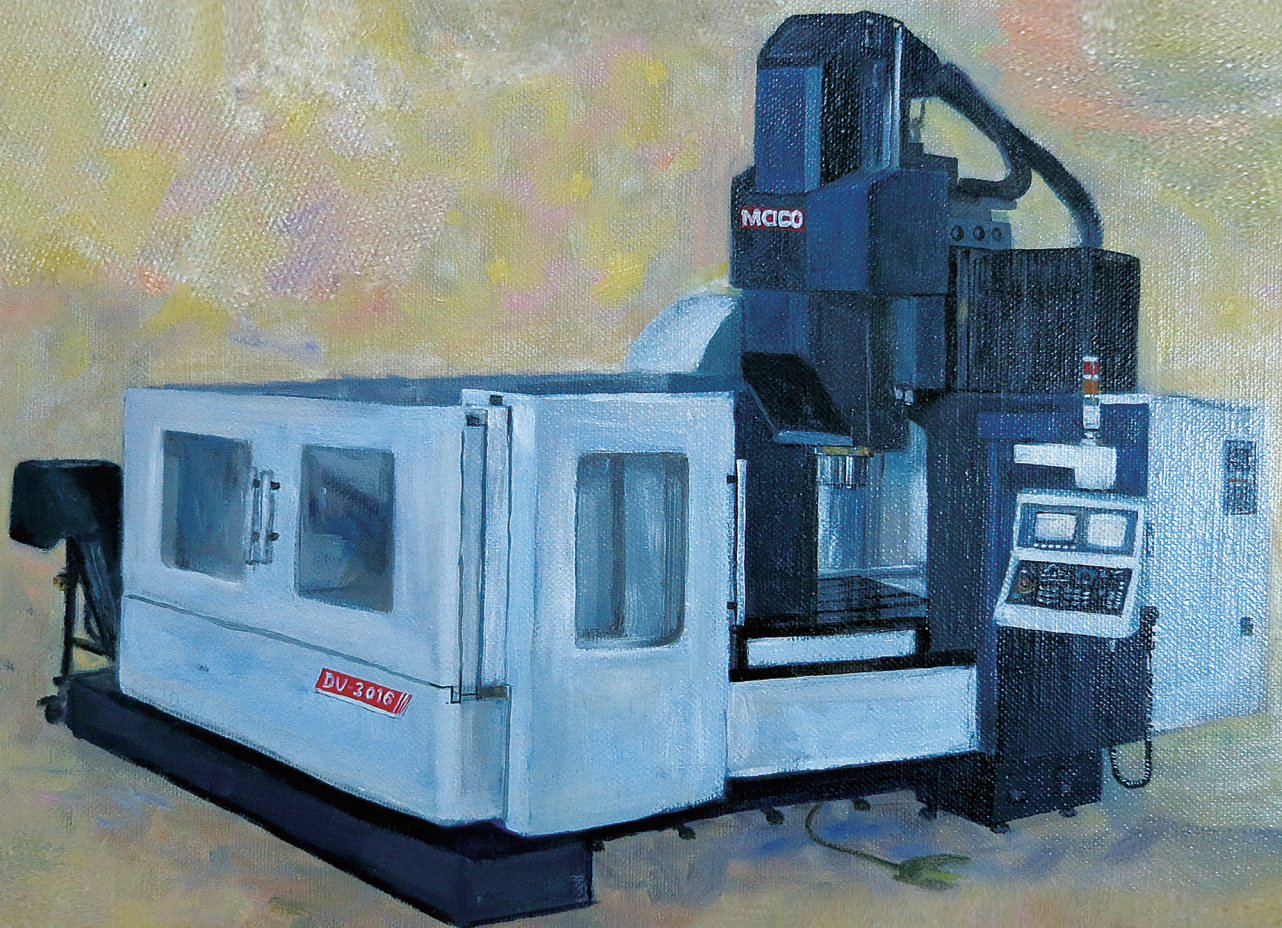


MACO

■ www.macocnc.com



MASTER AUTOMATIC CO.,LTD.

Standard Accessories

- Controller: Fanuc Oi-MF
- Gear Type Spindle 6000rpm(20/25HP)
- Dual Oil Cylinder Counterbalance
- Arm Type ATC(24 Tools)
- Hydraulic System
- Air Pressure System(w/o Air Pressure Source and Pipes)
- Spindle Oil Coolant System
- Auto-Lubrication System
- Recycling Lubricating Oil Collector
- Spindle Air Blast Equipment
- Full Enclosure (w/o Top Roof)
- Coolant System(with Coolant Tank & Pump)
- Coolant Gun
- Dual Screw Type Chip Conveyor
- Chain Type Chip Conveyor & Cart
- Electrical Cabinet Heat Exchanger
- Vertical Arm Type Operation Panel
- Moving Hand Wheel
- Foot Pad For Spindle Unclamping
- Working Light
- Program End Alarm Light
- RS232 Interface
- Rigid Tapping
- M30 Automatic Power Off
- Leveling Bolts and Blocks
- Tool Box and Tool Kit
- Technical Data
(Including Operation Manual 、
Electrical Diagrams 、 Ladder
Diagrams)



Optional Accessories

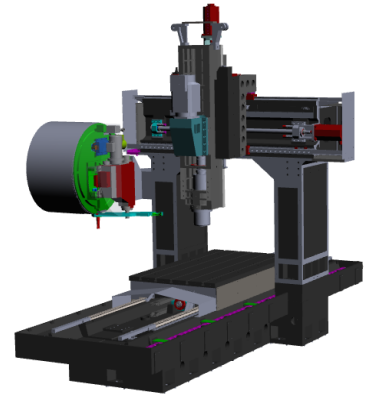
- Controller: Fanuc 31iMB
- Direct-Drive Spindle 10000rpm (20/25HP)
- Built-In Spindle 15000rpm (45.6/59HP)
(Select And Use BBT40 Or HSK-A63, ATC Modify Required)
- Tool Tapper: CAT50/DIN50/ISO50/HSK
- Coolant Through Spindle
- Increase Height of Column: 200mm
- Full Enclosure (Included Roof & Multi-Layer Door)
- Number of Tools(32、40、60 Tools)
- Add Foot Pad to Front/Rear Side of Table
- Secondary Table (By Matching Each Model Spec.)
- XYZ Three-Axes Linear Scale
- Electrical Cabinet Air Conditioner
- Pendant Type Control Panel
- Automatic Tool Length Measurement Blum、Renishaw
- Automatic Work Piece Measurement Blum、Renishaw(Disposed On Table Surface)
- CNC Rotary Table(4th Axis)
- Coolant Through Tool Holder Device
- Spindle Oil Mist Cutting Device
- Oil Mist Collector
- Disk Type Oil Skimmer
- Scraper Type Chip Conveyor & Cart
- Transformer
- DATA SERVER Memory Capacity 1GB
- AICC2 (Look-Ahead 200)
- AICC2 (Look-Ahead 600)
(Fanuc 31iMB only)
- Auto. Change 90° Angle Milling Head
- Semi-Auto. 90° Angle Milling Head
- Manual 90° Angle Milling Head
- Auto. Change Orthogonal Milling Head
- Auto. Change Extend Milling Head 500mm
- 5-Axis Head

Optional Accessories(Head)

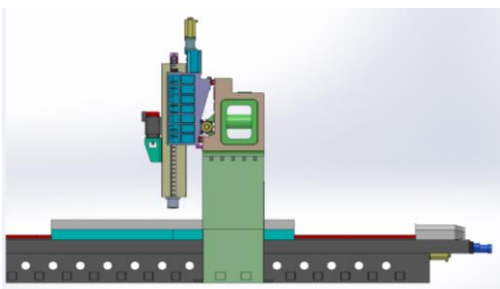
<p>Auto. Change 90° Angle Milling Head</p> 	<p>Semi-Auto. 90° Angle Milling Head</p> 	<p>Manual 90° Angle Milling Head</p> 
<p>Auto. Change Orthogonal Milling Head</p> 	<p>Auto. Change Extend Milling Head 500mm</p> 	<p>5-Axis Head</p> 

Small and Medium Size Double Column Machining Center Features : (Column Distance between 1.3M~1.6M)

- DV series are designed to achieve the high efficiency cutting of double column machining centers, it is provided with MACO heavy rigidity structural design to ensure transmission precision feature, moreover, the new generation feeding mechanism design can enhance XY axis transmission precision substantially. It is the best choice for customer high efficiency cutting need by high speed and precision features.
- The box-type structural design with high density ribs strengthening design to perform excellent machine body rigidity.
- XY axis are equipped with extra heavy loading roller type linear guideway with low friction coefficient and high rigidity, and Z axis is adopted box way, therefore an optimal dynamic accuracy can be ensured.
- XYZ three axes are adopted direct transmission mechanism to increase the torque of servo motor and ensured the servo motor-driven accuracy synchronized.
- Y-axis slideway is designed with maximum span. Upper slideway is placed above on the beam to ensure the maximum slideway supported rigidity.
- Z-axis is adopted dual oil cylinder counterbalance which there is no traditional mechanical hydraulic commutation delays phenomenon. Z-axis acceleration up to 0.5G to prevent Z-axis drop down because of external power off. It provides the most stable performance of the mold machining.
- Heavy rigidity and light weight table structural design ensure to maintain a high acceleration/deceleration cutting performance while heavy loading on table.
- Table is full travel supported, no hanging weight problem.
- Various spindle head types are available for all kinds of cutting applications.
- To achieve high productivity, the MACO Double column machining centers can reduce vibration in minimum and no distortion during for a long time. Therefore, it both has wider cutting depth and faster cutting feedrate.
- Suitable for mold and pocket machining, reducing the cutting problem due to use of long arbors, moreover, various angles of milling heads can be direct purchased as optional.
- Spindle center and Z-axis slideway design for minimum distance to increase substantially rigidity for cutting.



Larger Size Double Column Machining Centers Features : (Column Distance between 2M~3.2M)



- XYZ three axes are equipped with extra heavy loading roller type linear guideway with low friction coefficient and high rigidity, therefore an optimal dynamic accuracy can be ensured.
- X-axis uses the toothed belts reduction transmission-mechanism with decoder to increase the transmission-torque of servo motor and ensured the servo motor-driven accuracy synchronized.
- Spindle is consistent with the center of linear guideway to get the best structural rigidity and precision.

Series	DV13 Series			DV16 Series		
Model	DV-2013	DV-3013	DV-4013	DV-2016	DV-3016	DV-4016
Controller	FANUC Oi-MF					
Travel						
X-axis travel	2,100mm	3,100mm	4,100mm	2,100mm	3,100mm	4,100mm
Y-axis travel	1,300mm			1,600mm		
Z-axis travel	800mm			800mm		
Distance of column	1,300mm			1,600mm		
Spindle nose to table	150~950mm			150~950mm		
Ground to table	950mm			950mm		
Spindle						
Spindle type	BT-50			BT-50		
Spindle transmission	Gear type (OPT:Belt-drive/Direct-drive)			Gear type (OPT:Belt-drive/Direct-drive)		
Spindle speed	Gear type:6,000 rpm (OPT:Belt-drive:6,000 rpm/Direct-drive:10,000 rpm)			Gear type:6,000 rpm (OPT:Belt-drive:6,000 rpm/Direct-drive:10,000 rpm)		
Spindle motor	18.5 Kw			18.5 Kw		
Feedrate						
X/Y/Z rapid traverse (M/min)	20/20/15	15/20/15	15/20/15	20/20/15	15/20/15	15/20/15
X/Y/Z minimum unit	0.001			0.001		
Cutting feedrate	7M/min			7M/min		
Table						
Table size (mm)	2,000x1,100	3,000x1,100	4,000x1,100	2,000x1,400	3,000x1,400	4,000x1,400
T-slot(WxNo.xPitch)	22x5x200mm			22x7x200mm		
Table loading capacity	4,000kgs	5,000kgs	6,000kgs	4,000kgs	5,000kgs	6,000kgs
ATC						
Number of tools	24pcs (OPT:32pcs/40pcs)			24pcs (OPT:32pcs/40pcs)		
Tool shank	BT-50			BT-50		
ATC changing time(T-T)	3.8sec. (Arm type)			3.8sec. (Arm type)		
Max. tool diameter/ without adjacent tool	ø116mm/ø200mm			ø116mm/ø200mm		
Max. tool length	350mm			350mm		
Max. tool weight	18kgs			18kgs		
Miscellaneous						
Max. machine weight	17,000kgs	19,000kgs	21,000kgs	18,500kgs	20,500kgs	22,500kgs
Coolant tank	395L			395L		
Hydraulic tank	80L			80L		
Lubricating tank	6L			6L		
Power requirement	40KVA			40KVA		
Air pressure requirement	7bar			7bar		
Hydraulic pressure requirement	70bar			70bar		

● Design and specification are subject to change without prior notice.

Series	DV20 Series			DV24 Series		
Model	DV-3220	DV-4220	DV-5220	DV-3224	DV-4224	DV-5224
Controller	FANUC Oi-MF					
Travel						
X-axis travel	3,200mm	4,200mm	5,200mm	3,200mm	4,200mm	5,200mm
Y-axis travel	2,000mm			2,400mm		
Z-axis travel	1,000mm			1,000mm		
Distance of column	2,050mm			2,450mm		
Spindle nose to table	200~1,200mm			200~1,200mm		
Ground to table	950mm			1,090mm		
Spindle						
Spindle type	BT-50			BT-50		
Spindle transmission	Gear type (OPT:Direct-drive)			Gear type (OPT:Direct-drive)		
Spindle speed	Gear type:6,000 rpm (OPT:Direct-drive:10,000 rpm)			Gear type:6,000 rpm (OPT:Direct-drive:10,000 rpm)		
Spindle motor	22 Kw			22 Kw		
Feedrate						
X/Y/Z rapid traverse (M/min)	12/15/15	12/15/15	12/15/15	10/12/12	10/12/12	10/12/12
X/Y/Z minimum unit	0.001			0.001		
Cutting feedrate	7M/min			5M/min		
Table						
Table size (mm)	3,000x1,800	4,000x1,800	5,000x1,800	3,200x2,000	4,200x2,000	5,200x2,000
T-slot(WxNo.xPitch)	22x9x190mm			22x11x180mm		
Table loading capacity	6,000kgs	7,000kgs	8,000kgs	12,000kgs	15,000kgs	18,000kgs
ATC						
Number of tools	24pcs (OPT:40pcs/60pcs)			24pcs (OPT:40pcs/60pcs)		
Tool shank	BT-50			BT-50		
ATC changing time(T-T)	4.5sec. (Arm type)			4.5sec. (Arm type)		
Max. tool diameter/ without adjacent tool	ø116mm/ø200mm			ø116mm/ø200mm		
Max. tool length	350mm			350mm		
Max. tool weight	18kgs			18kgs		
Miscellaneous						
Max. machine weight	31,000kgs	33,000kgs	35,000kgs	38,000kgs	41,000kgs	45,000kgs
Coolant tank	395L			395L		
Hydraulic tank	80L			80L		
Lubricating tank	6L			6L		
Power requirement	40KVA			50KVA		
Air pressure requirement	7bar			7bar		
Hydraulic pressure requirement	70bar			70bar		

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Series	DV28 Series			DV32 Series		
Model	DV-4228	DV-5228	DV-6228	DV-4232	DV-5232	DV-6232
Controller	FANUC Oi-MF					
Travel						
X-axis travel	4,200mm	5,200mm	6,200mm	4,200mm	5,200mm	6,200mm
Y-axis travel	2,800mm			3,200mm		
Z-axis travel	1,000 (OPT:1,200) mm			1,000 (OPT:1,200) mm		
Distance of column	2,850mm			3,250mm		
Spindle nose to table	200~1,200mm			200~1,200mm		
Ground to table	1,090mm			1,090mm		
Spindle						
Spindle type	BT-50			BT-50		
Spindle transmission	Gear type (OPT:Direct-drive)			Gear type (OPT:Direct-drive)		
Spindle speed	Gear type:6,000 rpm (OPT:Direct-drive:10,000 rpm)			Gear type:6,000 rpm (OPT:Direct-drive:10,000 rpm)		
Spindle motor	22 Kw			22 Kw		
Feedrate						
X/Y/Z rapid traverse (M/min)	10/12/12	10/12/12	10/12/12	10/12/12	10/12/12	10/12/12
X/Y/Z minimum unit	0.001			0.001		
Cutting feedrate	5M/min			5M/min		
Table						
Table size (mm)	4,200x2,200	5,200x2,200	6,200x2,200	4,200x2,400	5,200x2,400	6,200x2,400
T-slot(WxNo.xPitch)	22x12x180mm			22x12x180mm		
Table loading capacity	16,000kgs	19,000kgs	22,000kgs	17,000kgs	20,000kgs	23,000kgs
ATC						
Number of tools	24pcs (OPT:40pcs/60pcs)			24pcs (OPT:40pcs/60pcs)		
Tool shank	BT-50			BT-50		
ATC changing time(T-T)	4.5sec. (Arm type)			4.5sec. (Arm type)		
Max. tool diameter/ without adjacent tool	ø116mm/ø200mm			ø116mm/ø200mm		
Max. tool length	350mm			350mm		
Max. tool weight	18kgs			18kgs		
Miscellaneous						
Max. machine weight	42,000kgs	47,000kgs	49,000kgs	43,000kgs	48,000kgs	51,000kgs
Coolant tank	395L			395L		
Hydraulic tank	80L			80L		
Lubricating tank	6L			6L		
Power requirement	50KVA			50KVA		
Air pressure requirement	7bar			7bar		
Hydraulic pressure requirement	70bar			70bar		

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Practice makes Perfect.

Taiwan Headquarters :
MASTER AUTOMATIC CO.,LTD.
 No.285, Dongzhou Rd., Shengang Dist.,
 Taichung City 429, Taiwan
 TEL: +886-4-2525 0480
 FAX: +886-4-2525 7747
 E-mail: sales@macocnc.com
<http://www.macocnc.com>



China Factory :
Ningbo MACO Mechatronic Co., Ltd.
 No.329 Chaosheng Rd., Cixi, Zhejiang, China.
 TEL: +86-574-63041050
 FAX: +86-574-63041051
 E-mail: macotech@126.com
<http://macocx.1688.com/>