

# KAFO

## HIGH SPEED DOUBLE COLUMN MILLING CENTER HIGH SPEED DOUBLE COLUMN MACHINING CENTER | P/PV 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**

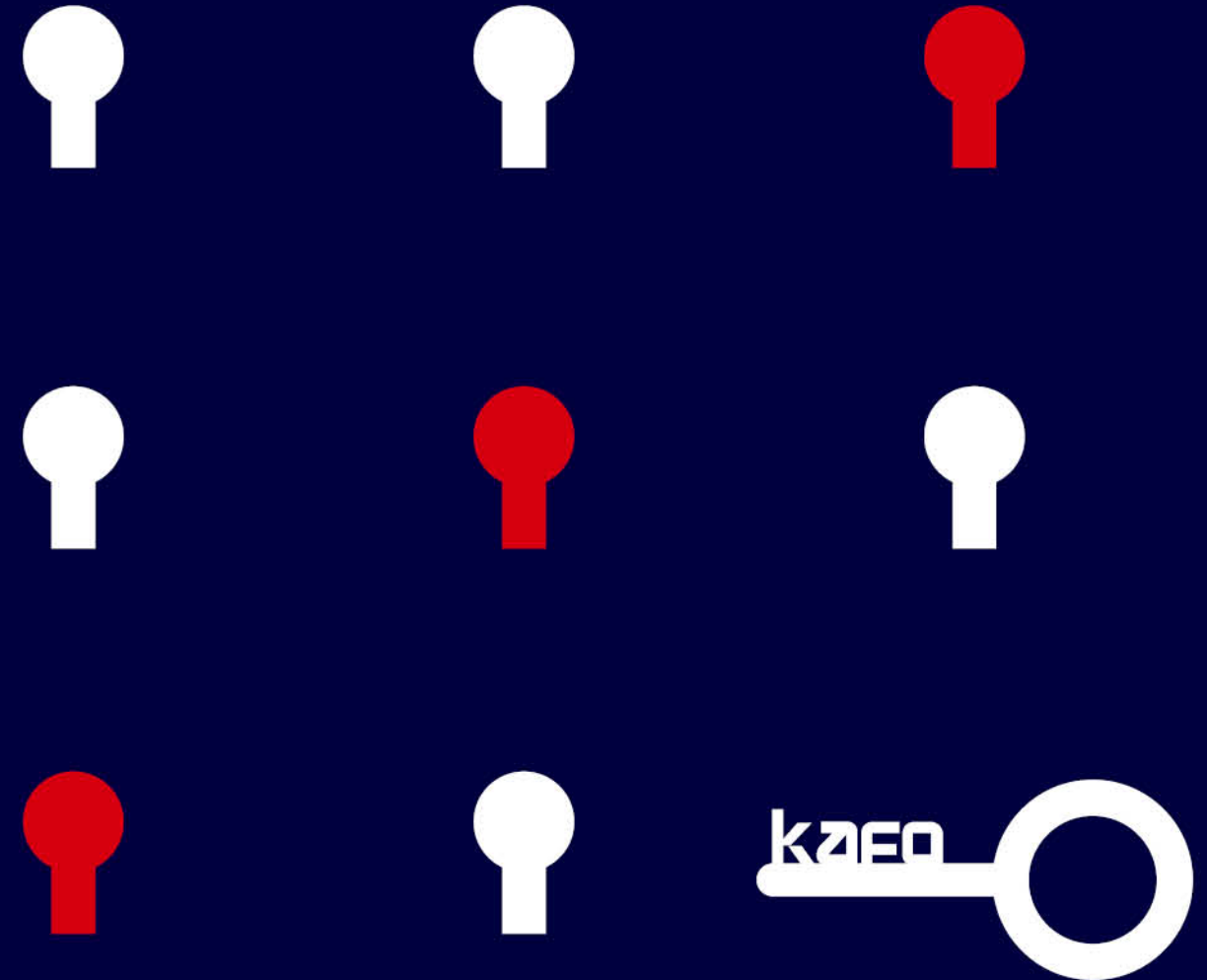
We focus on the enhancement of top core technologies and capabilities, and develop solidly to achieve excellent quality.

**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.



*Smell the market demand  
and offer well-thought-out plans*

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# KAFO

## SIX SENSES PERFORMANCE



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*

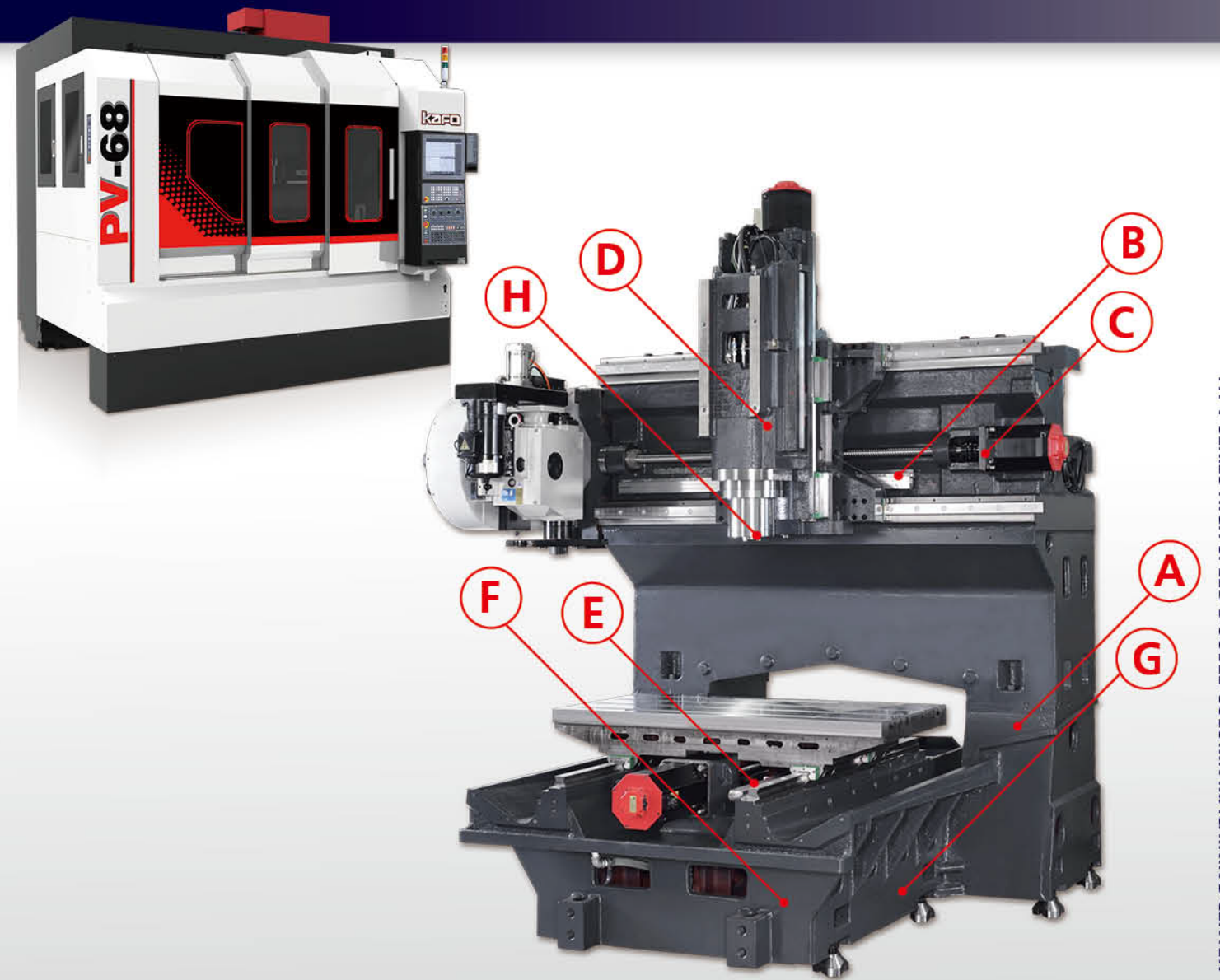
KAO FONG MACHINERY CO., LTD.  
President & CEO  
SHEN, KUO-JUNG (DAVID SHEN)

# P/PV - 58, 68

## HIGH SPEED DOUBLE COLUMN MILLING CENTER HIGH SPEED DOUBLE COLUMN MACHINING CENTER

### FEATURES

- A:** With thermal symmetry structure, machine columns and base can effectively improve machining accuracy and avoid thermal deformation.
- B:** Linear scales of 3 axes adopt the closed-loop control system which can perform high-precision positioning and contour machining.
- C:** The three-axis feed system adopts one-piece design which can enhance positioning accuracy and reach high acceleration and deceleration when machining.
- D:** Z-axis is designed with the short throat to shorten the distance between linear guideway and spindle and reach to great accuracy and rigid.
- E:** The adoption of imported high load linear guideway can ensure dynamic accuracy and extend lifetime.
- F:** Through FEM analysis, the enhanced machine structure provides great cutting rigidity and effectively avoids cutting flutter to ensure machining accuracy.
- G:** Castings are produced with stress relief and aging treatment which can avoid deformation and meet the requirements of accuracy.
- H:** The advantages of built-in type spindle are high rotating speed and low vibration which can improve machining efficiency.



P/PV SERIES HIGH SPEED DOUBLE COLUMN MILLING CENTER  
P/PV SERIES HIGH SPEED DOUBLE COLUMN MACHINING CENTER

# P/PV - 1310, 1318, 1800

## HIGH SPEED DOUBLE COLUMN MILLING CENTER HIGH SPEED DOUBLE COLUMN MACHINING CENTER

### OPTIMIZED SPINDLE (BUILT-IN TYPE)

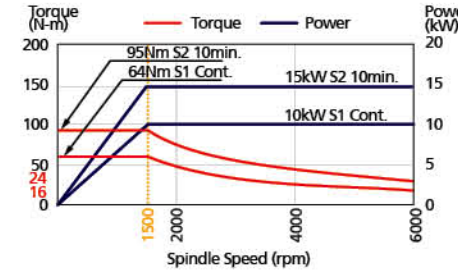
- Spindle is produced with high-rigidity bearings of which diameter are Ø70mm.
- The motor of built-in type spindle is high speed and high precision, and the output is 25/29kW.
- Under long-term manufacturing, it has great suppression effects on vibration and thermal displacement, and can maintain good dimensional tolerance and shape accuracy.



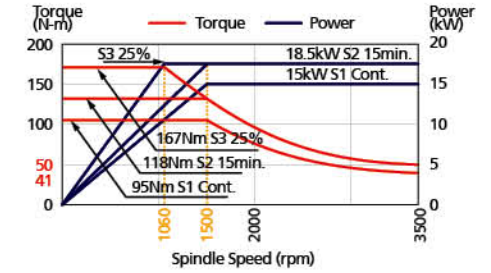
### P/PV-58, 68

#### / SPINDLE POWER-TORQUE DIAGRAM

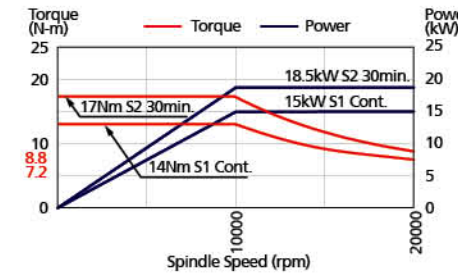
- Royal 20000 RPM (Low Winding)



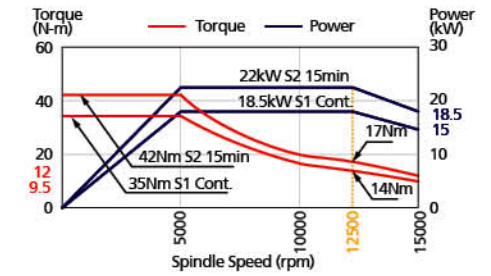
- Royal 15000 RPM (Low Winding)



- Royal 20000 RPM (High Winding)



- Royal 15000 RPM (High Winding)



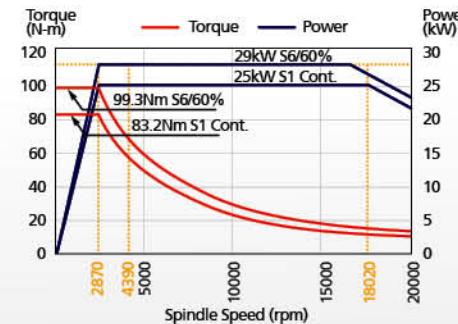
#### / BUILT-IN TYPE SPECIFICATION ( WITH FANUC )

Rated Power (S1/S2)	kW	15/18.5	18.5/22
Rated Torque (S1/S2 or S3)	N-m	64/95	95/167
Rated Speed	rpm	1500	1500
Max. Speed	rpm	20000	15000
Bearing Diameter	mm	Front:ø70 / Back:ø65	Front:ø70 / Back:ø65
Tool Interface			BBT40
Bearing Lubrication			Oil-air
Motor			Synchronous
Motor Cooling			Oil

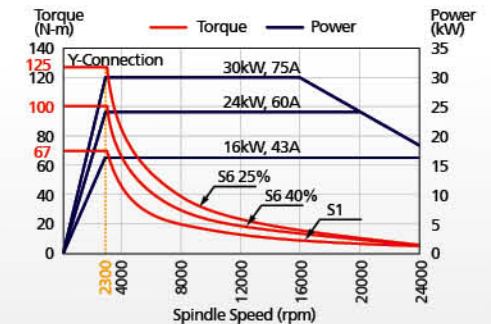
### P/PV-1310, 1318, 1800

#### / SPINDLE POWER-TORQUE DIAGRAM

- Taiwan Brand 15000 / 18000 / 20000 RPM



- Kessler 24000 RPM



#### / BUILT-IN TYPE SPECIFICATION ( WITH SIEMENS / HEIDENHAIN )

Rated Power (S1/S3 40%)	kW	25/29	25/29	25/40	16/24/30
Rated Torque (S1/S3 40%)	N-m	83.2/99.3	83.2/99.3	87/135	67/100/125
Rated Speed	rpm	2870	2870	2800	2300
Max. Speed	rpm	15000	18000/20000	20000	24000
Bearing Diameter	mm	Front:ø70 / Back:ø60	Front:ø70 / Back:ø60	Front:ø80 / Back:ø55	ø70
Tool Interface				HSK A63	
Bearing Lubrication		Grease		Oil-air	
Motor				Asynchronous	
Motor Cooling				Water with Additive	

# P/PV SERIES

HIGH SPEED DOUBLE COLUMN MILLING CENTER  
HIGH SPEED DOUBLE COLUMN MACHINING CENTER

## OPTIONAL ACCESSORIES

### / ATC SYSTEM

- With hardware limit position, the built-in type ATC can move to 2nd reference point rapidly. To prevent chips damaging tools, ATC system moves to the outside of machining area while the machine is operating.

The chuck is made of the plastic composite which can clamp tools stably and protect spindle and turret when improper tool change happened. ATC can run smoothly, quietly and operate under precise position with the use of cam type motor-driven system.



### / TOOL MEASURING INSTRUMENT

- The integral system can reach to high accuracy of inspection. The minimum tool diameter of measurable is 50µm and the repeatability accuracy is 0.5µm. The level of protection is IP68, which can prevent cutting fluid from splashing and efficiently avoid chips damage.

The measuring instrument adopts stably movable stage which is placed outside of machining area to prevent chips damaging the instrument and extend lifetime.



## FULL STRICT TESTS FOR QUALITY ASSURANCE



/ 3D PROBE SYSTEM  
QUALITY ASSURANCE  
( CMM )



/ LASER INSPECTION



/ 3D CIRCULAR BALL  
MILLING

## HIGH SPEED DOUBLE COLUMN MACHINING CENTER P/PV SERIES

MODEL		P/PV-58	P/PV-68	P/PV-1310	P/PV-1318	P/PV-1800
<b>Travel</b>						
X-axis	mm	560	1100	1300	1800	1800
Y-axis	mm	460	610	1000	1300	
Z-axis	mm	460		700		
Rapid Travel Rate (X/Y/Z)	m/min	40/40/32		20/20/20		
Cutting Rate	m/min	32		20		
Distance From Spindle Nose to Table Surface	mm	150-610		125-825		
Distance Between Two Columns	mm	860	1100	1500		
<b>Table</b>						
Table Dimension ( X )	mm/mm	760	1250	1300	2000	2000
Table Dimension ( Y )	mm/mm	460	610	1000	1300	
T-slots Size X Number X Pitch	mm	3*18*150	4*18*150	7*18*125	8*22*160	
Max. Loading Capacity	kg	500	1000	2000	4000	4000
<b>Spindle</b>						
Spindle Speed	rpm	15000/20000		15000/18000/20000/24000		
Spindle Motor Output (Continuous / 30 mins)	kW	(18.5/22) / (15/18.5)		(25/29) / (25/29) / (25/40) / (16/24/30)		
Spindle Rated Torque	N-m	(95/167) / (64/95)		(83.2/99.3) / (83.2/99.3) / (87/135) / (67/100/125)		
Spindle Tool Interface		BBT-40		HSK A63		
<b>ATC System</b>						
Tool Magazine Capacity	tools	20/32	24/30/32	16/24/32/40		
Tool Diameter (with adjacent tools)	mm	ø90	ø75	ø35		
Max. Tool Diameter	mm	ø125	ø150(24/30) / ø127(32)	ø35		
Max. Tool Length	mm	300		220		
Max. Tool Weight	kg	8	7	7		
<b>Controller</b>						
Controller Model		Siemens / Fanuc / Heidenhain		Siemens 840DSL / Siemens 828D / Heidenhain / ★ Fanuc		
<b>Accuracy</b>						
Positioning Accuracy (JIS 6338)	mm	±0.01		±0.015		
Positioning Accuracy (ISO 8636)	mm	0.009		0.012		
Repeatability Accuracy (JIS 6338)	mm	±0.003		±0.003		
Repeatability Accuracy (ISO 8636)	mm	0.006		0.008		
<b>Others</b>						
Power Supply	kVA	35	45	55		
Compressed Air Supply	kg/cm <sup>2</sup>			6		
Length	mm	2880	3200	4080	5565	6434
Width	mm	1909	2700	3900	3236	3552
Height	mm	2781	3030	4150	4150	3938
Net Weight	kg	6000	8000	16500	18500	20500

### / STANDARD ACCESSORIES

- Spindle Blast
- Air Gun & Coolant Gun
- Tool Box
- Air Blast Function for Workpiece (M07)
- M30 Auto Power Off
- RS232 Interface & Port & Cable (10M)
- USB Interface
- Spindle Oil Mist Lubrication (Except 15,000rpm of P/PV-1300, 1318, 1800)
- Rigid Tapping Function
- Movable MPG Hand Wheel
- Working light
- Tri-color Status Light
- Leveling Bolts & Pads
- Operation & Maintenance Manual
- P/PV-1310, 1318, 1800 (P/PV-58, 68 OPTIONAL)
- Dual Screw Type Chip Conveyor
- Lift up Type Chip Conveyor
- 3 Axes Linear Scale
- ATC Automotive Door

### / OPTIONAL ACCESSORIES

- Auto Tool Length & Diameter Measurement
- Auto Workpiece Measurement
- P/PV-1310, 1318, 1800 ONLY
- Oil-mist Collector
- Coolant System
- Kessler Spindle