

# KAFO

## GANTRY TYPE 5-AXIS MACHINING CENTER | KG / KGM / KG5A / KGM5A SERIES



Vision

Hearing

Smell

Touch

Taste

Heart

The design idea of KAFO new catalogues is providing comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart.

**Vision: Visual Design Master creates designs covering all aspects**

We create innovative designs covering every aspect to develop perfect machines.

**Hearing: Hear your needs from every corner of the world**

We hear and comprehend customers' needs actively from every corner of the world, and we practice thoroughly to exceed customers' expectations.

**Smell: Smell the market demand offers well-thought-out plans**

We have superior market insights and perfect strategic ability to be the strong support of customers.

**Touch: Pursue excellent quality to achieve high performance**

We focus on the enhancement of top core technologies and capabilities, and develop solidly to achieve excellent quality.

**Taste: Taste good service by our professional and efficient team**

We provide efficient, professional, and comprehensive services, and establish permanent and deep relationships with customers.

**Heart: Feel our Heart that always sticks to perfection**

We manage business with all our heart, and stick to perfection, to create maximum benefits for customers.

# KAFO



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*Hear your needs  
from every corner of the world*

www.kafo.com.tw



Over fifty years, KAFO has become the leading brand in Die & Molds field and Machining field based on its solid foundation of superior technology. "Steady Research & Development, Quality Control, Accumulate Experience" exceed customers' expectations and think globally, act locally.

We provide you comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart. As a visual design master, we create innovative designs covering all aspects. We understand and meet customers' needs from every corner of the world. Additionally, we smell the market demand and offer well-thought-out plans. Through strict quality control, we pursue excellent quality to achieve high and steady performance. Moreover, our professional team offer efficient 24/7 service which is worth experiencing. Operating with our Heart, we always stick to perfection. By means of accumulating experience, intensifying the know-how, focusing on the upgrading core competency of technology, and continuously improving the manufacturing process, KAFO realizes the commitment to customers for best quality products and also being rated as the benchmark of the industry.

*David Shen*

KAO FONG MACHINERY CO., LTD.  
President & CEO  
SHEN, KUO-JUNG (DAVID SHEN)

# KG/KGM/KG5A/KGM5A

## GANTRY TYPE 5-AXIS MACHINING CENTER

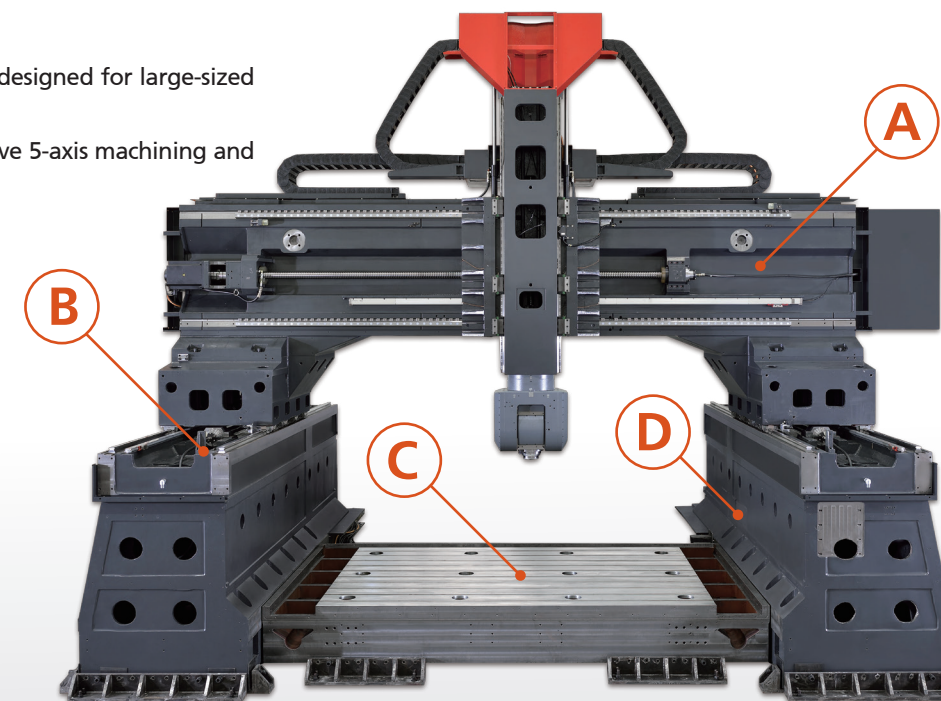
COLLOCATION : KESSLER

- A/C-axis milling head is driven by direct-driven motor, which makes the structure more simple, no abrasion and without backlash. This achieves not only 5-axis machining but also high efficient manufacturing. A/C axis are both equipped with high accuracy encoder.



### FEATURES

- Gantry type 5-axis machining center is designed for large-sized and heavyweight workpieces.
- With A/C-axis milling head, it can achieve 5-axis machining and high-efficiency manufacturing.



**A:** Axes(X/Y/Z/A/C-axis) of gantry type model move on columns. The individual design of table is better for heavy workpieces.

**B:** Medium-Size Model: The dual direct-driven synchronized ballscrews on column provide high accuracy and great dynamic performance.

Large-Size Model: The dual gear-driven synchronized ballscrews on column can provide high torque through proper motors.

**C:** Floor type table is designed for large-sized and heavyweight workpieces.

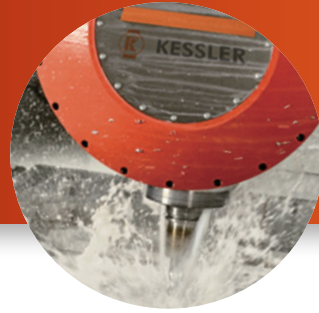
**D:** One piece designed column features high rigidity and great stability, which ensures better machining and cutting ability.



# GANTRY TYPE 5-AXIS MACHINING CENTER

## KESSLER 2 AXIS SPINDLE HEAD

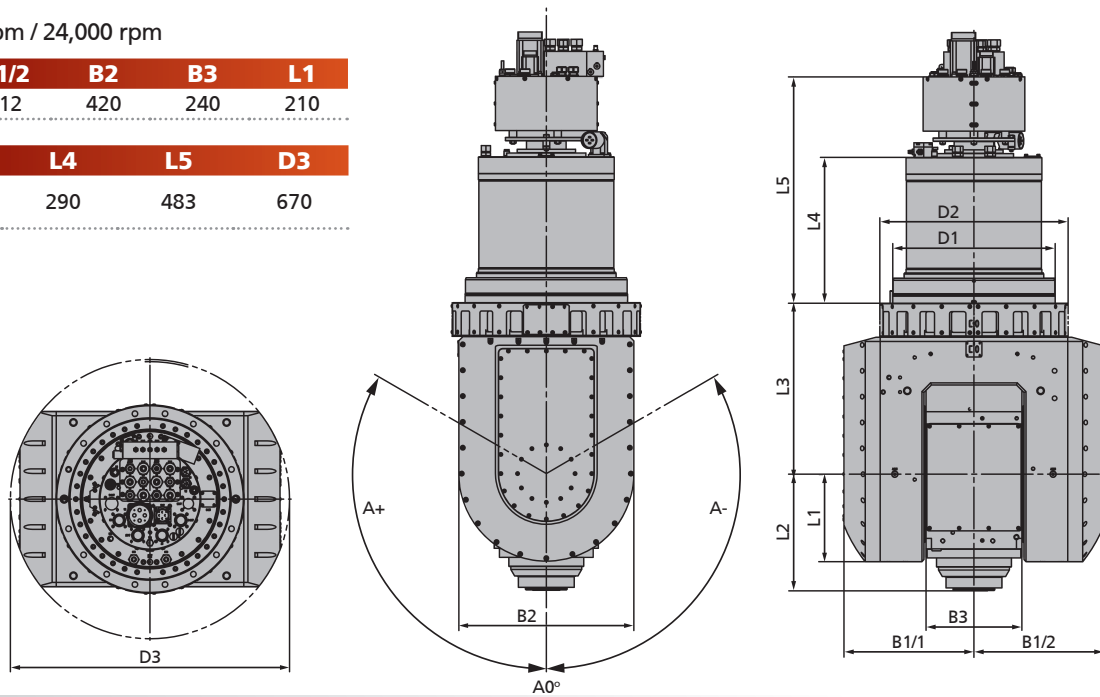
- Germany KESSLER 2-axis head with high performance and stability.
- A-axis with integrated dual-arm structure makes greater accuracy and rigidity.
- The 600°/s ultrafast speed and high efficiency achieves perfect working ability.
- A/C axes with KESSLER Direct-Driven motor provide a great dynamic performance.
- Lightweighting design.
- Replaceable design spindle for fulfilling any machining needs.



## 2 AXIS HEAD DIMENSION

- Kessler Small 2AK-G3 12,000 rpm / 24,000 rpm

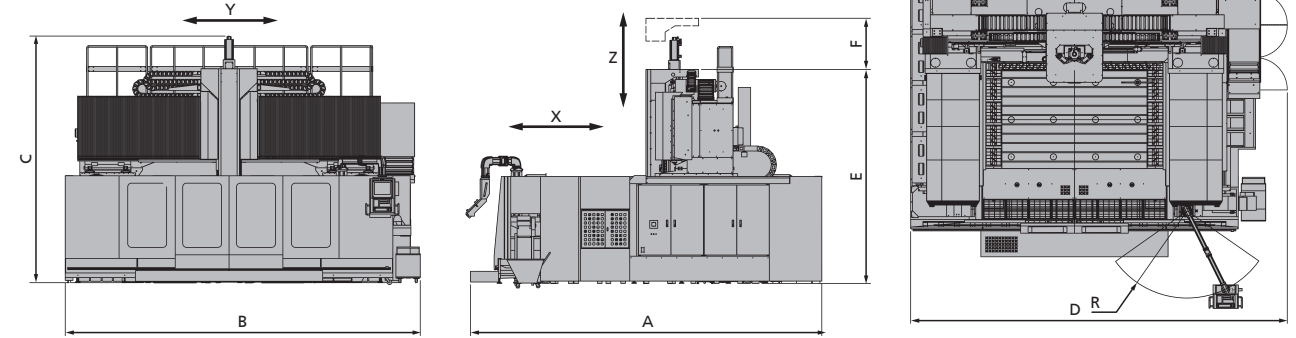
D1	D2	B1/1	B1/2	B2	B3	L1
335	406	312	312	420	240	210
L2	L3	L4	L5	D3		
280(HSK A63)	470	290	483	670		
340(HSK A100)						



## Dual Axes Head Specification

Supplier	Kessler					
Model	Standard Specification			Optional Specification		
Spindle	Torque (S1/S6 40%)	N-m	119/143	60/73	120/145	89/111
	Power (S1/S6 40%)	kW	25/30	37/46	45/45	56/70
	Speed	rpm	12000	24000	15000	18000
	Spindle Taper		HSK A100	HSK A63	HSK A100	HSK A63
A-axis	Bearing Lubrication		Oil-air	Oil-air	Oil-air	Oil-air
	Torque (S1/Smax)	N-m	764 / 1200			
	Clamping Torque (P0/Pmax)	N-m	1200 / 2160			
	Max. Speed	rpm	100			
C-axis	Rotary Range	°	±105			
	Positioning Accuracy	"	±5			
	Torque	N-m	810 / 1100			
	Clamping Torque (P0/Pmax)	N-m	1675 / 3025			
C-axis	Max. Speed	rpm	100			
	Rotary Range	°	±200			
	Positioning Accuracy	"	±3			
	Weight	kg	580			
Note	Oil-mist Lubrication equipped					

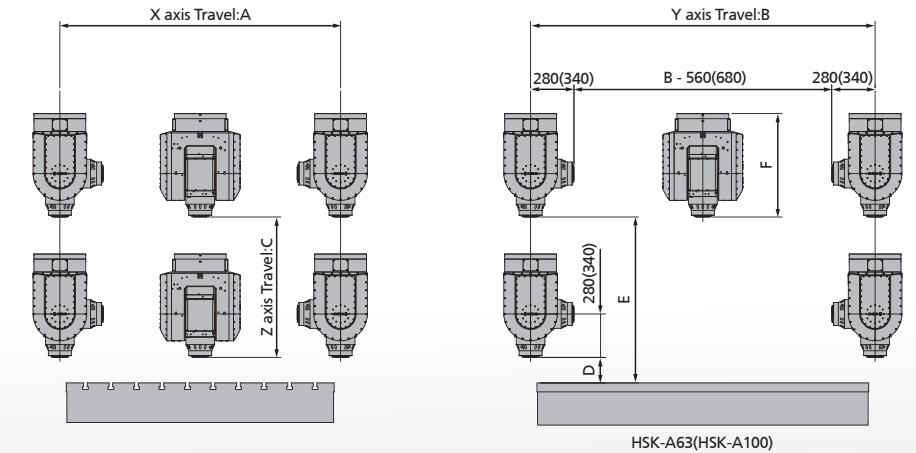
## MACHINE LAYOUT



	Z travel	A	B	C	D	E	F		Z travel	A	B	C	D	E	F
KG5A-1727	1100	7010	7100	5350	7560	4610	1100	KG5A-5050	1100	11700	10300	5350	10480	4610	1100
KG5A-2232	1300	7010	7100	5350	7560	4810	1300	KG5A-6050	1300	12700	10300	5350	10480	4810	1300
KG5A-4040	1100	10700	9300	5350	9480	4610	1100	KG5A-8050	1100	14700	10300	5350	10480	4610	1100
KG5A-5040	1300	10700	9300	5350	9480	4810	1300	KG5A-10050	1300	14700	10300	5350	10480	4810	1300
KG5A-6040	1100	11700	9300	5350	9480	4610	1100	KG5A-12050	1100	16700	10300	5350	10480	4610	1100
KG5A-8040	1300	11700	9300	5350	9480	4810	1300	KG5A-14050	1300	16700	10300	5350	10480	4810	1300
KG5A-10040	1100	12700	9300	5350	9480	4610	1100	KG5A-16050	1100	12700	11300	5350	11480	4610	1100
								KG5A-18050	1300	12700	11300	5350	11480	4810	1300
								KG5A-20050	1100	14700	11300	5350	11480	4610	1100
								KG5A-22050	1300	14700	11300	5350	11480	4810	1300
								KG5A-24050	1100	16700	11300	5350	11480	4610	1100
								KG5A-26050	1300	16700	11300	5350	11480	4810	1300

## MACHINE RANGE

- 2-Axis Spindle Head : Kessler
- A Axis Rotation : ±105
- C Axis Rotation : ±200



	Z travel	A	B	C	D	E	F		Z travel	A	B	C	D	E	F
KG5A-1727	1100	1700	2700	1100	200	1300	750(HSK A63)	KG5A-5050	1100	5000	5000	1100	200	1300	750(HSK A63)
KG5A-2232	1300	1700	2700	1300	200	1500	810(HSK A100)	KG5A-6050	1300	5000	5000	1300	200	1500	810(HSK A100)
KG5A-4040	1100	2200	3200	1100	200	1300	750(HSK A63)	KG5A-8050	1100	6000	5000	1100	200	1300	750(HSK A63)
KG5A-5040	1300	2200	3200	1300	200	1500	810(HSK A100)	KG5A-10050	1300	6000	5000	1300	200	1500	810(HSK A100)
KG5A-6040	1100	4000	4000	1100	200	1300	750(HSK A63)	KG5A-12050	1100	8000	5000	1100	200	1300	750(HSK A63)
KG5A-8040	1300	4000	4000	1300	200	1500	810(HSK A100)	KG5A-14050	1300	8000	5000	1300	200	1500	810(HSK A100)
KG5A-10040	1100	5000	4000	1100	200	1300	750(HSK A63)	KG5A-16050	1100	10000	5000	1100	200	1300	750(HSK A63)
KG5A-12040	1300	5000	4000	1300	200	1500	810(HSK A100)	KG5A-18050	1300	10000	5000	1300	200	1500	810(HSK A100)
KG5A-14040	1100	6000	4000	1100	200	1300	750(HSK A63)	KG5A-20050	1100	6000	6000	1100	200	1300	750(HSK A63)
KG5A-16040	1300	6000	4000	1300	200	1500	810(HSK A100)	KG5A-22050	1300	6000	6000	1300	200	1500	810(HSK A100)
KG5A-18040	1100	8000	4000	1100	200	1300	750(HSK A63)	KG5A-24050	1100	8000	6000	1100	200	1300	750(HSK A63)
KG5A-20040	1300	8000	4000	1300	200	1500	810(HSK A100)	KG5A-26050	1300	8000	6000	1300	200	1500	810(HSK A100)
KG5A-22040	1100	10000	4000	1100	200	1300	750(HSK A63)	KG5A-28050	1100	10000	6000	1100	200	1300	750(HSK A63)
KG5A-24040	1300	10000	4000	1300	200	1500	810(HSK A100)	KG5A-30050	1300	10000	6000	1300	200	1500	810(HSK A100)

# GANTRY TYPE 5-AXIS MACHINING CENTER

## / Features

**A:** KG/KG5A Series with Heidenhain iTNC 640 HSCI controller increases work efficiency.

Siemens 840DSL controller is available as option for extensive requirements from customers.

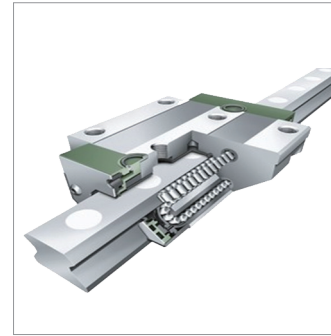


**A:** Siemens 840DSL Controller

Heidenhain iTNC Controller

**B:** 3 axes adopt roller-type linear guideway to perform high rigidity while 3 axes are functioning.

**C:** 3 axes with Heidenhain Linear Scale, and A/C axis with high accuracy encoders and closed loop control can improve the accuracy effectively.



**B:** Roller-Type Linear Guideway from Germany or Japan



**C:** Heidenhain Linear Scale

## / Quality Assurance

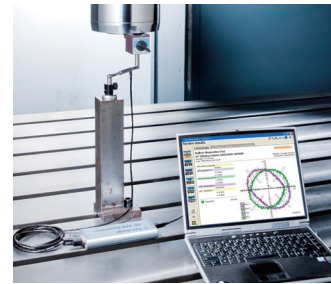
- Adequate inspection facility and strict testing procedure assure 100% best quality per each major component on machine.



3D Probe System



Rigidity Inspection

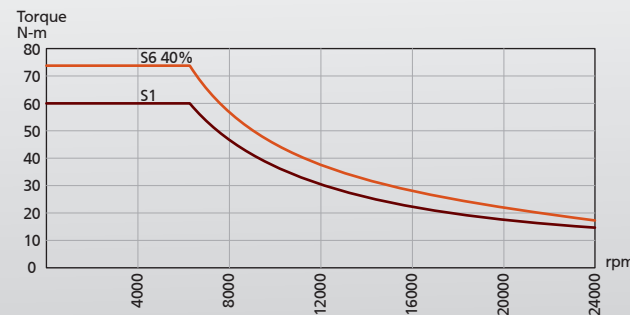
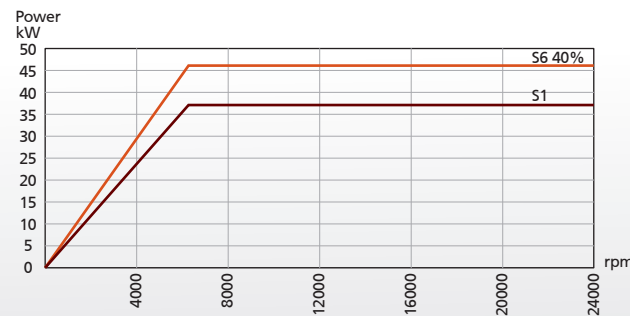


Ball Bar Inspection

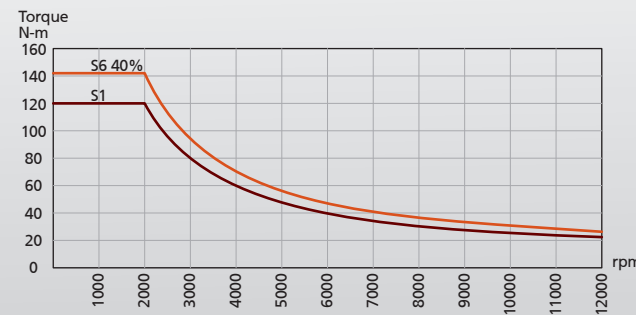
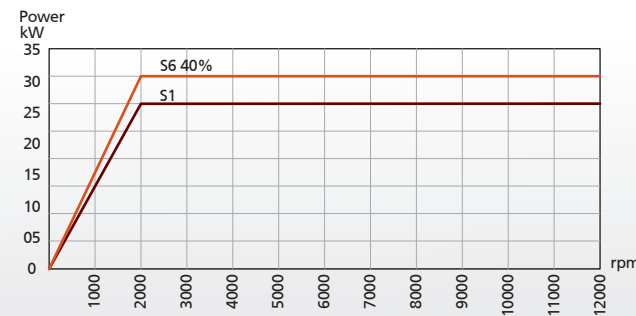


Laser Inspection

- Power Torque Diagram : Kessler Small 2AK G3 24,000 rpm



- Power Torque Diagram : Kessler Small 2AK G3 12,000 rpm



## KG/KGM/KG5A/KGM5A SPECIFICATION

Model	KG-1727	KG-2232	KG-4040	KG-5040	KG-6040	KG-8040	KG-10040	KG-5050	KG-6050	KG-8050	KG-10050	KG-6060	KG-8060	KG-10060	
	KG-1727	KG-2232	KG-4040	KG-5040	KG-6040	KG-8040	KG-10040	KG-5050	KG-6050	KG-8050	KG-10050	KG-6060	KG-8060	KG-10060	
<b>Travel</b>															
X-axis Travel	mm	1700	2200	4000	5000	6000	8000	10000	5000	6000	8000	10000	6000	8000	10000
Y-axis Travel	mm	2700	3200			4000				5000				6000	
Z-axis Travel	mm	1100(1300)													
Distance between Spindle Nose to Table Surface	mm	200-1300(200-1500)													
Distance between Two Columns (waterproof sheetmetal)	mm	3760 (3500)	4260 (4000)	5090(4500)				6090(5500)				7090(6500)			
Table Size (X Direction)	mm	1600	2100	4000	5000	6000	8000	10000	5000	6000	8000	10000	6000	8000	10000
Table Size (Y Direction)	mm	2600	3100	3800				4800				5800			
Max. Loading Table Capacity	kg/m <sup>2</sup>	2500													
<b>Dual-Axis Head / A-axis - Only Applicable to KG5A/KGM5A Series (with Dual-Axis Head)</b>															
Max. Speed	rpm	100													
Torque (S1 / S6-40%)	N-m	764/1200													
Clamping Torque	N-m	1200/2160													
Rotary Range	degree	±105													
<b>Dual-Axis Head / C-axis - Only Applicable to KG5A/KGM5A Series (with Dual-Axis Head)</b>															
Max. Speed	rpm	100													
Torque (S1 / S6-40%)	N-m	810/1100													
Clamping Torque	N-m	1675/3025													
Rotary Range	degree	±200													
<b>Dual-Axis Head / Spindle</b>															
Power (S1 / S6-40%)	kW	(25/30-HSK A100)/(37/46-HSK A63)													
Torque (S1 / S6-40%)	N-m	(119/143-HSK A100)/(60/73-HSK A63)													
Speed	rpm	(12000-HSK A100)/(24000-HSK A63)													
Spindle Taper		HSK A100/HSK A63													
<b>Feed Rate</b>															
Rapid Travel Rate (X, Y, Z)	m/min	20/20/20					10/10/10								
Cutting Feed Rate	mm/min	10000					10000								
Feed Motor (X, Y, Z)	kW	16/16/12.2					6x2/6/6								
<b>Accuracy</b>															
Positioning Accuracy (ISO 8636)	mm	0.030	0.045				0.065								
Repeatability Accuracy (ISO 8636)	mm	0.016	0.025				0.037								
<b>ATC System - NOT Applicable to KGM/KGM5A Series (without ATC System)</b>															
Tool Magazine Capacity		16(24/32)													
Tool Diameter (with adjacent tools)	Ømm	Ø125-HSK A100/Ø100-HSK A63													
Tool Diameter (without adjacent tool)	Ømm	Ø215-HSK A100/Ø125-HSK A63													
Max. Tool Length	mm	400-HSK A100/200-HSK A63													
Max. Tool Weight	kg	15-HSK A100/7-HSK A63													
Tool Shank Type		HSK A100/HSK A63													
Pull Stud		HSK A100/HSK A63													
<b>Others</b>															
Guideway of X / Y / Z axis		Roller Linear Guideway / Roller Linear Guideway / Roller Linear Guideway													
Net Weight	kg	55000	61000	100000	110000	120000	140000	160000	130000	140000	160000	180000	160000	180000	200000
Floor Space (LengthxWidthxHeight)	mm	7700x7500x5800	8200x8000x5800	10700x9300x5800	11700x9300x5800	12700x9300x5800	14700x9300x5800	16700x9300x5800	11700x10300x5800	12700x10300x5800	14700x10300x5800	16700x10300x5800	12700x11300x5800	14700x11300x5800	16700x11300x5800

- The specification is for reference only. KAFO remains the right to modify machine specification, design or property and without prior notice.
- The positioning accuracy inspection is only allowed to execute in KAFO's factory, may not provide inspection at other time after leaving.

- The temperature of machine installing environment must be 5~40 degrees, the surrounding temperature difference should within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.
- As for more details, please refer to operating manual or contact with KAFO sales.