

HSA NEW INFINITY

HSA / EA / EAY Series

High efficiency machining center

- Hartrol plus controller
- 5-Year warranty on guideway
- Spindle run-out : 5 micro
- Gear type 8,000rpm spindle
- Four linear guideways on Z- axis



Website



Facebook



Hartford has sold more than 46,000 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.

Hartford
innovation

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Application program

Key technology

Intelligentization

Specification parameter

Strong cutting force; release your production potential

All New Infinity of high rigidity, high-precision can help you machine blank to become the finished mold of excellent precision and smoothness.



1. Auto industry - large sheet metal mold



2. Auto industry- steering wheel

Actual cutting tests

Model: HSA-428 Spindle: 6,000 rpm gear type 26 KW
Cutting material: S45C medium carbon steel



Face milling

Tool diameter	Φ125mm
Feed rate	2050mm/min
Depth	4mm
Cutting volumn	820 CC/mm
Width	100mm



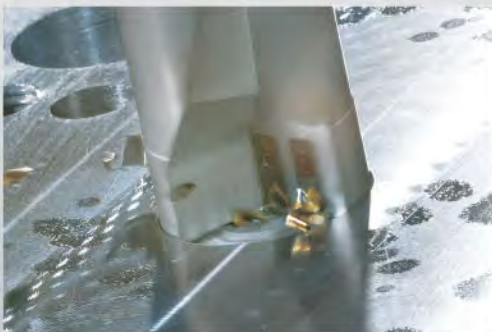
End milling

Tool diameter	Φ63mm
Feed rate	1350mm/min
Width	10mm
Depth	40mm



Tapping

Tool diameter	Φ36mm
Feed rate	480mm/min
Depth	40mm
Spindle load	35%

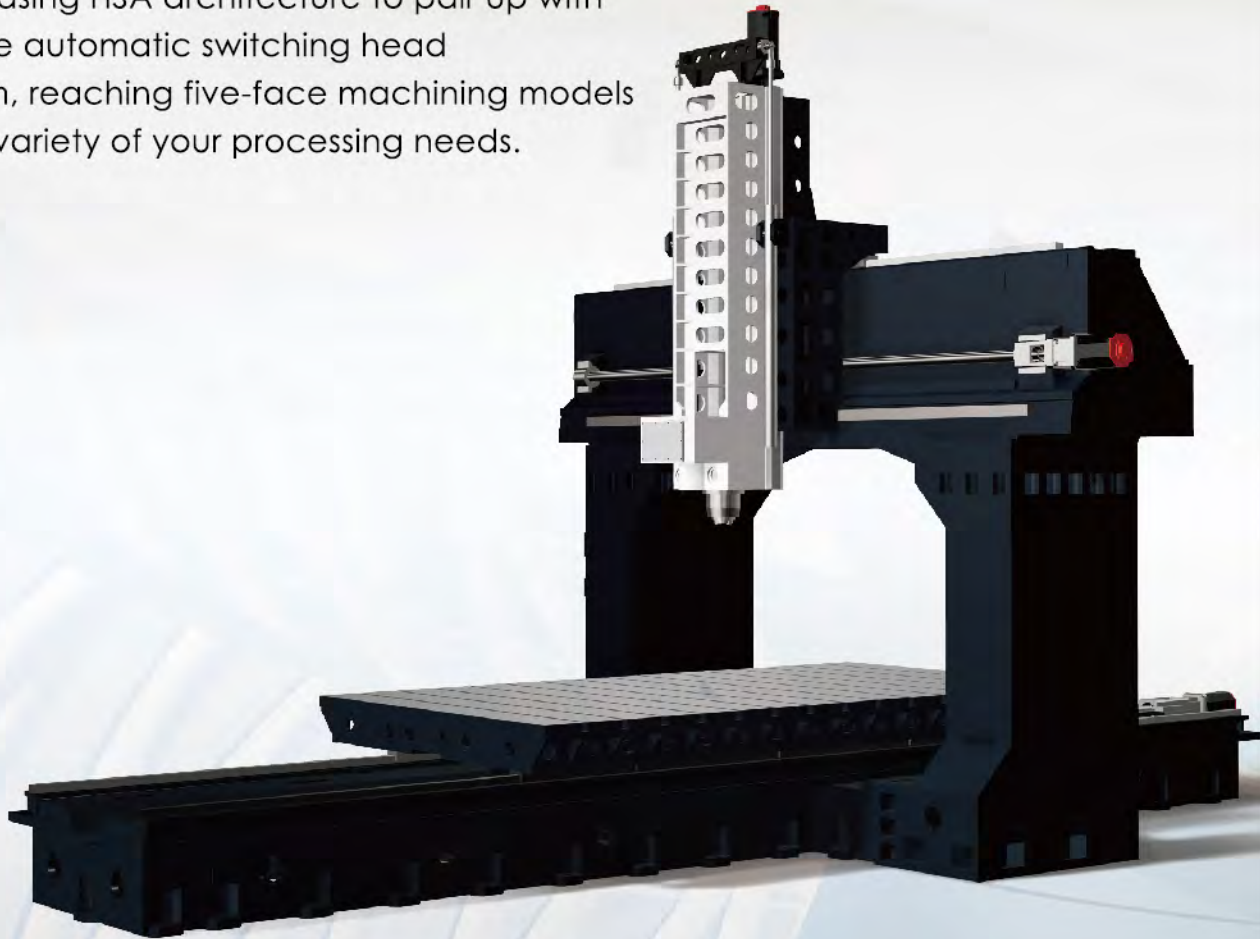


Drilling

Tool diameter	Φ53mm
Feed rate	100mm/min
Depth	50mm
Spindle load	50%

New ALL NEW INFINITY, from roughing to finishing, allows you to accomplish at one go

The new HSA Series gives you optimal processing performance and extreme precision performance, while increasing HSA architecture to pair up with homemade automatic switching head mechanism, reaching five-face machining models to meet a variety of your processing needs.



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.

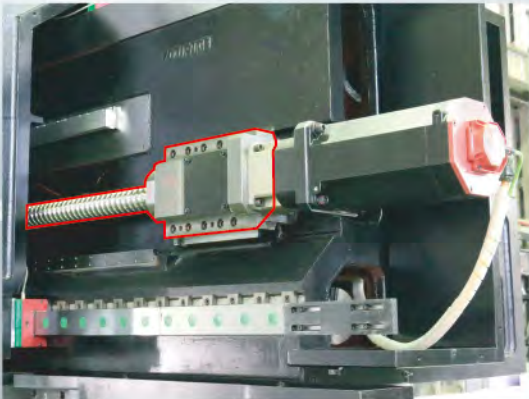


Z-axis four linear guideways three binding structure patented technology

The patented HSA four linear guideways three binding structure technology, two-way support provides high rigidity while cutting, bringing you excellent performance.

(HSA2212 / 3212/2215 four linear guideways are optional feature; the rest machine is standard feature).

Patent No. 1264343 machining center Z-axis head Z-axis four linear guideways.



HSA three-axis direct-connected drive advantage

HSA series X-axis and Y-axis pair up with the planetary reducer, effectively enhancing the overall axial drive torque of the machine.



X-axis three linear guideways design – HSA-X28/HSA-X32/HSA-X36

The X-axis three linear guideways design can be used to resist process rotation torsion and enhance rigidity by more than **50%**. Moreover, the maximum load of a workbench can be **30,000 kg**, thus allowing you to meet your processing needs and help you reach your accuracy and quality requirements. (HSA-X20/X23/X27 are two linear guideways)

Unique Machine Structure Design

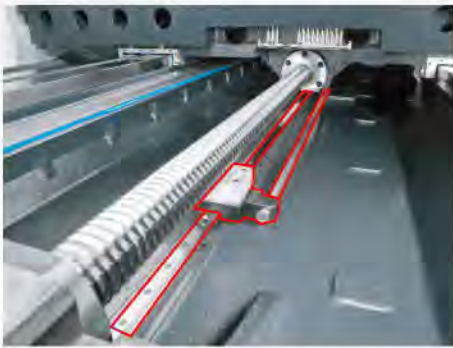
Screw support mechanism maintains excellent positioning accuracy

- In time of the transmission of the X and Y axes, ensure that power is maintained.
- Improve screw dead weight sagging; enhance the positioning accuracy and life of screw.
- Increase 1 level of screw specification; lift static rigidity.

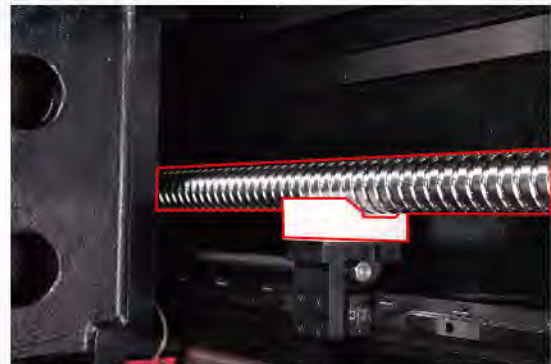
Model above the 5 meters X-axis is standard configuration; below 4 meters is optional configuration.

Y-axis support mechanism, X36 / EAY is standard configuration.

Y-axis support mechanism, X23 / X27 / X28 / X32 / EA is optional configuration.



X-axis screw support mechanism



Y-axis screw support mechanism

Diversified strong spindle meets your processing needs



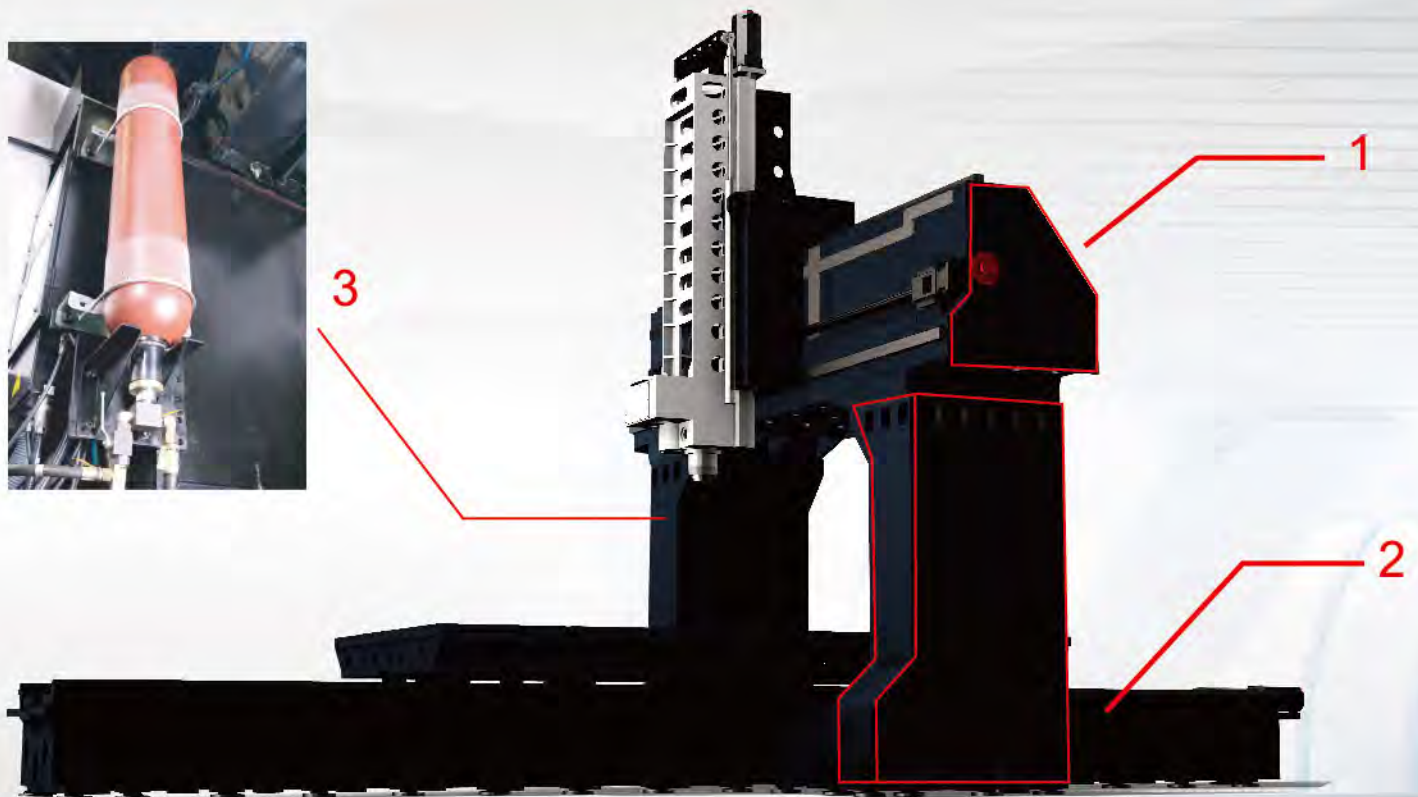
Hartford made gear type 8,000 rpm
Two-stage spindle (optional feature)

- To follow the process attribute, pair up with high or low gear.
- Spindle-mounted structure design
- Thermal separation technology enables thermal extension to control and apply to HSA-X20 / X23 / X27 / X28 / X32 / X36.



Hartford made i-Tech hybrid type
10,000 rpm spindle (optional feature)

- Motor and spindle dual cooling circulation design
 - Cooling cycle design
 - Built-in motor – maximum **35kW, 600** N-m
- Applicable models: EA / EAY



1 The new slant beam design effectively reduces vibration from cutting

- Reduce the vibration generated by the process.
- Enhance accuracy and surface sheet cleanliness during processing.

Patent:
M435318
Beam rear slant design

2 Extra-large columns effectively transfer the maximum cutting force

- The joint width between bottom of the column and the base is increased to **1,250** mm.
- Reduce overall vibration from cutting.

Patent:
M437316
Structure section has design to resist torsion.
M438938
Column foot span design

3 Z-axis nitrogen accumulator weight system

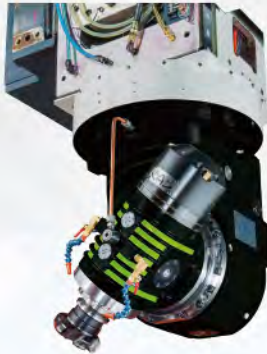
- Reduce operating noise of hydraulic tank.
- Reduce hydraulic tank oil temperature by **50%**
- Effective energy-saving more than **20%**

Suitable for HSA-X20 / X23 / X27 / 32 / X36 and EA / EAY full range of models

Complete angular head design package

Hartford has a full range of angular head specifications, in addition to automatic universal heads, automatic 90 degrees head, automatically extension head, automatic grab head to pair up with a 90-degree head, there are series of manual and semi-automatic universal heads, 90 degrees head and extension head, etc., for you to choose to meet your wide range of processing needs.

1. Automatic heads (automatic clamp) suitable for HSA-EA / EAY series models



Automatic universal head (5° /2.5°/1°) A / C axis automatic rotation angle Maximum speed: 4,000 rpm Maximum power: 26 kW The maximum torque to withstand: 930 N-m Optional configuration of maximum pressure 70 BAR CTS	Axis	A / C axis division angle configuration table									
	C-axis	5°	2.5°	1°	5°	2.5°	1°				
	A-axis	5°	2.5°	1°	2.5°	1°	5°	1°	5°	2.5°	
	Remark	ST. standard feature	OPT. customized specifications								



Automatic 90 ° head (5° /2.5° / 1°)

Maximum speed: 4,000 rpm / 2,500 rpm (opt.)
Maximum power: 26 kW
The maximum torque to withstand: 930 N-m
Optional configuration of maximum pressure 70 BAR CTS
Minimum optional configuration C-axis positioning indexing: 1 degree



Automatically extension head (350 / 500 mm)

Maximum speed: 4,000 rpm
Maximum power: 25 kW
The maximum torque to withstand: 750 N-m
Optional configuration of maximum pressure 70 BAR CTS
Automatic tool change function



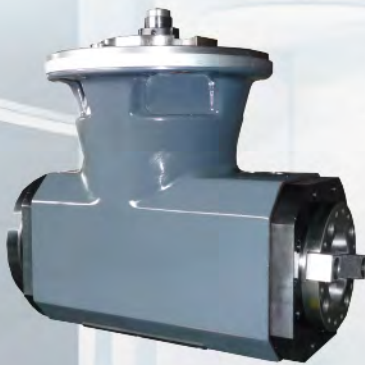
Automatic clamp/unclamp+ the manual 90° head

Maximum speed: 2,000 rpm
Maximum power: 18.5 kW
The maximum torque to withstand: 650 N-m
External guide pins enhance the positioning accuracy of the exchange head, with automatic grab head function and manual rotating angle function.

2. Manual position head (manually fixed) applicable to general model HSA



Universal head (manual / semi-automatic)		Manual universal head	Semi-automatic universal head
A axis: $\pm 110^\circ$, C-axis: $\pm 180^\circ$ Maximum speed: 2,500 rpm Maximum power: 18.5 kW The maximum torque to withstand: 650 N-m	Binding mechanism	Manual	Manual
	Unclamping mechanism	Manual	Automatic
	C-axis rotation	Manual	Manual



90° side milling head (manual / semi-automatic)		Manual 90° head	Semiautomatic 90° head
Manual tool change (manual / hydraulic lock release tool.) Maximum speed: 2,000rpm Maximum power: 18.5 kW The maximum torque to withstand: 650 N-m	Binding mechanism	Manual	Manual
	Unclamping mechanism	Manual	Automatic
	C-axis rotation	Manual	Manual



Extension head (350 / 500 mm)
Maximum speed: 4,000 rpm Maximum power: 18.5 kW The maximum torque to withstand: 650 N-m

Application program

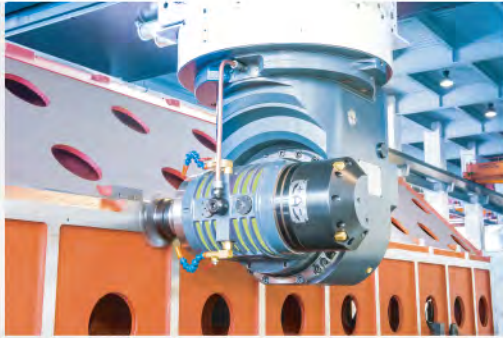
Key technology -

Angular head and test data

Intelligentization

Specification parameter

Automatic angular head machining patterns



1



2



3

Working patterns	1. Composite bevel sharp cutting processing	2. 90 degrees side sharp machining	3. Elongation sharp cutting processing
Product form	AC universal head	90 degrees side cutting head	350 / 500 mm extension head
Model code	HF-AU360H	HF-A90L/H	HF-AE35/50L
Maximum speed (rpm)	4000	4000	4000
Tool form	BT50	BT50	BT50
Automatic indexing	5° /2.5° /1°	5° /2.5° /1°	—
Automatic switching head	Automatic	Automatic	Automatic
Automatic tool changing	Automatic	Automatic	Automatic
Rotation angle	C:±180° A:±110°	±180°	—

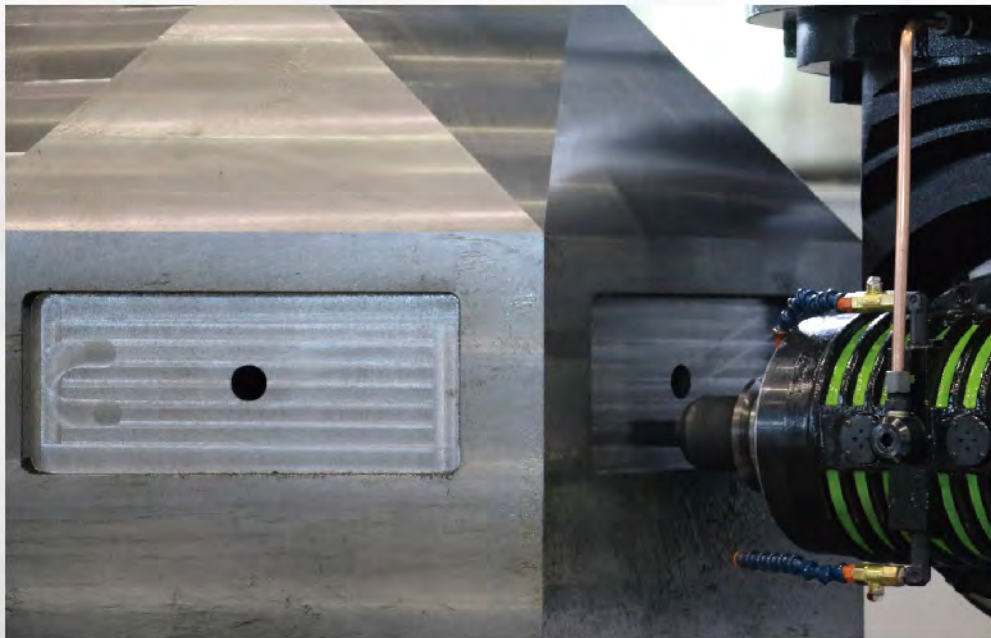
Application of automatic 90° head

Angular head cutting ability actual test data

Spindle motor specifications: $\alpha 30$ * 7000iRPM * 37KW (gear type)

Angle head	Auto AC universal axis (1°)		
Test models	HSA-428EAY	HSA-428EAY	HSA-428EAY
Angle	A : 90 / C : 90	A : 90 / C : 0	A : 0 / C : 0
Test item	Face milling / end milling	Face milling / end milling	Face milling / end milling
Test Results	1200(32.4cc/kw) / 720(19.5 cc/kw)	1200(32.4cdkw) / 720(19.5 cc/kw)	1200(32.4cc/kw) / 720(19.5 cc/kw)
The maximum depth of cut (mm)	5/10x40	5/10x40	5/10x40

Test item	The maximum test size (mm)	Spindle current ratio (%)
Drilling (violent drilling)	$\Phi 76$	38
Tapping	M32	20



Angular head exclusive technology

Patented technology



Clutch-type vertical skew angular axis head
The clutch lock of the horizontal axis (CHE)

During clutch, the electromagnetic brake will activate on both the rotating and linkage shaft. The slanting swing is generated by gravity. Reduce the amount of slanting swing while in clutch to avoid tooth jamming.



Angular head C-axis 1 degree positioning mechanism (TWC)

Angular head has a 1-degree indexing positioning function. Because the whole transmission system is a fully closed loop, it can still better eliminate the origin of mechanical backlash.



Angular head center coolant mechanism (UAC)

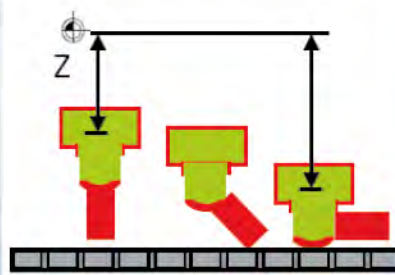
All automatic head classes have CTS function, can give customers maximum tool life and processing performance.

Intelligent technology



Minimum optional configuration A/C-axis positioning indexing: 1 degree

In AC travel, arbitrary integer angular inclined surface processing needs. (Optional accessory)



Auto angular head travel intelligent switching

Solves the problems of switching between travel and protected areas so that the travel limit (Y-axis & Z axis) is automatically adjusted according to the universal head angular. (Standard accessory)



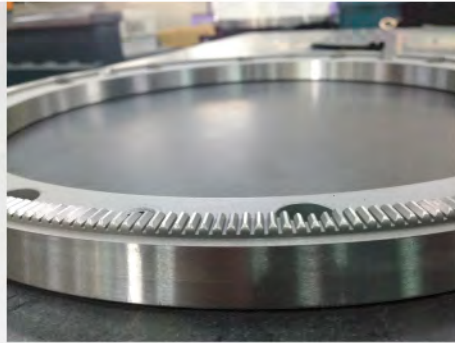
AC universal head rotation center + Tool tip automatic error measurement function

Raises processing accuracy, reduces manual measurement error, and shortens the measurement time. In time of measurement, error value is to be measured comprising a heat deflection of the angle head, so it is possible to improve accuracy errors. (Optional accessory)

Assembly quality assurance



• Adjust teeth clearance



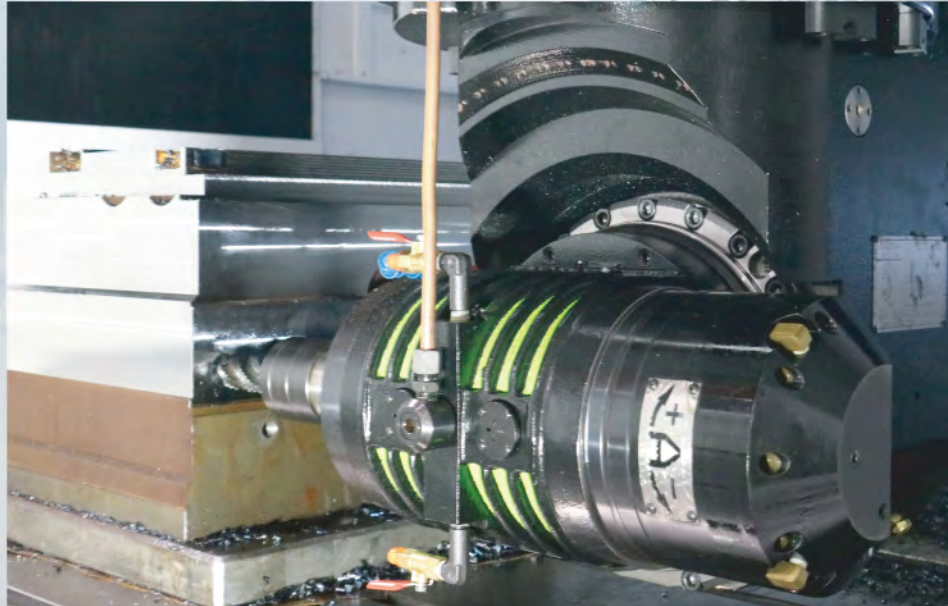
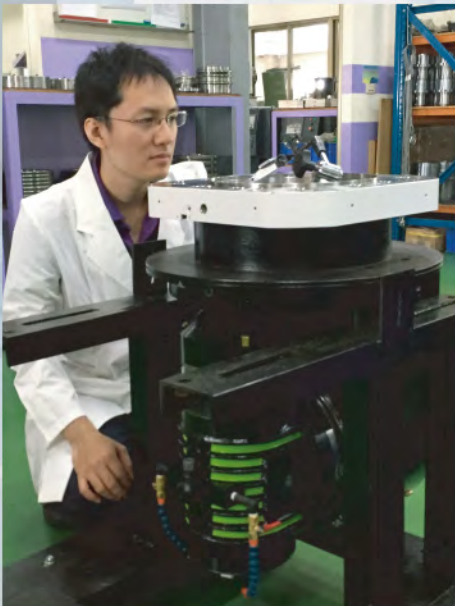
• Check gear



• End surface flatness correction

Adhere to quality and meticulous detail

Hartford adheres to each graduation, grasps every possibility, and is devoted to adhering to quality and meticulous detail. By demanding quality precision within each process, we remain dedicated to producing the best.



Automatic angular head switching head compartment

EA / EAY series can be combined with automated switching head compartment and vertical and horizontal tool change system, to provide highly efficient, versatile processing.



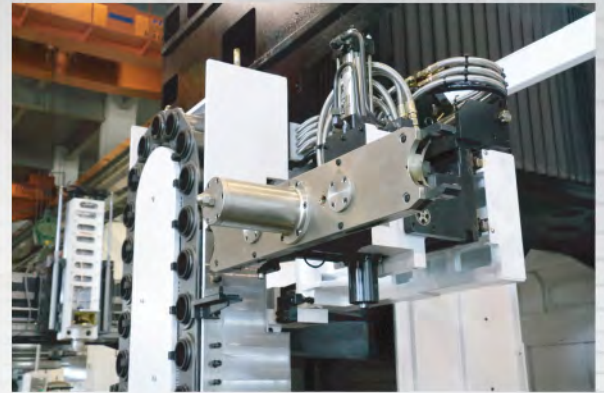
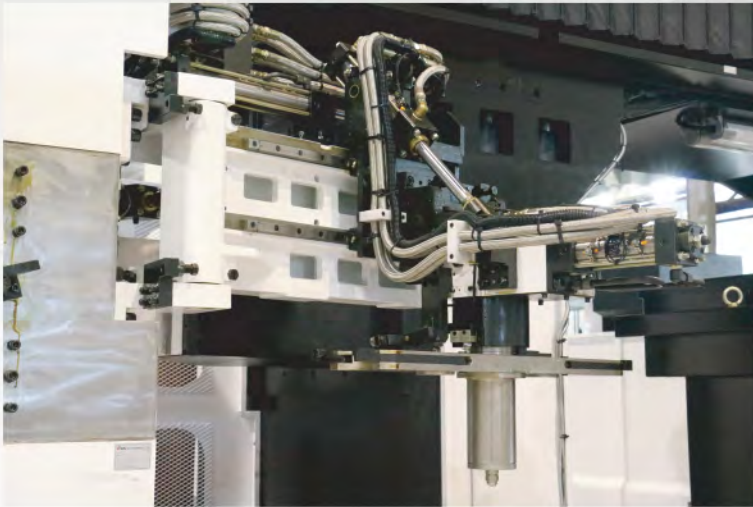
EA / EAY jib head compartment module

- It can be used with automatic universal head / automatic 90-degree head / automatically extension head.
- Fully automated exchange head compartment is fitted with protective cover and independent angle head compartment.
- It is designed to be driven by a hydraulic cylinder to provide the angle head fast switching capability.
- Each compartment is fitted with an independent movable door, which opens only during switching of the head, to prevent chips from contaminating angle head.



Besides, there are multi-head compartment specifications. If required, please contact our sales staff.

Choose a variety of tool magazines



1. The vertical and horizontal tool magazine

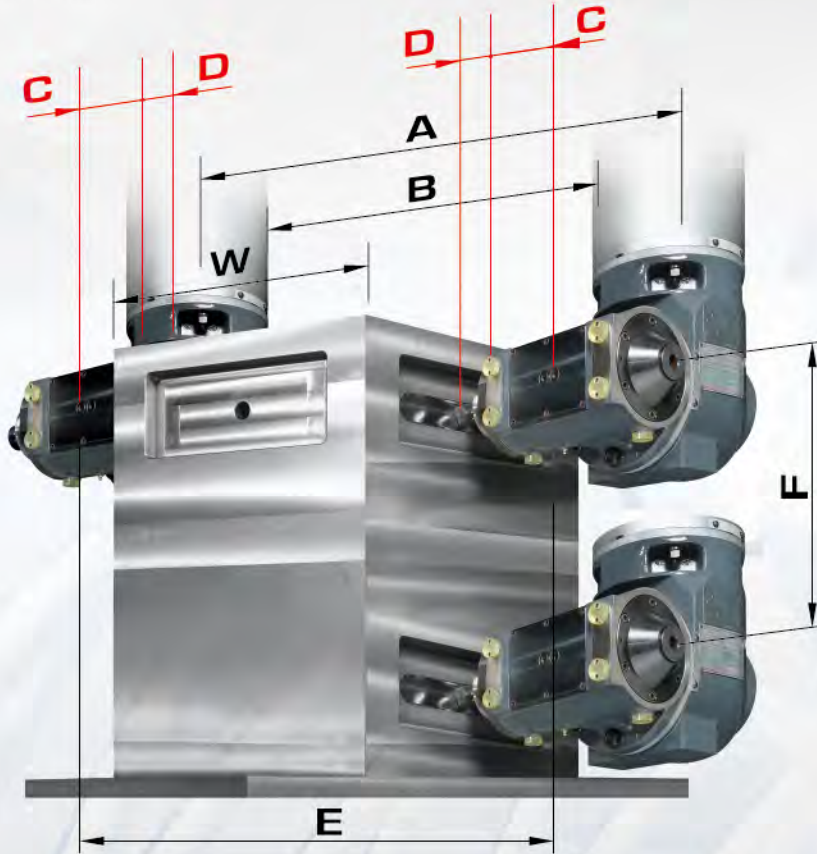


2. Vertical tool magazine

- Automatic switching processing tool
- All tool change action and tool change points are fitted with detector and sequential scanning to ensure stability and reliability for machine tool change.
- Vertical type tool magazine: can be used with 32/40/60/90 tools (standard feature).
- Vertical and horizontal tool magazine: can be used with 32/40/62 tools (optional configuration).

The new Y-axis is designed to bring a broader range of processing

ALL NEW INFINITY series models providing increased Y-axis travel design, you can upgrade your range of processing through the increase of Y-axis travel. We have achieved our purpose to process the widest range with the minimum cost.

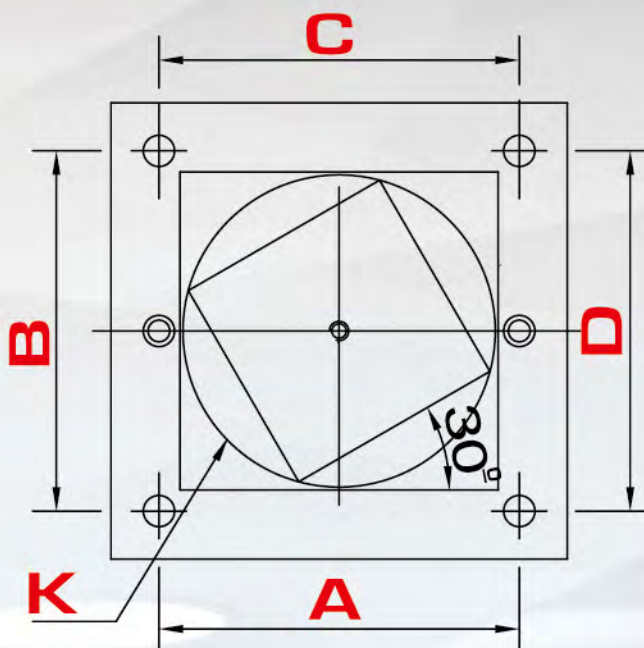


Model	A		B		C	D	E	W	F		
	Original travel	Increased travel	Original travel A-Cx2	Increased travel A-Cx2	The distance from the nose of angle head to the spindle center	Tool length	Shut the door.	Working width			
HSA-X20EA	2000	-	1552		224	150	2000	1252	880(Z1000) 1080(Z1200)		
HSA-X20EAY	-	2800		2352			2000	2052			
HSA-X23EA	2300	-	2300				2300	2300			
HSA-X23EAY	-	3100		3100			2300	2800			
HSA-X27EA	2700	-	2700				2800	2700			
HSA-X27EAY	-	3500		3500			2800	3200			
HSA-X28EA	2800	-	2800				2800	2800			
HSA-X28EAY	-	3600		3600			2800	3600			
HSA-X32EA	3200	-	3200				3200	3200			
HSA-X32EAY	-	4000		4000			3200	4000			
HSA-X36EA	3600	-	3600				3600	3600			
HSA-X36EAY	-	4400		4400			3600	4400			
											840(Z1000) 1040(Z1200)

QC cutting ability test presents the best quality of Hartford

HSA-423 Mold Testing

Test materials F25C
 Cutting speed F200 - 500
 Spindle speed S500 - 800
 Test tool diameter $\Phi 25$ mm



Positioning machining precision
 Positioning accuracy

Through FIG cutting accuracy
 Precision through FIG.

	A	B	C	D	K
Error value	0.025	0.025	0.025	0.025	0.020
Actual value	0.0016	0.0015	0.0070	0.0019	0.0037
	(\oplus)	(\oplus)	(\oplus)	(\oplus)	(\ominus)

Unit(mm)

Accuracy	Error value	The actual value
The true flatness of bed top surface (X / Y-axis)	1000 ∇ 0.05/M, 1000-2000 \blacktriangle 0.06/M, 2000 0.07/M	0.02
Right angle of mutual movement of each axis (X / Y-axis)	0.020/500	0.005
Right angle of mutual movement of each axis (Y / Z axis)	0.02/500	0.005
Slanting swing in spindle hole	Fixed Side:0.005, Free Side:0.012/300	0.001/0.005
Accuracy through roundness	0.012/150 (Machine X-axis above 5M within 0.012/150)	0.003

Intelligent Controller- **Hartrol Plus**

What is Hartrol plus?

- 19" multi-touch screen
- IPC is equipped with the Windows operating system
- The world's fastest CNC
- Automatic feed system control function

By the use of open architecture, 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. Software, which can be added to and updated at any time with new features.




An Intelligent Controller

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 processes.

With ease of use, advanced automation, and smart data collection, Hartrol plus essential tool for enhancing 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.)

Intelligent Support

Save Time & Cost

- Multi Touch Screen
- E-book
- Remote Management
- Cutting Condition Calculator
- Stand-by Mode
- Hartford UserConnect

Intelligent Functions

Increase Productivity

- AFC(Automatic Feedrate Control)
- SSS-4G
- Machining Time Countdown for Single Block
- Optimized Machining Program

Intelligent Design

Easy Management

- Machine Utilization Management
- Operators Performance Management
- 24 Hours a Day Management
- Remote Management

Hartrol
Plus

Application program

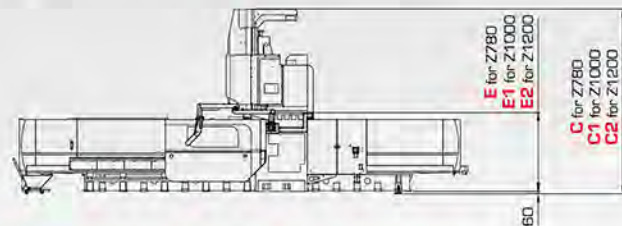
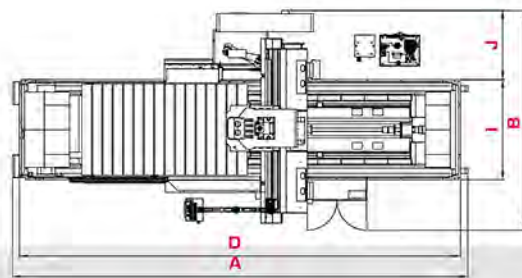
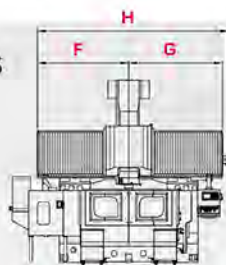
Key technology - processing range

Intelligentization

Specification parameter
- Machine dimension

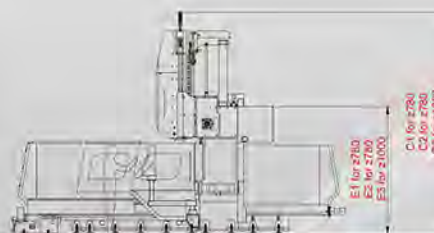
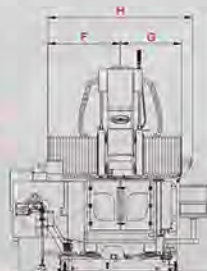
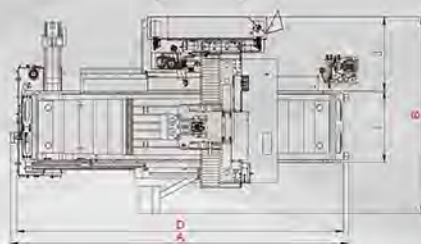
Machine Dimension

HSA-X20/X23/X27/X28/X32/X36 series



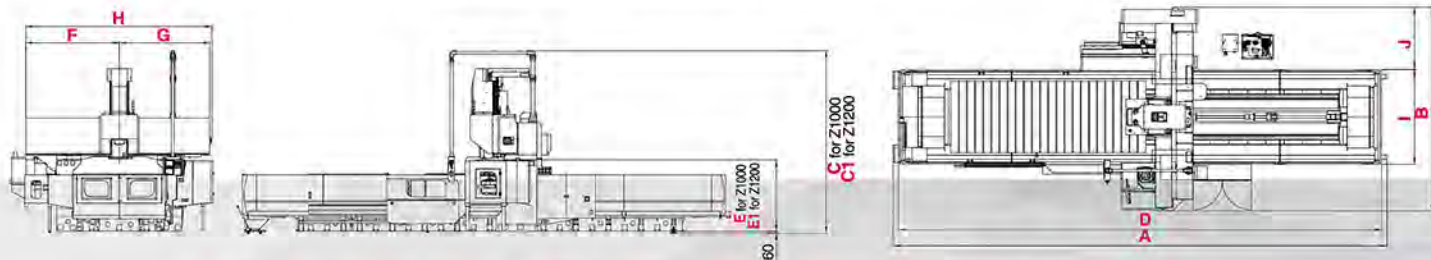
Model	A	B	C	C1	C2	D	E	E1	E2	F	G	H	I	J
HSA-220	7000	5004	4640	5210	5540	6655	1900	2200	2400	2130	2190	4400	2114	1670
HSA-320	9000	5004	4640	5210	5540	8655	1900	2200	2400	2130	2190	4400	2114	1670
HSA-420	11000	5004	4640	5210	5540	10655	1900	2200	2400	2130	2190	4400	2114	1670
HSA-323	9000	5304	4640	5210	5540	8655	1900	2200	2400	2205	2265	4625	2414	1670
HSA-423	11000	5304	4640	5210	5540	10655	1900	2200	2400	2205	2265	4625	2414	1670
HSA-523	13000	5304	4640	5210	5540	12655	1900	2200	2400	2205	2265	4625	2414	1670
HSA-623	15000	5304	4640	5210	5540	14655	1900	2200	2400	2205	2265	4625	2414	1670
HSA-723	17000	5304	4640	5210	5540	16655	1900	2200	2400	2205	2265	4625	2414	1670
HSA-327	9000	5804	4640	5210	5540	8655	1900	2200	2400	2523	2583	5192	2914	1670
HSA-427	11000	5804	4640	5210	5540	10655	1900	2200	2400	2523	2583	5192	2914	1670
HSA-527	13000	5804	4640	5210	5540	12655	1900	2200	2400	2523	2583	5192	2914	1670
HSA-627	15000	5804	4640	5210	5540	14655	1900	2200	2400	2523	2583	5192	2914	1670
HSA-328	9050	5677	4730	5200	5530	8655	2000	2200	2400	2523	2583	5192	2914	1670
HSA-428	11050	5677	4730	5200	5530	10655	2000	2200	2400	2523	2583	5192	2914	1670
HSA-528	13050	5677	4730	5200	5530	12655	2000	2200	2400	2523	2583	5192	2914	1670
HSA-628	15050	5677	4730	5200	5530	14655	2000	2200	2400	2523	2583	5192	2914	1670
HSA-728	17050	5677	4730	5200	5530	16655	2000	2200	2400	2523	2805	5192	2914	1670
HSA-828	19050	5677	4730	5200	5530	18655	2000	2200	2400	2523	3083	5192	3714	1670
HSA-432	11050	6077	4730	5200	5530	10655	2000	2200	2400	2745	2805	5664	3314	1670
HSA-532	13050	6077	4730	5200	5530	12655	2000	2200	2400	2745	2805	5664	3314	1670
HSA-632	15050	6077	4730	5200	5530	14655	2000	2200	2400	2745	2805	5664	3314	1670
HSA-732	17050	6077	4730	5200	5530	16655	2000	2200	2400	2745	2805	5664	3314	1670
HSA-832	19050	6077	4730	5200	5530	18655	2000	2200	2400	2745	2805	5664	3314	1670
HSA-436	10950	6539	4730	5200	5530	10520	2000	2200	2400	3023	3083	6192	3714	1770
HSA-536	12950	6539	4730	5200	5530	12520	2000	2200	2400	3023	3083	6192	3714	1770
HSA-636	14950	6539	4730	5200	5530	14520	2000	2200	2400	3023	3083	6192	3714	1770
HSA-736	16950	6539	4730	5200	5530	16520	2000	2200	2400	3023	3083	6192	3714	1770
HSA-836	18950	6539	4730	5200	5530	18520	2000	2200	2400	3023	3083	6192	3714	1770

HSA-2212/2215/3212



Model	A	B	C1	C2	C3	D	E1	E2	E3	F	G	H	I	J
HSA-2212	6620	3858	4352.5	4552.5	—	6392	2505	2705	—	1423.5	1193.5	2832.5	1396	1459
HSA-3212	8670	3858	4352.5	4552.5	—	8462	2505	2705	—	1423.5	1193.5	2832.5	1396	1459
HSA-2215	6673	4150.9	4754	4954	5274	5940	2920	3120	3220	1658.5	1398.5	3202	1750	1468

HSA-X20/X23/X27/X28/X32/X36 series (EA/EAY)



Model	A	B	C	C1	D	E	E1	F	G	H	I	J
HSA-220EA	6937	5202	5315	5815	6487	2200	2400	2130	2190	4400	2114	1670
HSA-320EA	8937	5202	5315	5815	8487	2200	2400	2130	2190	4400	2114	1670
HSA-420EA	10937	5202	5315	5815	10487	2200	2400	2130	2190	4400	2114	1670
HSA-323EA	9000	5520	5315	5815	8655	2200	2400	2205	2265	4625	2414	1670
HSA-423EA	11000	5520	5315	5815	10655	2200	2400	2205	2265	4625	2414	1670
HSA-523EA	13000	5520	5315	5815	12655	2200	2400	2205	2265	4625	2414	1670
HSA-623EA	15000	5520	5315	5815	14655	2200	2400	2205	2265	4625	2414	1670
HSA-327EA	9000	6002	5315	5815	8655	2200	2400	2523	2583	5192	2914	1670
HSA-427EA	11000	6002	5315	5815	10655	2200	2400	2523	2583	5192	2914	1670
HSA-527EA	13000	6002	5315	5815	12655	2200	2400	2523	2583	5192	2914	1670
HSA-627EA	15000	6002	5315	5815	14655	2200	2400	2523	2583	5192	2914	1670
HSA-328EA	9050	6020	5315	5815	8671	2200	2400	2523	2583	5192	2914	1670
HSA-428EA	11050	6020	5315	5815	10655	2200	2400	2523	2583	5192	2914	1670
HSA-528EA	13050	6020	5315	5815	12655	2200	2400	2523	2583	5192	2914	1670
HSA-628EA	15050	6020	5315	5815	14655	2200	2400	2523	2583	5192	2914	1670
HSA-728EA	17050	6020	5315	5815	16655	2200	2400	2523	2583	5192	2914	1670
HSA-828EA	19050	6020	5315	5815	18655	2200	2400	2523	2583	5192	2914	1670
HSA-432EA	11050	6420	5315	5815	10671	2200	2400	2745	2805	5664	3314	1670
HSA-532EA	13050	6420	5315	5815	12671	2200	2400	2745	2805	5664	3314	1670
HSA-632EA	15050	6420	5315	5815	14671	2200	2400	2745	2805	5664	3314	1670
HSA-732EA	17050	6420	5315	5815	16671	2200	2400	2745	2805	5664	3314	1670
HSA-832EA	19050	6420	5315	5815	18671	2200	2400	2745	2805	5664	3314	1670
HSA-436EA	10950	6960	5315	5815	10520	2200	2400	3023	3083	6192	3714	1770
HSA-536EA	12950	6960	5315	5815	12520	2200	2400	3023	3083	6192	3714	1770
HSA-636EA	14950	6960	5315	5815	14520	2200	2400	3023	3083	6192	3714	1770
HSA-736EA	16950	6960	5315	5815	16520	2200	2400	3023	3083	6192	3714	1770
HSA-836EA	18950	6960	5315	5815	18520	2200	2400	3023	3083	6192	3714	1770
HSA-220EAY	6937	5452	5315	5815	6487	2200	2400	2379	2279	4737	2114	1920
HSA-320EAY	8937	5452	5315	5815	8487	2200	2400	2379	2279	4737	2114	1920
HSA-420EAY	10937	5452	5315	5815	10487	2200	2400	2379	2279	4737	2114	1920
HSA-323EAY	9000	5975	5315	5815	8655	2200	2400	2624	2534	5225	2414	1920
HSA-423EAY	11000	5975	5315	5815	10655	2200	2400	2624	2534	5225	2414	1920
HSA-523EAY	13000	5975	5315	5815	12655	2200	2400	2624	2534	5225	2414	1920
HSA-623EAY	15000	5975	5315	5815	14655	2200	2400	2624	2534	5225	2414	1920
HSA-327EAY	9000	6252	5315	5815	8655	2200	2400	2875	2784	5725	2914	1920
HSA-427EAY	11000	6252	5315	5815	10655	2200	2400	2875	2784	5725	2914	1920
HSA-527EAY	13000	6252	5315	5815	12655	2200	2400	2875	2784	5725	2914	1920
HSA-627EAY	15000	6252	5315	5815	14655	2200	2400	2875	2784	5725	2914	1920
HSA-328EAY	9050	6475	5315	5815	8671	2200	2400	2875	2784	5725	2914	1920
HSA-428EAY	11050	6475	5315	5815	10655	2200	2400	2875	2784	5725	2914	1920
HSA-528EAY	13050	6475	5315	5815	12655	2200	2400	2875	2784	5725	2914	1920
HSA-628EAY	15050	6475	5315	5815	14655	2200	2400	2875	2784	5725	2914	1920
HSA-728EAY	17050	6475	5315	5815	16655	2200	2400	2875	2784	5725	2914	1920
HSA-828EAY	19050	6475	5315	5815	18655	2200	2400	2875	2784	5725	2914	1920
HSA-432EAY	11050	6700	5315	5815	10671	2200	2400	3095	3005	6214	3314	1920
HSA-532EAY	13050	6700	5315	5815	12671	2200	2400	3095	3005	6214	3314	1920
HSA-632EAY	15050	6700	5315	5815	14671	2200	2400	3095	3005	6214	3314	1920
HSA-732EAY	17050	6700	5315	5815	16671	2200	2400	3095	3005	6214	3314	1920
HSA-832EAY	19050	6700	5315	5815	18671	2200	2400	3095	3005	6214	3314	1920
HSA-436EAY	10950	6960	5315	5815	10520	2200	2400	3275	3060	6445	3714	2020
HSA-536EAY	12950	6960	5315	5815	12520	2200	2400	3275	3060	6445	3714	2020
HSA-636EAY	14950	6960	5315	5815	14520	2200	2400	3275	3060	6445	3714	2020
HSA-736EAY	16950	6960	5315	5815	16520	2200	2400	3275	3060	6445	3714	2020
HSA-836EAY	18950	6960	5315	5815	18520	2200	2400	3275	3060	6445	3714	2020

Note: Above machine dimension is not suitable for 2017 new cover, please check with sales window directly.

Application program

Key technology - processing range

Intelligentization

Specification parameter
- Mechanical Specifications Table

Mechanical Specifications Table

Model	unit	HSA-2212/3212	HSA-2215	HSA-220/320/420	HSA-323/423/
Workbench					
Workbench size	mm	2000/3000 x 1100	2100 x 1450	2000/3000/4000x1800	3000/4000/5000
T-shaped slot (slot frame x slot number x slot distance)	mm	22 x 6 x 160	22 x 11 x 200	22x7/11/15x250	28x11/15/19/23
Maximum load	kg	3500/4500	8000	8000/10000/12000	10000/12000/15000
Travel					
X-axis travel	mm	2250/3250	2200	2000/3000/4000	3000/4000/5000
Y-axis travel	mm	1200	1500	2000	2300
Z-axis travel	mm	780	780 (1070)	780(1000/1200)	780(1000/1200)
Spindle nose to workbench	mm	120 ~ 900 (Z: 780_Column1700)# 50 320 ~ 1100 (Z: 780_Column1900)# 50 180 ~ 960 (Z: 780_Column1700)# 40 380 ~ 1160 (Z: 780_Column1900)# 40	220 ~ 1000 (Z: 780_Column 2000) # 50 420 ~ 1200 (Z: 780_Column 2200) # 50 230 ~ 1300 (Z: 1070_Column 2300) # 50 279 ~ 1059 (Z: 780_Column 2000) # 40 289 ~ 1359 (Z: 1070_Column 2300) # 40	200~980(Z:780_Column1900) 280~1280(Z:1000_Column2200) 280~1480(Z:1200_Column2400)	200~980(Z:780_Column1900) 280~1280(Z:1000_Column2200) 280~1480(Z:1200_Column2400)
Spindle center to column	mm	450	430	450	450
Door width	mm	1300	1750	2000	2300
Spindle					
Gear type speed	rpm	6000(8000)	6000	6000(8000)	6000(8000)
Direct-connected type speed	rpm	10000 (15000 Only on #40, 12000 only on #50)	10000 (15000 Only on #40, 12000 only on #50)	(10000/12000)	(10000/12000)
Nose taper		ISO50 / ISO40	ISO50 / ISO40	ISO50	ISO50
Speed					
		10000	12000	12000	12000/12000/12000 10000/12000/12000 8000/12000/12000 8000/12000/12000 8000/12000/12000
Cut rate (X / Y / Z-axis)	mm / min				
Feedrate (X / Y / Z axis)	mm / min	24000/24000/20000(2212) 20000/24000/20000(3212)	X=24000 Y=24000 Z=20000 (Z780) Z=15000 (Z1070)	24000/18000/16000(220) 20000/18000/16000(320) 20000/18000/16000(420)	20000/18000/16000 20000/18000/16000 14000/18000/16000 12000/18000/16000 12000/18000/16000
Automatic Tool Changer					
Tool number	pcs	24/32 A-type , 40 A-type Only on #50	20 S-type, 32 / 40 A-type (24 A-type Only on #40)	20 S-type,32 A-type	20 S-type,32 A-type
Maximum tool weight	kg	18 (#50), 7 (#40)	18 (#50), 7 (#40)	15 S-type,20 A-type	15 S-type,20 A-type
Tool size (diameter x length)	mm	φ110 x 350L (24) / φ125 x 350L (32 / 40) (Ø75 x 300L Only on #40)	φ125 x 300L (φ75 x 300L only on #40)	φ125 x 350(S-type)/ φ125 x 400(A-type)	φ125 x 350(S-type)
Tool holder		BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN
Pulling bolt		P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P50T-1 / P40T-1	P50T-1	P50T-1
Motor					
Spindle power (Fanuc)	KW (power/Cont)	#50: 18.5 / 15 (22 / 18.5 DDS for Fanuc) #40: 11 / 7.5 DDS for Fanuc	#50: 18.5 / 15 (22 / 26 DDS for Fanuc) #40: 11 / 7.5 DDS for Fanuc	22/18.5	22/18.5
Positioning accuracy					
3-axis laser positioning accuracy (JIS B6330)					
Positioning accuracy / full travel	mm	±0.010	±0.010	±0.010	±0.010/0.010/0.012/
Repeated positioning accuracy	mm	±0.003	±0.003	±0.003	±0.003
3-axis laser positioning accuracy (VDI3441) repeats 5 times.					
Positioning accuracy	mm	0.015/0.016	0.015	0.015/0.016/0.018	0.016/0.018/0.020/
Repeated positioning accuracy	mm	0.014	0.014	0.014/0.014/0.015	0.014/0.015/0.021/
Other					
Required air pressure	kg / cm ²	6.5	6.5	6.5	6.5
Required power	KVA	50/65	#50: 45 (60 for DDS), #40: 40 for DDS	55/55/60	55/55/60/65/65
Covering area	mm	7930/10160x5440	7700 x 6150	11000/13000/15000x6100	11000/13000/15000
Net weight	kg	14720/18200	24500 (Z-axis 780) 26000 (Z-axis 1070)	24500/27500/30500(Z-axis 780) 25500/28500/31500(Z-axis 1000) 26500/29500/32500(Z-axis 1200)	30100/34100/38100/ 31420/35420/39420/ 32000/36200/40200/

The factory laser precision is JIS B6330.
If VDI 3441 demand,
you may further propose

A: Hartrol (standard equipment)

- ∞ Manual workpiece alignment
- ∞ Machine utilization rate analysis (only suitable for Fanuc)
- ∞ Tool magazine graphics and data display
- ∞ Internal and external thread cutting (only suitable for Fanuc)
- ∞ Pop-up computer
- ∞ Tool magazine data display - Tool style graphical data display (only suitable for Fanuc)
- ∞ Supporting processing parameters

Specifications & dimensions are subject to change without notice (for actual weight, shipped product shall prevail.) At maximum load, X-axis rapid feed & cutting feed rate should be halved. In case of any questions, please contact our sales staff.
Hartrol (standard equipment) does not apply to Hartrol plus

1. Electrical features Standard equipment & optional features

523/623/723	HSA-327/427/527/627	HSA-328/428/528/628/728/828	HSA-432/532/632/732/832	HSA-436/536/636/736/836
/6000/7000x2200	3000/4000/5000/6000 x 2200	3000/4000/5000/6000/7000/8000x2500	4000/5000/6000/7000/8000x2500	4000/5000/6000/7000/8000x3000
/27x250	28x11/15/19/23 x 250	28x11/15/19/23/27/31x250	28x15/19/23/27/31x250	28x15/19/23/27/31x250
/18000/20000	10000/12000/15000/18000	15000/18000/20000/23000/25000/27000	18000/20000/23000/25000/27000	18000/21000/24000/27000/30000
/6000/7000	3000/4000/5000/6000	3000/4000/5000/6000/7000/8000	4000/5000/6000/7000/8000	4000/5000/6000/7000/8000
	2700	2800	3200	3600
	780(1000/1200)	780(1000/1200)	780(1000/1200)	780(1000/1200)
Column1900)	200~980(Z:780_Column1900)	260~1040(Z:780_Column2000)	260~1040(Z:780_Column2000)	260~1040(Z:780_Column2000)
Column2200)	280~1280(Z:1000_Column2200)	240~1240(Z:1000_Column2200)	240~1240(Z:1000_Column2200)	240~1240(Z:1000_Column2200)
Column2400)	280~1480(Z:1200_Column2400)	240~1440(Z:1200_Column2400)	240~1440(Z:1200_Column2400)	240~1440(Z:1200_Column2400)
	450	450	450	450
	2800	2800	3200	3600
	6000(8000)	6000(8000)	6000(8000)	6000(8000)
	(10000/12000)	(10000/12000)	(10000/12000)	(10000/12000)
	ISO50	ISO50	ISO50	ISO50
(323)	12000/12000/12000(327)	10000/12000/12000(328)	10000/12000/12000(432)	10000/10000/10000(436)
(423)	10000/12000/12000(427)	10000/12000/12000(428)	8000/12000/12000(532)	8000/10000/10000(536)
(523)	8000/12000/12000(527)	8000/12000/12000(528)	8000/12000/12000(632)	8000/10000/10000(636)
(623)	8000/12000/12000(627)	8000/12000/12000(628)	8000/12000/12000(732)	8000/10000/10000(736)
(723)	8000/12000/12000(727)	8000/12000/12000(728)	6000/12000/12000(832)	6000/10000/10000(836)
(323)	20000/18000/16000(327)	20000/18000/16000(328)	16000/18000/16000(432)	16000/16000/16000(436)
(423)	20000/18000/16000(427)	16000/18000/16000(428)	12000/18000/16000(532)	14000/16000/16000(536)
(523)	14000/18000/16000(527)	12000/18000/16000(528)	10000/18000/16000(632)	12000/16000/16000(636)
(623)	12000/18000/16000(627)	10000/18000/16000(628)	10000/18000/16000(732)	10000/16000/16000(736)
(723)	12000/18000/16000(727)	10000/18000/16000(728)	8000/18000/16000(832)	8000/16000/16000(836)
	20 S-type,32 A-type	20 S-type,32 A-type	20 S-type,32 A-type	20 S-type,32 A-type
	15 S-type,20 A-type	15 S-type,20 A-type	15 S-type,20 A-type	15 S-type,20 A-type
/φ 125 x 400(A-type)	φ 125 x 350(S-type)/ φ 125 x 400(A-type)	φ 125 x 350(S-type)/ φ 125 x 400(A-type)	φ 125 x 350(S-type)/ φ 125 x 400(A-type)	φ 125 x 350(S-type)/ φ 125 x 400(A-type)
/BBT50	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50
	P50T-1	P50T-1	P50T-1	P50T-1
	22/18.5	22/18.5	22/18.5	22/18.5
±0.012/0.012	±0.010/0.010/0.012/0.012	±0.010/0.010/0.012/0.012/0.012/0.012	±0.012	±0.012
	±0.003	±0.003	±0.003	±0.003
0.028/0.028	0.016/0.018/0.020/0.028	0.016/0.018/0.026/0.028/0.028/0.030	0.018/0.026/0.028/0.028/0.030	0.018/0.026/0.028/0.028/0.030
0.024/0.024	0.014/0.015/0.021/0.024	0.014/0.015/0.021/0.024/0.024/0.026	0.015/0.021/0.024/0.024/0.026	0.015/0.021/0.024/0.024/0.026
	6.5	6.5	6.5	6.5
	55/55/60/65	65/65/65/65/70	65/65/70/70/70	65/65/70/70/70
/17000/19000x6400	11000/13000/15000/17000x6900	11440/13440/15440/17440/19440/21440x7280	13440/15440/17440/19440/21440x7680	12790/14790/16790/18790/20790x8140
42100/46100(Z-axis 780)	33370/37370/41370/45370(Z-axis 780)	34000/39000/44000/50000/55000/60000(Z-axis 780)	41000/46000/52000/58000/64000(Z-axis 780)	50000/56000/62000/67000/72000(Z-axis 780)
43420/47420(Z-axis 1000)	34690/38690/42690/46900(Z-axis 1000)	34500/39500/44500/50500/55500/60500(Z-axis 1000)	41500/46500/52500/58500/64500(Z-axis 1000)	50500/56500/62500/67500/72500(Z-axis 1000)
44200/48200(Z-axis 1200)	35470/39470/43470/47470(Z-axis 1200)	35000/40000/45000/51500/56500/61500(Z-axis 1200)	42000/47000/53000/59000/65000(Z-axis 1200)	51000/57000/63000/68000/73000(Z-axis 1200)

B: Harnet (optional features)

- ∞ Whole plant utilization rate management system
- ∞ Processing countdown management
- ∞ Whole plant file transfer system
- ∞ Output management

C: Electrical function (optional features)

- ∞ Power-off gravity axis lift function
- ∞ Coordinate display hand input
- ∞ Tool magazine HMI
- ∞ Rigid tapping tool retraction
- ∞ Spindle thermal displacement compensation

- ∞ Tool life monitoring (only suitable for Fanuc)
- ∞ Lettering processing function
- ∞ Tool correction screen & fast tool change function (only suitable for Fanuc)

Application program

Key technology - processing range

Intelligentization

Specification parameter
- Mechanical Specifications Table

Mechanical Specifications Table

Model	unit	HSA-220/320/420(EA)	HSA-323/423/523/623/723(EA)	HSA-327/427/527/627(EA)
Workbench				
Workbench size	mm	2000/3000/4000/x1800	3000/4000/5000/6000/7000x2200	3000/4000/5000/6000 x2200
T-shaped slot (slot frame x slot number x slot distance)	mm	22x7/11/15x250	28x11/15/19/23/27x250	28x11/15/19/23x250
Maximum load	kg	8000/10000/12000	10000/12000/15000/18000/20000	10000/12000/15000/18000
Travel				
X-axis travel	mm	2000/3000/4000	3000/4000/5000/6000/7000	3000/4000/5000/6000
Y-axis travel	mm	EA:2000 EAY:2800	EA:2300 EAY:3100	EA:2700 EAY:3500
Z-axis travel	mm	1000(1200)	1000(1200)	1000(1200)
Spindle nose to workbench	mm	350~1350(Z:1000_Column2200) 350~1550(Z:1200_Column2400)	350~1350(Z:1000_Column2200) 350~1550(Z:1200_Column2400)	350~1350(Z:1000_Column2200) 350~1550(Z:1200_Column2400)
Spindle center to column	mm	450	450	450
Door width	mm	2000	2300	2800
Spindle				
Gear type speed	rpm	6000(8000)	6000(8000)	6000(8000)
Direct-connected type speed	rpm	10000	10000	10000
Nose taper		ISO50	ISO50	ISO50
Speed				
Cut rate (X / Y / Z-axis)	mm / min	12000/12000/12000(220) 12000/12000/12000(320) 12000/12000/12000(420)	12000/12000/12000(323) 10000/12000/12000(423) 8000/12000/12000(523) 8000/12000/12000(623) 8000/12000/12000(723)	12000/12000/12000(327) 10000/12000/12000(427) 8000/12000/12000(527) 8000/12000/12000(627)
Feedrate (X / Y / Z axis)	mm / min	24000/18000/16000(220) 20000/18000/16000(320) 20000/18000/16000(420)	20000/18000/16000(323) 20000/18000/16000(423) 14000/18000/16000(523) 12000/18000/16000(623) 10000/18000/16000(723)	20000/18000/16000(327) 20000/18000/16000(427) 14000/18000/16000(527) 12000/18000/16000(627)
Automatic Tool Changer				
Tool number	pcs	32(40/60/90) A-type	32(40/60/90) A-type	32(40/60/90) A-type
Maximum tool weight	kg	20	20	20
Tool size (diameter x length)	mm	φ125 x 400	φ125 x 400	φ125 x 400
Tool holder		BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50
Pulling bolt		P50T-1	P50T-1	P50T-1
Motor				
Spindle power (Fanuc)		22/18.5 35/30(Hybrid spindle for Fanuc)	22/18.5 35/30(Hybrid spindle for Fanuc)	22/18.5 35/30(Hybrid spindle for Fanuc)
Positioning accuracy				
3-axis laser positioning accuracy (JIS B6330)				
Positioning accuracy / full travel	mm	±0.010	±0.010/0.010/0.012/0.012/0.012	±0.010/0.010/0.012/0.012
Repeated positioning accuracy	mm	±0.003	±0.003	±0.003
3-axis laser positioning accuracy (VD13441) repeats 5 times.				
Positioning accuracy	mm	0.015/0.016/0.018	0.016/0.018/0.026/0.028/0.028	0.016/0.018/0.026/0.028
Repeated positioning accuracy	mm	0.014/0.014/0.015	0.014/0.015/0.021/0.024/0.024	0.014/0.015/0.021/0.024
Other				
Required air pressure	kg / cm ²	6.5	6.5	6.5
Required power	KVA	55/55/60	60/60/65/65/70	60/60/65/65
Covering area	mm	9000/11000/13000x6500(EA) 9000/11000/13000x6750(EAY)	11000/13000/15000/17000/19000x6800(EA) 11000/13000/15000/17000/19000x7050(EAY)	11000/13000/15000/17000 x7300(EA) 11000/13000/15000/17000 x7550(EAY)
Net weight	kg	26000/29000/32000(EA) 26500/29500/32500(EAY)	32000/36000/40000/44000/48000(EA) 33500/37500/41500/45500/49500(EAY)	35300/39300/43300/47500(EA) 36800/40800/44800/49000(EAY)

The factory laser precision is JIS B6330.
If VDI 3441 demand,
you may further propose

A: Standard equipment

2. The machine is equipped with standard equipment & optional features

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

- ∞ Centralized automatic lubrication system
- ∞ Spindle air blow device
- ∞ Spindle oil temperature cooler
- ∞ Removable crumb barrels x 2 (not suitable for HSA-2215 / HSA-X212)
- ∞ Fluorescent lamp
- ∞ Full cover type anti-splash protection cover
- ∞ Workbench side blowing device (single tube)
- ∞ Electrical control box convection heat exchanger (applies to pair up with Mitsubishi, Fanuc, Syntec motor)
- ∞ Spindle air curtain
- ∞ 6000 rpm gear type spindle head
- ∞ Bamboo hat type tool magazine (not applicable to EA / EAY / HSA-X212)
- ∞ Hollow spiral cutting conveyor screw

HSA-328/428/528/628/728/828(EA)	HSA-432/532/632/732/832 (EA)	HSA-436/536/636/736/836(EA)
3000/4000/5000/6000/7000/8000x2500	4000/5000/6000/7000/8000x2500	4000/5000/6000/7000/8000x3000
28x11/15/19/23/27/31x250	28x15/19/23/27/31x250	28x15/19/23/27/31x250
15000/18000/20000/23000/25000/27000	18000/20000/23000/25000/27000	18000/21000/24000/27000/30000
3000/4000/5000/6000/7000/8000	4000/5000/6000/7000/8000	4000/5000/6000/7000/8000
EA:2800 EAY:3600	EA:3200 EAY:4000	EA:3600 EAY:4400
1000(1200)	1000(1200)	1000(1200)
310-1310(Z:1000_Column2200)	310-1310(Z:1000_Column2200)	310-1310(Z:1000_Column2200)
310-1510(Z:1200_Column2400)	310-1510(Z:1200_Column2400)	310-1510(Z:1200_Column2400)
450	450	450
2800	3200	3600
6000(8000)	6000(8000)	6000(8000)
10000	10000	10000
ISO50	ISO50	ISO50
10000/12000/12000(328)	10000/12000/12000(432)	10000/10000/10000(436)
10000/12000/12000(428)	8000/12000/12000 (532)	8000/10000/10000(536)
8000/12000/12000(528)	8000/12000/12000 (632)	8000/10000/10000(636)
8000/12000/12000(628)	8000/12000/12000 (732)	8000/10000/10000(736)
8000/12000/12000(728)	6000/12000/12000 (832)	6000/10000/10000(836)
6000/12000/12000(828)		
20000/18000/16000(328)	16000/18000/16000(432)	16000/16000/16000(436)
16000/18000/16000(428)	12000/18000/16000(532)	14000/16000/16000(536)
12000/18000/16000(528)	10000/18000/16000(632)	12000/16000/16000(636)
10000/18000/16000(628)	10000/18000/16000(732)	10000/16000/16000(736)
10000/18000/16000(728)	8000/18000/16000(832)	8000/16000/16000(836)
8000/18000/16000(828)		
32(40/60/90) A-type	32(40/60/90) A-type	32(40/60/90) A-type
20	20	20
φ 125 x 400	φ 125 x 400	φ 125 x 400
BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50	BT-50/CAT50/DIN/BBT50
P50T-1	P50T-1	P50T-1
22/18.5	22/18.5	22/18.5
35/30(Hybrid spindle for Fanuc)	35/30(Hybrid spindle for Fanuc)	35/30(Hybrid spindle for Fanuc)
±0.010/0.010/0.012/0.012/0.012/0.012	±0.012	±0.012
±0.003	±0.003	±0.003
0.016/0.018/0.026/0.028/0.028/0.030	0.018/0.026/0.028/0.028/0.030	0.018/0.026/0.028/0.028/0.030
0.014/0.015/0.021/0.024/0.024/0.026	0.015/0.021/0.024/0.024/0.026	0.015/0.021/0.024/0.024/0.026
6.5	6.5	6.5
60/65/65/65/65/70	65/65/70/70/70	65/65/70/70/70
11000/13000/15000/17000/1900/2100x7300(EA)	13000/15000/17000/1900/2100 x7700(EA)	13000/15000/17000/1900/2100x8400(EA)
11000/13000/15000/17000/1900/2100x7550(EAY)	13000/15000/17000/1900/2100 x7950(EAY)	13000/15000/17000/1900/2100x8650(EAY)
36300/41300/46300/51300/56300/61300(EA)	41500/46500/52500/57500/62500 (EA)	53000/58000/63000/68000/73000(EA)
37800/42800/47800/52800/57800/62800(EAY)	43000/48000/54000/59000/64000 (EAY)	54500/59500/64500/69500/74500(EAY)

B: Optional Accessories

- ∞ Semi-cover type anti-splash protection cover (HSA-2215 / HSA-X212 have no semi-cover.)
- ∞ CTS full cover type anti-splash protection cover
- ∞ Spindle central coolant apparatus
- ∞ 90° angle head
- ∞ Extending head
- ∞ Universal milling head
- ∞ Measuring system
- ∞ Closed loop optical ruler (standard length: X axis 6m or longer)
- ∞ Chain-type cut conveyor (HSA-X212 standard feature)
- ∞ 10000 rpm / 12000 rpm direct-connected axis (not applicable to EA / EAY)
- ∞ ATC-40T / 60 T / 90 T / 120 T
- ∞ 8000 rpm gear type spindle head
- ∞ Cut coolant system devices (HSA-2215 / HSA-X 212 standard feature)
- ∞ Automatic angle head jib base