = 2940mm/s<sup>2</sup>. The maximum load shown in the catalog is based on this acceleration/deceleration.

\* Attention : Acceleration/deceleration will generate an inertia force on the load. For higher acceleration/deceleration, load will increase accordingly. In addition, higher acceleration/deceleration could generate a possible impact and should be noted.

### 4. Working cycle

The SR system's working cycle is determined by the operator. The below diagram illustrates how the working cycle is generally calculated. The variables include acceleration time  $T_a$ , constant speed time  $T_c$ , deceleration time  $T_d$ , and idling time  $T_f$ .



Accelerating Speed =  $V/T_a$

Decelerating Speed =  $V/T_d$

Working cycle (sec) =  $T_a + T_c + T_d + T_f$

Working time = working cycle  $\times$  frequency

Operating ratio = working time / (working time + off time)

Operating ratio is closely related to the load of the motor.

Normally, the operating ratio is not recommended to exceed 0.5 for long, continuous work.

## Motor Loading Calculation

1. Confirm the moving conditions required by the loading mechanism, including acceleration, deceleration, the weight of the mechanism and it's movement.
2. Momentum loading calculation:  
Momentum calculation for loads moving along a straight line

$$J_L = W \times \left( \frac{V}{2 \times \pi \times N \times 10} \right)^2 = W \times \left( \frac{\Delta S}{20 \times \pi} \right)^2$$

$J_L$  : Momentum of load, calculated to the motors axial output (kg.cm<sup>2</sup>)  
 $V$  : Velocity of load along a straight line(mm/min)  
 $\Delta S$  : Displacement of load per motor rotation(mm)  
 $W$  : Weight of load (kg)  
 $N$  : Rotational speed of motor[r/min]

3. Select suitable specification of motor with the proportional principle per the momentums between load and motor.
4. Calculate the acceleration and deceleration torques per the momentum of the selected motor combined with the momentum of the load.

$$\text{Acceleration torque: } T_a = \frac{(J_L + J_M) \times N}{9.55 \times 10^4 \times T_{psa}}$$

$$\text{Deceleration torque: } T_d = \frac{(J_L + J_M) \times N}{9.55 \times 10^4 \times T_{psd}}$$

$J_L$  : Momentum of load, calculated to the motors axial output (kg.cm<sup>2</sup>)  
 $J_M$  : Momentum of motor (kg.cm<sup>2</sup>)  
 $N$  : Rotational speed of motor (r/min)  
 $T_{psa}$  : Acceleration/deceleration time(s)  
 $T_{psd}$  : time (s)

5. Per the loads, installation methods, friction coefficients, and motor efficiency, calculate the torque at uniform motion.

$$T_L = \frac{F \times V}{2 \times 10^3 \times \pi \times \eta \times N} = \frac{F \times \Delta S}{2 \times 10^3 \times \pi \times \eta}$$

$F$  : Axial force moving along a straight line  
 $F = F_C + \mu \times (W \times g + F_0)$   
 $T_L$  : Load torque (N.m)  
 $F_C$  : External force exerted in the axial direction (N)  
 $F_0$  : External positive pressure exerted by the load onto the Single Axis Robot (N)  
 $W$  : Load (including sliding platform) (kg)  
 $\mu$  : Friction coefficient  
 $\eta$  : Mechanical efficiency  
 $V$  : Velocity of load in a straight line (mm/min)  
 $N$  : Rotational speed of motor (r/min)  
 $g$  : Gravity (9.8m/s<sup>2</sup>)  
 $\Delta S$  : Displacement of load per motor rotation (mm)

6. The maximum output torque of the selected motor should be larger than the sum of the acceleration torque and load torque; if this condition is not met, the model number needs to be changed and calculated until the requirement is satisfied.
7. Obtain the continuous effective torque per the load torque, acceleration torque, deceleration torque, and continuous torque.

$$T_{RMS} = \sqrt{\frac{T_a^2 \times T_{psa} + T_L^2 \times t_c + T_d^2 \times T_{psd} + T_{LH}^2 \times t_h}{T_f}}$$

$T_{psa}$  : Acceleration time     $t_c$  : Constant speed time  
 $T_{psd}$  : Deceleration time     $t_h$  : Stop time  
 $T_f$  : Cycle time     $T_a$  : Acceleration torque  
 $T_L$  : Load torque     $T_d$  : Deceleration torque  
 $T_{LH}$  : Continuous torque (horizontal movement,  $T_{LH}=0$ )

8. The rated output torque of the selected motor should be larger than the continuous effective torque; if this condition is not met, the model number needs to be changed and calculated until the requirement is compliant.

## Installation

If the ballscrew is used in the vertical direction (Z axis), the load should be within the maximum value indicated for vertical loading. Vertical installation using timing belts is forbidden.

\* Attention : To prevent the load from slipping off, a brake system is recommended on the motor when the KA module is installed vertically.

## Service life

For horizontal, side or slope (less than 30 degrees) orientation, the service life is dependent on the guideway, as for vertical orientation, the service life is dependent on the ballscrew or fixed bearing which ever one is shorter.

The listed dynamic load (Fy, Fz, Mx, My, Mz) is based on a service life of 10,000km of travel. If the load is less than the loading condition ( $Fy/Fyd + Fz/Fzd + Mx/Mxd + My/Myd + Mz/Mzd \leq 1$ ), the service life could be extended. If the load is over, the service life will be less than 10,000km. To ensure long term use, it is recommended that the loading be within the listed range.

## Maintenance

All the related accessories, ballscrew and guideway need to be maintained. After every 3 months or 100km travel distance, it is recommended to add grease to the ballscrew and guideway. Clean any dust or debris from the system. Replace the grease if there is any color change. If you have any further questions, please contact HIWIN.



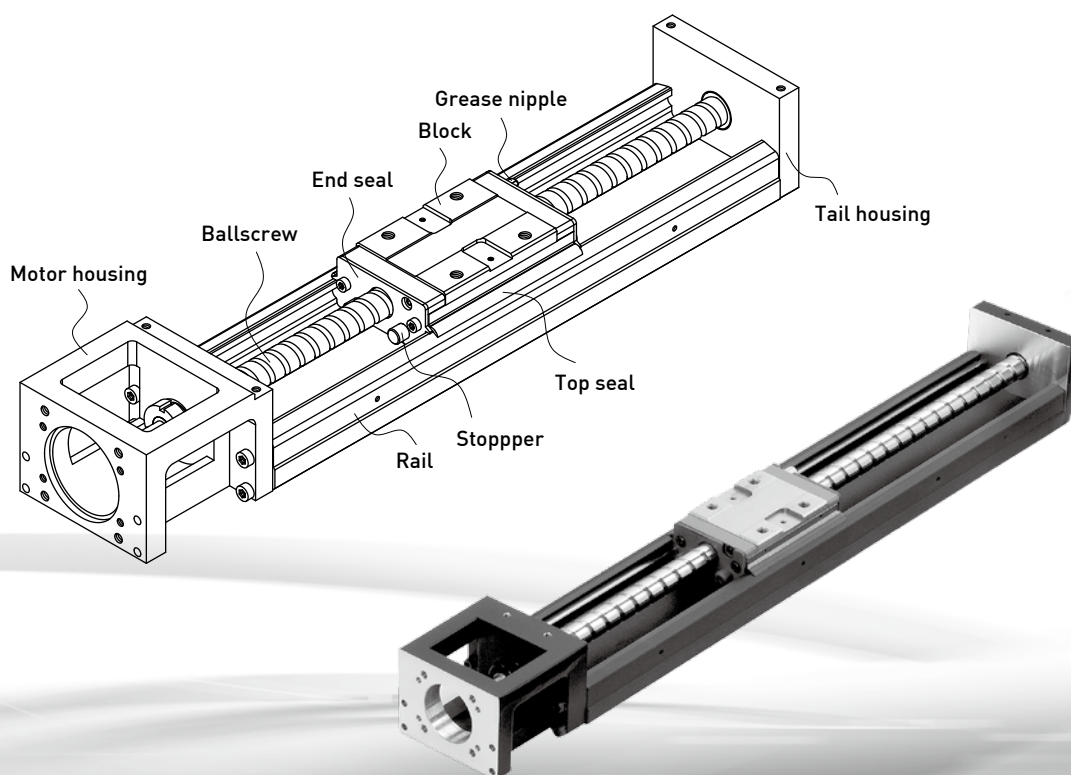
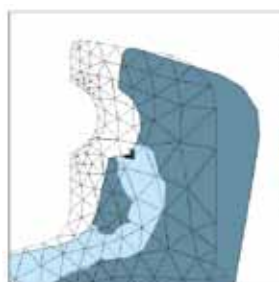
# Single Axis Robot

## KK Series

The HIWIN KK Single Axis Robot is driven by a ballscrew while a guideway slides on an optimized U-rail to achieve higher accuracy and greater stiffness.

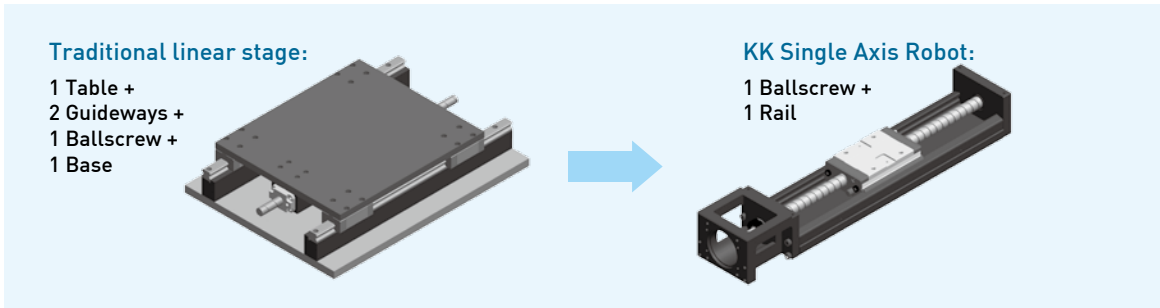
### 1.1 Features

- An integrated system
- Easy installation and maintenance
- Compact and lightweight
- High accuracy
- High stiffness
- Complete line of accessories



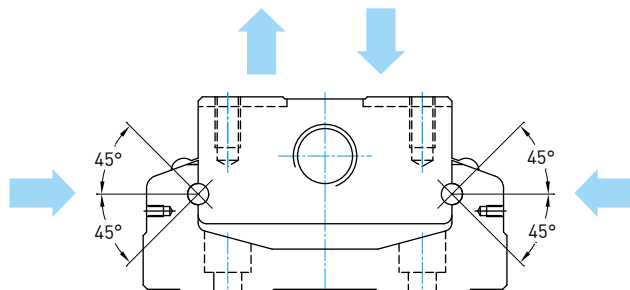
### 1.1.1 Modulization

The KK Single Axis Robot integrating a ballscrew and guideway forms a modularized product. The modularized design can help customers save time, cost and system inspection. Therefore, installation efficiency and a space-saving design are also promoted.



### 1.1.2 Equivalent Load

The gothic arch contact design sustains load from all directions and offers high rigidity and accuracy.

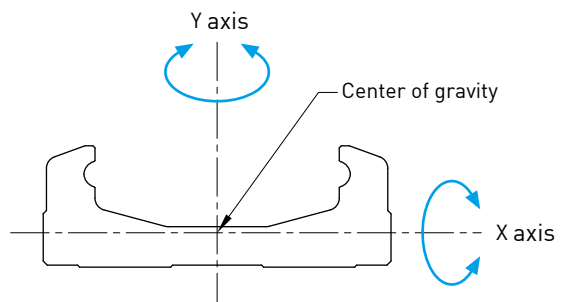


### 1.1.3 High Stiffness

Using finite element analysis on the U-shaped cross section allows the volume and rigidity to be made balanced, therefore, a high rigidity rail, compact design and a light weight design are also accomplished simultaneously.

Moment of inertia Unit:mm<sup>4</sup>

Model no.	I <sub>x</sub>	I <sub>y</sub>
KK30	7.554 x 10 <sup>2</sup>	12.726 x 10 <sup>3</sup>
KK40	3.533 x 10 <sup>3</sup>	5.317 x 10 <sup>4</sup>
KK50	9.6 x 10 <sup>3</sup>	1.34 x 10 <sup>5</sup>
KK60	2.056 x 10 <sup>4</sup>	2.802 x 10 <sup>5</sup>
KK80	6.711 x 10 <sup>4</sup>	8.444 x 10 <sup>5</sup>
KK86	7.445 x 10 <sup>4</sup>	1.134 x 10 <sup>6</sup>
KK100	1.296 x 10 <sup>5</sup>	2.035 x 10 <sup>6</sup>
KK130	2.546 x 10 <sup>5</sup>	5.073 x 10 <sup>6</sup>



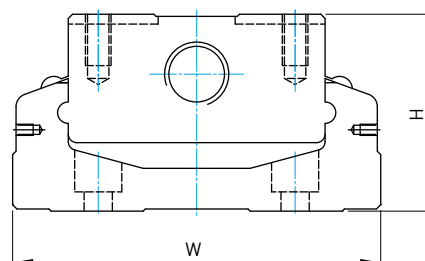
I<sub>x</sub> : Moment of inertia computed about X axis

I<sub>y</sub> : Moment of inertia computed about Y axis

### 1.1.4 Various Specification

KK Single Axis Robots of various specifications are developed, providing customers with different choices relating to space and loading conditions.

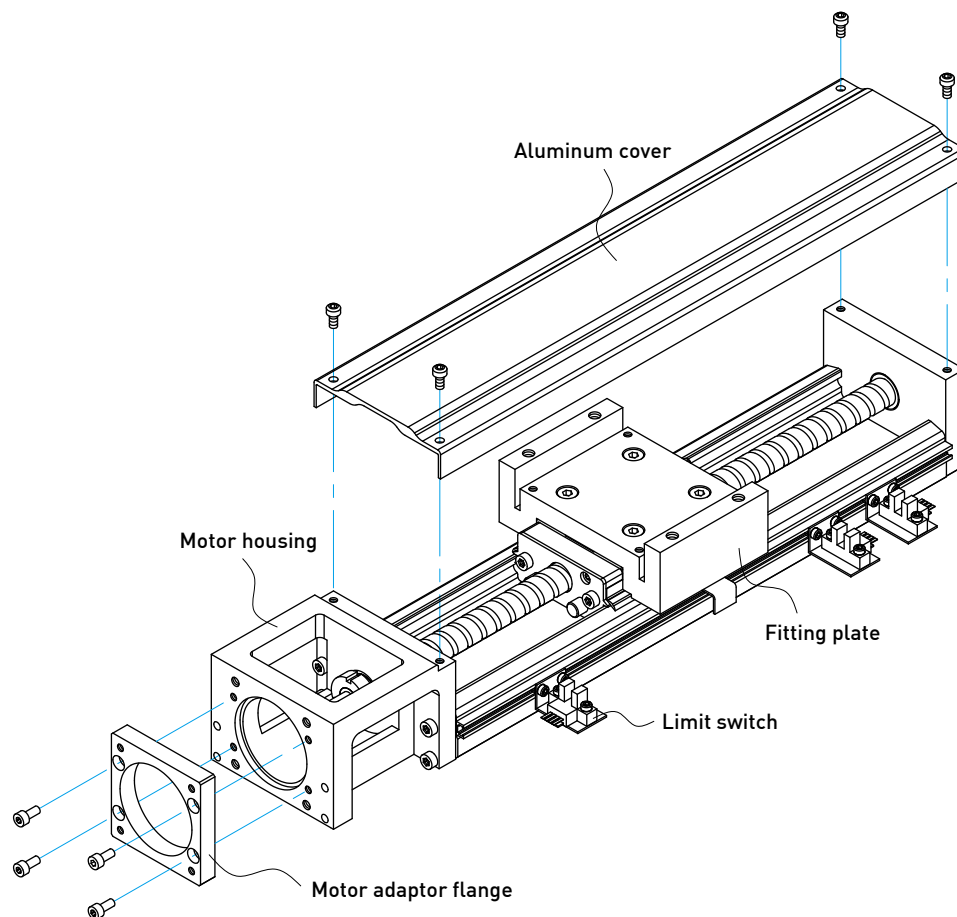
Model no.	W	H
KK30	30	15
KK40	40	20
KK50	50	26
KK60	60	33
KK80	80	45
KK86	86	46
KK100	100	55
KK130	130	65



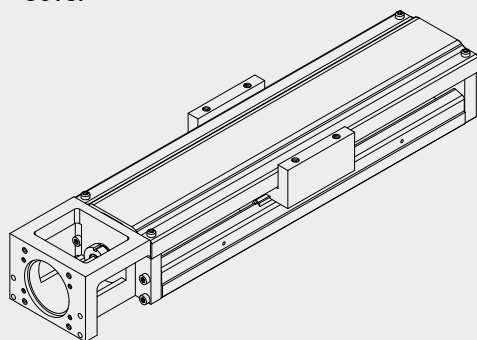
## 1.2 Accessories

Accessories of KK Single Axis Robot are also supported for specific demands, such as an aluminum cover, bellows, motor adaptor flange and limit switches.

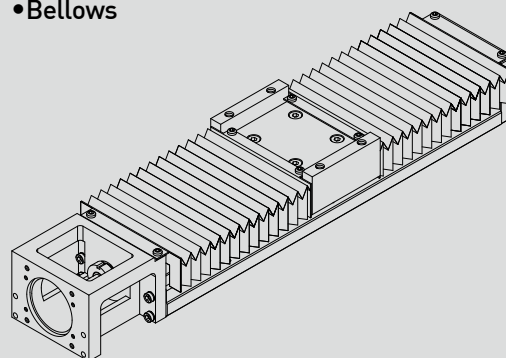
- Aluminum cover and bellow: contamination protection
- Motor adaptor flange: connection for different types of motors
- Limit switches: starting point, positioning and other safety matters



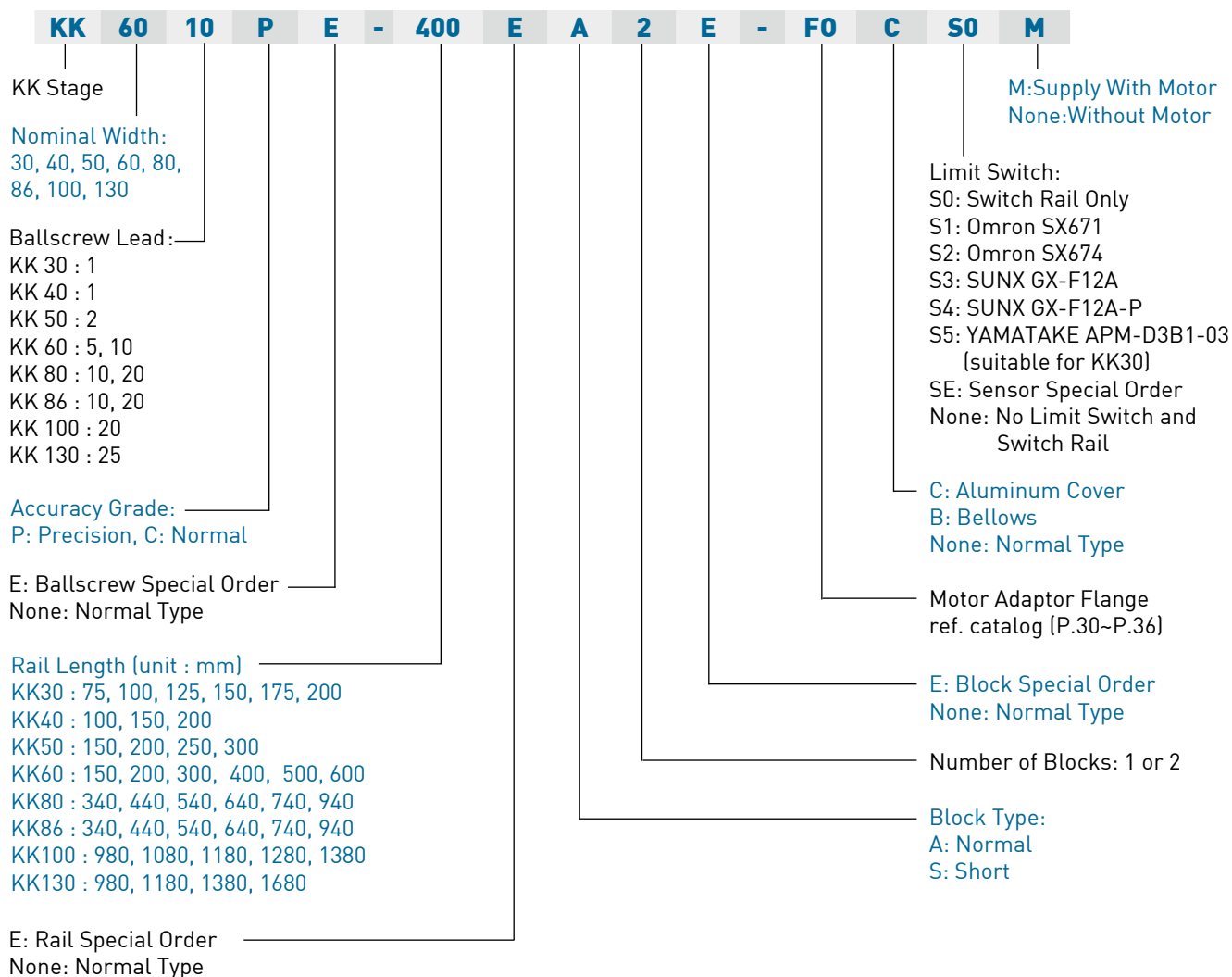
•Cover



•Bellows



### 1.3 Model Number of KK Series





## 1.5 Accuracy Grade

Unit : mm

Model	Rail Length	Repeatability		Accuracy		Running Parallelism		Starting Torque(N-cm)					
		Precision	Normal	Precision	Normal	Precision	Normal	Precision	Normal				
KK30	75	±0.003	±0.004	0.02	0.04	0.01	0.02	1.2	0.8				
	100												
	125												
	150												
	175												
	200												
KK40	100	±0.003	±0.005	0.02	-	0.01	-	1.2	0.8				
	150												
	200												
KK50	150	±0.003	±0.005	0.02	-	0.01	-	4	2				
	200												
	250												
	300												
KK60	150	±0.003	±0.005	0.02	-	0.01	-	15	7				
	200												
	300												
	400												
	500	±0.003	±0.005	0.025	-	0.015	-	15	7				
		600											
KK80	340	±0.003	±0.005	0.025	-	0.015	-	15	10				
	440												
	540												
	640												
	740	±0.003	±0.005	0.03	-	0.02	-	17	10				
	940	±0.003	±0.005	0.04	-	0.03	-	25	10				
KK86	340	±0.003	±0.005	0.025	-	0.015	-	15	10				
	440												
	540												
	640												
	740	±0.003	±0.005	0.03	-	0.02	-	17	10				
	940	±0.003	±0.005	0.04	-	0.03	-	25	10				
KK100	980	±0.005	±0.01	0.035	-	0.025	-	17	12				
	1080												
	1180	±0.005	±0.01	0.04	-	0.03	-	20	12				
	1280	±0.005	±0.01	0.045	-	0.035	-	23	15				
	1380			0.05		0.04		25					
KK130	980	±0.005	±0.01	0.035	-	0.025	-	25	15				
	1180			0.04		0.03		25	15				
	1380			±0.007		±0.012		0.05	-	0.04	-	27	18
	1680												

## 1.6 Maximum Speed Limit

Model	Ballscrew Lead (mm)	Rail Length (mm)	Speed (mm/sec)	
			Precision	Normal
KK30	01	75	160	160
		100	160	160
		125	160	160
		150	160	160
		175	160	160
		200	160	160
KK40	01	100	190	190
		150	190	190
		200	190	190
KK50	02	150	270	270
		200	270	270
		250	270	270
		300	270	270
		300	270	270
KK60	05	150	550	390
		200	550	390
		300	550	390
		400	550	390
		500	550	390
		600	340	340
	10	150	1100	790
		200	1100	790
		300	1100	790
		400	1100	790
KK80	10	500	1100	790
		600	670	670
		340	740	520
		440	740	520
		540	740	520
		640	740	520
	20	740	740	520
		940	610	430
		340	1480	1050
		440	1480	1050
		540	1480	1050
		640	1480	1050
KK86	10	740	1480	1050
		940	1220	870
		340	740	520
		440	740	520
		540	740	520
		640	740	520
	20	740	740	520
		940	610	430
		340	1480	1050
		440	1480	1050
KK100	20	540	1480	1050
		640	1480	1050
		740	1480	1050
		940	1220	870
		980	1120	800
		1080	980	800
KK130	25	1180	750	750
		1280	630	630
		1380	530	530
		1680	550	550



## 1.7 Life Calculations

### 1.7.1 Service Life

Under repeated stress between the raceway and the rolling elements, pitting and flaking will occur as it reaches fatigue failure. The service life of the KK Single Axis Robot is defined as the distanced traveled before any failure of the raceway or rolling elements appear.

### 1.7.2 Nominal Life (L)

The service life varies greatly even when the KK units are manufactured in the same way or operated under the same conditions. For this reason, nominal life is used as the criteria for predicting the service life of a KK unit.

### 1.7.3 Nominal Life Calculation

The calculating formulas are divided into two parts, guideway and ballscrew. The smaller value of the two would be the recommended nominal life of the KK unit.

Nominal life formulas for both the guideway and ballscrew depend on several parameters and are shown below.

#### Guideway

$$L = \left( \frac{f_t}{f_w} \cdot \frac{C}{P_n} \right)^3 \times 50 \text{ km}$$

$L$  : Life Rating (km)       $C$  : Basic Dynamic Load Rating (N)  
 $f_t$  : Contact Coefficient (ref. Table 1)       $P_n$  : Calculated Loading (N)  
 $f_w$  : Loading Coefficient (ref. Table 2)

Table 1

Block Type	Contact Coefficient $f_t$
A1, S1	1.0
A2, S2	0.81

Table 2

Operating Condition		Loading Coefficient $f_w$
Thrust and Vibration	Velocity (V)	
No Thrust	V < 15m/min	1.0 ~ 1.5
Low Vibration	15m/min < V < 60m/min	1.5 ~ 2.0
High Vibration	V > 60m/min	2.0 ~ 3.5

#### Ballscrew and Bearing

$$L = \left( \frac{1}{f_w} \cdot \frac{C_a}{P_{a,n}} \right)^3 \times 10^6 \text{ rev}$$

$L$  : Life Rating (rev.)       $C_a$  : Basic Dynamic Load Rating (N)  
 $f_w$  : Loading Coefficient (ref. Table 2)       $P_{a,n}$  : Axial Loading (N)

## 1.8 Lubrication

Insufficient lubrication of the guideway would lead to a reduction of the service life.

The lubricant provides the following functions:

- Reducing rolling friction and avoiding abrasion
- Providing a lubricating film and extending the service life
- Anti-rusting

### 1.8.1 Lubricating Grease

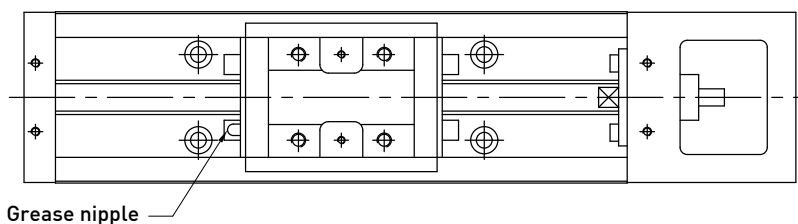
Re-lubricating the KK Single Axis Robot every 100km is recommended. Generally, grease is applied for speeds under 60 m/min. For operating speeds over 60 m/min, a grease with a higher viscosity should be used.

$$T = \frac{100 \times 1000}{V_e \times 60}$$

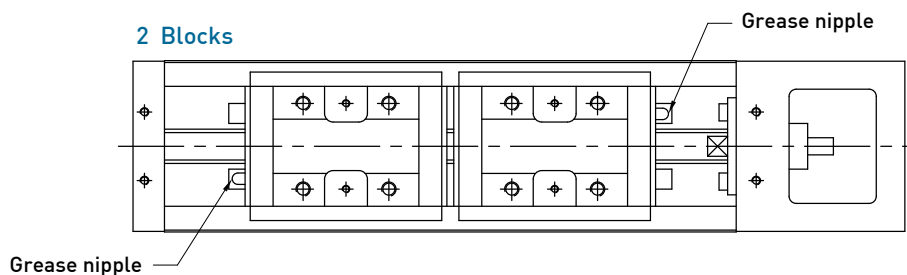
$T$  : Lubricating frequency (hrs)  
 $V_e$  : Speed (m/min)

### 1.8.2 Grease Nipple

#### 1 Block

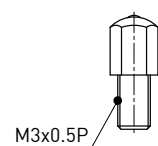


#### 2 Blocks



#### Types of grease nipple

KK40



NO. 34310010

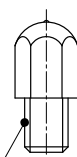
KK50

KK60

KK80

KK86

M4x0.7P

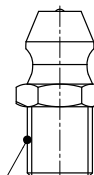


NO. 34310002

KK100

KK130

M6x0.75P

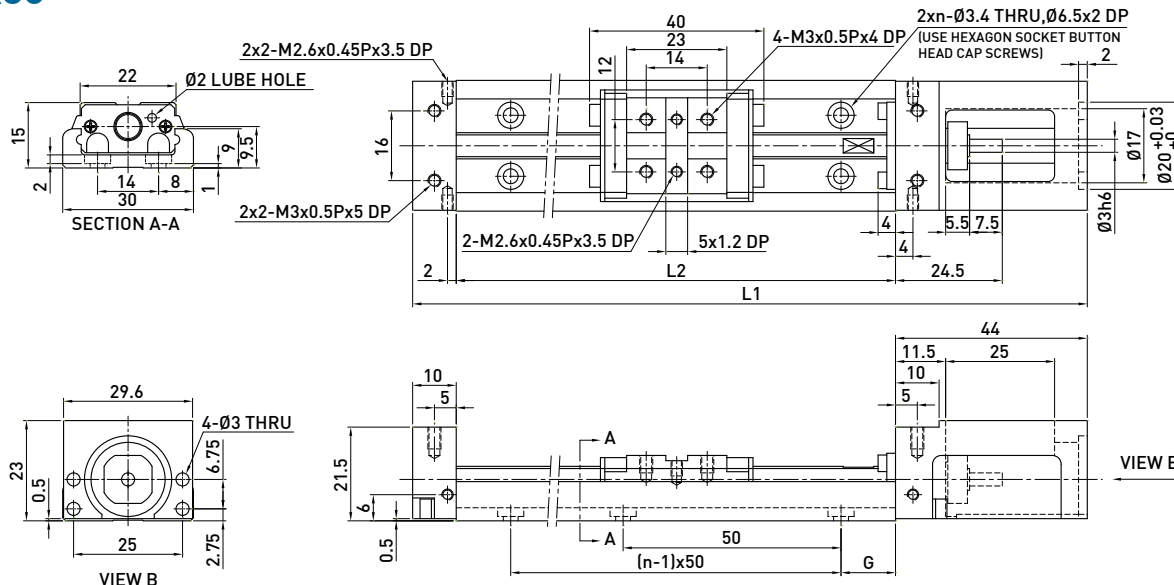


NO. 34310008

## 1.9 Dimensions

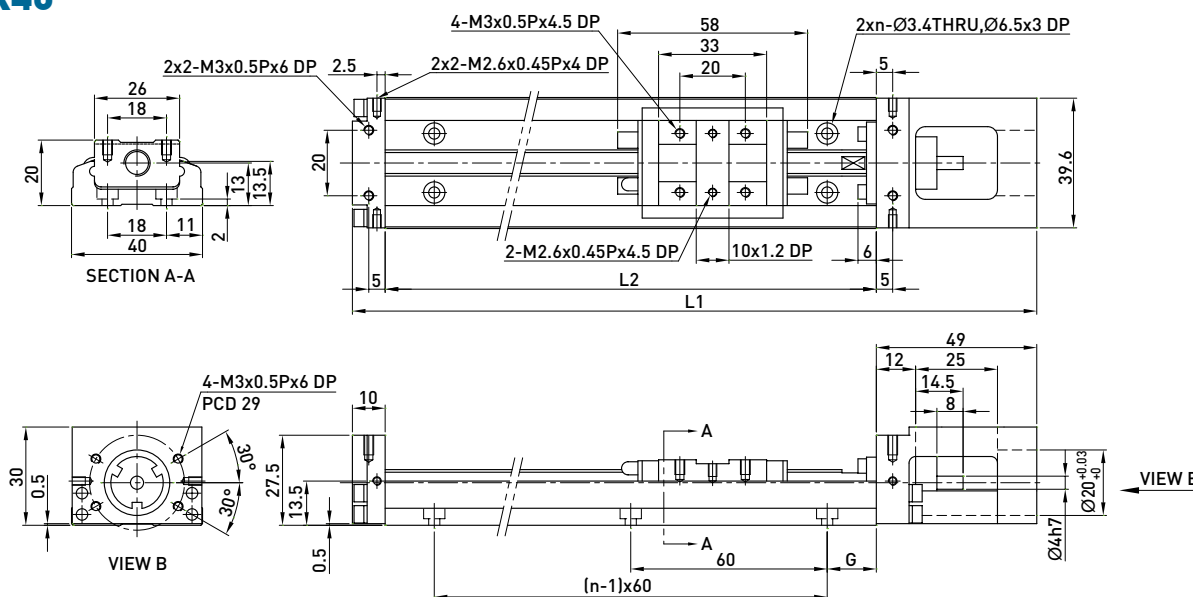
### 1.9.1 Without cover

#### KK30



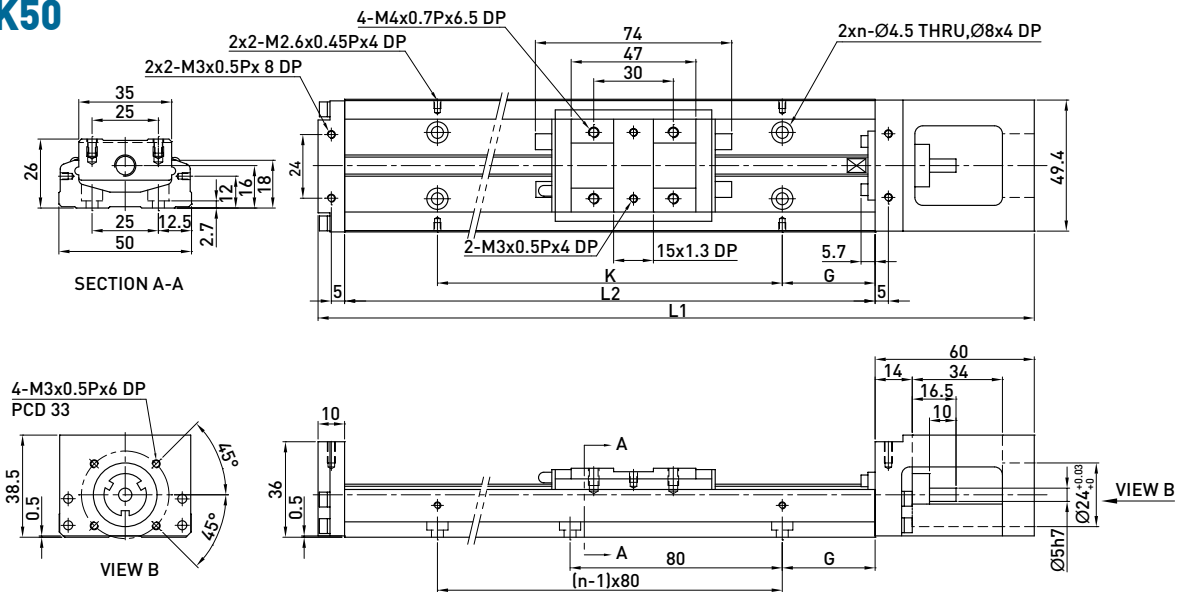
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	n	Mass (kg)	
		A1 Block	A2 Block			A1 Block	A2 Block
75	129	31	-	12.5	2	0.2	-
100	154	56	-	25	2	0.23	-
125	179	81	45	12.5	3	0.26	0.3
150	204	106	70	25	3	0.29	0.33
175	229	131	95	12.5	4	0.32	0.36
200	254	156	120	25	4	0.35	0.39

#### KK40



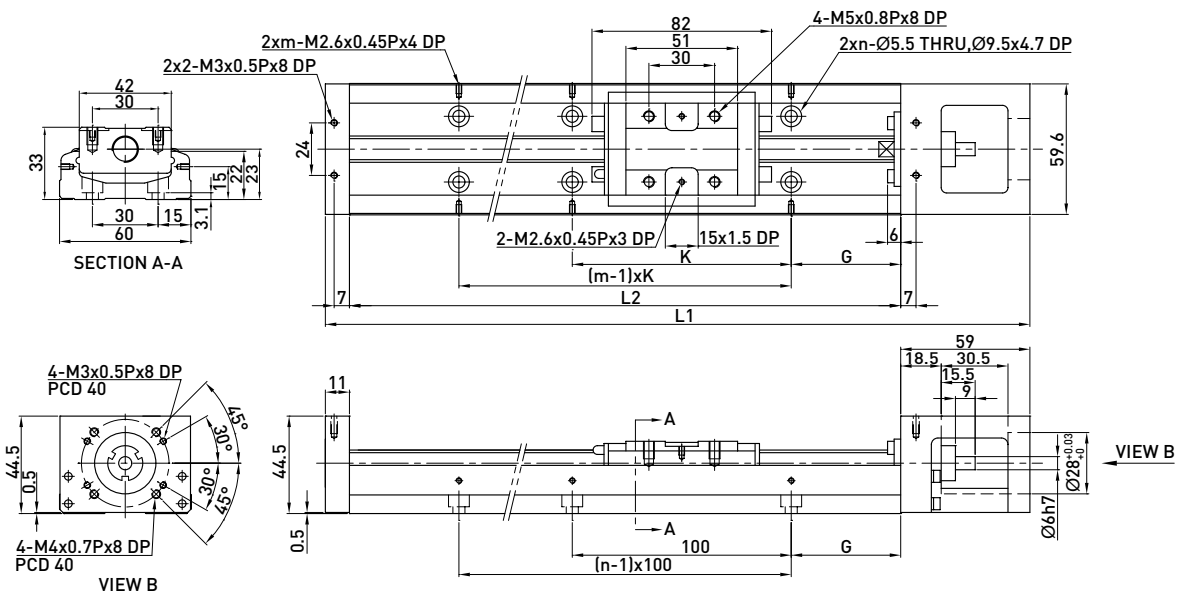
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	n	Mass (kg)	
		A1 Block	A2 Block			A1 Block	A2 Block
100	159	36	-	20	2	0.48	-
150	209	86	34	15	3	0.6	0.67
200	259	136	84	40	3	0.72	0.79

## KK50



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
150	220	70	-	35	80	2	1	-
200	270	120	55	20	160	3	1.2	1.4
250	320	170	105	45	160	3	1.4	1.6
300	370	220	155	30	240	4	1.6	1.8

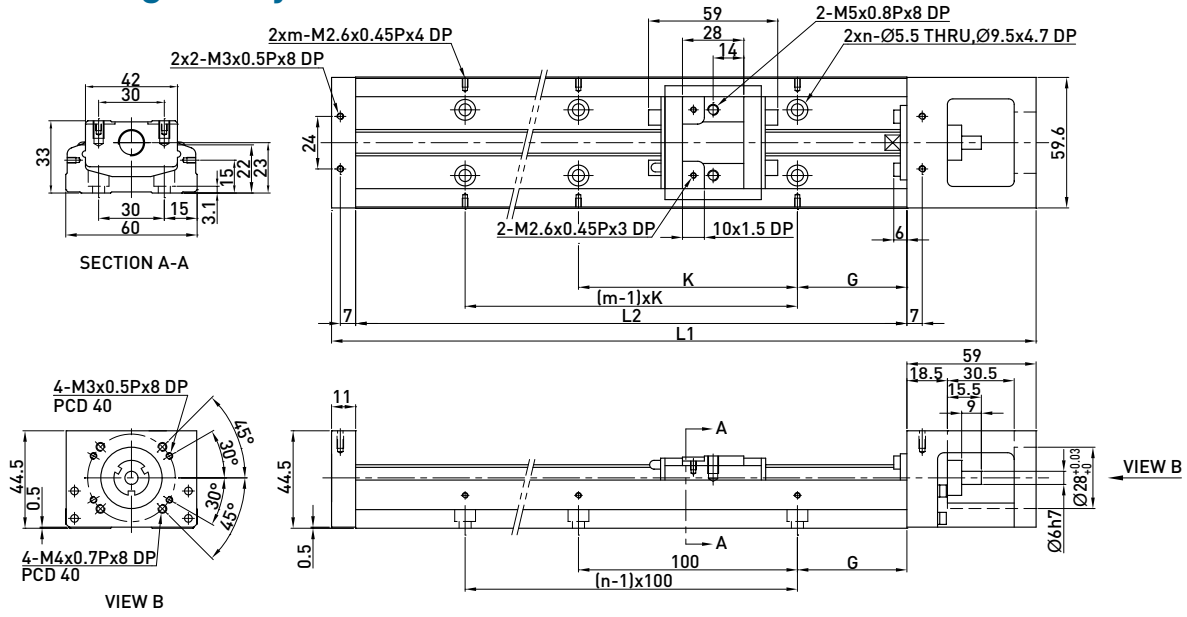
## KK60 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
150	220	60	-	25	100	2	2	1.5	-
200	270	110	-	50	100	2	2	1.8	-
300	370	210	135	50	200	3	2	2.4	2.7
400	470	310	235	50	100	4	4	3	3.3
500	570	410	335	50	200	5	3	3.6	3.9
600	670	510	435	50	100	6	6	4.2	4.6

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

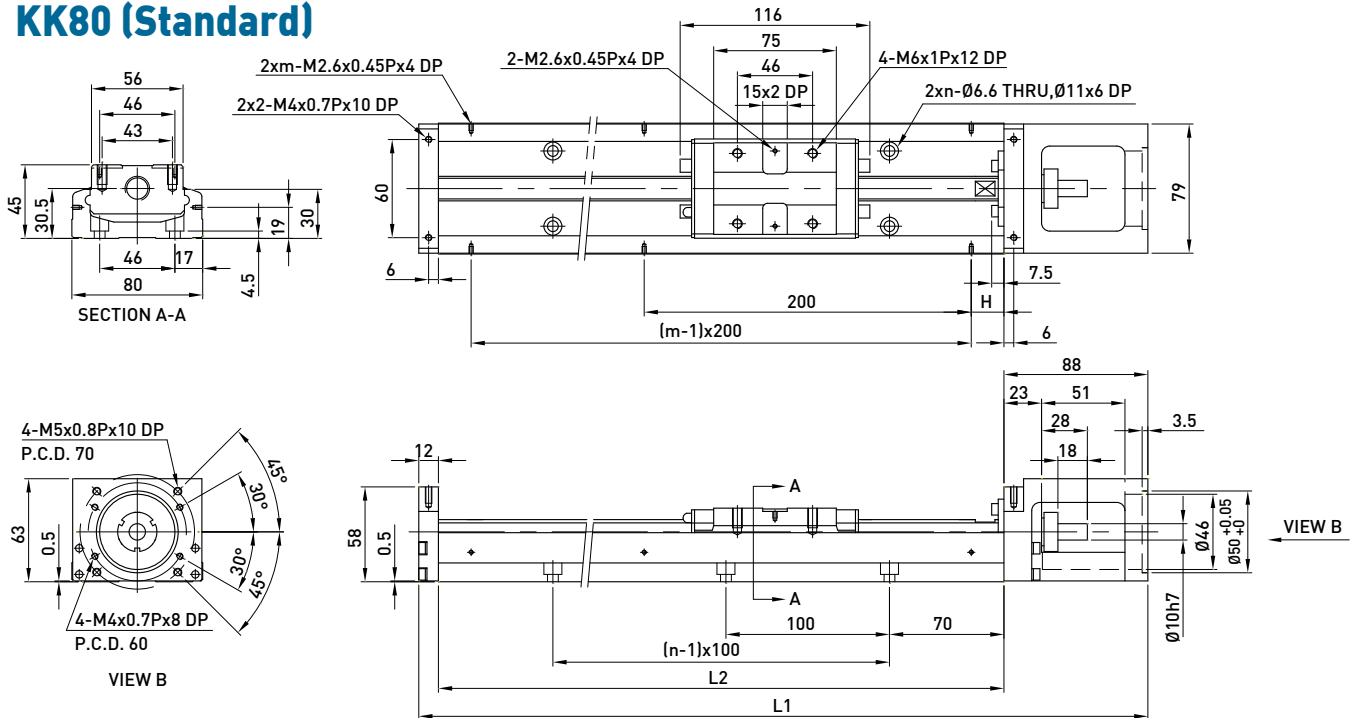
## KK60 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block					S1 Block	S2 Block
150	220	85	34	25	100	2	2	1.4	1.6
200	270	135	84	50	100	2	2	1.7	1.9
300	370	235	184	50	200	3	2	2.3	2.5
400	470	335	284	50	100	4	4	2.9	3.1
500	570	435	384	50	200	5	3	3.5	3.7
600	670	535	484	50	100	6	6	4.1	4.3

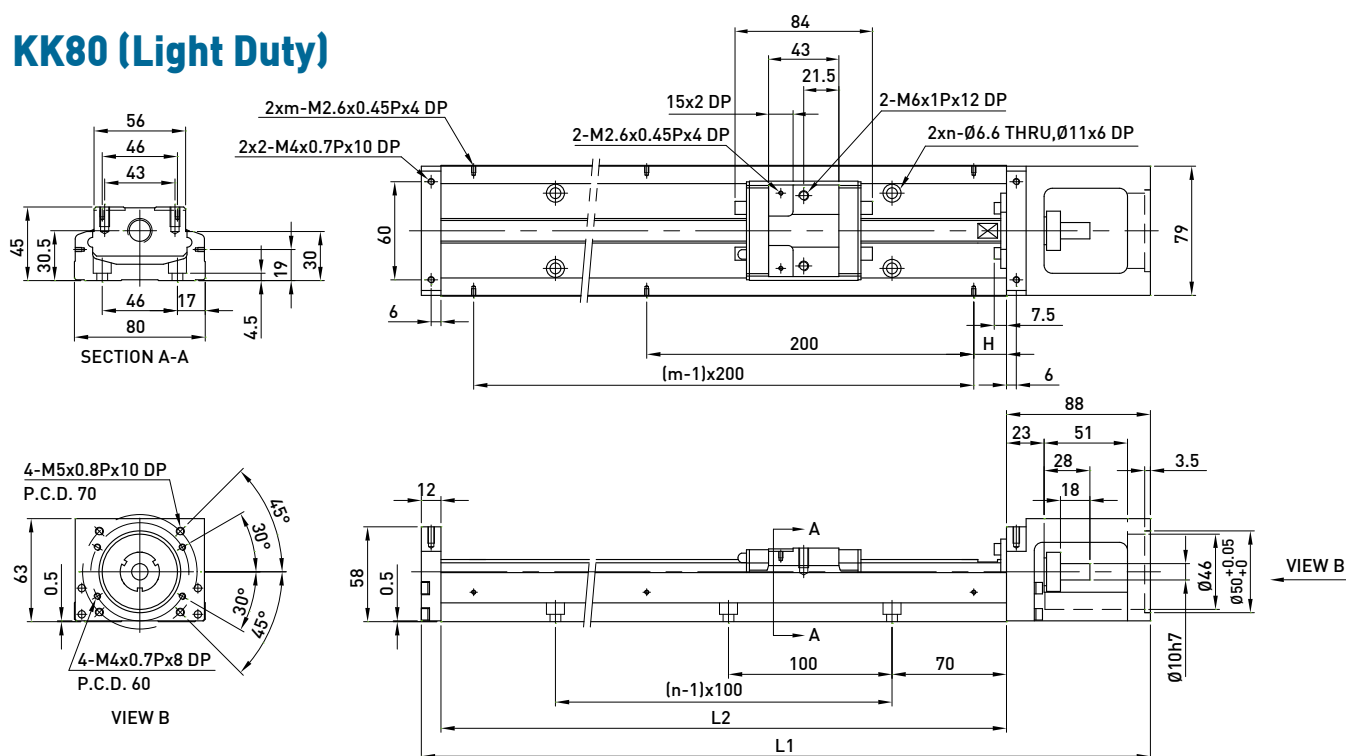
Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

## KK80 (Standard)



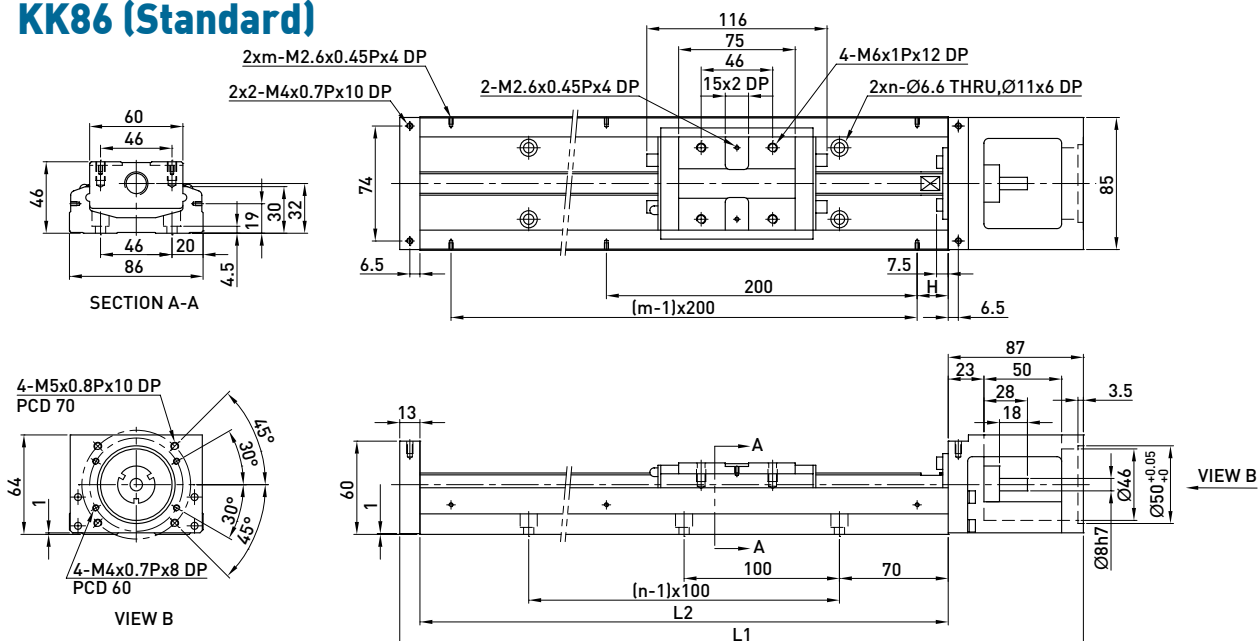
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	5.3	6
440	540	316.5	208.5	20	4	3	6.5	7.2
540	640	416.5	308.5	70	5	3	7.6	8.3
640	740	516.5	408.5	20	6	4	8.8	9.5
740	840	616.5	508.5	70	7	4	10	10.7
940	1040	816.5	708.5	70	9	5	12.4	13.1

## KK80 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	5	5.4
440	540	348.5	272.5	20	4	3	6.2	6.6
540	640	448.5	372.5	70	5	3	7.3	7.7
640	740	548.5	472.5	20	6	4	8.5	8.9
740	840	648.5	572.5	70	7	4	9.7	10.1
940	1040	848.5	772.5	70	9	5	12.1	12.5

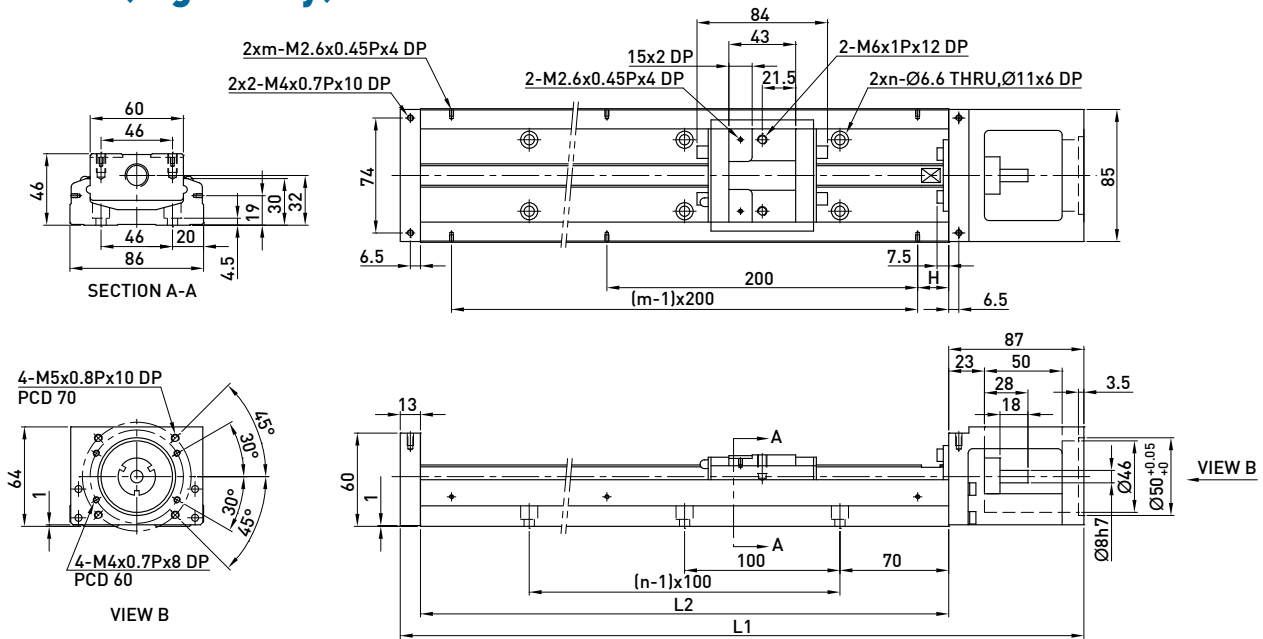
## KK86 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	5.7	6.5
440	540	316.5	208.5	20	4	3	6.9	7.7
540	640	416.5	308.5	70	5	3	8.0	8.8
640	740	516.5	408.5	20	6	4	9.2	10.0
740	840	616.5	508.5	70	7	4	10.4	11.2
940	1040	816.5	708.5	70	9	5	11.6	12.4

Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

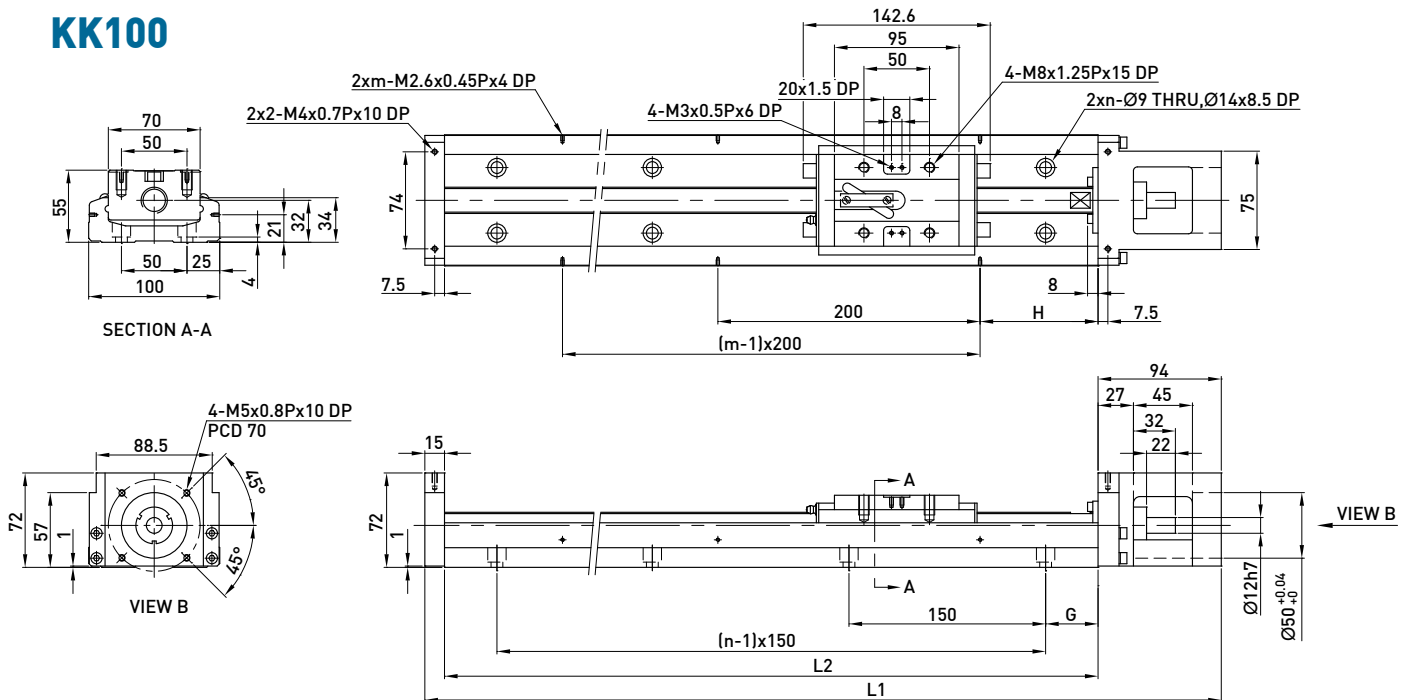
## KK86 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	5.4	5.9
440	540	348.5	272.5	20	4	3	6.6	7.1
540	640	448.5	372.5	70	5	3	7.7	8.2
640	740	548.5	472.5	20	6	4	8.9	9.4
740	840	648.5	572.5	70	7	4	10.1	10.6
940	1040	848.5	772.5	70	9	5	11.3	11.8

Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

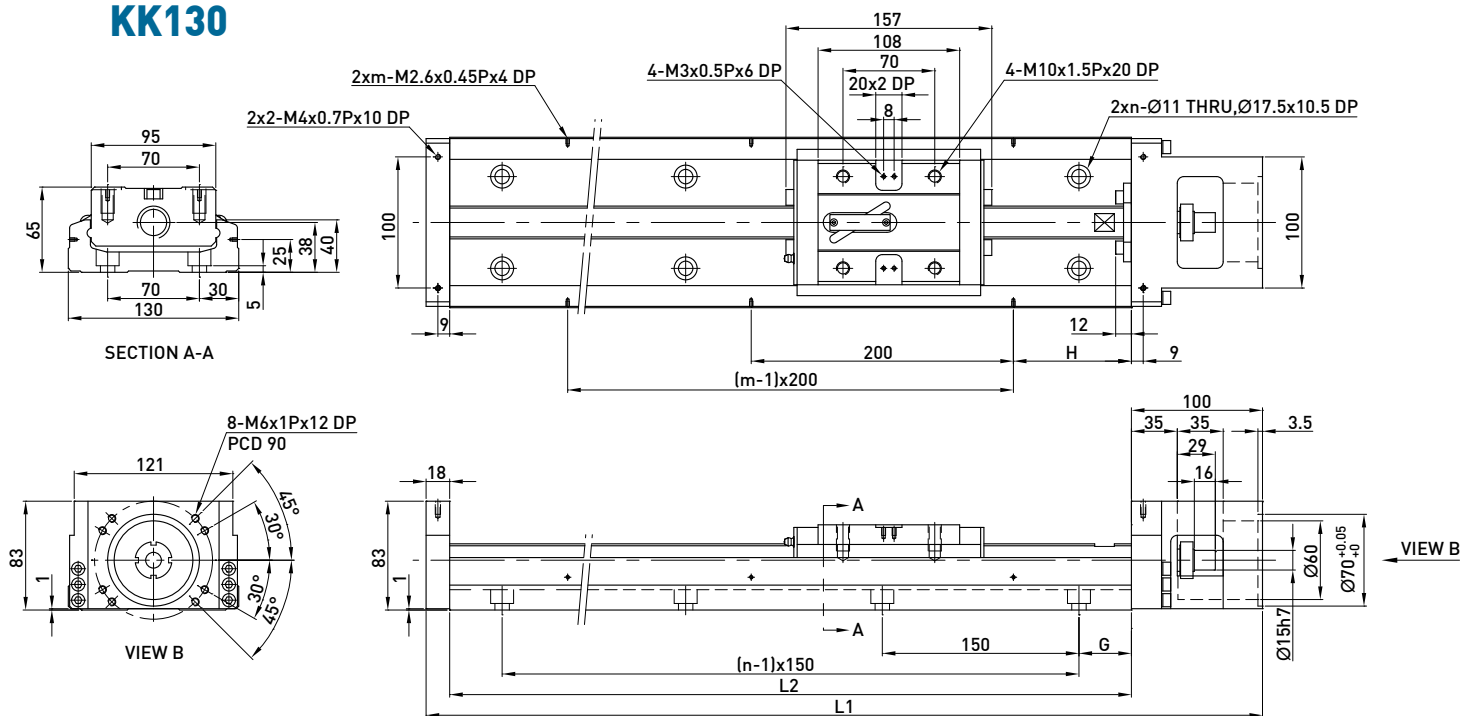
## KK100



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
980	1089	828	700	40	90	7	5	18.6	20.3
1080	1189	928	800	15	40	8	6	20.3	22.0
1180	1289	1028	900	65	90	8	6	22.0	23.7
1280	1389	1128	1000	40	40	9	7	23.6	25.3
1380	1489	1228	1100	15	90	10	7	25.3	27.0



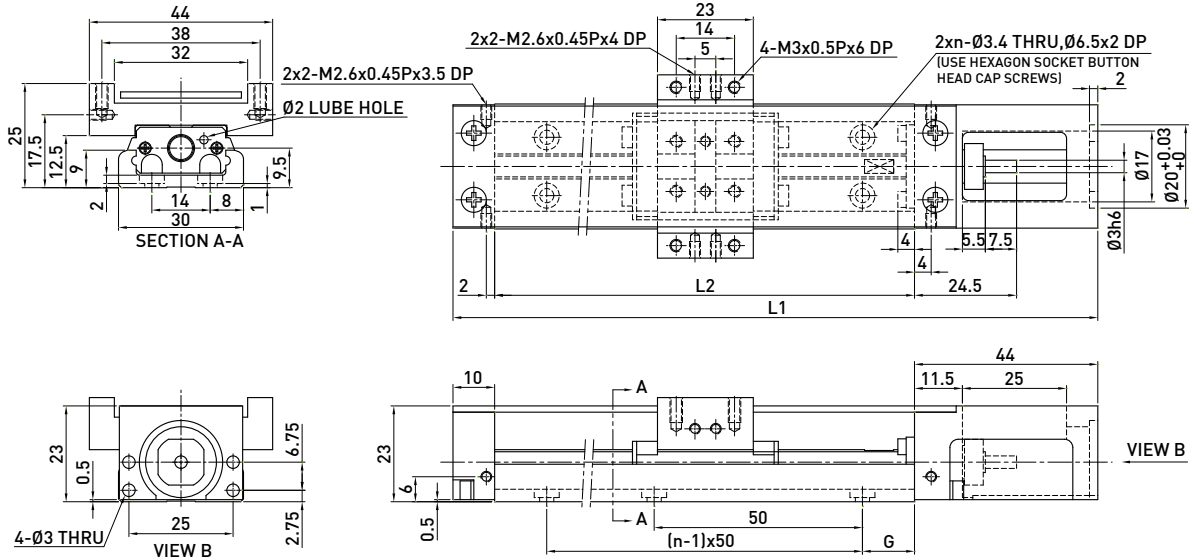
# KK130



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
980	1098	811	659	40	90	7	5	29.4	32.3
1180	1298	1011	859	65	90	8	6	34.3	37.2
1380	1498	1211	1059	90	90	9	7	39.2	42.1
1680	1798	1511	1359	90	40	11	9	46.5	49.4

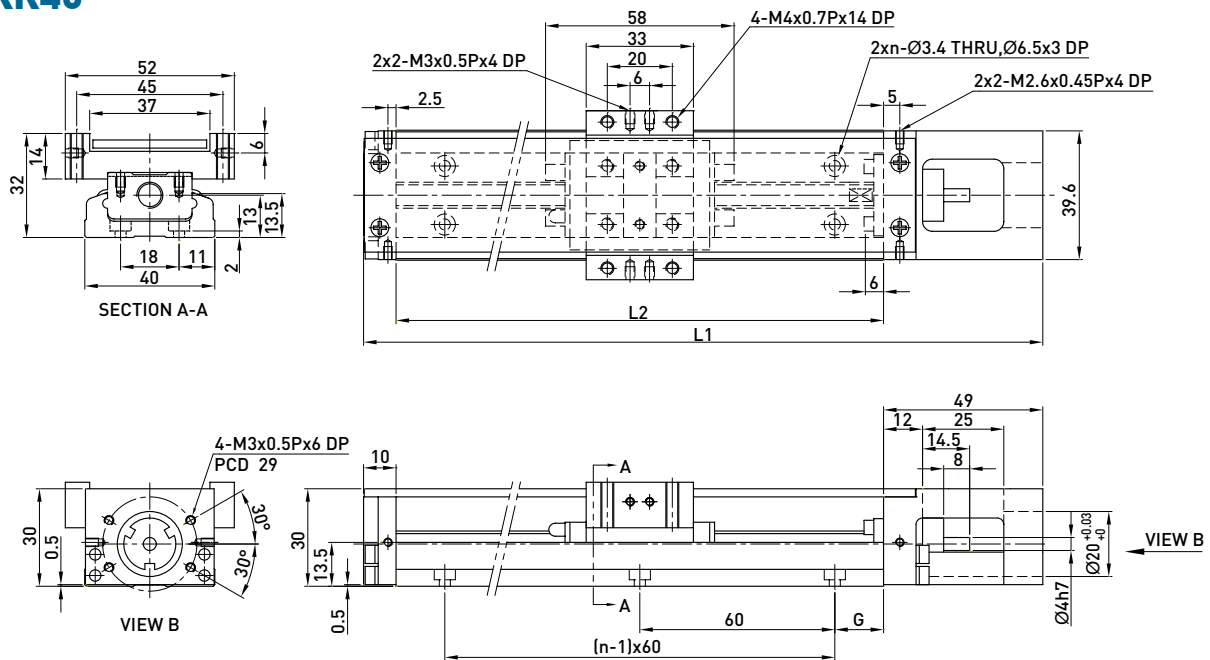
### 1.9.2 With cover

## KK30



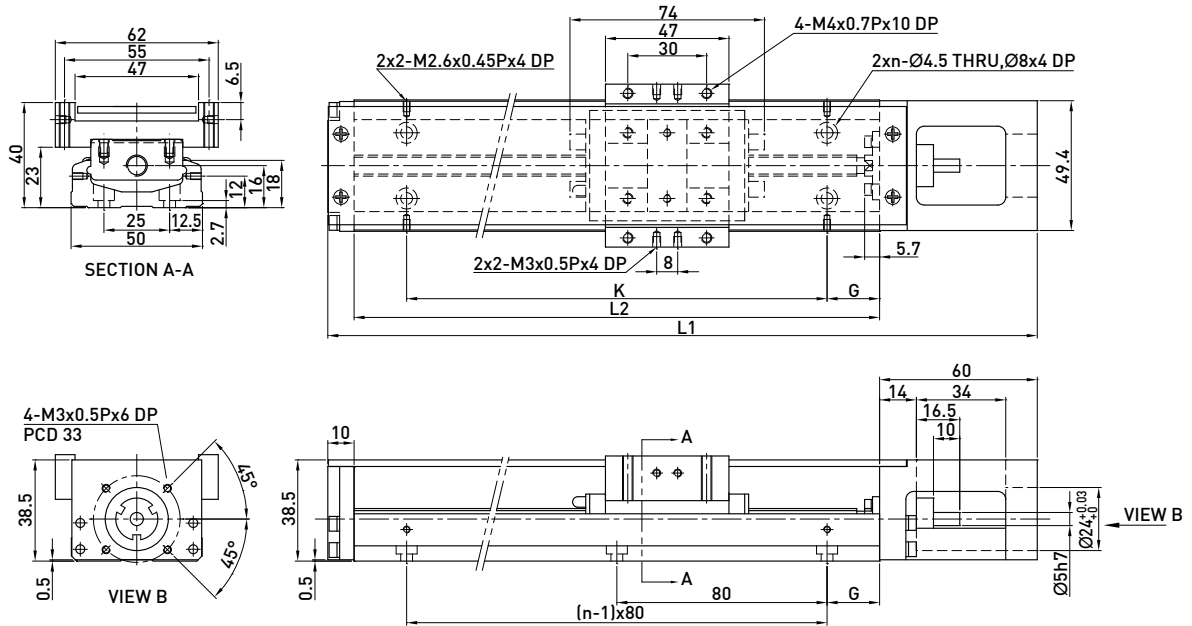
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	n	Mass (kg)	
		A1 Block	A2 Block			A1 Block	A2 Block
75	129	31	-	12.5	2	0.2	-
100	154	56	-	25	2	0.23	-
125	179	81	45	12.5	3	0.26	0.3
150	204	106	70	25	3	0.29	0.33
175	229	131	95	12.5	4	0.32	0.36
200	254	156	120	25	4	0.35	0.39

## KK40



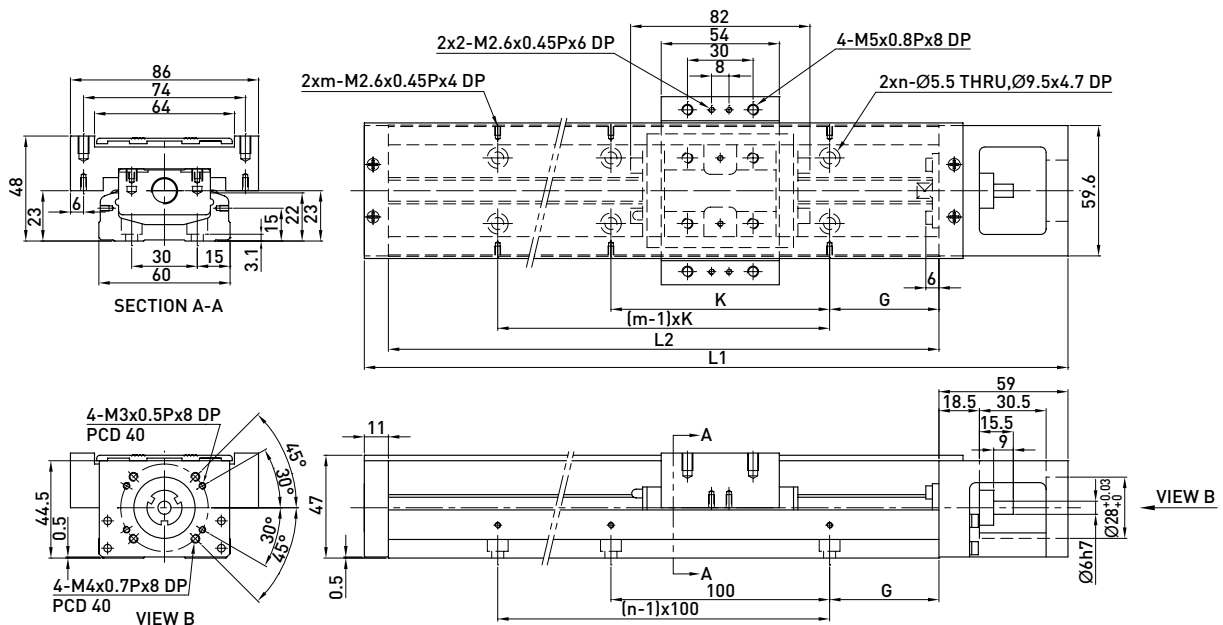
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	n	Mass (kg)	
		A1 Block	A2 Block			A1 Block	A2 Block
100	159	36	-	20	2	0.55	-
150	209	86	34	15	3	0.68	0.76
200	259	136	84	40	3	0.82	0.89

## KK50



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
150	220	70	-	35	80	2	1.1	-
200	270	120	55	20	160	3	1.3	1.5
250	320	170	105	45	160	3	1.6	1.8
300	370	220	155	30	240	4	1.8	2.0

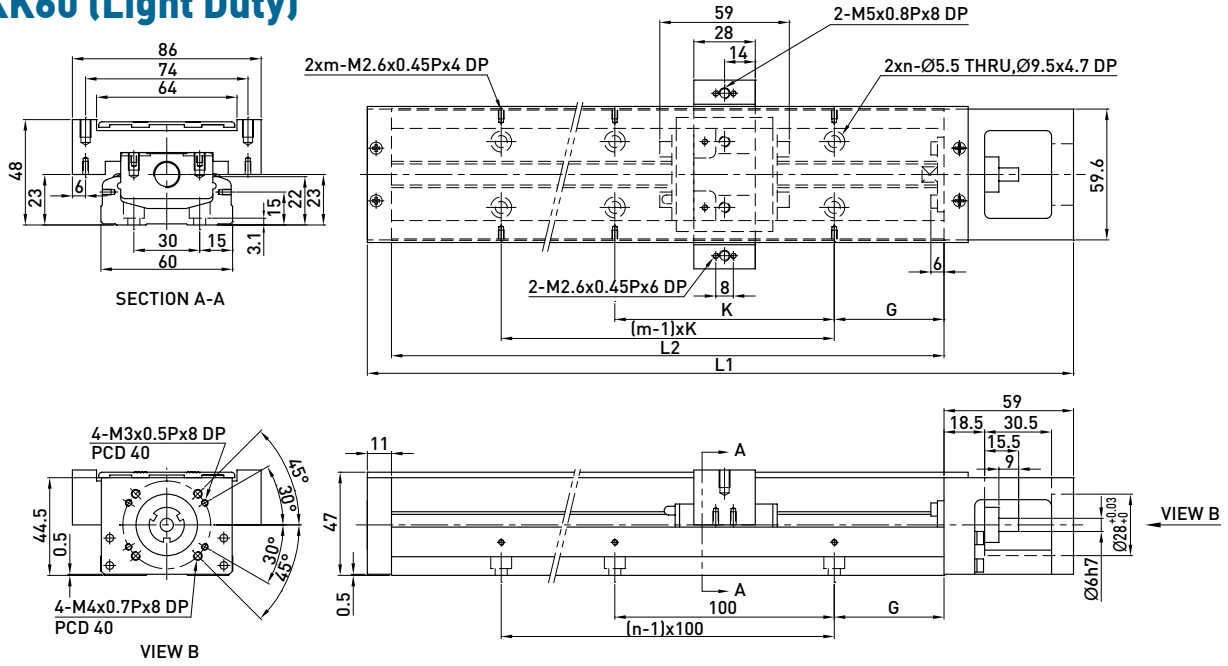
## KK60 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
150	220	60	-	25	100	2	2	1.7	-
200	270	110	-	50	100	2	2	2.1	-
300	370	210	135	50	200	3	2	2.7	3.0
400	470	310	235	50	100	4	4	3.3	3.6
500	570	410	335	50	200	5	3	3.9	4.2
600	670	510	435	50	100	6	6	4.6	5.0

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

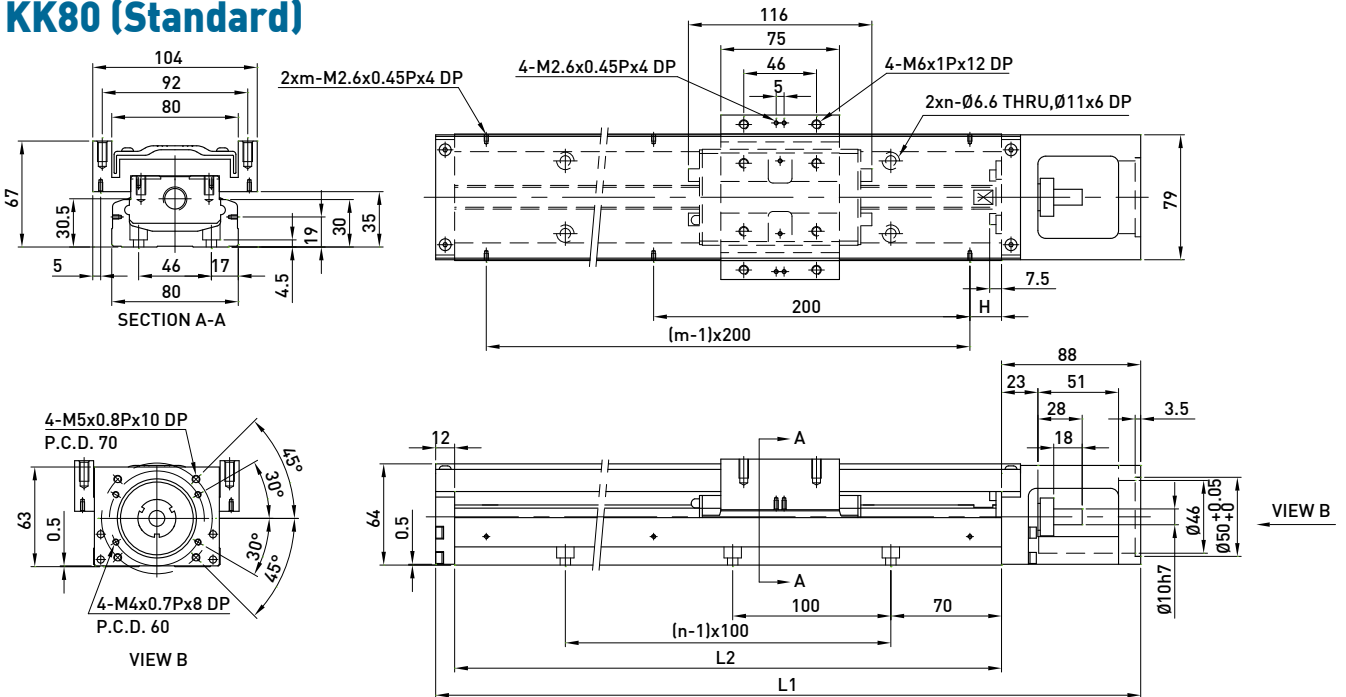
## KK60 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block					S1 Block	S2 Block
150	220	85	34	25	100	2	2	1.6	1.8
200	270	135	84	50	100	2	2	1.9	2.1
300	370	235	184	50	200	3	2	2.5	2.7
400	470	335	284	50	100	4	4	3.1	3.3
500	570	435	384	50	200	5	3	3.7	3.9
600	670	535	484	50	100	6	6	4.4	4.6

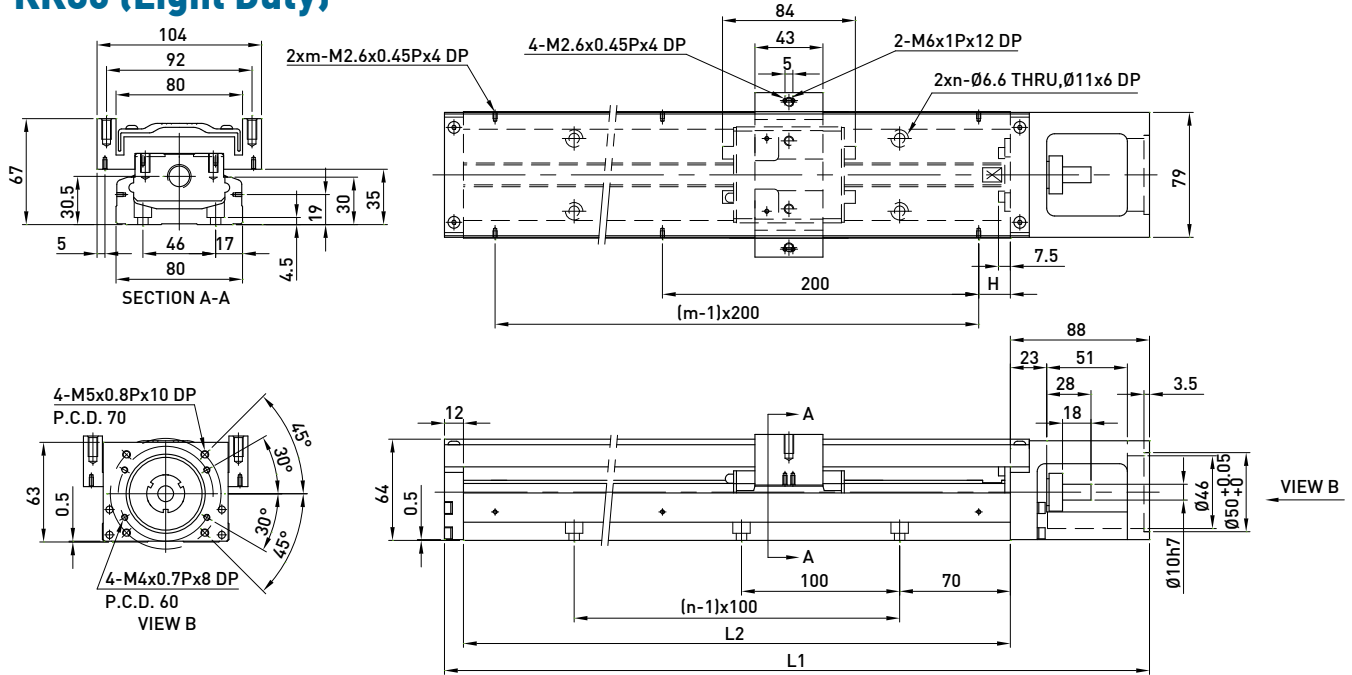
Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

## KK80 (Standard)



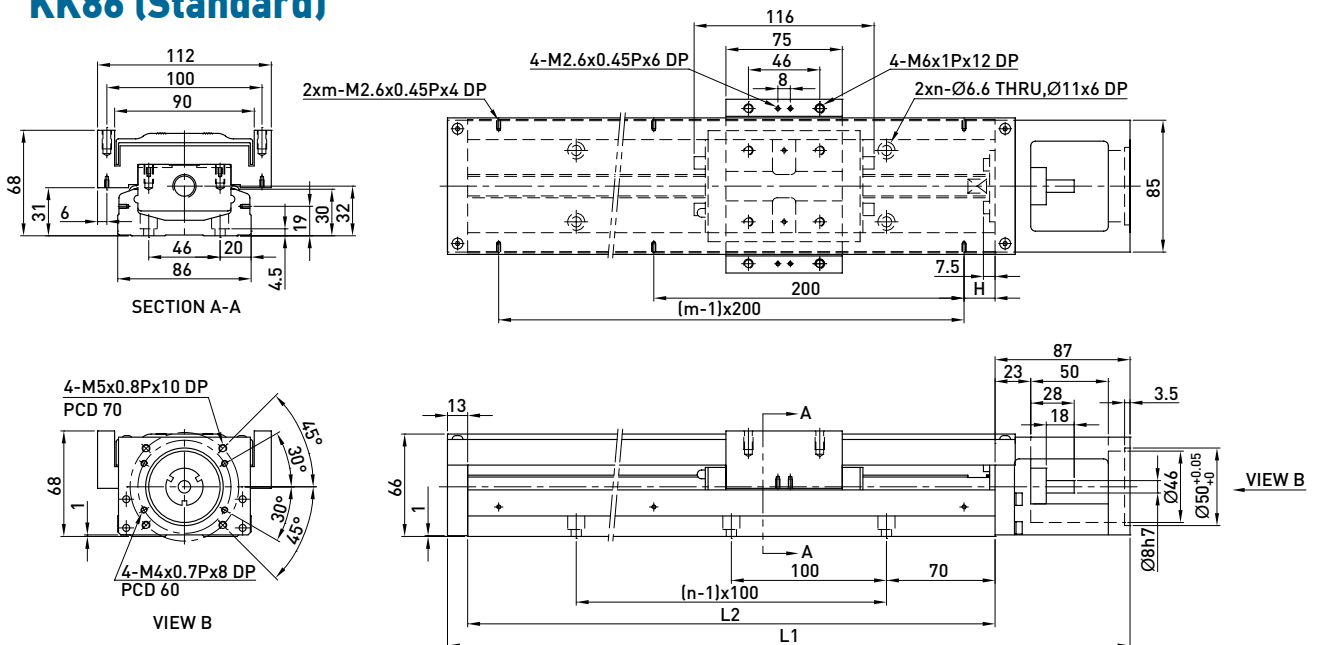
Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	6	7.1
440	540	316.5	208.5	20	4	3	7.2	8.3
540	640	416.5	308.5	70	5	3	8.4	9.5
640	740	516.5	408.5	20	6	4	9.7	10.8
740	840	616.5	508.5	70	7	4	10.9	12
940	1040	816.5	708.5	70	9	5	13.5	14.6

## KK80 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	5.5	6.1
440	540	348.5	272.5	20	4	3	6.8	7.4
540	640	448.5	372.5	70	5	3	7.9	8.5
640	740	548.5	472.5	20	6	4	9.2	9.8
740	840	648.5	572.5	70	7	4	10.5	11.1
940	1040	848.5	772.5	70	9	5	13	13.6

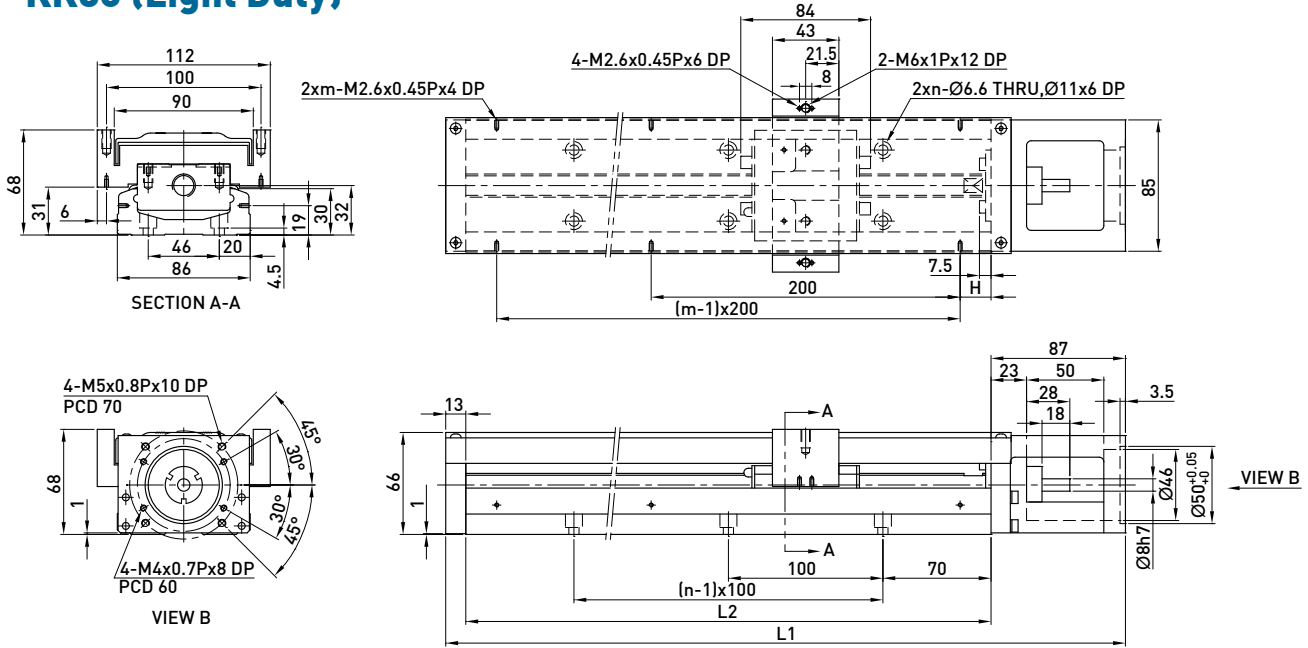
## KK86 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	6.5	7.3
440	540	316.5	208.5	20	4	3	7.8	8.6
540	640	416.5	308.5	70	5	3	9.0	9.8
640	740	516.5	408.5	20	6	4	10.3	11.3
740	840	616.5	508.5	70	7	4	11.6	12.4
940	1040	816.5	708.5	70	9	5	13.0	13.8

Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

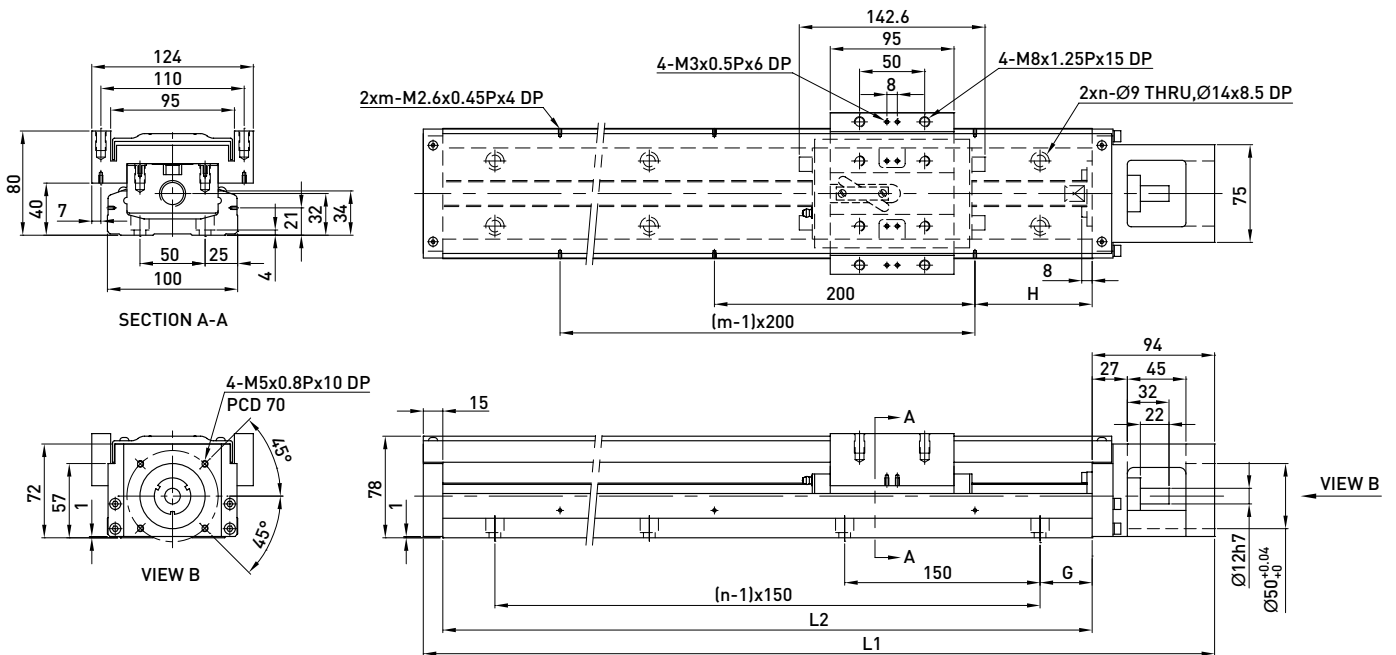
## KK86 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	6.3	7.1
440	540	348.5	272.5	20	4	3	7.6	8.4
540	640	448.5	372.5	70	5	3	8.8	9.6
640	740	548.5	472.5	20	6	4	10.1	11.1
740	840	648.5	572.5	70	7	4	11.4	12.2
940	1040	848.5	772.5	70	9	5	12.8	13.6

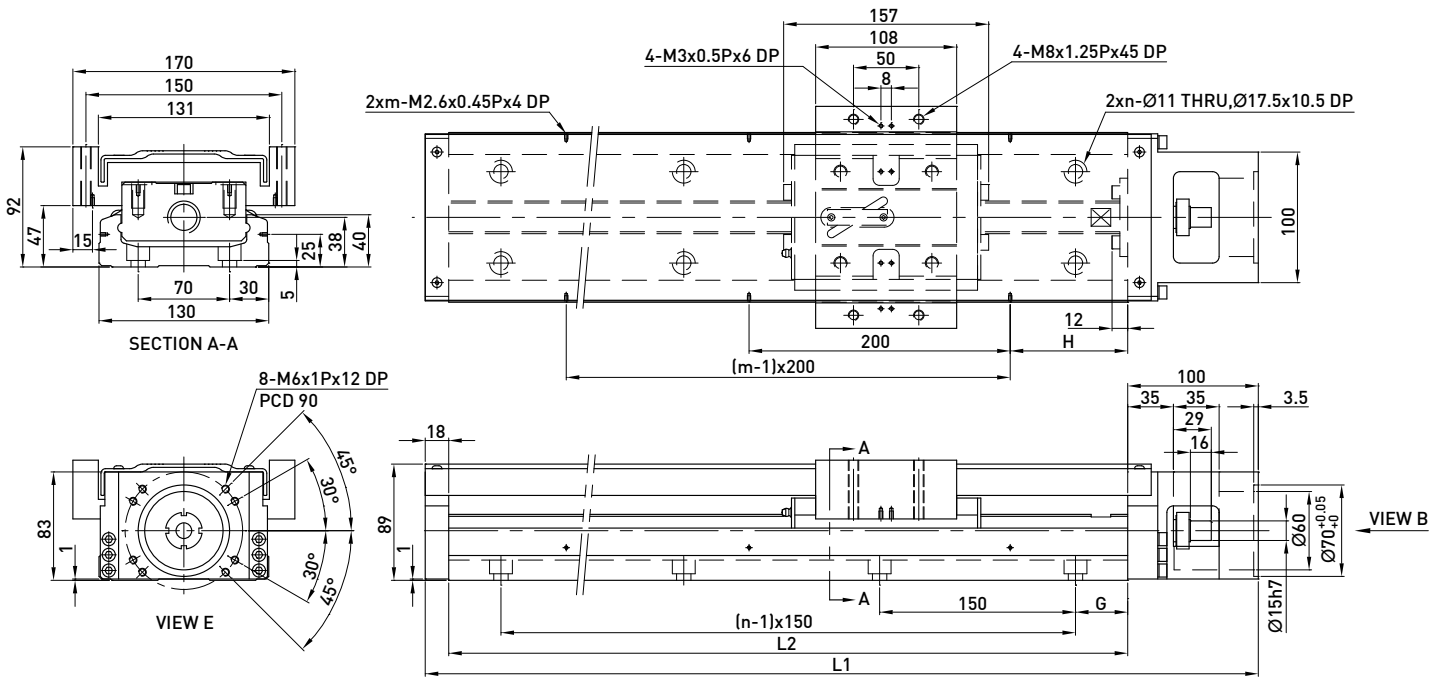
Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

## KK100



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
980	1089	828	700	40	90	7	5	20.4	22.1
1080	1189	928	800	15	40	8	6	22.2	23.9
1180	1289	1028	900	65	90	8	6	24.0	25.7
1280	1389	1128	1000	40	40	9	7	25.7	27.4
1380	1489	1228	1100	15	90	10	7	27.5	29.2

# KK130



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
980	1098	811	659	40	90	7	5	31.9	35.9
1180	1298	1011	859	65	90	8	6	37.1	41.1
1380	1498	1211	1059	90	90	9	7	42.2	46.2
1680	1798	1511	1359	90	40	11	9	49.9	53.9



## 1.10 Motor Housing and Motor Adaptor Flange

### 1.10.1 Motor Selection

#### HIWIN Mikrosystem Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection								+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130				
50W	FRLS052□□A4□	0.45	-	F2	F2	F2	F3	F3	-	-	0.58	D2	1.25	220V
100W	FRLS102□□A4□	0.6	-	F2	F2	F2	F3	F3	-	-	0.76			220V
200W	FRLS202□□06□	1	-	-	-	-	F0	F0	F0	F1	1.5			220V
400W	FRLS402□□06□	1.45	-	-	-	-	F0	F0	F0	F1	1.86			220V
750W	FRMS752□□08□	2.66	-	-	-	-	-	-	F1	F2	3.32			220V

#### Mitsubishi Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection								+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130				
10W	HC-AQ0135D	0.19	F1	-	-	-	-	-	-	-	0.29	M2-JR-03A5	0.2	
20W	HC-AQ0235D	0.22	F1	-	-	-	-	-	-	-	0.32	M2-JR-03A5	0.2	
50W	HF-KP053	0.35	-	F1	F1	F1	F2	F2	-	-	0.75	MR-J3S-10A	0.8	220V
100W	HF-KP13	0.56	-	F1	F1	F1	F2	F2	-	-	0.89	MR-J3S-10A	0.8	220V
200W	HF-KP23	0.94	-	-	-	-	F0	F0	F0	F1	1.6	MR-J3S-20A	0.8	220V
400W	HF-KP43	1.5	-	-	-	-	F0	F0	F0	F1	2.1	MR-J3S-40A	1	220V
750W	HF-KP73	2.9	-	-	-	-	-	-	F1	F2	4	MR-J3S-70A	1.4	220V

#### Panasonic Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection								+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130				
50W	MSMD5AZP1	0.32	-	F2	F2	F2	F3	F3	-	-	0.53	MADDT1105	0.8	110V
50W	MSMD5AZP1	0.32	-	F2	F2	F2	F3	F3	-	-	0.53	MADDT1205	0.8	220V
100W	MSMD011P1	0.47	-	F2	F2	F2	F3	F3	-	-	0.68	MADDT1107	0.8	110V
100W	MSMD012P1	0.47	-	F2	F2	F2	F3	F3	-	-	0.68	MADDT1205	0.8	220V
200W	MSMD021P1	0.82	-	-	-	-	F1	F1	-	-	1.3	MADDT2110	1.1	110V
200W	MSMD022P1	0.82	-	-	-	-	F1	F1	-	-	1.3	MADDT1207	0.8	220V
400W	MSMD041P1	1.2	-	-	-	-	F1	F1	-	-	1.7	MADDT3120	1.5	110V
400W	MSMD042P1	1.2	-	-	-	-	F1	F1	-	-	1.7	MADDT2210	1.1	220V
750W	MSMD082S1	2.3	-	-	-	-	F4	F4	F2	F4	3.1	MADDT3520	1.5	220V

#### Yasukawa Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection								+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130				
10W	SGMMV-A1A2A21	0.13	F2	-	-	-	-	-	-	-	0.215	SGDV-R90A01A	0.9	220V
20W	SGMMV-A2A2A21	0.17	F2	-	-	-	-	-	-	-	0.27	SGDV-R90A01A	0.9	220V
50W	SGMAV-A5ADA61	0.3	-	F1	F1	F1	F2	F2	-	-		SGDV-R70A01A	0.9	with key
50W	SGMAV-A5ADA2C	0.3	-	F1	F1	F1	F2	F2	-	-		SGDV-R70A01A	0.9	no key
50W	SGMAV-A5ADA21	0.3	-	F1	F1	F1	F2	F2	-	-	0.75	SGDV-R70A01A	0.9	Mid inertia
100W	SGMAV-01ADA64	0.4	-	F1	F1	F1	F2	F2	-	-	0.89	SGDV-R90A01A	0.9	
200W	SGMAV-02ADA65	0.9	-	-	-	-	F0	F0	F0	F1	1.6	SGDV-1R6A01A	0.9	
400W	SGMAV-04ADA66	1.2	-	-	-	-	F0	F0	F0	F1	2.1	SGDV-2R8A01A	1	
750W	SGMAV-08ADA67	2.6	-	-	-	-	-	-	F1	F2	4	SGDV-5R5A01A	1.5	

## HIWIN Mikosystem Step Motor

Series	Model	Flange Selection								Weight (kg)	Built in Motor	Weight (kg)	Remarks		
		KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130						
ST40	FRST011024	-	F3	F3	F5	-	-	-	-	0.3	STD-24A	0.09	single axis		
ST55	FRST021024	-	F3	F3	F5	-	-	-	-	0.55			0.09	0.09	single axis
	FRST022024	-				-	-	-	0.8						
	FRST023024	-	-	-	-	1.18	axis of symmetry								
	FRST121024	-	F3	F3	F5	-		-	-	-					0.58
	FRST122024	-				-		-	-	0.83					
	FRST123024	-				-	-	-	0.21						

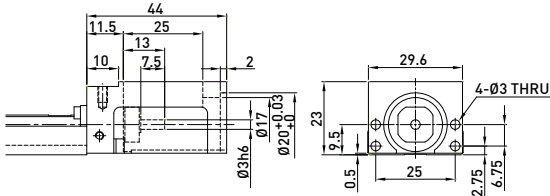
## Oriental Step Motor

Series	Model	Flange Selection								Built in Motor	Weight (kg)	Built in Driver	Weight (kg)
		KK30	KK40	KK50	KK60	KK80	KK86	KK100	KK130				
CSK 2 phase	CSK243-AP	-	F3	F3	F5	-	-	-	-	PK243-01A	0.21	CSD2109-P	0.12
	CSK244-AP	-	F3	F3	F5	-	-	-	-	PK244-01A	0.27	CSD2112-P	0.12
	CSK245-AP	-	F3	F3	F5	-	-	-	-	PK245-01A	0.35	CSD2112-P	0.12
	CSK264-AP	-	-	-	F4	F6	F6	-	-	PK264-02A	0.45	CSD2120-P	0.12
	CSK266-AP	-	-	-	F4	F6	F6	-	-	PK266-02A	0.7	CSD2120-P	0.12
	CSK268-AP	-	-	-	F4	F6	F6	-	-	PK268-02A	1	CSD2120-P	0.12
	CSK296-AP	-	-	-	-	-	-	F4	F3	PK296-03A	1.7	CSD2145P	0.2
	CSK299-AP	-	-	-	-	-	-	F4	F3	PK299-03A	2.8	CSD2145P	0.2
CSK2913-AP	-	-	-	-	-	-	F4	F3	PK2913-02A	3.8	CSD2140P	0.2	
CSK 5 phase	CSK523-AP	F3	-	-	-	-	-	-	-	PK523A	0.1	SD5103P3	0.04
CFKII 5 phase micro stepping	CFK543AP2	-	F3	F3	F5	-	-	-	-	PK543NAW	0.21	DFC5107P	0.2
	CFK544AP2	-	F3	F3	F5	-	-	-	-	PK544NAW	0.27	DFC5107P	0.2
	CFK545AP2	-	F3	F3	F5	-	-	-	-	PK545NAW	0.35	DFC5107P	0.2
	CFK564AP2	-	-	-	-	F5	F5	-	-	PK564NAW	0.6	DFC5114P	0.2
	CFK566AP2	-	-	-	-	F5	F5	-	-	PK566NAW	0.8	DFC5114P	0.2
	CFK569AP2	-	-	-	-	F5	F5	-	-	PK569NAW	1.3	DFC5114P	0.2
	CFK566HAP2	-	-	-	-	F5	F5	-	-	PK566HNAW	0.8	DFC5128P	0.22
	CKF569HAP2	-	-	-	-	F5	F5	-	-	PK569HNAW	1.3	DFC5128P	0.22
	CFK596HAP2	-	-	-	-	-	-	F3	-	PK596HNAW	1.7	DFC5128P	0.22
	CFK599HAP2	-	-	-	-	-	-	F3	-	PK599HNAW	2.8	DFC5128P	0.22
CFK5913HAP2	-	-	-	-	-	-	F3	-	PK5913HNAW	3.8	DFC5128P	0.22	
UMK 2 phase	UMK243A	-	F3	F3	F5	-	-	-	-	PK243-01	0.21	UDK2109	0.47
	UMK244A	-	F3	F3	F5	-	-	-	-	PK244-01	0.27	UDK2112	0.47
	UMK245A	-	F3	F3	F5	-	-	-	-	PK245-01	0.35	UDK2112	0.47
	UMK264A	-	-	-	F4	F6	F6	-	-	PK264-02	0.45	UDK2120	0.47
	UMK266A	-	-	-	F4	F6	F6	-	-	PK266-02	0.7	UDK2120	0.47
	UMK268A	-	-	-	F4	F6	F6	-	-	PK268-02	1	UDK2120	0.47
RK 5 phase	RK543AA	-	F3	F3	F5	-	-	-	-	PK543W	0.25	RKD507-A	0.4
	RK544AA	-	F3	F3	F5	-	-	-	-	PK544W	0.3	RKD507-A	0.4
	RK545AA	-	F3	F3	F5	-	-	-	-	PK545W	0.4	RKD507-A	0.4
	RK566AA	-	-	-	-	F5	F5	-	-	PK566W	0.8	RKD514L-A	0.85
	RK569AA	-	-	-	-	F5	F5	-	-	PK569W	1.3	RKD514L-A	0.85
	RK596AA	-	-	-	-	-	-	F3	-	PK596W	1.7	RKD514H-A	0.85
	RK599AA	-	-	-	-	-	-	F3	-	PK599W	2.8	RKD514H-A	0.85
RK5913AA	-	-	-	-	-	-	F3	-	PK5913W	3.8	RKD514H-A	0.85	
ASC α-step	ASC34AK	F3	-	-	-	-	-	-	-	ASM34AK	0.15	ASD10A-K	0.25

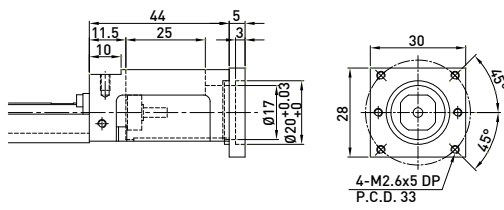
## 1.10.2 Motor Housing and Motor Adaptor Flange

### KK30

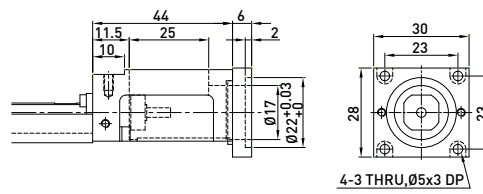
Motor Housing F0



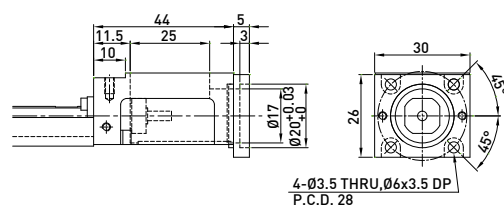
Motor Adaptor Flange F1



Motor Adaptor Flange F3

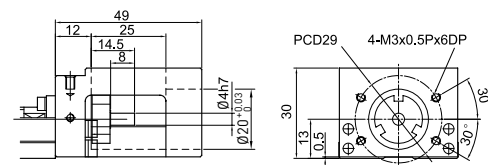


Motor Adaptor Flange F2

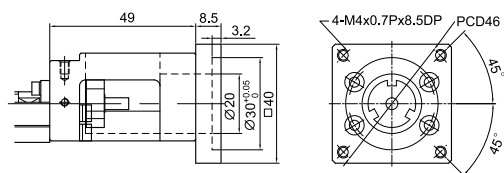


### KK40

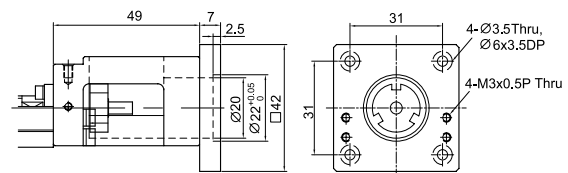
Motor Housing F0



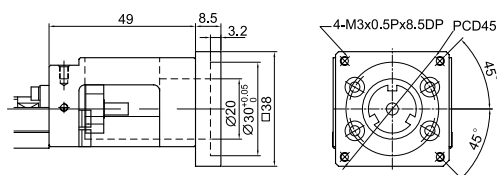
Motor Adaptor Flange F1



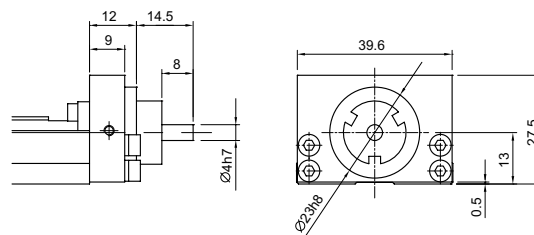
Motor Adaptor Flange F3



Motor Adaptor Flange F2

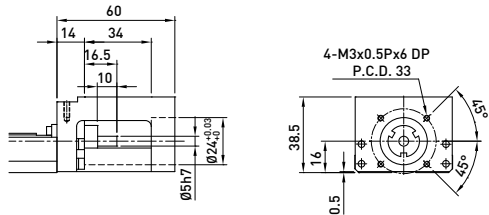


Mount Housing H0

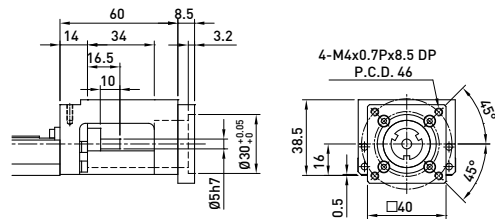


## KK50

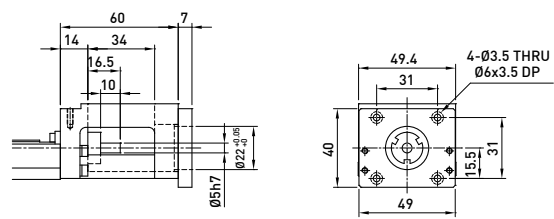
Motor Housing F0



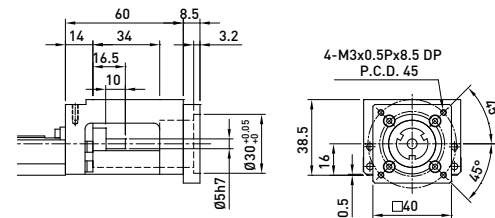
Motor Adaptor Flange F1



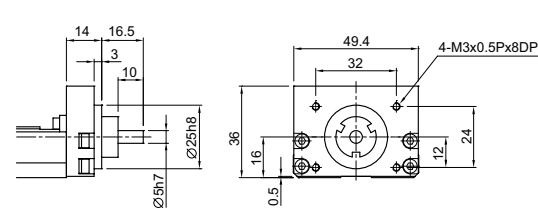
Motor Adaptor Flange F3



Motor Adaptor Flange F2

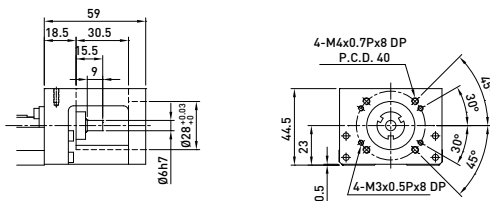


Mount Housing H0

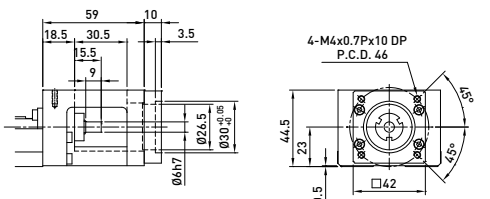


## KK60

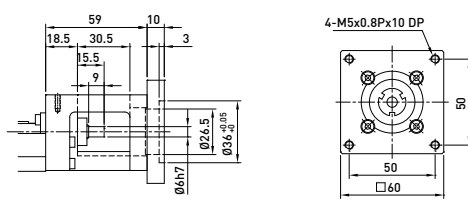
Motor Housing F0



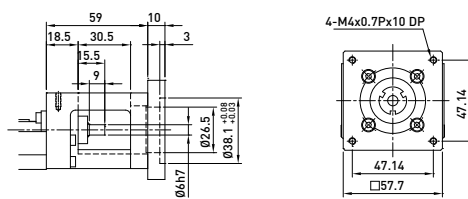
Motor Adaptor Flange F1



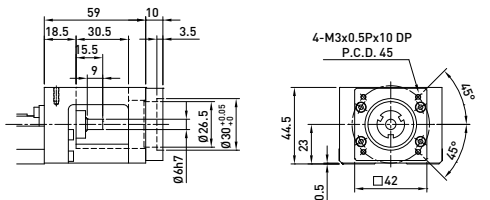
Motor Adaptor Flange F3



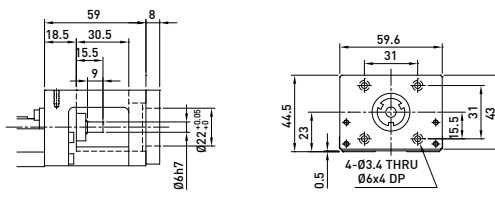
Motor Adaptor Flange F4



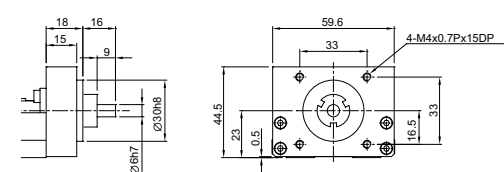
Motor Adaptor Flange F2



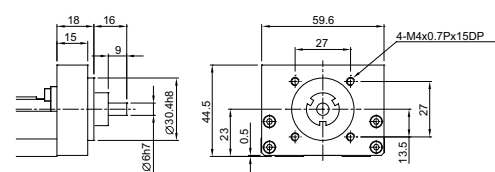
Motor Adaptor Flange F5



Mount Housing H0

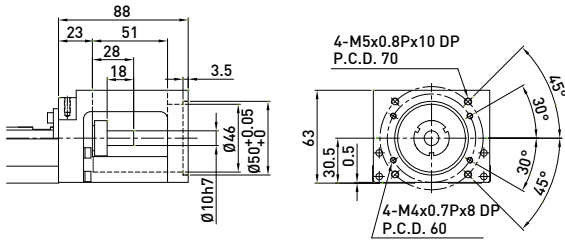


Mount Housing H1

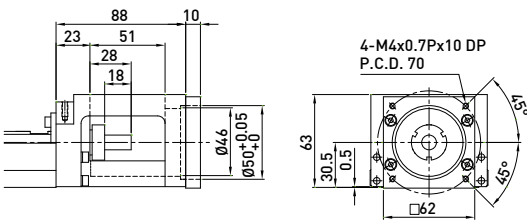


# KK80

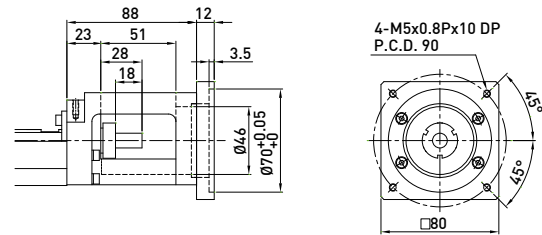
## Motor Housing F0



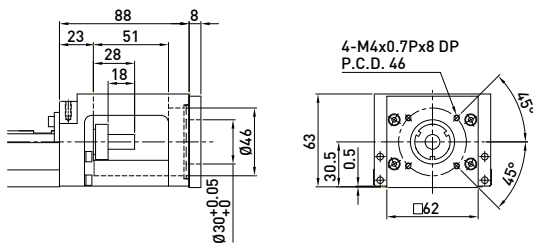
## Motor Adaptor Flange F1



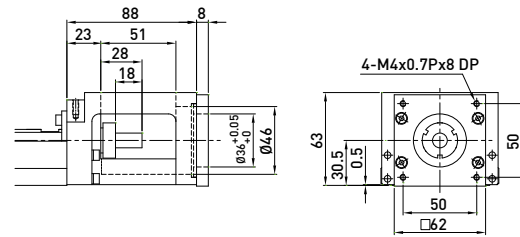
## Motor Adaptor Flange F4



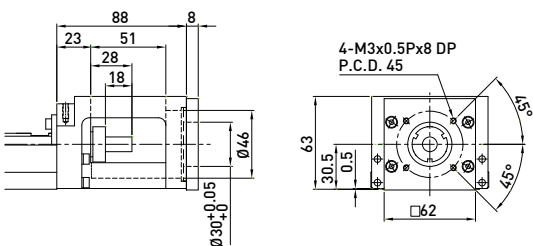
## Motor Adaptor Flange F2



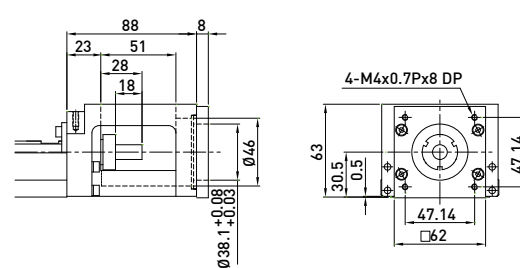
## Motor Adaptor Flange F5



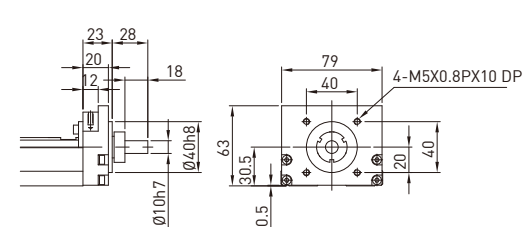
## Motor Adaptor Flange F3



## Motor Adaptor Flange F6

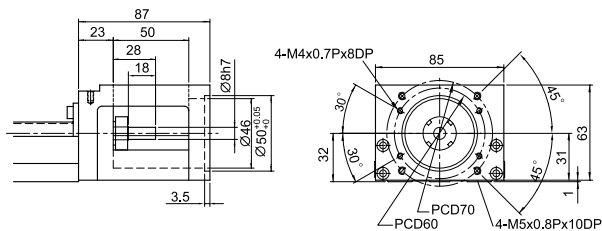


## Mount Housing H0

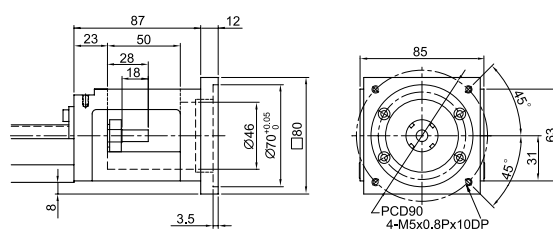


# KK86

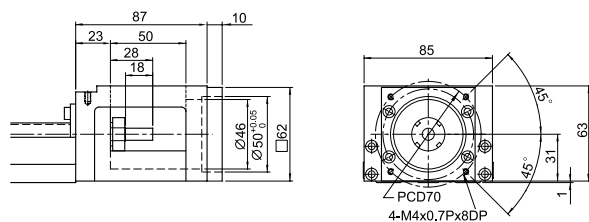
Motor Housing F0



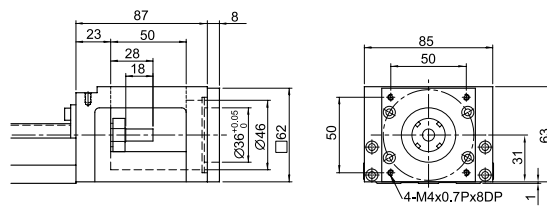
Motor Adaptor Flange F4



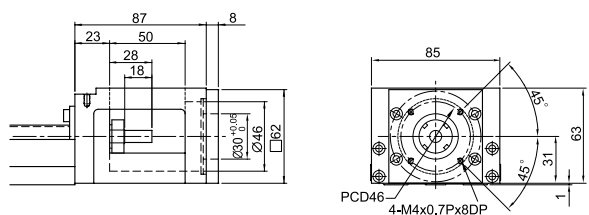
Motor Adaptor Flange F1



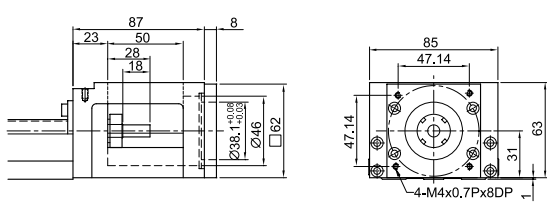
Motor Adaptor Flange F5



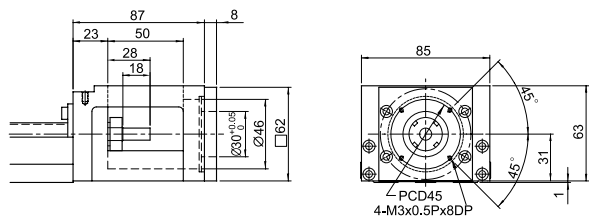
Motor Adaptor Flange F2



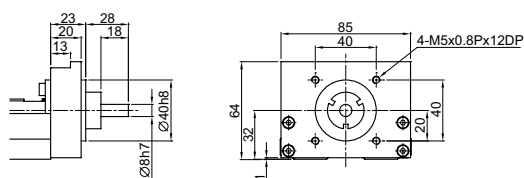
Motor Adaptor Flange F6



Motor Adaptor Flange F3

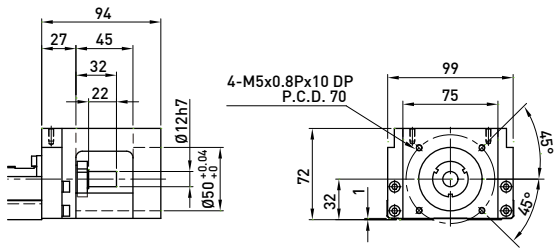


Mount Housing H0

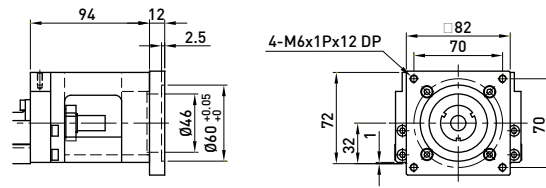


## KK100

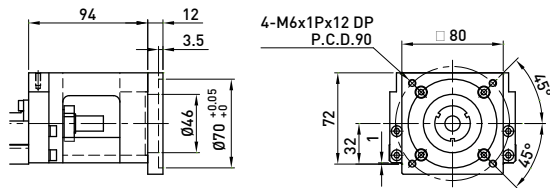
Motor Housing F0



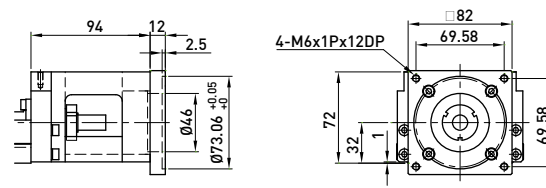
Motor Adaptor Flange F3



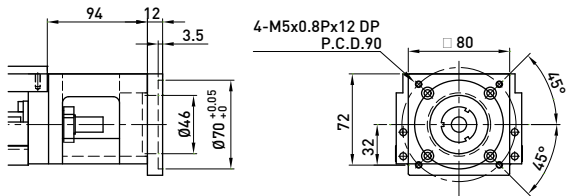
Motor Adaptor Flange F1



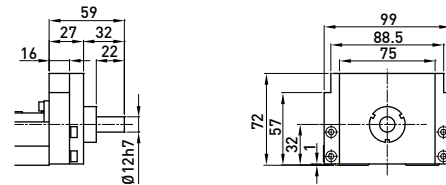
Motor Adaptor Flange F4



Motor Adaptor Flange F2

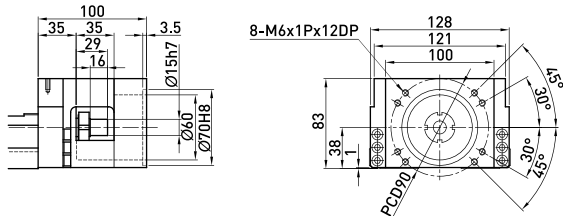


Mount Housing H0

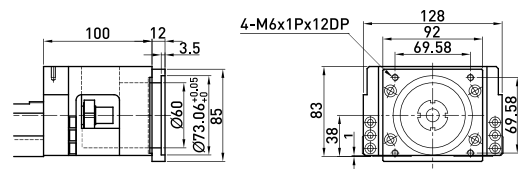


## KK130

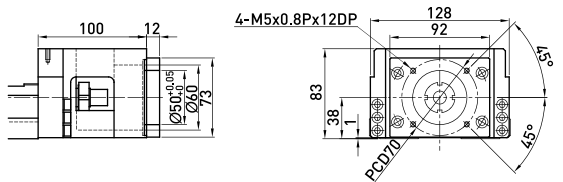
Motor Housing F0



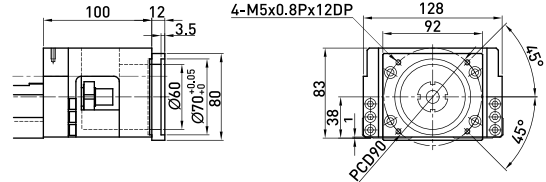
Motor Adaptor Flange F3



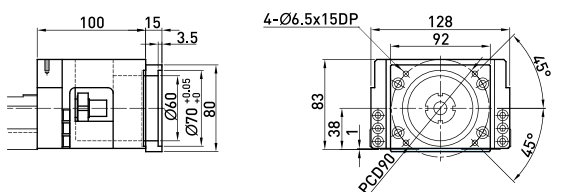
Motor Adaptor Flange F1



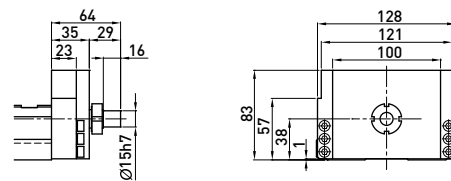
Motor Adaptor Flange F4



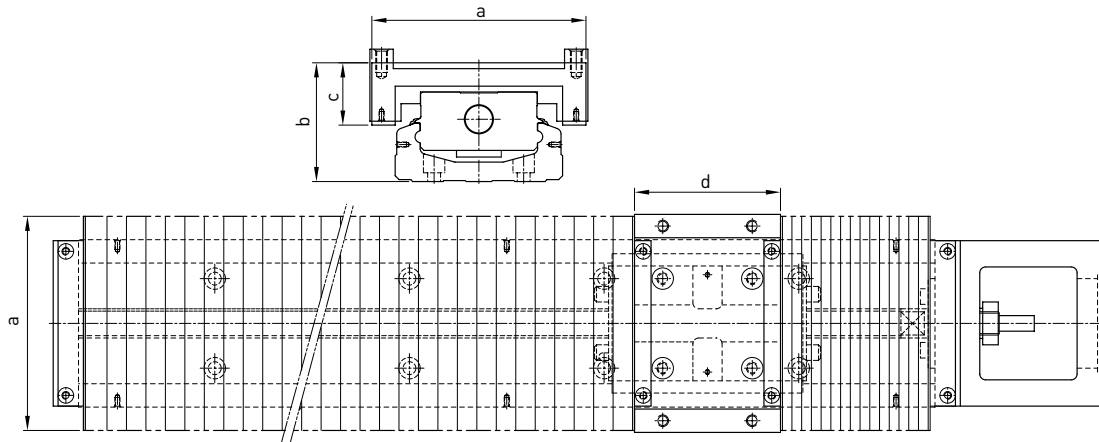
Motor Adaptor Flange F2



Mount Housing H0



## 1.11 Optional Accessories



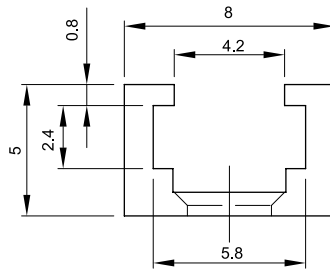
Unit : mm

Nominal Width	Rail Length	Stroke	Min.	Max.	a	b	c	d
KK30	75	22	15	37	47	22.5	15.5	23
	100	37	20	57				
	125	52	25	77				
	150	67	30	97				
	175	82	35	117				
KK40	100	35	16	51	60	29.5	19	33
	150	63	27	90				
	200	93	37	130				
KK50	150	60	21.5	81.5	62	37	19	47
	200	95	29	124				
	250	130	36.5	166.5				
	300	160	46.5	206.5				
KK60	150	56	16	80	84	45.5	24	54
	200	106	20	126				
	300	166	40	206				
	400	234	56	290				
	500	306	70	376				
	600	366	90	456				
KK80	340	181	42	223	106	62.5	34.5	75
	440	257	54	311				
	540	333	66	399				
	640	409	78	487				
	740	485	90	575				
	940	649	108	757				
KK86	340	188	36	224	110	61	32	75
	440	260	50	310				
	540	336	62	398				
	640	408	76	484				
	740	480	90	570				
	940	640	110	750				
KK100	980	769	58	827	150	73	41	95
	1080	855	65	920				
	1180	945	70	1015				
	1280	1029	78	1107				
	1380	1115	85	1200				
KK130	980	748	62	810	180	89	53	108
	1180	916	78	994				
	1380	1084	94	1178				
	1680	1346	113	1459				

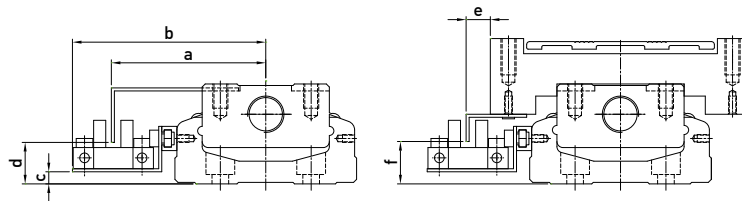


## 1.12 Switch

### Switch rail

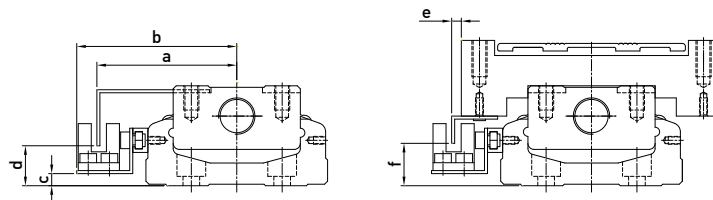


### Switch



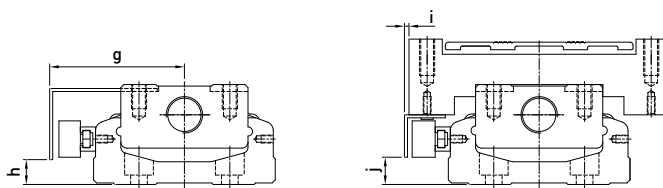
Nominal Width	a	b	c	d	e	f
KK40	41.5	54.1	0.5	10.8	15.3	12
KK50	45.5	59	1	10	15	11
KK60	51	63.8	4	14.5	8	13
KK80	61	74	8	19	9	19
KK86	63.5	76.7	8	18	8	18
KK100	71	84	10	20	9	20
KK130	85.5	98.5	14	24	0.5	23

Switch 1 : OMRON EE-SX-671



Nominal Width	a	b	c	d	e	f
KK40	36.5	44.3	1	9.8	10.5	12
KK50	41.3	48	1	10.5	10.2	11
KK60	46.2	52.8	4	14	3.2	13
KK80	56	63	8	18	4	18
KK86	59	65.7	8	18	3	18
KK100	66	73	10	20	4.2	20
KK130	80.8	87.5	14	23.5	-4.1	23.5

Switch 2 : OMRON EE-SX-674



Nominal Width	g	h	i	j
KK40	40	5.5	13.5	5.5
KK50	39.5	5.7	7	19.5
KK60	44.5	9	2	9
KK80	54	12	2	13
KK86	57	13	1	13
KK100	64.5	15	2.5	15
KK130	79	19	-6	19

Switch 3 : PANASONIC GX-F12A

Switch 4 : PANASONIC GX-F12A-P



Nominal Width	g	h	i	j
KK30	28	1.8	5.8	1.8

Switch 5 : YAMATAKE APM-D3B1-03

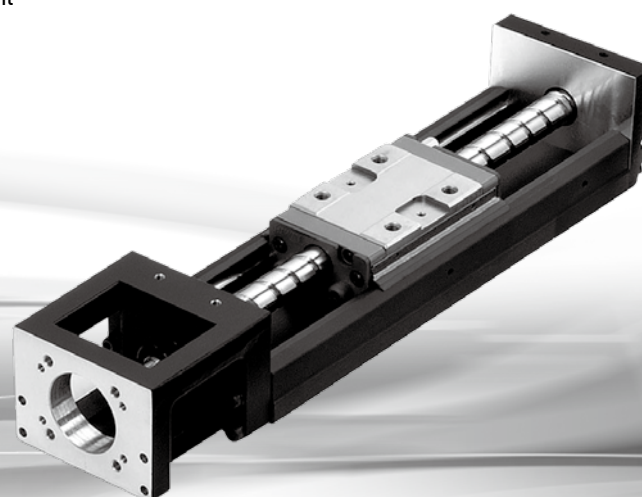
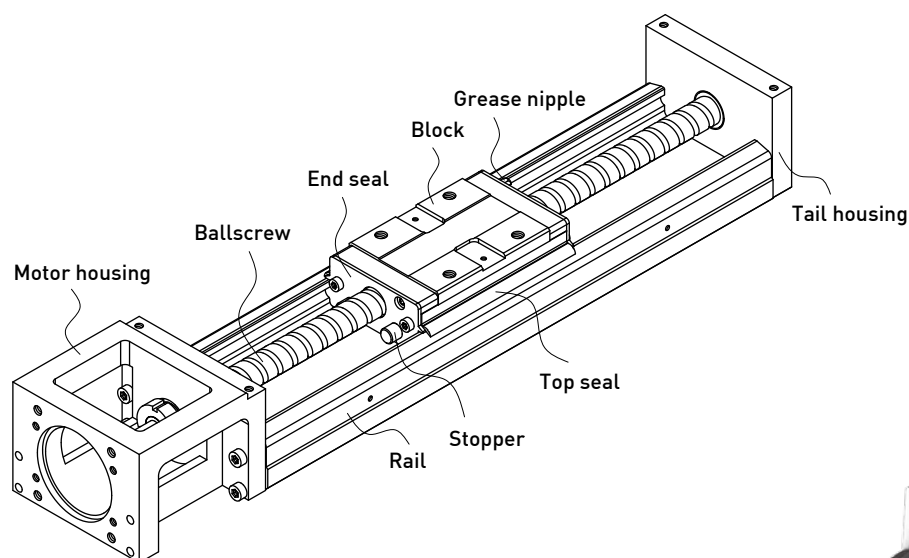
# Single Axis Robot

## SK Series

The HIWIN SK quiet Single Axis Robot with SynchMotion™ Technology offers quieter operation, smooth movement, low particle emission rate, longer service life and superior lubrication. With the SynchMotion™ Technology, SK Single Axis Robots will be more suitable for industries which require higher speeds and quieter performance.

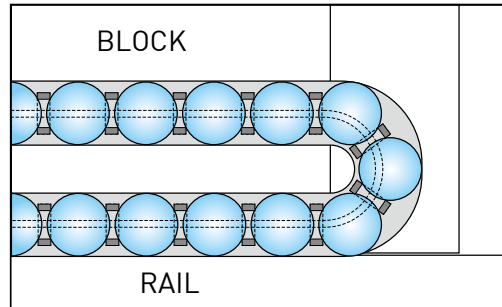
### 2.1 Features

- Low noise
- Low particle emission rate
- Longer service life
- Superior lubrication
- Easy installation and maintenance



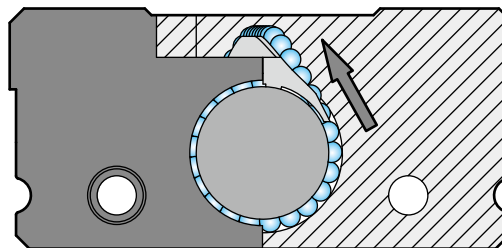
### 2.1.1 SynchMotion™ Technology

With SynchMotion™ Technology, the rolling elements are interposed between the partitions of SynchMotion™ to provide improved circulation. By eliminating the contact between the rolling elements, collision noise and sound levels are greatly reduced.



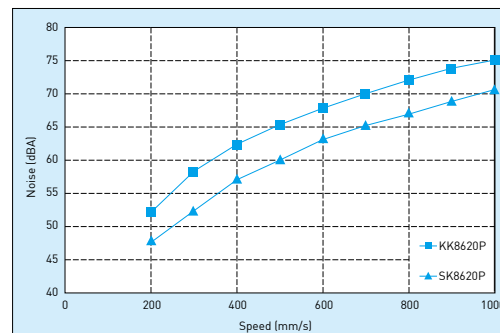
### 2.1.2 Tangent Circulation Technology

The rolling elements enter the circulation system by following the spiral pathway. When compared to the traditional external circulation, the Tangent Circulation Technology diminishes the impact caused by the rolling elements entering the circulation system, improving the speed, acceleration and smoothness while reducing the noise.

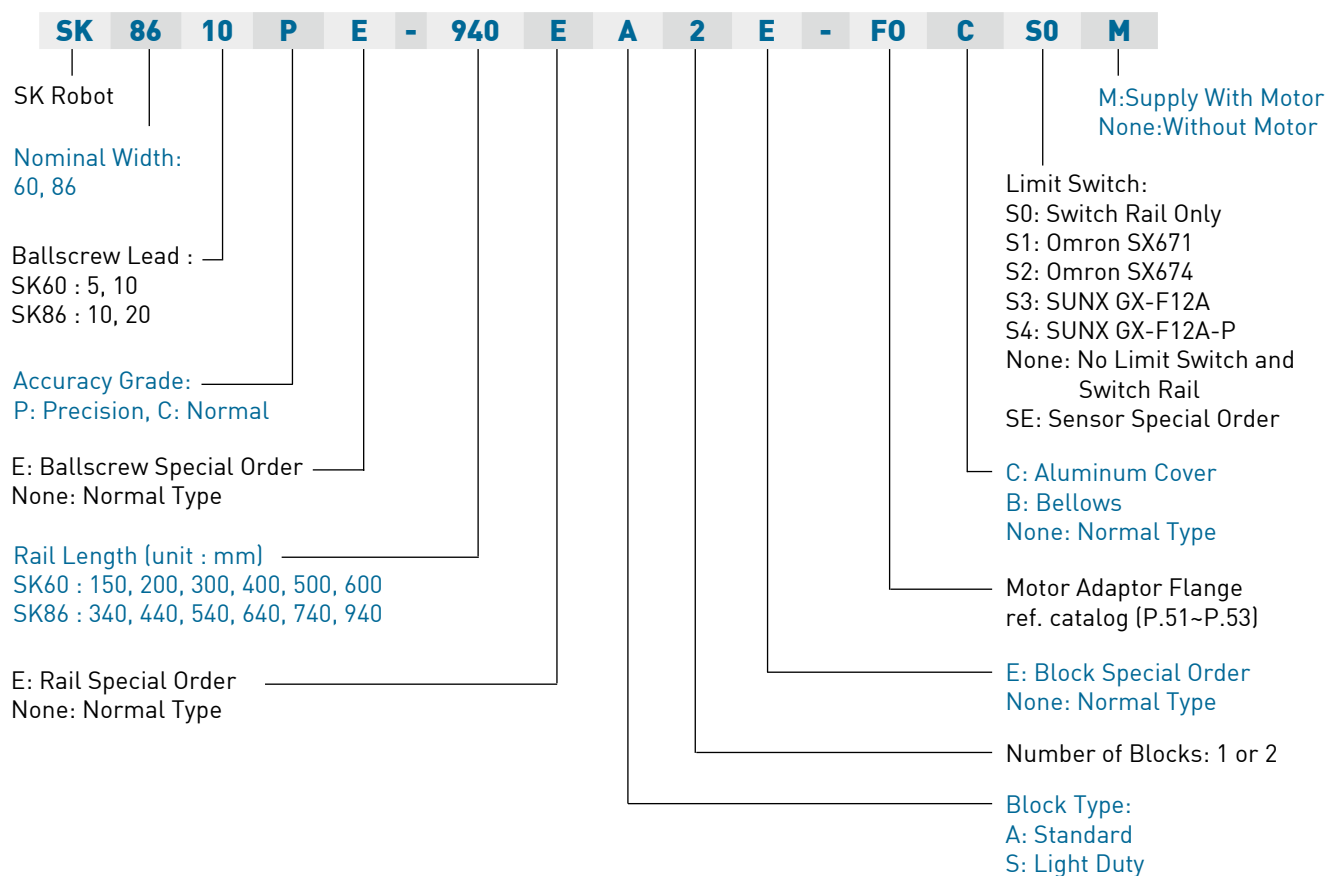


### 2.1.3 Noise Test

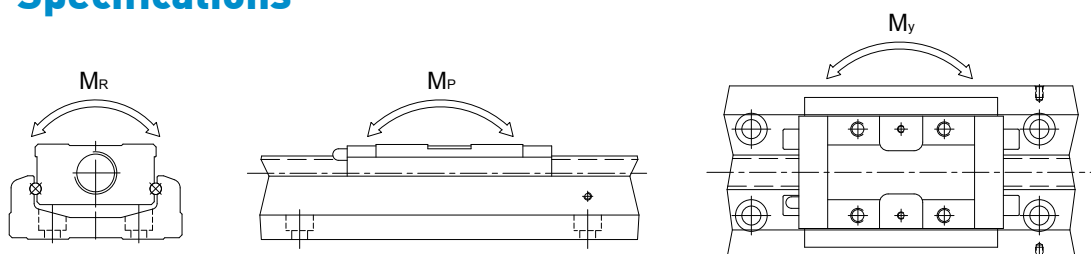
Incorporating both SynchMotion™ Technology and Tangent Circulation Technology, the noise reduction is about 3–5 dB during operation.



## 2.2 Model Number of SK Series



## 2.3 Specifications



Model No.	Ballscrew				Guideway																
	Nominal Diameter (mm)	Lead (mm)	Basic Dynamic Load (N)	Basic Static Load (N)	Basic Dynamic Load Rating (N)	Basic Dynamic Load Rating (N)	Basic Static Load Rating (N)	Basic Static Load Rating (N)	Static Rated Moment												
					Block A	Block S	Block A	Block S	Allowable Static Moment $M_p$ (N-m) (pitching)				Allowable Static Moment $M_y$ (N-m) (yawing)				Allowable Static Moment $M_r$ (N-m) (rolling)				
									Block A1	Block A2	Block S1	Block S2	Block A1	Block A2	Block S1	Block S2	Block A1	Block A2	Block S1	Block S2	
SK6005	Precision	12	5	3744	6243	15132	9900	19811	10800	168	891	60	366	168	891	60	366	413	826	245	490
	Normal			3377	5626																
SK6010	Precision	12	10	2410	3743	15132	9900	19811	10800	168	891	60	366	168	891	60	366	413	826	245	490
	Normal			2107	3234																
SK8610	Precision	15	10	7144	12642	26011	17580	35793	20450	565	2481	210	1281	565	2481	210	1281	1063	2126	635	1270
	Normal			6429	11387																
SK8620	Precision	15	20	4645	7655	26011	17580	35793	20450	565	2481	210	1281	565	2481	210	1281	1063	2126	635	1270
	Normal			4175	6889																

## 2.4 Accuracy Grade

Unit : mm

Model	Rail Length	Repeatability		Accuracy		Running Parallelism		Starting Torque(N-cm)	
		Precision	Normal	Precision	Normal	Precision	Normal	Precision	Normal
SK60	150	±0.003	±0.005	0.020	-	0.010	-	15	7
	200								
	300								
	400	±0.003	±0.005	0.025	-	0.015	-	15	7
	500								
	600								
SK86	340	±0.003	±0.005	0.025	-	0.015	-	15	10
	440								
	540								
	640	±0.003	±0.005	0.030	-	0.020	-	17	10
	740								
	940								

## 2.5 Maximum Speed Limit

Model	Ball screw Lead (mm)	Rail Length (mm)	Speed (mm/sec)	
			Precision	Normal
SK60	05	150	550	390
		200	550	390
		300	550	390
		400	550	390
		500	550	390
		600	340	340
	10	150	1100	790
		200	1100	790
		300	1100	790
		400	1100	790
		500	1100	790
		600	670	670
SK86	10	340	740	520
		440	740	520
		540	740	520
		640	740	520
		740	740	520
		940	610	430
	20	340	1480	1050
		440	1480	1050
		540	1480	1050
		640	1480	1050
		740	1480	1050
		940	1220	870

## 2.6 Life Calculations

### 2.6.1 Service Life

Under repeated stress between the raceway and the rolling elements, pitting and flaking will occur as it reaches fatigue failure. The service life of the SK Single Axis Robot is defined as the distanced traveled before any failure of the raceway or rolling elements appear.

### 2.6.2 Nominal Life (L)

The service life varies greatly even when the SK units are manufactured in the same way or operated under the same conditions. For this reason, nominal life is used as the criteria for predicting the service life of a SK unit.

### 2.6.3 Nominal Life Calculation

The calculating formulas are divided into two parts, guideway and ballscrew. The smaller of the two values would be the recommended nominal life of the SK unit.

Nominal life formulas for both the guideway and ballscrew depend on several parameters as shown below:

#### Guideway

$$L = \left( \frac{f_t}{f_w} \cdot \frac{C}{P_n} \right)^3 \times 50 \text{ km}$$

$L$  : Life Rating (km)       $C$  : Basic Dynamic Load Rating (N)  
 $f_t$  : Contact Coefficient (ref. Table 1)       $P_n$  : Calculated Loading (N)  
 $f_w$  : Loading Coefficient (ref. Table 2)

Table 1

Block type	Contact Coefficient $f_t$
A1, S1	1.0
A2, S2	0.81

Table 2

Operating Condition		Loading Coefficient $f_w$
Thrust and Vibration	Velocity (V)	
No Thrust	V < 15m/min	1.0 ~ 1.5
Low Vibration	15m/min < V < 60m/min	1.5 ~ 2.0
High Vibration	V > 60m/min	2.0 ~ 3.5

#### Ballscrew and Bearing

$$L = \left( \frac{1}{f_w} \cdot \frac{C_a}{P_{a,n}} \right)^3 \times 10^6 \text{ rev}$$

$L$  : Life Rating (rev.)       $C_a$  : Basic Dynamic Load Rating (N)  
 $f_w$  : Loading Coefficient (ref. Table 2)       $P_{a,n}$  : Axial Loading (N)

## 2.7 Lubrication

Insufficient lubrication of the guideway would lead to a reduction of the service life.

The lubricant provides the following functions:

- Reducing rolling friction and avoiding abrasion
- Providing a lubricating film and extending the service life
- Anti-rusting

### 2.7.1 Lubricating grease

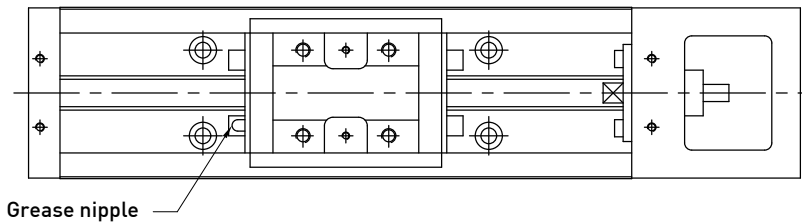
Re-lubricating the SK Single Axis Robot every 100km is recommended. Generally, grease is applied for speeds under 60 m/min. For operating speeds over 60 m/min, a grease with a higher viscosity should be used.

$$T = \frac{100 \times 1000}{V_e \times 60}$$

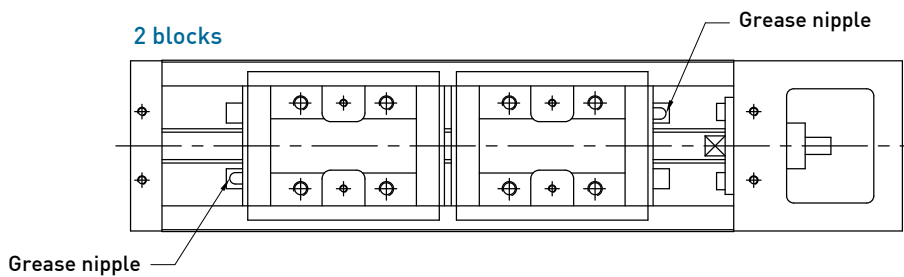
*T* : Lubricating frequency (hrs)  
*V<sub>e</sub>* : Speed (m/min)

### 2.7.2 Grease nipple

1 block

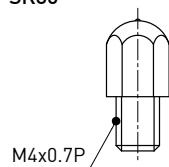


2 blocks



#### Type of grease nipple

SK60  
SK86



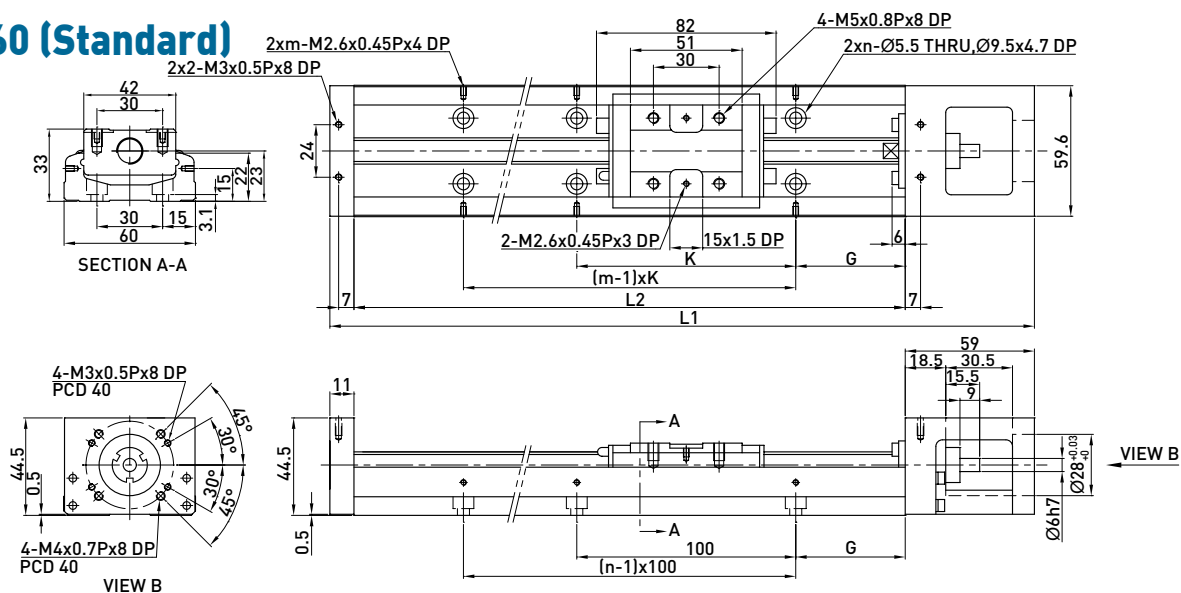
NO. 34310002



## 2.8 Dimensions

### 2.8.1 Without cover

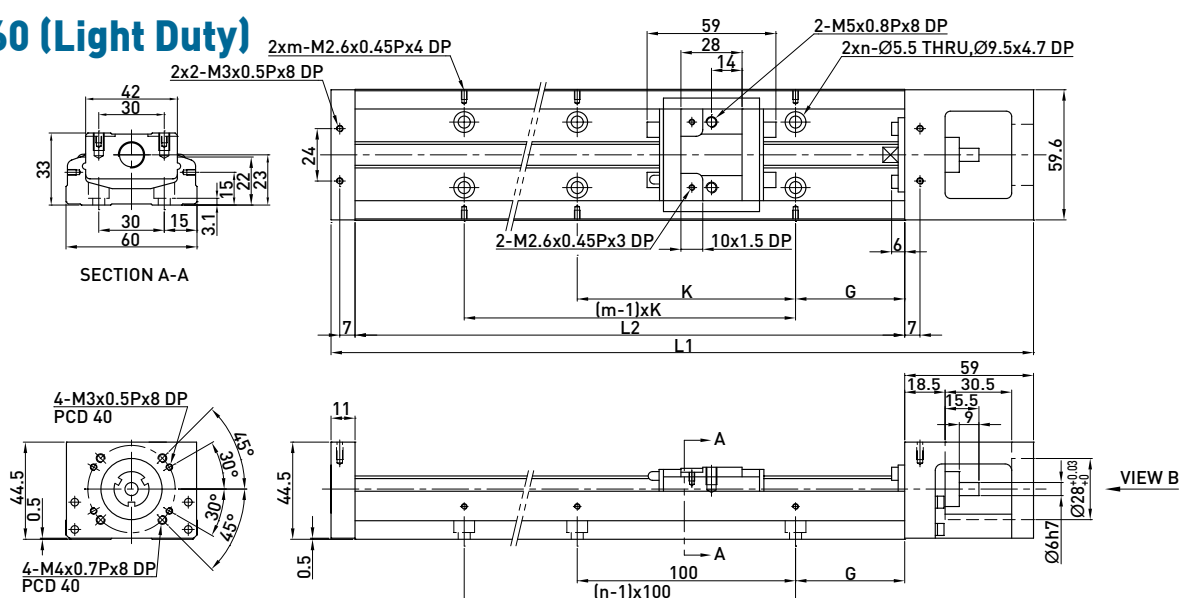
#### SK60 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
150	220	60	-	25	100	2	2	1.5	-
200	270	110	-	50	100	2	2	1.8	-
300	370	210	135	50	200	3	2	2.4	2.7
400	470	310	235	50	100	4	4	3	3.3
500	570	410	335	50	200	5	3	3.6	3.9
600	670	510	435	50	100	6	6	4.2	4.6

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

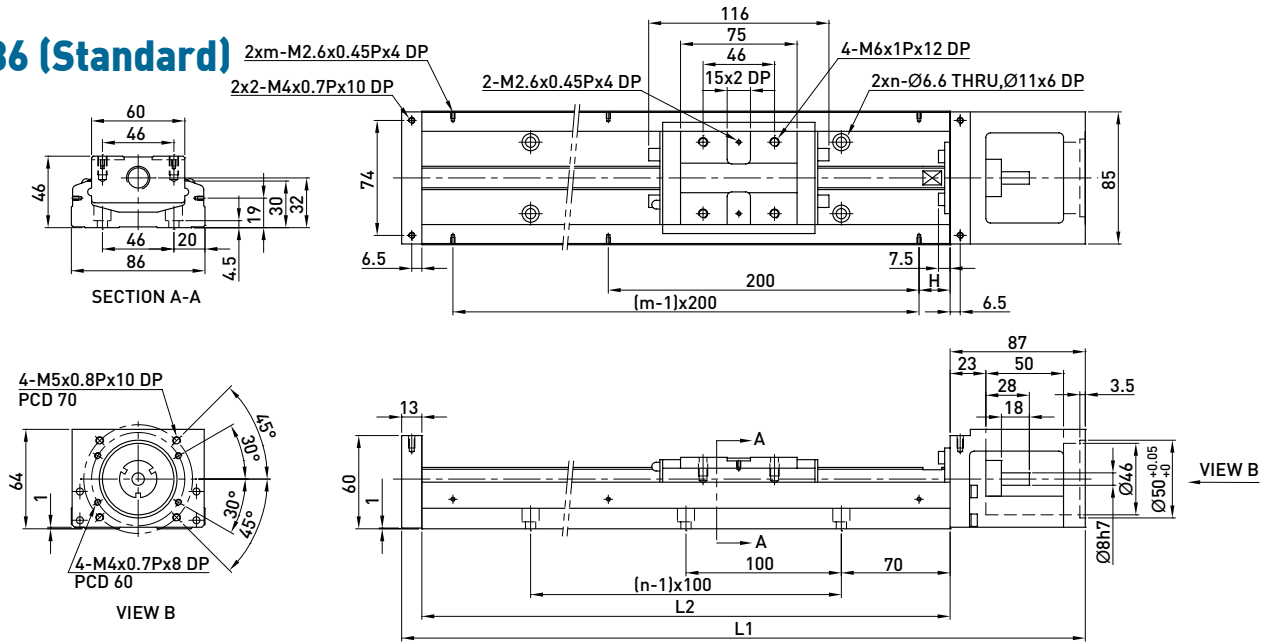
#### SK60 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block					S1 Block	S2 Block
150	220	85	34	25	100	2	2	1.4	1.6
200	270	135	84	50	100	2	2	1.7	1.9
300	370	235	184	50	200	3	2	2.3	2.5
400	470	335	284	50	100	4	4	2.9	3.1
500	570	435	384	50	200	5	3	3.5	3.7
600	670	535	484	50	100	6	6	4.1	4.3

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

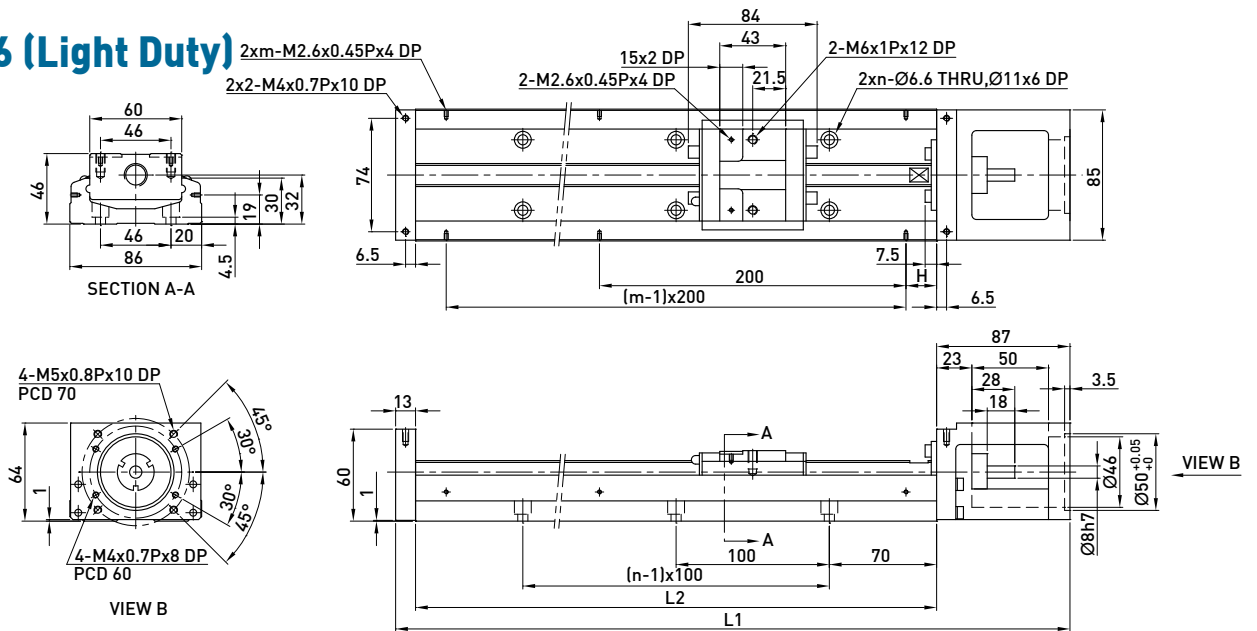
### SK86 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	5.7	6.5
440	540	316.5	208.5	20	4	3	6.9	7.7
540	640	416.5	308.5	70	5	3	8.0	8.8
640	740	516.5	408.5	20	6	4	9.2	10.0
740	840	616.5	508.5	70	7	4	10.4	11.2
940	1040	816.5	708.5	70	9	5	11.6	12.4

Note:Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

### SK86 (Light Duty)

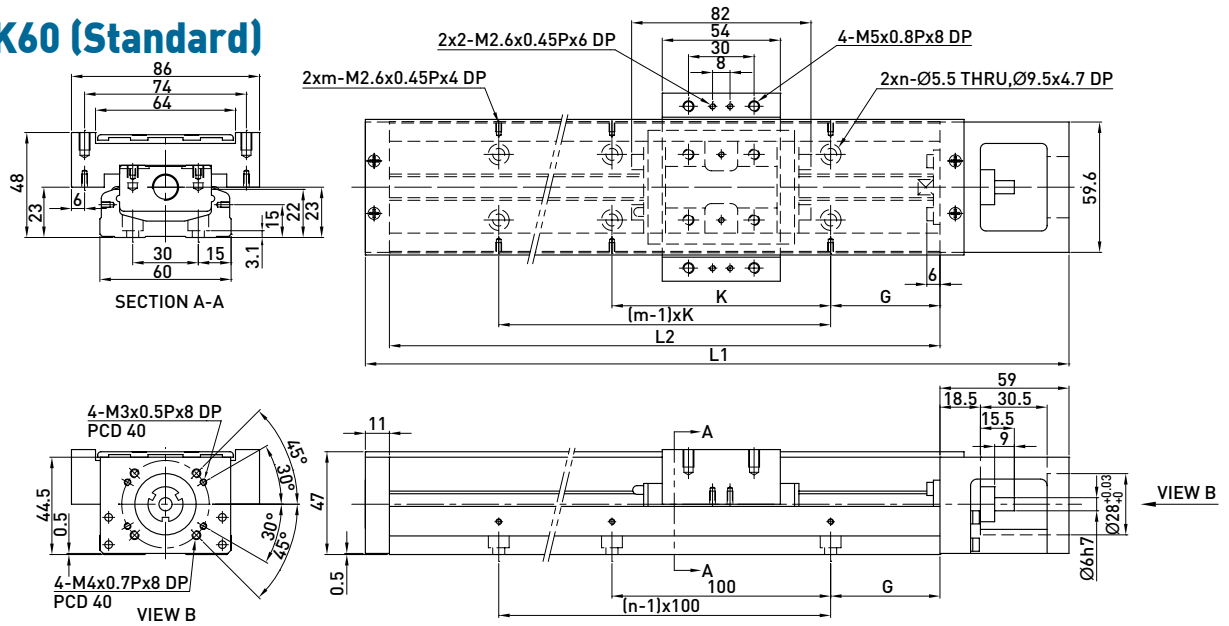


Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	5.4	5.9
440	540	348.5	272.5	20	4	3	6.6	7.1
540	640	448.5	372.5	70	5	3	7.7	8.2
640	740	548.5	472.5	20	6	4	8.9	9.4
740	840	648.5	572.5	70	7	4	10.1	10.6
940	1040	848.5	772.5	70	9	5	11.3	11.8

Note:Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

## 2.8.2 With cover

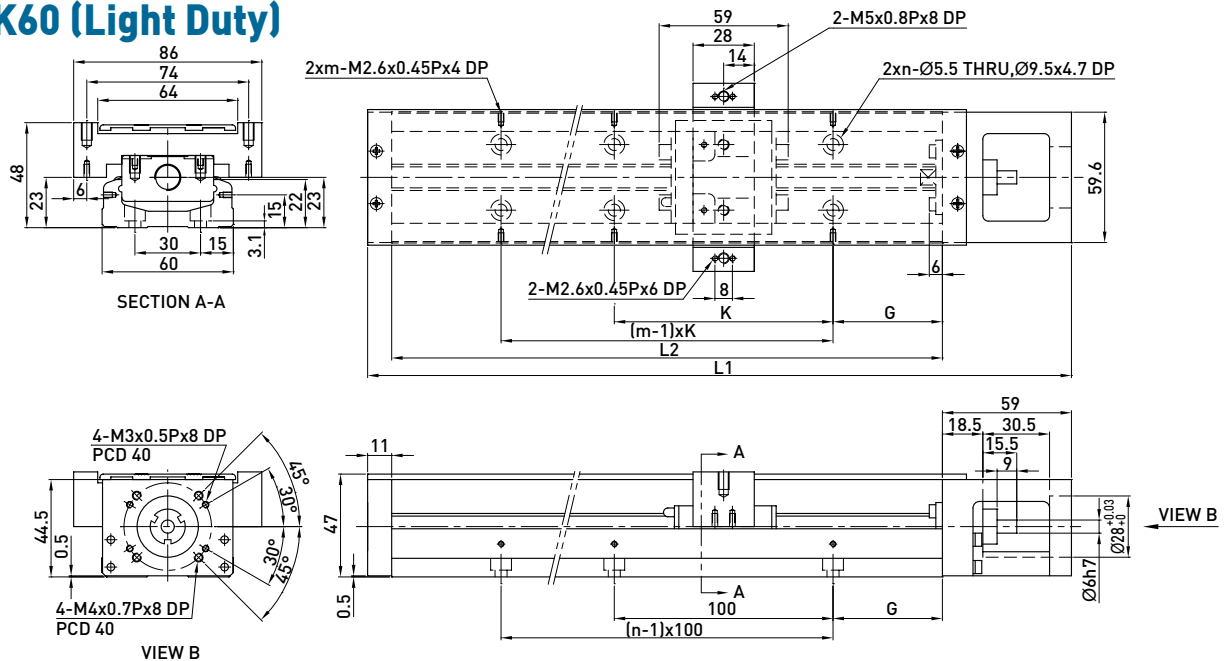
### SK60 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block					A1 Block	A2 Block
150	220	60	-	25	100	2	2	1.7	-
200	270	110	-	50	100	2	2	2.1	-
300	370	210	135	50	200	3	2	2.7	3.0
400	470	310	235	50	100	4	4	3.3	3.6
500	570	410	335	50	200	5	3	3.9	4.2
600	670	510	435	50	100	6	6	4.6	5.0

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

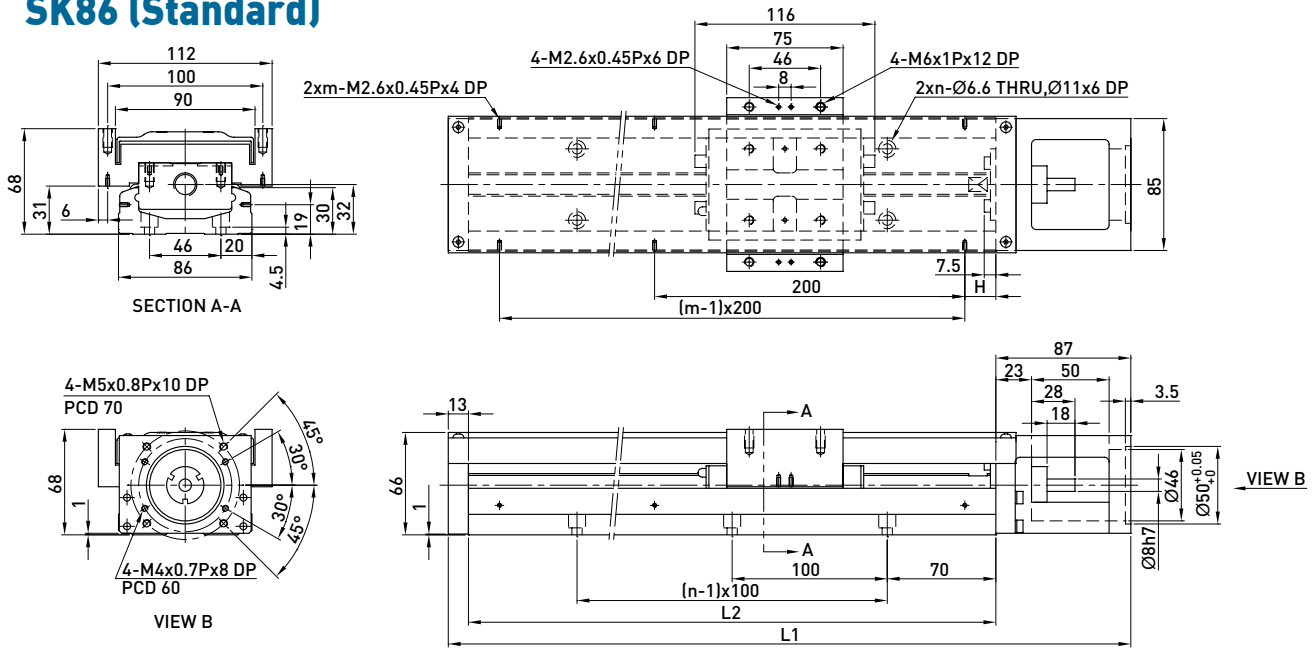
### SK60 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		G (mm)	K (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block					S1 Block	S2 Block
150	220	85	34	25	100	2	2	1.6	1.8
200	270	135	84	50	100	2	2	1.9	2.1
300	370	235	184	50	200	3	2	2.5	2.7
400	470	335	284	50	100	4	4	3.1	3.3
500	570	435	384	50	200	5	3	3.7	3.9
600	670	535	484	50	100	6	6	4.4	4.6

Note: Special ballscrew spindle end of 8 mm diameter is available, please contact hiwin if necessary.

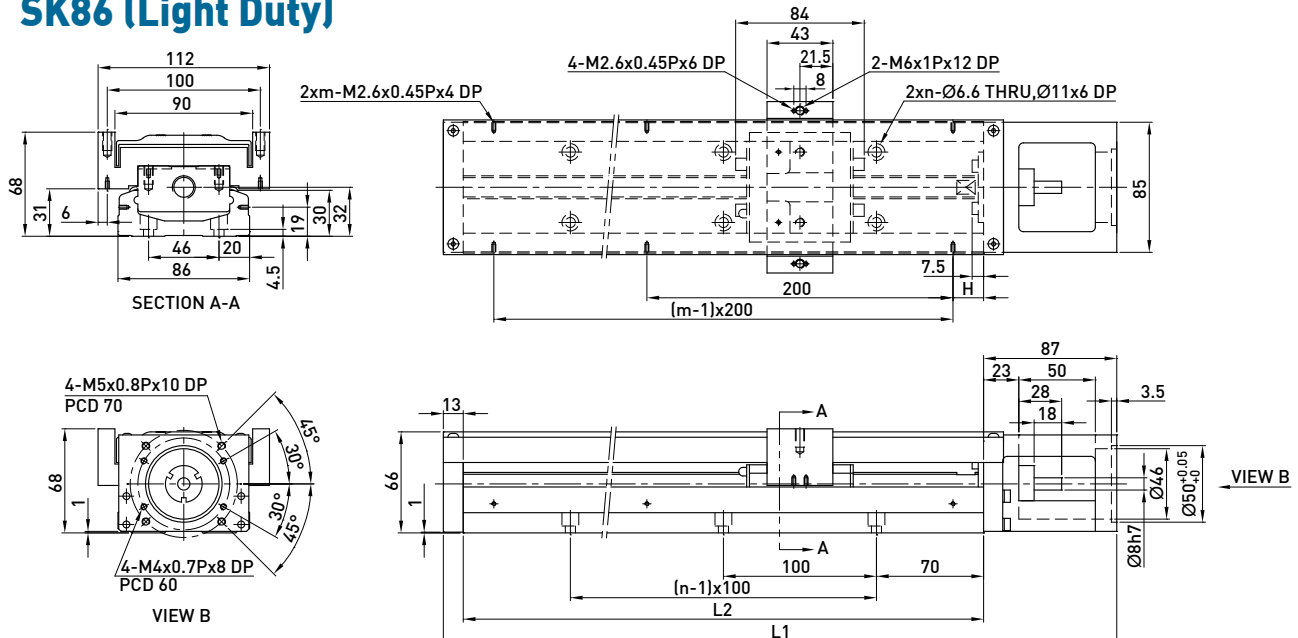
## SK86 (Standard)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		A1 Block	A2 Block				A1 Block	A2 Block
340	440	216.5	108.5	70	3	2	6.5	7.3
440	540	316.5	208.5	20	4	3	7.8	8.6
540	640	416.5	308.5	70	5	3	9.0	9.8
640	740	516.5	408.5	20	6	4	10.3	11.3
740	840	616.5	508.5	70	7	4	11.6	12.4
940	1040	816.5	708.5	70	9	5	13.0	13.8

Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

## SK86 (Light Duty)



Rail Length L2 (mm)	Total Length L1 (mm)	Maximum Stroke (mm)		H (mm)	n	m	Mass (kg)	
		S1 Block	S2 Block				S1 Block	S2 Block
340	440	248.5	172.5	70	3	2	6.3	7.1
440	540	348.5	272.5	20	4	3	7.6	8.4
540	640	448.5	372.5	70	5	3	8.8	9.6
640	740	548.5	472.5	20	6	4	10.1	11.1
740	840	648.5	572.5	70	7	4	11.4	12.2
940	1040	848.5	772.5	70	9	5	12.8	13.6

Note: Special ballscrew spindle end of 10 mm diameter is available, please contact hiwin if necessary.

## 2.9 Motor Housing and Motor Adaptor Flange

### 2.9.1 Motor Selection

#### HIWIN Mikrosystem Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection		+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			SK60	SK86				
50W	FRLS052□□A4□	0.45	F2	F3	0.58	D2	1.25	220V
100W	FRLS102□□A4□	0.6	F2	F3	0.76			220V
200W	FRLS202□□06□	1	-	F0	1.5			220V
400W	FRLS402□□06□	1.45	-	F0	1.86			220V
750W	FRMS752□□08□	2.66	-	-	3.32			220V

#### Mitsubishi Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection		+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			SK60	SK86				
50W	HF-KP053	0.35	F1	F2	0.75	MR-J3S-10A	0.8	220V
100W	HF-KP13	0.56	F1	F2	0.89	MR-J3S-10A	0.8	220V
200W	HF-KP23	0.94	-	F0	1.6	MR-J3S-20A	0.8	220V
400W	HF-KP43	1.5	-	F0	2.1	MR-J3S-40A	1	220V
750W	HF-KP73	2.9	-	-	4	MR-J3S-70A	1.4	220V

#### Panasonic Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection		+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			SK60	SK86				
50W	MSMD5AZP1	0.32	F2	F3	0.53	MADDT1105	0.8	110V
50W	MSMD5AZP1	0.32	F2	F3	0.53	MADDT1205	0.8	220V
100W	MSMD011P1	0.47	F2	F3	0.68	MADDT1107	0.8	110V
100W	MSMD012P1	0.47	F2	F3	0.68	MADDT1205	0.8	220V
200W	MSMD021P1	0.82	-	F1	1.3	MADDT2110	1.1	110V
200W	MSMD022P1	0.82	-	F1	1.3	MADDT1207	0.8	220V
400W	MSMD041P1	1.2	-	F1	1.7	MADDT3120	1.5	110V
400W	MSMD042P1	1.2	-	F1	1.7	MADDT2210	1.1	220V
750W	MSMD082S1	2.3	-	F4	3.1	MADDT3520	1.5	220V

#### Yasukawa Servo Motor

Motor Output	Motor	Weight (kg)	Flange Selection		+Brake Weight (kg)	Driver	Weight (kg)	Remarks
			SK60	SK86				
50W	SGMAV-A5ADA61	0.3	F1	F2		SGDV-R70A01A	0.9	with key
50W	SGMAV-A5ADA2C	0.3	F1	F2		SGDV-R70A01A	0.9	no key
50W	SGMAV-A5ADA21	0.3	F1	F2	0.75	SGDV-R70A01A	0.9	Mid inertia
100W	SGMAV-01ADA64	0.4	F1	F2	0.89	SGDV-R90A01A	0.9	
200W	SGMAV-02ADA65	0.9	-	F0	1.6	SGDV-1R6A01A	0.9	
400W	SGMAV-04ADA66	1.2	-	F0	2.1	SGDV-2R8A01A	1	

## HIWIN Mikrosystem Step Motor

Series	Model	Flange Selection		Weight (kg)	Built in Motor	Weight (kg)	Remarks	
		SK60	SK86					
ST40	FRST011024	F5	-	0.3	STD-24A	0.09	single axis	
ST55	FRST021024	F5	-	0.55			single axis	
	FRST022024			0.8				
	FRST023024			1.18				
	FRST121024	F5	-	0.58				axis of symmetry
	FRST122024			0.83				
	FRST123024			0.21				

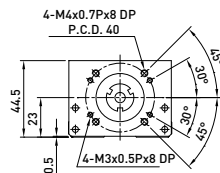
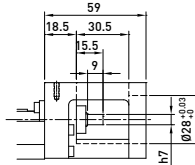
## Oriental Step Motor

Series	Model	Flange Selection		Built in Motor	Weight (kg)	Built in Driver	Weight (kg)
		SK60	SK86				
CSK 2 phase	CSK243-AP	F5	-	PK243-01A	0.21	CSD2109-P	0.12
	CSK244-AP	F5	-	PK244-01A	0.27	CSD2112-P	0.12
	CSK245-AP	F5	-	PK245-01A	0.35	CSD2112-P	0.12
	CSK264-AP	F4	F6	PK264-02A	0.45	CSD2120-P	0.12
	CSK266-AP	F4	F6	PK266-02A	0.7	CSD2120-P	0.12
	CSK268-AP	F4	F6	PK268-02A	1	CSD2120-P	0.12
CFKII 5 phase micro stepping	CFK543AP2	F5	-	PK543NAW	0.21	DFC5107P	0.2
	CFK544AP2	F5	-	PK544NAW	0.27	DFC5107P	0.2
	CFK545AP2	F5	-	PK545NAW	0.35	DFC5107P	0.2
	CFK564AP2	-	F5	PK564NAW	0.6	DFC5114P	0.2
	CFK566AP2	-	F5	PK566NAW	0.8	DFC5114P	0.2
	CFK569AP2	-	F5	PK569NAW	1.3	DFC5114P	0.2
	CFK566HAP2	-	F5	PK566HNAW	0.8	DFC5128P	0.22
CFK569HAP2	-	F5	PK569HNAW	1.3	DFC5128P	0.22	
UMK 2 phase	UMK243A	F5	-	PK243-01	0.21	UDK2109	0.47
	UMK244A	F5	-	PK244-01	0.27	UDK2112	0.47
	UMK245A	F5	-	PK245-01	0.35	UDK2112	0.47
	UMK264A	F4	F6	PK264-02	0.45	UDK2120	0.47
	UMK266A	F4	F6	PK266-02	0.7	UDK2120	0.47
	UMK268A	F4	F6	PK268-02	1	UDK2120	0.47
RK 5 phase	RK543AA	F5	-	PK543W	0.25	RKD507-A	0.4
	RK544AA	F5	-	PK544W	0.3	RKD507-A	0.4
	RK545AA	F5	-	PK545W	0.4	RKD507-A	0.4
	RK566AA	-	F5	PK566W	0.8	RKD514L-A	0.85
	RK569AA	-	F5	PK569W	1.3	RKD514L-A	0.85

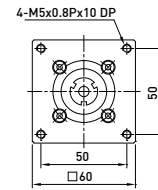
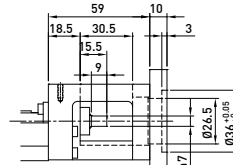
## 2.9.2 Motor Housing and Motor Adaptor Flange

### SK60

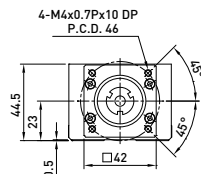
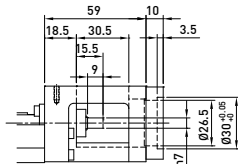
Motor Housing F0



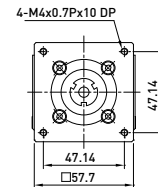
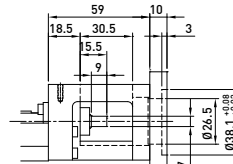
Motor Adaptor Flange F3



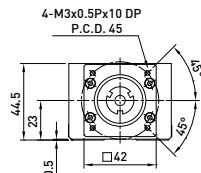
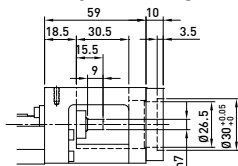
Motor Adaptor Flange F1



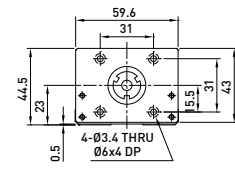
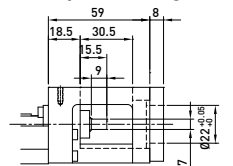
Motor Adaptor Flange F4



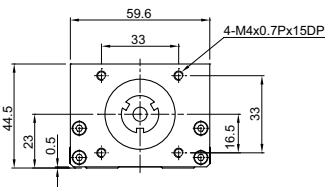
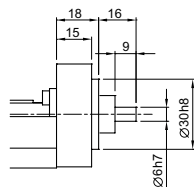
Motor Adaptor Flange F2



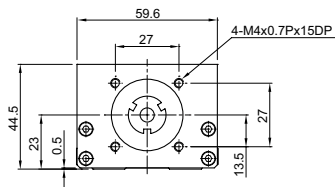
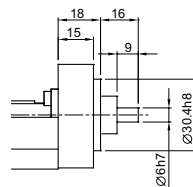
Motor Adaptor Flange F5



Mount Housing H0

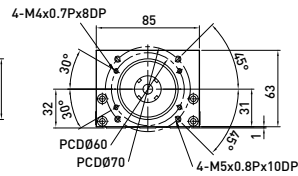
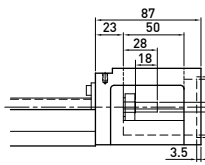


Mount Housing H1

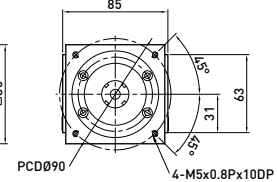
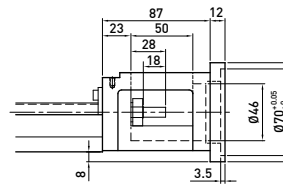


### SK86

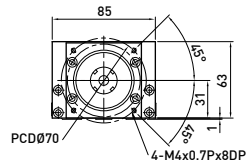
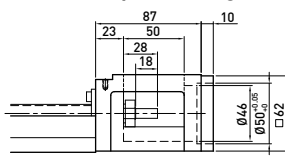
Motor Housing F0



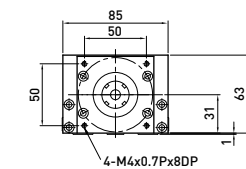
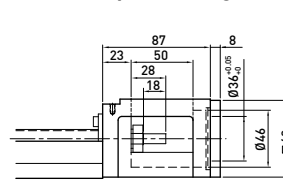
Motor Adaptor Flange F4



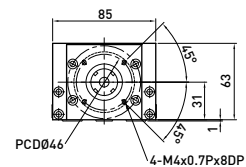
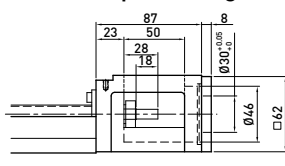
Motor Adaptor Flange F1



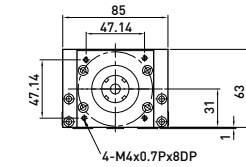
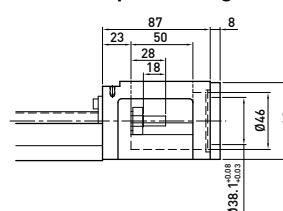
Motor Adaptor Flange F5



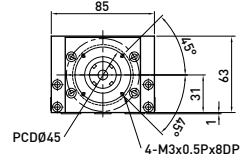
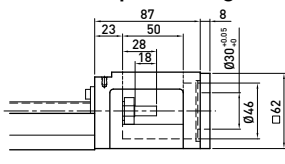
Motor Adaptor Flange F2



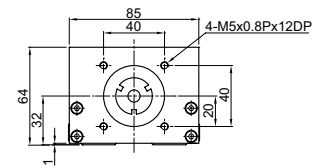
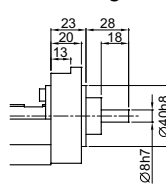
Motor Adaptor Flange F6



Motor Adaptor Flange F3

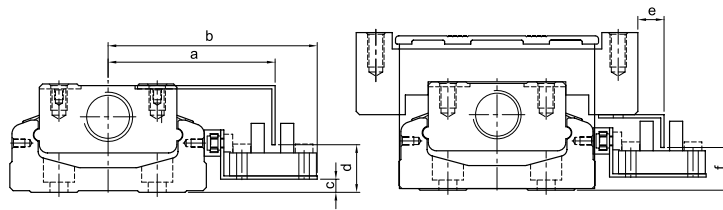
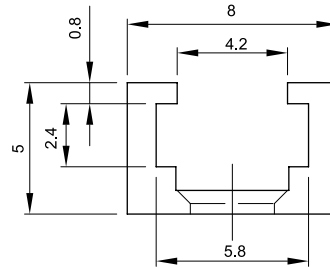


Mount Housing H0



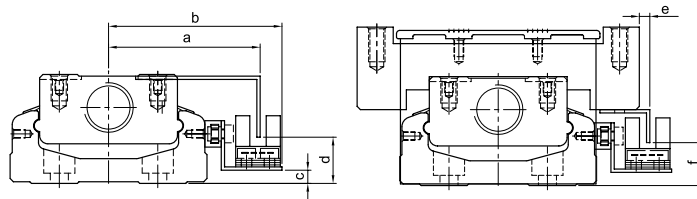
## 2.10 Switch

### Switch rail



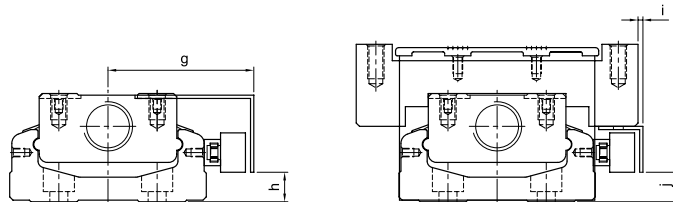
Nominal Width	a	b	c	d	e	f
SK60	51	63.8	4	14.5	8	13
SK86	63.5	76.7	8	18	8	18

Switch 1 : Omron EE-SX671



Nominal Width	a	b	c	d	e	f
SK60	46.2	52.8	4	14	3.2	13
SK86	59	65.7	8	18	3	18

Switch 2 : Omron EE-SX674



Nominal Width	g	h	i	j
SK60	44.5	9	2	9
SK86	57	13	1	13

Switch 3, 4 : SUNX GX-F12A, GX-F12A-P



# Single Axis Robot

## KA Series

### 3.1 Features

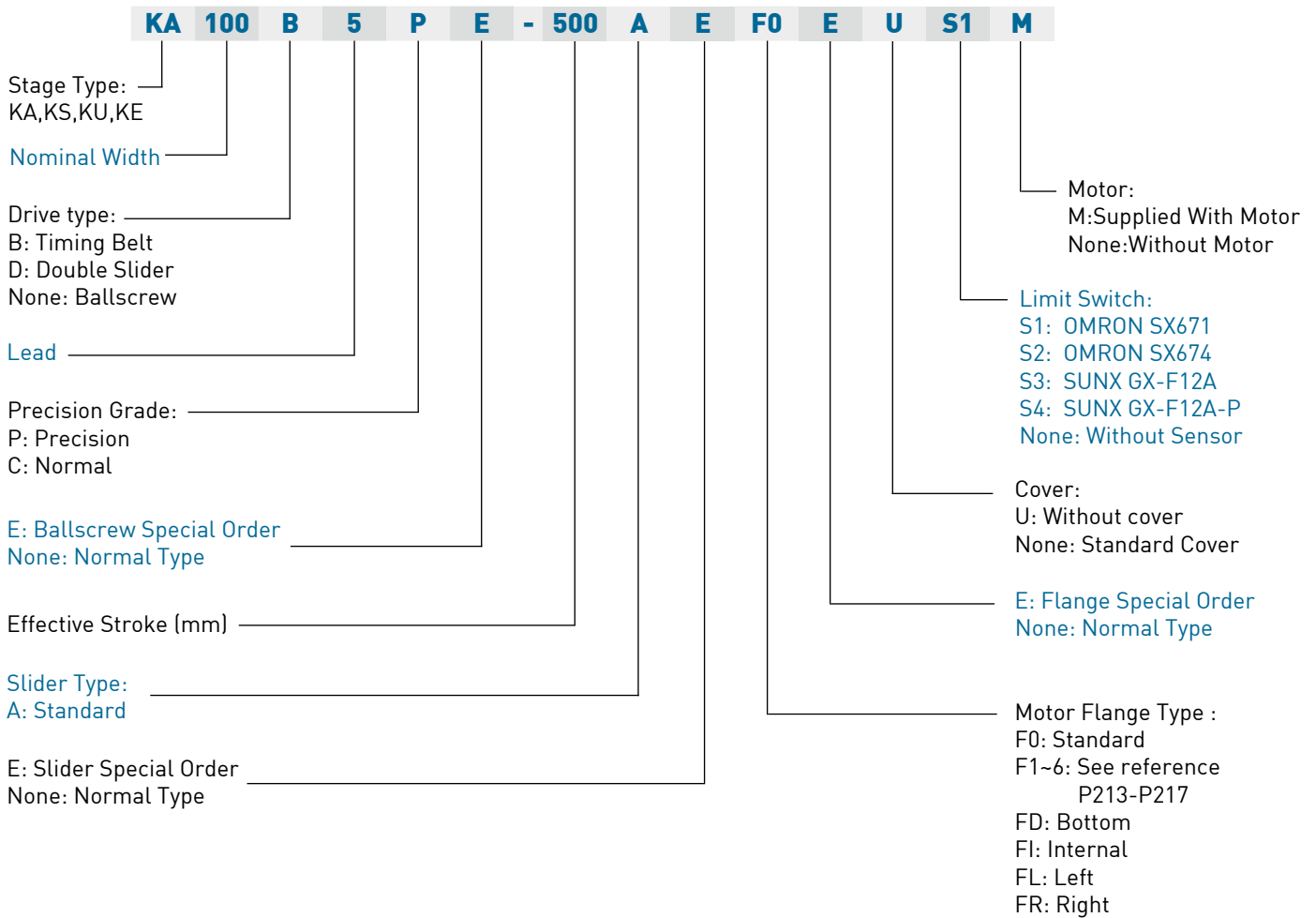
- Lightweight and high rigidity aluminum base
- Easy system installation and maintenance
- Complete selection of accessories for most applications
- Customized design

### 3.2 Applications

- Precision industry
- FPD industry
- Conveying equipment
- Inspection & testing equipment
- Assembly equipment



### 3.3 Model Number of Single Axis Robot Series



### 3.4 Specifications

The KA series designation is represented by the following:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Aluminum Cover	Limit Switch	Motor

**(1) Model**

KA is the designation for all KA models and the number represents the width of the aluminum base.

**(2) Lead**

The lead on the ballscrew, in millimeters, indicates how far a sliding table will travel with a complete rotation of the ballscrew. The following table shows the current available ballscrews for the KA series :

KA Model	KA136															
	KA100						KA170						KA200			
Ballscrew diameter (Φ)	15			16			20			25			32		25	
Lead (P)	10	20	40	5	10	32	5	10	20	40	25	50	32	40	10	25
L (available in left hand thread)			*	L	L	*	L		L	*	*	*	*	*	*	*

\*Please contact HIWIN for high lead screws, left-hand thread screws, or any unlisted ballscrew.

### (3) Precision Grade

The precision grade for the sliding table to repeat the same position after traveling back and forth.

C; Normal grade :  $\pm 0.02\text{mm}$ , P; Precision grade :  $\pm 0.01\text{mm}$ .

The repeatability is measured by the largest error occurred at any point when the sliding table is traveling back and forth.

\* Attention : KA products do not indicate the absolute positional accuracy.

### (4) Effective Stroke

The travel range for the KA sliding table (in millimeters).

\* Attention : Vibration might occur when the effective stroke is longer than what is listed in the catalog. If vibration occurs, reduce the RPM to help improve the situation. Refer to the “Speed” section for information regarding RPM values.

### (5) Slider Type

The KA series is designed to only support the listed loading. Please contact HIWIN for inquiries on greater dynamic load or heavy load models.

### (6) Motor Flange

Direct connection is the standard type on the KA series. There are different flange options for adapting different types of motors, please refer to the following table.

	KA100		KA136		KA170		KA200	
	Screw	PCD	Screw	PCD	Screw	PCD	Screw	PCD
F0	M3	40	M4	60	M5	70	M6	90
	M4	46	M5	70				
F1	M3	45	M4	70	M6	90	M5	70
F2			M4	46	M5	90	M5	90
F3			M3	45	M6	□70		
F4			M5	90	M6	□69.58		
F5			M4	□50				
F6			M4	□47.14				

FD : Bottom connected motor (belt pulley drive).

FI : Internal connected motor (coupling drive).

FL : Left connected motor (belt pulley drive).

FR : Right connected motor (belt pulley drive).

Please refer to the Appendix for different flange sizes.

### (7) Aluminum Cover

All standard KA models are equipped with an aluminum protective cover. U : without aluminum cover.

### (8) Limit Switch

HIWIN provides some standard options for limit switches. Please contact a HIWIN sales representative for any other type that is not listed.

### (9) Motor

No mark : motor not included. Please inform HIWIN in advance when installing a motor provided by the customer.

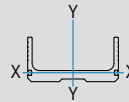
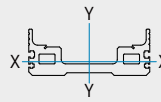
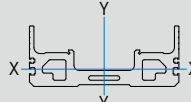
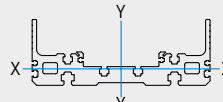
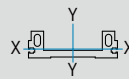
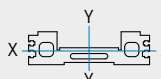
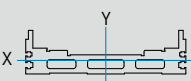

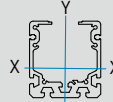
M : motor included. Please refer to the Appendix for motor selection, for other customized motors please contact a HIWIN sales representative.

### 3.5 KA Specifications

Series	Drive Type	Aluminum Base Width	Motor Choice	Maximum Load [Kg]*1															Motor Connection Type	Model	
				Lead (mm)																	
				1	2	4	5	10	20	25	1	2	4	5	10	20	25				
				Horizontal							Vertical										
KA	Ballscrew	90	100W				24	12							6	3			F0, F1	KA90-	
		100					50	32	20							12	8	3		F0, F1, FD, FI, FL, FR	KA100-
		120					50	32	20							12	8	3		F0, F1	KA120-
		136	200W				95	75	40							27	18	7		F0-F6, FD, FI, F, FR	KA136-
		150						80	40							20	8			F0-F6	KA150-
		170	400W					125	75							30	14			F0-F4, FD, FI, FL, FR	KA170-
		200	750W					150		85						40		20		F0-F2, FD, FI, FL, FR	KA200
	Belt*2	100	100W				7.5													FL, FR	KA100B-
		136	200W				15													FL, FR	KA136B-
		170	400W				30													FL, FR	KA170B-
KS	Ballscrew	90	100W				24	12							6	3			FI, F1	KS90-	
		100					8	6	3.5							2	1.5	1		F1, FI, FL, FR	KS100-
		120					50	32	20							12	8	3		FI, F1	KS120-
		140	200W					75	35								18	7		FI, FL, FR	KS140
		150						80	40								20	8		FI	KS150-
		180	400W					110	50							30	14			FI, FL, FR	KS180-
	Belt*2	100	100W				3													FL, FR	KS100B-
		140	200W				15													FL, FR	KS140B-
		180	400W				30													FL, FR	KS180B-
	KU	60	100W				30	20								7	5			F0, F1	KU60-
80		200W				60	40	20							15	10	5		F0-F6	KU80-	
KE	Ballscrew	30	28 stepping drive	3										1					F0	KE30-	
		40	50W		6		4								1.5		1		F0-F2	KE40-	
		50	100W				8									2				F0, F1	KE50-
		65						15	8								4	2		F0, F1	KE65-
		70						20	15								5	4		F0, F1	KE70-
		90	200W					25	23							6	5			F0-F6	KE90-

\*1.Maximum mass refers to the maximum load value the stage could sustain. Load center is just above the sliding table.  
 2.The belt driven KA is to be used in horizontal applications. Maximum linear velocity of 1800 mm/sec.

### 3.6 U-shaped aluminum base features a light weight construction and high rigidity

Series	Moment of Inertia (mm <sup>4</sup> )	I <sub>xx</sub>	I <sub>yy</sub>	
KA	KA100	2.17 x10 <sup>5</sup>	1.81x10 <sup>6</sup>	
	KA136	3.37x10 <sup>5</sup>	5.36x10 <sup>6</sup>	
	KA170	8.84x10 <sup>5</sup>	1.24x10 <sup>7</sup>	
	KA200	9.52x10 <sup>5</sup>	1.90x10 <sup>7</sup>	
KS	KS10	8.67x10 <sup>4</sup>	1.45x10 <sup>6</sup>	
	KS14	2.34x10 <sup>5</sup>	4.4x10 <sup>6</sup>	
	KS18	3.7x10 <sup>5</sup>	1.2x10 <sup>7</sup>	
KU	KU60	5.24x10 <sup>5</sup>	5.48x10 <sup>5</sup>	
	KU80	1.56x10 <sup>5</sup>	1.67x10 <sup>6</sup>	

### 3.7 Table for the operating speed and stroke of KA

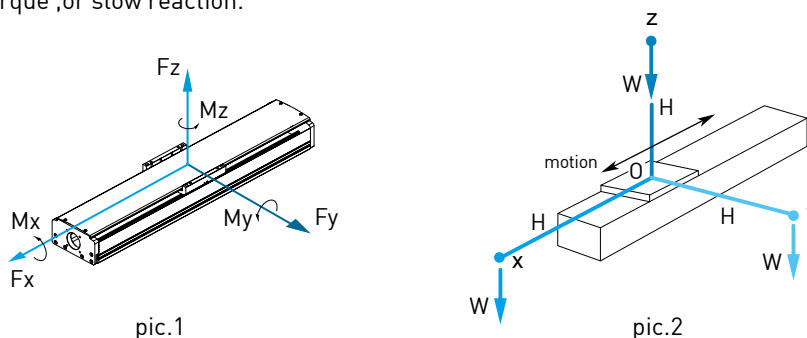
	KA Model				KA136							
					KA100				KA170			
	Ballscrew D (mm)				15		16		20		25	
	Ballscrew dr (mm)				12.364	12.399	12.899	12.684	16.624	17.084	21.824	22.094
Lead(mm)	5	10	20	25	10	20	5	10	10	20	10	25
RPM: S(rpm)	Maximum Linear Velocity V: (mm/sec)				Maximum Stroke							
100	8	17	33	42	4142	4148	4234	4197	4723	4792	5449	5484
200	17	33	67	83	2883	2887	2948	2922	3264	3312	3776	3801
300	25	50	100	125	2325	2329	2378	2357	2617	2657	3035	3056
400	33	67	133	167	1993	1996	2039	2020	2232	2266	2594	2611
500	42	83	167	208	1766	1769	1807	1791	1969	1999	2292	2308
600	50	100	200	250	1598	1601	1636	1621	1774	1802	2070	2084
700	58	117	233	292	1468	1471	1503	1489	1623	1649	1897	1910
800	67	133	267	333	1363	1366	1396	1383	1502	1526	1758	1770
900	75	150	300	375	1277	1279	1307	1295	1401	1424	1642	1654
1000	83	167	333	417	1203	1205	1232	1220	1316	1337	1545	1556
1100	92	183	367	458	1140	1142	1167	1156	1242	1263	1461	1471
1150	96	192	383	479	1111	1113	1138	1128	1209	1230	1423	1433
1200	100	200	400	500	1085	1086	1111	1101	1179	1198	1387	1397
1300	108	217	433	542	1036	1038	1061	1051	1122	1141	1323	1332
1400	117	233	467	583	993	994	1017	1007	1072	1090	1265	1274
1500	125	250	500	625	954	955	977	968	1027	1044	1213	1222
1600	133	267	533	667	918	920	941	932	986	1003	1166	1175
1700	142	283	567	708	886	888	909	900	949	965	1124	1132
1800	150	300	600	750	857	858	879	870	915	931	1085	1093
1900	158	317	633	792	830	831	851	843	883	899	1049	1057
2000	167	333	667	833	805	806	826	817	854	870	1016	1024
2100	175	350	700	875	782	783	802	794	827	842	985	993
2200	183	367	733	917	760	762	780	772	802	817	956	964
2300	192	383	767	958	740	741	759	752	779	793	930	937
2400	200	400	800	1000	721	722	740	733	757	771	904	912
2500	208	417	833	1042	704	705	722	715	737	750	881	888
2600	217	433	867	1083	687	688	705	698	717	731	859	866
2700	225	450	900	1125	671	672	689	682	699	712	838	845
2800	233	467	933	1167	656	657	674	667	682	695	818	825
2900	242	483	967	1208	642	643	659	652	665	678	799	806
3000	250	500	1000	1250	629	630	645	639	650	662	781	788

\* Operating Speed and Stroke for reference only. If effective stroke requirement is longer than standard stroke available in the above chart, please contact HIWIN.

### 3.8 Dynamic Load

Several factors affect the calculation of loads acting on a KA system as shown in the figure below. The dynamic loads indicated in the catalog ( $F_y, F_z, M_x, M_y, M_z$ ) are calculated based on 10,000 km of travel distance. To obtain the correct load value and maintain the service life of the KA, each load condition should be carefully considered.

The below figure shows the load being applied onto the center of the KA sliding table. In fact, the load is not necessarily in the middle during its operation, and if the load is not on the center, there could be potential vibrations, over torque, or slow reaction.

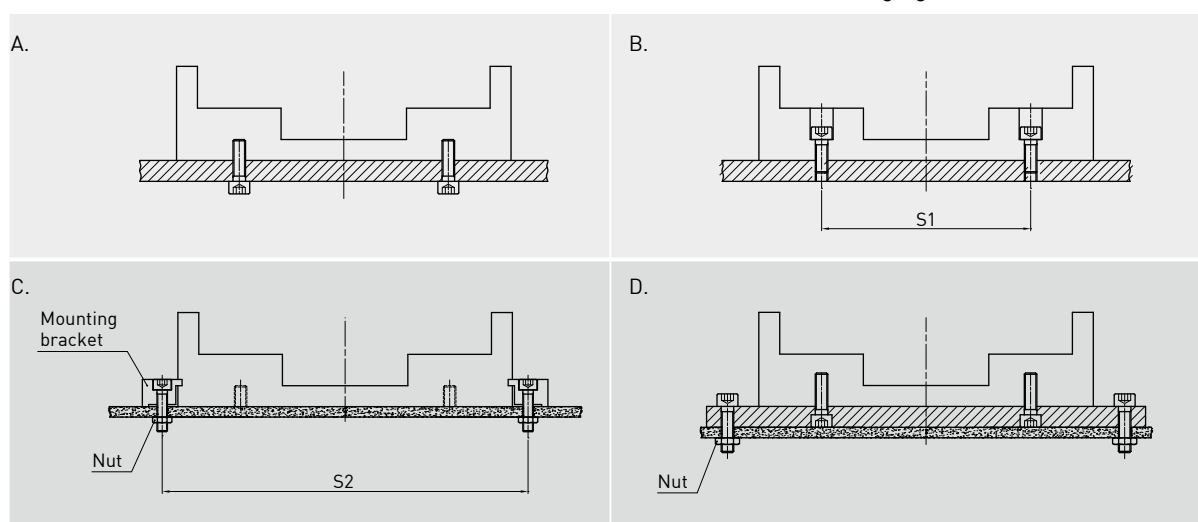


To avoid these circumstances, please keep the loading ( $W$ ) close to the center of the sliding table ( $O$ ) within the distance ( $H$ ).

Off Center Distance	H (mm)		
	x	y	z
KA100	550	550	550
KA136	550	550	550
KA170	780	780	780
KA200	900	900	900

### 3.9 Installation Method

There are several installation methods for the KA series as shown in the following figures.



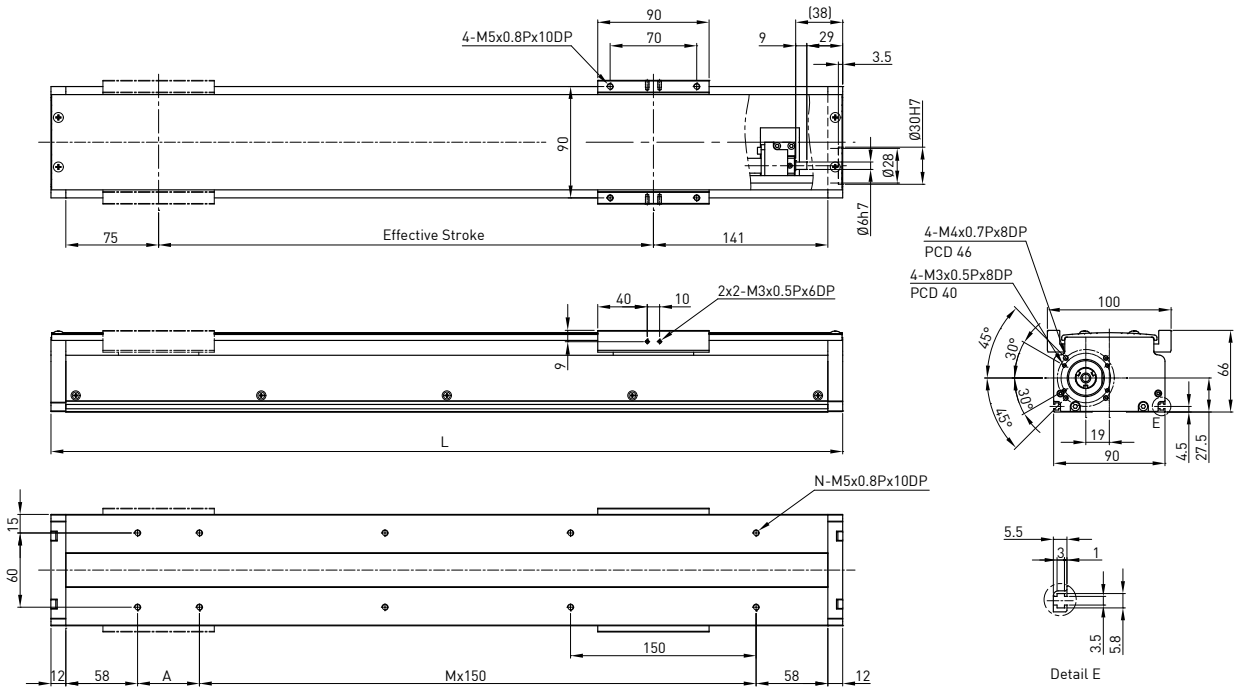
The table below indicates the distance between fixing screws, ( $S1$ ) on type B and ( $S2$ ) on type C (fixing from above):

KA Model	S1	S2	Screw
KA100	80	116	M5
KA136	112	150	M6
KA170	136	186	M8
KA200	162	218	M8

### 3.8 KA Series

#### Model Number for KA090

KA090	-10	P	-0600	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm	C: Normal P: Precision		A: Standard	F0:Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



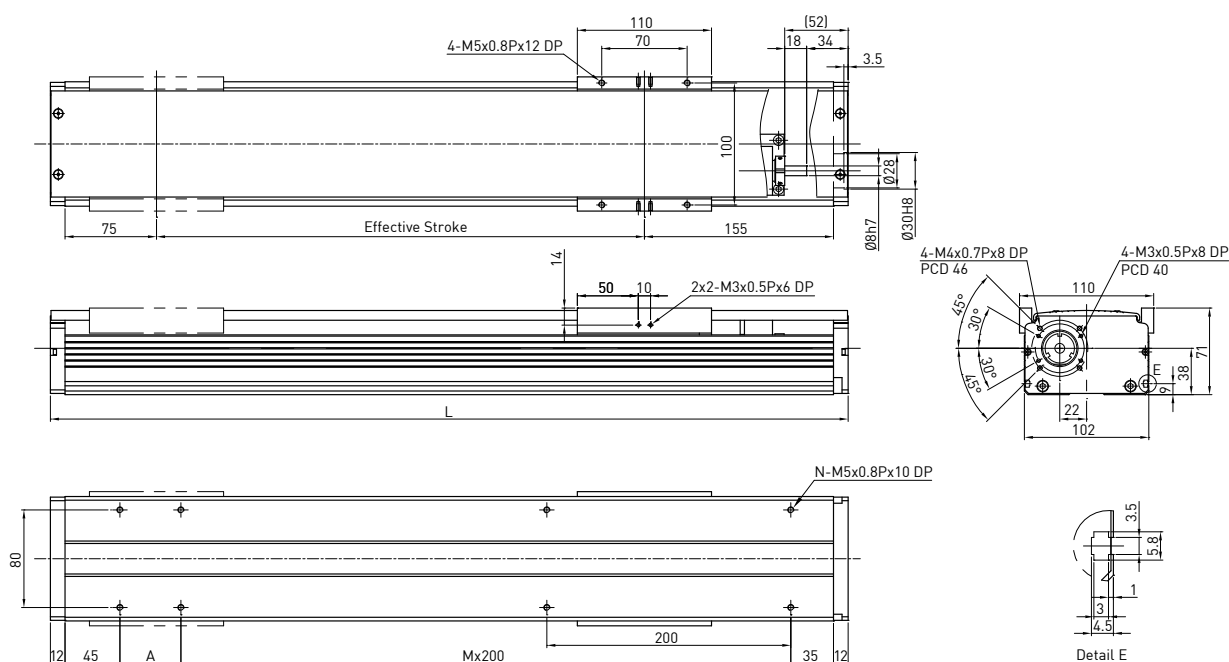
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output		W		
						W	100	5	10	
50	290	150	0	4	3.38	Drive		Ballscrew C7(normal)		
100	340	50	1	6	3.78	Lead	mm	5	10	
150	390	100	1	6	4.18	Rated RPM	RPM	3000	3000	
200	440	150	1	6	4.58	Max linear speed*	mm/sec	250	500	
250	490	50	2	8	4.98	Rated thrust	N	280	140	
300	540	100	2	8	5.38	Repeatability	mm	±0.02		
350	590	150	2	8	5.78	Effective stroke	mm	150-600		
400	640	50	3	10	6.18	Max load (H)	kg	24	12	
450	690	100	3	10	6.58		F <sub>yd</sub>	N	50	50
500	740	150	3	10	6.98		F <sub>zd</sub>	N	240	160
550	790	50	4	12	7.38		M <sub>xd</sub>	N-m	5	4.5
600	840	100	4	12	7.78		M <sub>yd</sub>	N-m	2.3	2.1
							M <sub>zd</sub>	N-m	2.3	2.1
						Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads			

\* Vibration might occur when the effective stroke is longer than 550mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.



## Model Number for KA100

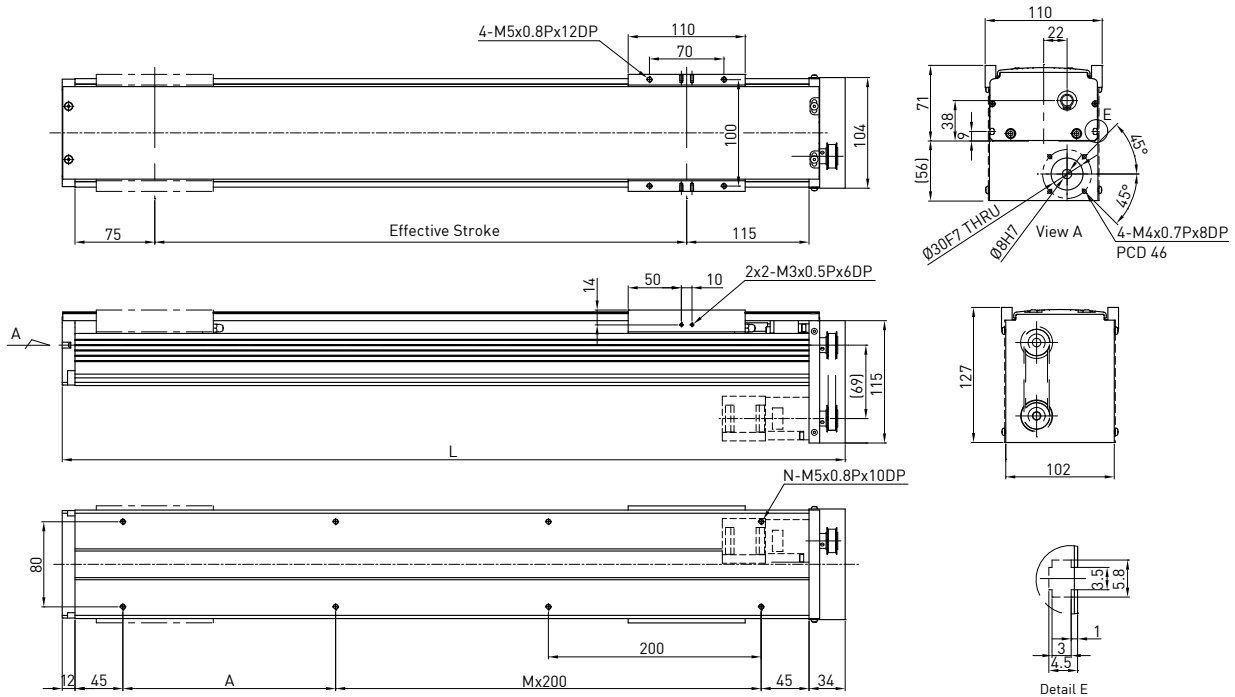
KA100	-20	P	-1050	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	F0:Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100			
100	354	50	1	6	4.86	Lead	mm	5	10	20	
150	404	100	1	6	5.34	Rated RPM	RPM	3000	3000	3000	
200	454	150	1	6	5.81	Max linear speed*	mm/sec	250	500	1000	
250	504	200	1	6	6.29	Rated thrust	N	280	140	70	
300	554	50	2	8	6.77	Repeatability	mm	±0.02			
350	604	100	2	8	7.25	Effective stroke	mm	100~1050			
400	654	150	2	8	7.73	Max load (H)	kg	50	32	20	
450	704	200	2	8	8.2	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50
500	754	50	3	10	8.67		F <sub>zd</sub>	N	500	320	200
550	804	100	3	10	9.15		M <sub>xd</sub>	N-m	16	16	16
600	854	150	3	10	9.63		My <sub>d</sub>	N-m	14	13.5	13
650	904	200	3	10	10.11		M <sub>zd</sub>	N-m	14	13.5	13
700	954	50	4	12	10.59	Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads				
750	1004	100	4	12	11.06						
800	1054	150	4	12	11.54						
850	1104	200	4	12	12.02						
900	1154	50	5	14	12.49						
950	1204	100	5	14	12.97	* Vibration might occur when the effective stroke is longer than 650mm. The maximum speed should be decreased by 15% for every 100mm of increased stroke.					
1000	1254	150	5	14	13.45	** The load condition is based on 10,000km operation.					
1050	1304	200	5	14	13.93	*** If used on the vertical axis or in a special condition, please contact HIWIN.					

## Model Number for KA100-FD

KA100	-20	P	-1050	A	FD	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FD: Bottom	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

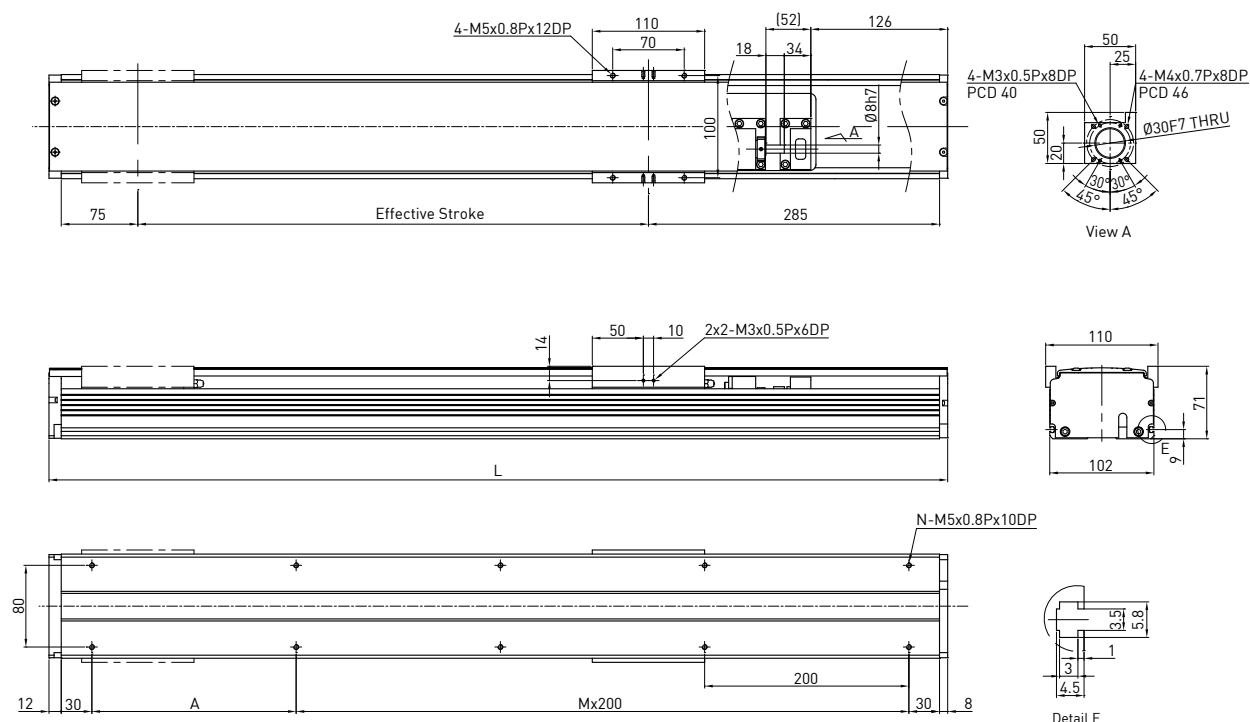


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output					
						W	100				
						Drive	Ballscrew C7(normal)				
100	336	200	0	4	4.91	Lead	mm	5	10	20	
150	386	50	1	6	5.41	Rated RPM	RPM	3000	3000	3000	
200	436	100	1	6	5.88	Max linear speed*	mm/sec	250	500	1000	
250	486	150	1	6	6.36	Rated thrust	N	280	140	70	
300	536	200	1	6	6.85	Repeatability	mm	±0.02			
350	586	50	2	8	7.33	Effective stroke	mm	100~1050			
400	636	100	2	8	7.82	Max load (H)	kg	50	32	20	
450	686	150	2	8	8.29	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50
500	736	200	2	8	8.76		F <sub>zd</sub>	N	500	320	200
550	786	50	3	10	9.25		M <sub>xd</sub>	N-m	16	16	16
600	836	100	3	10	9.73		M <sub>yd</sub>	N-m	14	13.5	13
650	886	150	3	10	10.22		M <sub>zd</sub>	N-m	14	13.5	13
700	936	200	3	10	10.71	Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads				
750	986	50	4	12	11.19						
800	1036	100	4	12	11.67						
850	1086	150	4	12	12.15						
900	1136	200	4	12	12.63						
950	1186	50	5	14	13.12						
1000	1236	100	5	14	13.6						
1050	1286	150	5	14	14.08						

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA100-FI

KA100	-20	P	-1050	A	FI	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FI : Internal	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

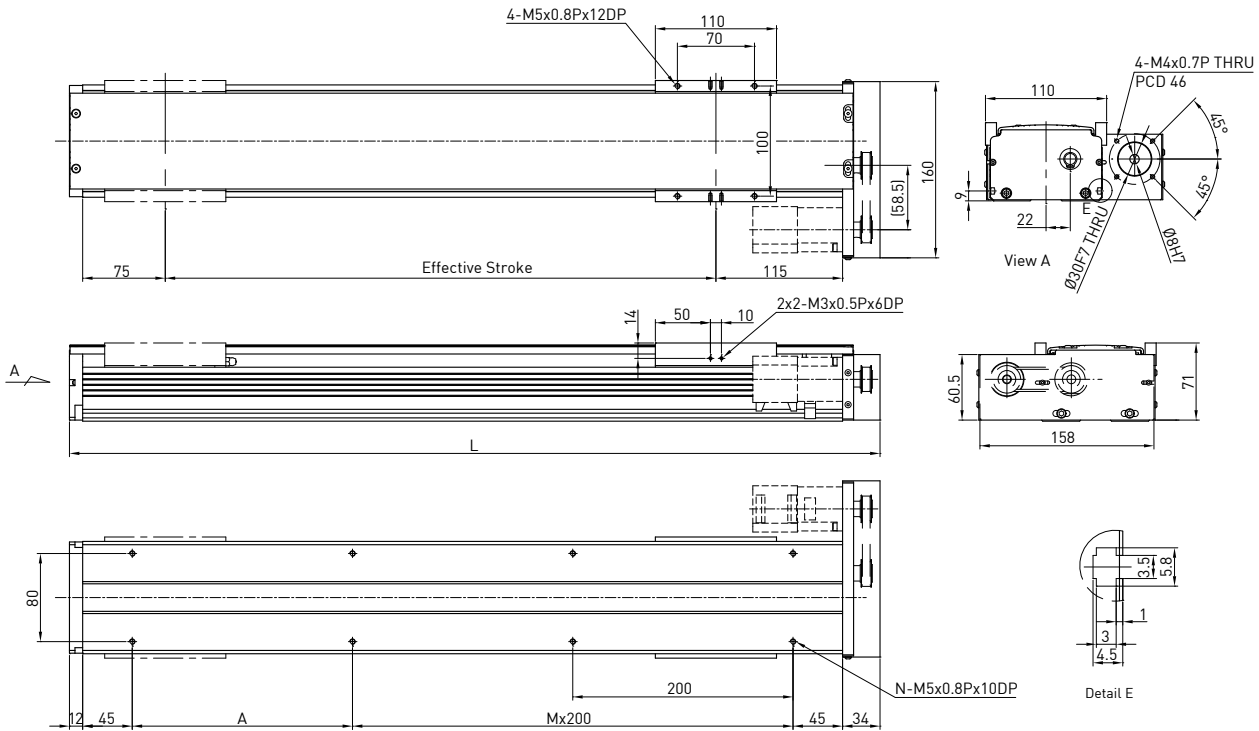


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100			
100	480	200	1	6	5.2	Lead	mm	5	10	20	
150	530	50	2	8	5.71	Rated RPM	RPM	3000	3000	3000	
200	580	100	2	8	6.22	Max linear speed*	mm/sec	250	500	1000	
250	630	150	2	8	6.73	Rated thrust	N	280	140	70	
300	680	200	2	8	7.24	Repeatability	mm	±0.02			
350	730	50	3	10	7.76	Effective stroke	mm	100~1050			
400	780	100	3	10	8.27	Max load (H)	kg	50	32	20	
450	830	150	3	10	8.77		Fyd	N	50	50	50
500	880	200	3	10	9.28		Fzd	N	500	320	200
550	930	50	4	12	9.79		Mxd	N-m	16	16	16
600	980	100	4	12	10.31		Myd	N-m	14	13.5	13
650	1030	150	4	12	10.82		Mzd	N-m	14	13.5	13
700	1080	200	4	12	11.33	<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads					
750	1130	50	5	14	11.83						
800	1180	100	5	14	12.35						
850	1230	150	5	14	12.86						
900	1280	200	5	14	13.37						
950	1330	50	6	16	13.88						
1000	1380	100	6	16	14.39						
1050	1430	150	6	16	14.91						

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA100-FL

KA100	-20	P	-1050	A	FL	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

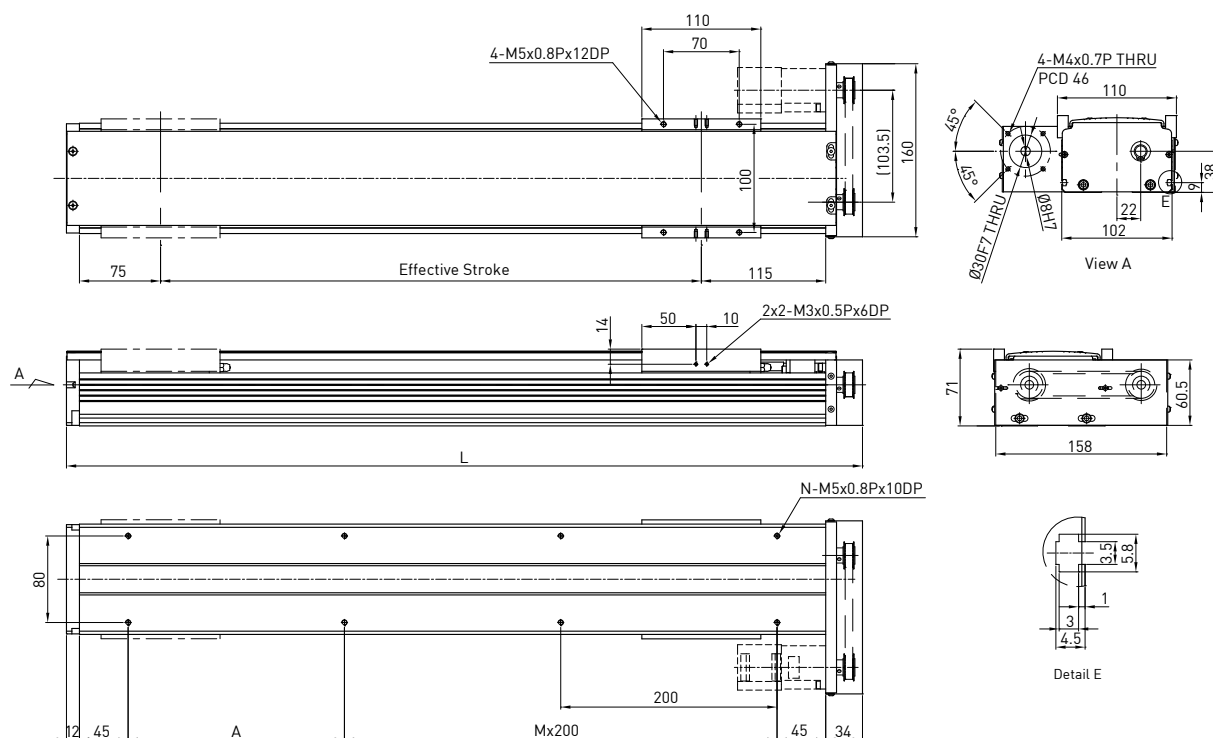


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	100			
100	336	200	0	4	4.91	Drive		Ballscrew C7(normal)			
150	386	50	1	6	5.41	Lead	mm	5	10	20	
200	436	100	1	6	5.88	Rated RPM	RPM	3000	3000	3000	
250	486	150	1	6	6.36	Max linear speed*	mm/sec	250	500	1000	
300	536	200	1	6	6.85	Rated thrust	N	280	140	70	
350	586	50	2	8	7.33	Repeatability	mm	±0.02			
400	636	100	2	8	7.82	Effective stroke	mm	100~1050			
450	686	150	2	8	8.29	Max load (H)	kg	50	32	20	
500	736	200	2	8	8.76		F <sub>yd</sub>	N	50	50	50
550	786	50	3	10	9.25		F <sub>zd</sub>	N	500	320	200
600	836	100	3	10	9.73		M <sub>xd</sub>	N-m	16	16	16
650	886	150	3	10	10.22		M <sub>yd</sub>	N-m	14	13.5	13
700	936	200	3	10	10.71		M <sub>zd</sub>	N-m	14	13.5	13
750	986	50	4	12	11.19	<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads					
800	1036	100	4	12	11.67						
850	1086	150	4	12	12.15						
900	1136	200	4	12	12.63						
950	1186	50	5	14	13.12						
1000	1236	100	5	14	13.6						
1050	1286	150	5	14	14.08						

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA100-FR

KA100	-20	P	-1050	A	FR	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

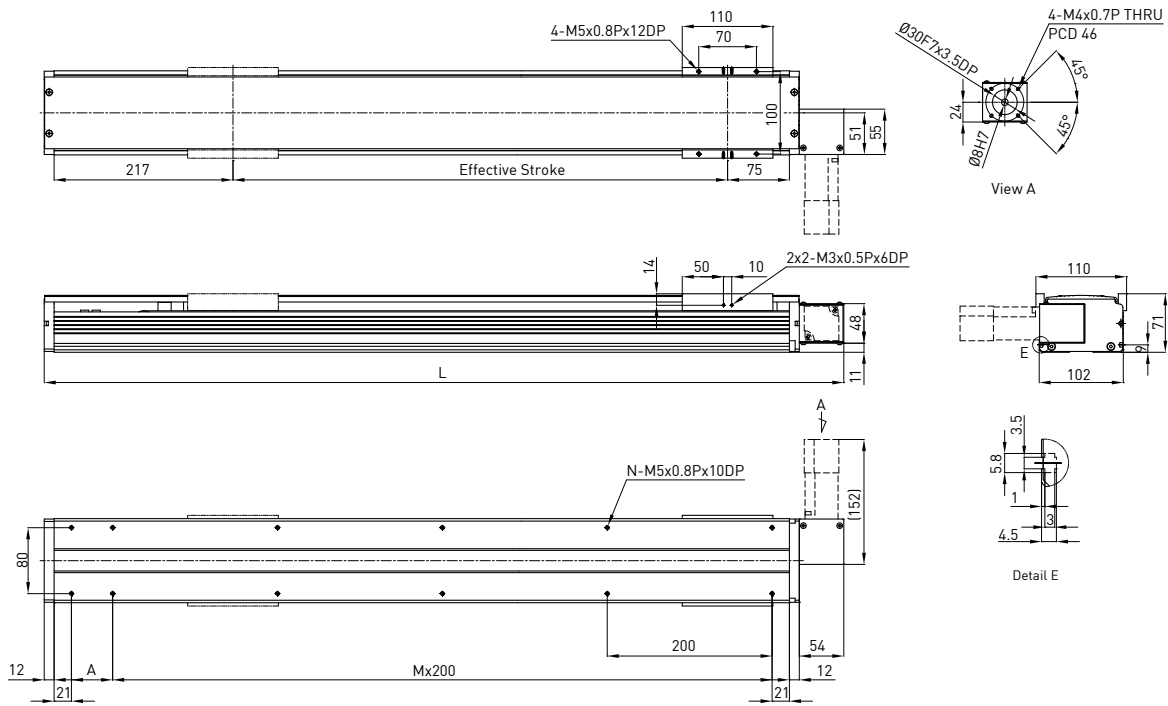


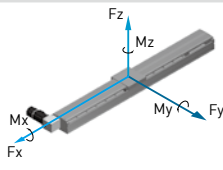
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100			
100	336	200	0	4	4.91	Lead	mm	5	10	20	
150	386	50	1	6	5.41	Rated RPM	RPM	3000	3000	3000	
200	436	100	1	6	5.88	Max linear speed*	mm/sec	250	500	1000	
250	486	150	1	6	6.36	Rated thrust	N	280	140	70	
300	536	200	1	6	6.85	Repeatability	mm	±0.02			
350	586	50	2	8	7.33	Effective stroke	mm	100~1050			
400	636	100	2	8	7.82	Max load (H)	kg	50	32	20	
450	686	150	2	8	8.29		Fyd	N	50	50	50
500	736	200	2	8	8.76		Fzd	N	500	320	200
550	786	50	3	10	9.25		Mxd	N-m	16	16	16
600	836	100	3	10	9.73		Myd	N-m	14	13.5	13
650	886	150	3	10	10.22		Mzd	N-m	14	13.5	13
700	936	200	3	10	10.71	<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads					
750	986	50	4	12	11.19						
800	1036	100	4	12	11.67						
850	1086	150	4	12	12.15						
900	1136	200	4	12	12.63						
950	1186	50	5	14	13.12						
1000	1236	100	5	14	13.6						
1050	1286	150	5	14	14.08						

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA100B-FL

KA100	B	-84	C	-3000	A	FL	U	S1	M
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
			C: Normal		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



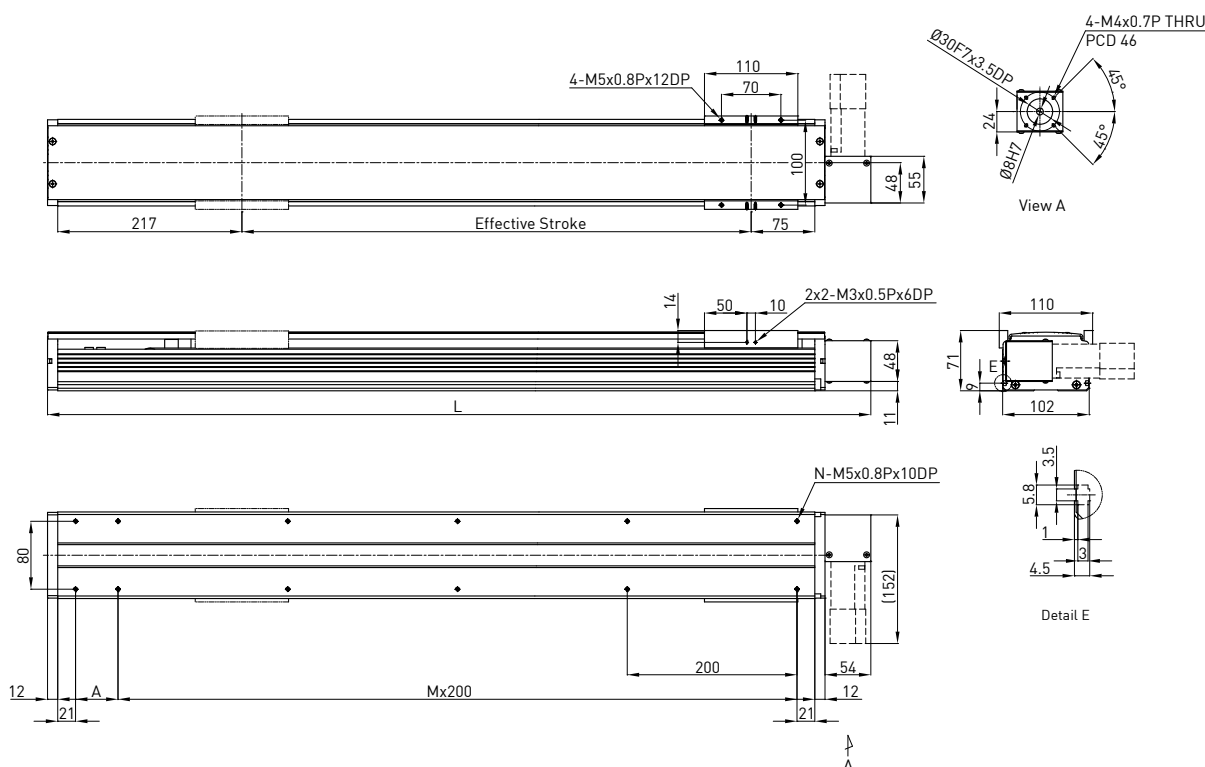
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100	
200	570	50	2	8	5.41	Pulley Perimeter	mm	84	
400	770	50	3	10	7.07	Pulley RPM	RPM	1286	
600	970	50	4	12	8.83	Max linear speed	mm/sec	1800	
800	1170	50	5	14	10.49	Rated thrust	N	33	
1000	1370	50	6	16	12.15	Repeatability	mm	±0.1	
1200	1570	50	7	18	13.91	Effective stroke	mm	200-3000	
1400	1770	50	8	20	15.57	Max load (H)	kg	7.5	
1600	1970	50	9	22	17.33	Rated dynamic load* 	Fyd	N	50
1800	2170	50	10	24	18.99		Fzd	N	75
2000	2370	50	11	26	20.65		Mxd	N-m	15
2200	2570	50	12	28	22.41		Myd	N-m	13
2400	2770	50	13	30	24.07		Mzd	N-m	13
2600	2970	50	14	32	25.83				
2800	3170	50	15	34	27.49	Permitted load condition** $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
3000	3370	50	16	36	29.15				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KA100B-FR

<b>KA100</b>	<b>B</b>	<b>-84</b>	<b>C</b>	<b>-3000</b>	<b>A</b>	<b>FR</b>	<b>U</b>	<b>S1</b>	<b>M</b>
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
			C: Normal		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



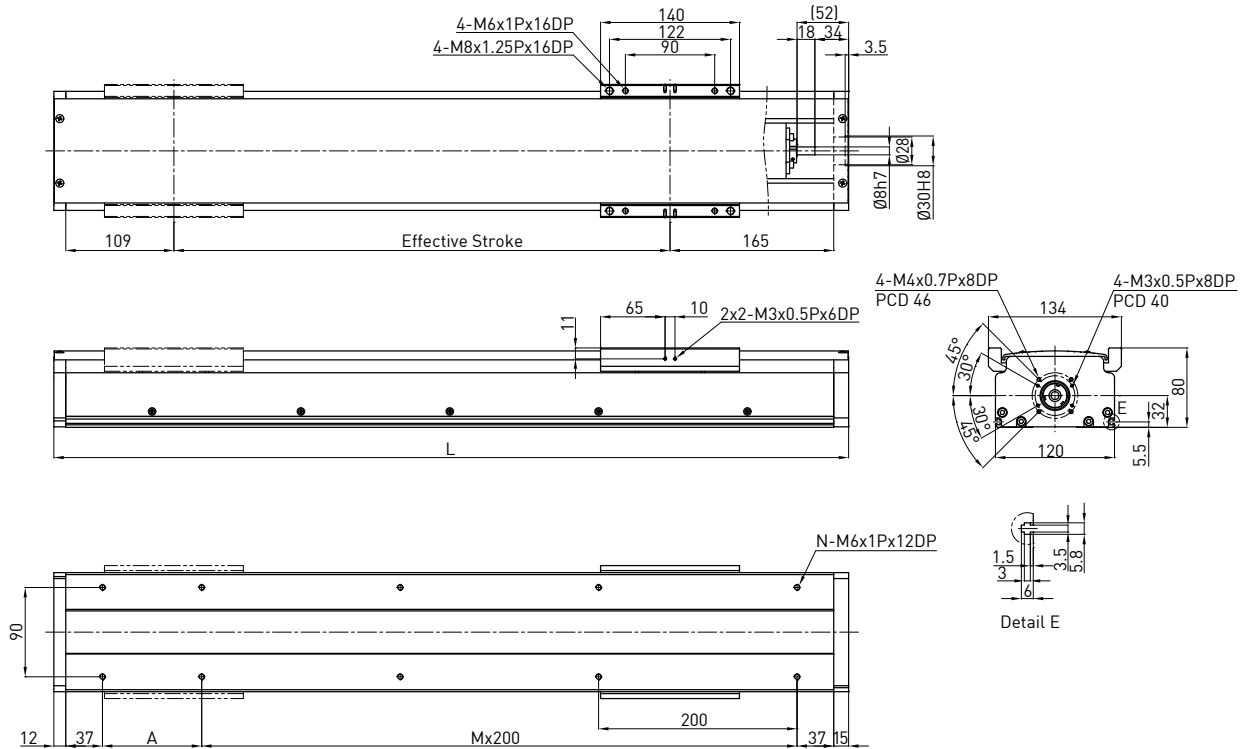
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100	
200	570	50	2	8	5.41	Pulley Perimeter	mm	84	
400	770	50	3	10	7.07	Pulley RPM	RPM	1286	
600	970	50	4	12	8.83	Max linear speed	mm/sec	1800	
800	1170	50	5	14	10.49	Rated thrust	N	33	
1000	1370	50	6	16	12.15	Repeatability	mm	±0.1	
1200	1570	50	7	18	13.91	Effective stroke	mm	200-3000	
1400	1770	50	8	20	15.57	Max load (H)	kg	7.5	
1600	1970	50	9	22	17.33		Fyd	N	50
1800	2170	50	10	24	18.99		Fzd	N	75
2000	2370	50	11	26	20.65		Mxd	N-m	15
2200	2570	50	12	28	22.41		Myd	N-m	13
2400	2770	50	13	30	24.07		Mzd	N-m	13
2600	2970	50	14	32	25.83	<b>Permitted load condition**</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
2800	3170	50	15	34	27.49				
3000	3370	50	16	36	29.15				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KA120

KA120	-20	P	-1050	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	F0 : Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



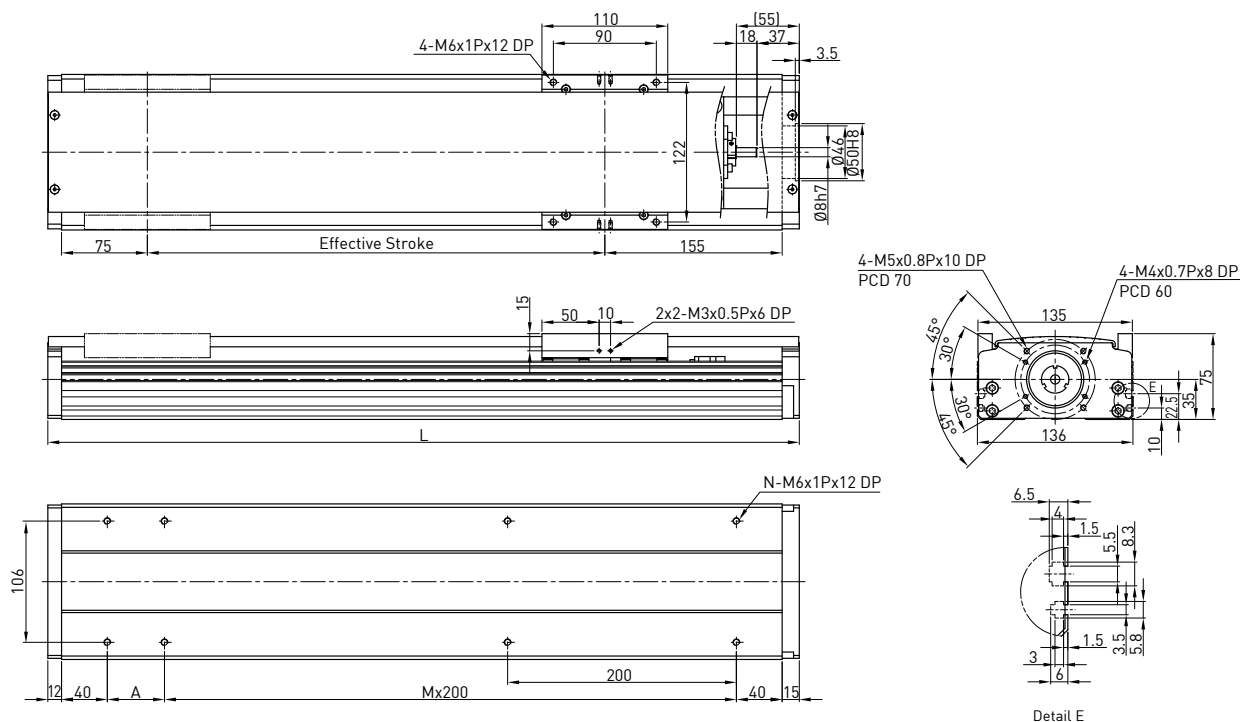
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output								
						W	100							
						Drive								
						Ballscrew C7(normal)								
100	401	100	1	6	7.5	Lead	mm	5	10	20				
150	451	150	1	6	8.13	Rated RPM	RPM	3000	3000	3000				
200	501	200	1	6	8.76	Max linear speed*	mm/sec	250	500	1000				
250	551	50	2	8	9.39	Rated thrust	N	560	280	140				
300	601	100	2	8	10.02	Repeatability	mm	±0.02						
350	651	150	2	8	10.65	Effective stroke	mm	100~1050						
400	701	200	2	8	11.28	Max load (H)	kg	50	32	20				
450	751	50	3	10	11.91	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50			
500	801	100	3	10	12.54		F <sub>zd</sub>	N	500	320	200			
550	851	150	3	10	13.17		M <sub>xd</sub>	N-m	25	27	28			
600	901	200	3	10	13.8		M <sub>yd</sub>	N-m	20	22	23			
650	951	50	4	12	14.43		M <sub>zd</sub>	N-m	20	22	23			
700	1001	100	4	12	15.06		$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads							
750	1051	150	4	12	15.69	Permitted load condition***								
800	1101	200	4	12	16.32									
850	1151	50	5	14	16.95									
900	1201	100	5	14	17.58									
950	1251	150	5	14	18.21									
1000	1301	200	5	14	18.84									
1050	1351	50	6	16	19.47									

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.



## Model Number for KA136

KA136	-20	P	-1050	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	F0 : Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

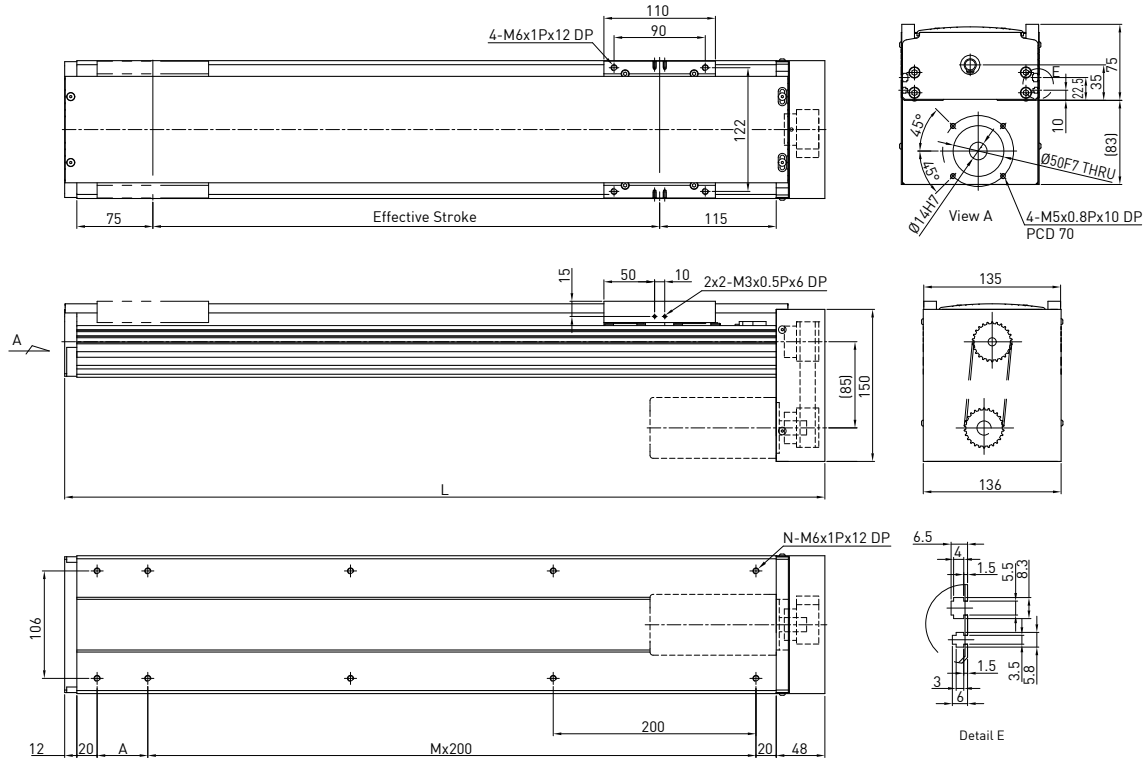


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	200			
100	357	50	1	6	6.19	Drive		Ball screw C7(normal)			
150	407	100	1	6	6.74	Lead	mm	5	10	20	
200	457	150	1	6	7.29	Rated RPM	RPM	3000	3000	3000	
250	507	200	1	6	7.84	Max linear speed*	mm/sec	250	500	1000	
300	557	50	2	8	8.39	Rated thrust	N	560	280	140	
350	607	100	2	8	8.94	Repeatability	mm	±0.02			
400	657	150	2	8	9.49	Effective stroke	mm	100~1050			
450	707	200	2	8	10.05	Max load (H)	kg	95	75	40	
500	757	50	3	10	10.6	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50
550	807	100	3	10	11.15		F <sub>zd</sub>	N	950	750	400
600	857	150	3	10	11.7		M <sub>xd</sub>	N-m	21	21	26
650	907	200	3	10	12.25		M <sub>yd</sub>	N-m	17	17	21
700	957	50	4	12	12.8		M <sub>zd</sub>	N-m	17	17	21
750	1007	100	4	12	13.35	Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads				
800	1057	150	4	12	13.9						
850	1107	200	4	12	14.45						
900	1157	50	5	14	15						
950	1207	100	5	14	15.55						
1000	1257	150	5	14	16.1						
1050	1307	200	5	14	16.65						

\* Vibration might occur when the effective stroke is longer than 650mm.  
The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
\*\* The load condition is based on 10,000km operation.  
\*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA136-FD

KA136	-20	P	-1050	A	FD	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FD: Bottom	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output				W					
						Drive	Lead	Rated RPM	Max linear speed*	Rated thrust	Repeatability	Effective stroke	Max load (H)	200	
100	350	50	1	6	6.31		mm	RPM	mm/sec	N	mm	Ballscrew C7(normal)			
150	400	100	1	6	6.88					560	±0.02	100~1050	95	75	40
200	450	150	1	6	7.44					280			50	50	50
250	500	200	1	6	8.01					140			950	750	400
300	550	50	2	8	8.56								21	21	26
350	600	100	2	8	9.12								17	17	21
400	650	150	2	8	9.68								17	17	21
450	700	200	2	8	10.25										
500	750	50	3	10	10.81										
550	800	100	3	10	11.37										
600	850	150	3	10	11.94										
650	900	200	3	10	12.51										
700	950	50	4	12	13.06										
750	1000	100	4	12	13.62										
800	1050	150	4	12	14.18										
850	1100	200	4	12	14.74										
900	1150	50	5	14	15.3										
950	1200	100	5	14	15.86										
1000	1250	150	5	14	16.42										
1050	1300	200	5	14	16.98										

Rated dynamic load**	Fyd	N	50	50	50
	Fzd	N	950	750	400
	Mxd	N-m	21	21	26
	Myd	N-m	17	17	21
	Mzd	N-m	17	17	21

**Permitted load condition\*\*\***

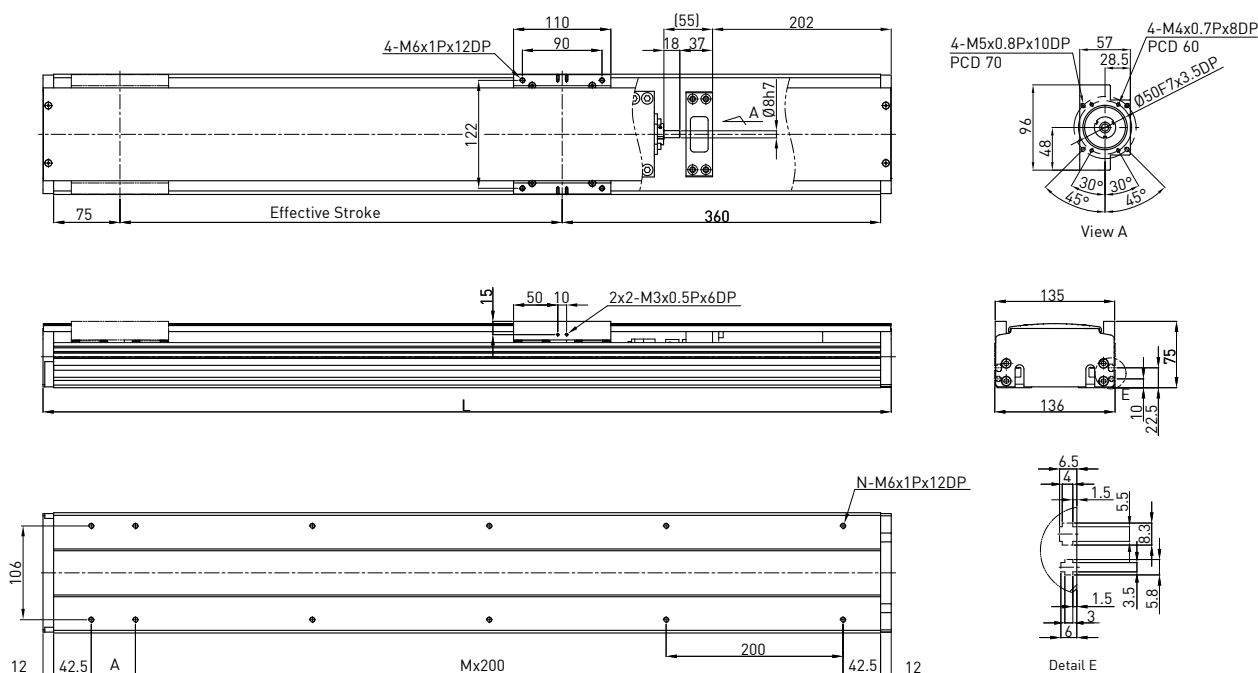
$$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$$

Fy, Fz, Mx, My, Mz are working loads

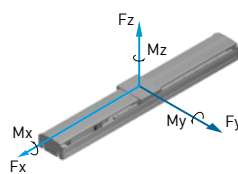
\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA136-FI

KA136	-20	P	-1050	A	FI	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FI : Internal	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



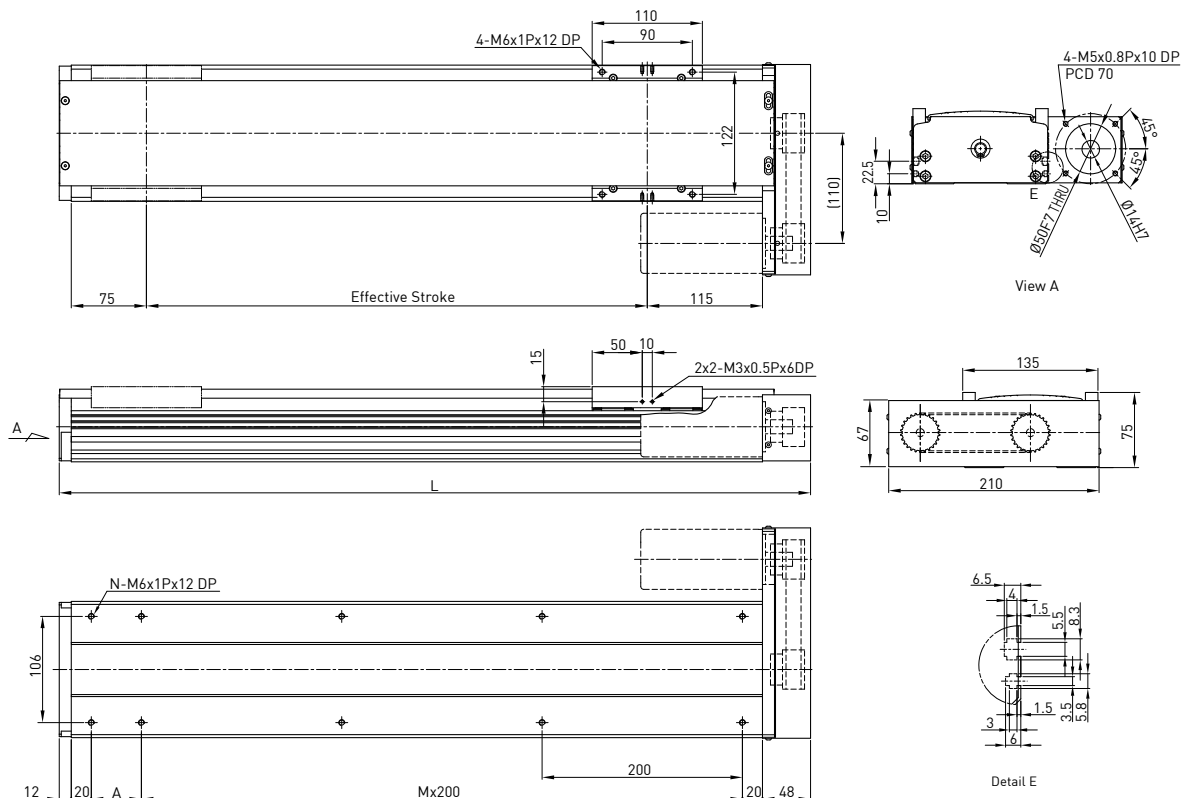
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output					
						W	200				
						Drive	Ball screw C7(normal)				
100	559	50	2	8	6.62	Lead	mm	5	10	20	
150	609	100	2	8	7.21	Rated RPM	RPM	3000	3000	3000	
200	659	150	2	8	7.8	Max linear speed*	mm/sec	250	500	1000	
250	709	200	2	8	8.39	Rated thrust	N	560	280	140	
300	759	50	3	10	8.98	Repeatability	mm	±0.02			
350	809	100	3	10	9.57	Effective stroke	mm	100~1050			
400	859	150	3	10	10.15	Max load (H)	kg	95	75	40	
450	909	200	3	10	10.75	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50
500	959	50	4	12	11.34		F <sub>zd</sub>	N	950	750	400
550	1009	100	4	12	11.93		M <sub>xd</sub>	N-m	21	21	26
600	1059	150	4	12	12.52		M <sub>yd</sub>	N-m	17	17	21
650	1109	200	4	12	13.11		M <sub>zd</sub>	N-m	17	17	21
700	1159	50	5	14	13.71	Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads				
750	1209	100	5	14	14.29						
800	1259	150	5	14	14.87						
850	1309	200	5	14	15.46						
900	1359	50	6	16	16.05						
950	1409	100	6	16	16.64						
1000	1459	150	6	16	17.23						
1050	1509	200	6	16	17.82						



\* Vibration might occur when the effective stroke is longer than 650mm.  
The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
\*\* The load condition is based on 10,000km operation.  
\*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA136-FL

KA136	-20	P	-1050	A	FL	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

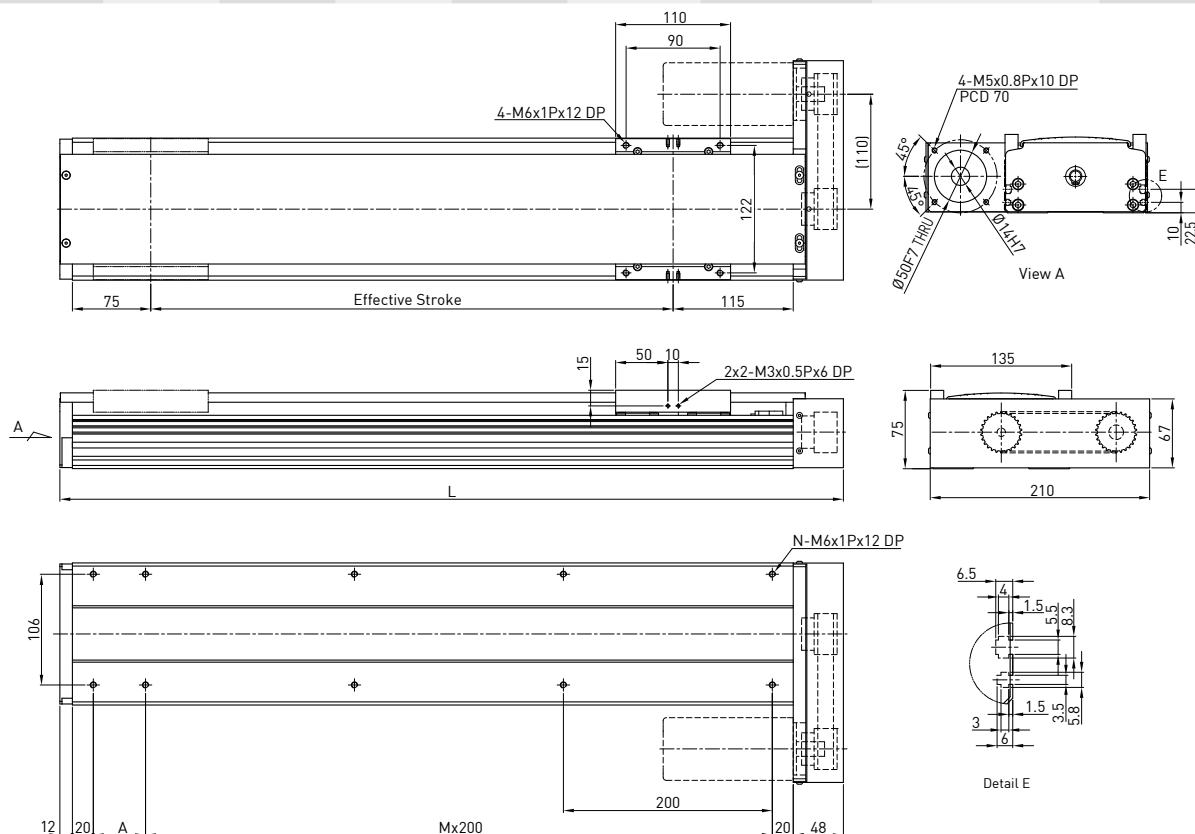


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output							
						W	200						
100	350	50	1	6	6.31	Drive	Ballscrew C7(normal)						
150	400	100	1	6	6.88	Lead	mm	5	10	20			
200	450	150	1	6	7.44	Rated RPM	RPM	3000	3000	3000			
250	500	200	1	6	8.01	Max linear speed*	mm/sec	250	500	1000			
300	550	50	2	8	8.56	Rated thrust	N	560	280	140			
350	600	100	2	8	9.12	Repeatability	mm	±0.02					
400	650	150	2	8	9.68	Effective stroke	mm	100~1050					
450	700	200	2	8	10.25	Max load (H)	kg	95	75	40			
500	750	50	3	10	10.81	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50		
550	800	100	3	10	11.37		F <sub>zd</sub>	N	950	750	400		
600	850	150	3	10	11.94		M <sub>xd</sub>	N-m	21	21	26		
650	900	200	3	10	12.51		M <sub>yd</sub>	N-m	17	17	21		
700	950	50	4	12	13.06		M <sub>zd</sub>	N-m	17	17	21		
750	1000	100	4	12	13.62								
800	1050	150	4	12	14.18	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads							
850	1100	200	4	12	14.74								
900	1150	50	5	14	15.3								
950	1200	100	5	14	15.86								
1000	1250	150	5	14	16.42								
1050	1300	200	5	14	16.98	Permitted load condition***							

\* Vibration might occur when the effective stroke is longer than 650mm. The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA136-FR

KA136	-20	P	-1050	A	FR	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	5 mm 10 mm 20 mm	C: Normal P: Precision		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

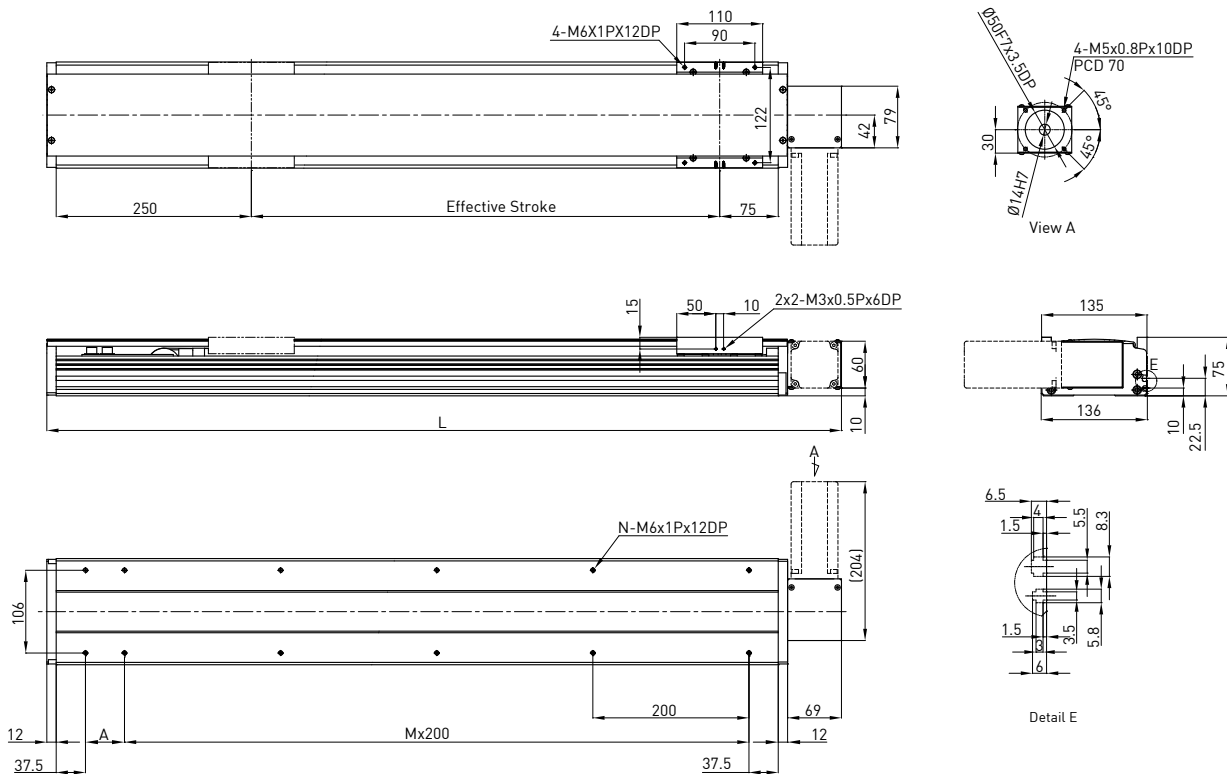


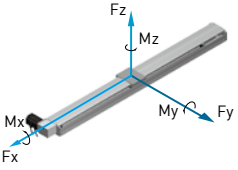
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output					
						W	200				
						Drive	Ball screw C7(normal)				
100	350	50	1	6	6.31	Lead	mm	5	10	20	
150	400	100	1	6	6.88	Rated RPM	RPM	3000	3000	3000	
200	450	150	1	6	7.44	Max linear speed*	mm/sec	250	500	1000	
250	500	200	1	6	8.01	Rated thrust	N	560	280	140	
300	550	50	2	8	8.56	Repeatability	mm	±0.02			
350	600	100	2	8	9.12	Effective stroke	mm	100~1050			
400	650	150	2	8	9.68	Max load (H)	kg	95	75	40	
450	700	200	2	8	10.25	Rated dynamic load**	F <sub>yd</sub>	N	50	50	50
500	750	50	3	10	10.81		F <sub>zd</sub>	N	950	750	400
550	800	100	3	10	11.37		M <sub>xd</sub>	N-m	21	21	26
600	850	150	3	10	11.94		M <sub>yd</sub>	N-m	17	17	21
650	900	200	3	10	12.51		M <sub>zd</sub>	N-m	17	17	21
700	950	50	4	12	13.06	Permitted load condition***	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads				
750	1000	100	4	12	13.62						
800	1050	150	4	12	14.18						
850	1100	200	4	12	14.74						
900	1150	50	5	14	15.3						
950	1200	100	5	14	15.86						
1000	1250	150	5	14	16.42						
1050	1300	200	5	14	16.98						

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA136B-FL

KA136	B	-120	C	-3000	A	FL	U	S1	M
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
			C: Normal		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



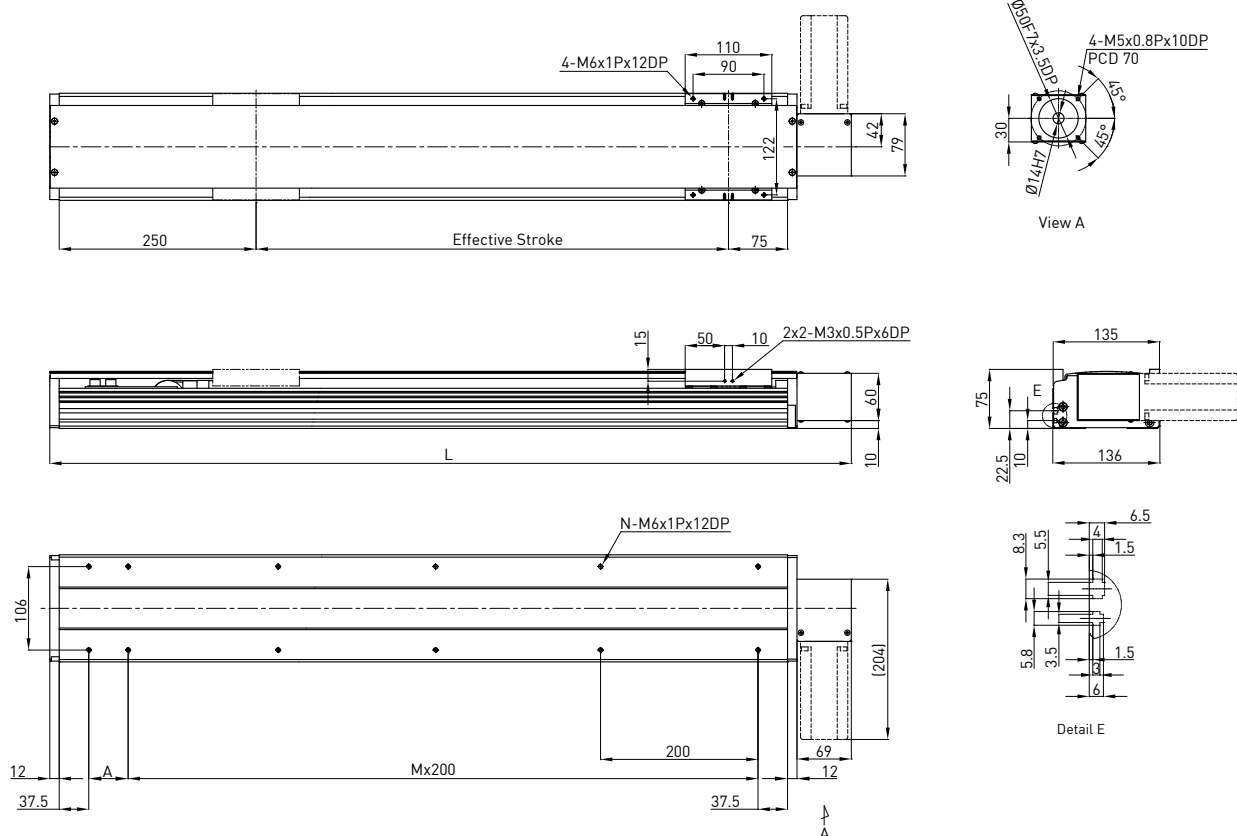
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	200	
200	618	50	2	8	6.97	Pulley Perimeter	mm	120	
400	818	50	3	10	8.93	Pulley RPM	RPM	900	
600	1018	50	4	12	11.01	Max linear speed	mm/sec	1800	
800	1218	50	5	14	12.97	Rated thrust	N	67	
1000	1418	50	6	16	14.93	Repeatability	mm	±0.1	
1200	1618	50	7	18	16.99	Effective stroke	mm	200~3000	
1400	1818	50	8	20	18.95	Max load (H)	kg	15	
1600	2018	50	9	22	21.01	Rated dynamic load* 	Fyd	N	50
1800	2218	50	10	24	22.97		Fzd	N	150
2000	2418	50	11	26	24.93		Mxd	N-m	29
2200	2618	50	12	28	26.99		Myd	N-m	24
2400	2818	50	13	30	28.95		Mzd	N-m	24
2600	3018	50	14	32	31.01	Permitted load condition** $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
2800	3218	50	15	34	32.97				
3000	3418	50	16	36	34.93				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KA136B-FR

<b>KA136</b>	<b>B</b>	<b>-120</b>	<b>C</b>	<b>-3000</b>	<b>A</b>	<b>FR</b>	<b>U</b>	<b>S1</b>	<b>M</b>
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
			C: Normal		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



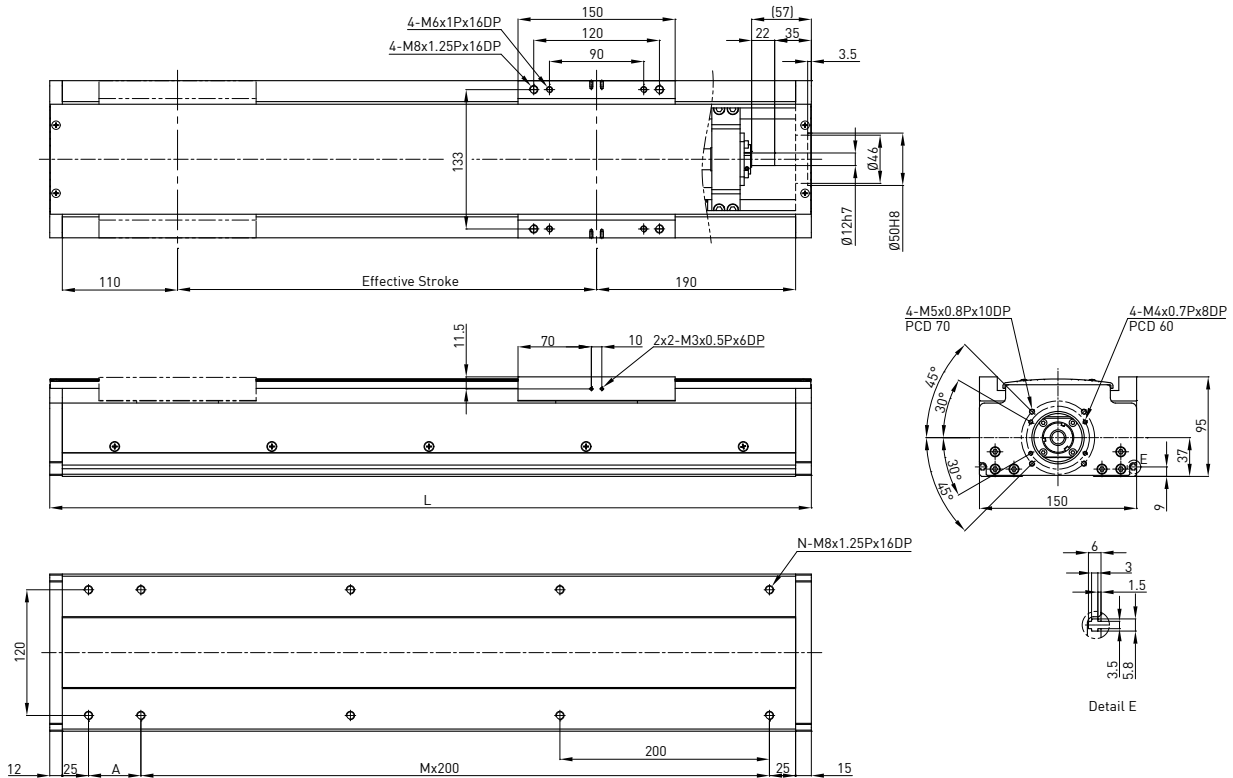
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	200	
200	618	50	2	8	6.97	Pulley Perimeter	mm	120	
400	818	50	3	10	8.93	Pulley RPM	RPM	900	
600	1018	50	4	12	11.01	Max linear speed	mm/sec	1800	
800	1218	50	5	14	12.97	Rated thrust	N	67	
1000	1418	50	6	16	14.93	Repeatability	mm	±0.1	
1200	1618	50	7	18	16.99	Effective stroke	mm	200-3000	
1400	1818	50	8	20	18.95	Max load (H)	kg	15	
1600	2018	50	9	22	21.01	<b>Rated dynamic load*</b>	Fyd	N	50
1800	2218	50	10	24	22.97		Fzd	N	150
2000	2418	50	11	26	24.93		Mxd	N-m	29
2200	2618	50	12	28	26.99		Myd	N-m	24
2400	2818	50	13	30	28.95		Mzd	N-m	24
2600	3018	50	14	32	31.01	<b>Permitted load condition**</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
2800	3218	50	15	34	32.97				
3000	3418	50	16	36	34.93				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KA150

KA150	-10	P	-1250	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10 mm 20 mm	C: Normal P: Precision		A: Standard	F0 : Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	200																			
150	477	200	1	6	12.71	Drive		Ballscrew C7(normal)																			
200	527	50	2	8	13.59	Lead	mm	10    20																			
250	577	100	2	8	14.47	Rated RPM	RPM	3000    3000																			
300	627	150	2	8	15.35	Max linear speed*	mm/sec	500    1000																			
350	677	200	2	8	16.23	Rated thrust	N	280    140																			
400	727	50	3	10	17.11	Repeatability	mm	±0.02																			
450	777	100	3	10	17.99	Effective stroke	mm	150-1250																			
500	827	150	3	10	18.87	Max load (H)	kg	80    40																			
550	877	200	3	10	19.75		<table border="1"> <tr> <td>Fyd</td> <td>N</td> <td>50</td> <td>50</td> </tr> <tr> <td>Fzd</td> <td>N</td> <td>800</td> <td>400</td> </tr> <tr> <td>Mxd</td> <td>N-m</td> <td>56</td> <td>63</td> </tr> <tr> <td>Myd</td> <td>N-m</td> <td>49</td> <td>53</td> </tr> <tr> <td>Mzd</td> <td>N-m</td> <td>49</td> <td>53</td> </tr> </table>	Fyd	N	50	50	Fzd	N	800	400	Mxd	N-m	56	63	Myd	N-m	49	53	Mzd	N-m	49	53
Fyd	N	50	50																								
Fzd	N	800	400																								
Mxd	N-m	56	63																								
Myd	N-m	49	53																								
Mzd	N-m	49	53																								
600	927	50	4	12	20.63	$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ <p>Fy, Fz, Mx, My, Mz are working loads</p>																					
650	977	100	4	12	21.51																						
700	1027	150	4	12	22.39																						
750	1077	200	4	12	23.27																						
800	1127	50	5	14	24.15																						
850	1177	100	5	14	25.03																						
900	1227	150	5	14	25.91	<p>* Vibration might occur when the effective stroke is longer than 650mm. The maximum speed should be decreased by 15% for every 100mm of increased stroke. ** The load condition is based on 10,000km operation. *** If used on the vertical axis or in a special condition, please contact HIWIN.</p>																					
950	1277	200	5	14	26.79																						
1000	1327	50	6	16	27.67																						
1050	1377	100	6	16	28.55																						
1100	1427	150	6	16	29.43																						
1150	1477	200	6	16	30.31																						
1200	1527	50	7	18	31.19																						
1250	1577	100	7	18	32.07																						

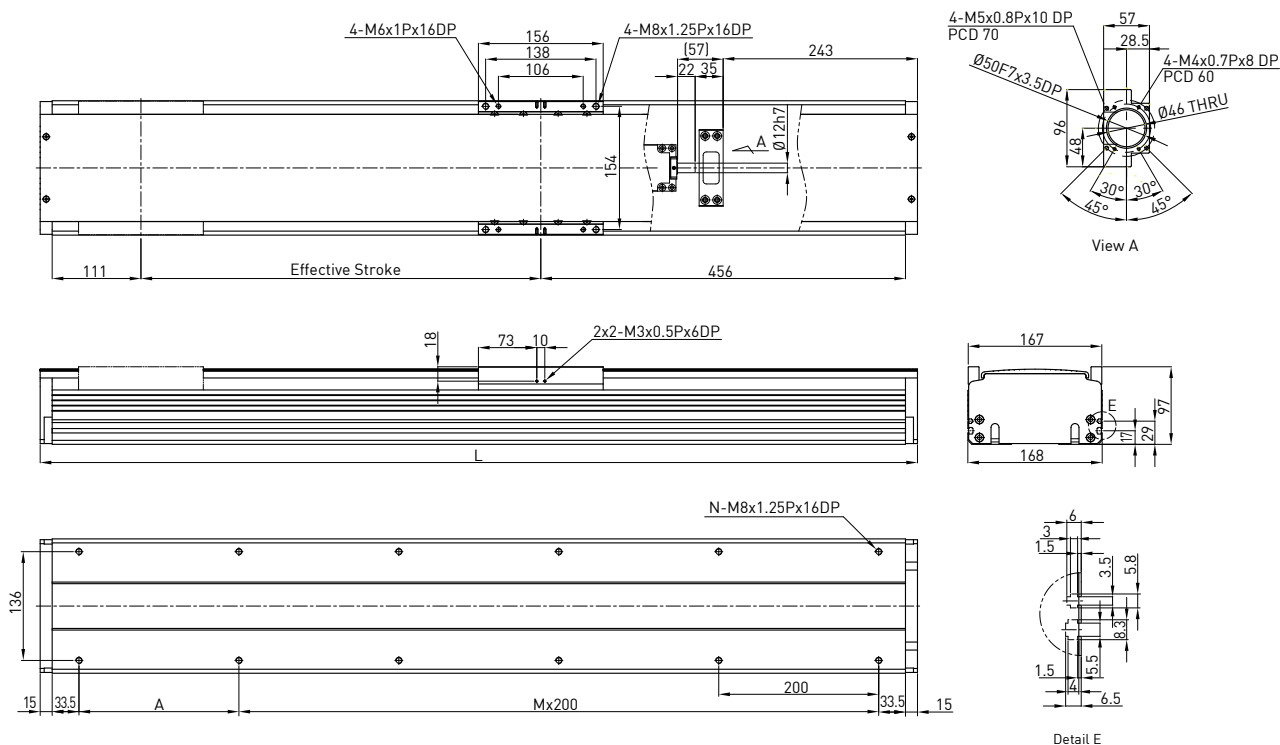






## Model Number for KA170-FI

KA170	-20	P	-1250	A	FI	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10 mm 20 mm	P: Precision C: Normal		A: Standard	FI : Internal	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

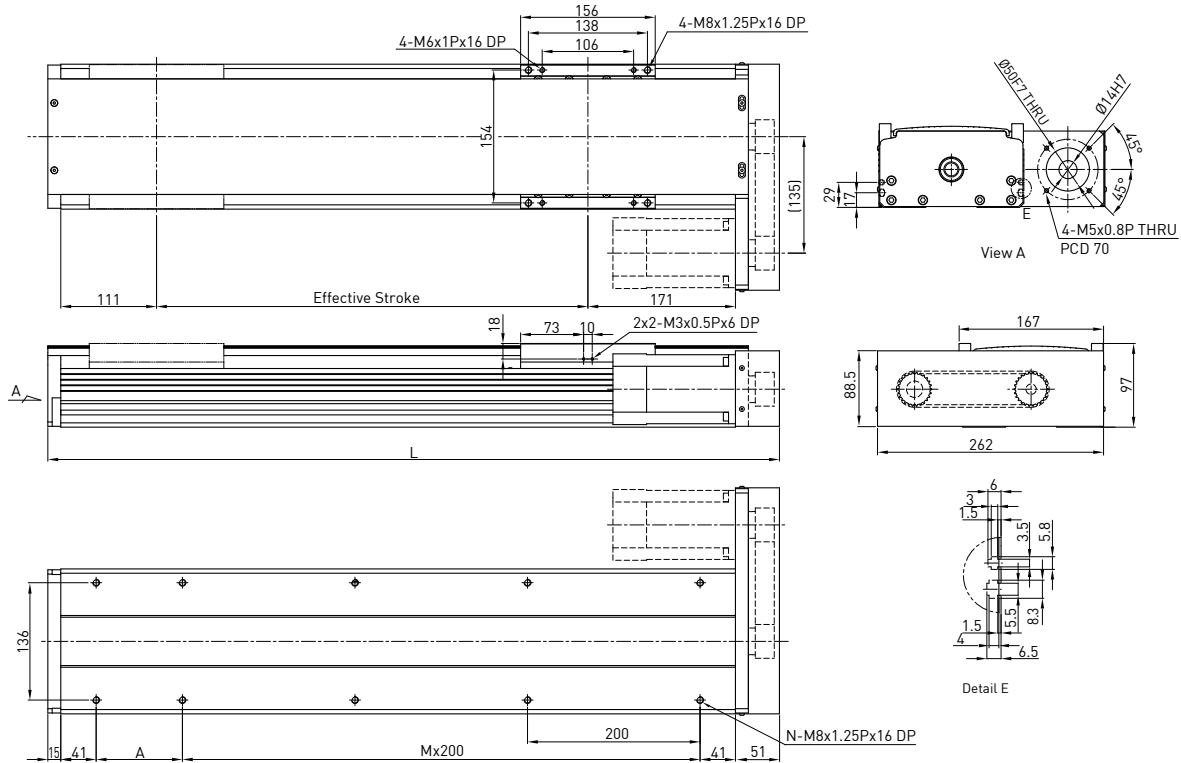


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	400	
150	747	50	3	10	15.59	Lead	mm	10 20	
200	797	100	3	10	16.53	Rated RPM	RPM	3000 3000	
250	847	150	3	10	17.47	Max linear speed*	mm/sec	500 1000	
300	897	200	3	10	18.42	Rated thrust	N	560 280	
350	947	50	4	12	19.36	Repeatability	mm	±0.02	
400	997	100	4	12	20.31	Effective stroke	mm	150~1250	
450	1047	150	4	12	23.24	Max load (H)	kg	125 75	
500	1097	200	4	12	22.18		Fyd	N	50 50
550	1147	50	5	14	23.12		Fzd	N	1250 750
600	1197	100	5	14	24.06		Mxd	N-m	100 110
650	1247	150	5	14	25.01		Myd	N-m	85 90
700	1297	200	5	14	25.95		Mzd	N-m	85 90
750	1347	50	6	16	26.89		$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads		
800	1397	100	6	16	27.83	<b>Permitted load condition***</b>			
850	1447	150	6	16	28.77				
900	1497	200	6	16	29.71				
950	1547	50	7	18	30.66				
1000	1597	100	7	18	31.61				
1050	1647	150	7	18	32.54				
1100	1697	200	7	18	33.48				
1150	1747	50	8	20	34.42				
1200	1797	100	8	20	35.36				
1250	1847	150	8	20	36.31				

\* Vibration might occur when the effective stroke is longer than 650mm. The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

## Model Number for KA170-FL

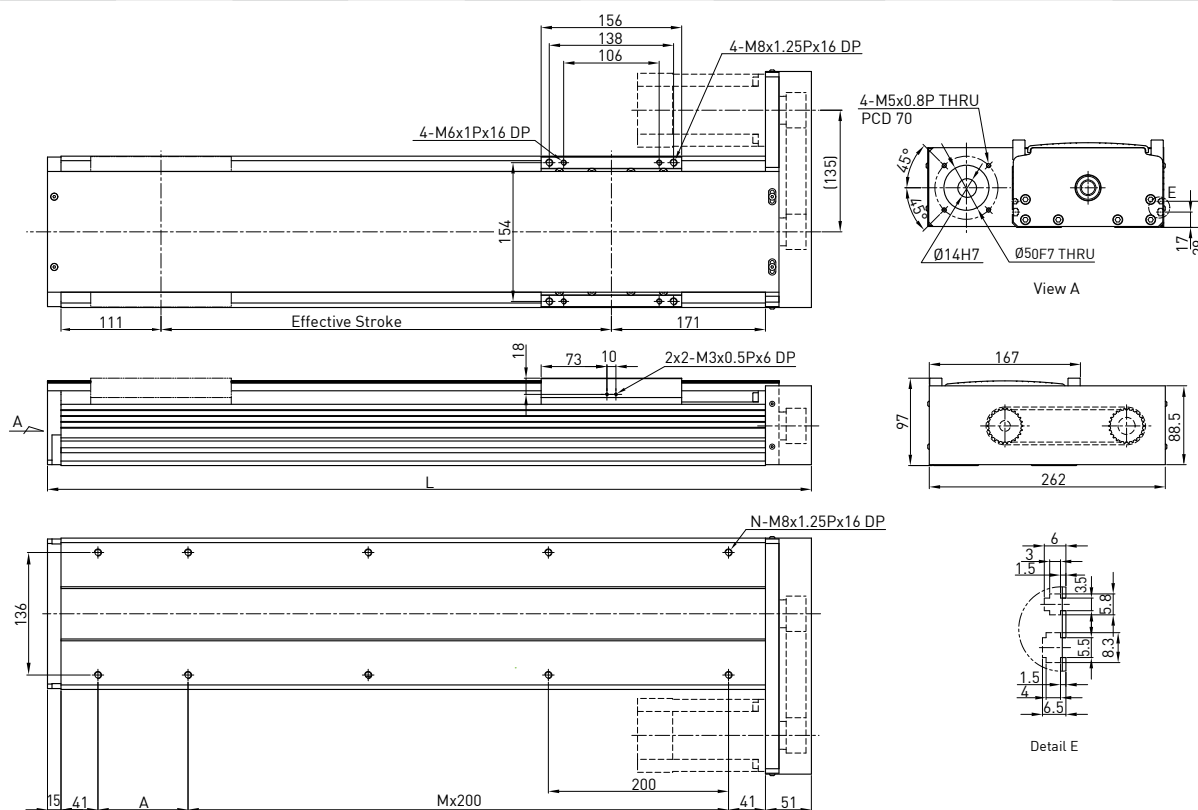
KA170	-20	P	-1250	A	FL	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10 mm 20 mm	C: Normal P: Precision		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	400		
150	498	150	1	6	15.01	Lead	mm	10	20	
200	548	200	1	6	15.92	Rated RPM	RPM	3000	3000	
250	598	50	2	8	16.82	Max linear speed*	mm/sec	500	1000	
300	648	100	2	8	17.73	Rated thrust	N	560	280	
350	698	150	2	8	18.63	Repeatability	mm	±0.02		
400	748	200	2	8	19.54	Effective stroke	mm	150-1250		
450	798	50	3	10	20.45	Max load (H)	kg	125	75	
500	848	100	3	10	21.35		Fyd	N	50	50
550	898	150	3	10	22.26		Fzd	N	1250	750
600	948	200	3	10	23.17		Mxd	N-m	100	110
650	998	50	4	12	24.07		Myd	N-m	85	90
700	1048	100	4	12	24.98		Mzd	N-m	85	90
750	1098	150	4	12	25.89		$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
800	1148	200	4	12	26.79	Permitted load condition***				
850	1198	50	5	14	27.71	* Vibration might occur when the effective stroke is longer than 650mm.				
900	1248	100	5	14	28.61	The maximum speed should be decreased by 15% for every 100mm of increased stroke.				
950	1298	150	5	14	29.51	** The load condition is based on 10,000km operation.				
1000	1348	200	5	14	30.42	*** If used on the vertical axis or in a special condition, please contact HIWIN.				
1050	1398	50	6	16	31.33					
1100	1448	100	6	16	32.23					
1150	1498	150	6	16	33.14					
1200	1548	200	6	16	34.04					
1250	1598	50	7	18	34.94					

## Model Number for KA170-FR

KA170	-20	P	-1250	A	FR	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10 mm 20 mm	C: Normal P: Precision		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



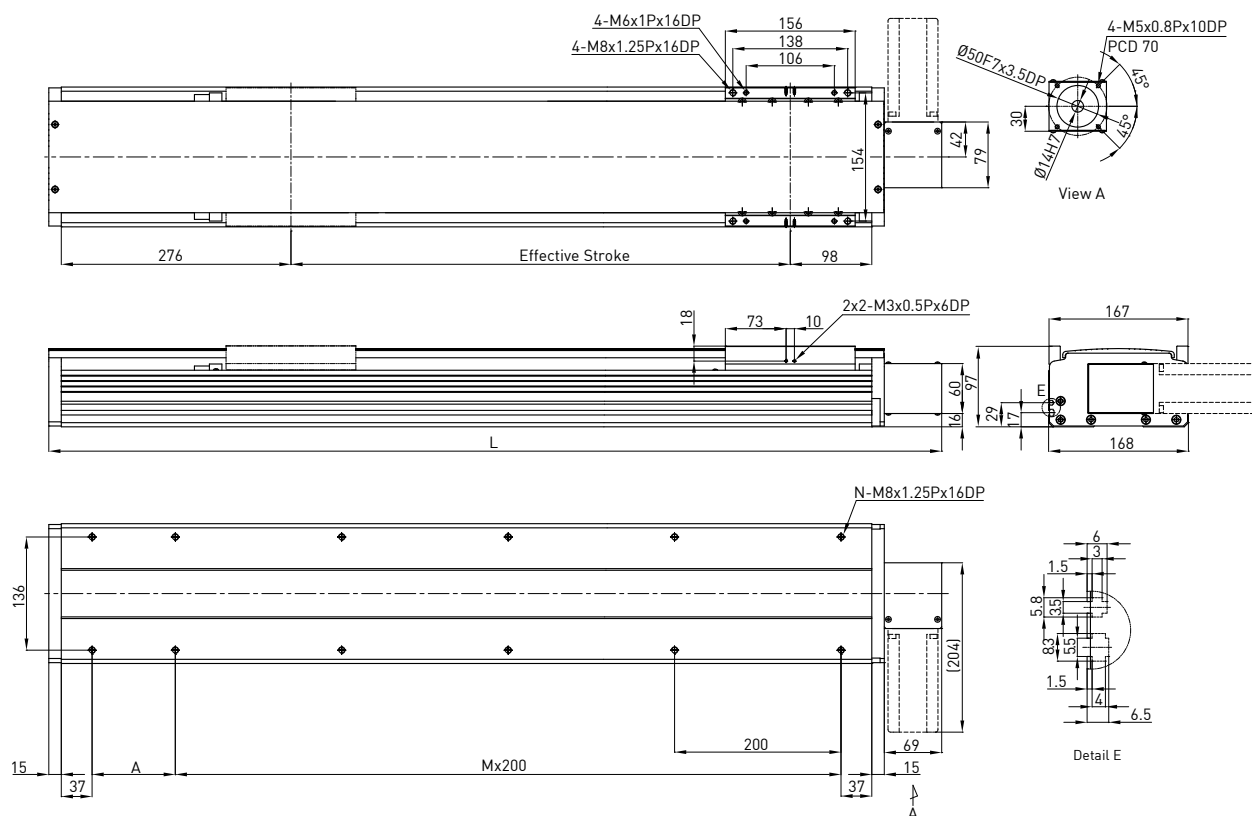
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	400																		
150	498	150	1	6	15.01	Drive		Ballscrew C7(normal)																		
200	548	200	1	6	15.92	Lead	mm	10 20																		
250	598	50	2	8	16.82	Rated RPM	RPM	3000 3000																		
300	648	100	2	8	17.73	Max linear speed*	mm/sec	500 1000																		
350	698	150	2	8	18.63	Rated thrust	N	560 280																		
400	748	200	2	8	19.54	Repeatability	mm	±0.02																		
450	798	50	3	10	20.45	Effective stroke	mm	150~1250																		
500	848	100	3	10	21.35	Max load (H)	kg	125 75																		
550	898	150	3	10	22.26	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <b>Rated dynamic load**</b> </div> </div> <table border="1" style="margin-left: 20px;"> <tr><td>Fyd</td><td>N</td><td>50</td><td>50</td></tr> <tr><td>Fzd</td><td>N</td><td>1250</td><td>750</td></tr> <tr><td>Mxd</td><td>N-m</td><td>100</td><td>110</td></tr> <tr><td>Myd</td><td>N-m</td><td>85</td><td>90</td></tr> <tr><td>Mzd</td><td>N-m</td><td>85</td><td>90</td></tr> </table>	Fyd	N	50	50	Fzd	N	1250	750	Mxd	N-m	100	110	Myd	N-m	85	90	Mzd	N-m	85	90
Fyd	N	50	50																							
Fzd	N	1250	750																							
Mxd	N-m	100	110																							
Myd	N-m	85	90																							
Mzd	N-m	85	90																							
600	948	200	3	10	23.17	<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads																				
650	998	50	4	12	24.07																					
700	1048	100	4	12	24.98																					
750	1098	150	4	12	25.89																					
800	1148	200	4	12	26.79																					
850	1198	50	5	14	27.71																					
900	1248	100	5	14	28.61																					
950	1298	150	5	14	29.51																					
1000	1348	200	5	14	30.42																					
1050	1398	50	6	16	31.33																					
1100	1448	100	6	16	32.23																					
1150	1498	150	6	16	33.14																					
1200	1548	200	6	16	34.04																					
1250	1598	50	7	18	34.94																					

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.



## Model Number for KA170B-FR

KA170 B	-120 C	-3000 A	FR	U	S1	M		
Model	Timing Belt Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
		C: Normal		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



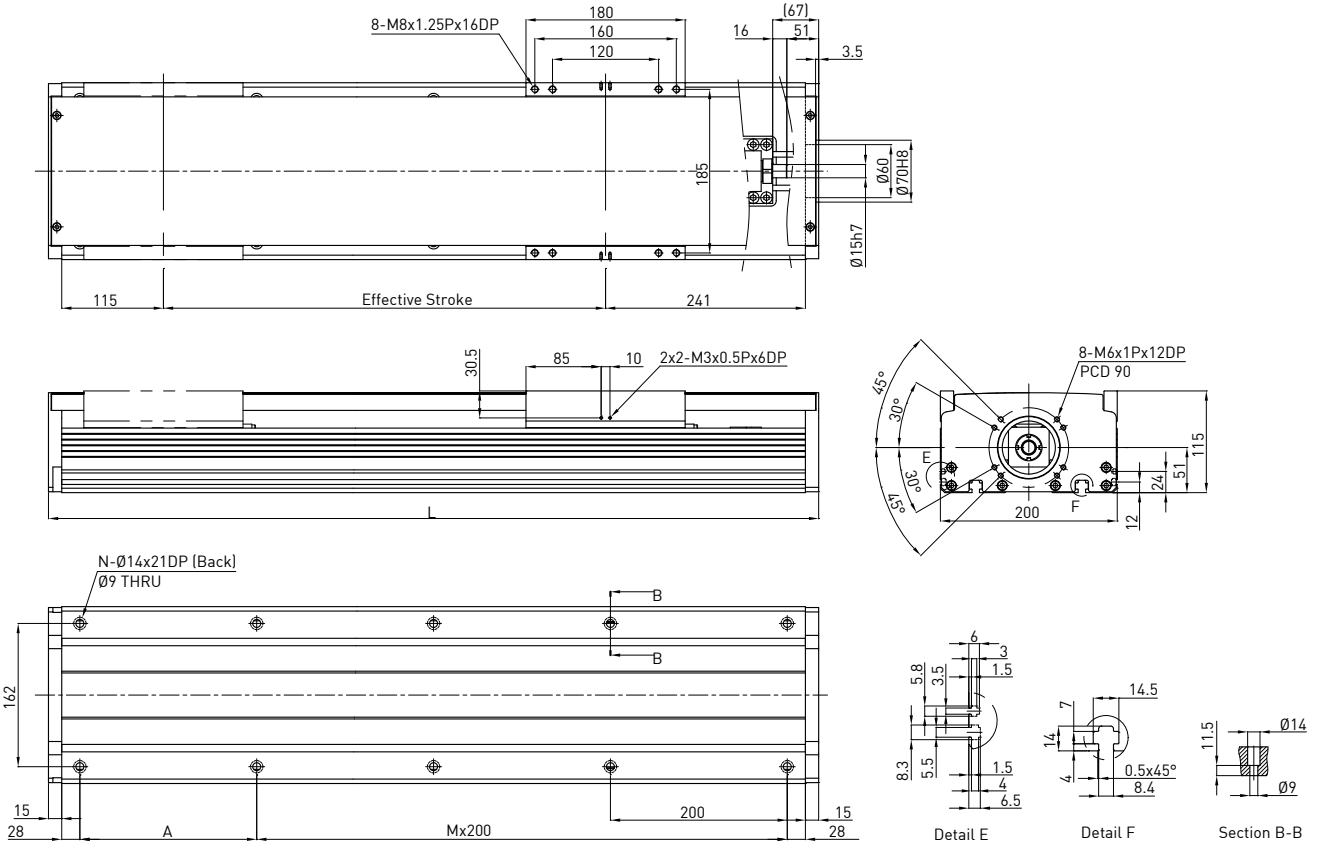
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	400														
200	673	100	2	8	14.74	Pulley Perimeter	mm	120														
400	873	100	3	10	17.88	Pulley RPM	RPM	900														
600	1073	100	4	12	21.13	Max linear speed	mm/sec	1800														
800	1273	100	5	14	24.37	Rated thrust	N	133														
1000	1473	100	6	16	27.52	Repeatability	mm	±0.1														
1200	1673	100	7	18	30.77	Effective stroke	mm	200-3000														
1400	1873	100	8	20	34.01	Max load (H)	kg	30														
1600	2073	100	9	22	37.07	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>Rated dynamic load*</p> </div> </div> <table border="1" style="margin-left: 20px;"> <tr> <td>Fyd</td> <td>N</td> <td>50</td> </tr> <tr> <td>Fzd</td> <td>N</td> <td>300</td> </tr> <tr> <td>Mxd</td> <td>N-m</td> <td>115</td> </tr> <tr> <td>Myd</td> <td>N-m</td> <td>96</td> </tr> <tr> <td>Mzd</td> <td>N-m</td> <td>96</td> </tr> </table>	Fyd	N	50	Fzd	N	300	Mxd	N-m	115	Myd	N-m	96	Mzd	N-m	96	
Fyd	N	50																				
Fzd	N	300																				
Mxd	N-m	115																				
Myd	N-m	96																				
Mzd	N-m	96																				
2000	2473	100	11	26	43.54	<p>Permitted load condition**</p> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ <p>F<sub>y</sub>, F<sub>z</sub>, M<sub>x</sub>, M<sub>y</sub>, M<sub>z</sub> are working loads</p>																
2200	2673	100	12	28	46.68																	
2400	2873	100	13	30	49.92																	
2600	3073	100	14	32	53.07																	
2800	3273	100	15	34	56.2																	
3000	3473	100	16	36	59.44																	

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KA200

KA200	-25	P	-1250	A	F0	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10mm 25mm	C: Normal P: Precision		A: Standard	F0 : Direct	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	750		
150	536	50	2	8	17.66	Drive	Ball screw C7(normal)			
200	586	100	2	8	18.99	Lead	mm	10 25		
250	636	150	2	8	20.32	Rated RPM	RPM	3000 3000		
300	686	200	2	8	21.65	Max linear speed*	mm/sec	500 1250		
350	736	50	3	10	22.98	Rated thrust	N	1050 420		
400	786	100	3	10	24.31	Repeatability	mm	±0.02		
450	836	150	3	10	25.64	Effective stroke	mm	150~1250		
500	886	200	3	10	26.97	Max load (H)	kg	150 85		
550	936	50	4	12	28.3	<b>Rated dynamic load**</b>	Fyd	N	50 50	
600	986	100	4	12	29.63		Fzd	N	1500 850	
650	1036	150	4	12	30.96		Mxd	N-m	180 185	
700	1086	200	4	12	32.29		Myd	N-m	145 155	
750	1136	50	5	14	33.62		Mzd	N-m	145 155	
800	1186	100	5	14	34.95		<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
850	1236	150	5	14	36.28					
900	1286	200	5	14	37.61					
950	1336	50	6	16	38.94					
1000	1386	100	6	16	40.27					
1050	1436	150	6	16	41.61					
1100	1486	200	6	16	42.93					
1150	1536	50	7	18	44.26					
1200	1586	100	7	18	45.59					
1250	1636	150	7	18	46.92					

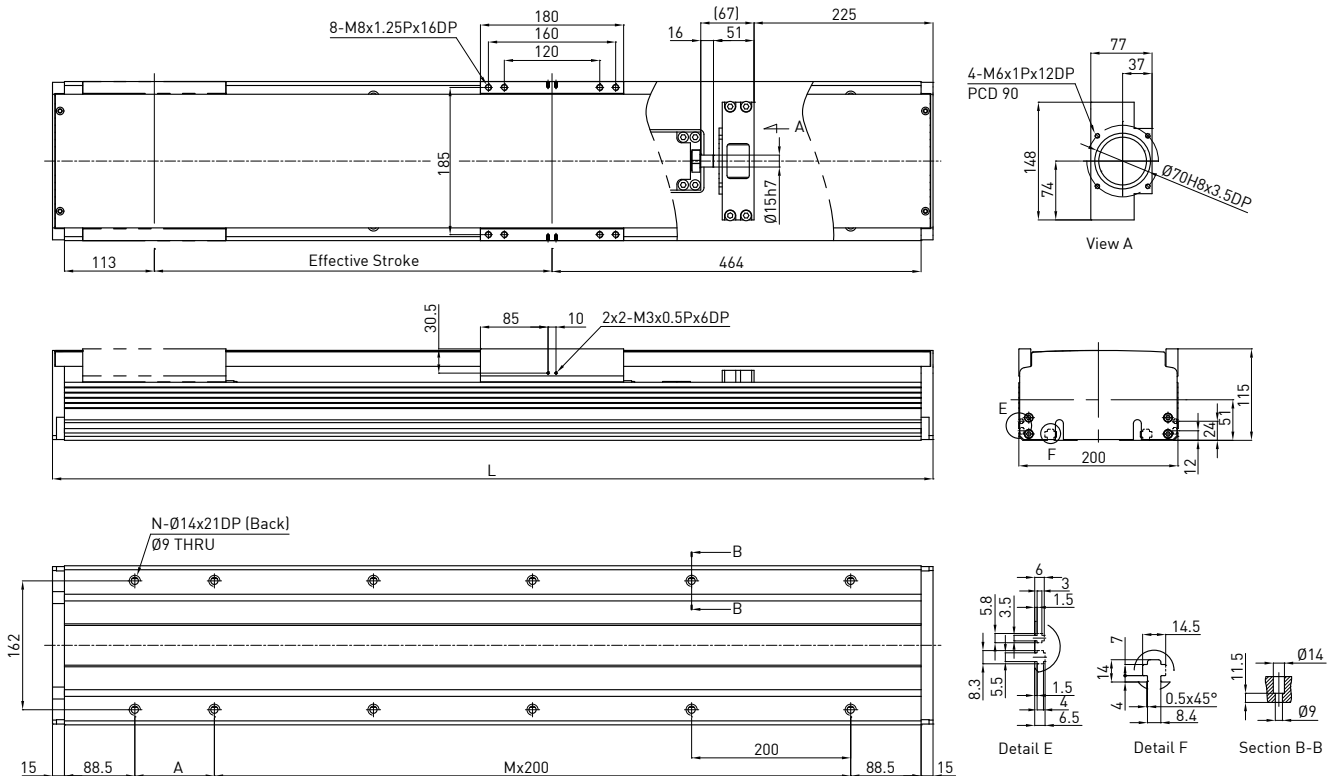
\* Vibration might occur when the effective stroke is longer than 800mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\*The load condition is based on 10,000km operation.  
 \*\*\*If used in a special condition, please contact HIWIN.





## Model Number for KA200-FI

KA200	-25	P	-1250	A	FI	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10mm 25mm	C: Normal P: Precision		A: Standard	FI: Internal	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

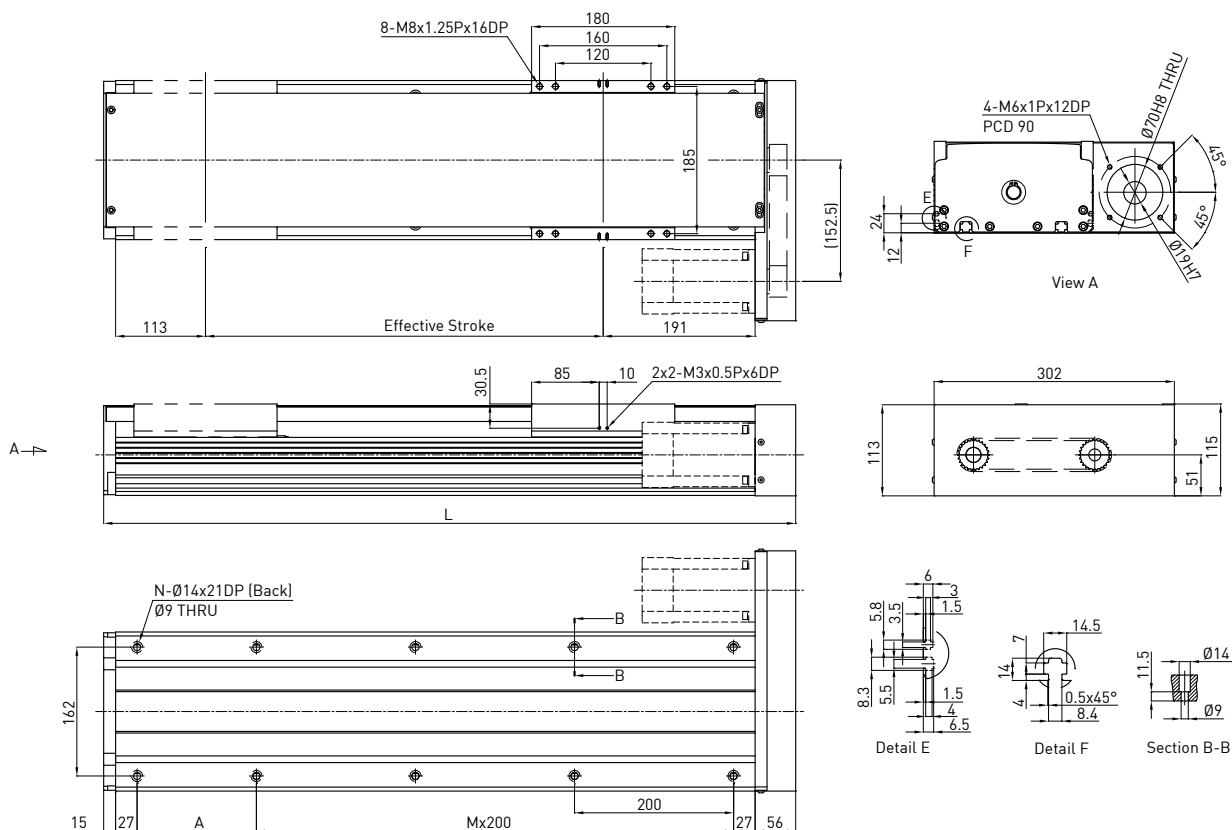


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	750	
150	757	150	2	8	19.83	Lead	mm	10 25	
200	807	200	2	8	21.32	Rated RPM	RPM	3000 3000	
250	857	50	3	10	22.82	Max linear speed*	mm/sec	500 1250	
300	907	100	3	10	24.31	Rated thrust	N	1050 420	
350	957	150	3	10	25.81	Repeatability	mm	±0.02	
400	1007	200	3	10	27.3	Effective stroke	mm	150~1250	
450	1057	50	4	12	28.79	Max load (H)	kg	150 85	
500	1107	100	4	12	30.29	<b>Rated dynamic load**</b>	Fyd	N	50 50
550	1157	150	4	12	31.78		Fzd	N	1500 850
600	1207	200	4	12	33.27		Mxd	N-m	180 185
650	1257	50	5	14	34.77		Myd	N-m	145 155
700	1307	100	5	14	36.26		Mzd	N-m	145 155
750	1357	150	5	14	37.76		<b>Permitted load condition***</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads		
800	1407	200	5	14	39.25				
850	1457	50	6	16	40.74				
900	1507	100	6	16	42.24				
950	1557	150	6	16	43.73				
1000	1607	200	6	16	45.22				
1050	1657	50	7	18	46.73				
1100	1707	100	7	18	48.21				
1150	1757	150	7	18	49.7				
1200	1807	200	7	18	51.2				
1250	1857	50	8	19	52.69				

\* Vibration might occur when the effective stroke is longer than 800mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\*The load condition is based on 10,000km operation.  
 \*\*\*If used in a special condition, please contact HIWIN.

## Model Number for KA200-FL

KA200	-25	P	-1250	A	FL	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10mm 25mm	C: Normal P: Precision		A: Standard	FL: Left	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor

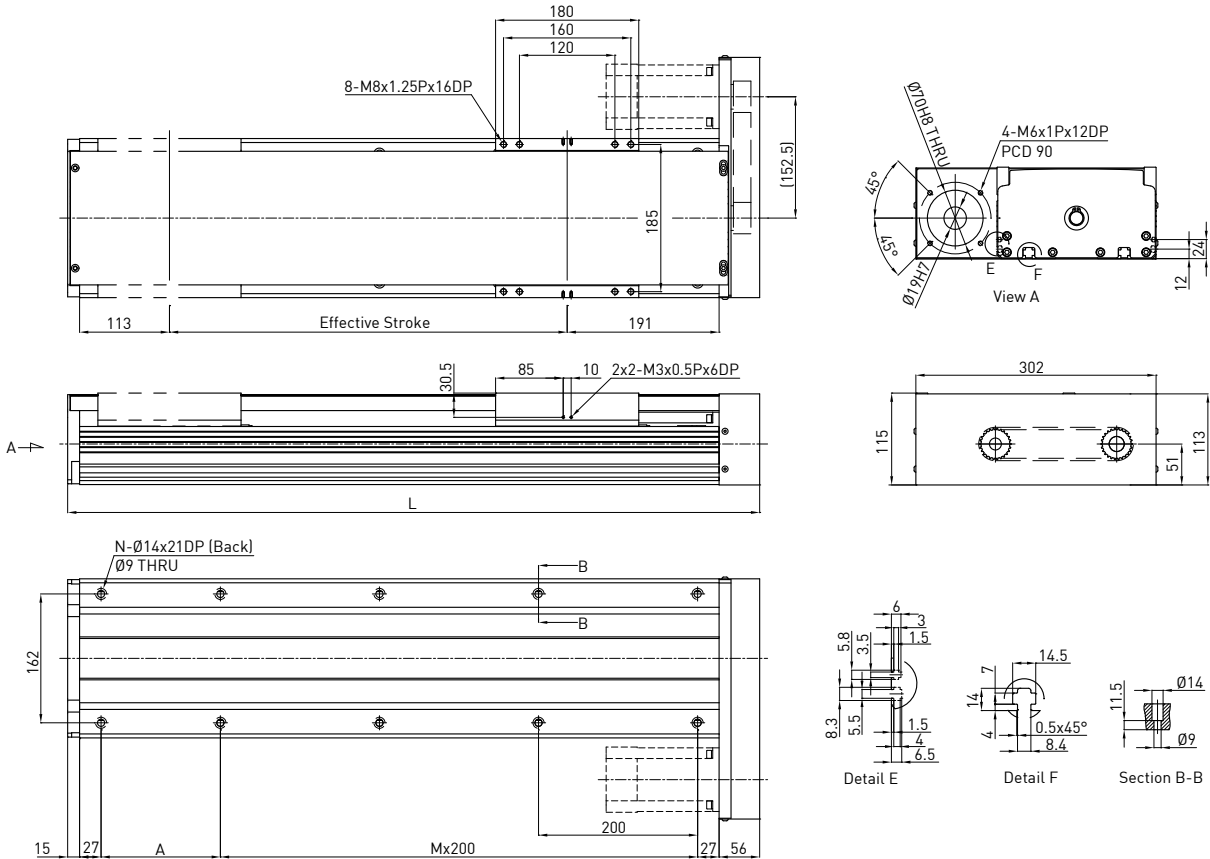


Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	750	
150	525	200	1	6	18.46	Drive	Ball screw C7(normal)		
200	575	50	2	8	19.79	Lead	mm	10 25	
250	625	100	2	8	21.12	Rated RPM	RPM	3000 3000	
300	675	150	2	8	22.45	Max linear speed*	mm/sec	500 1250	
350	725	200	2	8	23.78	Rated thrust	N	1050 420	
400	775	50	3	10	25.11	Repeatability	mm	±0.02	
450	825	100	3	10	26.44	Effective stroke	mm	150~1250	
500	875	150	3	10	27.77	Max load (H)	kg	150 85	
550	925	200	3	10	29.1		Fyd	N	50 50
600	975	50	4	12	30.43		Fzd	N	1500 850
650	1025	100	4	12	31.76		Mxd	N-m	180 185
700	1075	150	4	12	33.09		Myd	N-m	145 155
750	1125	200	4	12	34.42		Mzd	N-m	145 155
800	1175	50	5	14	35.75		$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads		
850	1225	100	5	14	37.08				
900	1275	150	5	14	38.41				
950	1325	200	5	14	39.74				
1000	1375	50	6	16	41.07				
1050	1425	100	6	16	42.41	Permitted load condition***			
1100	1475	150	6	16	43.73				
1150	1525	200	6	16	45.06				
1200	1575	50	7	18	46.39				
1250	1625	100	7	18	47.72				

\* Vibration might occur when the effective stroke is longer than 800mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\*The load condition is based on 10,000km operation.  
 \*\*\*If used in a special condition, please contact HIWIN.

## Model Number for KA200-FR

KA200	-25	P	-1250	A	FR	U	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Cover	Limit Switch	Motor
	10mm 25mm	C: Normal P: Precision		A: Standard	FR: Right	U: Without Cover None : Standard Cover	S1: OMRON SX671 S2: OMRON SX674 S3: SUNX GX-F12A S4: SUNX GX-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output	W	750	
150	525	200	1	6	18.46	Drive		Ballscrew C7(normal)	
200	575	50	2	8	19.79	Lead	mm	10 25	
250	625	100	2	8	21.12	Rated RPM	RPM	3000 3000	
300	675	150	2	8	22.45	Max linear speed*	mm/sec	500 1250	
350	725	200	2	8	23.78	Rated thrust	N	1050 420	
400	775	50	3	10	25.11	Repeatability	mm	±0.02	
450	825	100	3	10	26.44	Effective stroke	mm	150~1250	
500	875	150	3	10	27.77	Max load (H)	kg	150 85	
550	925	200	3	10	29.1		Fyd	N	50 50
600	975	50	4	12	30.43		Fzd	N	1500 850
650	1025	100	4	12	31.76		Mxd	N-m	180 185
700	1075	150	4	12	33.09		Myd	N-m	145 155
750	1125	200	4	12	34.42		Mzd	N-m	145 155
800	1175	50	5	14	35.75		<b>Rated dynamic load**</b>		
850	1225	100	5	14	37.08				
900	1275	150	5	14	38.41				
950	1325	200	5	14	39.74				
1000	1375	50	6	16	41.07				
1050	1425	100	6	16	42.41	<b>Permitted load condition**</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
1100	1475	150	6	16	43.73				
1150	1525	200	6	16	45.06				
1200	1575	50	7	18	46.39				
1250	1625	100	7	18	47.72				

\* Vibration might occur when the effective stroke is longer than 800mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\*The load condition is based on 10,000km operation.  
 \*\*\*If used in a special condition, please contact HIWIN.

# Single Axis Robot

## KS Series

### 4.1 Features

- For use in clean room
- Stainless steel cover
- Already installed AC servo motor (optional)
- High repeatability  $\pm 0.02\text{mm}$
- Dustproof
- Different strokes available

### 4.2 Applications

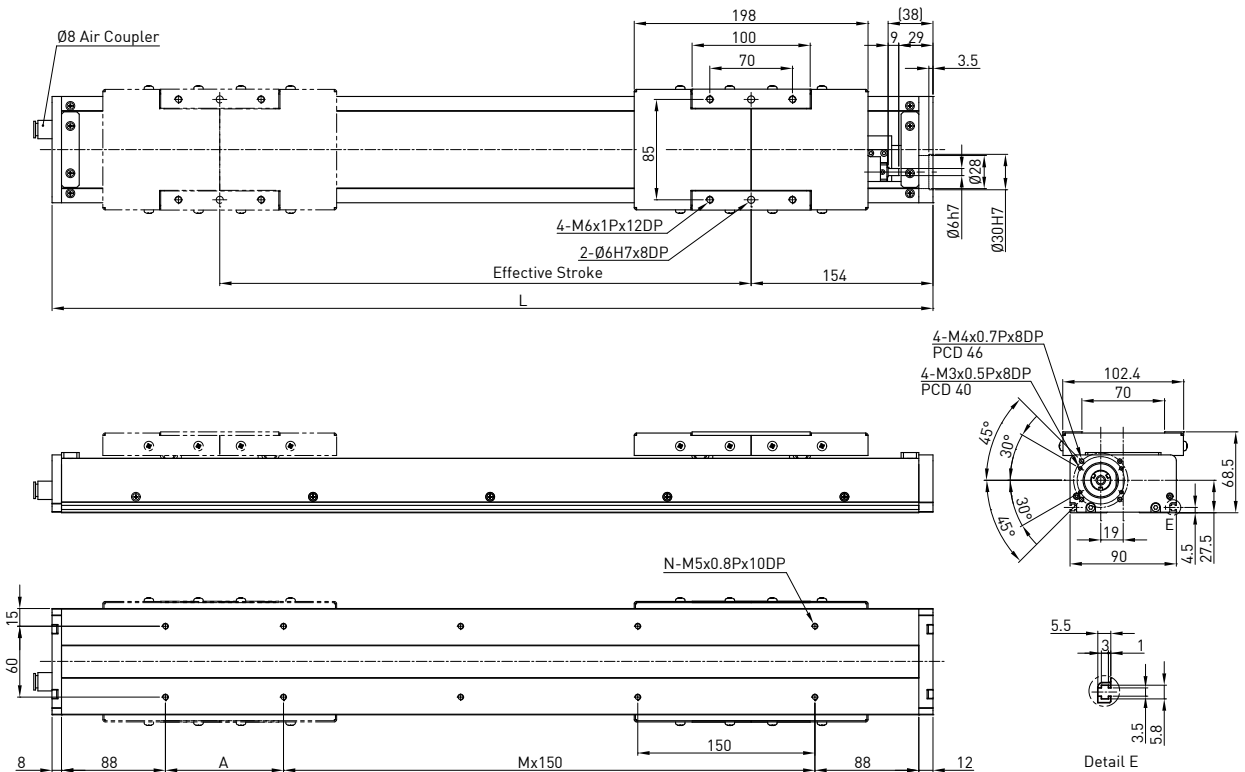
- FPD industry
- Semiconductor
- Medical applications
- FPD glass transfer
- Inspection & testing equipment



### 4.3 KS Series

#### Model Number for KS090

KS090	-10	P	-0600	A	F0	S1	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Limit Switch	Motor
	5mm 10mm	P: Precision C: Normal		A: Standard	F0: Direct	S1:OMRON SX671 S2:OMRON SX674 S3:SUNX GX-F12A S4:SUNX GL-F12A-P None: No Limit Switch	M: Supplied With Motor None: Without Motor



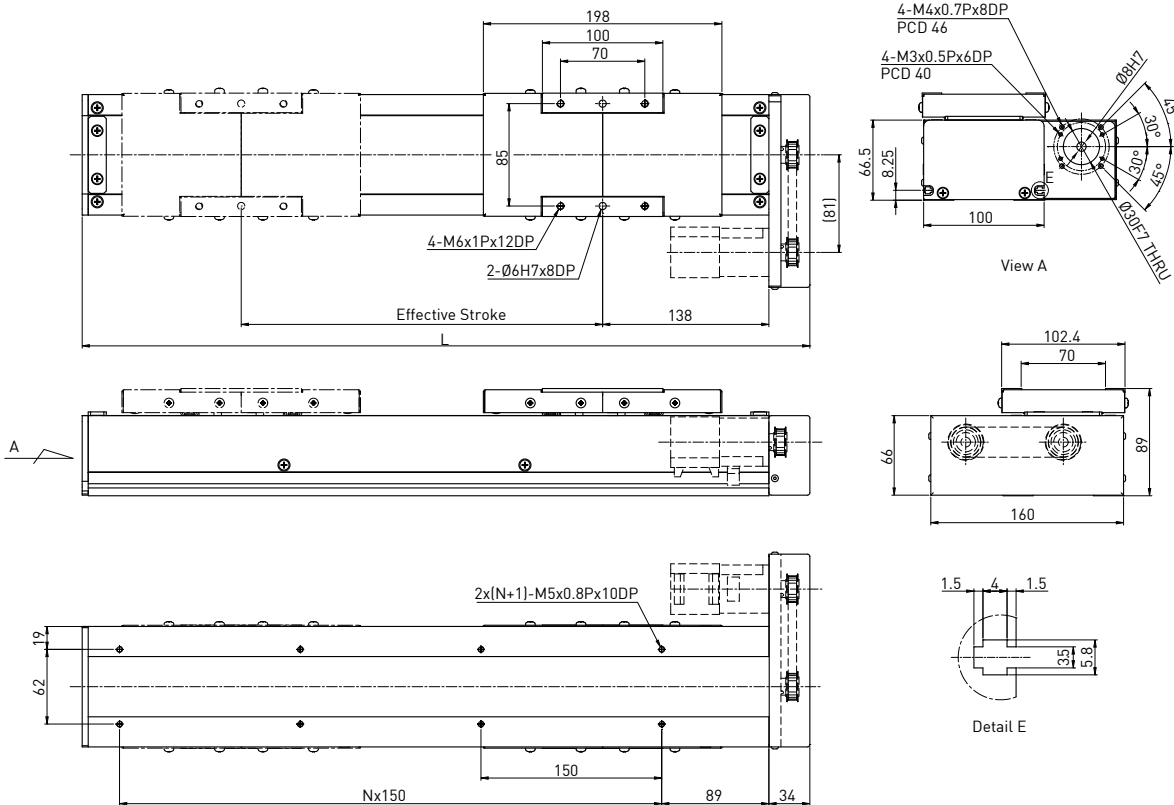
Effective stroke (mm)	L	A	M	N	Weight (kg)	AC motor output Drive	W	100	
50	346	150	0	4	3.38	Lead	mm	5 10	
100	396	50	1	6	3.78	Rated RPM	RPM	3000 3000	
150	446	100	1	6	4.18	Max linear speed*	mm/sec	250 500	
200	496	150	1	6	4.58	Rated thrust	N	280 140	
250	546	50	2	8	4.98	Repeatability	mm	±0.02	
300	596	100	2	8	5.38	Effective stroke	mm	50~600	
350	646	150	2	8	5.78	Max load (H)	kg	24 12	
400	696	50	3	10	6.18		Fyd	N	50 50
450	746	100	3	10	6.58		Fzd	N	240 120
500	796	150	3	10	7.19		Mxd	N-m	5 4.5
550	846	50	4	12	7.38		Myd	N-m	2.3 2.1
600	896	100	4	12	7.78		Mzd	N-m	2.3 2.1
Permitted load condition***						$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			

\* Vibration might occur when the effective stroke is longer than 650mm.  
 The maximum speed should be decreased by 15% for every 100mm of increased stroke.  
 \*\* The load condition is based on 10,000km operation.  
 \*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.



## Model Number for KS100-FL

KS100	-20	P	-800	A	FL	S2	M
Model	Lead	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Limit Switch	Motor
	10mm 20mm	P: Precision C: Normal		A: Standard	FL: Left	S2: OMRON SX674 None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	N	Weight (kg)	AC motor output Drive	W	100			
200	504	2	6.0	Lead	mm	5	10	20	
300	604	3	6.9	Rated RPM	RPM	3000	3000	3000	
400	704	3	7.8	Max linear speed*	mm/sec	250	500	1000	
500	804	4	8.7	Rated thrust	N	280	140	70	
600	904	5	9.6	Repeatability	mm	±0.02			
700	1004	5	10.5	Effective stroke	mm	200-800			
800	1104	6	11.4	Max load (H)	kg	8	6	3.5	
<b>Rated dynamic load**</b>					F <sub>yd</sub>	N	20	20	20
					F <sub>zd</sub>	N	80	60	35
					M <sub>xd</sub>	N-m	1.1	1.2	1.1
					M <sub>yd</sub>	N-m	0.9	0.9	0.9
					M <sub>zd</sub>	N-m	0.9	0.9	0.9
<b>Permitted load condition***</b>				$\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$					
				F <sub>y</sub> , F <sub>z</sub> , M <sub>x</sub> , M <sub>y</sub> , M <sub>z</sub> are working loads					

\* Vibration might occur when the effective stroke is longer than 650mm.

The maximum speed should be decreased by 15% for every 100mm of increased stroke.

\*\* The load condition is based on 10,000km operation.

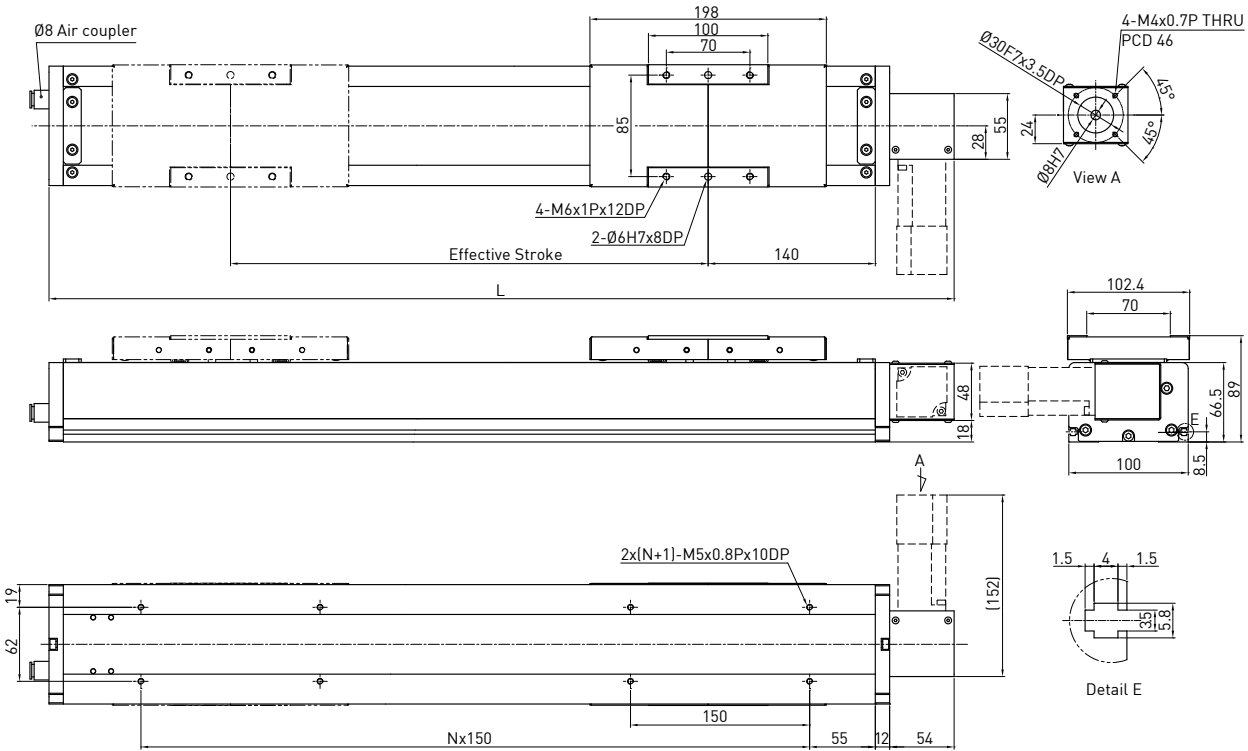
\*\*\* If used on the vertical axis or in a special condition, please contact HIWIN.

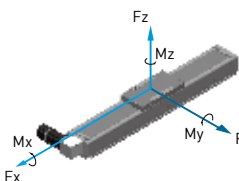




## Model Number for KS100B-FL

KS100	B	-84	C	-3000	A	FL	S2	M
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Limit Switch	Motor
			C: Normal		A: Standard	FL: Left	S2: OMRON SX674 None: No Limit Switch	M: Supplied With Motor None: Without Motor



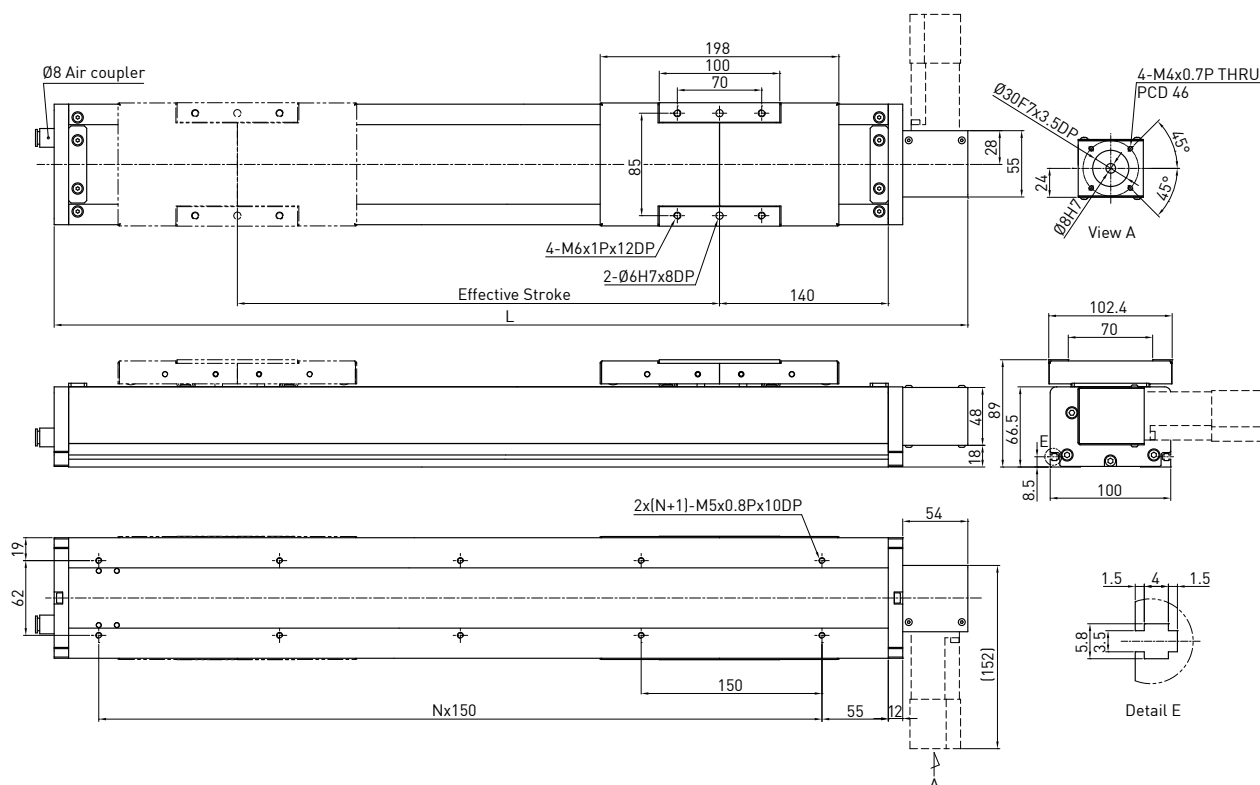
Effective stroke (mm)	L	N	Weight (kg)	AC motor output	W	100	
200	558	2	6.1	Drive		Timing Belt	
400	758	4	7.6	Pulley Perimeter	mm	84	
600	958	5	9.1	Pulley RPM	RPM	1286	
800	1158	6	10.6	Max linear speed	mm/sec	1800	
1000	1358	8	12.1	Rated thrust	N	33	
1200	1558	9	13.6	Repeatability	mm	±0.1	
1400	1758	10	15.1	Effective stroke	mm	200~3000	
1600	1958	12	16.6	Max load (H)	kg	3	
1800	2158	13	18.1	Rated dynamic load* 	Fyd	N	20
2000	2358	14	19.6		Fzd	N	30
2200	2558	16	21.1		Mxd	N-m	1.2
2400	2758	17	22.6		Myd	N-m	1
2600	2958	18	24.1		Mzd	N-m	1
2800	3158	20	25.6	Permitted load condition** $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
3000	3358	21	27.1				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.

## Model Number for KS100B-FR

<b>KS100</b>	<b>B</b>	<b>-84</b>	<b>C</b>	<b>-3000</b>	<b>A</b>	<b>FR</b>	<b>S2</b>	<b>M</b>
Model	Timing Belt	Pulley Perimeter	Precision Grade	Effective Stroke	Slider Type	Motor Flange	Limit Switch	Motor
			C: Normal		A: Standard	FR: Right	S2: OMRON SX674 None: No Limit Switch	M: Supplied With Motor None: Without Motor



Effective stroke (mm)	L	N	Weight (kg)	AC motor output Drive	W	100	
200	558	2	6.1	Pulley Perimeter	mm	84	
400	758	4	7.6	Pulley RPM	RPM	1286	
600	958	5	9.1	Max linear speed	mm/sec	1800	
800	1158	6	10.6	Rated thrust	N	33	
1000	1358	8	12.1	Repeatability	mm	±0.1	
1200	1558	9	13.6	Effective stroke	mm	200-3000	
1400	1758	10	15.1	Max load (H)	kg	3	
1600	1958	12	16.6		Fyd	N	20
1800	2158	13	18.1		Fzd	N	30
2000	2358	14	19.6		Mxd	N-m	1.2
2200	2558	16	21.1		Myd	N-m	1
2400	2758	17	22.6		Mzd	N-m	1
2600	2958	18	24.1	<b>Permitted load condition**</b> $\frac{F_y}{F_{yd}} + \frac{F_z}{F_{zd}} + \frac{M_x}{M_{xd}} + \frac{M_y}{M_{yd}} + \frac{M_z}{M_{zd}} \leq 1$ Fy, Fz, Mx, My, Mz are working loads			
2800	3158	20	25.6				
3000	3358	21	27.1				

\*The load condition is based on 10,000km operation.

\*\*For horizontal applications only. If used in a special condition, please contact HIWIN.