

HIWIN[®]

Linear Stage

The **HIWIN** Linear Motion Stage KS is one of the newest motor-driven ballscrew module in which is equipped with dust-proof strip so that prevent from wear particles flying out. Based on the dust-proof designed, this linear stage is the most suitable product for the applications of semi-conductor manufacturing, LED examination or medical equipment...etc.

NEW Patent Pending
KS TYPE



Features

- Low cost and compact
- Dust-proof designed
- Precision and high speed
- Easy installation
- Design Optimization:
The structure is designed for high Stiffness and light weight. The FEM Analysis is shown beside.

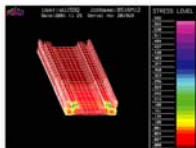


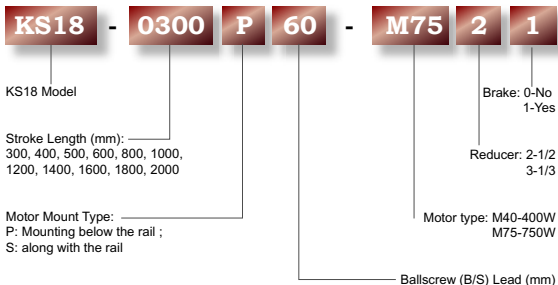
Figure 1.

Applications

- Semi-conductor manufacturing
- LED examination
- Medical equipment
- Wafer movement

Description of Serial Number

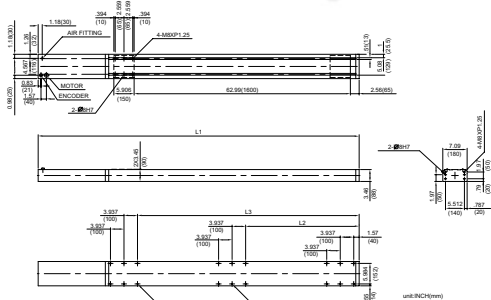
Example: KS18-0300P60-M75 2 1



Note:

For the Motor type and the following Roman numerals, it shows no symbol if the motor will not be needed. Ex: KS18-0300P60

KS-S type


Table2.

Model	Dimensions (mm)			Stroke Length (mm)	Repeatability (mm)	Operation Tem. (°C)	Weight (kg)
	L1	L2	L3				
KS18-030S	1075	190	340	300	±0.01	0~40	34
KS18-040S	1175	240	440	400	±0.01	0~40	36
KS18-050S	1275	290	540	500	±0.01	0~40	38
KS18-060S	1375	340	640	600	±0.01	0~40	40
KS18-080S	1575	440	840	800	±0.01	0~40	44
KS18-100S	1775	540	1040	1000	±0.01	0~40	48
KS18-120S	1975	640	1240	1200	±0.01	0~40	52
KS18-140S	2175	740	1440	1400	±0.01	0~40	56
KS18-160S	2375	840	1640	1600	±0.01	0~40	60
KS18-180S	2575	940	1840	1800	±0.01	0~40	64
KS18-200S	2775	1040	2040	2000	±0.01	0~40	68

Examination of resolution and travel speed

RESOLUTION

$$R = \frac{L}{P \times e}$$

L : Ballscrew Lead (mm)

P : Number of division per revolution of motor (pulse/r)

e : Gear reducer ratio

R : Resolution (least input increment)

Example:

Ballscrew lead: 60 mm

Number of division per revolution of motor: 2000 pulse/r

Gear reducer ratio: 5

$$\text{Resolution} = \frac{60}{2000 \times 5} = 0.006 \text{ mm}$$

TRAVEL SPEED

$$V = L \times \frac{N}{e}$$

L : Ballscrew Lead (mm)

N : Allowable maximum motor speed (r/min)

e : Gear reducer ratio

V : Travel speed

Example:

Ballscrew lead: 60 mm

Allowable motor speed: 3,000 r/min

Gear reducer ratio: 5

$$\begin{aligned} \text{Travel speed} &= 60 \times \frac{3000}{5} = 36,000 \text{ mm/min} \\ &= 36 \text{ m/min} = 600 \text{ mm/sec} \end{aligned}$$

Service Life

Three main component of the linear stage KS are guideway, ballscrew and bearing. The Calculation formulas of their life are shown as follows:

GUIDEWAY

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

L : Life Rating (km)

C : Basic Dynamic Load Rating (N), 1650N

P_n : Calculating Loading (N)

f_t : Temperature Coefficient (ref, Table 1)

f_w : Loading Coefficient (ref. Table 2)

Table 1

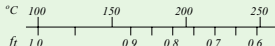


Table 2

Thrust and Vibration	Velocity (V)	f_w
No Thrust	V < 15m/min	1 ~ 1.5
Low Vibration	15 < V < 60m/min	1.5 ~ 2
High Vibration	V < 60m/min	2 ~ 3.5

BALLSCREW AND BEARING

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

L : Life Rating (rev.)

C_a : Basic Dynamic Load Rating (N), 8683N

$F_{a,n}$: Axial Loading (N)

f_w : Loading Coefficient (ref. Table 2)

Example of KS-Type for special applications

EX. 1



EX. 2



EX. 3



EX. 4



HIWIN.

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