

Accessories

Standard : ● Optional : ★

Item	Model	HCMC-1100	HCMC-1270	HCMC-1370	HCMC-1682	HCMC-2082	HCMC-2110
1.Full-enclosed splash guard		●	●	●	●	●	●
2.Cooling System		●	●	●	●	●	●
3.Lubrication system		●	●	●	●	●	●
4.Two side chip of the chassis (screw type)		★	●	●	●	●	●
5.Coolant Tank (With Chip Bucket)		●	●	●	●	●	●
6.Operation Manual & Electric Drawing Equipment		●	●	●	●	●	●
7.Fluorescent lampx1		●	●	●	●	●	-
8.Air blast through spindle		●	●	●	●	●	●
9.Leveling Bolts and Blocks		●	●	●	●	●	●
10.Remote manual pulse generator		●	●	●	●	●	●
11.Convection Heat Exchanger in Control		●	●	●	●	●	●
12.Auto Power off		●	●	●	●	●	●
13.Operation Finish Lamp		●	●	●	●	●	●
14.RS232 Interface		●	●	●	●	●	●
15.Tool Package		●	●	●	●	●	●
16.Operator Panel, Pendent type		-	●	●	●	●	●
17.Spray around spindle		●	●	●	●	●	●
18.Fluorescent Lampx1		●	●	●	●	●	★
19.#50 Disk Type Tool Magazine		●	●	●	●	●	●
20.Spindle Oil Cooler		●	●	●	●	●	●
21.Coolant Through Spindle_20BAR Without Water Cart		★	★	★	★	★	★
22.Coolant Through Spindle_25BAR Without Water Cart		★	★	★	★	★	★
23.Coolant Through Spindle Preparation Only		★	★	★	★	★	★
24.Closed Loop Linear Scale Positioning System		★	★	★	★	★	★
25.AUTO tool length and diameter measurement		★	★	★	★	★	★
26.Oil Mist Collector System		★	★	★	★	★	★
27.Fluorescent Lampx2		★	★	★	★	★	●
28.NC Rotary Table		★	★	★	★	★	★
29.DNC Software		★	★	★	★	★	★
30.90° Angle Head(Tool Type)		-	-	★	★	★	★
31.ink type chip conveyor& portable chip bucket		★	★	★	★	★	★
32.Spindle Oil Cooler(only Pulley/Gear10000rpm)		★	★	★	★	★	★
33.Auto Work Piece Measurement		★	★	★	★	★	★
34.Coolant flushing Device		★	★	★	★	★	★
35.Water gun		★	★	★	★	★	★
36.Air gun		★	★	★	★	★	★
37.Oil skimmer		★	★	★	★	★	★
38.Operation Finish Lamp		★	★	★	★	★	★

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Hartford

Hartrol · Smartcenter · Robocell

We manufacture intelligent machines only

Hartford
 EXCLUSIV
 HartrolPlus APP

Intelligent Machining Center

HCMC Series

- Hartrol plus controller
- 5-Year warranty on guideways
- Z-axis column oversized design
- Spindle run-out : 10 micro
- 8,000 rpm gear type spindle



Hartrol Plus®
 From tradition to intelligent



A.I. Applications inside, Hartrol Plus is the control which provides machining status with advanced features.

Imagine what future machines ought to be outlined.

AiSm@rtcontrol



Hartford
redefine the future



Major functions
of Hartford AI
controller



Facial
Recognition
system-Face ID



AI Environment
Thermal
Displacement
Compensation



AI Efficient
Lubrication
Management



Broken Tool
Detection
System



Highlight on
Intelligent
Auger



AI Navi

IoT

- + Remote Warm-up & Turn-on
- + Hartrol Plus Sync & Update
- + User Connect



Thermal stability solution

- + Spindle Thermal Compensation
- + Casting Thermal Compensation
- + Thermal Symmetry / Thermal Balancing



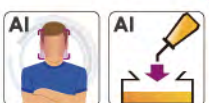
ZDT

- + Diagnosis Report on Spindle Operation
- + Alarm Report System



AI

- + Facial Recognition System
- + AI Efficient Lubrication Management
- + Smart Efficient Chip Collection



How to quickly implement automation?

Hartford Robot Production Cell

Easy to get started

Hartford Robocell provides you a professional robot training and rich automation experience, to let you quickly learn and easily operate your automation systems

Quality control monitoring

Automation systems have to pass all the strict Quality Control tests at every stage like design, assembly, testing, final inspection and shipment, complete quality control processes for all the products.

Professional analysis

Robocell Machining optimization service, to let you be on the top by using professional machining methods

What definition of Automation interface only :



- 1. Automatic Door
- 2. Automatic Interface
- 3. Pneumatic/ Hydraulic Interface
- 4. Other options

1. Automatic Door

- Pneumatic/Automatic Door System_Operating Door
- Pneumatic/ Servo Automatic Door System_Right Side Door

2. Automatic Interface

- I/O Preparation
- Profibus Link Preparation
- CC-Link Preparation
- EtherNet/IP Link Preparation

3. Pneumatic/ Hydraulic Interface

- 1/2/3 Cell Automatic Pneumatic/ Hydraulic Interface in the machine

4. Other options

- High Pressure Spray Nozzle with Automatic Preparation
- HStainless Base
- High-volume chip-removal system comprising dual side augers

Versatile Machining for Industry

A perfect demonstration for machining accuracy and ability.

The Super Tornado offers incredible versatility for you workshop, combining 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 : 6,000 rpm #50 Gear type 18.5kW ■ Cutting material : S45C



Face milling

Tool diameter Ø125 mm
Feed rate 1,800 mm/min
Cutting depth 3 mm
Cutting Width 100mm
Cutting volume 540 cc



End milling

Tool diameter Ø63 mm
Feed rate 4,000mm/min
Cutting depth 30 mm
Cutting Width 4 mm
Cutting volume 600 cc



Tapping

Tool diameter Ø42mm
Feed rate 315 mm/min
Cutting depth 42mm



Drilling

Tool diameter Ø50 mm
Feed rate 250 mm/min
Cutting depth 50mm

Model : HCMC-1682

■ Spindle : 6,000 rpm #50 Gear type 26kW ■ Cutting material : S45C



Face milling

Tool diameter Ø125 mm
Feed rate 2,400 mm/min
Cutting depth 3 mm
Cutting Width 100 mm
Cutting volume 720 cc



End milling

Tool diameter Ø63 mm
Feed rate 3,000mm/min
Cutting depth 40 mm
Cutting Width 5 mm
Cutting volume 600 cc



Tapping

Tool diameter Ø42 mm
Feed rate 360 mm/min
Cutting depth 50 mm



Drilling

Tool diameter Ø76 mm
Feed rate 100 mm/min
Cutting depth 50 mm

All the results featured in this catalogue were produced under strict testing condition in a special zed testing environment. Under different testing conditions and in less than ideal testing environments. That the test results may vary from those shown in this catalogue.

The very first step for fully intelligent machining.

What is Hartrol Plus ?

Hartrol plus is a brand new intelligent controller Hartrol , Hartnet and Hartford electrical function together which developed and made by Hartford.

HMI and operation is user friendly, it can achieve :

1. Internet connection, collect and analyze data, monitoring by portable device
2. Intelligent control: Auto revise human error and operating basis
3. Real time update new APPs

The difference between Hartrol plus and others

Function	Hartrol Plus P1	Others
Screen Size	19"Multi-touch Panel	10.4" (OPT:15")
Look Ahead Block	2700(G5P20000)	400(1000 Max.)
Hard Drive	32GB SSD	NO
Smoothing Interpolation	SSS 4G	Option
Industry 4.0	Hartford UserConnect	NO



The Intelligent Controller You Should Have

With three major solutions, Hartrol Plus takes you machining to the next level.

Highly optimized and intelligent controls bring even more capabilities and productivity to your metal cutting processes.

With ease use, advanced automation, and smart data collection, Hartrol plus is essential tool for enhancing performance on your production floor.

Intelligent Support

Cost down to 20%

Multi Touch Screen
CCD remote management
E-book
Remote Management
Cutting Condition Calculator
Stand-by Mode

Intelligent Functions

Productivity increased 23%

HartCAM
AFC= Automatic Feedrate Control.
SSS-4G
Machining Time Countdown for Single Block
Optimized Machining Program
Automatic measurement

Intelligent Design

Efficiency increased 20%

MES(Manufacturing Execution System)
Machine Utilization Management
Operator Performance Management
24 Hours a Day Management
Remote Management
Hartford Userconnect

Hartford UserConnect

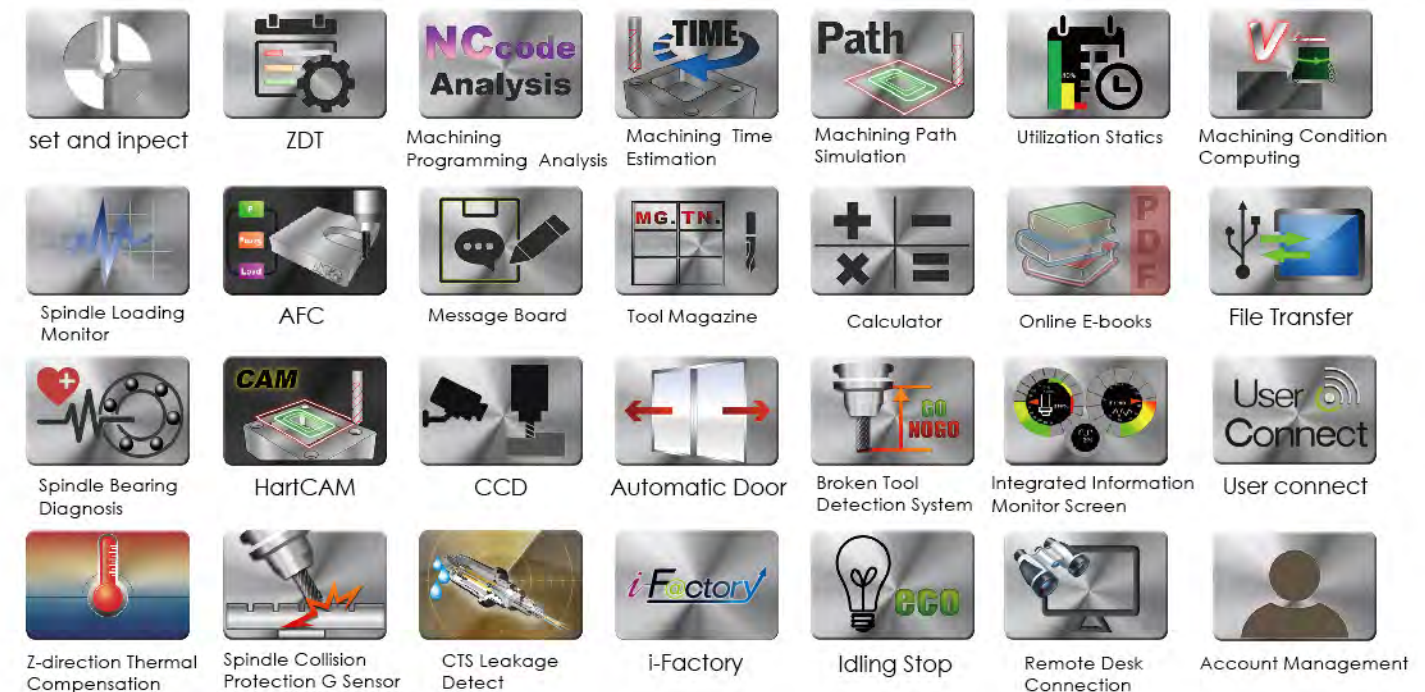
- Alert Notification
- Remote Diagnoses
- Remote Value Enhancement
- Remote Monitoring & Management

Hartford APP Store

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.



Hartford smartcenter APP



The fuctions mentioned above will need to option the Hartrol plus controller or Dual screen with Fanuc controller.

What Hartford APP can do for you?

The integrated intelligent functions of Hartrol plus could achieve your machining requirements.
For more Hartrol Plus functions, please contact our sales person.

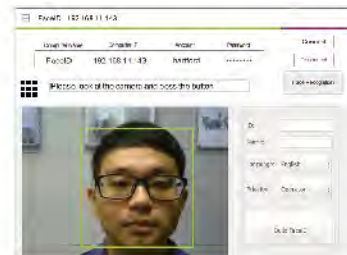
AI Environment Thermal Displacement Compensation(opt.)

Vertical machining center : **0.03mm**
Thermal displacement problem is improved up to **60%**
It can achieve good accuracy as in constant temperature room.



AI Facial recognition system(opt.)

Face ID log-in authority
Recognition time: **2** seconds
Recognition accuracy: **100%**



Highlight on Intelligent Auger(opt.)

50% efficacy increases

- Intelligent auger automatically proceeds cleaning iron chips based on electrical current of spindle.
- Intelligent auger automatically performing reversal mode in case amount of iron chips outnumbers, preventing from machine stop.
- Auger is overly shielded



AI Efficient Lubrication Management(opt.)

50% lubrication saved.

- Auto-adjustment oil supply base on machining condition.
- 50% oil consumption saved



On line update

With online updating system similar to smart phone will make sure your operating system stays the latest version with Hartford.

- 24hr ➡ Live updating , no boundary no time zone difference.
- NEW ➡ Synchronize with Hartford for the latest information and functions.
- Easy ➡ One key updating, easy and fast !



The Hartrol plus NC version must be A6 or above



Graphical user interfaces for part setting, inspection, tool setting

- Ease of use
- Increasing usability
- Eliminating manual set-up tasks
- Increasing efficiency



CIS Integral Design page



Hartford ZDT

Eliminate machine down time and increase efficiency.
ZDT –

- Ease of use
- Check parts status clearly
- Eliminating unexpected down time
- Instand notification to your machine and your protable device



Spindle Vibration Intelligent Monitoring System (B-Safe) is ensuring spindle stability at times(opt.)

Highlights

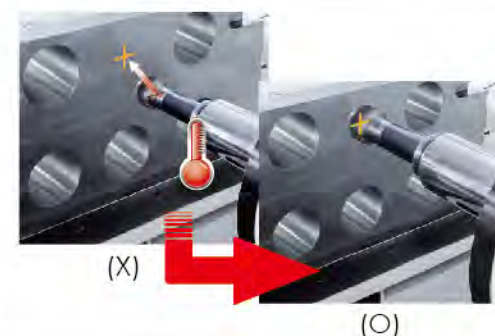
- APP Vibration function is handy to set up manually.
- Alert status on crash protection.
- Responsive graphic is available for diagnosis by user, and analytic information is just-in-time served.



AFC(opt.)

Machining efficiency is increased by **21%**↑
Controls the feed rate depending on the machining situation

- Adjusting feed rate automatically
- Lengthen your tool life
- Reduce machining time



Thermal compensation on spindle(opt.)

No worries about HEAT!!

- Machine with compensation
#40 spindle thermal extension is within 0.03mm
#50 spindle thermal extension is within 0.02mm
 - Machine without compensation
Spindle thermal extension is around 0.10mm
- Notes: Above test is under room temperature



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

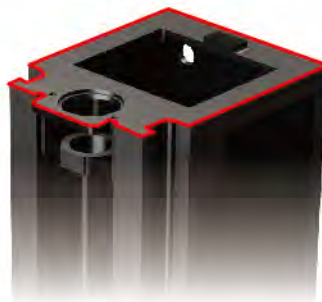
A+ structural stability

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



New square section resists torsion

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



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.



8,000 rpm Gear type spindle

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



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.



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-2082

Variety of Hartford Made Spindle Have Quality Assurance

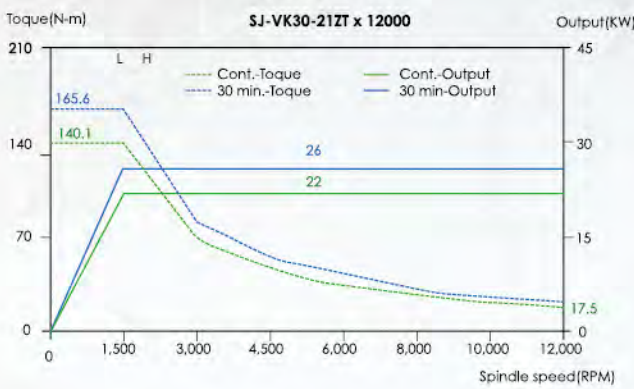
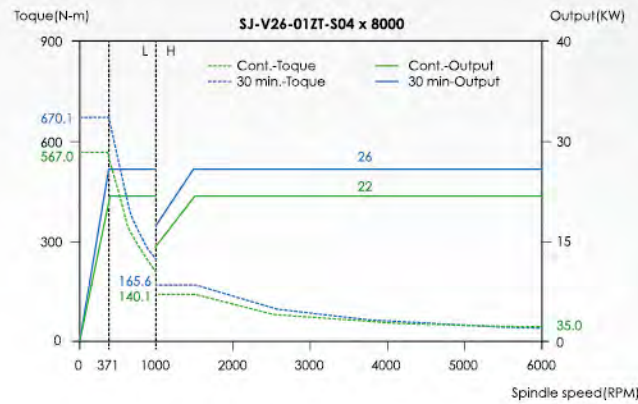
Machine Dimensions

Spindle type

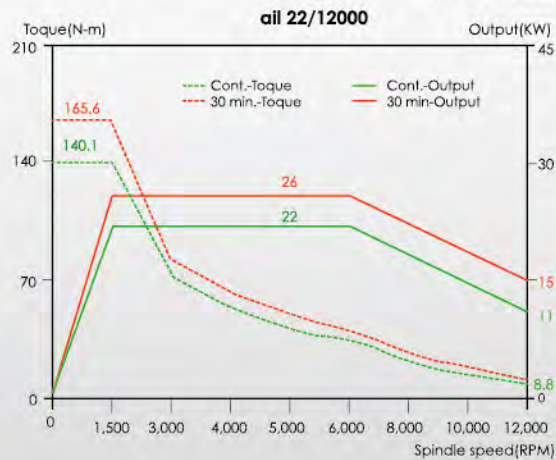
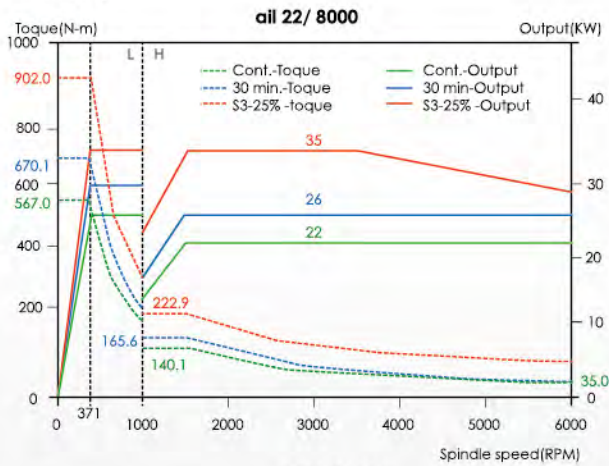
- #40 Pulley type 8000 rpm opt. 10000 rpm(HCMC-1100)
- #40 Gear type 6000 rpm opt. 8000 (HCMC-1100/1270)
- #40 DDS type 10000rpm opt. 15000(HCMC-1100/1270)
- #50 Gear type 6000 rpm opt. 8000 (HCMC-1100/1270)
- #50 Gear type 4000 rpm opt. 6000/8000 (HCMC-1370,x82)
- #50 DDS type opt. 10000(HCMC-1100,x70,x82)

Spindle torque diagram

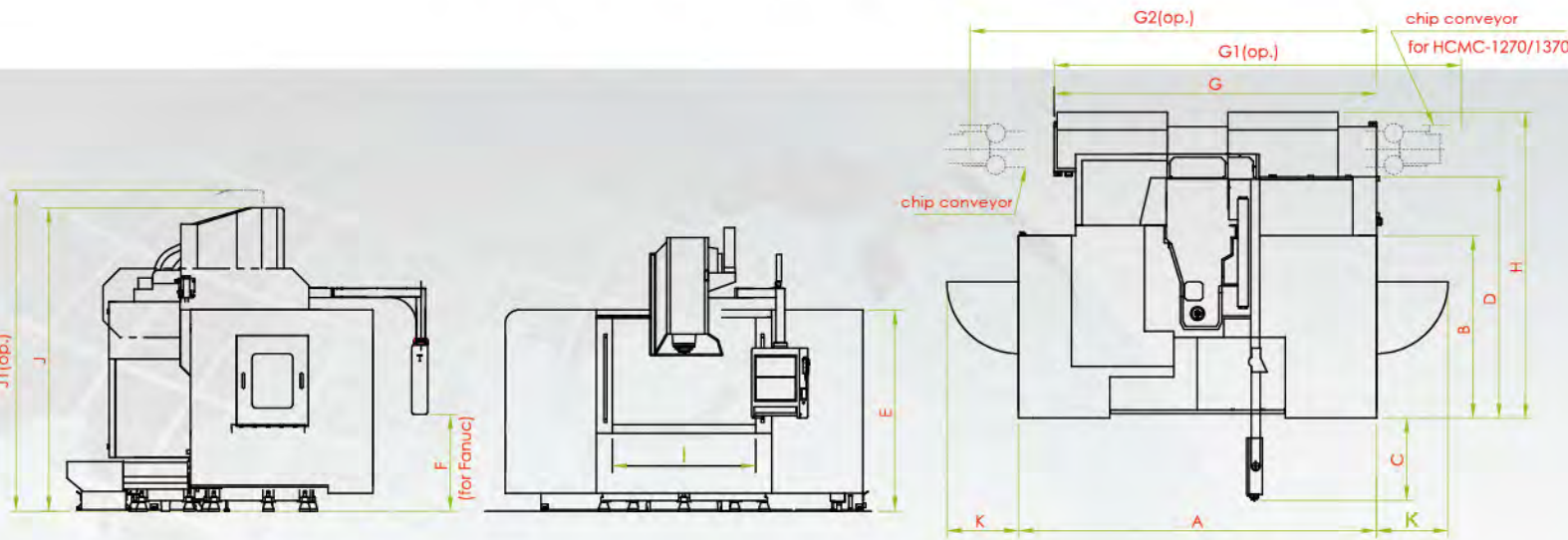
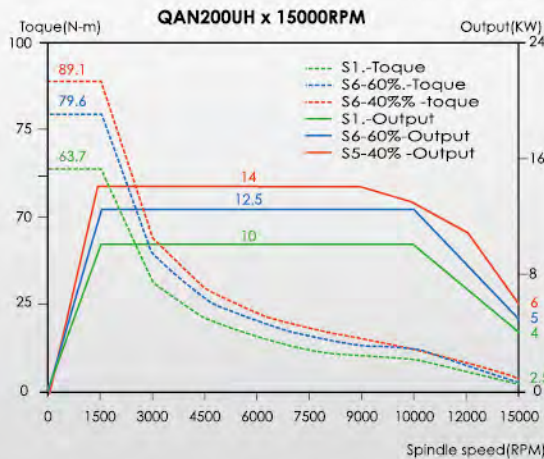
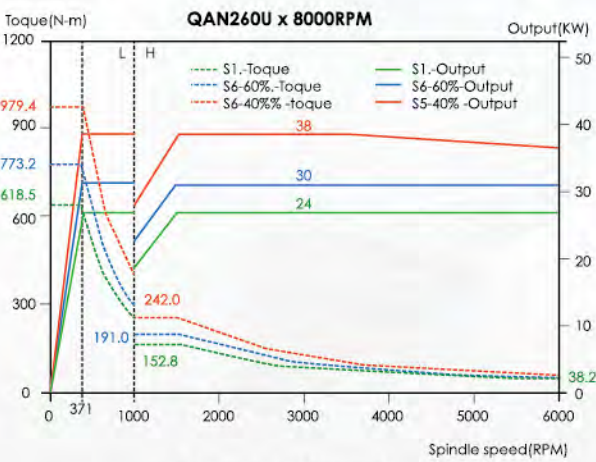
Mitsubishi



Fanuc

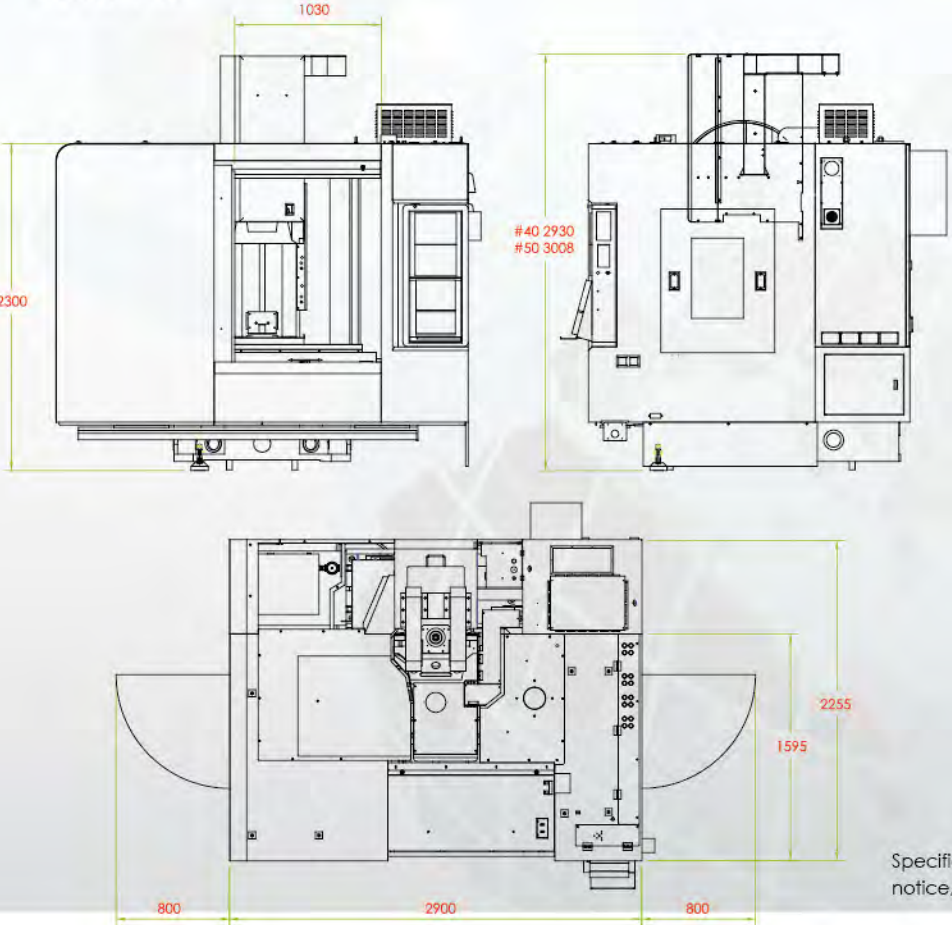


Heidenhain



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	-	3110	1350	2920	3250	800
HCMC-1270(#50)		3300	1655	880	2265	2210	1080	3450	4360	-	3110	1350	3020	3450	800
HCMC-1370	mm	3300	1609	925	2265	2210	1080	3450	4265	-	3270	1370	3000	3200	800
HCMC-1682		4000	2037	1060	2692	2340	1080	3600	-	4437	3417	1613	3380	3590	800
HCMC-2082		5000	2037	1060	2692	2340	1080	3600	-	4437	3417	2160	3380	3590	800
HCMC-2110		5000	2503	942	3158	2425	1080	3700	-	4720	4009	2100	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-2110
Table							
Working Surface	mm	1270x600	1370x650	1450x700	1750x820	2150x820	2250x1020
T-slot(Size x Number x Pitch)	mm	18x5x120	18x5x130	18x5x130	18x5x150	18x5x150	20x7x150
Max Table Load	kg	1200	1200	1500	2200	2600	3000
Travel							
Longitudinal Travel (X-axis)	mm	1100	1270	1300	1600	2060	2100
Gross Travel (Y-axis)	mm	600	650	700	820	820	1020
Vertical Travel (Z-axis)	mm	630	630	660	660 820(OP)	660 820(OP)	820
Distance Form Spindle End to Table Center	mm	100~730	120~750 320~950(OP)	120~780 320~980(OP)	160~810 200~1020(OP)	150~810 200~1020(OP)	200~1020 400~1220(OP)
Distance Form Spindle Center to Column	mm	645	695	745	865	865	1080
Spindle							
Spindle Nose Taper	mm	#40, #50	#40, #50	#50	#50	#50	#50
Spindle Speed	rpm	#40 Pulley 8000(10000) Gear 6000(8000)DDS 10000(15000) #50 Gear 6000(8000)DDS 10000	#40 Pulley 8000 Gear 6000(8000)DDS 10000(15000) #50 Gear 6000(8000)DDS 10000	Gear 4000(6000/8000) (DDS 10000/12000)	Gear 6000	Gear 6000	Gear 4000(6000) (DDS 12000)
Feed							
Cutting feedrate(X/Y/Z)	M/min	12	12	12	12	12	10
Rapid Traverse feedrate(X/Y/Z)	M/min	24/24/20	#40 24/24/20 #50 24/24/18	24/24/20	20/20/18	18 /18/18	15 /15 /15
ATC							
Tool storage Capacity	pcs	#40 A:24/30/40 #50 A:24/32	#40 A:24/30/40 #50 A:24/32	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
Max. Tool Size(Diameter x Length)	mm	#40 A:Ø75x300L #50 A:Ø105 x 300L	#40 A:Ø75x300L #50 A:Ø105 x 300L	Ø125 x350L	Ø125 x350L	Ø125 x350L	Ø125 x350L
Tool Shank		#40 BT-40(CAT40/DIN69871/BBT) #50 BT-50(CAT50/DIN69871/BBT50)	BT-40(CAT40/DIN69871/BBT) 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 BT-40T-1/CAT40/DIN69872 #50 BT-50-1/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
Motor							
Spindle Drive Motor(Fanuc)	kw(Cont/30min)	#40 5.5/7.5 OPT:7.5/11,11/15,15/18.5 #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 4/4/4	11/15 OPT:15/18.5 4/4/4	11/15 OPT:15/18.5 4/4/4	15/18.5 OPT:18.5/22 4/4/4
X/Y/Z Axis Drive Motor(Fanuc)	kw	#40 3/3/3 #50 3/3/4	#40 3/3/3 #50 3/3/4				
Positioning Accuracy							
3 Axes Laser Positioning Accuracy (JIS 6338)							
Positioning Accuracy / Full Travel	mm	±0.010	±0.010	±0.010	±0.010	±0.012	±0.012
Repetitive Positioning Accuracy	mm	±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	0.030
Repetitive Positioning Accuracy	mm	0.010	0.012	0.012	0.012	0.016	0.016
Other							
Required Air pressure	kg/cm²	6.5	6.5	6.5	6.5	6.5	6.5
Electric Power Consumption	KVA	#40 15~40 #50 25~40	#40 20~40 #50 25~40	25~55	25~55	25~55	30~50
Machine weight	kg	#40 7950 #50 8200	#40 7350 #50 7600	9000	12400	13000	16000
Machine Dimension (L x WxH)	mm	#40 2900 x 2714 x 2930 #50 2900 x 2714 x 3008	#40 3450 x 3890 x 3250 #50 3450 x 3980x 3450	3450x4140x3425	4000x4310x3380(OP:3590)	5000x4310x3380(OP:3590)	5000x4950x3625

VDI 3441 accuracy available upon order request.

Specifcations & dimensions are subject to change without notice (for actual weight, shipped product shall prevail.)

Standard & Optional Electrical Functions

Hartrol / Standard

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