

# HCMC Series

Smartcenter

**Intelligent** machining center

- Hartrol plus controller
- 5-Year warranty on guideway
- Z-axis column oversized design
- Spindle run-out: 5 micro
- 8,000rpm gear type spindle



## Hartford

Hartrol · Smartcenter · Robocell

We manufacture intelligent machines only

Hartford has sold more than 50,000 machines to all over the world, accumulated more than 37,000 customers, who absolutely affirm Hartford's manufacturing experience and ingenious machine manufacture technology.

We insist on providing customers with the best quality machining centers.

We will devote more carefully, in order to continuously enhance the technical level of manufacture and applications.

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# What is *Smartcenter*?

Smartcenter is Smart machine center, an intelligent machine if put it in a simple way.

A Hartford Smartcenter has to include

1. Intelligent operating interface
2. Intelligent machining: Machining accuracy/ surface accuracy/ self learning / self optimizing
3. Intelligent quality control: Auto compensation for machining accuracy
4. Intelligent maintenance program : Active notification/ Active machine down time schedule also include other intelligent functions, help user reaching the target of Zero Down Time.

## The benefits of Hartford smartcenter

- + Intelligent management : Fully aware of the machining status
- + Fully aware of the status of the machine key components.
- + Improving of the machine efficiency
- + Crash protection – Stop the machine immediately to prevent the further damage when alarm occurred .

## Hartford Smartcenter will help you become an intelligent manager

The main technologies of Hartford smartcenter include intelligent managing system, status monitoring, alarm predicting, machine status diagnosis, crash preventing, 3D program simulation, machining efficiency improving...etc.  
 All the intelligent functions help you control the machine status and assure the job quality.



# Versatile Machining for Industry

The Super Tornado offers incredible versatility for you workshop, combing high efficiency material removal for large workpiece to super fine finishing on small automotive components. The Super Tornado covers a huge range of requirements delivering excellent surface finish and the very latest operational features backed by the Hartford brand.



1. Honeycomb structural component



2. Mechanical part

## Actual cutting tests

Model : HCMC-1100

■ Spindle : 8,000 rpm #40 Pulley type 18.5kW ■ Cutting material : S45C



**Face milling**  
 Tool diameter Ø80 mm  
 Feed rate 2,700 mm/min  
 Depth 3 mm  
 Cutting volume 527 cc  
 Width 65mm



**End milling**  
 Tool diameter Ø63 mm  
 Feed rate 4,500mm/min  
 Depth 30 mm  
 Width 4 mm  
 Cutting volume 540 cc



**Tapping**  
 Tool diameter Ø20 mm  
 Feed rate 540 mm/min  
 Depth 30mm



**Drilling**  
 Tool diameter Ø21 mm  
 Feed rate 165 mm/min  
 Depth 40mm

Model : HCMC-1892

■ Spindle : 8,000 rpm #50 Gear type 26kW ■ Cutting material : S45C



**Face milling**  
 Tool diameter Ø125 mm  
 Feed rate 1,900 mm/min  
 Depth 5 mm  
 Cutting volume 950 cc  
 Width 100 mm



**End milling**  
 Tool diameter Ø63 mm  
 Feed rate 1,600mm/min  
 Depth 40 mm  
 Width 10 mm  
 Cutting volume 640 cc



**Tapping**  
 Tool diameter Ø42 mm  
 Feed rate 315 mm/min  
 Depth 50 mm



**Drilling**  
 Tool diameter Ø76 mm  
 Feed rate 130 mm/min  
 Depth 50 mm

## Unlimited Cutting from Hartford Super Tornado

Hartford Super Tornado delivers massive cutting versatility to your workshop. Whether you need heavy cutting or fine finishing the incredible structural stability and cutting performance of HCMC series will exceed your expectations.



### Full range of box guideway five-year warranty

The following situation is not covered under warranty  
1. Improper operation (collision)  
2. No regular cleaning of accumulated debris causes damaged to the track

## HCMC-1100, the Machine Equal to Japanese

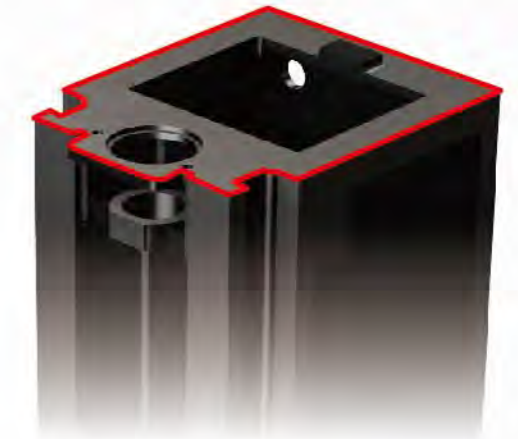
### Temperature controller structure (opt.)

- Added recirculating cooling channels at heat points.
- Positional accuracy is always maintained.
- Thermal deformation is not an issue for machine.



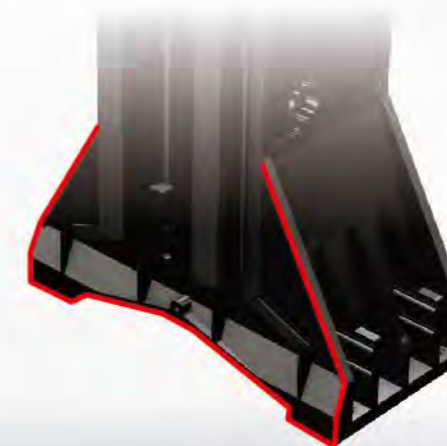
### New square section resists torsion

- Higher rigidity column .
- Ensure even distribution of cutting forces.
- Enhanced resistance to torsional forces that could impact machining precision.



### A+ structural stability

- The increased width of the interface between the column and base by adding A+ support sections.
- Enhanced stability and efficient force dissipation.



### Extra wide stable design

- The original width of the machine feet has been widened to 180mm.
- Delivering a much more rigid and stable platform for heavy machining.

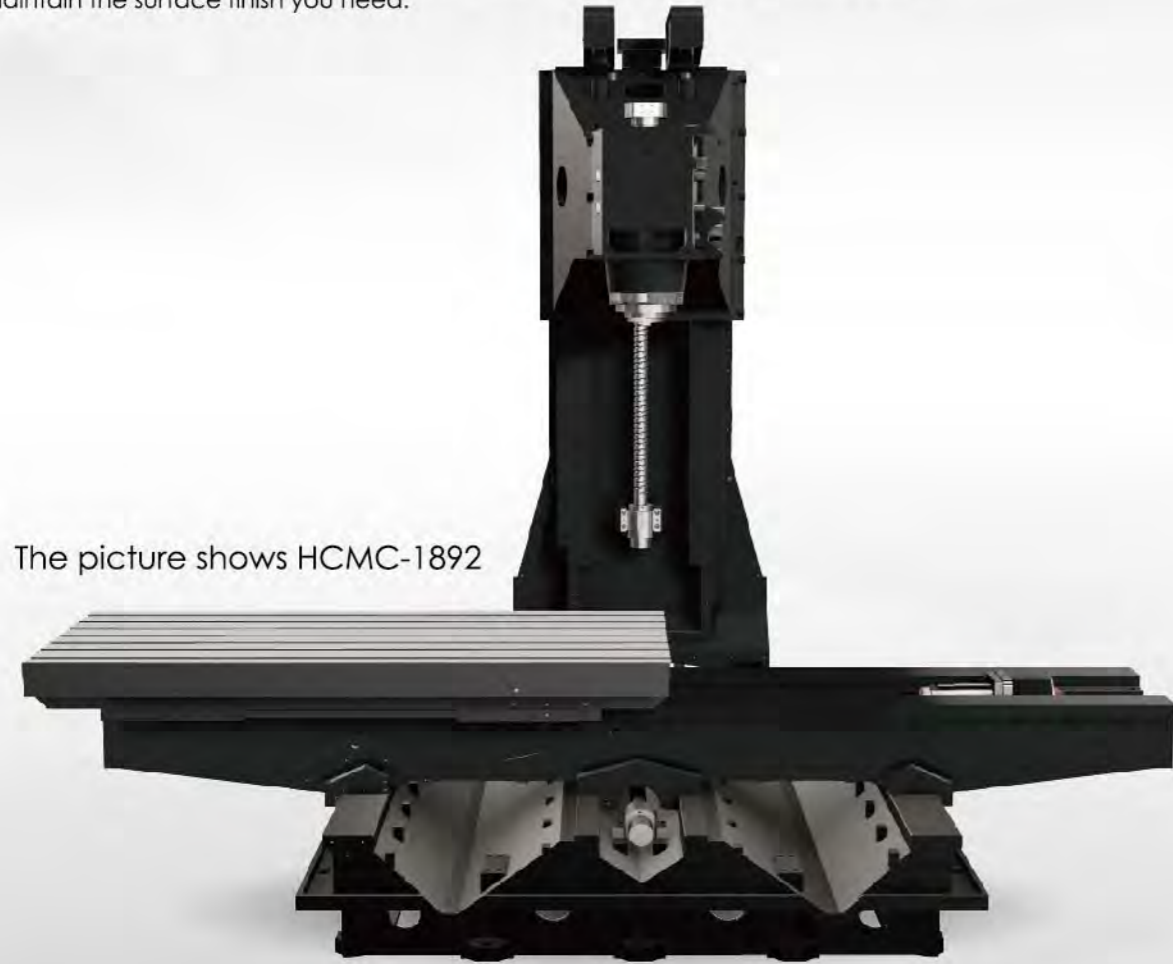


# HCMC-The New Structural Design Deliver You High Rigidity

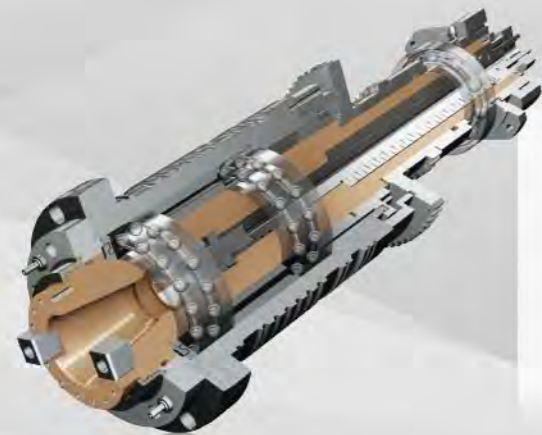
Optimum stability for maximum support

### High rigidity structure

Vibration damping is key to machining hard materials whilst machining tolerance and cycle times that you need. HCMC series structure is specially designed cast iron (Meehanite), that is heavily ribbed and reinforced to absorb those vibrations and maintain the surface finish you need.

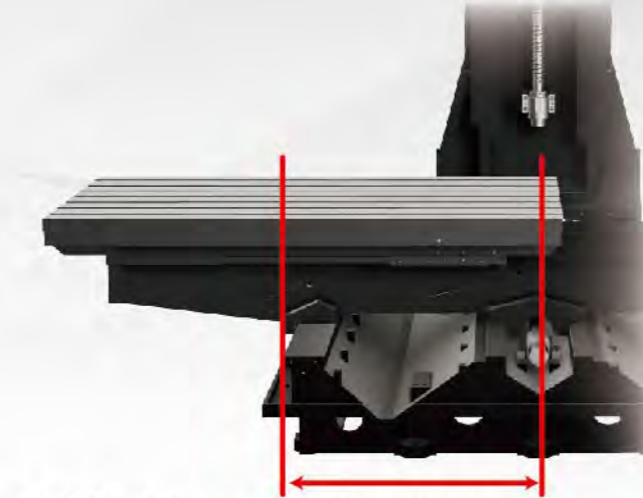


The picture shows HCMC-1892



### 8,000 rpm Gear type spindle

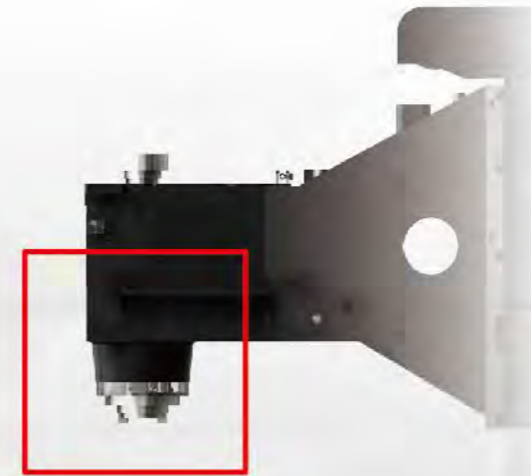
- Two-step gear transmission.
- Spindle run-out: 5 micro
- Available for HCMC all models



+35% guideway spacing on X-axis

### Axis overhand

- The base has been redesigned to widen the support points on the base
- Guarantee full support throughout the X axis traverse.
- Eliminating with overhand, especially on heavier work piece.



### One-piece design for spindle housing and casting iron

- Increases rigidity and cutting performance
- Reducing weight to reduce acceleration stresses and increase positional accuracy.
- The structural of the head has been adjusted.
- Provide additional support for the spindle to absorb the cutting forces.



### Self-made gear driven spindle head

- Two-step speed for transmit
- Low speed with great force output
- Perfect for heavy cutting
- High speed cutting for die & mold industry

# Intelligent Controller- **Hartrol Plus**

## What is Hartrol plus?

- 19" multi-touch screen
- IPS is equipped with the Windows operating system
- Automatic feed system control function

By the use of open structure, we begin to enter a new era of intelligent processing. In addition to basic functions, we have joined hardware and software exclusively developed by Hartford, which can be added and updated at any time with each new features.



## The Intelligent Controller You Should Have

With three major solutions, Hartrol plus takes your machining to the next level. Highly optimized and intelligent controls bring even more capabilities and productivity to your metal cutting process. With ease of use, advanced automation, and smart data collection, Hartrol plus is the tool you want for doubling performance on your production floor.

The difference between Hartrol plus and others

Function	Hartrol plus 1 	Others
Screen Size	19" Multi-touch Panel	10.4"(OPT:15")
Hard Drive	32GB SSD	NO
Smoothing Interpolation	SSS-4G	Option
Look Ahead Block	2700	400(1000 Max.)



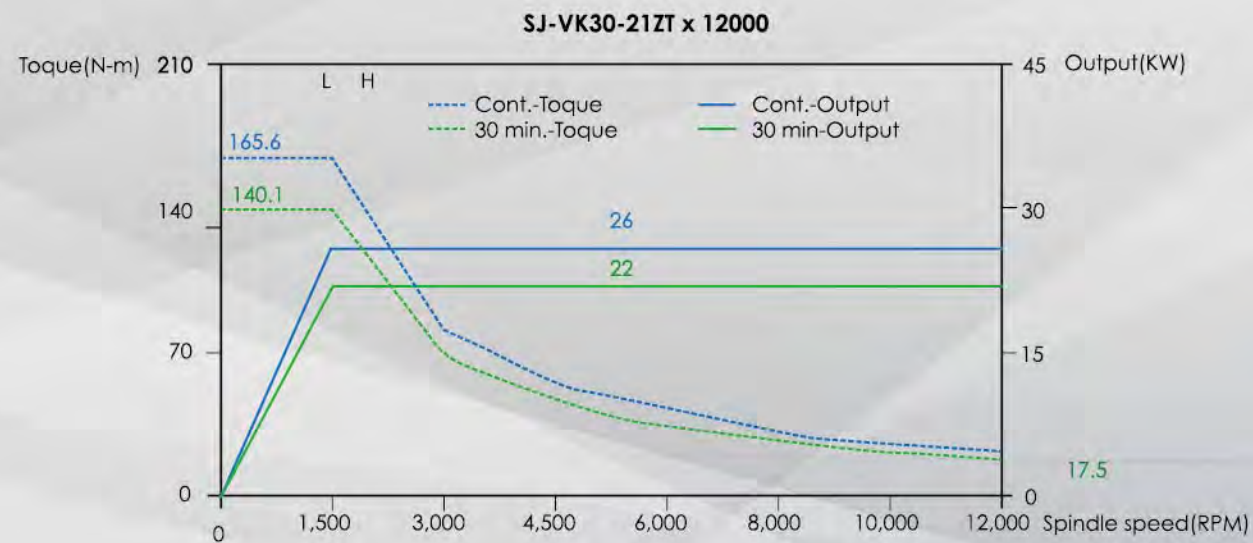
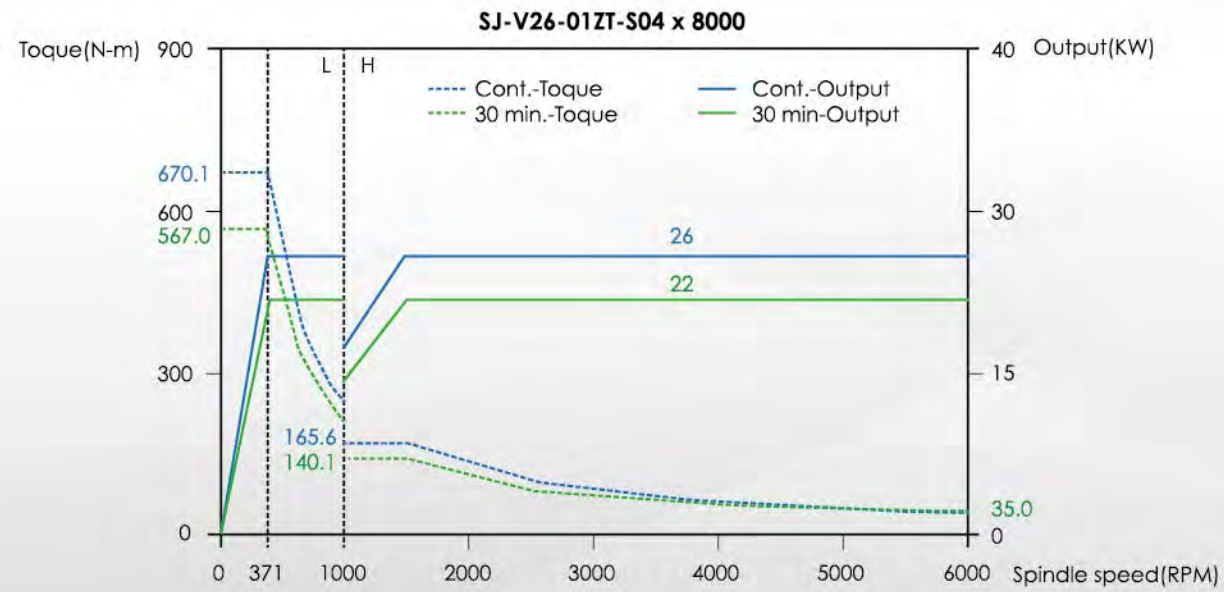
# Variety of Hartford Made Spindle Have Quality Assurance

## Spindle type

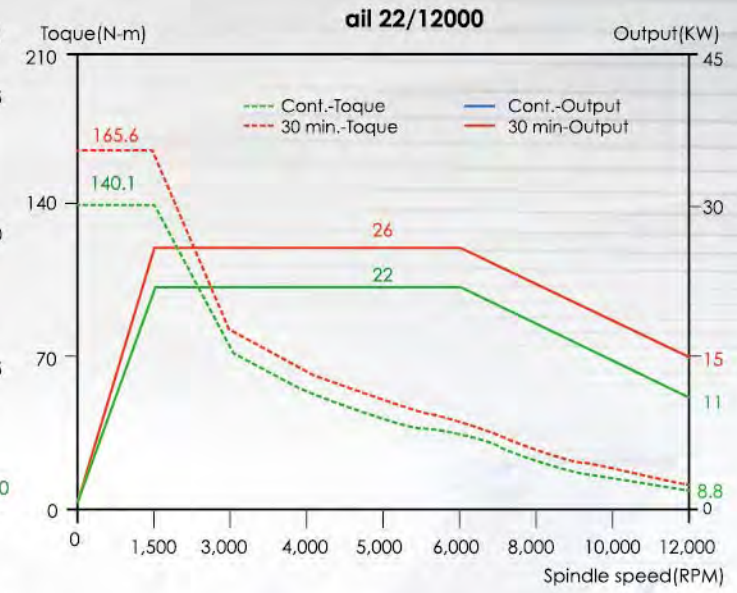
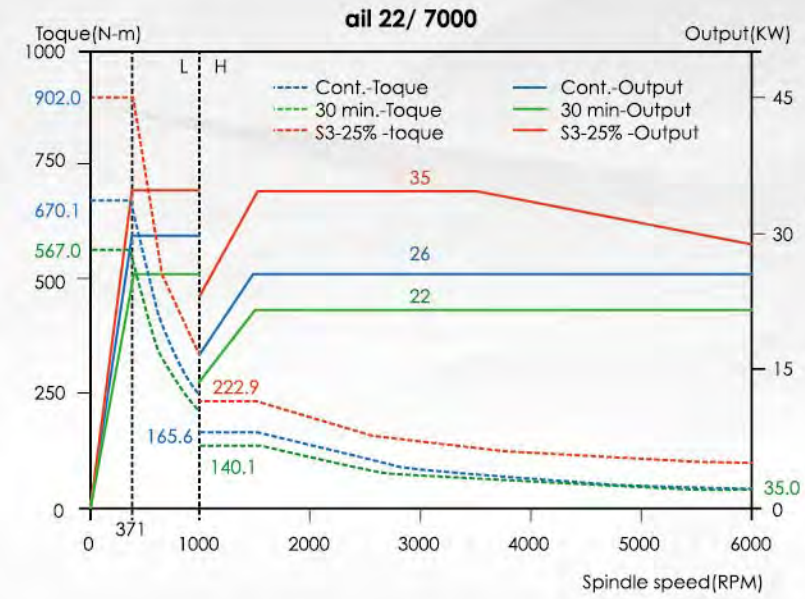
- #40 Pulley type : 8000 OPT.: 10000/12000 (HCMC-1100, HCMC-1270)
- #40 Gear type : 6000 OPT: 8000 (HCMC-1100, HCMC-1270)
- #40 DDS type : 10000 OPT.: 15000 (HCMC-1270)
- #50 Gear type : 6000 OPT.: 8000 (HCMC-1100, HCMC1270)
- #50 Gear type : 4000 OPT.: 6000/8000 (HCMC-1370,X82, X92, X110)
- #50 DDS type : OPT.: 10000/12000 (HCMC-1100,X70,X82,X92,X110)

## Spindle torque diagram

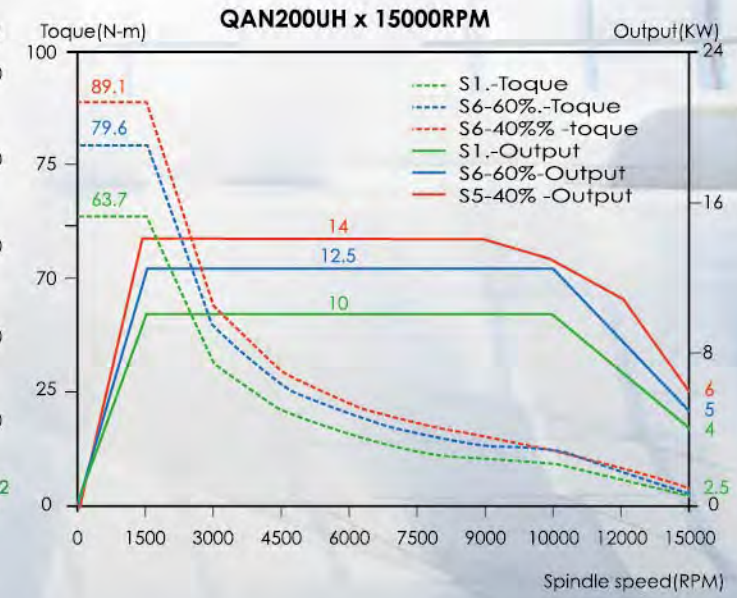
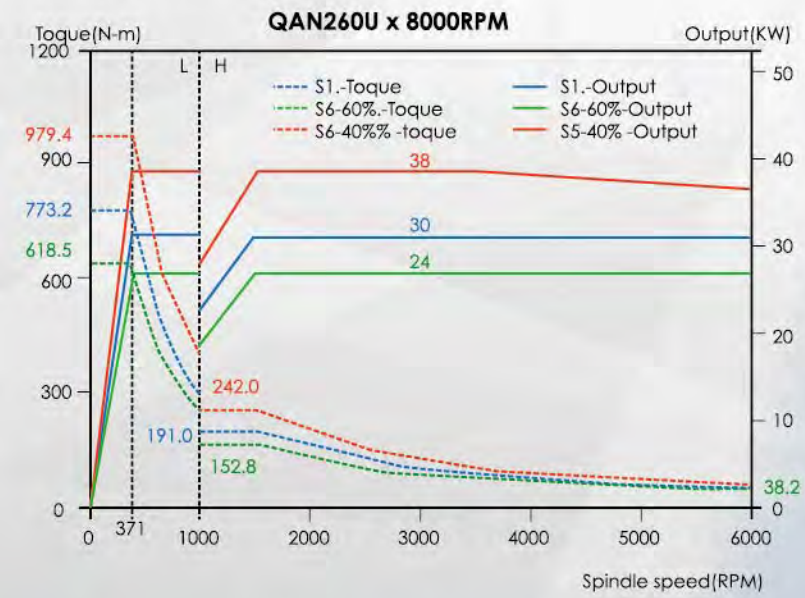
### Mitsubishi



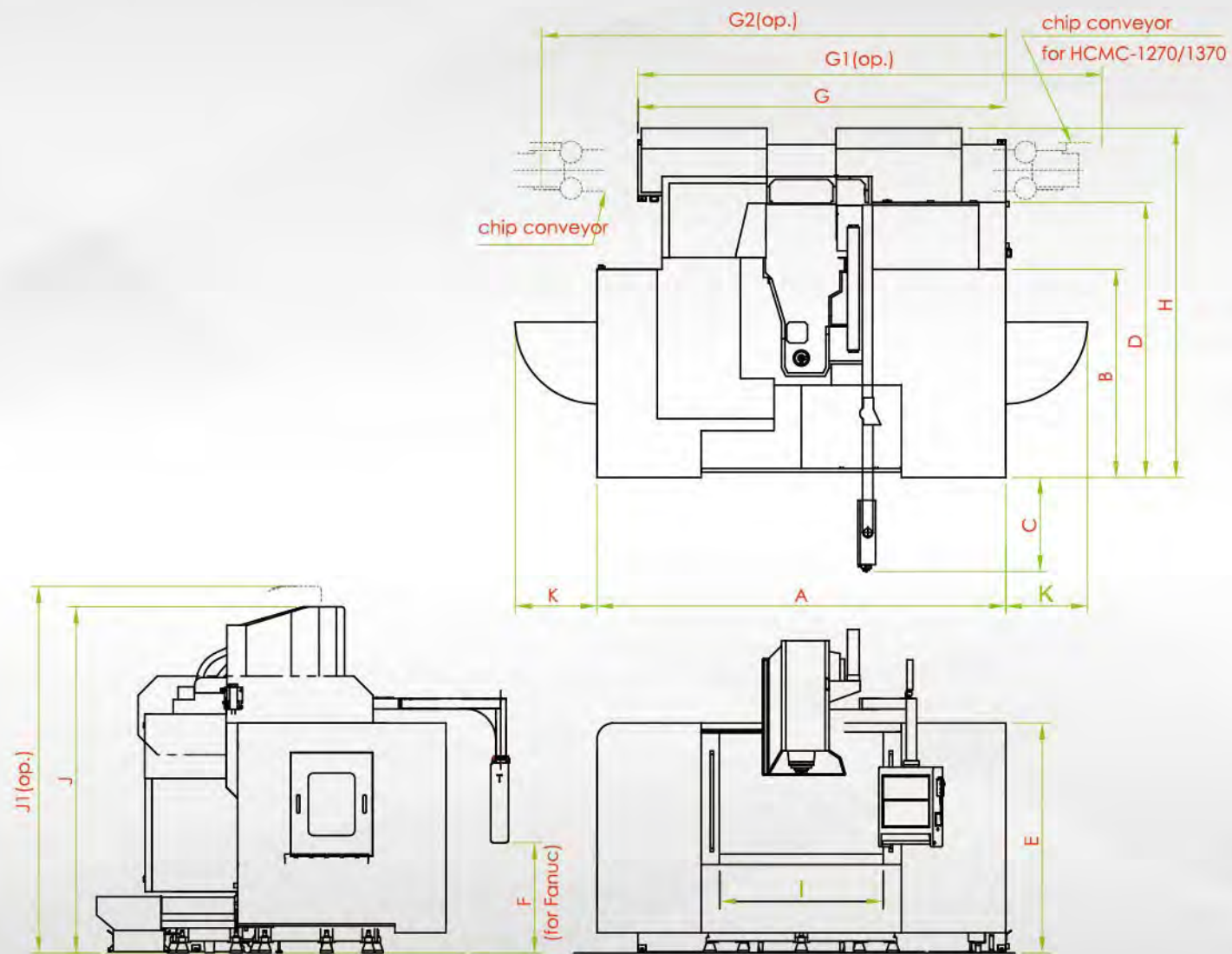
### Fanuc



### Heidenhain

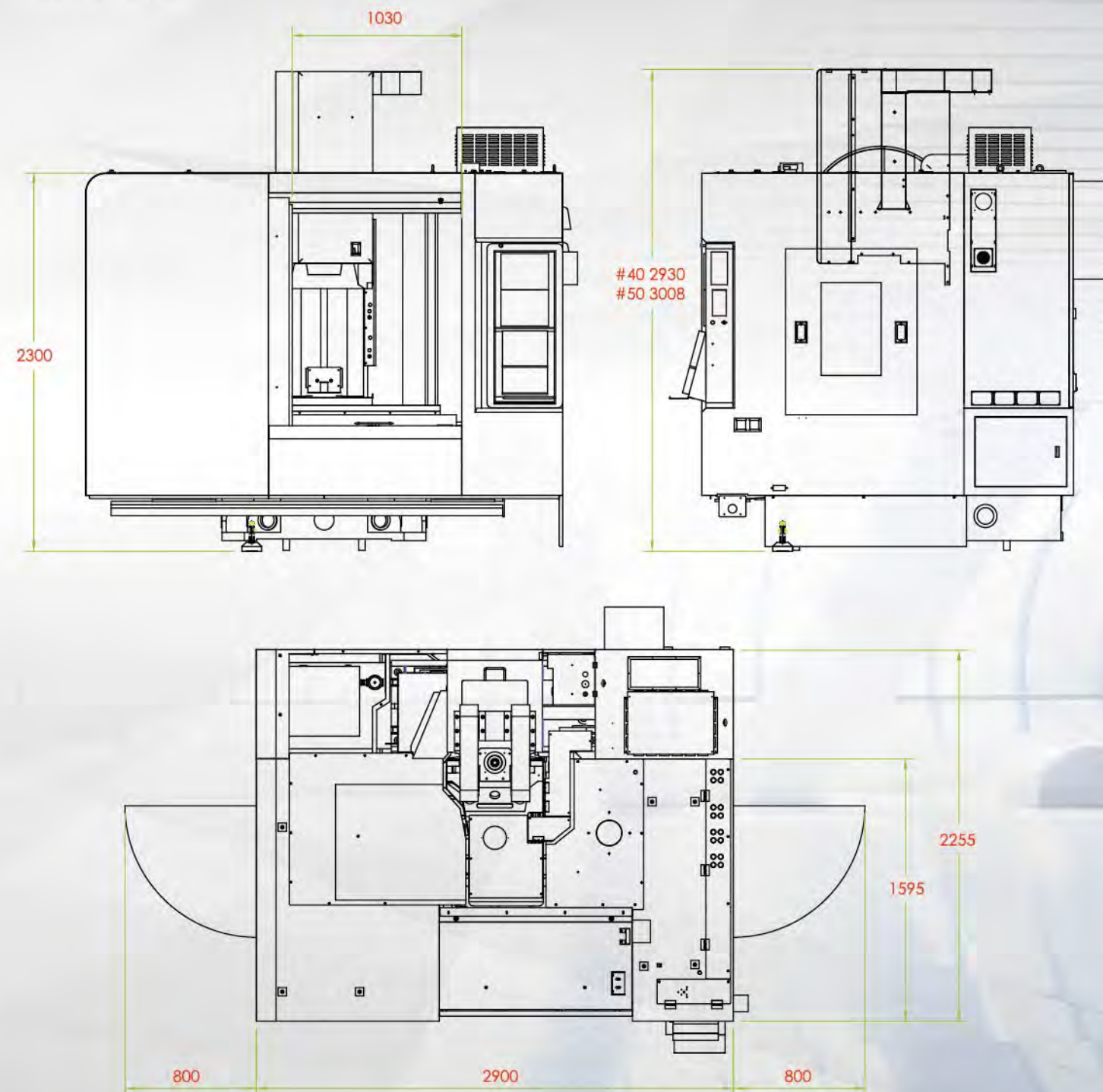


## Machine Dimensions



Model	Unit	A	B	C	D	E	F	G	(OP) G1	(OP) G2	H	I	J	(OP) J1	K
HCMC-1270(#40)		3300	1655	880	2265	2210	1080	3450	4360	-	3060	1350	3000	3200	800
HCMC-1270(#50)		3300	1655	880	2265	2210	1080	3450	4360	-	3060	1350	3300	3500	800
HCMC-1370		3300	1609	925	2265	2340	1080	3450	4243	-	3215	1300	3425	3265	800
HCMC-1682		4000	2037	1060	2692	2340	1080	3600	-	4437	3417	1613	3380	3590	800
HCMC-2082	mm	5000	2037	1060	2692	2340	1080	3600	-	4437	3417	2160	3380	3590	800
HCMC-1692		4000	2244	779	2899	2372	1080	3600	-	4437	3609	1640	3620	3820	800
HCMC-1892		4500	2244	779	2599	2372	1080	3600	-	4437	3609	1840	3620	3820	800
HCMC-2110		5000	2503	942	3158	2425	1080	3700	-	4720	4009	2100	3625	3825	1000
HCMC-3110		7400	2503	942	3158	2361	1080	5370	-	6370	4009	3100	3625	3825	1000

### HCMC-1100



Specifications of the machine are subject to be modified without prior notice, please check with sales staff for detail information.

# Machine Specifications

Model	Unit	HCMC-1100	HCMC-1270	HCMC-1370	HCMC-1682	HCMC-2082	HCMC-1692	HCMC-1892	HCMC-2110	HCMC-3110
<b>Table</b>										
Working Surface	mm	1270 x 600	1370 x 650	1450 x 700	1750 x 820	2150 x 820	1750 x 920	1950 x 920	2250 x 1020	3250 x 1020
T-slot (Size x Number x Pitch)	mm	18 x 5 x 120	18 x 5 x 130	18 x 5 x 130	18 x 5 x 150	18 x 5 x 150	20 x 7 x 125	20 x 7 x 125	20 x 7 x 150	20 x 7 x 150
Max Table Load	kg	1200	1200	1500	2200	2600	2500	3000	3000	4000
<b>Travel</b>										
Longitudinal Travel (X-axis)	mm	1100	1270	1300	1600	2060	1600	1800	2100	3100
Gross Travel (Y-axis)	mm	600	650	700	820	820	920	920	1020	1020
Vertical Travel (Z-axis)	mm	630	630	660	660 820 (OP)	660 820 (OP)	820	820	820	820
Distance Form Spindle End to Table Center	mm	100~730	120~750 320~950(OP)	120~780 320~980(OP)	150~810 200~1020 (OP)	150~810 200~1020 (OP)	200~1020 400~1220 (OP)	200~1020 400~1220 (OP)	200~1020 400~1220(OP)	200~1020 400~1220(OP)
Distance Form Spindle Center to Column	mm	645	695	745	865	865	965	965	1080	1080
<b>Spindle</b>										
Spindle Nose Taper	mm	#40, #50	#40, #50	#50	#50	#50	#50	#50	#50	#50
Spindle Speed	rpm	#40 Pulley 8000 (10000/12000) Gear 6000 (8000) #50 Gear 6000 (8000) DDS 10000(12000)	#40 Pulley 8000 (10000/12000) Gear 6000 (8000) DDS 10000 (15000) #50 Gear 6000 (8000) DDS 10000 (12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000 (6000/8000) (DDS 10000/12000)	Gear 4000(6000/8000) (DDS 10000/12000)
<b>Feed</b>										
Cutting Feedrate	M / min	12	12	12	12	12	10	10	10	7
Rapid Traverse (X,Y,Z Axes)	M / min	24 / 24 / 20	#40 24 / 24 / 20 #50 24/24/18	24 / 24 / 20	20 / 20 / 18	18 / 18 / 18	20 / 18 / 18	18 / 18 / 18	15 / 15 / 15	15 / 15 / 15
<b>ATC</b>										
Tool storage Capacity	pcs	#40 S:16, A:24 #50 S:16, A:24	#40 S:16, A:24 (30 / 40) #50 A: 24 (32)	24 (32 / 40)	24 (32 / 40)	24 (32 / 40)	24(32 / 40)	24 (32 / 40)	24 (32 / 40)	24(32 / 40)
Max. Tool Weight	kg	#40 7 #50 15	#40 7 #50 15	20	20	20	20	20	20	20
Max. Tool Size (Diameter x Length)	mm	#40 S:Ø90 x 250L A:Ø75 x 300L #50 A:Ø105 x 300L	#40 S: Ø90 x 250L A: Ø75 x 300L #50 A: Ø105 x 300L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L
Tool Shank		#40 BT-40 (CAT40/DIN69871/BBT) #50 BT-50(CAT50/DIN69871/BBT50)	BT-40(CAT40/DIN69871/BBT) BT-50(CAT50/DIN69871/BBT50) BBT40 not for #40 G8K)	BT-50(CAT50/DIN69871/BBT50)	BT-50(CAT50/DIN69871/BBT50)	BT-50 (CAT50/DIN69871/BBT50)	BT-50(CAT50/DIN69871/BBT50)	BT-50(CAT50/DIN69871/BBT50)	BT-50(CAT50/DIN69871/BBT50)	BT-50(CAT50/DIN69871/BBT50)
Pull Stud Bolt		#40 P40T-1/CAT40/DIN69872 #50 P50T-1/CAT50/DIN69872	P40T-1/CAT40/DIN69872 P50T-1/CAT50/DIN69872	P50T-1/CAT50/DIN69872	P50T-1/CAT50/DIN69872	P50T-1 /CAT50 / DIN69872	P50T-1/CAT50/DIN69872	P50T-1 / CAT50 / DIN69872	P50T-1 / CAT50 / DIN69872	P50T-1 /CAT50 / DIN69872
<b>Motor</b>										
Spindle Drive Motor (Fanuc)	kW (Cont / 30min)	#50 11 / 15 OPT: 15/18.5	#40 7.5 / 11 OPT: 11/15/15/18.5 #50 11 / 15 OPT: 15/18.5	11 / 15 OPT: 15/18.5	11 / 15 OPT: 15/18.5	11/15 OPT: 15/18.5	11 / 15 OPT:15/18.5	11 / 15 OPT: 15/18.5	15 / 18.5 OPT: 18.5/22	15 / 18.5 OPT: 18.5/22
X,Y,Z Axis Drive Motor (Fanuc)	kW	#40 3/3/3 #50 3/3/4	#40 3/3/3 #50 3/3/4	4/4/4	4/4/4	4/4/4	4/4/4	7/4/4	4/4/4	4/7/4
<b>Positioning Accuracy</b>										
3 Axes Laser Positioning Accuracy (JIS 6338)										
Positioning Accuracy / Full Travel	mm	±0.010	±0.010	±0.010	±0.010	±0.012	±0.010	±0.010	±0.012	±0.012
Repetitive Positioning Accuracy	mm	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003
3 Axes Laser Positioning Accuracy (VDI3441)/ Repeated										
5 Time Positioning Accuracy	mm	0.022	0.024	0.024	0.024	0.030	0.024	0.024	0.030	0.030
Repetitive Positioning Accuracy	mm	0.010	0.012	0.012	0.012	0.016	0.012	0.012	0.016	0.016
VDI3441 accuract available upon order request										
<b>Other</b>										
Required Air pressure	kg /cm <sup>2</sup>	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Electric Power Consumption	kVA	#40 25 #50 30	#40 25 #50 30	30	30	30	30	35	35	35
Machine weight	kg	#40 7950 #50 8200	7350 7600	9000	12400	13000	13500	14100	16000	20000
Machine Dimension (L x W x H)	mm	#40 2900 x 2714 x 2930 #50 2900 x 2714 x 3008	#40 3450 x 3890 x 3000 #50 3450 x 3980 x 3150	3450X4140X3425	4000 x 4310 x 3380 (OP: 3590)	5000 x 4310 x 3380 (OP:3590)	4000 x 4472 x 3620	4500 x 4472 x 3620	5000 x 4950 x 3625	7400 x 4950 x 3625

For Other Specs Please Ask Sales.

## Standard & Optional Electrical Functions

### Hartrol / Standard

- Workpiece Calibration by MPG Directly
- Tool Magazine Display
- Parameter Package
- Threading Cutting (Only for 0i and 31i)
- Monitoring of Tool Status (Only for 0i and 31i)
- Character Carving Macro

### Hartnet / Optional

- Management System of Utilizaion
- Machining Time Countdown
- Convenient File Transfer
- Production Management

### Electrical Function / Optional

- Compensation of Temperature Displacement
- Retraction for Rigid Tapping
- HMI for Tool Magazine

## Standard & Optional Mechanical Accessories

### Standard

- Full-enclosed Splash Guard
- Cooling System
- Centralized Automotive Lubrication System
- Screw Type Two Side Chip of the Chassis (not for HCMC-1100)
- Coolant Tank (With Chip Bucket)
- Operation Manual & Electric Drawing Equipment

### Optional

- Coolant Through spindle 20 Bar without Water Cart
- Coolant Through spindle 25 Bar with Water Cart
- Coolant Through spindle Preparation Only
- Closed Loop Linear Scale Positioning System
- Auto Tool Length and Diameter Measurement
- Oil Mist Collector System

- Fluorescent Lamp x 1
- Air Blast Through Spindle
- Leveling Bolts and Blocks
- Remote Manual Pulse Generator
- Convection Heat Exchanger in Control
- Auto Power Off
- RS-232 Interface

- Tool Package
- Suspension Operator Box (not for HCMC-1100)
- Coolant Jets around Spindle
- Fluore Scut Lamp x 2 (HCMC-2110, HCMC-3110)
- Spindle Oil Cooler (For Gear/Pulley 10000 rpm)

- Fluorescent Lamp x 2
- NC Rotary Table
- DNC Software
- 90° Angle Head (Tool Type)
- Link Type Chip Conveyor & Protatable Chip Bucket (1 EA)
- Spindle Oil Cooler (HCMC-1100/1270 #40 Pulley 8000 rpm)

- Auto work piece Measurement
- Coolant flushing Device
- Water Gun
- Air Gun
- Oil Fluid Separator
- Operation Finish Lamp