

Accessories

Standard : ● Optional : ★

Description	Model	HEP-2150	HEP-3150
1.Spindle Air Curtain		●	●
2.Air Blast Through Spindle		●	●
3.Spindle Oil Cooler		●	●
4.Table Side Air Blast		●	●
5.Lubrication System		●	●
6.Link Type Chip Conveyor& Portable Chip Bucket		●	●
7.Screw Type Chip Conveyor		●	●
8.Hartford Manual x1		●	●
9.Tool Package		●	●
10.Foundation bolt, concrete		●	●
11.Without Tool Magazine		★	★
12.Coolant Through Spindle		★	★
13.Coolant Through Spindle		★	★
14.Coolant Through Spindle		★	★
15.Roller Linear Guideways-X/Y/Z		●	●
16.Full-Enclosed Splash Guard		●	●
17.CTS full splash guard with top cover		★	★
18.Fluorescent Lamp x1		●	●
19.Fluorescent Lampx2		★	★
20.Coolant System		●	●
21.X/Y/Z-Axis Linear Scale System		★	★
22.Coolant Gun		★	★
23.Air Gun		★	★
24.Oil Skimmer		★	★
25.Z-AXIS Nitrogen Accumulator Pressure		★	★
26.Hoist Seat		★	★
27.Angular Head (Hartford)		★	★
28.Semi-Automatic Angular Head(Hartford)		★	★
29.Mutiangular milling head		★	★
30.Semi-automatic Mutiangular milling		★	★
31.Extend Head (HF-ME35L)-4000RPM		★	★
32.Extend Head (HF-ME50L)-4000RPM		★	★
33.Rotary ARM Seat Of Angular Head		★	★
34.N.C. Rotary Table		★	★
35.Convection Heat Exchanger In Control Box		●	●
36Automatic Power Off		●	●
37.Operation Finish Lamp(For HEIDENHAIN)		★	★
38.Rs232 Interface		●	●
39.Foot Switch For Spindle Clamp/Unclamp		●	●
40.Remote Manual Pulse Generator		●	●
41. Dnc Software(HP/MITSUBISHI/FANUC)		★	★
42.T24E Touch Probe		★	★
43.Workpiece Measure Probe(Ts-640)		★	★
44.Workpiece Measure Probe (Omp60)		★	★
45.Workpiece Measure Probe (Rmp60)		★	★

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Hartford

Hartrol • Smartcenter • Robocell

We manufacture intelligent machines only

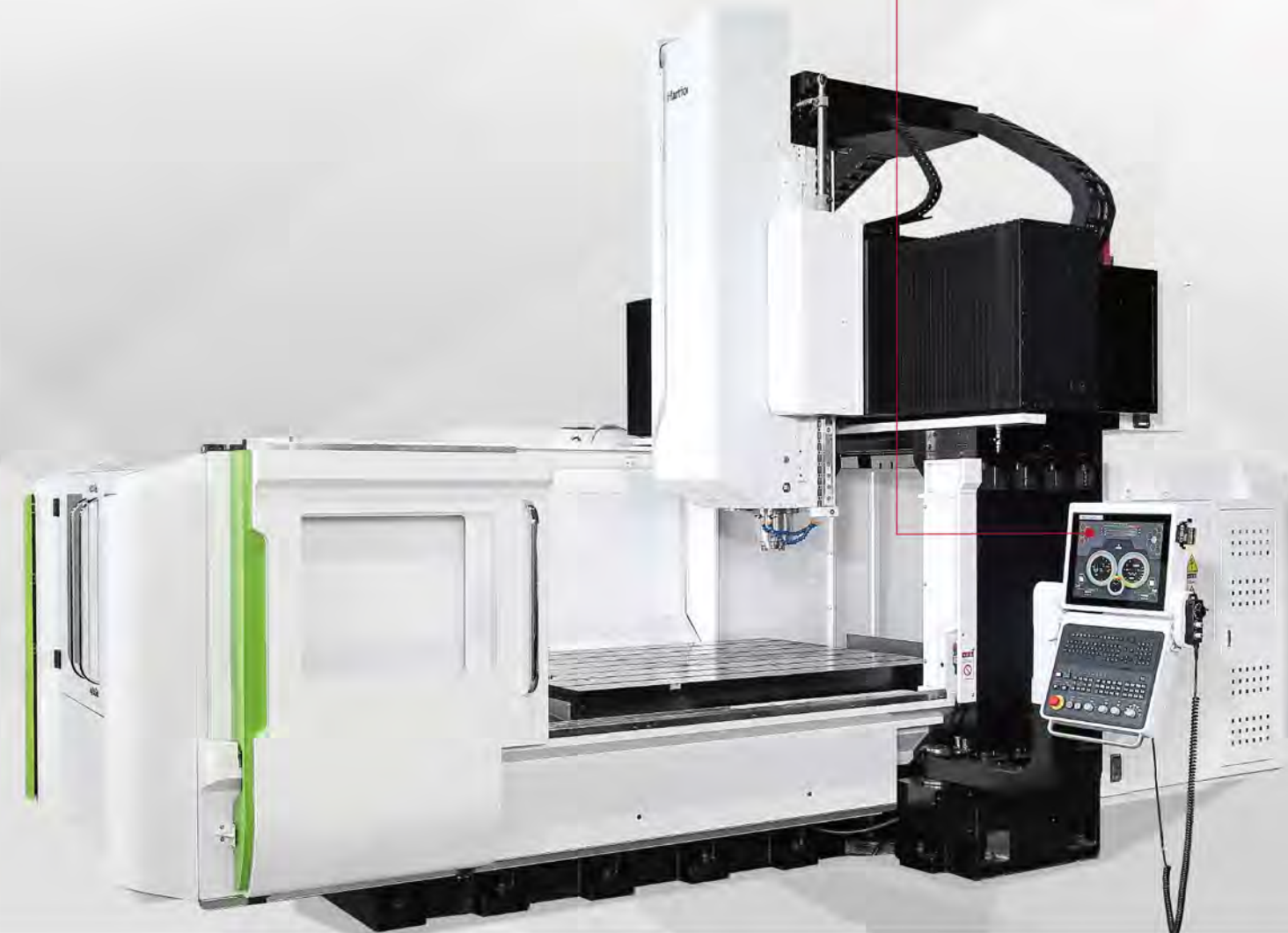
Hartford
EXCLUSIV
Hartrol Plus APP

Intelligent Machining Center

HEP Series

- Hartrol plus controller
- 5-year warranty on guideways
- Spindle run-out : 5 micro
- Four linear guideways on Z-axis
- i-Spindle for DDS type spindle

Hartrol Plus®
From tradition to intelligent



Facebook



Website

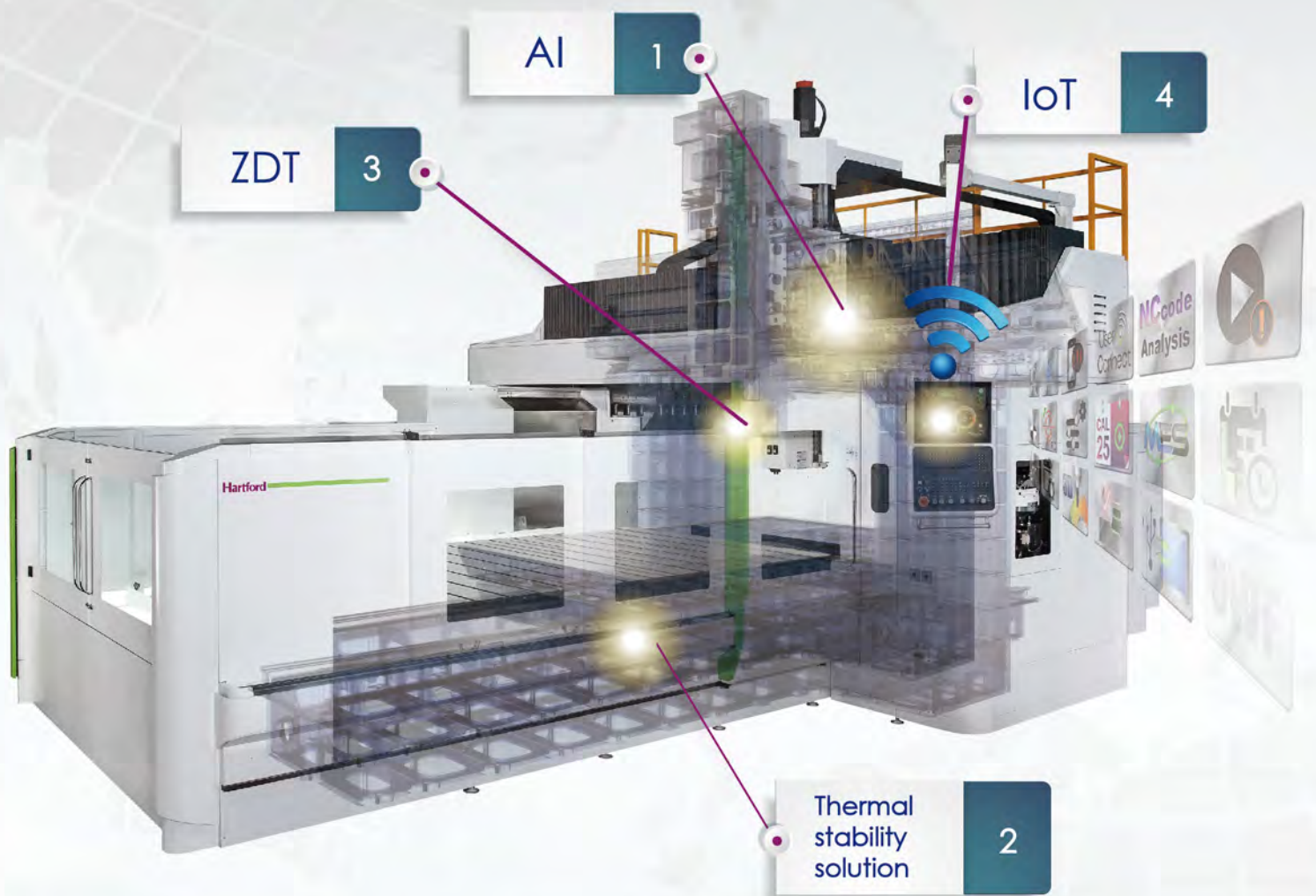


A.I. Applications inside, Hartrol Plus is the control which provides machining status with advanced features.

Imagine what future machines ought to be outlined.



Hartford
redefine the future



Major functions
of Hartford AI
controller

- AI Facial Recognition system-Face ID
- AI Environment Thermal Displacement Compensation
- AI Efficient Lubrication Management
- AI Broken Tool Detection System
- AI 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

Outstanding Machining Capability of MIRAGE

A perfect demonstration for machining accuracy and ability.

The superior machining capability of Hartford machining center is your best partner on machining.



1. Table of vertical machining center



2. Heat spreader

Actual Cutting Test

Model: HEP-2150

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



Face milling

Tool diameter Ø120x7T mm
Feed rate 1,760 mm/min
Spindle speed 1,100 rpm
Cutting depth 4 mm
Cutting width 100 mm
Cutting volume 560cc/mm



End milling

Tool diameter Ø63 x3T mm
Feed rate 1,600mm/min
Spindle speed 1,100 rpm
Cutting depth 35 mm
Cutting width 10 mm
Cutting volume 1600cc/mm



End milling

Tool diameter Ø76 mm
Feed rate 66mm/min
Cutting depth 40 mm

All the test 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



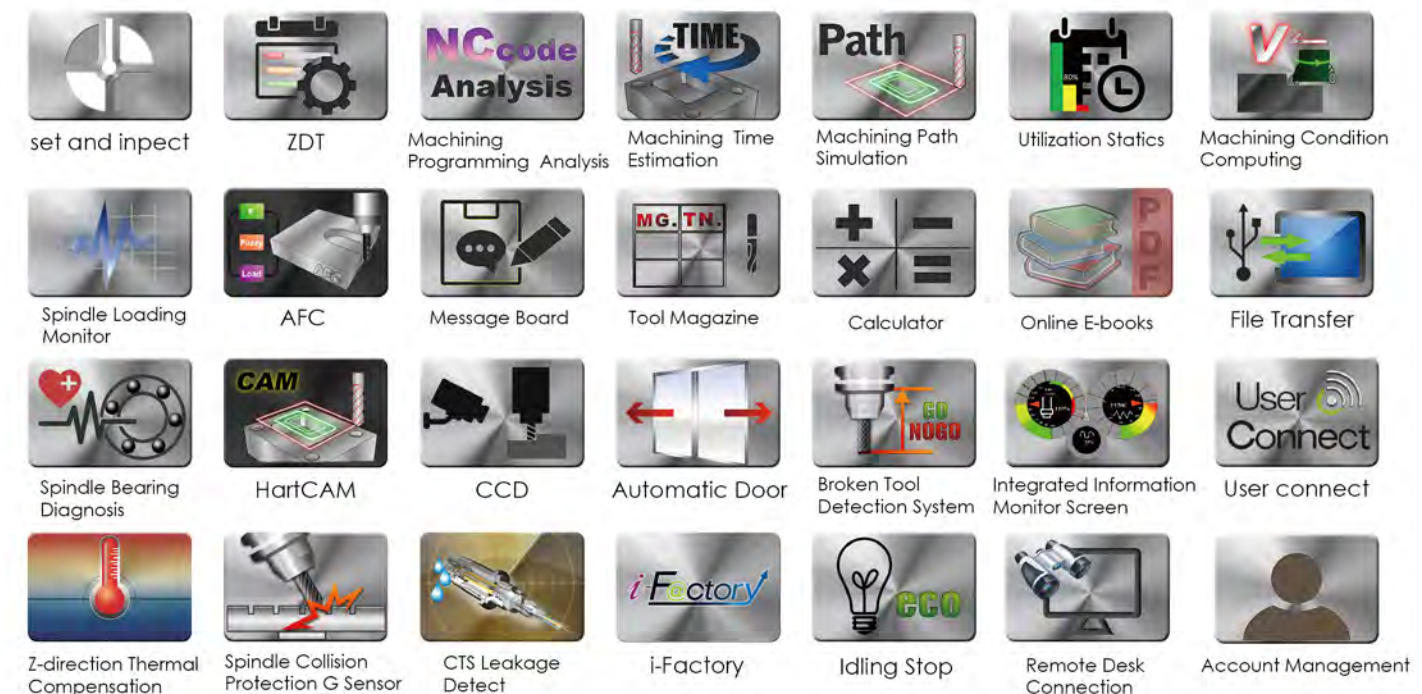
- Alert Notification
- Remote Diagnoses
- Remote Value Enhancement
- Remote Monitoring & Management

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%**



AI Tool breakage detection (opt.)

Available with tool size **6mm** above
■ Tool wears when electric current ratio increased
■ When tool abrasion over than your setting, machine alarms to avoid tool breakage



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



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 protable device



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

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.

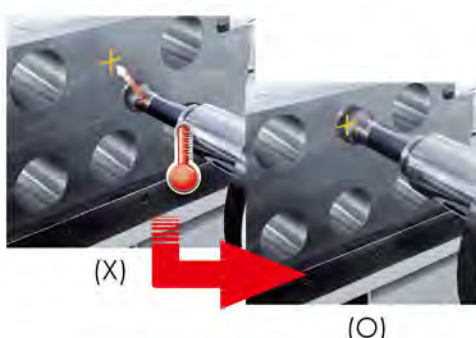


AFC(opt.)

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



All New Structure Design Delivers Better Rigidity & Cutting Capability

Hartford MIRAGE double column machining center is designed for precision machining.



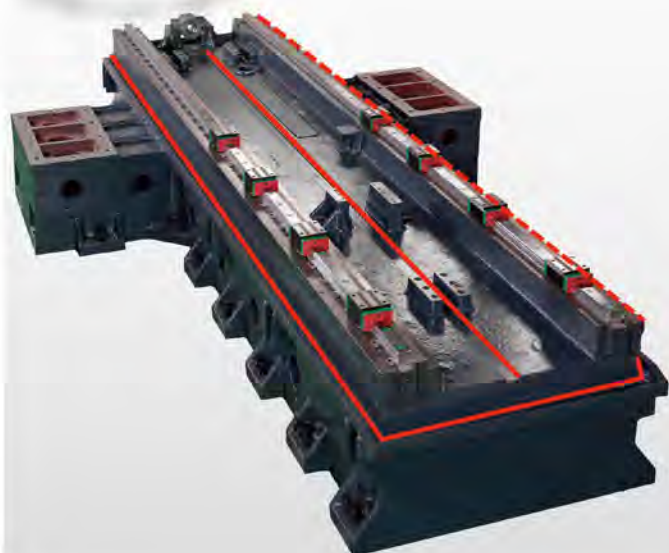
The picture show HEP-2150



Full range of linear guideway five-year warranty

Warranty coverage will not apply under the following conditions

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



1. Overlapped structure design

- **Durable overlapped** beam, column and base construction.
- Extra high box type beam construction combined with shortened column length increase the rigidity of the entire structure.
- Scrapping accuracy calibration is easier to control.

2. Rugged construction

- The major structure parts, such as beam, table and base are **ruggedly** designed.
- It constricted with scientific reinforcement to remain deformation – free year-after – year.

3. Oil / fluid separation on base

- The complete oil/fluid separation design throughout the machine extends the life of fluids and saves on production costs.
- It meets environmental protection requirements.
- The patented oil/fluid separation tank achieves the best oil / fluid separation effect.

Four linear guideway on Z-axis

- This makes Z-axis movement smoother and faster.
- Four linear guideways design delivers higher supported rigidity.
- The quality motion control reduces reverse spike marks on the work piece surface.
- Higher machining efficiency without sacrificing structural rigidity.



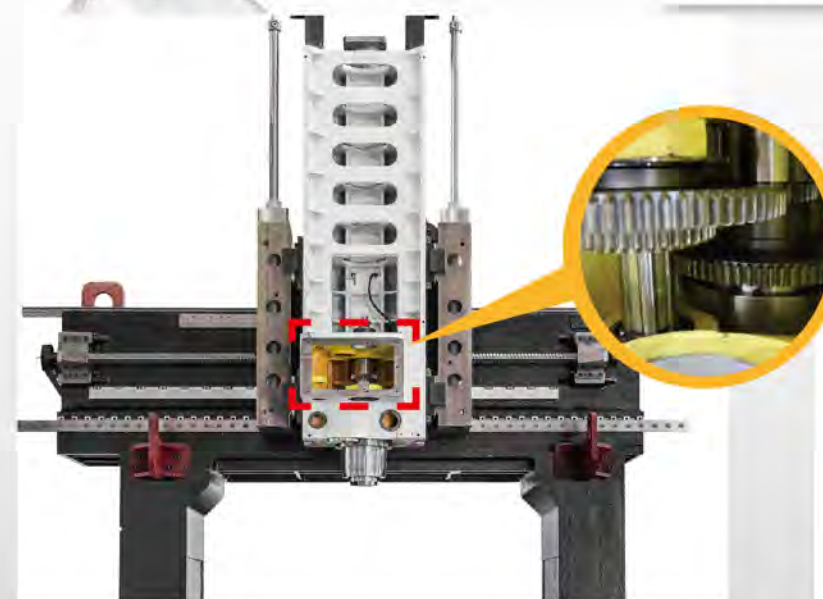
Z-axis nitrogen accumulator weight system

- Reduce operating noise of hydraulic tank.
- Reduce hydraulic tank oil temperature by **50%**
- Effective energy-saving more than **20%**



DDS 10,000rpm spindle

- Cooled design decreases spindle thermal displacement.
- Direct type driven lower noise and vibration problems.
- Box type thermal symmetry spindle head construction.
- The spindle features floating tool knocking without any direct force exerted on the bearing for extending the bearing life.
- A heat-isolated coupling is equipped between the motor and spindle. It prevents motor heat from transferring to the spindle for better accuracy control.
- i-Spindle option.

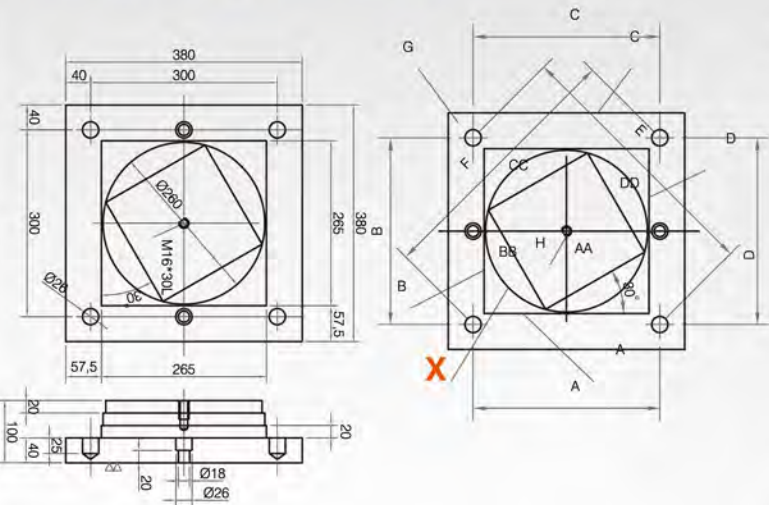


Tough gear-drive spindle head

- Box type and thermal symmetry design.
- An optimal spindle center layout.
- Standard spur gear drive offers greater transmission efficiency.
- Increases cutting rigidity and cutting stability.

2D Cutting Test

2D cutting test report



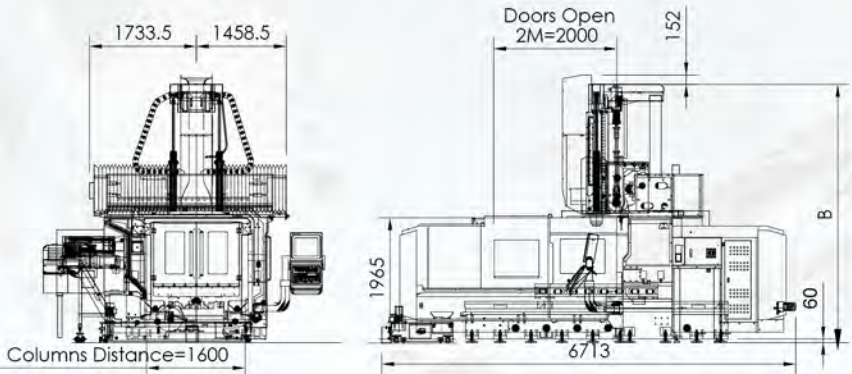
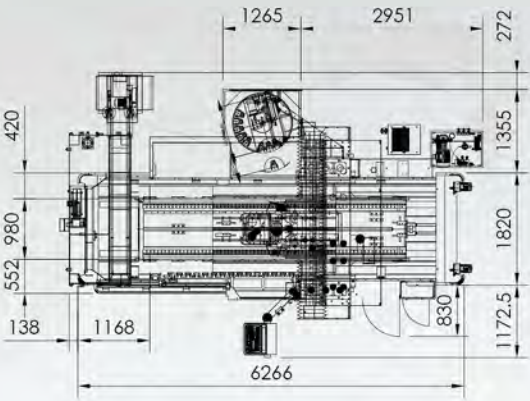
Model : HEP-2150 Temperature:20.0 °C/Humidity :75%
Material: FC25 Tool:ø25mmx4t

Item	JIS standard	Hartford standard	Cutting result
Positioning accuracyA(220mm)	0.025mm	0.025mm	0.0017mm
Positioning accuracyB(220mm)	0.025mm	0.025mm	0.0052mm
Positioning accuracy EF	0.035mm	0.035mm	0.003mm
CircularityX	0.040mm	0.02mm	0.0083mm
Perpendicularity bet. Adjacent sides	0.03mm	0.03mm	0.0036mm
Parallelism A&C,B&D	0.03mm	0.03mm	0.0041mm
Perpendicularity AA&BB	0.04mm	0.04mm	0.0019mm
Perpendicularity BB&CC	0.04mm	0.04mm	0.0027mm
Perpendicularity CC&DD	0.04mm	0.04mm	0.0035mm
Perpendicularity DD&AA	0.04mm	0.04mm	0.0062mm
Parallelism AA&CC	0.04mm	0.04mm	0.0053mm
Parallelism BB&DD	0.04mm	0.04mm	0.0042mm

unit : mm The test reports will vary with cutting conditions.

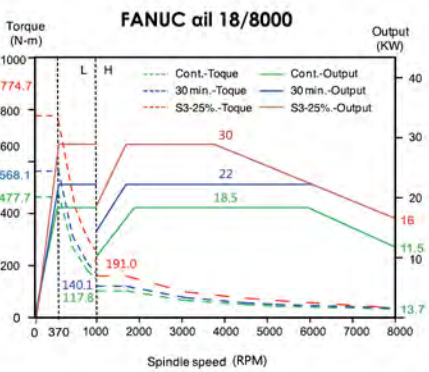
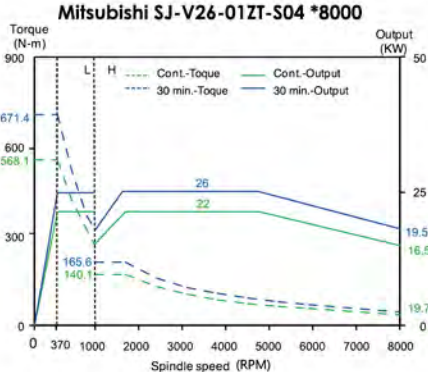
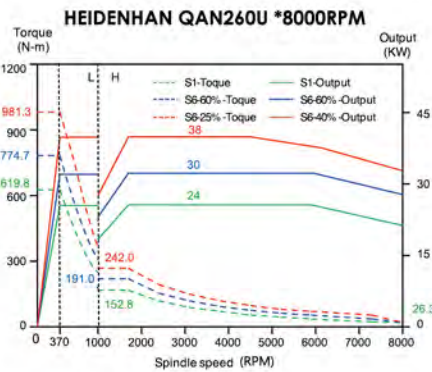
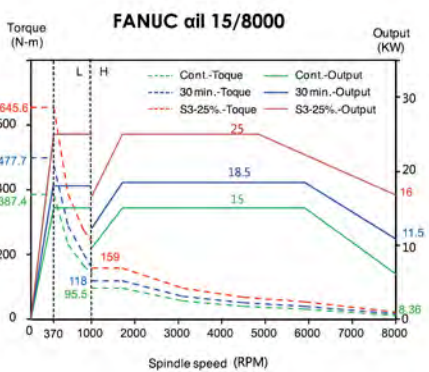
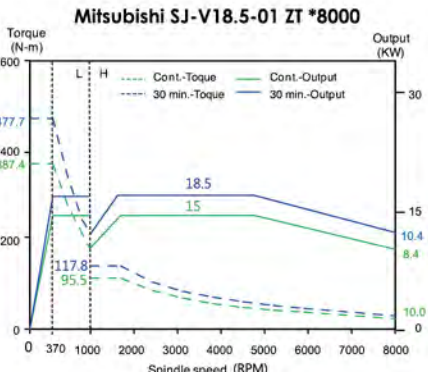
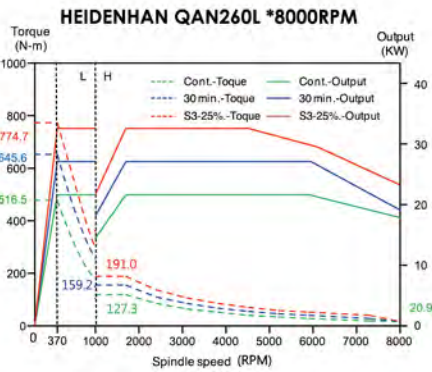
Machine Dimension

HEP-2150

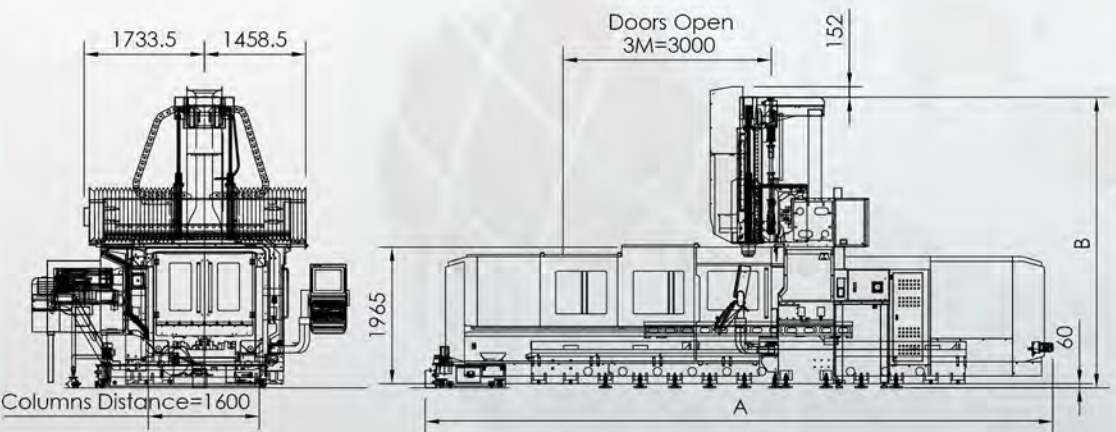
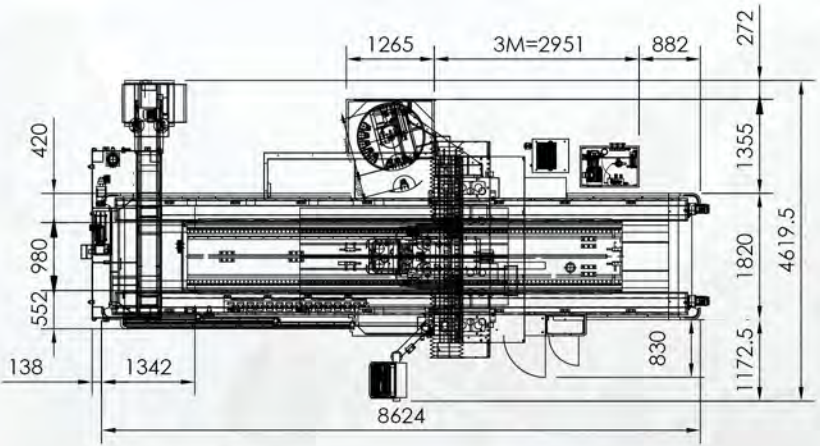


HEP-X150		HEP-2150	
		A	B
Z780	B920	6713	4186
	B1020		4286
	B1120		4386

Spindle Diagram



HEP-3150



HEP-X150		HEP-3150	
		A	B
Z780	B920	9040	4186
	B1020		4286
	B1120		4386

Specification

Model	Unit	HEP-2150	HEP-3150
Table			
Working Surface	mm	12000x1400	3000x1400
T-slot(Size x Number x Pitch)	mm	22x7x180	22x7x180
Max Table Load	kg	8000	10000
Travel			
Longitudinal Travel(X-axis)	mm	2250	3250
Gross Travel(Y-axis)	mm	1600(OPT.1500)	1600(OPT.1500)
Vertical Travel(Z-axis)	mm	780	780
Distance From Spindle End to Table Center	mm	160~940(Z780_B920 Standard Machine Base) 260~1040(Z780_B1020 Heighten Base100) 360~1140(Z780_B1120 Heighten Base200)	160~940(Z780_B920 Standard Machine Base) 260~1040(Z780_B1020 Heighten Base100) 360~1140(Z780_B1120 Heighten Base200)
Distance From Spindle Center to Column	mm	430	430
Width Between Column	mm	1600	1600
Spindle			
Spindle Nose Tape		#50	#50
Spindle Speed(Gear)	rpm	6000(8000 opt.)	6000(8000 opt.)
Spindle Speed(DDS)	rpm	10000(12000 opt.)	10000(12000 opt.)
Feed			
Cutting feedrate(X,Y,Z Axes)	M/min	12/12/12	12/12/12
Rapid Traverse feedrate(X,Y,Z Axes)	M/min	24/24/20	20/24/20
ATC			
Tool Storage Capacity	pcs	A:32/40	A:32/40
Max. Tool Weight	kg	18	18
Max. Tool Size(Diameter x Length)	mm	Ø125x300L	Ø125x300L
Tool Shank		opt.Ø200x300L	opt.Ø200x300L
Pull Stud Bolt		BT50(BBT/CAT)/DIN69871A MAS-P50T-1/DIN69872A/CAT50	BT50(BBT/CAT)/DIN69871A MAS-P50T-1/DIN69872A/CAT50
Motor			
Spindle Drive Motor (Cont/30min)	kw	18.5 opt.22/26	18.5 opt.22/26
Positioning Accuracy			
3 axes laser positioning accuracy (JIS B6330)			
Positioning accuracy / Full travel	mm	±0.010	±0.010
Repetitive positioning accuracy	mm	±0.003	±0.003
3 axes laser positioning accuracy (VDI 3441)/Repeated 5 times			
Positioning accuracy	mm	0.015	0.015
Repetitive positioning accuracy	mm	0.014	0.014
Other			
Required Air Pressure	kg/cm²	30-45	40-60
Electric Power Consumption	KVA	50	50
Machine dimension	mm	8272x5915.5	10630x5915.5
Net Weight	kg	22000	26000
Collant tank(Standard)	L	480	480

VDI 3441 accuracy available upon order request.

Standard & Optional Electrical Function

Hartrol / Standard(Fanuc only)

- Workpiece calibration by MPG directly
- Tool magazine display
- Pop-up calculator (in Hartrol screen)
- Parameter package
- Utilization rate of machining (Fanuc only)
- Machining countdown(Fanuc Only)
- Thread cutting (0i/31i only)
- Tool type display on magazine display screen(0i/31i only)
- Monitoring of tool status(0i/31i only)
- Character carving macro
- Tool change function on tool offset screen

Hartnet / Optional

- Management system of utilization
- Machining time countdown
- Convenient file transfer
- Production management

Electrical Function/ Optional

- Lifting function against gravity
- Retraction for rigid tapping
- Intelligent MPG
- Compensation of temperature displacement
- HMI for tool magazine