

# KAFO

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



Vision

Hearing

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 and offer 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**

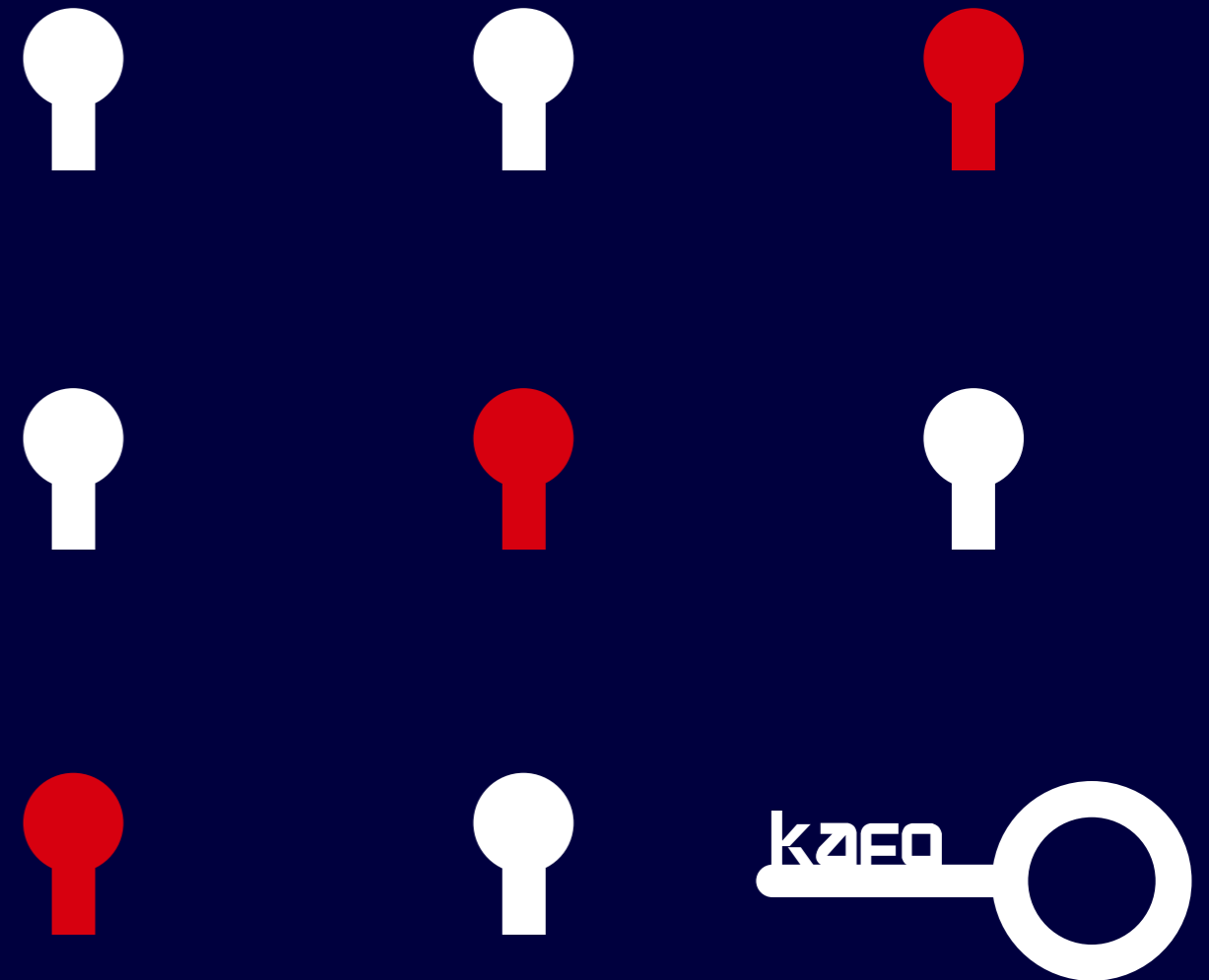
We focus on the enhancement of top core technologies and capabilities, and develop solidly to achieve excellent quality.

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

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*

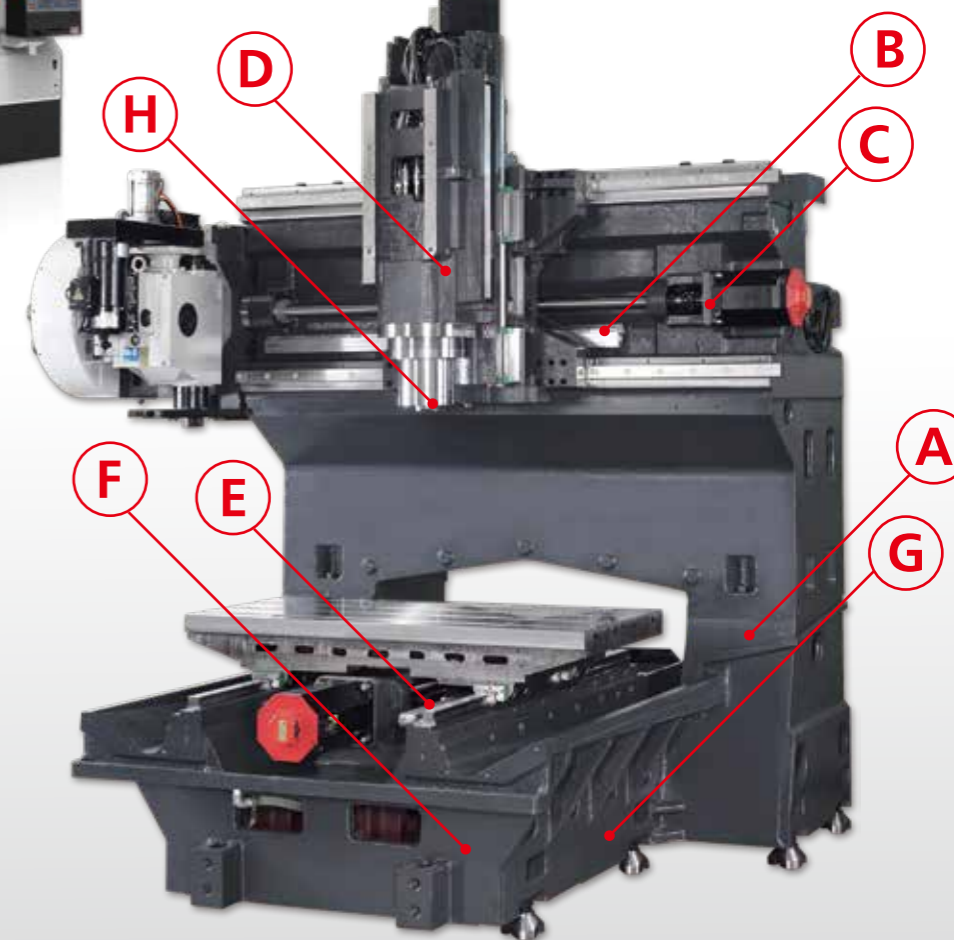
KAO FONG MACHINERY CO., LTD.  
President & CEO  
SHEN, KUO-JUNG (DAVID SHEN)

# P/PV - 58, 68

## 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 MACHINING CENTER

# P/PV - 1310, 1318, 1800

## HIGH SPEED DOUBLE COLUMN MACHINING CENTER

### OPTIMIZED SPINDLE (BUILT-IN TYPE)

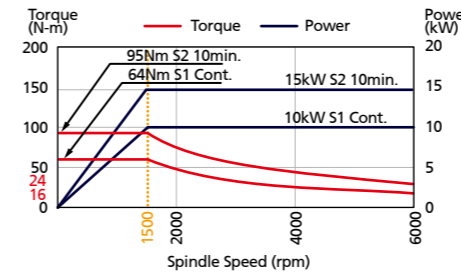
- Spindle is produced with high-rigidity bearings of which diameter are Ø70mm.
- The motor of built-in type spindle is high speed and high precision, and the output is 25/29kW.
- Under long-term manufacturing, it has great suppression effects on vibration and thermal displacement, and can maintain good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



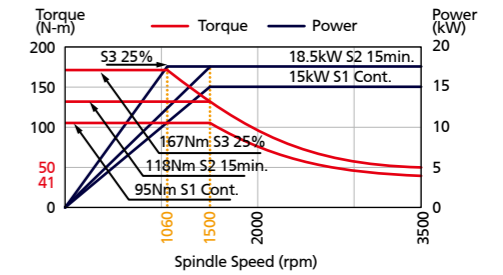
### P/PV-58, 68

#### / SPINDLE POWER-TORQUE DIAGRAM

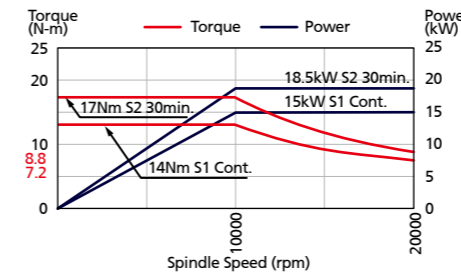
- Royal 20000 RPM (Low Winding)



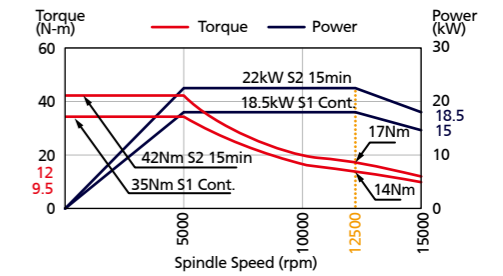
- Royal 15000 RPM (Low Winding)



- Royal 20000 RPM (High Winding)



- Royal 15000 RPM (High Winding)



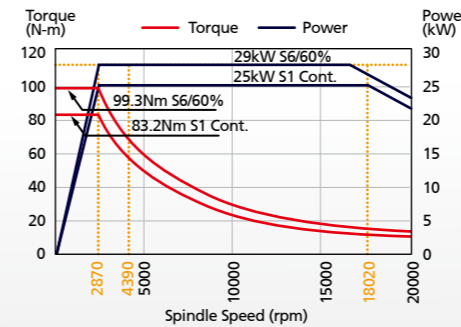
#### / BUILT-IN TYPE SPECIFICATION ( WITH FANUC )

|                            |     |                      |                      |
|----------------------------|-----|----------------------|----------------------|
| 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                  |                      |

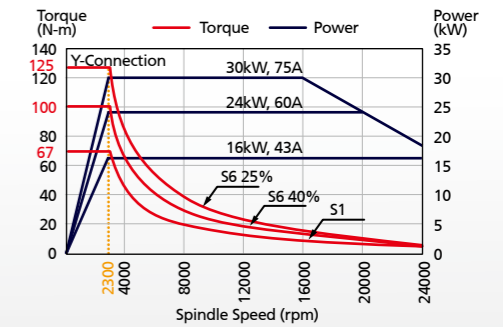
### P/PV-1310, 1318, 1800

#### / 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 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 / 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                   | 4315  | 5705      | 6213      |
| Width                                       | mm                 | 1909                         | 2700                   | 3985  | 3500      | 3580      |
| Height                                      | mm                 | 2781                         | 3030                   | 4124.5  | 3872.5    | 3971      |
| Net Weight                                  | kg                 | 6000                         | 8000                   | 16500   | 18500     | 20500     |

KAFO reserves the right to modify the specifications without further notice.

★ : Consulting Required

### / 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
- Rigid Tapping Function
- MPG Handwheel
- Working light
- Tri-color Status Light
- Leveling Bolts & Pads
- Operation & Maintenance Manual
- ATC Automotive Door

### / OPTIONAL ACCESSORIES

● : STANDARD, ○ : OPTIONAL

| ACCESSORIES \ MODEL                     | P/PV-58,68 | PV-1310/1318/1800 |
|---|------------|-------------------|
| Auto Tool Length & Diameter Measurement | ○          | ○                 |
| Auto Workpiece Measurement              | ○          | ○                 |
| Spindle Oil Mist Lubrication            | ●          | ○                 |
| Dual Screw Type Chip Conveyor           | ○          | ●                 |
| 3 Axes Linear Scale                     | ○          | ●                 |
| Lift up Type Chip Conveyor              | ○          | ●                 |
| Oil-mist Collector                      | -          | ●                 |
| Kessler Spindle                         | -          | ○                 |
| Coolant System                          | -          | ○                 |