

5BC Series

Smartcenter

Intelligent 5-axis machining center

- 5-year warranty on guideways
- 5-axis head made by Hartford
- 4 linear guideways on Z-axis
- One-piece wider column design
- Slant beam design on cross beam

Website



Facebook



Hartford has sold more than 50,000 machines to all over the world, accumulated more than 37,000 customers, who absolutely affirm Hartford's manufacturing experience and ingenious machine manufacture technology. We insist on providing customers with the best quality machining centers. We will devote more carefully, in order to continuously enhance the technical level of manufacture and applications.

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Hartford

Hartrol • Smartcenter • Robocell

We manufacture intelligent machines only



What is *Smartcenter*?

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

A Hartford Smartcenter has to include

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

The benefits of Hartford smartcenter

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

Hartford Smartcenter will help you become an intelligent manager

The main technologies of Hartford smartcenter include intelligent managing system, status monitoring, alarm predicting, machine status diagnosis, crash preventing, 3D program simulation, machining efficiency improving...etc.

All the intelligent functions help you control the machine status and assure the job quality.



High Efficiency Solutions for Aerospace Components

Hartford 5-axis double column machining center suits for complex multi axis components whilst maintaining high precision and excellent material removal efficiency.



1. Aerospace component



2. Hood

NCG-2005 5-axis Accuracy Testing

■ Workpiece name	NCG2005	■ Workpiece material	Necuron 1007	■ Workpiece size	75x105x50 mm
■ Workpiece fixed angle	0° & 30°	■ Cycle time	12 min	■ Tool	Ø6 mm end mill

Dimensional accuracy



Marginal lines(1 mm) in X, Y-axis are consistent.

N/C Thermal elongation check



Connection wall thickness down to 10 µm is not broken.

Angle accuracy deviation of rotating axes



High angle accuracy of B/C axes is easily recognized by surface finish and spacing symmetry.

Workpiece surface check



Accurate right angle between X & Y plane.

Axis accuracy check



In hole cutting, tool feeds in right and left direction are symmetrical.

Contour accuracy check



By the high accuracy of contour.

Tool center point check



Tool center point in 5-axis (X,Y,Z,B,C) positions accurately.

The Optimized Structure Design on 5BC

Hartford 5BC machining center delivers the power and versatility cutting capability , providing the best resolution for aerospace industry.



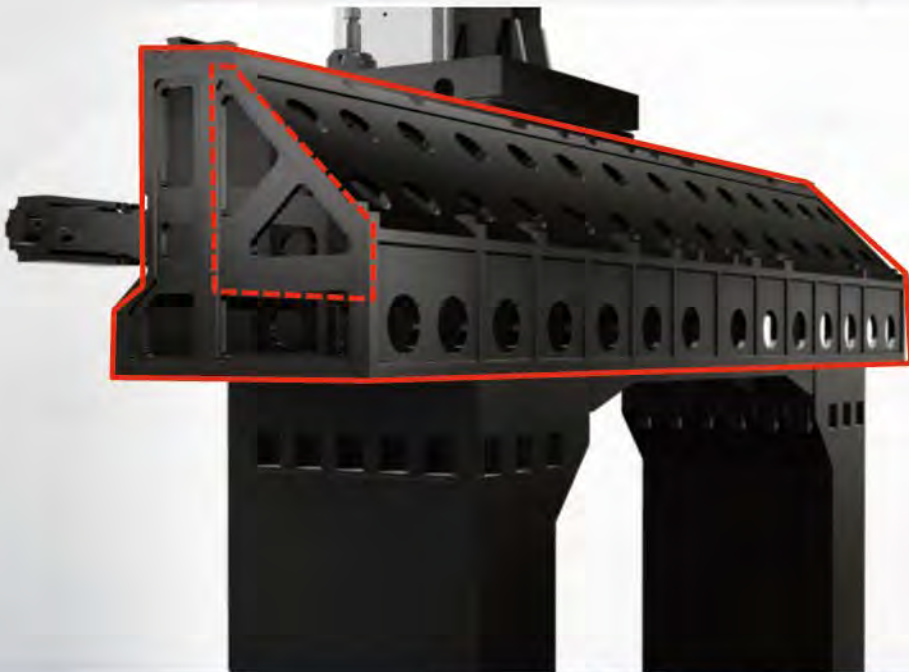
Photo shows 5BC-434



Full range of box 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.

Four linear guideways on Z-axis

- Supported by high rigidity roller type linear guideways.
- Bilateral supported delivers higher rigidity.
- Provides higher stability and accuracy.
- Paten(I264343: Four linear guideways on Z-axis.



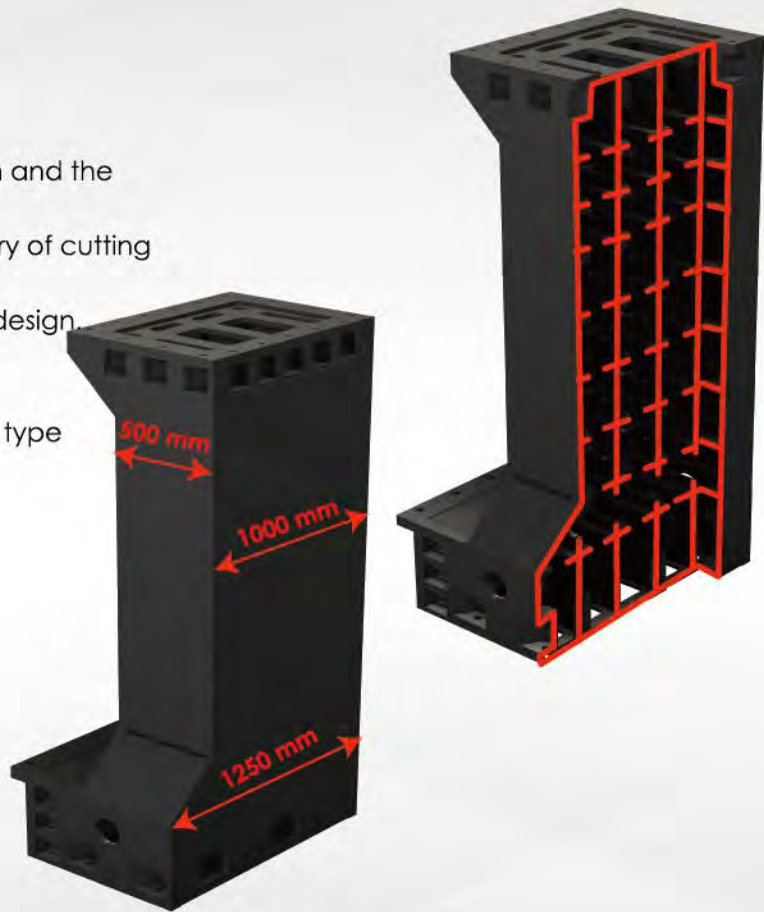
Slant beam design on cross beam

- **45 °** force flow design reducing vibration through efficient force flow transfer.
- Increased machine stability.
- Increased machine cutting accuracy.
- Patent(M435318: Slant beam design on double column cross beam)

Hartford-Made High Rigidity Head & Structure

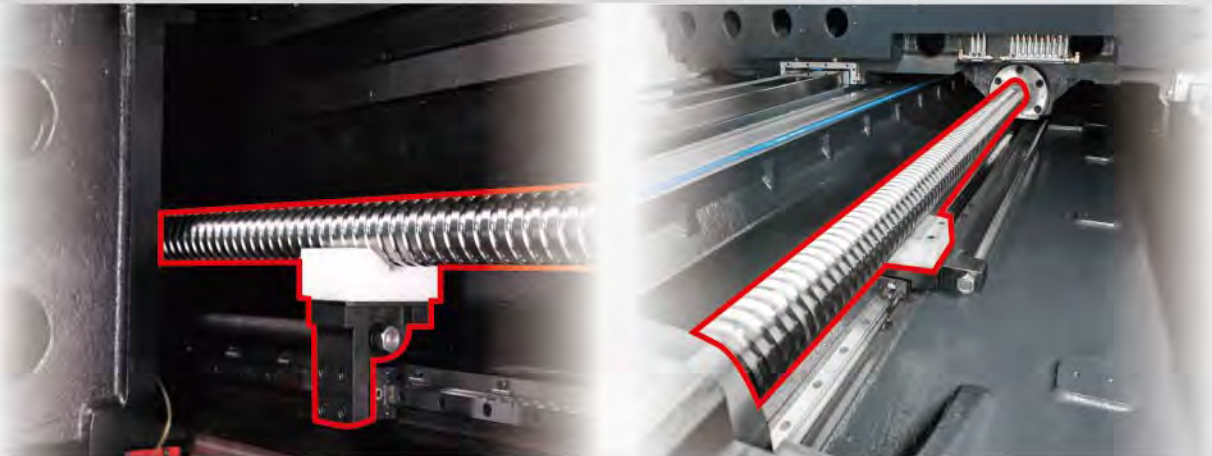
One-piece wider column design

- Increased contact area the column and the machine base to **1250mm**.
- This provides a more efficient delivery of cutting force to the machine base.
- Multi-layer box-in-box ribs structure design.
- Reduce vibration to improve your accuracy.
- Patent(M437316: The section of box type structure features excellent torsion-resistance.



X,Y-axis ballscrew supported

- Ballscrews downcast problem can be improved.
- Enhance machining accuracy.
- Y-axis: X29/X34/X38/X42 are standard, X22/X26 are optional.
- X-axis: Machines above 5 meter are standard, machines under 5 meter are optional.



Hartford-made high rigidity 5-axis head

- The 5-axis head is made in Taiwan.
- High rigidity **FORK** structure design.
- High accuracy & high rigidity 5-axis head.



High rigidity & strength machine head stock

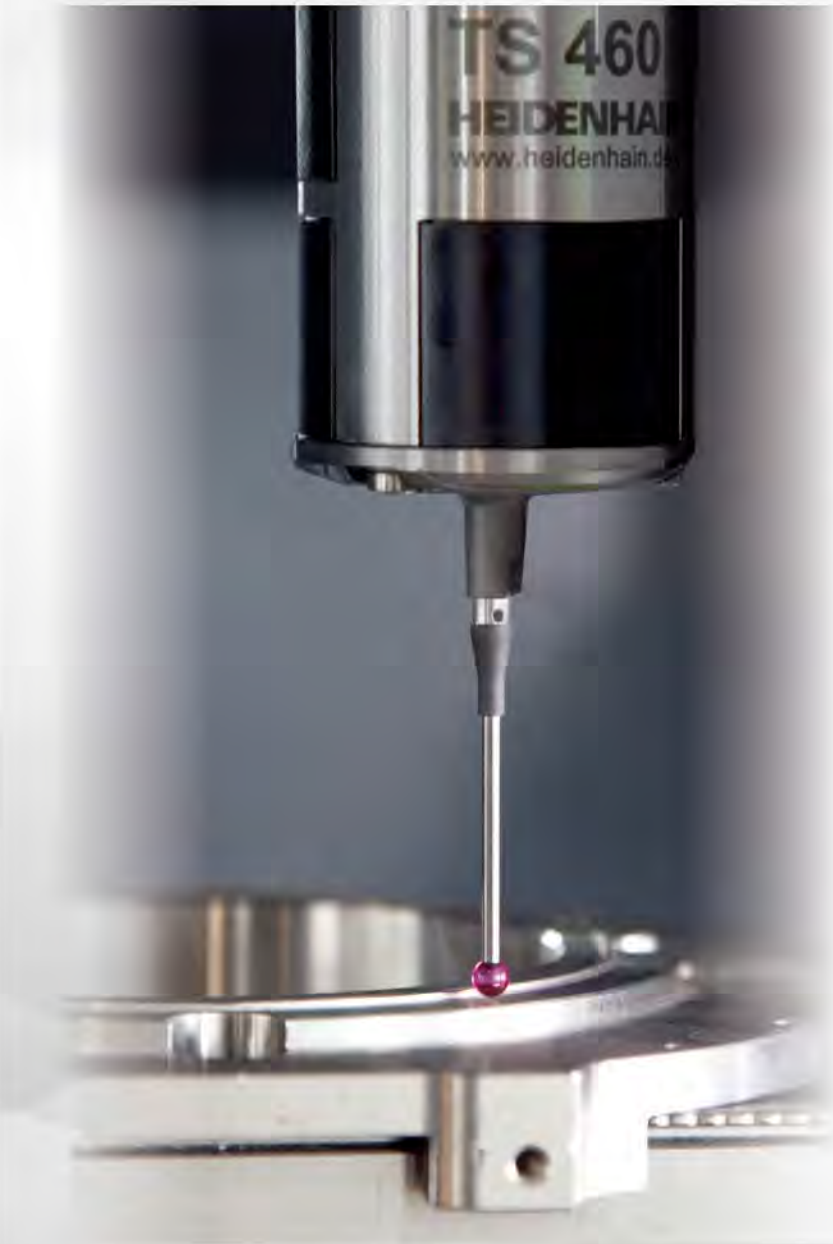
- The size of machine head section is **540x521mm**
- Chamfer design inside the stock increased machine running rigidity.
- Machine head rigidity and strength can be boosted.



Measurement Equipment

The advanced measurement technique

- Dynamic collision monitoring (DCM) function increases machine running safety.
- CYCLE 451 measurement can be operated easily so that machine accuracy is always maintained.
- Heidenhain TS460 +KKH250 are standard.



Dynamic collision monitoring (DCM)

- Automatically monitors the working space of machine.
- Prevents collision with components.
- Increases the level of safety for both the operator and machine.

Kinematic Comp(opt)

- This technology takes volumetric compensation to a new level.
- Enhances precision machining of large workpiece.

Kinematic Opt 48

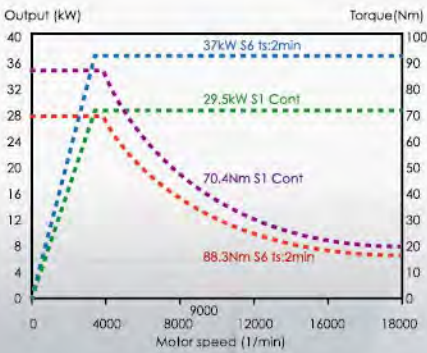
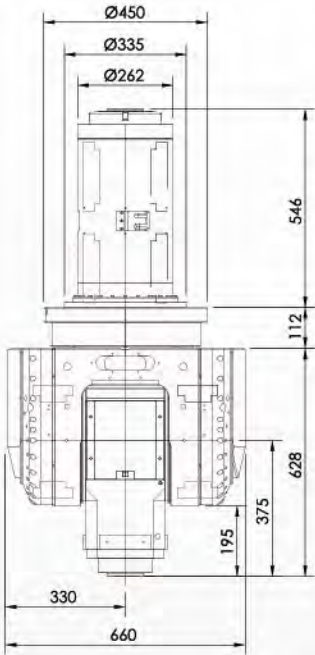
- It's a 3-D touch probe cycle that automatically measures all rotary axes.
- This makes reccalibration a fast and efficient process.
- Machine accuracy can be controled even over long period.

Powerful spindle torque

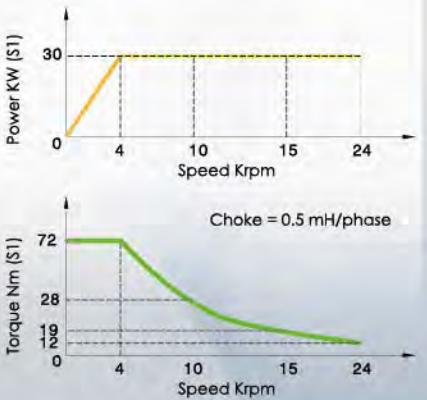
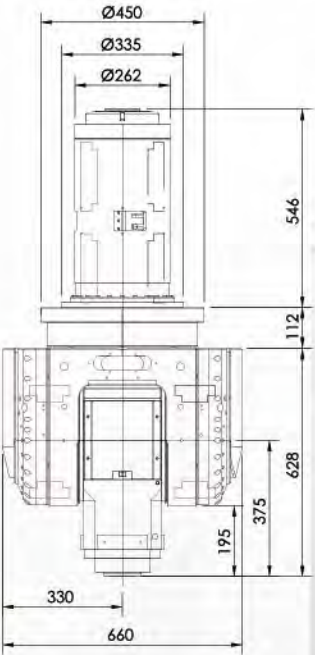
	Model	HSK-A63/A100(CYTEC)						
		HSK-A63			Spindle			
		Spindle	B	C	HSK-A63	HSK-A100	B	C
Rotation range	degree	-	±100°	±240°	-	-	±110°	±360°
Positioning accuracy	sec	-	±5"	±5"	-	-	±5"	±2"
Rotation speed	rpm	15000	60	60	24000	12000	60	60
Rotation torque (Con.)	Nm	70.4	648	638	72	170	700	700
	ft-lbs	51.92	477.94	470.56	53.1	125.39	516.29	516.29
Rotation torque (Max.)	Nm	88.3	1200	1000	91	220	1000	1000
	ft-lbs	65.13	885.07	737.56	67.12	162.26	737.56	737.56
Holding torque	Nm	-	4000	4000	-	-	4000	4000
	ft-lbs	-	2950.25	2950.25	-	-	2950.25	2950.25

Spindle diagram

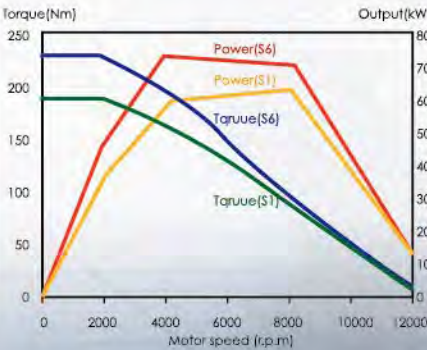
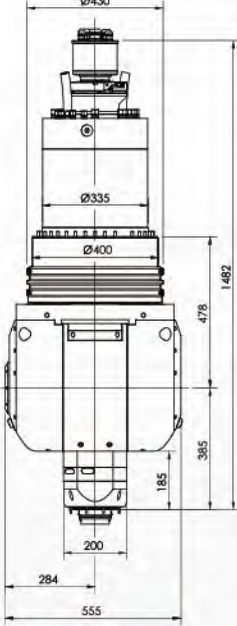
HSK- A63
15,000 rpm



HSK- A63
24,000 rpm



HSK- A100
12,000 rpm



5BC Pyramid RMP600
Precision measuring

NAS-979



				Actual length		Std. length		Error margin		B/C rotation
Y+	Y-	X+	X-	Y-axis	X-axis	Y-axis	X-axis	Y-axis	X-axis	
20.8045	20.8028	17.3119	17.2942	41.6073	34.6061	41.6	34.6	-0.0073	-0.0061	NO
40.2079	40.2014	35.7281	35.6926	80.4093	71.4207	80.4	71.4	-0.0093	-0.0207	Y+/X+/C180
60.7998	60.8027	56.3084	56.2965	121.6025	112.6049	121.6	112.6	-0.0025	-0.0049	NO
80.0998	80.1057	75.62407	75.5915	160.2055	151.2162	160.2	151.2	-0.0055	-0.0162	Y+/X+/C90

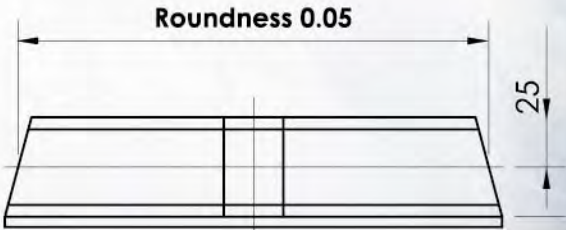
Unit:mm



NAS-979 Cutting report

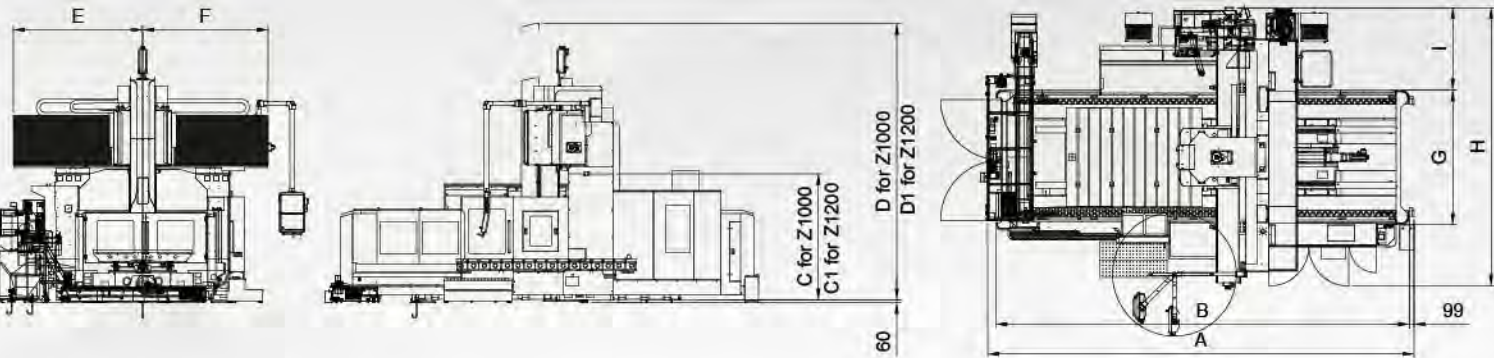
	Tolerance	Test Results
Inclination Angle	$\angle 15^{\circ}(\pm 1'20'')$	15.0007
Roundness	0.05	0.0148

Unit: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.

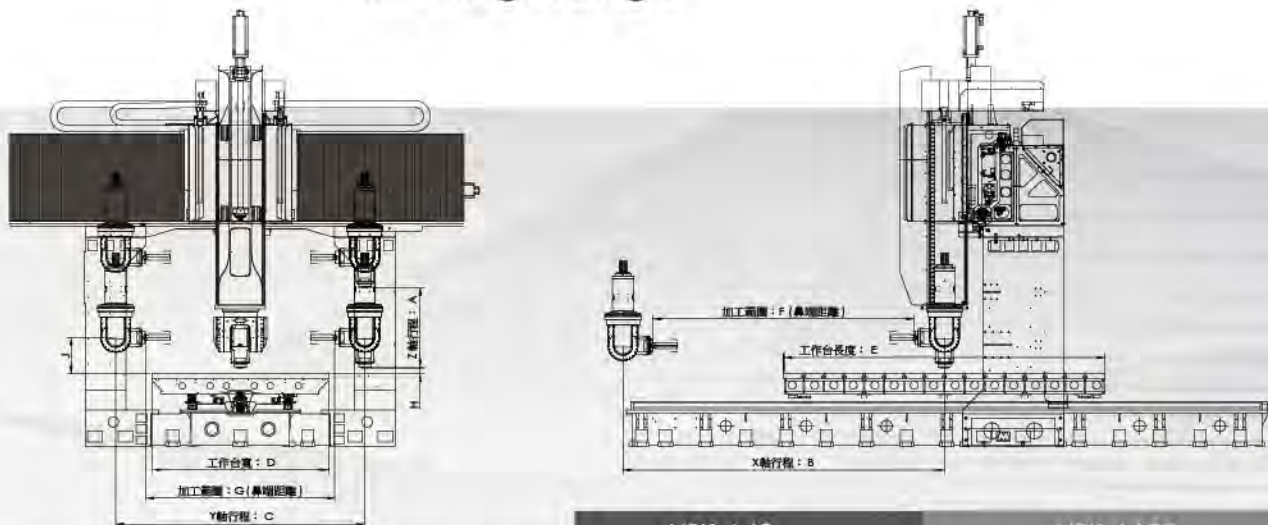
Machine Dimension



Model	A	B	C	C1	D	D1	E	F	G	H	I	Remarks
5BC-222	9068	8255	2600	2800	5960	6160	2179	2079	1794	4987	1830	HSK-A63
			2800	3000	6160	6360				5087	1930	HSK-A100(CYTEC)
5BC-322	9468	9188	2600	2800	5960	6160				4987	1830	HSK-A63
			2800	3000	6160	6360				5087	1930	HSK-A100(CYTEC)
5BC-226	9068	8255	2600	2800	5930	6130				5387	1830	HSK-A63
			2800	3000	6130	6330				5487	1930	HSK-A100(CYTEC)
5BC-326	9468	9188	2600	2800	5930	6130				5387	1830	HSK-A63
			2800	3000	6130	6330				5487	1930	HSK-A100(CYTEC)
5BC-426	11076	10796	2600	2800	5930	6130				5387	1830	HSK-A63
			2800	3000	6130	6330				5487	1930	HSK-A100(CYTEC)
5BC-329	9468	9188	2600	2800	5930	6130				5687	1830	HSK-A63
			2800	3000	6130	6330				5787	1930	HSK-A100(CYTEC)
5BC-429	11076	10796	2600	2800	5930	6130				5687	1830	HSK-A63
			2800	3000	6130	6330				5787	1930	HSK-A100(CYTEC)
5BC-529	13076	12796	2600	2800	5930	6130				5687	1830	HSK-A63
			2800	3000	6130	6330				5787	1930	HSK-A100(CYTEC)
5BC-629	15076	14796	2600	2800	5930	6130				5687	1830	HSK-A63
			2800	3000	6130	6330				5787	1930	HSK-A100(CYTEC)
5BC-334	9468	9188	2600	2800	5930	6130				6187	1830	HSK-A63
			2800	3000	6130	6330				6287	1930	HSK-A100(CYTEC)
5BC-434	11076	10796	2600	2800	5930	6130				6187	1830	HSK-A63
			2800	3000	6130	6330				6287	1930	HSK-A100(CYTEC)
5BC-534	13076	12796	2600	2800	5930	6130				6187	1830	HSK-A63
			2800	3000	6130	6330				6287	1930	HSK-A100(CYTEC)
5BC-634	15076	14796	2600	2800	5930	6130				6187	1830	HSK-A63
			2800	3000	6130	6330				6287	1930	HSK-A100(CYTEC)
5BC-438	11076	10796	2600	2800	5930	6130				6587	1830	HSK-A63
			2800	3000	6130	6330				6687	1930	HSK-A100(CYTEC)
5BC-538	13076	12796	2600	2800	5930	6130				6587	1830	HSK-A63
			2800	3000	6130	6330				6687	1930	HSK-A100(CYTEC)
5BC-638	15076	14796	2600	2800	5930	6130				6587	1830	HSK-A63
			2800	3000	6130	6330				6687	1930	HSK-A100(CYTEC)
5BC-738	17076	16796	2600	2800	5930	6130				6587	1830	HSK-A63
			2800	3000	6130	6330				6687	1930	HSK-A100(CYTEC)
5BC-838	19076	18796	2600	2800	5930	6130				6587	1830	HSK-A63
			2800	3000	6130	6330				6687	1930	HSK-A100(CYTEC)
5BC-442	11076	10796	2600	2800	5930	6130				6987	1830	HSK-A63
			2800	3000	6130	6330				7087	1930	HSK-A100(CYTEC)
5BC-542	13076	12796	2600	2800	5930	6130				6987	1830	HSK-A63
			2800	3000	6130	6330				7087	1930	HSK-A100(CYTEC)
5BC-642	15076	14796	2600	2800	5930	6130				6987	1830	HSK-A63
			2800	3000	6130	6330				7087	1930	HSK-A100(CYTEC)
5BC-742	17076	16796	2600	2800	5930	6130				6987	1830	HSK-A63
			2800	3000	6130	6330				7087	1930	HSK-A100(CYTEC)
5BC-842	19076	18796	2600	2800	5930	6130				6987	1830	HSK-A63
			2800	3000	6130	6330				7087	1930	HSK-A100(CYTEC)

Unit:mm

Cutting Range



					HSK-A63				HSK-A100						
Model	A	B	C	D	E	F	G	H	J	F	G	H	J		
5BC-222	1000/ 1200	2000	2200	1450	2000	1250	1450	75	450	1294	1430	190	575		
5BC-322		3000			3000	2250				2294					
5BC-226		2000	2600	1800	2000	1250	1850			1294	1830				
5BC-326		3000			3000	2250				2294					
5BC-426		4000			4000	3250				3294					
5BC-329		3000	2900	2200	3000	2250	2150			2294	2130				
5BC-429		4000			4000	3250				3294					
5BC-529		5000			5000	4250				4294					
5BC-629		6000			6000	5250				5294					
5BC-334		3000	3400	2200	3000	2250	2650			2294	2630				
5BC-434		4000			4000	3250				3294					
5BC-534		5000			5000	4250				4294					
5BC-634		6000			6000	5250		5294							
5BC-438		4000	3800	2500	4000	3250	3050	35	410	3294	3030			150	535
5BC-538		5000			5000	4250				4294					
5BC-638		6000			6000	5250				5294					
5BC-738		7000			7000	6250				6294					
5BC-838		8000			8000	7250				7294					
5BC-442		4000	4200	3000	4000	3250	3450			3294	3430				
5BC-542		5000			5000	4250				4294					
5BC-642		6000			6000	5250				5294					
5BC-742		7000			7000	6250				6294					
5BC-842		8000			8000	7250				7294					

Unit:mm

Machine Specifications

Specification parameter-Specification

Model	Unit	5BC-222/322	5BC-226/326/426	5BC-329/429/529/629	5BC-334/434/534/634	5BC-438/538/638/738/838	5BC-442/542/642/742/842
Table							
Working surface	mm	2000/3000×1450	2000/3000/4000×1800	3000/4000/5000/6000×2200	3000/4000/5000/6000×2200	4000/5000/6000/7000/8000×2500	4000/5000/6000/7000/8000×3000
T-slot(Size×Number×Pitch)	mm	22×7/11×250	22×7/11/15×250	28×11/15/19/23×250	28×11/15/19/23×250	28×15/19/23/27/31×250	28×15/19/23/27/31×250
Max. table load	Kg	8000/10000	8000/10000/12000	10000/12000/15000/18000	10000/12000/15000/18000	18000/20000/23000/25000/27000	18000/21000/24000/27000/30000
Travel							
Longitudinal travel (X-axis)	mm	2000/3000	2000/3000/4000	3000/4000/5000/6000	3000/4000/5000/6000	4000/5000/6000/7000/8000	4000/5000/6000/7000/8000
Cross travel (Y-axis)	mm	2200	2600	2900	3400	3800	4200
Vertical travel (Z-axis)	mm	1000/1200/1400	1000/1200/1400	1000/1200/1400	1000/1200/1400	1000/1200/1400	1000/1200/1400
Distance from spindle end to table	mm	Z1000=75~1075(HSK-A63) Z1000=190~1190(HSK-A100) Z1200=75~1275(HSK-A63) Z1200=190~1390(HSK-A100)	Z1000=75~1075(HSK-A63) Z1000=190~1190(HSK-A100) Z1200=75~1275(HSK-A63) Z1200=190~1390(HSK-A100)	Z1000=75~1075(HSK-A63) Z1000=190~1190(HSK-A100) Z1200=75~1275(HSK-A63) Z1200=190~1390(HSK-A100)	Z1000=75~1075(HSK-A63) Z1000=190~1190(HSK-A100) Z1200=75~1275(HSK-A63) Z1200=190~1390(HSK-A100)	Z1000=35~1035(HSK-A63) Z1000=150~1150(HSK-A100) Z1200=35~1235(HSK-A63) Z1200=150~1350(HSK-A100)	Z1000=35~1035(HSK-A63) Z1000=150~1150(HSK-A100) Z1200=35~1235(HSK-A63) Z1200=150~1350(HSK-A100)
Distance from spindle center to column	mm	480	480	480	480	480	480
Width between column	mm	1600	2000	2300	2800	3200	3600
Spindle							
Spindle drive motor	Kw(S1/S6)	29.5/37(HSK-A63) 34/43(HSK-A100)	29.5/37(HSK-A63) 34/43(HSK-A100)	29.5/37(HSK-A63) 34/43(HSK-A100)	29.5/37(HSK-A63) 34/43(HSK-A100)	29.5/37(HSK-A63) 34/43(HSK-A100)	29.5/37(HSK-A63) 34/43(HSK-A100)
Spindle Rated Torque	Nm(S1/S6)	70.4/88.3(HSK-A63) 170/220(HSK-A100)	70.4/88.3(HSK-A63) 170/220(HSK-A100)	70.4/88.3(HSK-A63) 170/220(HSK-A100)	70.4/88.3(HSK-A63) 170/220(HSK-A100)	70.4/88.3(HSK-A63) 170/220(HSK-A100)	70.4/88.3(HSK-A63) 170/220(HSK-A100)
Spindle speed	rpm	15000(HSK-A63) 12000(HSK-A100)	15000(HSK-A63) 12000(HSK-A100)	15000(HSK-A63) 12000(HSK-A100)	15000(HSK-A63) 12000(HSK-A100)	15000(HSK-A63) 12000(HSK-A100)	15000(HSK-A63) 12000(HSK-A100)
Spindle nose tape		HSK-A63/HSK-A100	HSK-A63/HSK-A100	HSK-A63/HSK-A100	HSK-A63/HSK-A100	HSK-A63/HSK-A100	HSK-A63/HSK-A100
B-axis							
RPM of B-axis	rpm	60	60	60	60	60	60
Rated Torque(max)	Nm	1200(HSK-A63) 1000(HSK-A100)	1200(HSK-A63) 1000(HSK-A100)	1200(HSK-A63) 1000(HSK-A100)	1200(HSK-A63) 1000(HSK-A100)	1200(HSK-A63) 1000(HSK-A100)	1200(HSK-A63) 1000(HSK-A100)
Braking Torque	Nm	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)
B-axis travel	°	±100°(HSK-A63) ±110°(HSK-A100)	±100°(HSK-A63) ±110°(HSK-A100)	±100°(HSK-A63) ±110°(HSK-A100)	±100°(HSK-A63) ±110°(HSK-A100)	±100°(HSK-A63) ±110°(HSK-A100)	±100°(HSK-A63) ±110°(HSK-A100)
Precision of Positioning		±5"	±5"	±5"	±5"	±5"	±5"
C-axis							
RPM of B-axis	rpm	60	60	60	60	60	60
Rated Torque(max)	Nm	1000(HSK-A63) 1000(HSK-A100)	1000(HSK-A63) 1000(HSK-A100)	1000(HSK-A63) 1000(HSK-A100)	1000(HSK-A63) 1000(HSK-A100)	1000(HSK-A63) 1000(HSK-A100)	1000(HSK-A63) 1000(HSK-A100)
Braking Torque	Nm	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)	4000(HSK-A63) 4000(HSK-A100)
C-axis travel	°	±240°(HSK-A63) ±360°(HSK-A100)	±240°(HSK-A63) ±360°(HSK-A100)	±240°(HSK-A63) ±360°(HSK-A100)	±240°(HSK-A63) ±360°(HSK-A100)	±240°(HSK-A63) ±360°(HSK-A100)	±240°(HSK-A63) ±360°(HSK-A100)
Precision of Positioning		±5'''(HSK-A63) ±2'''(HSK-A100)	±5'''(HSK-A63) ±2'''(HSK-A100)	±5'''(HSK-A63) ±2'''(HSK-A100)	±5'''(HSK-A63) ±2'''(HSK-A100)	±5'''(HSK-A63) ±2'''(HSK-A100)	±5'''(HSK-A63) ±2'''(HSK-A100)
Feed							
Cutting feed rate (X・Y・Z axis)	m/min	X/Y/Z=12	X/Y/Z=12	X=12/10/8/8 Y/Z=12	X=12/10/8/8 Y/Z=12	X=10/8/8/8/6 Y/Z=12	X=10/8/8/8/6 Y/Z=10
Rapid traverse (X・Y・Z axis)	m/min	X=24/20 Y=18 Z=16	X=24/20/20 Y=18 Z=16	X=20/20/14/12 Y=18 Z=16	X=20/20/14/12 Y=18 Z=16	X=16/12/10/10/8 Y=18 Z=16	X=16/14/12/10/8 Y=16 Z=16
ATC							
Tool storage capacity	Pcs	32/40・60(A-Type)	32/40・60(A-Type)	32/40・60(A-Type)	32/40・60(A-Type)	32/40・60(A-Type)	32/40・60(A-Type)
Max. tool weight	Kg	7(HSK-A63) 20(HSK-A100)	7(HSK-A63) 20(HSK-A100)	7(HSK-A63) 20(HSK-A100)	7(HSK-A63) 20(HSK-A100)	7(HSK-A63) 20(HSK-A100)	7(HSK-A63) 20(HSK-A100)
Max. tool size (diameter×length)	mm	Ø75×300(HSK-A63) Ø125×400(HSK-A100)	Ø75×300(HSK-A63) Ø125×400(HSK-A100)	Ø75×300(HSK-A63) Ø125×400(HSK-A100)	Ø75×300(HSK-A63) Ø125×400(HSK-A100)	Ø75×300(HSK-A63) Ø125×400(HSK-A100)	Ø75×300(HSK-A63) Ø125×400(HSK-A100)
Positioning Accuracy							
3 axes laser positioning accuracy (JIS B6330)							
Positioning accuracy/Full travel	mm	±0.010	±0.010	±0.010/±0.010	±0.010/10.10/0.012/0.012	±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 (VDI 3441)/Repeated 5 times							
Positioning accuracy	mm	0.015/0.016	0.015/0.016/0.018	0.016/0.018	0.016/0.018/0.026/0.028	0.018/0.026/0.028/0.028/0.030	0.018/0.026/0.028/0.028/0.030
Repetitive positioning accuracy	mm	0.014/0.014	0.014/0.014/0.015	0.014/0.015	0.014/0.015/0.021/0.024	0.015/0.021/0.024/0.024/0.026	0.015/0.021/0.024/0.024/0.026
VDI3441 accuracy available upon order request							
Other							
Coolant Capacity (L)	L	560	640	640	570	600	720
Required Air Pressure	kg/cm2	6.5	6.5	6.5	6.5	6.5	6.5
Distance From Table Surface To Floor	mm	960	960	960	960	1000	1000
Machine Height	mm	6020(HSK-A63) 6220(HSK-A100)	6020(HSK-A63) 6220(HSK-A100)	6020(HSK-A63) 6220(HSK-A100)	6020(HSK-A63) 6220(HSK-A100)	6020(HSK-A63) 6220(HSK-A100)	6020(HSK-A63) 6220(HSK-A100)
Floor space (Full Guarding)	mm	9000/11000×6510	9000/11000/13000×6910	11425/13425/15425/17425×7210	11425/13425/15425/17425×7710	12790/14790/16790/18790/20790×8610	12790/14790/16790/18790/20790×8610
Machine Weight	kg	27000/31000	29000/33000/37000	35000/39000/42000/46000	39000/45000/50000/55000	48000/55000/62000/69000/76000	54000/62000/70000/78000/87000

Standard

- Spray around spindle
- Spindle air curtain
- Air blast through spindle_M53
- Spindle water cooler
- Distance From Spindle Center To Column 480 mm
- Roller Rail Linear Guideways on X/Y/Z axis
- Z Axis Nitrogen Counter Balance
- Lubrication system
- Link type chip conveyor 0.25HP & portable chip bucket(1 EA)
- Screw type chip conveyor 0.5HP*2EA
- Hydraulic Hose Coolant gun

- 3-axis linear scale system_HEIDENHAIN
- Three-Steps Treadle (Side-Operation)_L1500*W810*H852mm [L59.06"*W31.89"*H33.54"]
- Tool package
- Maintenance safety guard(Including maintenance ladder)
- Foundation bolt,Concrete
- Y-axis ball screw support device(x29/x34/x38/x42)
- Tool ARM Type Tool Magazine_32 pcs
- Built-in Spindle 15000RPM_SETCO, DC150/150/6*15000RPM*37KW(S6)
- Tool shank_HSK A63

Optional

- Full-enclosed splash guard with single door
- WORKPIECE MEASURE PROBE(HEIDENHAIN TS-460)
- Calibration spheres (KKH 250)
- Air conditioning for electrical cabinet
- Dynamic Collision Monitoring(DCM)
- kinematicOpt

- Tool ARM Type Tool Magazine_40 pcs,φ75*300L*7kg
- Tool ARM Type Tool Magazine_60 pcs,φ75*300L*7kg
- Tool ARM Type Tool Magazine_32 pcs,φ125*400L*20kg
- Tool ARM Type Tool Magazine_40 pcs,φ125*400L*20kg
- Tool ARM Type Tool Magazine_60 pcs,φ125*400L*20kg
- Built-in type spindle 12000RPM*43KW(S6)
- Coolant through spindle_20BAR with cart
- Coolant through spindle_25BAR, with cart
- Tool shank_HSK-A100
- Full-enclosed splash guard with three doors
- CTS full-enclosed splash guard

- Air gun
- Oil skimmer
- Hoist Seat
- X-axis ball screw support device(Under 5M)
- kinematicComp