

HEAVY-DUTY LINEAR ROLLER GUIDEWAYS

PG5 GANTRY SERIES

# SIMULTANEOUS 5-AXIS MACHINING

- ▶ AC milling head
- ▶ Dual ballscrews on X and Z axes
- ▶ Up to 115,740 lb. table load capacity



# VIPER



ISO 9001:2008

*Gantry Type  
5-Axis  
Machining*

PG5 • Series

2025

3025

4030

5030

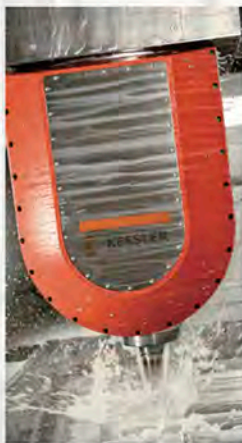
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天車式五軸綜合加工機主要針對加工中大型工件與超大重量之需求而設計開發，搭配A/C兩軸銑削頭完成五軸加工，進而達到高效率之加工應用。

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.



註:本樣機為 PG5A-3025 \* Model KG5A-3025



Kessler 2 axis spindle head

近年來五軸機的應用強調的不只是加工有負傾角之加工(如渦輪葉片)，並且強調加工效率，加工三軸或4、5軸工件時運用五軸機之特性，讓球刀之切削一直保持垂直工件表面，因而大幅縮短整體加工時間，提高效率。

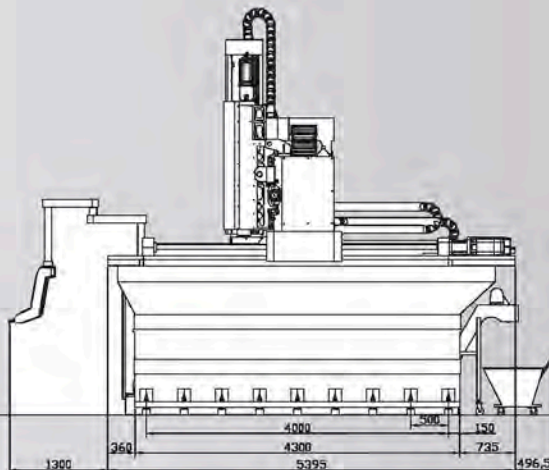
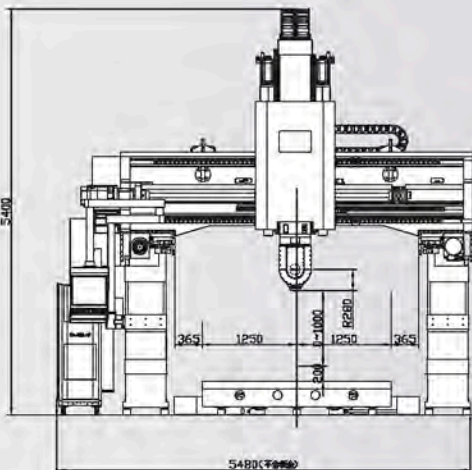
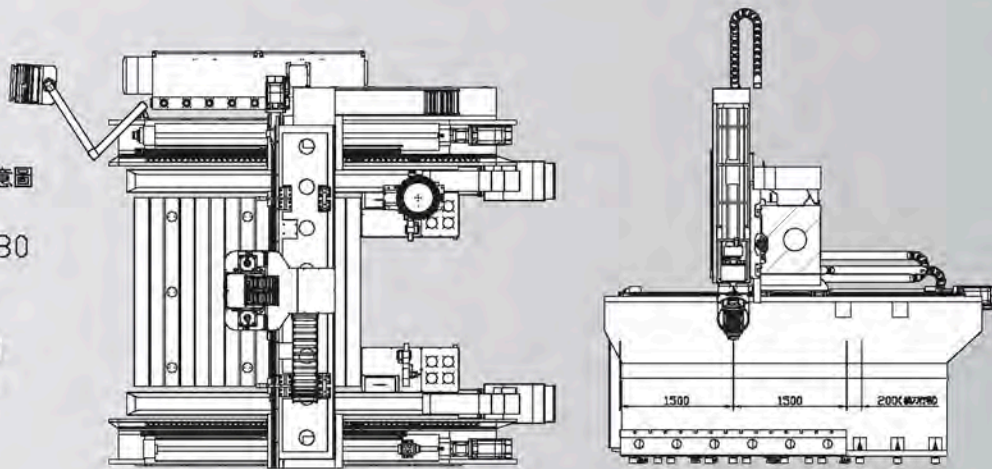
Currently 5-axis machining centers are not just focusing on negative incidence machining (ex. Turbine blade), but machining efficiency. Applying the properties of 5-axis machining center and keeping the ball blade perpendicular to the workpiece during 3-axis or 4/5-axis machining, so that it can largely shorten the time and enhance the efficiency.

### 兩軸頭規格比較 Dual Axes Specification

廠商 Supplier		Kessler			
型號 Model		Small 2AK-G3		Medium 2AK-G3	
主軸 Spindle	型號 Model		SMS 637.673	SMS 639.251	SMS 665.172
	扭矩 Torque (S1/S6 40%)	Nm	119/144	60/73	228/345
	功率 Power (S1/S6 40%)	kW	25/30	37/46	60/90
	轉速 Speed	rpm	12000	24000	12000
	刀把規格 Spindle Taper		HSK A100	HSK A63	HSK A100
軸承潤滑 Bearing Lubrication		Oil-air	Oil-air	Oil-air	
A軸 A-axis	額定扭矩 Torque (S1/Smax)	Nm	764 / 1150		1360 / 2720
	夾緊扭矩 Clamping Torque (P0/Pmax)	Nm	1200 / 2160		2220/7300
	最大轉速 Max. Speed	rpm	30		100
	擺動角度 Rotary Range	°	±105		±105
	定位精度 Positioning Accuracy	"	±5		±5
C軸 C-axis	額定扭矩 Torque	Nm	810 / 1100		2100 / 3200
	夾緊扭矩 Clamping Torque (P0/Pmax)	Nm	1675 / 3025		3100 / 9900
	最大轉速 Max. Speed	rpm	30		60
	擺動角度 Rotary Range	°	±200		±200
	定位精度 Positioning Accuracy	"	±3		±3
重量 Weight	kg	580		1150	
備註		含油霧主機 Oil-mist Lubrication equipped			

#### PG5A-3025 行程示意圖

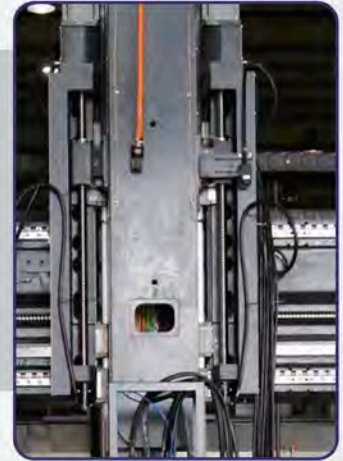
兩軸頭: Kessler  
 A 軸+ 主軸旋轉半徑: R280  
 A 軸旋轉角度: ±105°  
 C 軸旋轉角度: ±200°  
 主軸轉速: 24000RPM  
 刀把規格: HSK A63



PG5A SERIES

KG5A全系列使用Hiwin C3級滾珠螺桿，X/Z軸採用雙螺桿驅動，Y軸採用單螺桿，並搭配螺桿中空冷卻，有效抑制螺桿熱溫升，進而提高三軸動態表現。

PG5A Series adopt Hiwin C3 class ballscrew. X/Z-axis use dual screw and Y-axis uses single screw with cooling system to avoid ballcrew thermal increment and promote 3-axis dynamic performance.



X軸採用雙螺桿驅動



**Siemens**  
840DSL controller



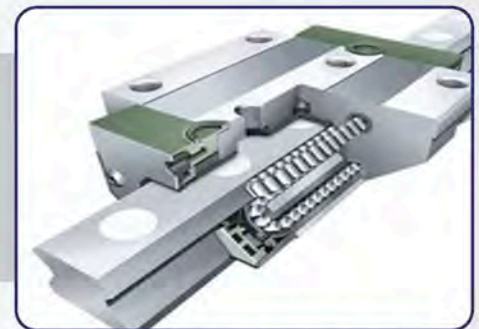
**Heidenhain**  
iTNC530 controller

PG5A全系列控制器標準配備採用Siemens 840DSL，可以有效提高五軸加工機的效率，另外也提供Heidenhain iTNC 530控制器作為選配，以滿足不同客戶群。

PG5A series equipped with Siemens 840DSL controller can increase work efficiency, and we also provide Heidenhain iTNC 530 controller as an option to satisfy every kind requirements from customers.

線軌部份，X/Y/Z軸採用INA RUE系列線軌，藉由滾柱線軌提供三軸移動時所需之剛性。

The 3 axes adopt INA RUE series linear guideway to provide high rigidity while the 3 axes are moving.



INA RUE series linear guideway

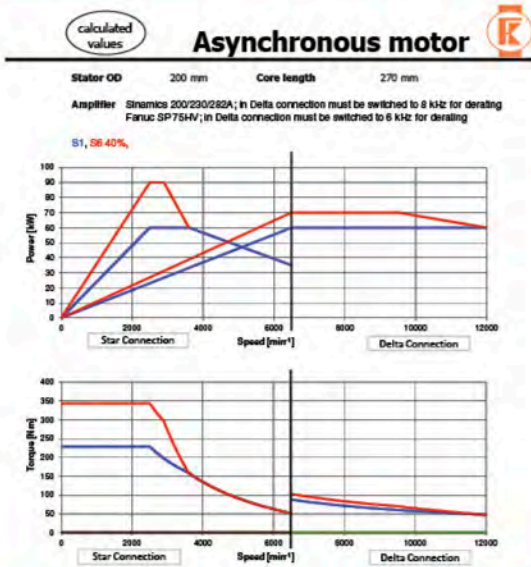


**Heidenhain** linear scale

三軸採用Heidenhain Linear Scale及閉迴路控制(Close loop control)，有效提高精度。

3 axes with Heidenhain Linear Scale and closed loop control can improve the accuracy effectively.

Medium 2AK HSK A100 Power Torque Diagram



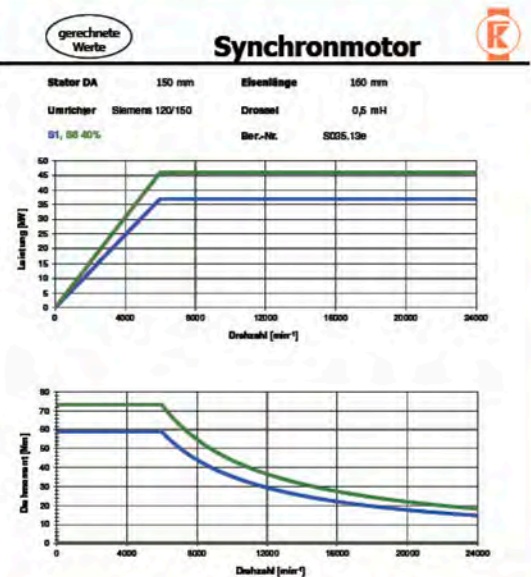
全套嚴格品保檢測 QUALITY ASSURANCE

嚴格可靠品質保證，100%主要零件品質管理  
Rigorous tests and inspection, guaranteed quality control upon key components.



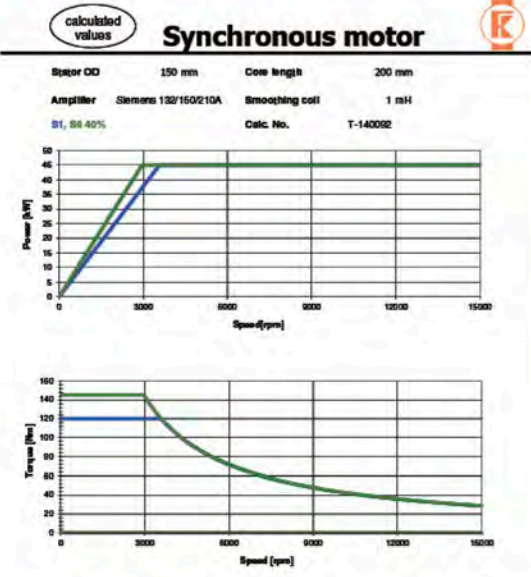
三次元座標測量系統  
3D Probe System

Small 2AK G3 HSK A63 Power Torque Diagram



雷射測量系統  
Laser Inspection

Small 2AK G3 HSK A100 Power Torque Diagram



BALL BAR系統  
Ball Bar Inspection



剛性檢測系統  
Rigidity Inspection

PG5A SERIES

## PG5A 系列規格表

機型 / Model			PG5A-2025 / PG-2025	PG5A-3025 / PG-3025	PG5A-4025 / PG-4025	PG5A-5025 / PG-5025
部別 / Parts	規格 / Specification	Unit				
	X 軸行程 X-axis Travel	mm	2000	3000	4000	5000
	Y 軸行程 Y-axis Travel	mm	2500			
	Z 軸行程 Z-axis Travel	mm	1000			
	工作台面到主軸鼻端距離 Distance from Spindle Nose to Table Surface	mm	200~1200			
	90 度中心線到工作台面距離 * 適用於 KG5A 系列 *for PG5A Series	mm	480-1480			
	立柱間距離 Distance between Two Columns	mm	3200			
	X 軸快移 X-axis Rapid Travel Rate	m/min	20 (直傳 / Direct-driven)		20 (齒輪箱 / Gear Box)	
	Y 軸快移 Y-axis Rapid Travel Rate	m/min	20 (直傳 / Direct-driven)			
	Z 軸快移 Z-axis Rapid Travel Rate	m/min	20 (直傳 / Direct-driven)			
	X/Y/Z 加速度 X/Y/Z-axis Acceleration	m/s <sup>2</sup>	4 / 4 / 4			
	切削速度 Cutting Rate	m/min	20			
工作台 Table	工作台尺寸 Table Dimension	mm	2500x2000	2500x3000	2500x4000	2500x5000
	T 型槽尺寸規格 (槽 x 間距) T-slots (size x pitch)	mm	22x200			
	最大載重 Max. Loading Capacity	kg	15000	18750	25000	31250
主軸 Spindle	功率 Power (S1/S2-30min)	kW	25 / 30			
	扭力 Torque (S1/S2-30min / S3-15%)	Nm	239 / 350 / 420			
	轉速 Speed	rpm	8000 (內藏 / Built-in)			
	軸承內徑 Spindle Bearing Bore Diameter	mm	Φ100			
	內孔規格 Spindle Taper		BT50			
兩軸頭 * 適用於 KG5A 系列	A 軸 A-axis					
	最高轉速 Max. Speed	rpm	30			
Dual Axes Milling Head *for KG5A Series	矩 Torque (S1/S6-40%)	Nm	(764/1150) / (764/1150) / (1360/2720)			
	夾持矩 Clamping Torque	Nm	(1200/2160) / (1200/2160) / (7300/9900)			
	旋轉角度 Rotary Range	deg ree	±105			
	C 軸 C-axis					
	最高轉速 Max. Speed	rpm	30			
	矩 Torque (S1/S6-40%)	Nm	(810/1100) / (810/1100) / (2100/3200)			
	夾持矩 Clamping Torque	Nm	(1675/3025) / (1675/3025) / (7300/9900)			
	旋轉角度 Rotary Range	deg ree	±200			
	主軸 Spindle					
	功率 Power (S1/S6-40%)	kW	(37/46 - HSK A63) / (45/45 - HSK A100) / (60/90 - HSK A100)			
	扭力 Torque (S1/S6-40%)	Nm	(60/73 - HSK A63) / (120/145 - HSK A100) / (228/345 - HSK A100)			
	轉速 Speed	rpm	24000 (HSK A63) / 15000 (HSK A100) / 12000 (HSK A100)			
	內孔規格 Spindle Taper		24000 RPM HSK A63 / 15000 RPM HSK A100 / 12000 RPM HSK A100			
刀庫 ATC	刀庫容量 Tool Magazine Capacity	pc	KG5A Series: 16 KG Series: 40 / 60 / 90 / 120			
	最大刀徑 / 鄰刀空 Max. Tool Diameter/Without Adjacent Tools	mm	KG5A Series: (Ø100 / Ø180 HSK A63) / (Ø125 / Ø215 HSK A100) KG Series: Φ125 / Φ215			
	最大刀具長度 Max. Tool Length	mm	KG5A Series: 200 KG Series: 400			
	最大刀重 Max. Tool Weight	kg	KG5A Series: 7 (HSK A63) / 15 (HSK A100) KG Series: 20 (BT50)			
控制器 Controller	KG5A 系列 KG5A Series		Siemens 840DSL / OP: Heidenhain ITNC 530			
	KG 系列 KG Series		Fanuc 0iD (OP: Fanuc 31i / Siemens 840DSL / Siemens 828D / Heidenhain ITNC 530)			
精度 Accuracy	定位精度 (JIS B6338) Positioning	mm	±0.015 / 全長			
	定位精度 (VDI 3440) - X、Z 軸 Positioning - X/Z-axis	mm	P=0.02 / 全長			
	定位精度 (VDI 3440) - Y 軸 Positioning - Y-axis	mm	Ps=0.02 / 全長	Ps=0.025 / 全長	Ps=0.030 / 全長	
	重現精度 (JIS B6338) Repeatability	mm	±0.01			
	重現精度 (VDI 3440) - X、Z 軸 Repeatability - X/Z-axis	mm	Ps=0.02			
	重現精度 (VDI 3440) - Y 軸 Repeatability - Y-axis	mm	Ps=0.02		Ps=0.022	
	機台尺寸 Dimension	mm	5500x6340x5200	6500x6340x5200	7500x6340x5200	8500x6340x5200
	氣壓需求 Compressed Air Supply	kgf/cm <sup>2</sup>	6			
	電力需求 Power Supply	KVA	KG5A Series: 200KVA / KG Series: 75KVA			
	最大工件 Max. Workpiece Capacity	mm	2500x2000x1000	2500x3000x1000	2500x4000x1000	2500x5000x1000

\* 本公司保有變更型錄規格之權利 MIGHTY USA reserves the right to modify the specifications without further notice.

PG5A-8025 / PG-8025	PG5A-3030 / PG-3030	PG5A-4030 / PG-4030	PG5A-5030 / PG-5030	PG5A-6030 / PG-6030	PG5A-4035 / PG-4035	PG5A-5035 / PG-5035	PG5A-8035 / PG-8035
6000	3000	4000	5000	6000	4000	5000	6000
2500	3000					3500	
1000							
200~1200							
480-1480							
3200	3700					4200	
20 (直傳 / Direct-driven)		20 (齒輪箱 / Gear Box)					
20 (直傳 / Direct-driven)				20 (齒輪箱 / Gear Box)			
20 (直傳 Direct-driven)							
4 / 4 / 4							
20							
2500x6000	3000x3000	3000x4000	3000x5000	3000x6000	4000x3500	5000x3500	6000x3500
22x200							
37500	22500	30000	37500	45000	35000	43750	52500
25 / 30							
239 / 350 / 420							
8000 (內藏 / Built-in)							
Φ100							
BT50							
30							
(764/1150) / (764/1150) / (1360/2720)							
(1200/2160) / (1200/2160) / (7300/9900)							
±105							
30							
(810/1100) / (810/1100) / (2100/3200)							
(1675/3025) / (1675/3025) / (7300/9900)							
±200							
(37/46 - HSK A63) / (45/45 - HSK A100) / (60/90 - HSK A100)							
(60/73 - HSK A63) / (120/145 - HSK A100) / (228/345 - HSK A100)							
24000 (HSK A63) / 15000 (HSK A100) / 12000 (HSK A100)							
24000 RPM HSK A63 / 15000 RPM HSK A100 / 12000 RPM HSK A100							
KG5A Series: 16							
KG Series: 40 / 60 / 90 / 120							
KG5A Series: (Ø100 / Ø180 HSK A63) / (Ø125 / Ø215 HSK A100)							
KG Series: Φ125 / Φ215							
KG5A Series: 200							
KG Series: 400							
KG5A Series: 7 (HSK A63) / 15 (HSK A100)							
KG Series: 20 (BT50)							
Siemens 840DSL / OP: Heidenhain iTNC 530							
Fanuc 0iD (OP: Fanuc 31i / Siemens 840DSL / Siemens828D / Heidenhain iTNC 530)							
±0.015 / 全長							
P=0.02 / 全長							
Ps=0.035 / 全長	Ps=0.02 / 全長	Ps=0.025 / 全長	Ps=0.025 / 全長	Ps=0.030 / 全長	Ps=0.025 / 全長	Ps=0.025 / 全長	Ps=0.030 / 全長
±0.01							
Ps=0.02							
Ps=0.026	Ps=0.02	Ps=0.022	Ps=0.026	Ps=0.02	Ps=0.022	Ps=0.026	Ps=0.026
9500x6340x5200	6500x6840x5200	7500x6840x5200	8500x6840x5200	9500x6840x5200	7500x7340x5200	8500x8340x5200	9500x9340x5200
6							
KG5A Series: 200KVA / KG Series: 75KVA							
2500x6000x1000	3000x3000x1000	3000x4000x1000	3000x5000x1000	3000x6000x1000	3000x4000x1000	3000x5000x1000	3000x6000x1000

## **MIGHTY VIPER**

Over 45 years, **Mighty Viper** has sold more than 25,000 machines nationwide, resulting in a world of satisfied customers and a wealth of feedback that has added to our arsenal of experience and fine craftsmanship. In keeping with our commitment to provide only the highest quality machining centers, every available resource is utilized to maintain a state-of-the art manufacturing process and to continue the delivery of cutting edge technologies.

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