KAO MING

ONE MORE STEP TO EXCELLENCE


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KM WEB

# KMC-EP

Cat.32 1810(E)x1000C

KAO MING 50 1968-2018


KAO MING Scientific and technological giant of the most humane intention!

KAO MING MACHINERY INDUSTRIAL CO., LTD


# One more step to excellence

## Careful Work Precise Technology

In the modern time, the more complex a mechanical device was, and the more highly trained its operators were. The enterprise promotes the industrial value by the accumulation of technical knowledge. KAO-MING Machinery Co. adopts the strict standard to the products' research and development, and manufactures the high value added product toward to the market strategy. As time went by, KAO-MING insists on the "Artisan spirit" working hard all the time, and let the enterprise shines on the international stage.

# KMC-EP SERIES

## PLANO-MACHINING CENTER↗


W

## MAIN FEATURES

1.The new machine model is equipped with moveable crossbeam (W-axis). The 4-axis control provides the machine with 5-face(multi-face) machining capability.

2.Optimized and minimized machining ranges can be made under the mutual movement function between Z (700mm) and W(1100mm) axes for varied workpieces.

3.Roller-type recirculating bearing for the movement of carriages are used on X、Y-axis insert-boxways.

4.The mounting brackets for the W axis ballscrews are integrated with the columns to maximize the rigidity further.

5.FEA has been adopted to check the deformation and vibration mode of the machine structure to ensure getting best rigidity and optimum design.

6.The crossbeam with strong ribs layout provide optimum bending and torsional stress.

7.A ram-type casted spindle head with a cross section of 400x400mm ensures high rigidity and stability under heavy-duty cutting.

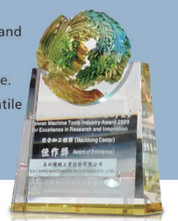
8.The spindle and motor are symmetrically put on the center line of the ram. Max spindle speed: 6000rpm, max spindle Output: 22/26/37 kw and max spindle torque: 553/653/1009 Nm(S3 25%).

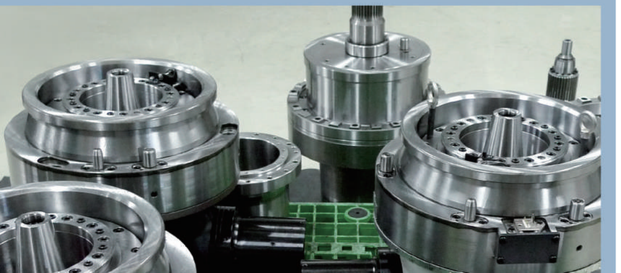
9.Coolant through spindle system (option) can clean chips from high speed cutting and restrain heat.

10.Horizontal spindle has high-precision hardened and ground spiral bevel gears that can reduce shock and noises effectively to ensure running stability.

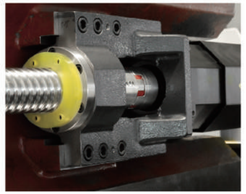
11.2-station AAC(Automatic Attachment Changer) is standard; V-head/H-head change and ATC(V/H) change.

12.Automatic universal head, 30-degree angle head, extension head are optionally available for versatile applications.



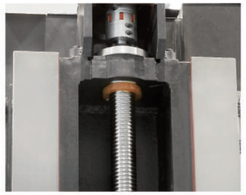







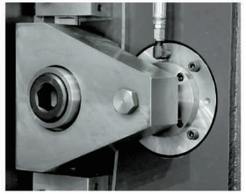
## DIRECT-DRIVE OF THE Y, Z, W AXIS

The servo motors are coupled directly to the ball-screw end to maximize the efficiency further.



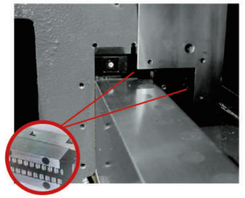
## INTEGRAL BALLSCREW MOUNTING BRACKETS

The mounting brackets for the W axis ballscrews are integrated with the columns to maximize the rigidity further.



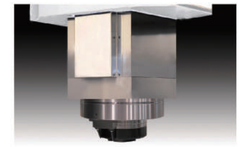
## POWERFUL CLAMPING

Powerful clamping devices on both sides of the crossbeam ensure high accuracy even for heavy cutting.



## SLIDING ROLLING COMBINED DESIGN

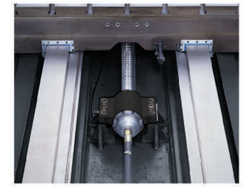
Roller packs for the movement of carriages are adopted to use on X、Y-axis insert-boxways to increase the feed and rigidity. Thanks to the right choice of material and good solution for the machining process,We can make the machine have the better performance of high rigidity and accuracy.



400 x 400 RAM

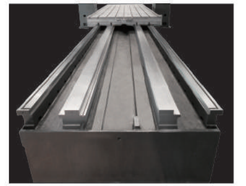
## BEST LAYOUT OF SPINDLE SYSTEM

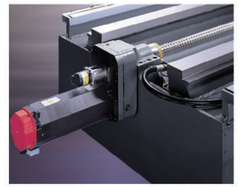
One piece with square shape headstock.
Unique design of spindle head features that the spindle and motor are symmetrically put on the center line, and then reduces the thermal growth.

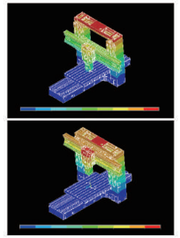


## INNER COOLED BALLSCREW

Cooled oil continuously flows through the center of the ballscrew(Model:3m~5m). The temperature of the oil is cooled, circulating through an external heat exchanger. This greatly enhances the machine's performance and accuracy by practically eliminating thermal growth of the axis especially when using the full traverse. Both support end of the X-axis ballscrew are equipped with a special design device to cool bearings by air. This superior design is unique to Kao Ming.







## FOUR GUIDEWAY HIGH RIGIDITY STRUCTURE

Machine base has four-boxway to support by sliding and rolling combined design.Central boxway for main support is hardened and ground , covered with Turcite-B which features strong absorb ability enhancing dynamic rigidity.Moreover , 2-side boxway is as same as central boxway but further employs extra roller-type recirculating bearing to strengthen support. This design can get less loading and more tolerance.

## EXTERNAL AXIS POSITION FEEDBACK

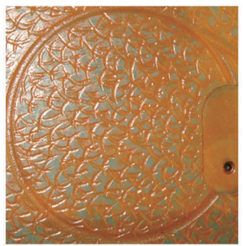
The ballscrew is driven by a motor and gear reducer for added strength to the axis feed system. The external position feedback pulse coder is coupled directly to the opposite end of the ballscrew. This allows for high positioning accuracy to be maintained by measuring the true rotation of the ballscrew.

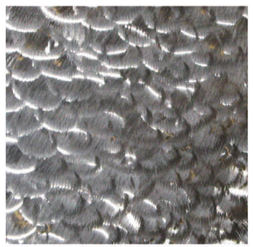
## FINITE ELEMENT ANALYSIS

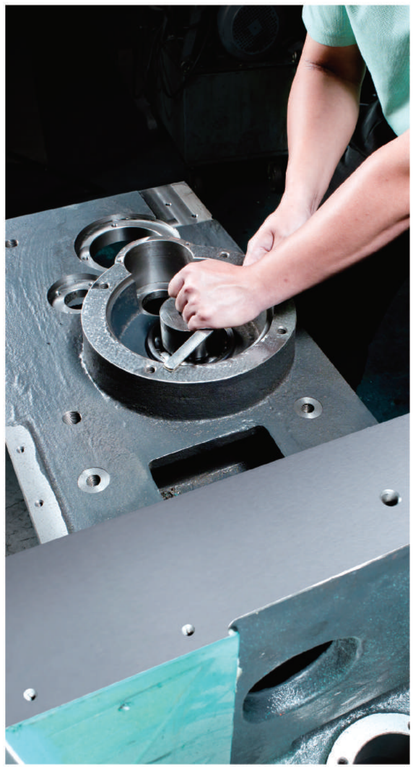
Optimized design of main structure through the Finite Element Method (FEM) analysis , to ensure excellent rigidity , suitable for both high speed and heavy-duty cutting.

# HIGH RIGIDITY STRUCTURE

In order to ensure the machine accuracy to achieve the highest standards, scrapping technique is the key. The mutual precision relationship between each structure, including perpendicularity, parallelism, flatness and other geometric accuracy, relies on experienced and professional scraping technicians carved step by step. The contact rate of each scraping point per unit is the highest standard for precision machines. During scraping process, sophisticated inspection instruments are applied for calibrating the machine's geometric accuracy to the best condition.

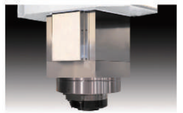






# RIGID & VERSATILE SPINDLE HEAD

## HEAVY-DUTY CUTTING



400 x 400 RAM

### BEST LAYOUT OF SPINDLE SYSTEM

One piece with square shape headstock.
Unique design of spindle head features that the spindle and motor are symmetrically put on the center line, and then reduces the thermal growth.

## V-HEAD CUTTING EXAMPLE

### V-HEAD CUTTING EXAMPLE
**(TEST IN THE BEST ENVIRONMENT)**

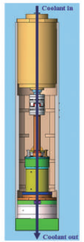
| | |
|---|---|
| Face mill cutter (mm) | ø 125 |
| Work material | S45C |
| Spindle speed (rpm) | 400 |
| Cutting width (mm) | 100 |
| Cutting depth (mm) | 7 |
| Feedrate (mm/min) | 1000 |
| Cutting capacity ($cm^3$/min) | 700 |

### IDD SPINDLE IN-LINE DESIGN

Spindle and spindle motor are arranged in the connection of an IDD ( Isolated Direct Drive ) system. This arrangement can reduce the heat transfer , and increase the performance of the machine.

Powerful 22/26/37 kw spindle motor is adopted to make the spindle have maximum output torque 553/653/1009 Nm(S3 25%) and maximum speed 6000rpm / *8000rpm.

IN-LINE design for 2-speed gear spindle head is optionally available. This system can make the coolant flow straightly through motor, reducer,spindle and attached head.




### COOLANT THROUGH SPINDLE SYSTEM

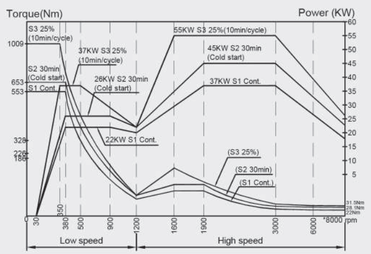
The optional, coolant through the spindle feature utilizes a complete pump/filtration system, rather than a single auxiliary pump as commonly used by our competition. This system is equipped with a large 600L capacity reservoir, high pressure pump, and duplex filter unit, with a choice of various output pressures.

### Coolant Through Spindle System

| | Medium pressure | High pressure | |
|---|---|---|---|
| Pressure | 20bar(284psi) | 40bar(568psi) | 70bar(994psi) |
| Quantity | 30L/min (7.92gal/min) | 30L/min (7.92gal/min) | 30L/min (7.92gal/min) |

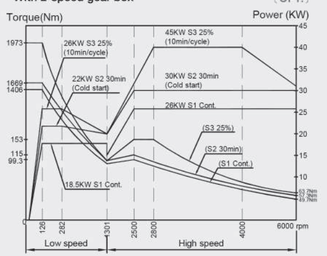
## Spindle Output And Torque

Spindle Output & Torque Diagram(6000/*8000rpm)



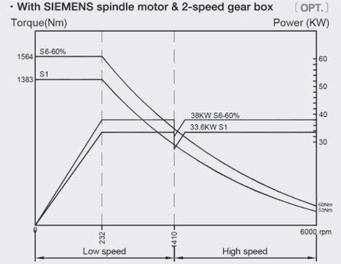

Spindle Output & Torque Diagram(6000rpm)

· With 2-speed gear box [OPT.]




Spindle Output & Torque Diagram(6000rpm)

· With SIEMENS spindle motor & 2-speed gear box [OPT.]

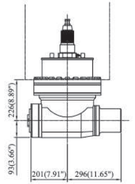


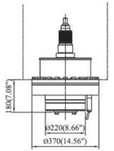
## AUTOMATIC TOOL CHANGER

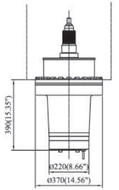


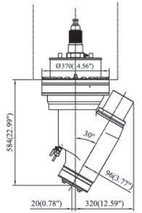


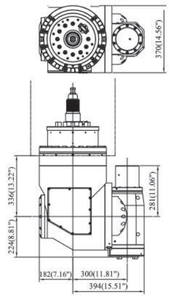

| | Horizontal Head | Vertical Head | Extension Head | 30-Degree Angle Head | Automatic Universal Head | Manual universal Head |
|---|---|---|---|---|---|---|
| Max. Speed | 3500 rpm | 6000 / *8000 rpm | 4000 rpm | 3500 rpm | 3500 rpm | 1500 rpm |
| Max. Power | 18.5 / 22 kw | 22 / 25 kw | 22 / 26 kw | 18.5 / 22 kw | 25 kw | 22 kw |
| Application | Powerful horizontal cutting | Powerful vertical cutting | Narrow deep machining | Deep vertical wall machining | Inclined plane machining | |

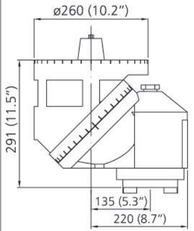













### Horizontal Head

Horizontal head can be indexed to 4 positions in 90° increments. It is indexed by the shortest path. For complex workpieces, indexing to 72 positions in 5° increments is optionally available.

Horizontal head employed high-precision hardened and ground spiral bevel gears that could reduce shocks and noises effectively to ensure running stability.

### Extension Head

Narrow deep machining.

### 30-Degree Angle Head

Deep vertical wall machining and die/mold machining.

### Automatic Attachment Changer

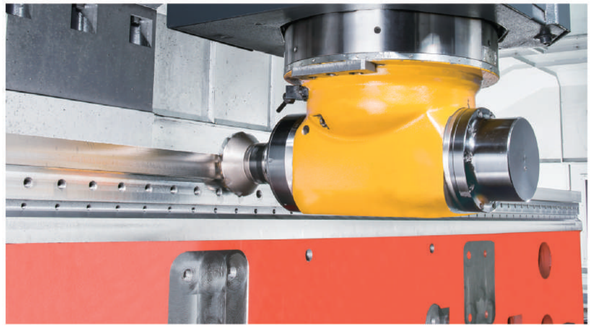
Using high hardness gear rack and pinion for the transmission mechanism can reach to high stability and good durability.

Using servo motor as the power source can reach high positioning accuracy, small vibration and does not affect the machine processing accuracy

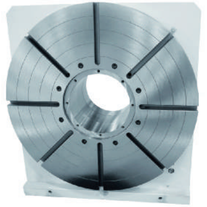
The slides of head is supported by the whole stroke, providing reliable rigidity for the head change.

2-position AAC (Automatic Attachment Changer) is designed for improving productivity.

Angular attachment and vertical head cap are put in AAC magazine which has upper and lower seat and moves back and forth - separately or together. The unique design of AAC magazine can be allowed to extend more stations for application.



# MACHINE STANDARD & OPTIONAL ACCESSORIES



NC ROTARY TABLE

AUTOMATIC TOOL LENGTH MEASURING SYSTEM

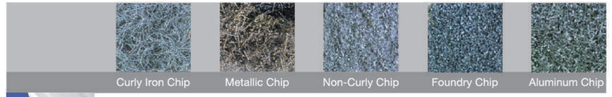
SPINDLE COOLING SYSTEM

LINK-TYPE CHIP CONVEYOR


AUTOMATIC TOUCH PROBE CENTERING SYSTEM

CONTROL CABINET COOLING SYSTEM(AIR CONDITIONER)

## How to select a suitable conveyor according to different types of chips

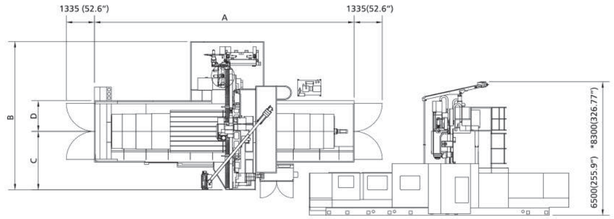



Steelbelt Chip Conveyor ○ ○

Scraper type Chip Conveyor (Suitable for dry Chips under 60mm) ○ ○ ○

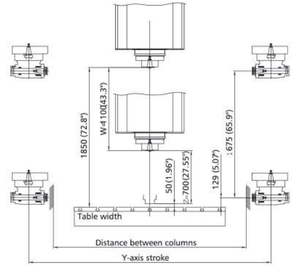
| STANDARD ACCESSORIES | OPTIONAL ACCESSORIES |
|---|---|
| Vertical and horizontal attachment head | Link-type chip conveyor |
| Coolant equipment | NC rotary table |
| Centralized automatic lubrication system | CAT50,DIN50,ISO50, HSK-A100 tool shank |
| Rigid tapping | Linear scale feedback system |
| Splash guard | Linear scale feedback system for W-axis |
| Adjusting tools and box(1 set) | Automatic tool length measuring system |
| Manual and electrical drawing(1 set) | Automatic tool touch probe centering system |
| Leveling and foundation fittings | Three to seven stations AAC magazine |
| Work light | Coolant through spindle system |
| Spindle cooling system(Chiller unit) | larger capacity coolant tank (1000L) |
| Alarm lamp | KMTCS-Kao Ming Thermal Compensation System |
| Air blast | Anchoring alignment system |
| Automatic power off | Mist coolant unit |
| Operation finish lamp | Fully enclosed splash guard |
| Screw-type chip conveyor | Coolant purifying system |
| Transformer(except 220v) | Coolant cooling system |
| Inner cooled ballscrew(Model 3m~5m) | Hydraulic cooling system |
| Control cabinet cooling system(Air conditioner) | Paper(Belt) filter system |
| Reinforced foot-stand at both table-end | CRT cooling system(Air conditioner) |
| Slideway cover | Oil skimmer system |
| Handrail with ladder | Sub-table |
| Magazine safety guard | Specified table T-slot |
| Electrical cabinet light | Specified machine color |
| Manual tool change and foot switch | 30-degree angle head |
| | Extension head |
| | Automatic universal head |
| | Manual universal head |

## FLOOR SPACE

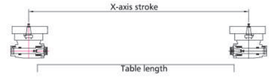



| | 325EP | 331EP | 337EP | 425EP | 431EP | 437EP | 525EP | 531EP | 537EP | 625EP | 631EP | 637EP | 825EP | 831EP | 837EP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 8400(330.7") | | | 10400(409.4") | | | 12400(488.1") | | | 14400(566.9") | | | 18400(724.4") | | |
| B | 7050 (277.5") | 7650 (301.1") | 8250 (324.8") | 7050 (277.5") | 7650 (301.1") | 8250 (324.8") | 7050 (277.5") | 7650 (301.1") | 8250 (324.8") | 7050 (277.5") | 7650 (301.1") | 8250 (324.8") | 7050 (277.5") | 7650 (301.1") | 8250 (324.8") |
| C | 2775 (109.2") | 3075 (121.0") | 3375 (132.8") | 2775 (109.2") | 3075 (121.0") | 3375 (132.8") | 2775 (109.2") | 3075 (121.0") | 3375 (132.8") | 2775 (109.2") | 3075 (121.0") | 3375 (132.8") | 2775 (109.2") | 3075 (121.0") | 3375 (132.8") |
| D | 1460 (57.4") | 1760 (69.3") | 2060 (81.1") | 1460 (57.4") | 1760 (69.3") | 2060 (81.1") | 1460 (57.4") | 1760 (69.3") | 2060 (81.1") | 1460 (57.4") | 1760 (69.3") | 2060 (81.1") | 1460 (57.4") | 1760 (69.3") | 2060 (81.1") |

## MACHINING RANGE




| Distance between columns | F | G | H |
|---|---|---|---|
| Table width | 2000 (78.74") | 2600 (102.4") | 3000 (118.1") |
| Y-axis stroke | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") |




Unit:mm(inch)

| Table length | 3000 (118.1") | 4000 (157.5") | 5000 (118.1") | 6000 (236.2") | 8000 (314.9") |
|---|---|---|---|---|---|
| X-axis stroke | 3230 (127.2") | 4230 (166.5") | 5230 (205.9") | 6230 (245.3") | 8230 (324.0") |

## SPECIFICATIONS

Unit:mm(inch)

| | ITEM | | KMC-325EP | KMC-331EP | KMC-337EP | KMC-425EP | KMC-431EP | KMC-437EP | KMC-525EP | KMC-531EP | KMC-537EP | KMC-625EP | KMC-631EP | KMC-637EP | KMC-825EP | KMC-831EP | KMC-837EP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Travels | Distance between columns | F G H | 2550 (100.4") | 3150 (124.0") | 3750 (147.6") | 2550 (100.4") | 3150 (124.0") | 3750 (147.6") | 2550 (100.4") | 3150 (124.0") | 3750 (147.6") | 2550 (100.4") | 3150 (124.0") | 3750 (147.6") | 2550 (100.4") | 3150 (124.0") | 3750 (147.6") |
| | X-axis (table longitudinal) | | 3230 (127.2") | | | 4230 (166.5") | | | 5230 (205.9") | | | 6230 (245.3") | | | 8230 (324.0") | | |
| | Y-axis (spindle lateral) | F G H | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") | 3200 (125.9") | 3800 (149.6") | 4400 (173.2") |
| | Z-axis | | 700 (27.55") *1100(43.3") | | | 700 (27.55") *1100(43.3") | | | 700 (27.55") *1100(43.3") | | | 700 (27.55") *1100(43.3") | | | 700 (27.55") *1100(43.3") | | |
| | W-axis | | 1100 (43.3") *1500(59.1") | | | 1100 (43.3") *1500(59.1") | | | 1100 (43.3") *1500(59.1") | | | 1100 (43.3") *1500(59.1") | | | 1100 (43.3") *1500(59.1") | | |
| | Distance from table surface to spindle nose | | 50~1850 (1.96"~72.8")*50~2650 (1.96"~104.3") | | | 50~1850 (1.96"~72.8")*50~2650 (1.96"~104.3") | | | 50~1850 (1.96"~72.8")*50~2650 (1.96"~104.3") | | | 50~1850 (1.96"~72.8")*50~2650 (1.96"~104.3") | | | 50~1850 (1.96"~72.8")*50~2650 (1.96"~104.3") | | |
| | Distance from table surface to horizontal spindle center | | 129~1804(5.07"~71.02")*129~2604(5.07"~102.5") | | | 129~1804(5.07"~71.02")*129~2604(5.07"~102.5") | | | 129~1804(5.07"~71.02")*129~2604(5.07"~102.5") | | | 129~1804(5.07"~71.02")*129~2604(5.07"~102.5") | | | 129~1804(5.07"~71.02")*129~2604(5.07"~102.5") | | |
| Table | Table working surface | F G H | 2000×3000(78.74"×118.1") | 2600×3000(102.4"×118.1") | 3000×3000(118.1"×118.1") | 2000×4000(78.74"×157.7") | 2600×4000(102.4"×157.7") | 3000×4000(118.1"×157.7") | 2000×5000(78.74"×196.9") | 2600×5000(102.4"×196.9") | 3000×5000(118.1"×196.9") | 2000×6000(78.74"×236.2") | 2600×6000(102.4"×236.2") | 3000×6000(118.1"×236.2") | 2000×8000(78.74"×314.9") | 2600×8000(102.4"×314.9") | 3000×8000(118.1"×314.9") |
| | Table configuration | F G H | 24 H8 mmX9X230mm | 28 H8 mmX13X200mm | 28 H8 mmX15X200mm | 24 H8 mmX9X230mm | 28 H8 mmX13X200mm | 28 H8 mmX15X200mm | 24 H8 mmX9X230mm | 28 H8 mmX13X200mm | 28 H8 mmX15X200mm | 24 H8 mmX9X230mm | 28 H8 mmX13X200mm | 28 H8 mmX15X200mm | 24 H8 mmX9X230mm | 28 H8 mmX13X200mm | 28 H8 mmX15X200mm |
| | Max. table load | | 11000kg(24200 lb)/*18000kg(39600 lb) | | | 13000kg(28600 lb)/*20000kg(44000 lb) | | | 14000kg(30800 lb)/*22000kg(48400 lb) | | | 15000kg(33000 lb)/*25000kg(55000 lb) | | | 15000kg(33000 lb)/*25000kg(55000 lb) | | |
| Spindle | Spindle speed | Vertical | 6000rpm/*8000rpm | | | 6000rpm/*8000rpm | | | 6000rpm/*8000rpm | | | 6000rpm/*8000rpm | | | 6000rpm/*8000rpm | | |
| | | Horizontal | 3500rpm | | | 3500rpm | | | 3500rpm | | | 3500rpm | | | 3500rpm | | |
| | Spindle taper | | ISO 50 | | | ISO 50 | | | ISO 50 | | | ISO 50 | | | ISO 50 | | |
| | Spindle motor (cont./30 min /S3 25%) | | AC 22/26/37 | | | AC 22/26/37 | | | AC 22/26/37 | | | AC 22/26/37 | | | AC 22/26/37 | | |
| | Max. spindle torque (cont./30 min /S3 25%) | | 553/653/1009 Nm | | | 553/653/1009 Nm | | | 553/653/1009 Nm | | | 553/653/1009 Nm | | | 553/653/1009 Nm | | |
| Feed rate | Rapid traverse (X, Y, Z, W) | | 15, 10, 10, 3(m/min) | 15, 10, 10, 3(m/min) | 15, 8, 10, 3(m/min) | 12,10,10,3(m/min) | 12, 10,10,3(m/min) | 12, 8,10,3(m/min) | 8, 10, 10, 3(m/min) | 8,10,10,3(m/min) | 8, 8,10,3(m/min) | 8, 10,10,3(m/min) | 8,10,10, 3(m/min) | 8, 8,10, 3(m/min) | 7, 10,10,3(m/min) | 7,10,10, 3(m/min) | 7, 8,10, 3(m/min) |
| | | | 590,393,393,118(ipm) | 590,393,393,118(ipm) | 590,315,393,118(ipm) | 472,393,393,118(ipm) | 472,393,393,118(ipm) | 472,315,393,118(ipm) | 315,393,393,118(ipm) | 315,393,393,118(ipm) | 315,315,393,118(ipm) | 315,393,393,118(ipm) | 315,393,393,118(ipm) | 315,315,393,118(ipm) | 276,393,393,118(ipm) | 276,393,393,118(ipm) | 276,315,393,118(ipm) |
| | Cutting feed rate | | 1~5000mm/min (0.1~196 ipm) | | | 1~5000mm/min (0.1~196 ipm) | | | 1~5000mm/min (0.1~196 ipm) | | | 1~5000mm/min (0.1~196 ipm) | | | 1~5000mm/min (0.1~196 ipm) | | |
| Automatic tool changer | Tool shank shape | | MAS403-BT50 | | | MAS403-BT50 | | | MAS403-BT50 | | | MAS403-BT50 | | | MAS403-BT50 | | |
| | Pull stud | | MAS-P50T-1 | | | MAS-P50T-1 | | | MAS-P50T-1 | | | MAS-P50T-1 | | | MAS-P50T-1 | | |
| | Tool magazine capacity | | 60 (*90) | | | 60 (*90) | | | 60 (*90) | | | 60 (*90) | | | 60 (*90) | | |
| | Max. tool diameter((without adjacent tools)) | | Ø125(4.92"), ((Ø250/9.84")) | | | Ø125(4.92"), ((Ø250/9.84")) | | | Ø125(4.92"), ((Ø250/9.84")) | | | Ø125(4.92"), ((Ø250/9.84")) | | | Ø125(4.92"), ((Ø250/9.84")) | | |
| | Max. tool length | | 400 (13.8") | | | 400 (15.7") | | | 400 (15.7") | | | 400 (15.7") | | | 400 (15.7") | | |
| | Max. tool weight | | 25kg (55 lb) | | | 25kg (55 lb) | | | 25kg (55 lb) | | | 25kg (55 lb) | | | 25kg (55 lb) | | |
| Power sources | Electrical power supply | | 80 KVA | | | 80 KVA | | | 80 KVA | | | 80 KVA | | | 80 KVA | | |
| | Compressed air supply | | 5~7 kg/cm$^2$ | | | 5~7 kg/cm$^2$ | | | 5~7 kg/cm$^2$ | | | 5~7 kg/cm$^2$ | | | 5~7 kg/cm$^2$ | | |
| Accuracy | Positioning accuracy | | ±0.01mm/1000(±0.0004"/39.37") | | | ±0.01mm/1000(±0.0004"/39.37") | | | ±0.01mm/1000(±0.0004"/39.37") | | | ±0.01mm/1000(±0.0004"/39.37") | | | ±0.01mm/1000(±0.0004"/39.37") | | |
| | Repeatability | | X,Y,Z:±0.003(±0.0001") W:±0.005(±0.0002") | | | X,Y,Z:±0.003(±0.0001") W:±0.005(±0.0002") | | | X,Y,Z:±0.003(±0.0001") W:±0.005(±0.0002") | | | X,Y,Z:±0.003(±0.0001") W:±0.005(±0.0002") | | | X,Y,Z:±0.003(±0.0001") W:±0.005(±0.0002") | | |
| Machine size | Machine height | | 6500 (255.9") *8300(326.77") | | | 6500 (255.9") *8300(326.77") | | | 6500 (255.9") *8300(326.77") | | | 6500 (255.9") *8300(326.77") | | | 6500 (255.9") *8300(326.77") | | |
| | Floor space | L x W | 8400X7050(330.7"×227.5") | 8400×7650(330.7"×301.1") | 8400×8250(330.7"×324.8") | 10400X7050(409.4"×277.5") | 10400×7650(409.4"×301.1") | 10400×8250(409.4"×324.8") | 12400X7050(488.1"×277.5") | 12400×7650(488.1"×301.1") | 12400×8250(488.1"×324.8") | 14400X7050(566.9"×277.5") | 14400×7650(566.9"×301.1") | 14400×8250(566.9"×324.8") | 18400X7050(724.4"×277.5") | 18400×7650(724.4"×301.1") | 18400×8250(724.4"×324.8") |
| | Machine net weight | | 52000kg(114400 lb) | 54000kg(118800 lb) | 58000kg (127600 lb) | 56800kg(124960 lb) | 58300kg(128260 lb) | 64000kg (140800 lb) | 60000kg (132000 lb) | 63000kg(138600 lb) | 70000kg (154000lb) | 66000kg (145200 lb) | 67800kg(149160 lb) | 76000kg (167200 lb) | 75600kg (166320 lb) | 77200kg (169840 lb) | 85400kg (187880 lb) |
| CNC controll | FANUC series , (*HEIDENHAIN) | | | | | | | | | | | | | | | | |

*Option Design specifications are subject to change without notice. (( ))Max. tool diameter(without adjacent tools)

Distance between two columns F=2550mm(100.4") G=3150mm(124.0") H=3750mm(147.6")