DAHLIH

Machines that Create Value

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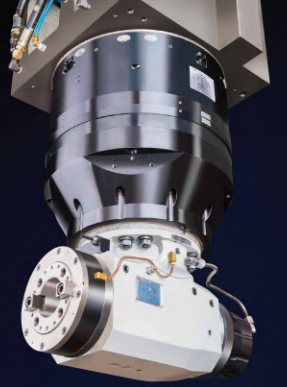
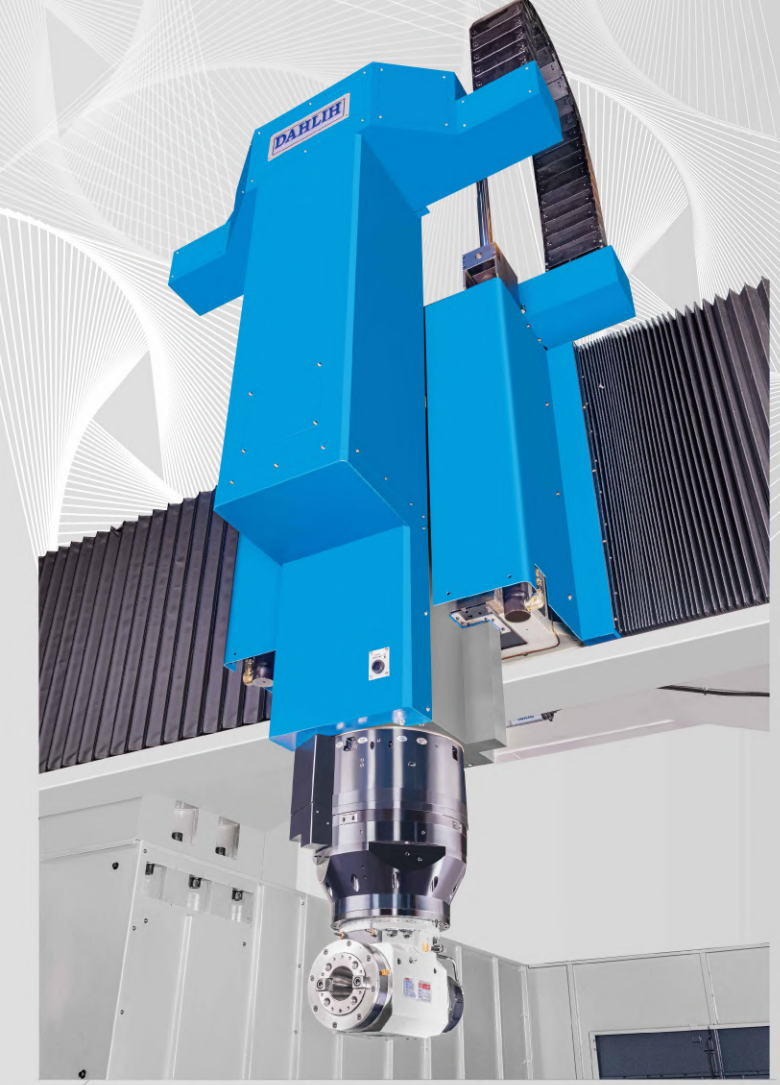
The Latest and Best Quality Machinery.

DAHLIH®



DOUBLE COLUMN
5-FACE MACHINING CENTER

DCM5F-3223
DCM5F-4226



DCM5F

DOUBLE COLUMN
5-FACE MACHINING CENTER

DCM5F-3223
DCM5F-4226

Applicable Industries:

- Aerospace parts
- Precision molds
- Automotive parts
- Energy Industry
- Large parts

Robust Construction Throughout To Exhibit Extraordinary Rigidity

Creating Unique Performance with Extensive Experience

Dah Lih DCM5F-3223 and DCM5F-4226 Double Column 5-Face Machining Centers can be fitted with various milling heads. Both models also integrate the functions of automatic head change and tool change, The five faces of the workpiece can be processed in one clamping.

DCM5F-3223
Machining capacity on X-axis: 3200mm
Machining capacity on Y-axis: 2800mm (Vertical head)
2382mm (Horizontal head)
Machining capacity on Z-axis: 1100mm

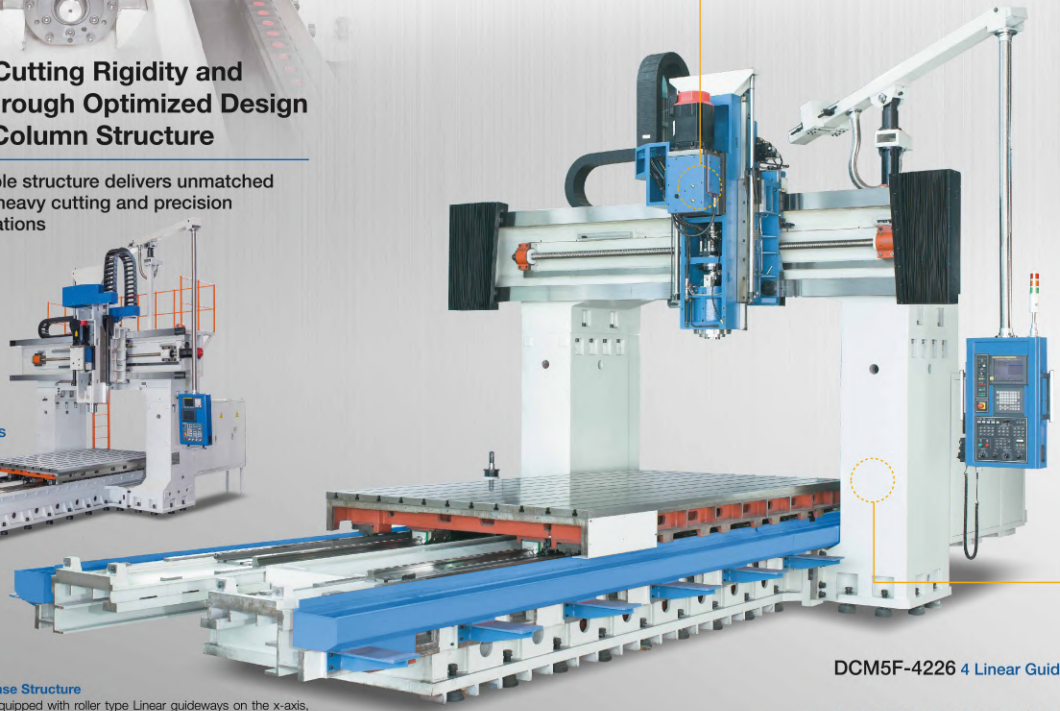
DCM5F-4226
Machining capacity on X-axis: 4200mm
Machining capacity on Y-axis: 3020mm (Vertical head)
2602mm (Horizontal head)
Machining capacity on Z-axis: 1100mm

- Automatic head change and automatic tool change
- Vertical and horizontal tool change motions are smooth and quick
- X-axis is equipped with roller type linear guideways
- Y and Z-axis are both box ways

Maximum Cutting Rigidity and Stability Through Optimized Design of Double Column Structure

Robust and stable structure delivers unmatched performance in heavy cutting and precision machining operations

DCM5F-3223
2 Linear Guideways



DCM5F-4226 4 Linear Guideways

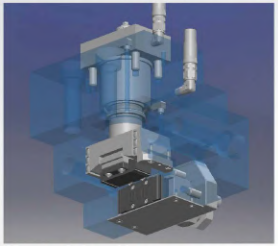
Extra Large, Stable Base Structure
The extra-large base is equipped with roller type Linear guideways on the x-axis, featuring low wear and high loading capacity. The span between the guideways is large and the entire travel on the X-axis is fully supported.

Highly Rigid Spindle Head
The spindle head is a box type structure providing optimal machining accuracy.

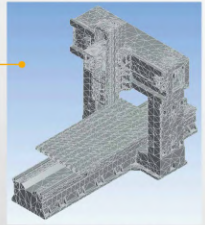
High Precision Movement of Spindle Head
The vertical movement of the spindle head is counter-balanced by double nitrogen gas cylinders, which ensures smoothness and high accuracy of moving motions.

High Rigidity, High Loading Capacity Roller Linear Guide Ways
- Suitable for heavy duty performance.
- High damping coefficient and excellent performance in absorbing cutting vibration.
- High servo response.
- Complete sealing of rollers, capable of working smoothly under difficult conditions.

Box Ways on Y, Z-Axis
- Y,Z-axis are designed with box ways for increasing the stability of cutting.
- The volume and span on the cross beam and the saddle are increased for higher rigidity support of the spindle head weight and higher cutting load.



Complex Guideways Support with Hydraulic Adjustment
The Y-axis box ways employ a combination of wear-resistant. In addition, the support load is adjusted by hydraulics to ensure accuracy as desired.



Finite Element Analysis
In order to ensure outstanding structural rigidity and stability of the machine, the major parts are analyzed by advanced "Finite Element Analysis" to achieve optimal structure design.

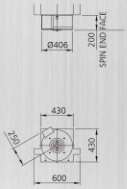
Vertical Head
(Standard accessory)

90° Horizontal Head
(Standard accessory)

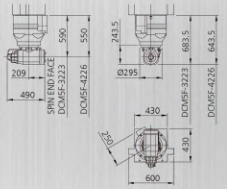
Extension Head
(Standard accessory)

MILLING HEAD	Vertical Head	90° Horizontal Head		Extension Head
Tool Specification	BBT50	BBT50		BBT50
Max. speed	6000rpm	3500rpm		3500rpm
Lube system	Grease	Grease		Grease
Rotation / Indexing		C-axis	360° / 5°	

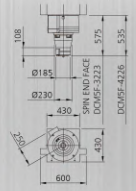
Dimensions of Vertical Head



Dimensions of 90° Horizontal Head



Dimensions of Extension Head



Unit:mm

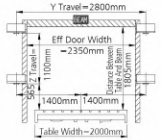
Automatic Head Change Compartment
These machines provide a variety of milling heads for customers to select from.

Automatic Head Change Compartment

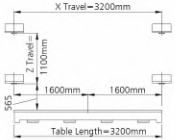
The head compartment can be fitted with 90° horizontal head, multi-direction swiveling head and extension head. A splash guard is equipped to milling heads from to prevent contamination.

DCM5F-3223

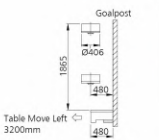
Machining Capacity of Vertical Head



Y, Z Machining Capacity

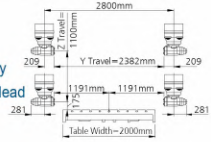


Y, Z Machining Capacity

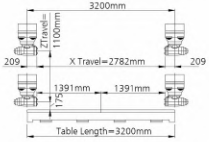


Distance Between Spin and Column In X Direction

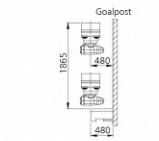
Machining Capacity of 90° Horizontal Head



Y, Z Machining Capacity

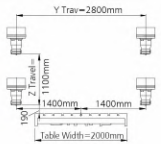


Y, Z Machining Capacity

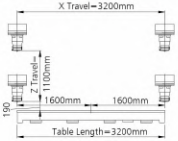


Distance Between Spin and Column In X Direction

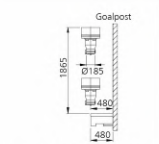
Machining Capacity of Extension Head



Y, Z Machining Capacity



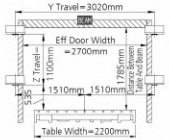
Y, Z Machining Capacity



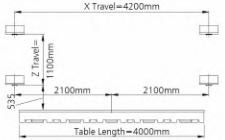
Distance Between Spin and Column In X Direction

DCM5F-4226

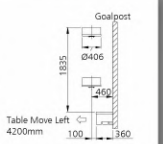
Machining Capacity of Vertical Head



Y, Z Machining Capacity

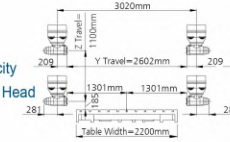


Y, Z Machining Capacity

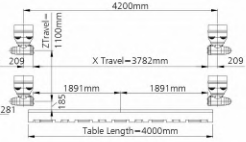


Distance Between Spin and Column In X Direction

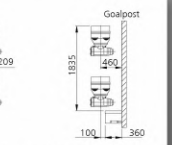
Machining Capacity of 90° Horizontal Head



Y, Z Machining Capacity

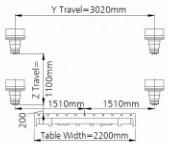


Y, Z Machining Capacity

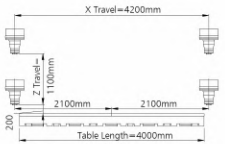


Distance Between Spin and Column In X Direction

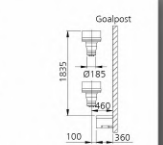
Machining Capacity of Extension Head



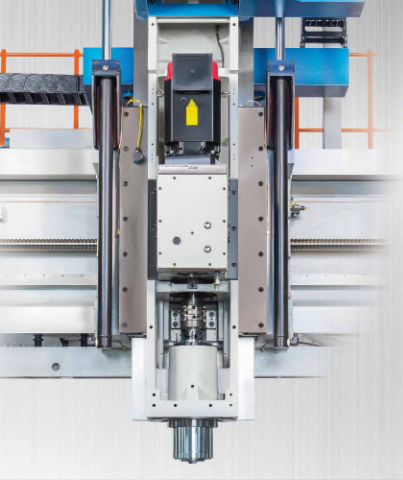
Y, Z Machining Capacity



Y, Z Machining Capacity



Distance Between Spin and Column In X Direction

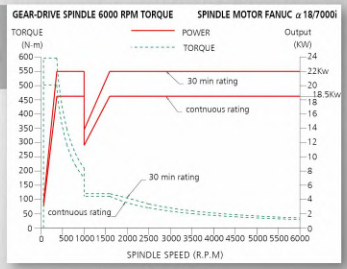


High Rigidity, Stable Structure, Consistent Accuracy!

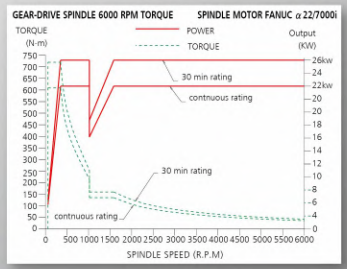
- The spindle transmission system employs employs all-gear a two step speed Change, providing high torque output for superior cutting performance.
- The head stock is a box structure featuring higher rigidity.
- With the use of coolant jets around the spindle, heat on the cutting tool and the workpiece, can fast removed for upgrading machining accuracy...
- The spindle provides two ranges of speeds. The wide range of spindle speeds makes the machine suitable for various maco machining requirements.
- The low speed range provides high torque output for heavy caccing.
- The high speed range is ideal for high speed cutting operations.

6000 rpm *Gear-Drive Spindle*

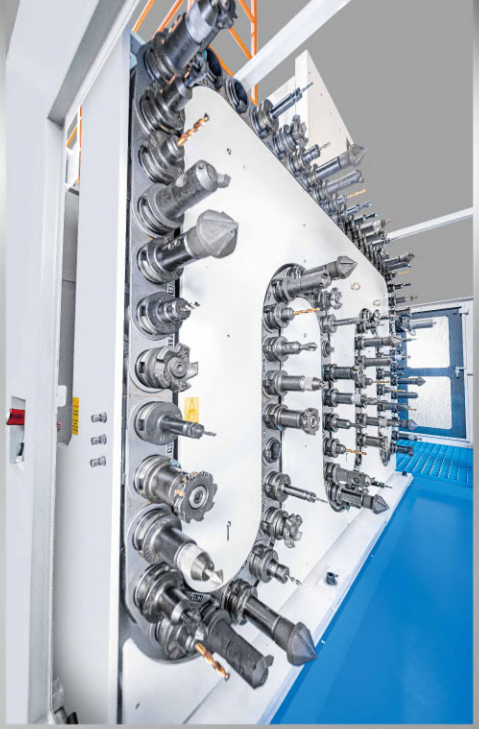
Spindle Power Output and Torque Diagram



Standard

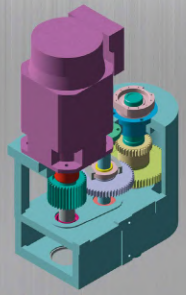


Optional



90 Tools Chain Type Tool Magazine

- The magazine features automatic vertical / horizontal tool change, making the machine suitable for various machining requirements.
- 90 tools chain type magazine is standard that accommodates the #50 tool shank.
- Tool selection is bi-directional.
- The tool magazine is separately mounted from the machining area, which prevents coolants from contaminating the magazine and cutting tools.



Gearbox for Spindle

- The gearbox provides high/low speed ranges. The wide range of speed allows for fine finishing.
- All gears are precision ground for silent running.
- The gearbox employs oil lubrication system.

Tool Change System

Vertical tool change

Horizontal tool change

Intelligent Manufacturing

iM intelligent Machine

iBox intelligent Box

iMonitor intelligent Monitor

iBox Edge Intelligence

Intelligent Manufacturing and Infinitely Smart

- Utilization
- Network DNC
- E-book
- Countdown timer
- AI cutting feed optimization
- QR-code milling
- Signals recorder
- Parameter recorder
- CCD monitor
- Dcam programming

Signals recorder (IPC intelligence)

- Multiple signals real-time monitoring
- Record and recall
- Warning and tips
- Multiple signals free setting
- Machining recorder

CCD monitor (IPC intelligence)

- On-screen display
- Video and event record
- Protection level: IP67, IK10

■ iBox proximal end intelligence (IPC intelligence) should be used together with FANUC Panel-iH Pro controller.

iM Edge Intelligence

Innovation and Efficacy

- Work origin
- Big tool management (BTM)
- Spindle load monitor (SLM)
- Adaptive feedrate control (AFC)
- Spindle thermo compensation (STC)
- Rotary axis quick switch

■ **Work origin**

- Center measure
- Edge side measure
- Arc center measure
- Intersection measure
- Tool length and gauge setting

■ **Big tool management (BTM)**

A fixed position magazine function of the large diameter tool, it has the function of protecting the tool and avoiding collision and interference of the tool.

■ **SPINDLE LOAD SETTING**

During machining, this function allows for real-time monitoring of spindle load (SLM), and instructs the machine to stop according to the allowable maximum value of spindle load. It can also automatically adjust the cutting feed rate (AFC).

■ **DESCRIPTION OF PLC ALARM**

By using this function, machine alarms can be quickly eliminated.

＊Our company keeps innovating and developing new functions, please contact DAH LIH Machinery for details.

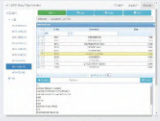
iMonitor Remote Intelligence

Connect machines,
Connect factories,Connect the world

This software automatically records the production information and operating status of the machines. The current production status of each machine in the factory can be viewed in real time on a remote computer or mobile phone through a web browser. In addition to production information, there are some assistant functions such as program transfer, parameter backup, and abnormal notification.

- Real-time monitoring
- Real-time utilization
- Production history
- Real-time machine information imization
- Program transferring, parameter backup
- Operation history, abnormal record and notification

Real-time utilization

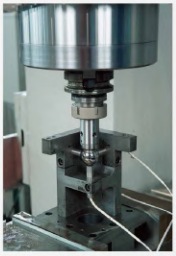


Program transferring, parameter backup

Operation history, abnormal record and notification

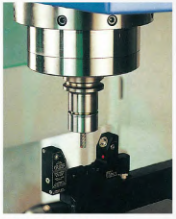
■ iMonitor remote intelligence is remote monitoring software developed by Dah Lih. User should prepare a computer and Internet connection.

Sophisticated Inspection Instruments Allow High Precision Inspections.



Spindle Dynamic Running Accuracy Test
Sophisticated spindle running testing equipment is applied to inspect the spindle running accuracy.

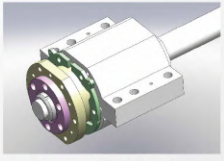
Twin Ball-Bar inspection
Twin Ball-Bar inspection is conducted to ensure the optimum 2D cutting accuracy.



Automatic Tool Length Measuring Device (optional)

Contact Type
The tool length measuring device is used for detecting the tool wear condition while assuring machining accuracy at all times.

Non-Contact Type
The laser tool length measuring device is used for detecting the tool wear condition while assuring machining accuracy at all times.



X-axis Screw Support with Pad
The X-axis ball screw is fitted with a specially designed pad for pretension that effectively reduces screw defection to a minimum while increasing rigidity. As a result, higher feed accuracy and smoother motion can be achieved.

Nitrogen Gas Counter-balance
- The nitrogen gas counter-balancing system employs an accumulator that does not require additional power.
- With automatic oil filling function.
- No noise, extremely stable, no resonance, and greatly upgrades machining efficiency.
- Easy to adjust servo parameters.

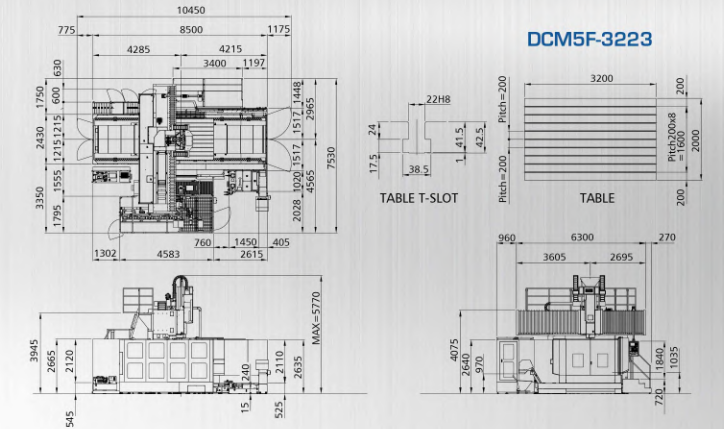
X-axis Transmitted Through Gear Belt Reducer
The x-axis feed is driven by a servo motor and transmitted through a gear belt reducer for increasing transmitting torque. This feature allows heavy workpieces to move effortlessly and smoothly.

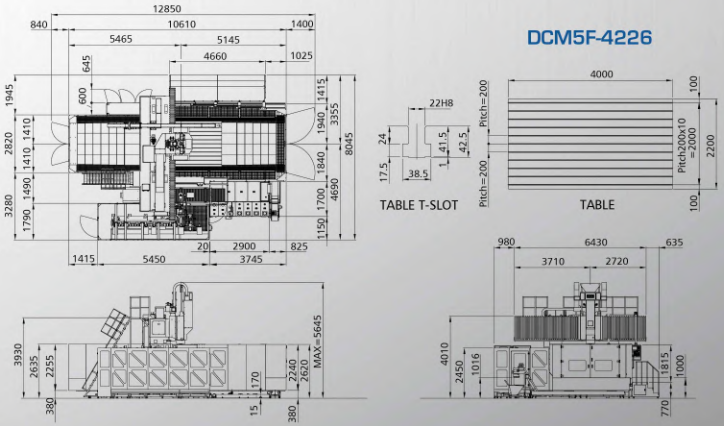
Outstanding Machining Capacity

＊The spindle motor power required for above-mentioned machining examples is 18.5/22kW.

Machine Dimensions

Unit: mm





Specifications, Accessories and Dimensions

SPECIFICATIONS

MODEL	DCM5F-3223	DCM5F-4226
TABLE		
Table sizes	3200 x 2000 mm	4000 x 2200 mm
T- slots (W. x No. x Pitch)	22 x 9 x 200 mm	22 x 11 x 200 mm
Max. table load	10000 kg	15000 kg
TRAVEL		
Machining capacity on X-axis	Vert. & Ext.: 3200 / Hori.: 2782 mm	Vert. & Ext.: 4200 / Hori.: 3782 mm
Machining capacity on Y-axis	Vert. & Ext.: 2800 / Hori.: 2382 mm	Vert. & Ext.: 3020 / Hori.: 2602 mm
Machining capacity on Z-axis	1100 mm	1100 mm
Distance from spindle nose to table surface	Vert.: 565~1665 / Hori.: 175~1275	Vert.: 535~1635 / Hori.: 185~1285
Effective distance between columns	2350 mm	2700 mm
Distance from table surface to the ground	1035 mm	1000 mm
Guideway type	X: Roller type linear ways / Y,Z: Box ways	X: Roller type linear ways / Y,Z: Box ways
X, Y, Z-axis transmission	X,Y: Belt / Z: Direct drive	X,Y: Belt / Z: Direct drive
FEED		
Rapid feedrate X-axis	20 m/min	12 m/min
Y-axis	15 m/min	12 m/min
Z-axis	15 m/min	12 m/min
Cutting feed rate	10000 mm/min	10000 mm/min
Minimum input increment	0.001 mm	0.001 mm
SPINDLE		
Spindle transmission	Transmitted By Gearbox With High / Low Range	
Spindle motor (30 min. / cont.)	22kW (30HP) / 18.5kW (25HP)	22kW (30HP) / 18.5kW (25HP)
Type of tool shank	N.T.50	N.T.50
Spindle speed	Vert.: 6000 / Ext. & Hori.: 3500 rpm	Vert.: 6000 / Ext. & Hori.: 3500 rpm
Additional head spindle (std)	Ext. Head x1/90° Hori. Head x1	Ext. Head x1/90° Hori. Head x1
Max spindle torque	597N-m	597N-m
Cooling / Lubrication	Oil cooling / Grease Lubrication	Oil cooling / Grease Lubrication
A.T.C		
Tool magazine capacity	90T	90T
Tool handle type	BT50	BT50
Pull stud type	45° pull stud	45° pull stud
Max. tool weight	18 kgw	18 kgw
Max. tool length	400 mm	400 mm
Max. tool Dia. (without adjacent tool)	Ø125 (Ø250) mm	Ø125 (Ø250) mm
Tool changing and tool selection	Vertical / Horizontal Tool Change. Bi-directional Tool Selection	
MOTOR		
X axis servo motors	5.5kW (7.5HP)	11kW (15HP)
Y axis servo motors	5.5kW (7.5HP)	5.5kW (7.5HP)
Z axis servo motors	5.5kW (7.5HP)	5.5kW (7.5HP)
MACHINE ACCURACY		
Positioning accuracy	0.020 mm	0.020 mm
Repeatability	0.015 mm	0.015 mm
OTHERS		
Power consumption	55 KVA	60 KVA
Pneumatic pressure (air supply)	6 kg/cm²	6 kg/cm²
Cutting pump	11/4 HP	11/4 HP
Coolant tank capacity	700L flat type	1000L flat type
Net weight of machine	60000 kgw	65000 kgw
Space occupied (L x W)	10450 x 7530 mm	12850 x 8045 mm

■ Specifications are subject to change without prior notice.

» STANDARD

1. Spindle cooling device
2. Coolant around spindle
3. Heat exchanger
4. Removable manual pulse generator
5. Flat type chip conveyor chip wagon
6. Screw chip auger
7. Call light
8. Work light
9. Splash guard
10. Tool box with tool kit
11. Standing platform at operation door
12. Air / Coolant gun

» OPTIONS

1. Coolant system
(a) Oil hole device
(b) Coolant through spindle
2. Paper filter
3. Oil mist device
4. Oil Skimmer
5. Automatic centering device
6. X, Y, Z, linear scale
7. Tool length measuring device
8. ATC storage: 120 tools
9. Air conditioner
10. Standing platform for front door
11. Ladder for cross beam
12. Fully automatic series change head series