

Challenger

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MCG-5X

5-axis Gantry Type Machining Center

Indefectible 5 axis machine from MICROCUT

Advanced Gantry construction and most powerful structure, developed to achieve the best working conditions even machining most complex workpieces. It can provide reliable precision and performances. 5 axes continuous working is provided by high dynamics from tool motion (3 axes) and working piece motion (2 axes). Both rotary axis of table are driven by high torque built-in motors (no trunnions) directly. Y axis with double linear measuring scales can perform high accuracy. Z slide traverse strongly is fixed with 3 roller guideways.



The design and the choice of components used in this machine are strictly subjected to rigorous analysis of quality, and carefully tested to perform perfectly in 5 axes. As final result, the performances in most complicated shapes and different surfaces are executed smoothly with utilization of highest cutting technology.



- **Tool and mould making**

High kinetic energy process 5 axes machine simultaneously and the loading capacity up to 1200kgs.

- **Medical engineering**

High precision, high efficiency.

- **Aerospace**

Precision in perfection

- **Mechanical engineering**

Perfectly finish on complex parts or solid material in one setting.

- **Subcontract industry**

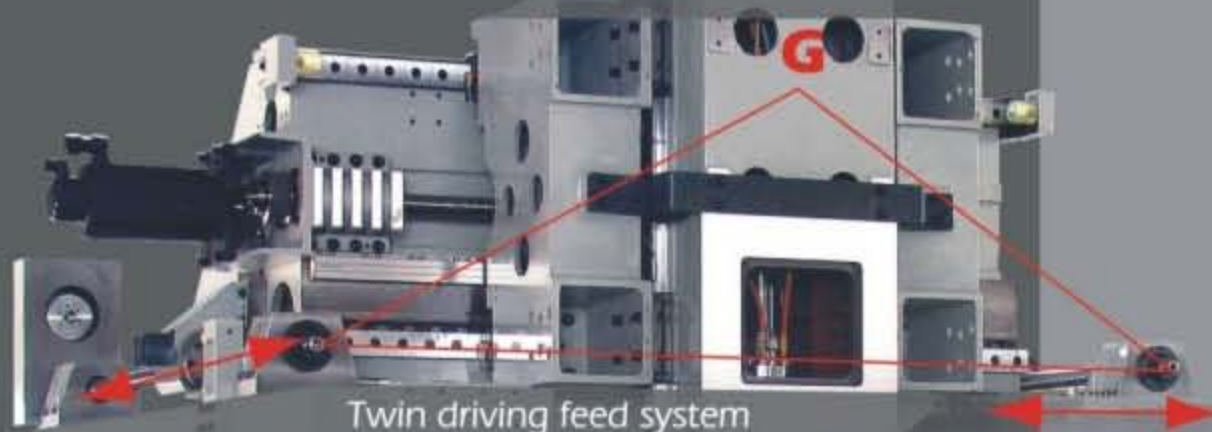
Precise and reliable

- **Automobile industry**

High availability, mass volume

Advanced Gantry Design

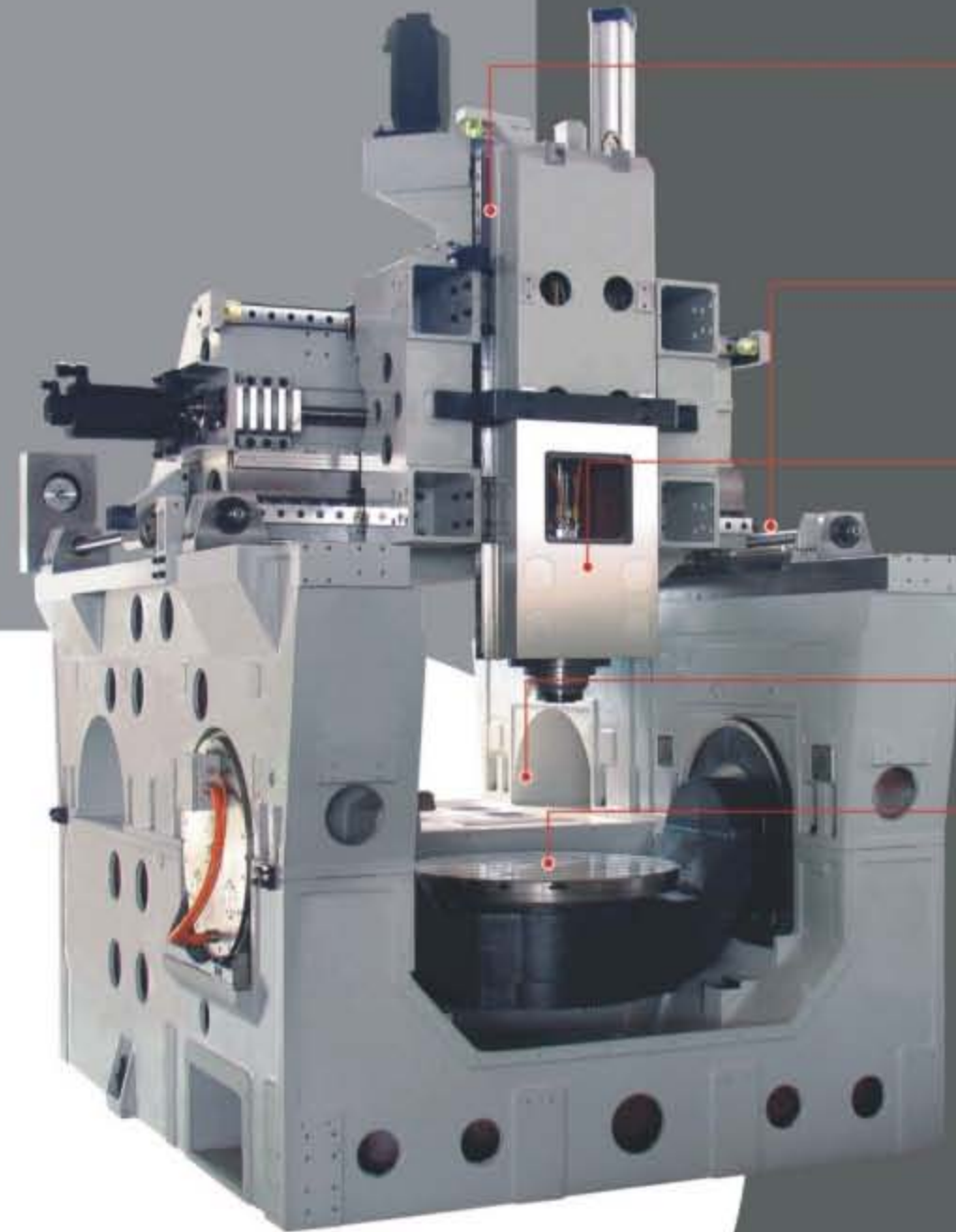
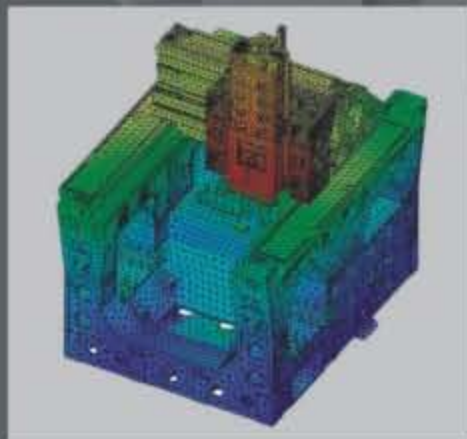
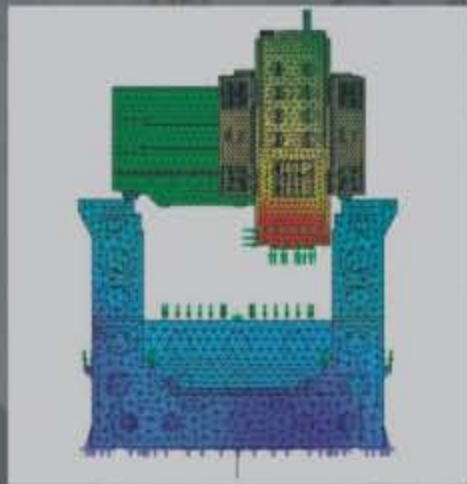
High rigidity & precision performance with gantry construction.



Twin driving feed system
simultaneous movement in Y direction

Machine highlights

- Gantry construction of cast iron base offers high rigid construction, precision performance and stress released
- 5 axes simultaneous machining function
- Various spindles for selection
In-line spindle 12000/15000rpm or 18000/24000rpm electronic spindle
- High accuracy rotary table is driven and tilted by high torque motors
- Large working space
- Various ATC packages for choice
- 2 – Roller linear guide ways on Y axis
- 3 – Roller linear guide ways on Z axis



Anti-friction linear guide way

The large diameter roller type linear guide ways on all axes, designed for rigidity structure & high speed movement.

Heidenhain Linear scale(opt.)

Linear scales are applied to ensure exact axis positioning under fluctuating temperatures.

Collision protection

With complicated machining, the collision protection function protect the spindle and table working interference free.

Large working area

Large space for free movement in the working area

High torque driven table

With super high table loading capacity at 1200 kgs.

Accessibility

Easy for parts loading/unloading



Pick up magazine

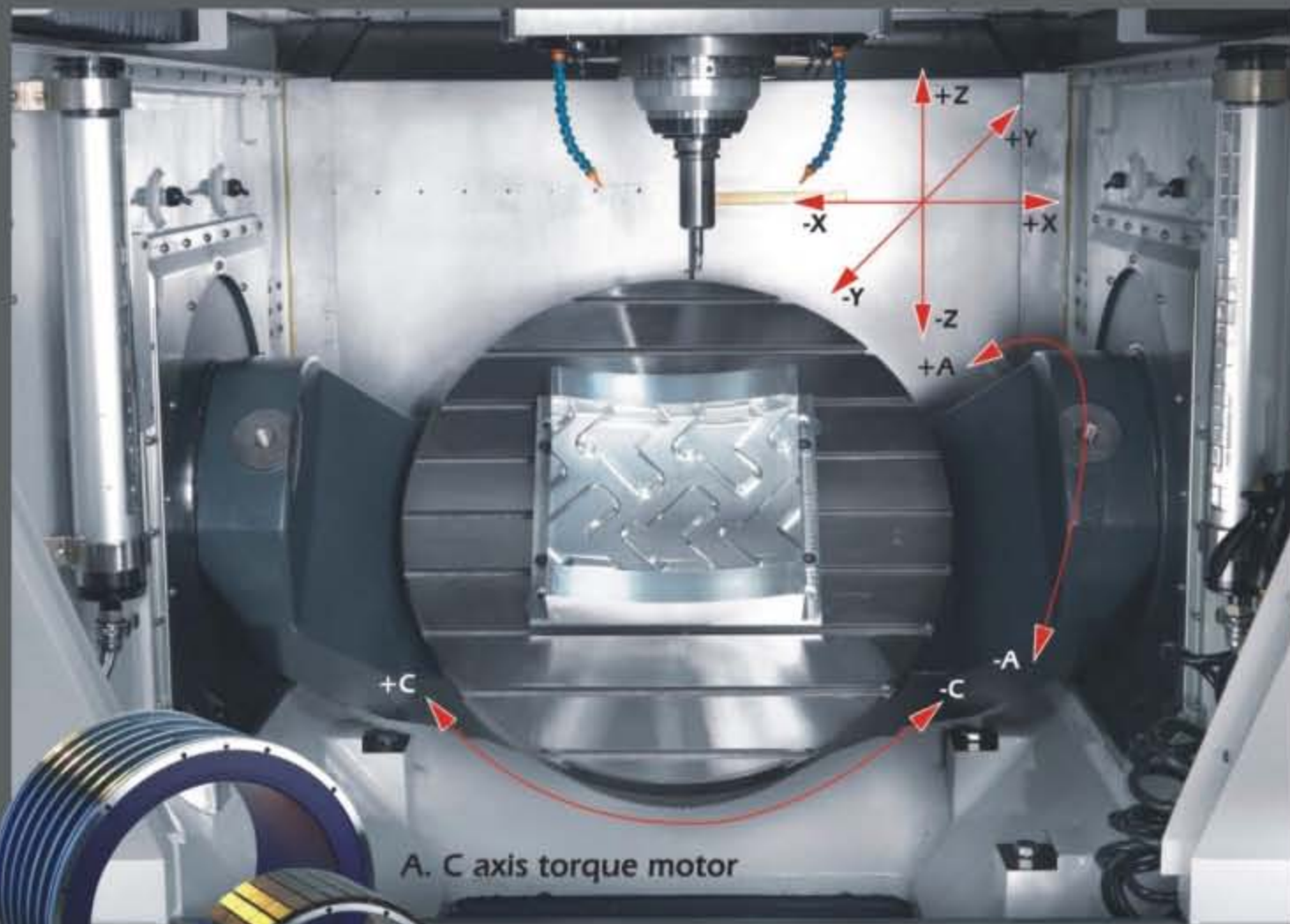
Driven by servo motors, offering stable & rapid tool changing action. Less interference with working area.



3-roller guideways
Z-axis



Double linear measuring scales
Y-axis



A. C axis torque motor

Complex machining more than 3-axes can do!

Highlight

- Large space for free movement in the working area
- With super high table load capacity at 1200 kgs
- No chips remain on table
- Workpiece can swing & rotate in U shape
- High torque built-in motors on A & C axis
- High resolution encoders on A axis & C axis

Rotary table

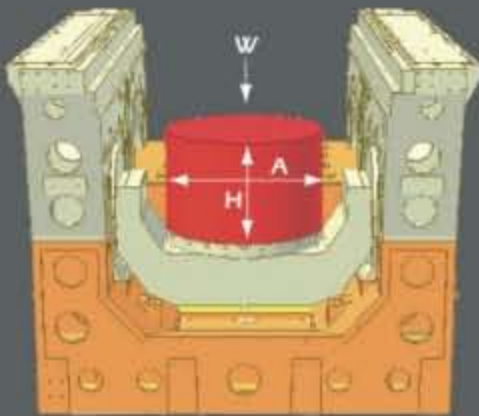


Table size	Unit	630mm	800mm
Tilting-A axis	Degree	+100 / -125	+100 / -125
Rotary-C axis	Degree	360	360
Max. torque-A axis	Nm	2600 (S1)	2600 (S1)
Max. torque-C axis	Nm	1250 (S1)	1250 (S1)
Max. Loading capacity (W)	kgs	1200	1200
Max. cutting diameter (A)	mm	630	800
Max. cutting height (H)	mm	500	500



A wide selection of spindles includes 18000rpm or 24000rpm high power core cooled built-in electronic motor spindle or in-line 12000 & 15000rpm mechanical spindle are available.

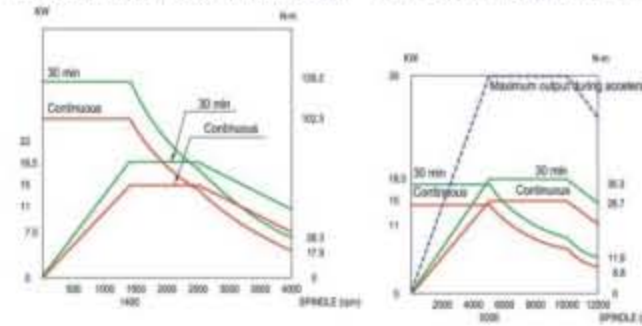
The cutting tools are securely drawn into the spindle by the preloaded spring package of the integrated power draw bar.

20 Bars coolant through-spindle coolant system are standard on MCG-5X 5 axis machining center, which will increase tool life, allowing higher cutting speeds, and clearing chips during deep-hole drilling and blind-pocket milling.

Torque & Horsepower

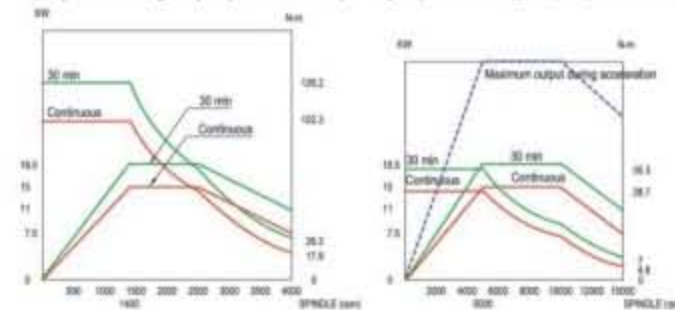
In-line spindle 12000rpm

Low-speed winding output (Y connection) High-speed winding output (Δ connection)

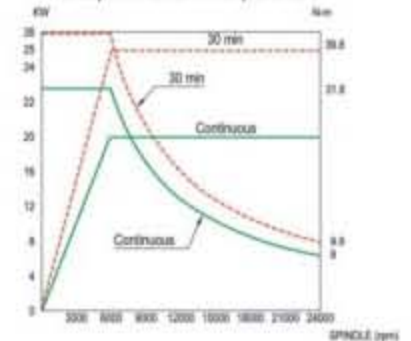


In-line spindle 15000rpm

Low-speed winding output (Y connection) High-speed winding output (Δ connection)

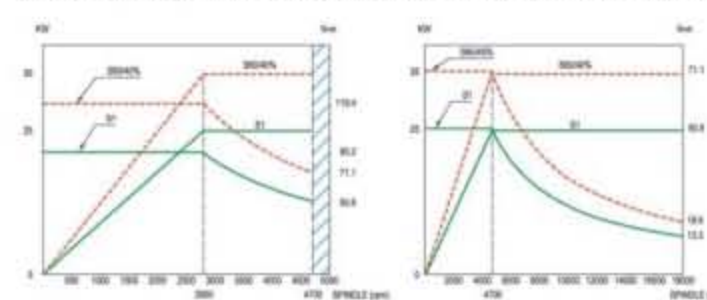


dia 170mm 20/25kw 18000rpm or 24000rpm Horsepower Chart / Torque Chart



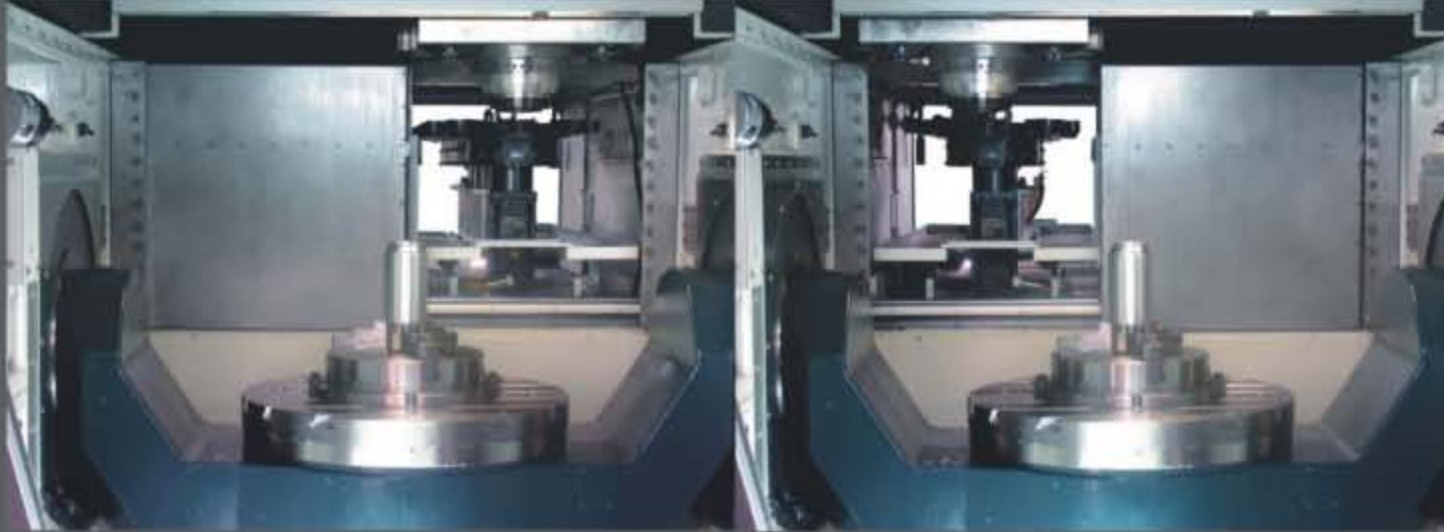
dia 230mm 25/35kw 18000rpm

Low-speed winding output (Y connection) High-speed winding output (Δ connection)



Twin magazine

- Settle up on machine base
- Less interference with working area
- Driven by servo motors
- Easy tool loading design
- Various-choice design with two stations for more magazines space
- User-friendly designed "smart tool-load station"



Pick-up magazine

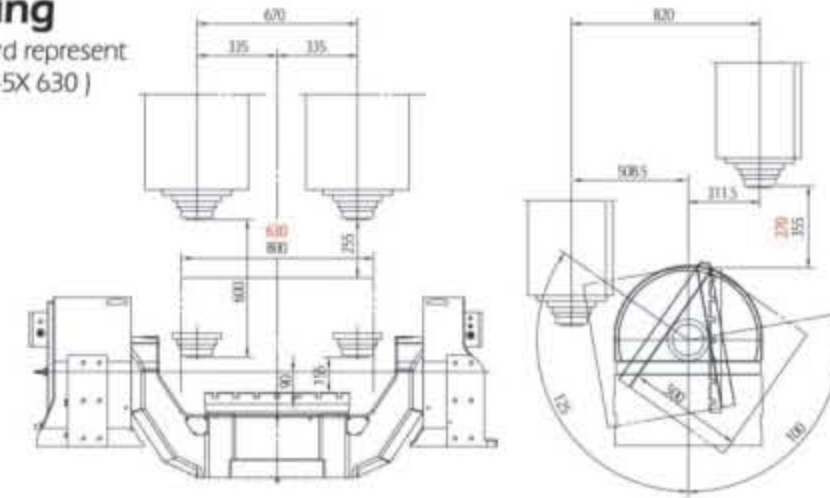
- Magazine capacity : 32, 48, 64 [32X2], 96 [48X2]
- Max. tool length : 300mm
- Max. tool diameter : 75mm
- Max. tool diameter – adjacent station empty: 125mm
- Max. tool weight : 7 kgs
- Change time of adjacent tool : 3 sec.



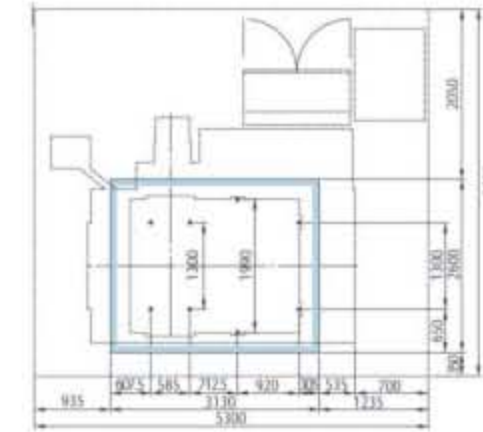
Laser tool setter
Non-connection laser tool setting
(on request)

Interference drawing

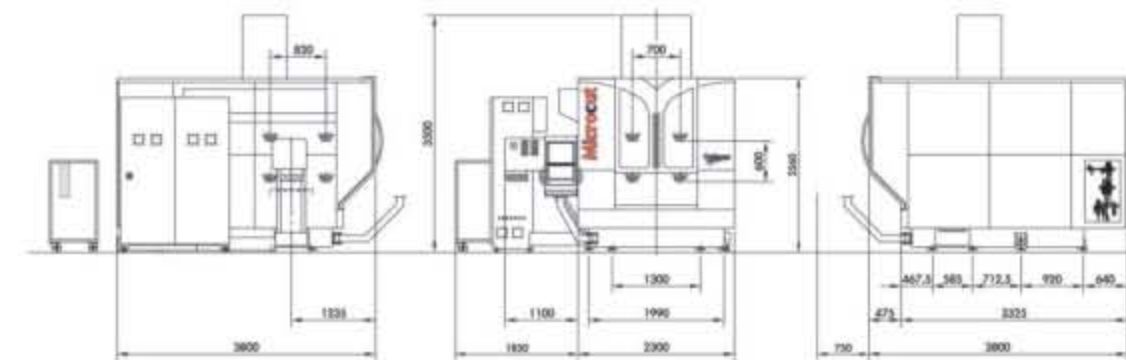
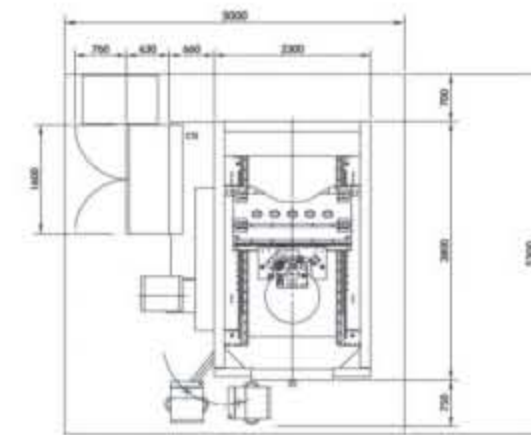
(Red word represent for MCG-5X 630)



Foundation drawing



Layout drawing



MCG-5X is equipped with advanced CNC functions to meet complex works for HSM



- CNC control Heidenhain iTNC530
- 15.1" TFT monitor
- The block process time is 0.5ms on this machine
- User memory is 6GB (hard disk)
- USB & RS232 are standard on machine.
- Ethernet network is standard
- Look ahead is 256 block. (1024 block look ahead is available on request)
- 3D tool length compensation function
- Dynamic collision monitoring (DCM) function
- 5-axis machining (TCPM) function
- SmartNC
- Different M code for selection while table with difference loading weight, ensuring the best cutting performance of each machining.
- Controller with integrated safety technology meets European Standard EN13849-1 & EN13849-2.
- SIEMENS 840DSL & Fanuc control are available on request



Kinematics opt. (on request)



Work piece probe (on request)



Auto roof

TECHNICAL DATA

Description	Unit	MCG-5X 630	MCG-5X 800	
ADVANCED GANTRY DESIGN				
TABLE	Rotary table top diameter	mm	630	800
	Tilting axis A	degree	+100 / -125	+100 / -125
	Rotary axis C	degree	360	360
	T-slots (number x width)	mm	7 X 90	9 X 90
	Max. weight on table	kgs	1200	1200
	Rotation driving system	mm	direct built-in	drive motors
LINEAR TRAVELS	X axis	mm	670	670
	Y axis	mm	820	820
	Z axis	mm	600	600
SPINDLE 1-2	Spindle taper		ISO40	
	Tooling available		BT40/DIN69871/CAT40	
	Spindle speed 1	mm	12000 rpm	
	Spindle speed 2	mm	15000 rpm	
	Spindle motor output S1-S6-speed 1	kw	18.5/28	
	Spindle motor output S1-S6-speed 2	kw	15/21	
	Spindle taper		HSK-A63	
SPINDLE 3-5	Spindle housing diameter & speed 3	mm	170(18000rpm)	
	Spindle housing diameter & speed 4	mm	170(24000rpm)	
	Spindle housing diameter & speed 5	mm	230(18000rpm)	
	Spindle motor output S1-S6-speed 3,4	kw	20-25	
	Spindle motor output S1-S6-speed 5	kw	25-35	
	Spindle torque S1-S6-speed 3,4	Nm	32-40	
	Spindle torque S1-S6-speed 5	Nm	87-130	
	Max. spindle speed	rpm	18000 / 24000	
	Speed change		dia. ø170 Continuous dia. ø 230-Y-Δ	
	Distance from spindle nose to rotary table clamping surface	mm	155-755	
TOOL MAGAZINE	Tool change mode		pick-up	
	Magazine capacity		32, 48, 64 (32X2), 96 (48X2)	
	Max. tool length	mm	300	
	Max. tool diameter	mm	75	
	Max. tool diameter - adjacent stations empty	mm	125	
	Max. tool weight	kgs	7	
FEED RATE	Change time of adjacent tool	sec.	3	
	Rapid traverse X/Y/Z	M/min.	60	
	Max. speed - axis A	rpm	50	
	Max. speed - axis C	rpm	100	
ACCURACY	Acceleration X/Y/Z	m.s ⁻²	7	
	Measuring system		direct	
CONNECTION TO THE MAINS	Repeatability	mm	0.004	
	Positioning accuracy	mm	0.008	
PNEUMATIC SYSTEM	Max. total machine input	KVA	85	
	Air operating pressure	kg/cm ²	5	
TOOL COOLING SYSTEM	Max. tank capacity	L	330	
	Max. total coolant capacity	L	425	
MACHINE DATA	Weight	kgs	19,000	
	Lay-out with accessories (L x W x H)	mm	4150 x 4550 x 3500	

*Specifications are subject to change without notice.

Standard accessories:

- CNC controller – Heidenhain iTNC530 or Fanuc 31IMA
- Pick-up tool magazine – 32 tools
- Pneumatic counter weight
- Hydraulic system
- Central lubrication
- Working space light
- High pressure chip flash system
- Chip conveyor
- Circulating liquid cooling system for spindle and rotary table
- Coolant through spindle with high pressure pump 20 bar (built-in type)
- CE norms
- Lamp of cycle finish and alarm
- Water gun
- Ethernet
- Tool kit, leveling bolts, pads and nuts
- RS232 port
- Portable MPG
- Water chiller device

Standard functions of iTNC 530 controller

- Heidenhain software option 1 & 2
- Heidenhain DNC function
- Heidenhain DCM collision function
- EMC

Optional accessories:

- Linear scales for 3 axes
- Robot for automatic operation
- Reference ball for Kinematic opt.
- Laser tool setter
- Work piece probe
- Heat exchanger
- ATC more than 32 tools
- Smart tool-load station
- Air conditioner for electric cabinet
- Cooling lubricant for built-in spindle