

Accessories

Standard : ● Optional : ★

Description	Model	HMC-6	HMC-8	HMC-10	HMC-1000
1.Full-Enclosed Splash Guard		●	●	●	●
2. 50 ARM Type ATC		●	●	●	●
3.Cooling System		●	●	●	●
4.Coolant Jets Around Spindle		●	●	●	●
5.Spindle Air Curtain		●	●	●	●
6.Air Blast Through Spindle		●	●	●	●
7.Lubrication System		●	●	●	●
8.Fluorescent Lamp x2		●	●	●	●
9.Foundation bolt, General		●	●	●	●
10.Spindle Oil Cooler		●	●	●	●
11.X, Y, Z-Axis Ball Screw Enforce Pressure		●	●	●	●
12.Link Type Chip Conveyor & Portable Chip Bucket (EA)		●	●	●	●
13.Screw type chip conveyor		●	●	●	●
14.Oil Fluid Separator		●	●	●	●
15.Tool package		●	●	●	●
16.Individual machine manual x1		●	●	●	●
17.Auto Power off		●	●	●	●
18.Pallet changer pallets		●	●	●	-
19.B-axis coupling (1 degree)		●	●	●	●
20.#50 ARM Type ATC(60 PCS)		★	★	★	★
21.#50 ARM Type ATC(40 PCS)		★	★	-	-
22.Mist Coolant System		★	★	★	★
23.Oil Mist Collector System		★	★	★	★
24.Coolant Through Spindle		★	★	★	★
25.Coolant Through Spindle(20 BAR)		★	★	★	★
26.Coolant Through Spindle(25 BAR)		★	★	★	★
27.Coolant Through Spindle(70 BAR)		★	★	★	★
28.Coolant Through Spindle(40 BAR)		★	★	★	★
29.Coolant Flushing Device (Power : 1.5 HP)		★	★	★	★
30.Coiling Tube Coolant gun		★	★	★	★
31.Air Gun		★	★	★	★
32.Rotary window		★	★	★	★
33.Individual machine manual x 2		★	★	★	★
34.Individual machine manual x 3		★	★	★	★
35.Individual machine manual x 4		★	★	★	★
36.Closed Loop Linear Scale Positioning System		★	★	★	★
37.Pallet changer pallets		★	★	★	★
38.Pneumatic/Hydraulic fixture control package_2+2 ports		★	★	★	-
39.Pneumatic/Hydraulic fixture control package_4+4 ports		★	★	★	-

Electrical

Standard-Electrical

- M code display
- PLC bit setting screen
- Tool comment
- Hole pattern
- Face milling cycle
- Side milling cycle
- Pocketing cycle
- Round cutting
- Workpiece calibration (Manually)
- Spindle load monitor
- High speed, high accuracy parameter screen
- Tool magazine display

Optional-Electrical

- DNC software
- Lifting function against gravity
- Intelligent MPG

Website



Facebook

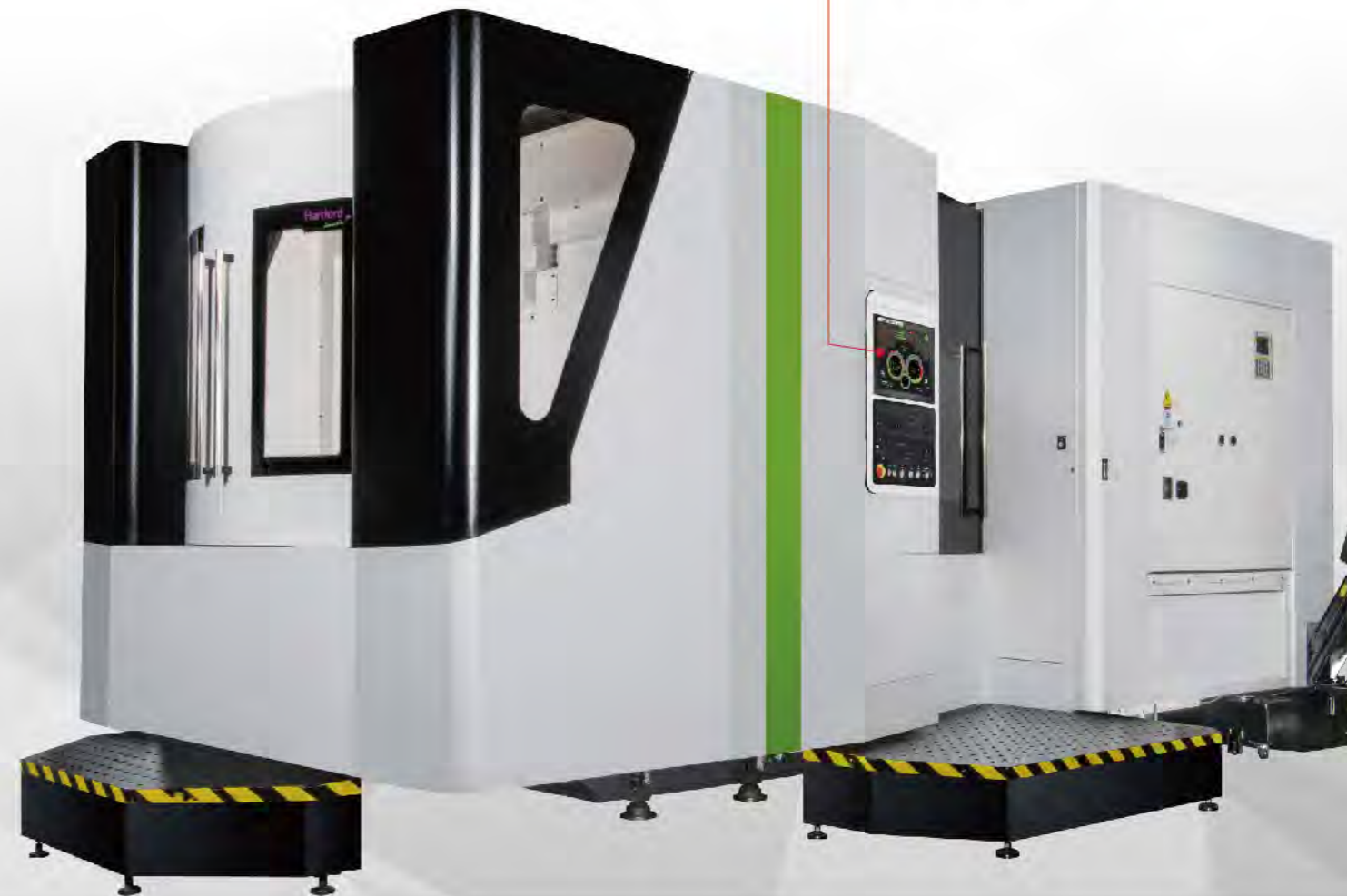


Automatic machining center for manufacturer

HMC Series Smartcenter

- Hartrol plus controller
- 5-Year warranty on guideways
- One-piece bed design
- Tool change time: 1.38 sec
- Oversized column design

Hartrol Plus®
From tradition to intelligent



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Hartford

Hartrol · Smartcenter · Robocell

We manufacture intelligent machines only

Imagine what future machines ought to be outlined.

What is Automation?

Hartford
 redefine the future



The meaning of automation?

Reducing manpower, increasing productivity, maintaining product quality & consistent precise movements without fatigue these all factors can be called "automation". There is a vast scope for automation from fully automatic engine cylinder manufacturing lines to simple robotic loading and unloading operations, the process of automatic workpiece measurement during machining can also be part of automation, so entering the field of automation is not so far away.

When it comes to machining processes, following features we can recommend to help our customers to enter the field of automation



<p>1. Networking</p> <ul style="list-style-type: none"> ▪ Remote warm-up/turn-on ▪ User connect ▪ On-line up-date ▪ Alarm reporting system 	<p>3. Automation</p> <ul style="list-style-type: none"> ▪ Automation Door ▪ Robocell HMI ▪ Inspection for workpiece on the site ▪ Automatic handling systems 	<p>5. Intelligent Factory</p> <ul style="list-style-type: none"> ▪ Management ▪ Intelligent monitor ▪ NC screen monitor ▪ CCD remote monitor ▪ Utilization rate management ▪ Production capacity analysis ▪ Embedded analytic information for operation abnormality
<p>2. Intelligent</p> <ul style="list-style-type: none"> ▪ MES ▪ Auto Q.C. ▪ AFC ▪ HartCAM ▪ Spindle vibration monitoring system ▪ CTS Leakage Detect ▪ ZDT 	<p>4. Ambient temperature is less pertinent to affect machine accuracy.</p> <ul style="list-style-type: none"> ▪ Thermal compensation on spindle dual axes. ▪ Thermal compensation for machine casting 	<p>6. Intelligent energy control</p> <ul style="list-style-type: none"> ▪ Idling stop ▪ Eco monitor ▪ Machining time estimation ▪ Countdown

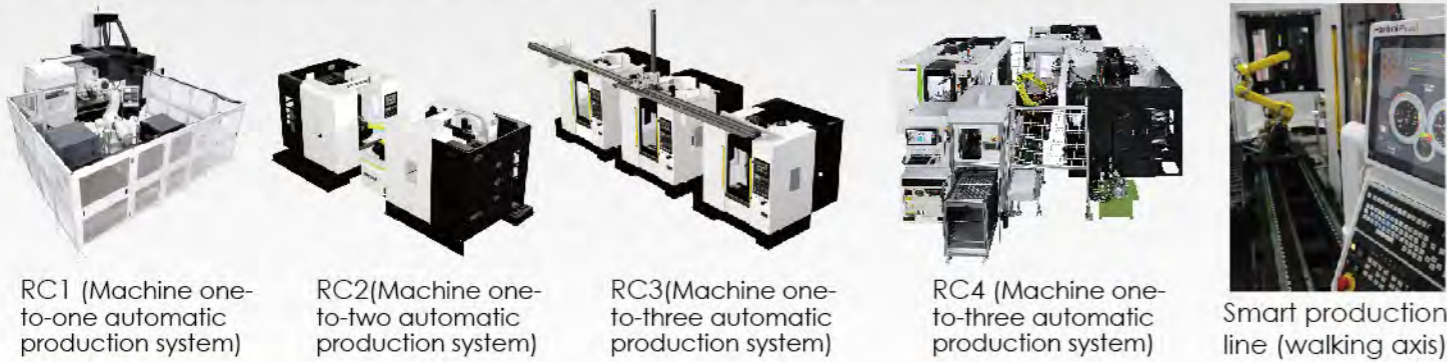


With more intelligent function equals to closer automation.

How to quickly implement automation?

Hartford Robot Production Cell

Hartford has the biggest automation solution team in Taiwan. We design and plan the project by ourself. To be professional, provide rapidly response and efficient are our points. In this modern age, labor shortage is always a big problem for many companies. Hartford provides you a set of stable and efficient automatic solution project to solve your problems.



RC1 (Machine one-to-one automatic production system)

RC2(Machine one-to-two automatic production system)

RC3(Machine one-to-three automatic production system)

RC4 (Machine one-to-three automatic production system)

Smart production line (walking axis)

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



Complete service

- Single window process
- Professional team
- Instant solution
- Quick service



The Application of LAUREL

A perfect demonstration for machining accuracy and ability.

Underneath the compact appearance, the robust structure of LAUREL is engineered with the unique Hartford technology to decrease the cycle time and enhance your cutting efficiency.



1.Parts for motorcycle



2.Hydraulic valve

Actual cutting tests

Model : HMC-6

■ Spindle: 6,000 rpm Gear type, 18.5kW ■ Cutting material : S45C



Face milling

Tool diameter $\varnothing 125 \times 7$
 Feed rate 1,200 mm/min
 Cutting depth 4 mm
 CuttingWidth 100mm
 Cutting volume 480 cc/ mm

End milling

Tool diameter $\varnothing 63 \times 3$
 Feed rate 2,000mm/min
 Cutting depth 30 mm
 Cutting width 5 mm
 Cutting volume 300 cc/min

Tapping

Tool diameter M30 X3.5 mm
 Feed rate 420 mm/min
 Cutting depth 40 mm
 Speed 120rpm

Drilling

Tool diameter $\varnothing 76 \times 2$
 Feed rate 60 mm/min
 Cutting depth 40 mm
 Speed 300rpm
 Spindle load 100%

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 form those shown in this catalogue.

The very first step for fully intelligent machining.

Hartford APP Store?


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 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.



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

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

Cost down to 20%

Intelligent Functions

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

Productivity increased 23%

Intelligent Design

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

Efficiency increased 20%

Hartford UserConnect

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

Hartford smartcenter APP

set and inspect	ZDT	NCcode Analysis Machining Programming Analysis	Machining Time Estimation	Machining Path Simulation	Utilization Statics	Machining Condition Computing
Spindle Loading Monitor	AFC	Message Board	Tool Magazine	Calculator	Online E-books	File Transfer
Spindle Bearing Diagnosis	HartCAM	CCD	Automatic Door	Broken Tool Detection System	Integrated Information Monitor Screen	User connect
Z-direction Thermal Compensation	Spindle Collision Protection G Sensor	CTS Leakage Detect	i-Factory	Idling Stop	Remote Desk Connection	Account Management

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.



On line update

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

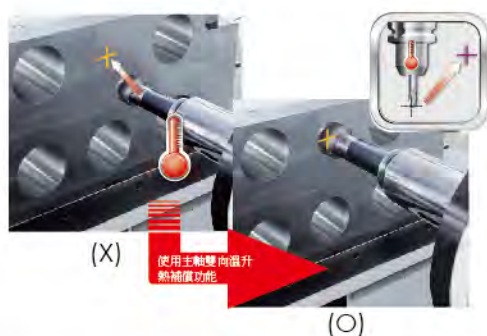
- 24hr ➡ Live updating , no boundary no time zone difference.
- NEW ➡ Synchronize with Hartford for the latest information and functions.
- Easy ➡ One key updating, easy and fast !

The Hartrol plus NC version must be A6 or above

On line intelligent remote system.

Integrate 4 major intelligent functions: remote booting warning, controller monitoring, CCD live feeding, auto alarm noticing. Save your time and efficiently increase the connivance of machine operating.

- Increase production efficiency and profit.
- Time saving and better productivity
- Prevent the machine damaging by on time operation monitoring.



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



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



Set & Inspect(opt.)

Graphical user interfaces for part setting, inspection, tool setting

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



Hartford ZDT

Eliminate machine down time and increase efficiency. ZDT –

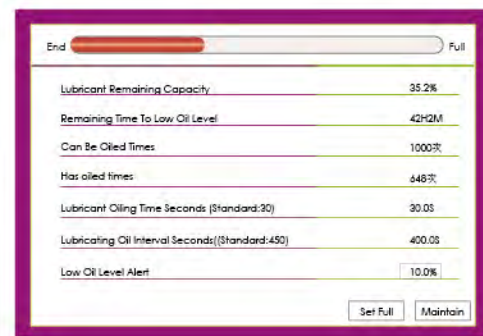
1. Ease of use
2. Check parts status clearly
3. Eliminating unexpected down time
4. Instand notification to your machine and your portable device



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

Highlights

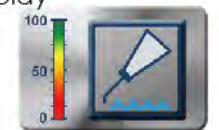
1. APP Vibration function is handy to set up manually.
2. Alert status on crash protection.
3. Responsive graphic is available for diagnosis by user, and analytic information is just-in-time served.



Lubricator detector is a new function

Ensuring your machine working smoothly.

- Lubricant remaining capacity on display
- Reminder time to low oil level on display
- Pumping times on display



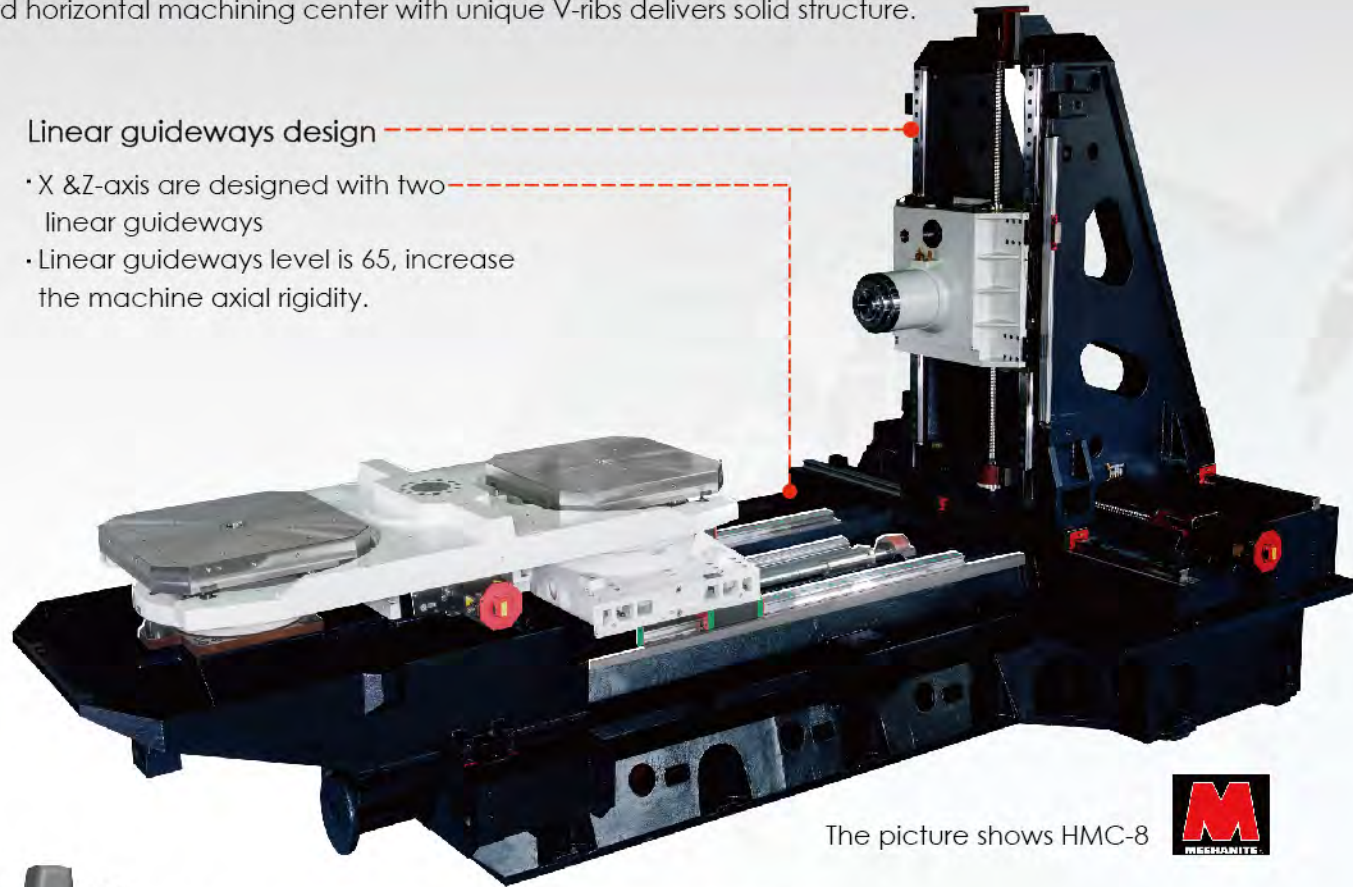
Monolithic Machine Base of LAUREL

Features Of Hartford Horizontal Machining Center

Hartford horizontal machining center with unique V-ribs delivers solid structure.

Linear guideways design

- X & Z-axis are designed with two linear guideways
- Linear guideways level is 65, increase the machine axial rigidity.



The picture shows HMC-8



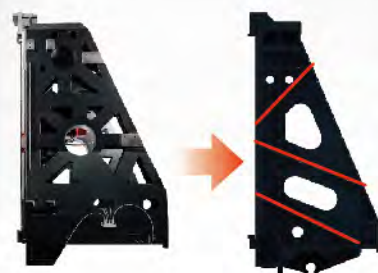
Full range of linear guideway five-year warranty:

Warranty coverage will not apply under following conditions

1. Improper operation (collision)
2. Lack of regular cleaning of accumulated debris causing damage to the linear rails & carriages.

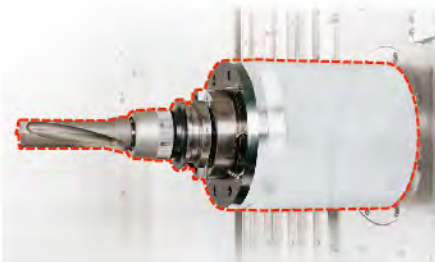
High rigidity column design

- One-piece design on column, increases structure rigidity.
- Two-step design on column, enhances rigidity.
- Chamfer design on inner body increases torsion resistance capability.



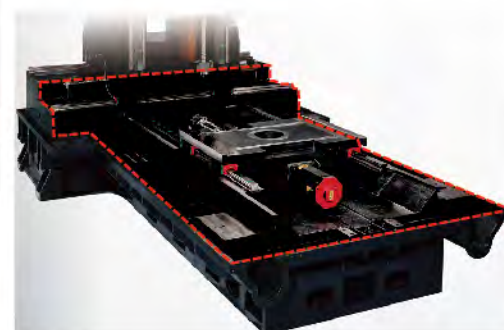
One-piece design on spindle housing and head

- The all new machine head structure design.
- Increases machine rigidity and cutting performance.
- Delivers higher support.



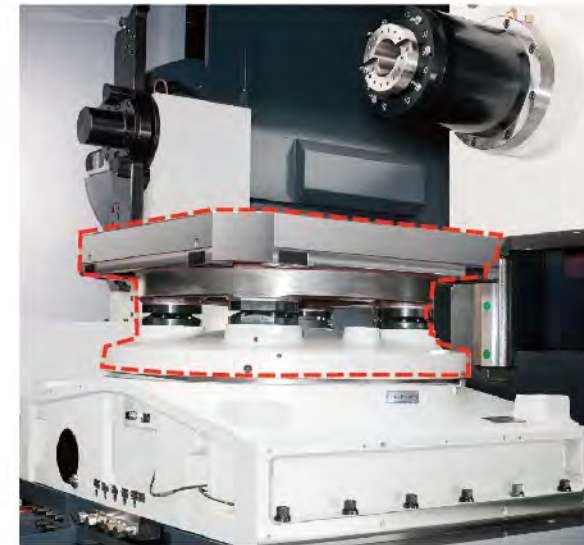
T-shape base features high stability

- Specially design on guideways, distance between linear guideways is 580mm
- Inside the casting are the heavy-duty, anti-flex, vibration-absorbing ribs.
- Makes the machines perfect for heavy-duty machining.



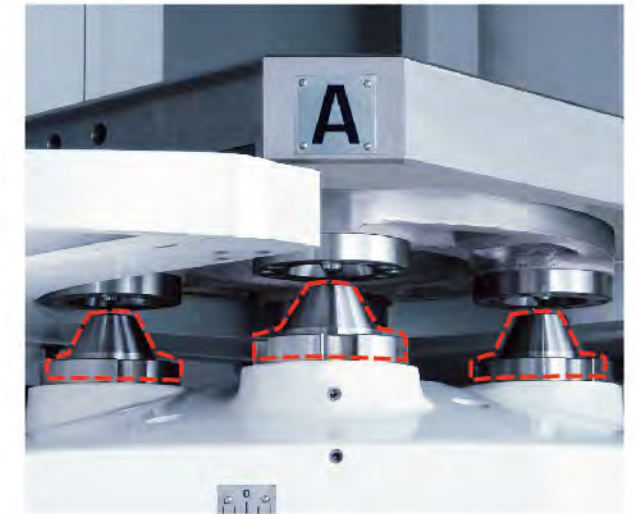
Auto pallet changer

- Auto pallet changer system is anchored on the base.
- The APC of Laurel is integrated on the machine base, free from an possibility of accuracy deviation.
- Min. indexing angle : 0.001° (1°opt.)



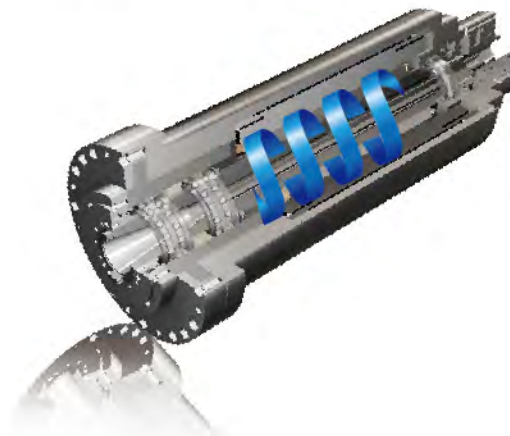
Air blast in B-axis positioning cones

- Pallets are positioned on 4 taper cones in combination with air blast on cone surface and hydraulic drawbar.
- Provides high rigidity and accuracy of the pallet.
- Prevents the ingress of cutting chip or fluid



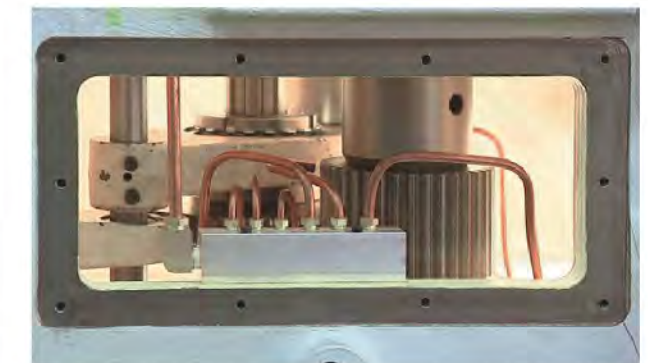
Built-in type spindle 10,000rpm

- The built-in type spindle is capable of resisting longtime continuous running at high speeds.
- It features water & dustproof protection for the spindle bearing.
- Spindle thermal problem is controlled by cooler system.
- Spindle runs on special bearings, providing excellent resistance for axial and radial loads.



ISO 50 Gear type spindle

- Two-step transmission.
- High torque output in low speed.
- Spur gear with big modulus delivers high rigidity and low abrasion.
- Suitable for heavy-load cutting.

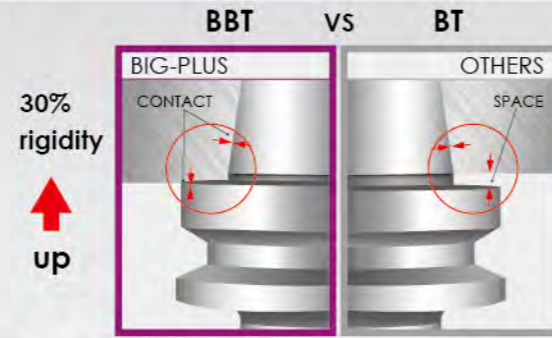


Spindles Manufactured by Hartford Offer Quality Assurance

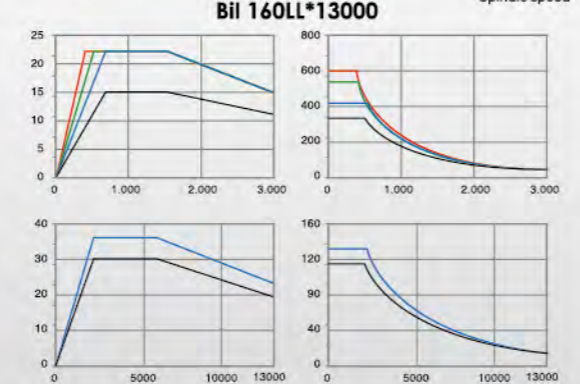
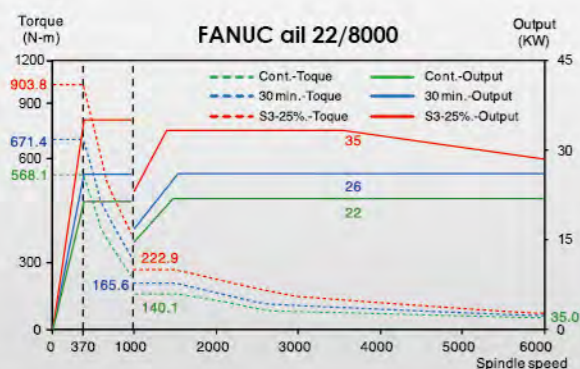
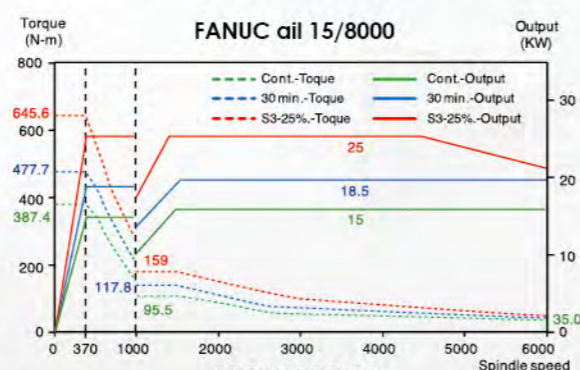
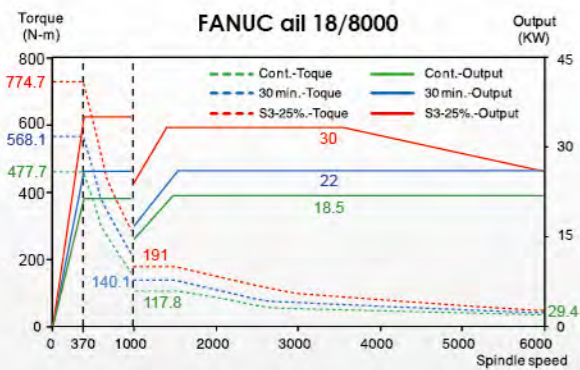
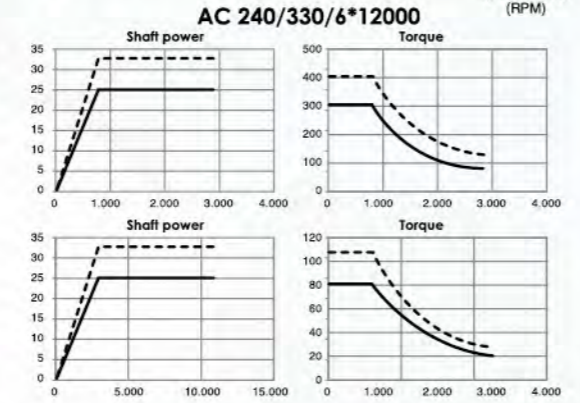
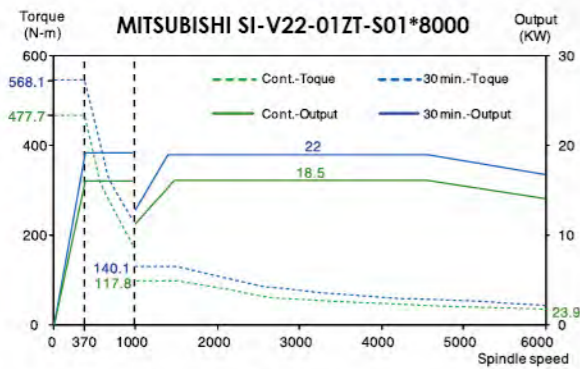
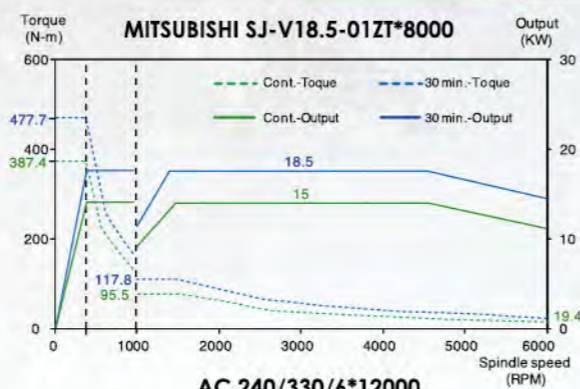
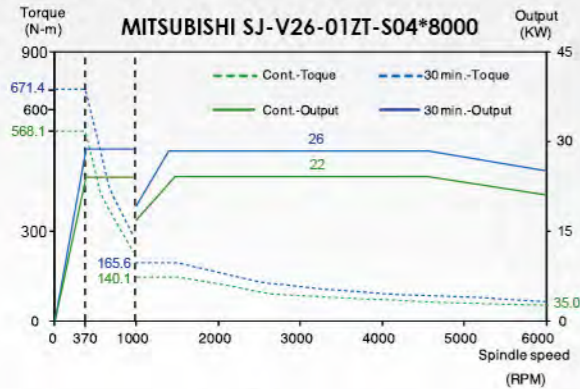
Dimensions Drawing

BBT for optional

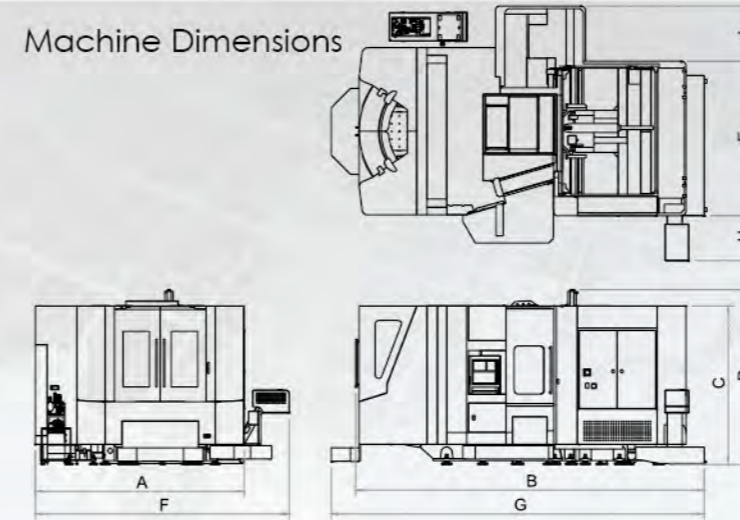
- Dual contact between the taper and the flange.
- Improves the rigidity, accuracy, speed and performance.
- Radial deflection, vibration and deviation are significantly reduced.



Spindle torque diagrams



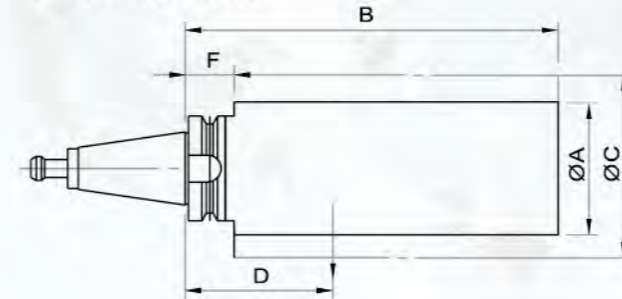
Machine Dimensions



Item	HMC-6	HMC-8	HMC-10	HMC-1000
A	3461	3518	4346	4346
B	5257	5883	7227	5827
C	3000	3032	3282	3282
D	3094	3393	3619	3619
E	3461	3518	3196	3200
F	3817	4727	5284	5284
G	-	6358	7807	7322
H	-	-	950	950
I	-	-	1150	1150

Unit : mm

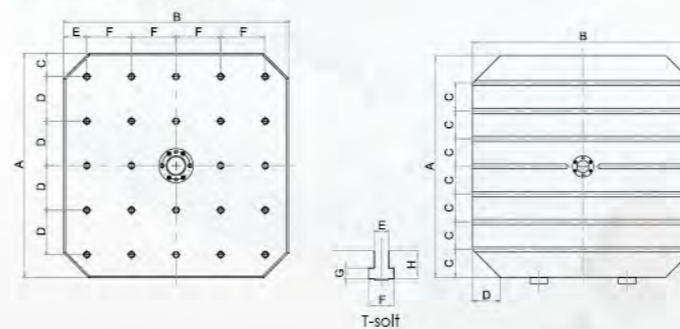
Tool dimension



Unit : mm

Item	A	B	C	D	E	F	Max. tool mass moment
HMC-6	125	400	250	130	20kg	50	25.5N-m
HMC-8	125	500	250	130	20kg	50	25.5N-m
HMC-10	125	600	250	100	25kg	45	24.5N-m
HMC-1000	125	600	250	100	25kg	45	24.5N-m

Pallet dimension



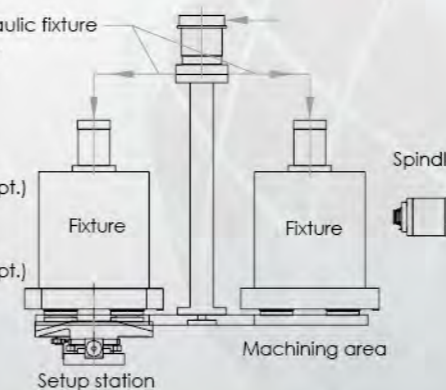
Unit : mm

Item	A	B	C	D	E	F	H
HMC-6	630	630	65	125	65	125	M16x2Px25L
HMC-8	800	800	80	160	80	160	M16x2Px28L

Pneumatic/Hydraulic fixture control package

Pneumatic/Hydraulic fixture control package: 2+2 ports (opt.)

Pneumatic/Hydraulic fixture control package: 4+4 ports (opt.)



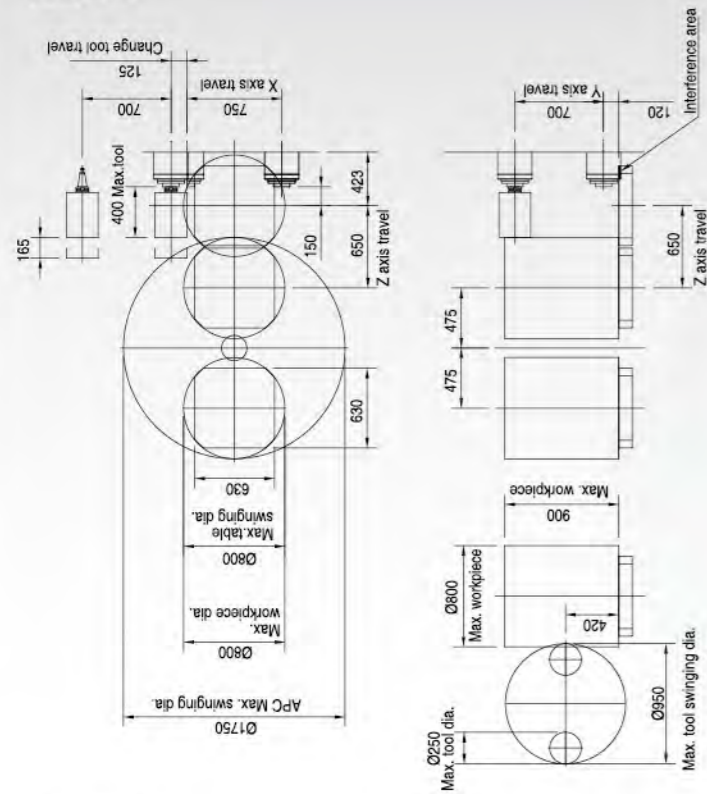
Unit : mm

Item	A	B	C	D	E	F	H
HMC-10	1000	1000	125	125	22	38	42
HMC-1000	1000	1000	125	100	22	38	42

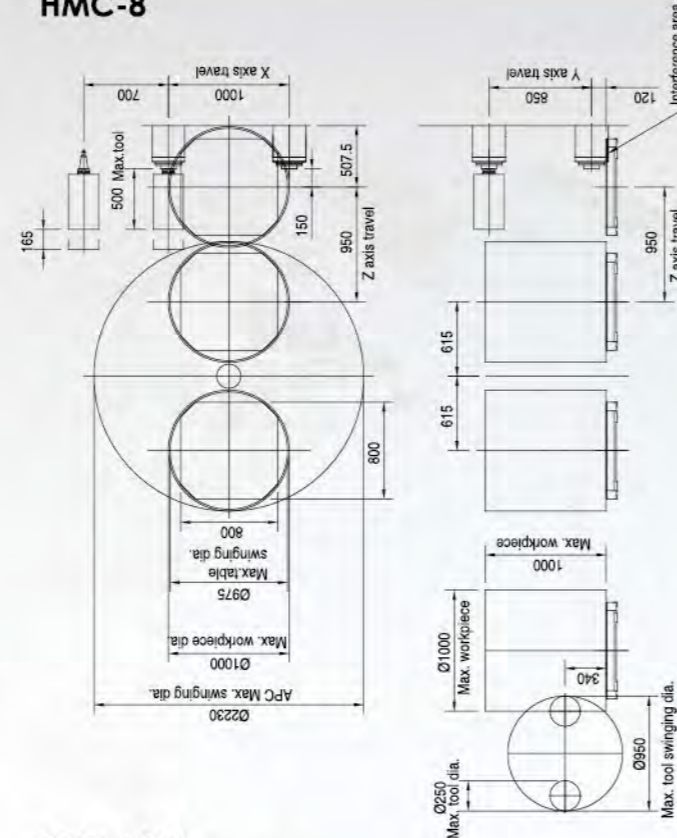
Interference Drawing

Specifications

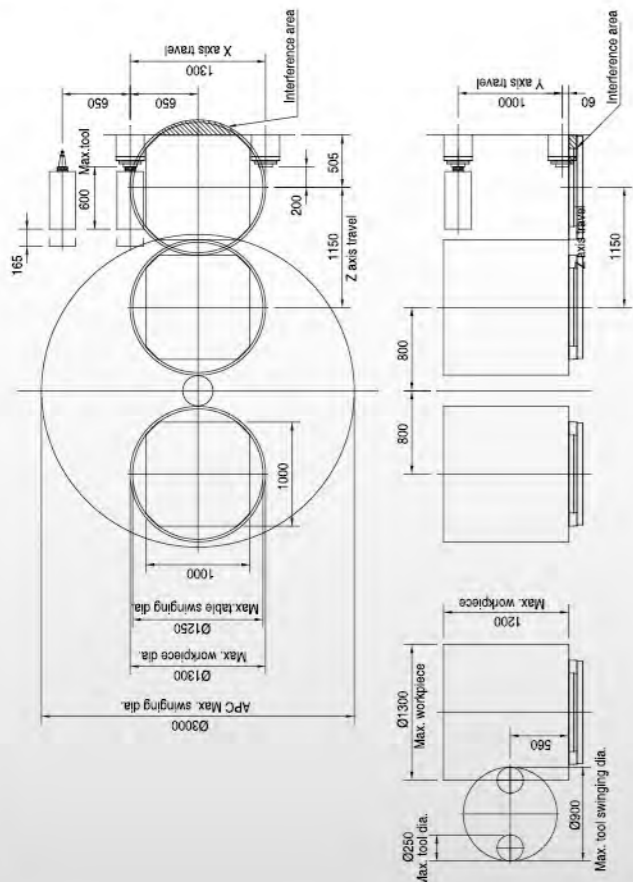
HMC-6



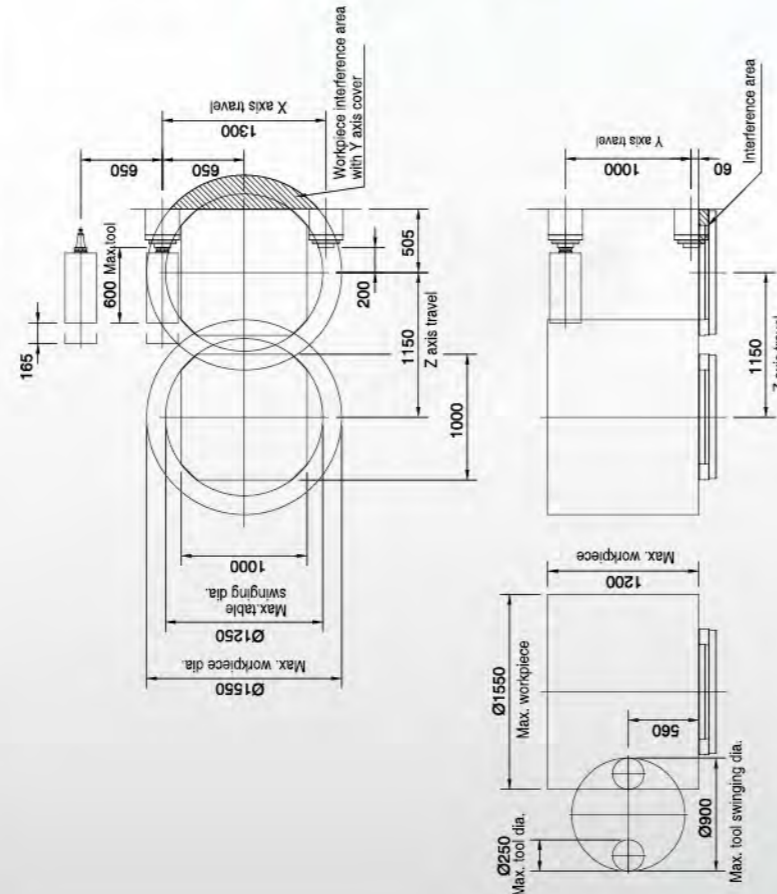
HMC-8



HMC-10



HMC-1000



Model	Unit	HMC-6	HMC-8	HMC-10
Table				
Working surface	mm	630x630	800x800	1000x1000
Max. workpiece swing diameter	mm	Ø800x900	Ø1000x1000	Ø1300x1200
Max. table load	kg	600	1500	2000
Indexing type	deg	0.001(1)	0.001(1)	0.001(1)
Max. speed of pallet top	rpm	22	11	11
Travel				
Longitudinal travel (X-axis)	mm	750	1000	1300
Cross travel (Y-axis)	mm	700	850	1000
Vertical travel (Z-axis)	mm	650	950	1150
Distance from spindle center to table surface	mm	120 - 820	110 - 960	60 - 1060
Distance from spindle end to table center		150 - 800	150 - 1100	200 - 1350
Spindle				
Spindle nose taper		ISO 50	ISO 50	ISO 50
Spindle speed (Gear type)	rpm	6000	6000	6000
Spindle speed (DDS)	rpm	-	-	-
Spindle speed (Built-in)	rpm	-	(10000 opt.)	(10000 opt.)
Feed				
Cutting feed rate(X/Y/Z axis)	m/min	12/12/12	12/12/12	12/12/12
Rapid traverse(X/Y/Z axis)	m/min	40/30/40	30/30/30	30/30/30
ATC				
Tool storage capacity	PCS	40(60 opt.)	40(60 opt.)	40(60 opt.)
Max. tool weight	Kg	20	20	25
Max. tool size (Diameter x length)	mm	Ø125x400L(Ø250x400L neighbor empty)	Ø125x500L(Ø250x500L neighbor empty)	Ø125x600L(Ø250x600L neighbor empty)
Tool selection		Random	Random	Random
Tool shank		BT50(BBT/CAT/DIN)	BT50(BBT/CAT/DIN)	BT50(BBT/CAT/DIN)
Pull stud bolt		P50T-1/CAT-50/DIN69872	P50T-1/CAT-50/DIN69872	P50T-1/CAT-50/DIN69872
Spindle motor				
Motor (Cont./30min)	kw	15/18.5(18.5/22, 22/26 opt.)	15/18.5(18.5/22, 22/26 opt.)	15/18.5(18.5/22, 22/26 opt.)
Positioning accuracy				
3-axes laser positioning accuracy(JIS B6336)				
Positioning accuracy / Full travel	mm	±0.008	±0.008	±0.008
Repetitive positioning accuracy	mm	±0.002	±0.002	±0.002
3-axes laser positioning accuracy(JIS B6336)				
Positioning accuracy	mm	0.010	0.010	0.010
Repetitive positioning accuracy	mm	0.007	0.007	0.007
Other				
Required Air Pressure	kg/cm ²	6.5	6.5	6.5
Electric power consumption	KVA	60	60	58.3
Floor space (Full Guarding)	mm	7791x5572	8430x5635	9680x7400
Machine Weight	kg	17000	21000	25000
Coolant Capacity(Standard)	L	500	650	1100

VDI 3441 accuracy available upon order request.

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