Accessories	HSA-X212	HSA-X20	HSA-X23	HSA-X27	HSA-X28	HSA-X32	HSA-X36
Item							
1. Full Enclosure with Multi-Panel Sliding Doors	●	●	●	●	●	●	●
2. Spindle Air Curtain	●	●	●	●	●	●	●
3. Spindle Air Blow Device	●	●	●	●	●	●	●
4. Side Air Blow Device for Table (Single Nozzle)	●	●	●	●	●	●	●
5. Depressurized Lubrication System	●	●	●	●	●	●	●
6. LED Work Light ×1	●	●	●	●	●	●	●
7. Spindle Cooling System	●	●	●	●	●	●	●
8. Foundation Bolt Set (for Concrete)	●	●	●	●	●	●	●
9. Movable Chip Container	●	●	●	●	●	●	●
10. Helical Chip Auger	●	●	●	●	●	●	●
11. Base Oil–Water Separator	○	○	○	○	○	○	○
12. Cutting Coolant System	○	○	○	○	○	○	○
13. Tool Kit	●	●	●	●	●	●	●
14. Hartford Operation Manual ×1	●	●	●	●	●	●	●
15. Automatic Power-Off Function	●	●	●	●	●	●	●
16. End-of-Process Warning Light	●	●	●	●	●	●	●
17. Foot Pedal for Automatic Tool Clamp/Unclamp	●	●	●	●	●	●	●
18. Remote Handwheel (Detachable Type)	●	●	●	●	●	●	●
19. RS-232 Communication Interface	●	●	●	●	●	●	●
20. Electrical Cabinet Convection Heat Exchanger	●	●	●	●	●	●	●
21. Umbrella-Type Tool Magazine (20 Tools)	-	●	●	●	●	●	●
22. 6000 rpm Gear-Driven Spindle	●	●	●	●	●	●	●
23. CTS Top-Cover Type Full Enclosure	○	○	○	○	○	○	○
24. LED Work Light ×2	○	○	○	○	○	○	○
25. Chain-Type Chip Conveyor + Movable Chip Container (1 unit)	○	○	○	○	○	○	○
26. Through-Spindle Coolant (Basic Type, 20 bar, with Water Tank)	○	○	○	○	○	○	○
27. Through-Spindle Coolant (Deluxe Type, 25 bar, with Water Tank)	○	○	○	○	○	○	○
28. Hydraulic Hose Water Gun Set	○	○	○	○	○	○	○
29. Air Gun	○	○	○	○	○	○	○
30. Hartford Operation Manual ×2/3 (as required)	○	○	○	○	○	○	○
31. Heidenhain Linear Scales for X/Y/Z Axes	○	○	○	○	○	○	○
32. No Tool Magazine	○	○	○	○	○	○	○
33. Arm-Type Tool Magazine	○	○	○	○	○	○	○
34. 10,000 / 12,000 rpm Direct-Drive Spindle	○	○	○	○	○	○	○
35. Manual 90° Head (HF-M90L)	○	○	○	○	○	○	○
36. Manual Extension Head (HF-ME35L / HF-ME50L)	○	○	○	○	○	○	○
37. Manual Universal Head (HF-MU360L)	○	○	○	○	○	○	○
38. Semi-Automatic 90° Head (HF-S90L)	○	○	○	○	○	○	○
39. Semi-Automatic Universal Head (HF-SU360L)	○	○	○	○	○	○	○
40. Automatic 90° Angle Head (Gong Yang)	○	○	○	○	○	○	○
41. Rotary Angle Head Mounting Base	-	○	○	○	○	○	○
42. Automatic Tool Length Measurement System	○	○	○	○	○	○	○
43. Automatic Workpiece Measurement System	○	○	○	○	○	○	○
44. DNC Communication Software	○	○	○	○	○	○	○

Standard ● Optional ○

Hartford

Hartrol · Smartcenter · Robocell

Only High-Quality Intelligent Machines

SHE HONG INDUSTRIAL CO., LTD.

No.3,Jingke N. Rd.,Nantung District,Taichung City, 40852 Taiwan(R.O.C)
www.hartford.com.tw Tel：886-4-23501980 Fax：886-4-23581793

CAT.No.：20260211 - E10

Facebook

Website

Hartford

Double Column Machining Center

HSA Series

HSA-X212
HSA-X16
HSA-X20
HSA-X23
HSA-X27
HSA-X28
HSA-X32
HSA-X36

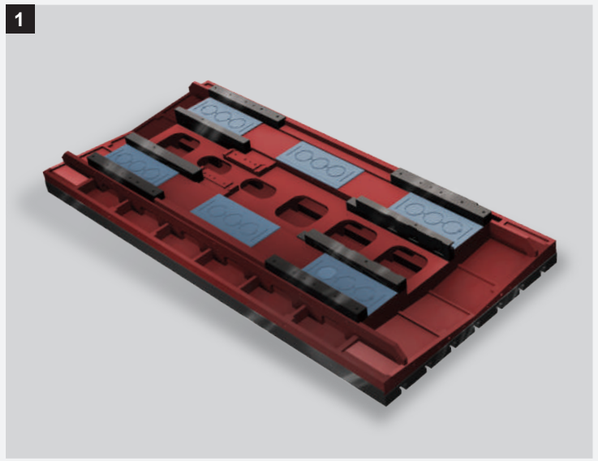
▲ HSA-X212

▲ HSA-X23

01 Workpiece Machining Applications

High Rigidity & Precision Control For Complete Machining Accuracy

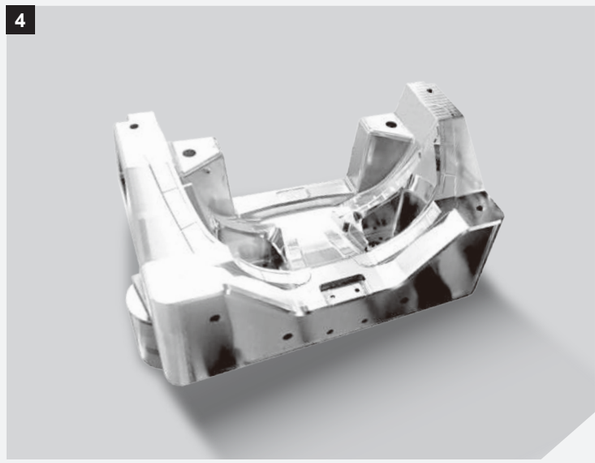
From rough machining to finished molds, the ALL NEW INFINITY features outstanding structural design and dynamic precision performance, enabling the production of high-quality molds with exceptional dimensional accuracy and superior surface finish. It enhances machining efficiency and product value, delivering a reliable solution for high-end mold manufacturing.



1

2

3



4

1 | 2
3 | 4

Casting

1 Vertical worktable
2 Column

Car

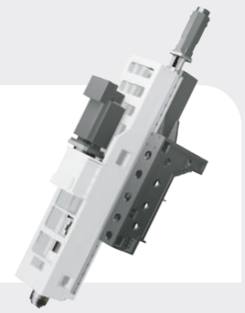
3 Sheet metal stamping die

Plastic

4 Injection mold

02 Machine Structure Features

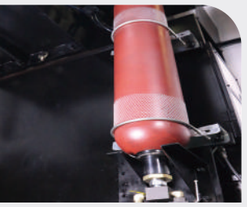
The HSA Series is built around a unique machine structure and integrates an in-house manual head-changing mechanism, delivering flexible five-face machining capabilities to meet diverse application requirements.



In-House 8,000rpm Gear-Driven 2-Speed Spindle opt.

Top-mounted structure design allows selection between high and low gear ranges according to machining requirements. Thermal isolation technology effectively controls thermal expansion.

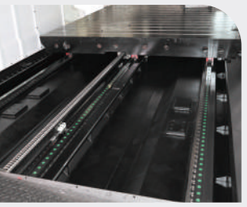
(Applicable to HSA-X20 / X23 / X27 / X28 / X32 / X36)



Z-Axis Nitrogen Counterbalance System opt.

FReduces hydraulic unit operating noise and oil temperature by up to **50**% , achieving energy savings of over **20**% .

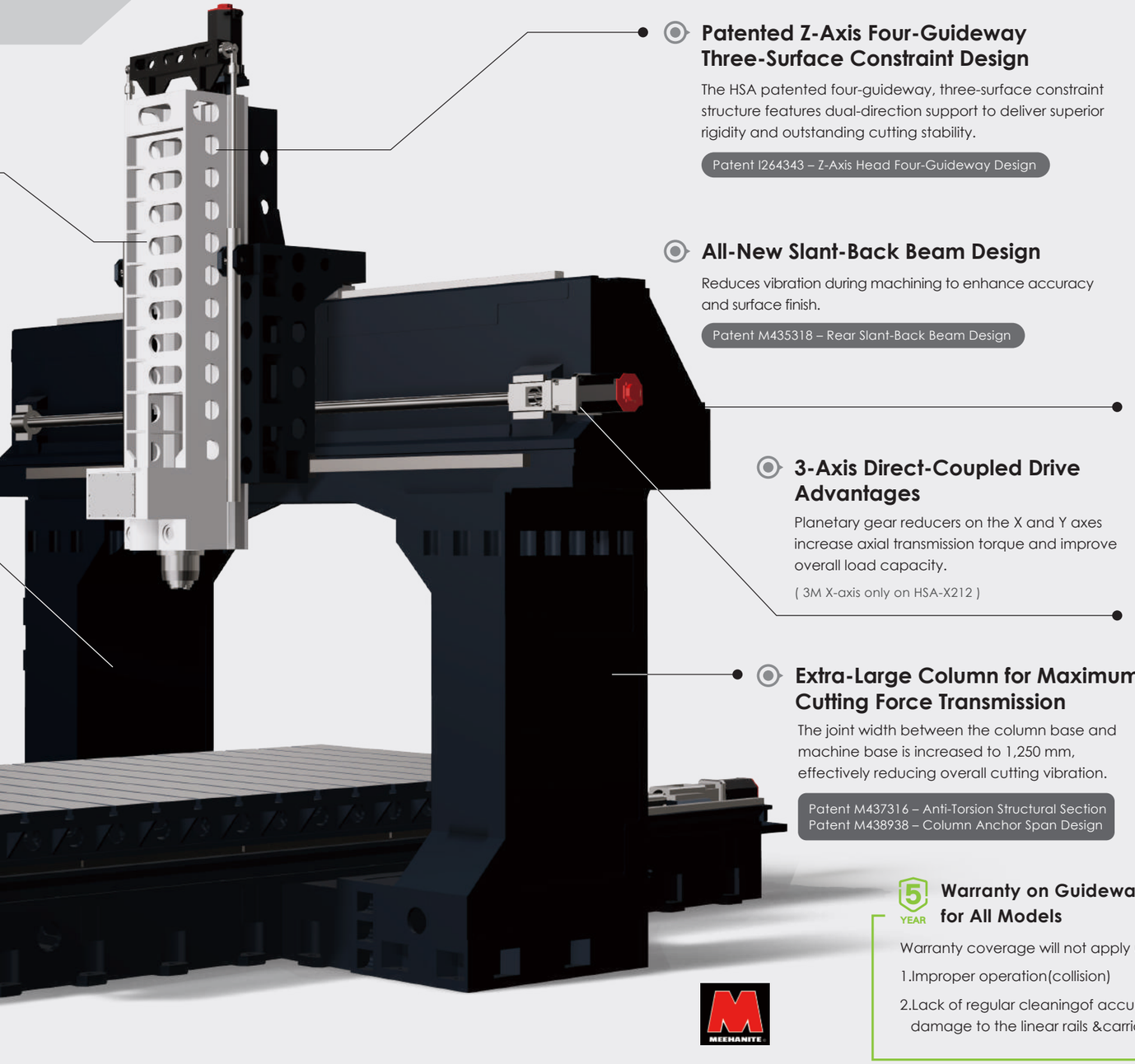
(Applicable to HSA-X23 / X27 / X28 / X32 / X36)



Triple Linear Guideway Design on X-Axis

Triple X-axis guideways increase rigidity by over **50**% by resisting machining torque, with a maximum table load of **30,000** kg.

(Dual guideways on HSA-X20 / X23 / X27 / X212)



Patented Z-Axis Four-Guideway Three-Surface Constraint Design

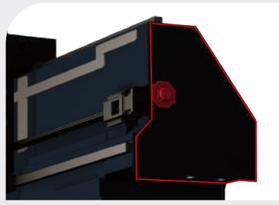
The HSA patented four-guideway, three-surface constraint structure features dual-direction support to deliver superior rigidity and outstanding cutting stability.

Patent I264343 – Z-Axis Head Four-Guideway Design

All-New Slant-Back Beam Design

Reduces vibration during machining to enhance accuracy and surface finish.

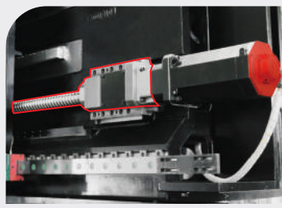
Patent M435318 – Rear Slant-Back Beam Design



3-Axis Direct-Coupled Drive Advantages

Planetary gear reducers on the X and Y axes increase axial transmission torque and improve overall load capacity.

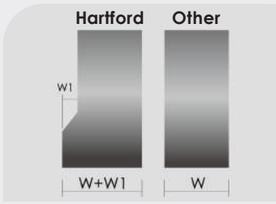
(3M X-axis only on HSA-X212)



Extra-Large Column for Maximum Cutting Force Transmission

The joint width between the column base and machine base is increased to 1,250 mm, effectively reducing overall cutting vibration.

Patent M437316 – Anti-Torsion Structural Section
Patent M438938 – Column Anchor Span Design



5 YEAR Warranty on Guideways for All Models

Warranty coverage will not apply under following conditions :

1.Improper operation(collision)

2.Lack of regular cleaningof accumulated debris causing damage to the linear rails &carriages.

03 Smart Factory / Intelligent Automation

One unit capable of connectingup to 10 or 20 machines

Smart i-Factory System with Superbox (Opt.)

Through i-Factory, all machinery and equipment in the factory can be connected, and the machine connections are no longer limited to Hartford. Machines from other manufacturers can also be connected for real-time visualization and management. The system is composed of five key components: real-time monitoring, production planning, alert notifications, data analysis, and remote connectivity, allowing you to move away from traditional management models and embrace a simpler and more convenient approach to factory management.

Tailored one-to-many automation planning

Intelligent Automated Production Line Unit (Opt.)

Customizing an automated factory just for you,
effectively reducing costs and enhancing competitiveness.

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.

Detailed specifications please contact our sales staff.

Hartrol Premium

Hartford Smartcenter APPS

1 Automation & Smart Factory

- Autopilot V2 Package
- Real-time Monitor Package
- Efficiency Improvement Package
- Smart Lubrication System
- Machine Play – Smartphone Remote Operation
- Wireless Network Function (Wi-Fi)

2 Monitoring & Energy Management

- Real-time Monitor Package (CCD Monitor / IP Camera)
- Energy Monitoring

3 Tool Protection & Machining Stability

- Tool Protection Suite (TPS)
- AFC – Automatic Feed Control
- Rigid Tapping Automatic Learning

4 CNC Control & Operation Enhancement

- Handwheel Simulation Mode
- HP Level R1–R10 Parameter Package

5 High-Speed / High-Accuracy Machining

- SSS High-speed High-accuracy Control
- High-speed High-accuracy Control III (G5P20000)
- High Speed Milling

6 Programming & User Interface

- Conversational Programming (HCP)

24 HR

Online Update System
Keep your operating system in optimal condition and stay up to date with the latest features from Hartford.

Hartford ZDT
Early warning before machine failure helps reduce unexpected downtime, minimizing productivity loss and cost.

Chip Conveyor Opt.

Smart detection based on spindle current clears chips only when needed. The system runs on a 50% on/off cycle during cutting to save up to 50% motor power, and automatically reverses when chips build up to prevent overload and protect the conveyor.

Lubrication Opt.

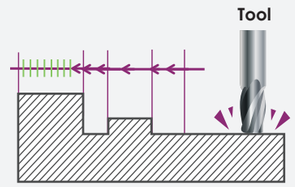
The system smartly delivers oil based on machine and cutting conditions, saving up to 50% oil and reducing costs while supporting eco-friendly operation.

Position Opt.

When performing workpiece measurement with Hartrol Premium and Fanuc 15" IPC, operators can simply enter values through the intuitive guided interface—no need to memorize complex measurement commands, making the process effortless.

AFC Opt.

Spindle load monitoring allows users to set tool-specific load limits, boosting efficiency by up to 21% in heavy operations like face and side milling.

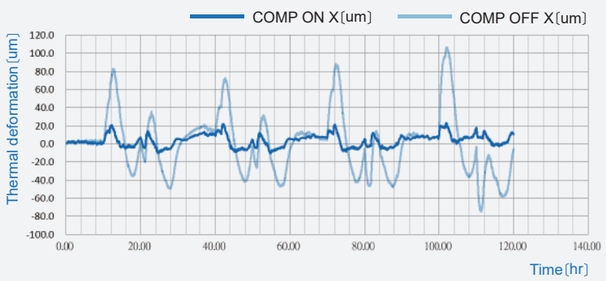


No More Thermal Drift –
Precision Machining, Zero Defects

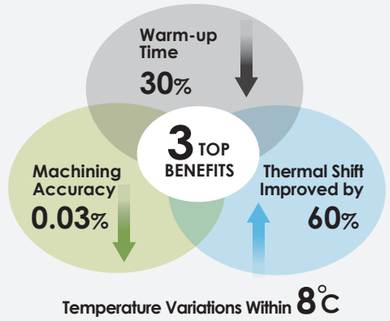
Thermal Compensation System (Opt.)

During prolonged machining or ambient temperature changes, thermal expansion can cause structural deformation and dimensional errors.

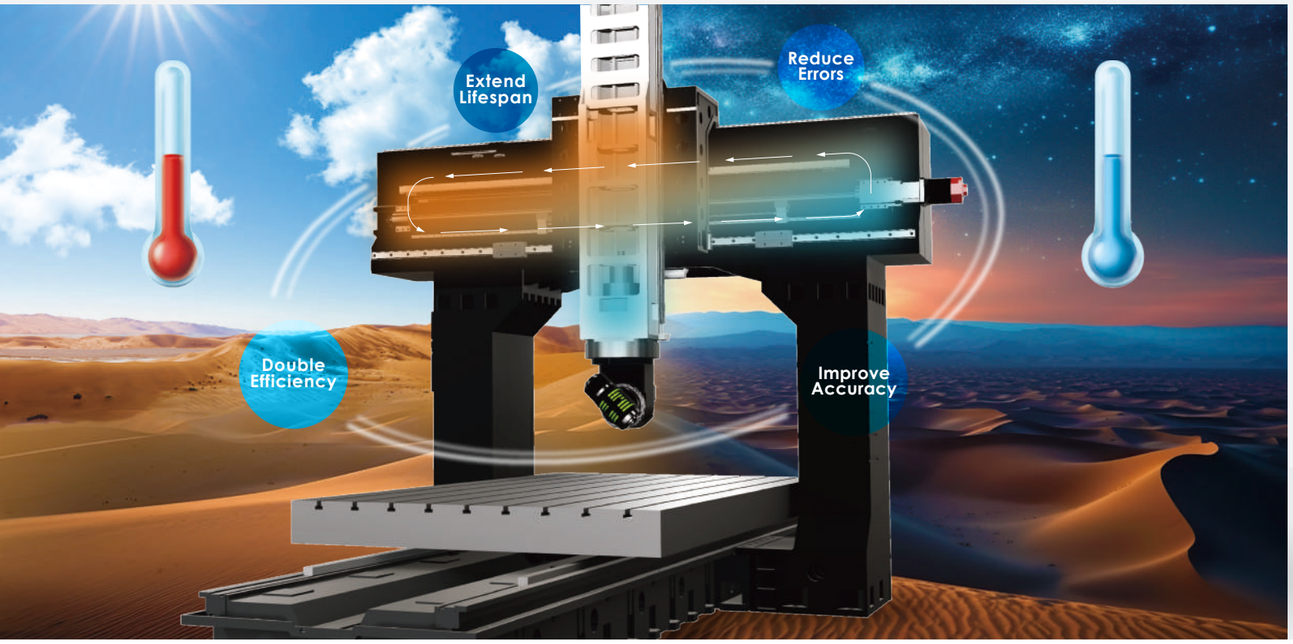
Hartford's exclusive Whole-Machine Ambient Thermal Deformation Compensation Technology uses high-precision sensing and smart algorithms to suppress thermal distortion, ensure machining accuracy, and significantly reduce warm-up and modeling time—boosting both production efficiency and yield.



HSA423-FANUCAI Thermal Compensation System X-axis



Temperature Variations Within 8℃



Eco-Friendly Solutions for Energy Management

ECO and Energy Monitoring Dashboard (Opt.)

Gas-based weight replacement instead of hydraulic
All lighting equipment is LED
FEM analysis for structural lightweight design

Energy Monitoring Dashboard

Real-time monitoring of energy consumption for each electrical component of the machine, with the ability to query historical energy consumption data and generate reports.

Eco Mode

Helps you control five peripheral devices, including the hydraulic motor, oil cooler, mist collector, work lights, and chip conveyor, to prevent unnecessary energy consumption when the machine is idle.

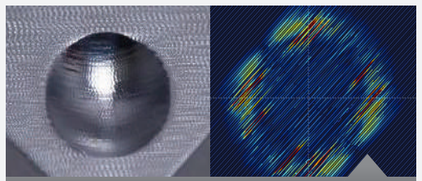
Eliminate interference and mechanical collision issues during the machining process

Digital Transformation (Opt.)

Digital Twin-NCVS software combines workpiece CAD, tools, and machine parameters to simulate the machining process in advance. It accurately reflects real conditions, going beyond traditional CAD/CAM by including machine data. The system verifies CNC parameter settings, analyzes part geometry and machine travel limits, and ensures alignment between programmed data and actual machine performance.. This helps prevent interference and collisions, ensuring safe, stable machining and better productivity.

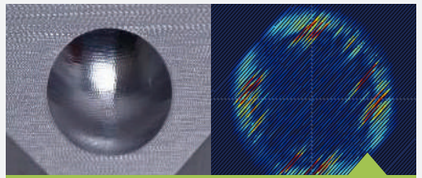
▪ Simulation vs. Actual Machining Results

OFF



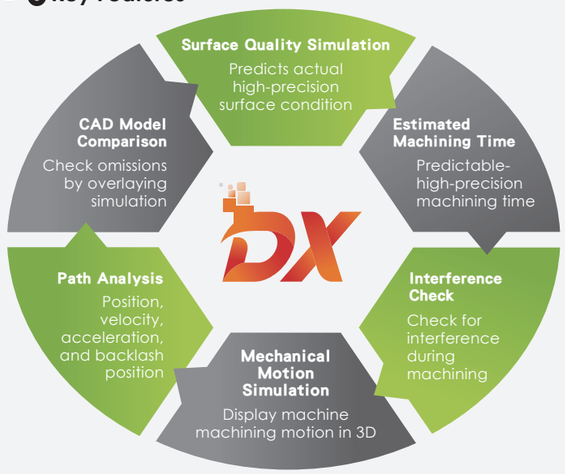
The shape change is not obvious

NO



The shape can be clearly identified

▪ 6 Key Features

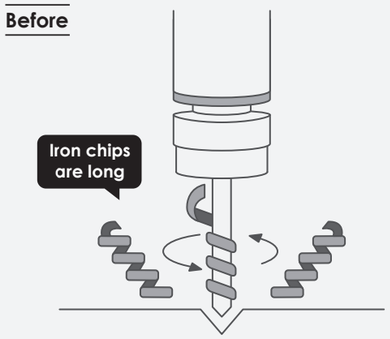


Solve the problem of chips wrapping around your cutting tool

Drilling Chip Breaker Feature (Opt.)

In deep-hole machining, the lack of effective chip-breaking can lead to issues like chips wrapping around the tool, scratching the workpiece, and making chips cleaning difficult. With Hartford's exclusive chips breaking for drilling function, chips are finely broken down, preventing them from wrapping around the tool. This ensures the workpiece remains intact, chips are easily cleaned, productivity is increased.

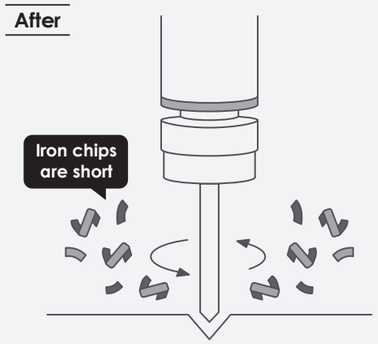
Before



▲ **Function Off**

Long iron chips cannot be effectively broken into manageable chips.

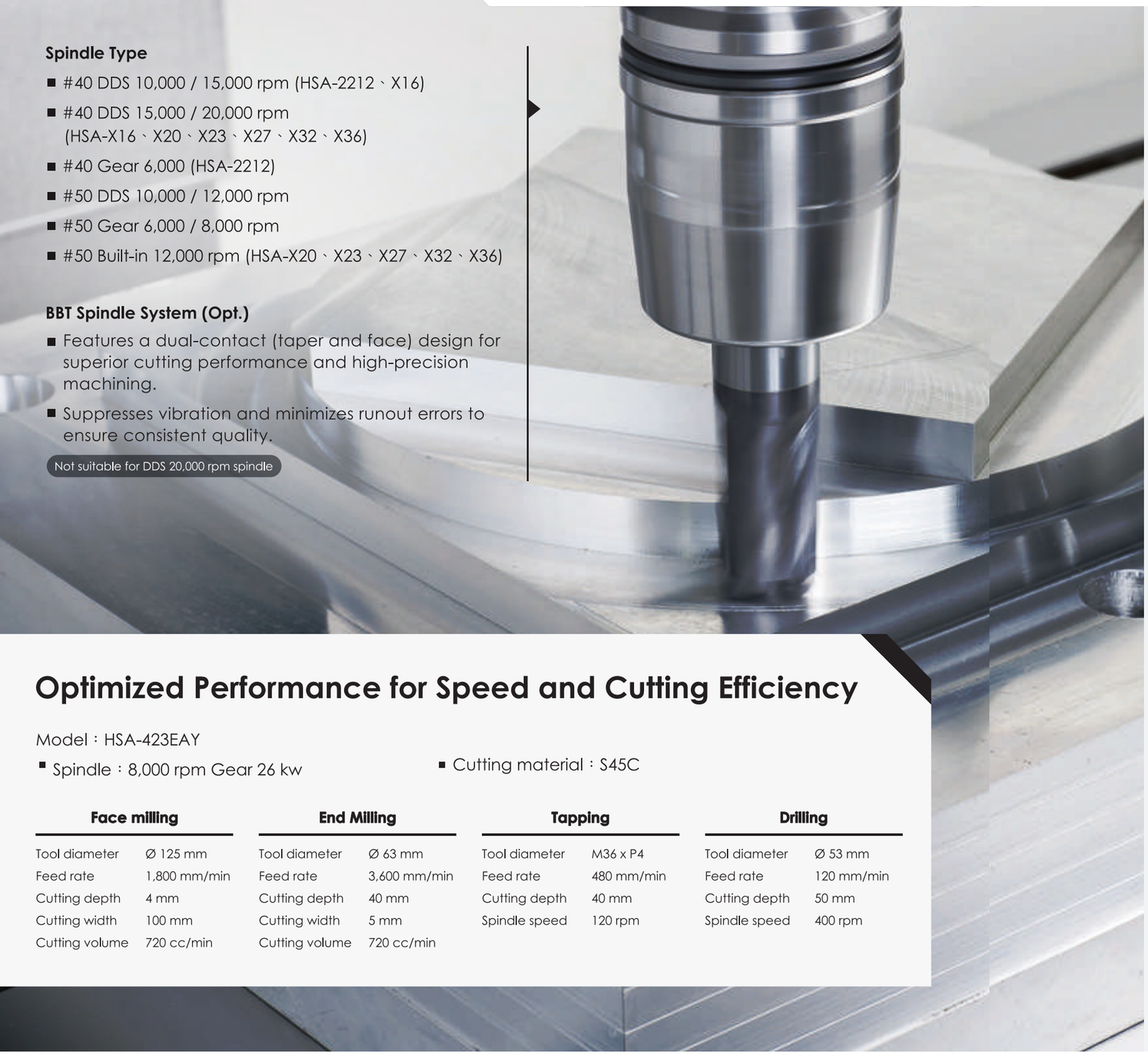
After



▲ **Function On**

Effectively breaks long chips into short chips for improved chip control.

05 Actual Cutting Tests



Spindle Type

- #40 DDS 10,000 / 15,000 rpm (HSA-2212、X16)
- #40 DDS 15,000 / 20,000 rpm (HSA-X16、X20、X23、X27、X32、X36)
- #40 Gear 6,000 (HSA-2212)
- #50 DDS 10,000 / 12,000 rpm
- #50 Gear 6,000 / 8,000 rpm
- #50 Built-in 12,000 rpm (HSA-X20、X23、X27、X32、X36)

BBT Spindle System (Opt.)

- Features a dual-contact (taper and face) design for superior cutting performance and high-precision machining.
- Suppresses vibration and minimizes runout errors to ensure consistent quality.

Not suitable for DDS 20,000 rpm spindle

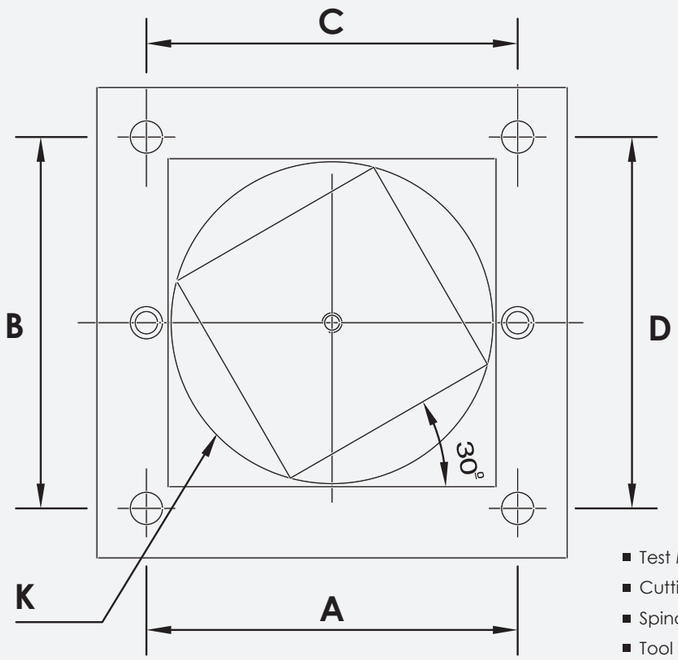
Optimized Performance for Speed and Cutting Efficiency

Model：HSA-423EAY

- Spindle：8,000 rpm Gear 26 kw
- Cutting material：S45C

Face milling		End Milling		Tapping		Drilling	
Tool diameter	Ø 125 mm	Tool diameter	Ø 63 mm	Tool diameter	M36 x P4	Tool diameter	Ø 53 mm
Feed rate	1,800 mm/min	Feed rate	3,600 mm/min	Feed rate	480 mm/min	Feed rate	120 mm/min
Cutting depth	4 mm	Cutting depth	40 mm	Cutting depth	40 mm	Cutting depth	50 mm
Cutting width	100 mm	Cutting width	5 mm	Spindle speed	120 rpm	Spindle speed	400 rpm
Cutting volume	720 cc/min	Cutting volume	720 cc/min				

■ **HSA-423 Mold Trial**



- Test Material: F25C
- Cutting Feedrate: F200 – 500 mm/min
- Spindle Speed: S500 – 800 rpm
- Tool Diameter: Ø25 mm

Positioning Accuracy **Contouring Accuracy**

	A	B	C	D	K
Error Value	0.020	0.020	0.020	0.020	0.015
Actual Value	0.0016	0.0015	0.0070	0.0019	0.0037

Unit(mm)

Item	Error Value	Actual Value
Flatness of Table Top (X/Y Axes)	1000 ▼0.05/M,1000-2000 ▲0.06/M, 2000 0.07/M	0.02
Squareness of Axes Movement (X/Y Axes)	0.020/500	0.005
Squareness of Axes Movement (Y/Z Axes)	0.02/500	0.005
Spindle Taper Runout	Fixed Side : 0.005,Free Side : 0.015/300	0.001/0.005
Circularity Accuracy	0.012/150(X-axis 5000▲ 0.020/150)	0.003

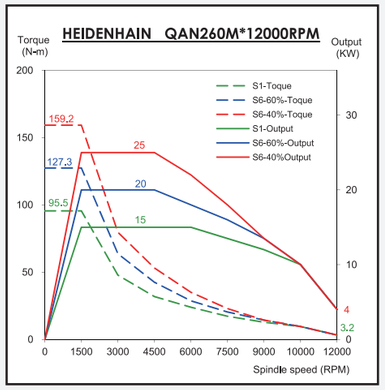
Disclaimer / Performance Note

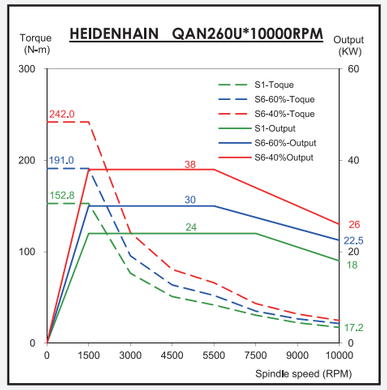
Disclaimer regarding Performance Data
All test data contained in this catalog was produced under controlled, rigorous conditions in a specialized facility.
Actual results may vary depending on specific operating conditions, environmental factors, and non-ideal testing parameters.

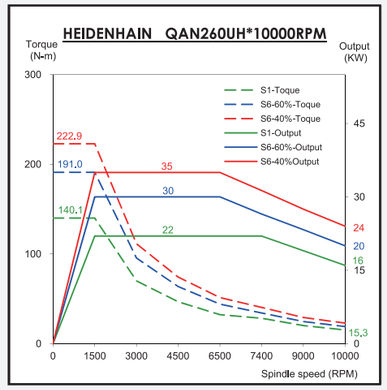
06 Spindle Torque Diagrams

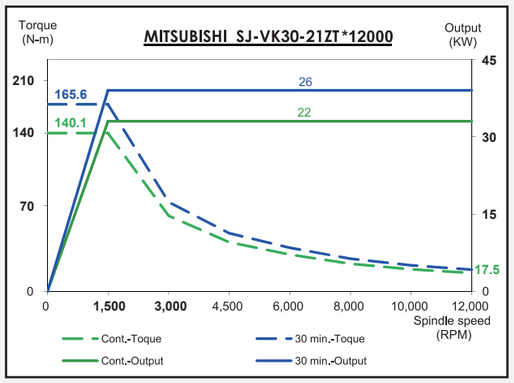
Spindle torque diagrams

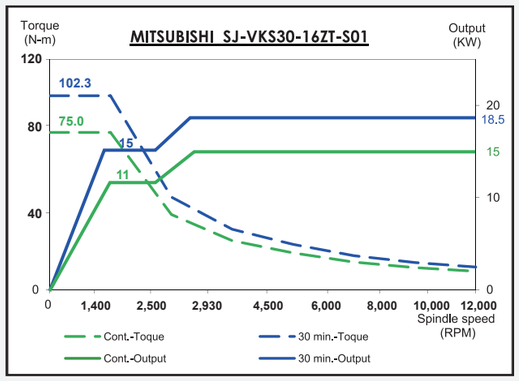
■ DDS_12000rpm

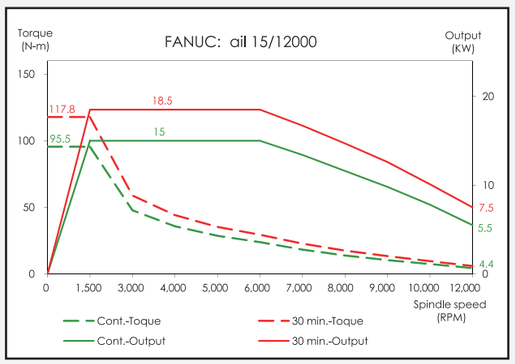


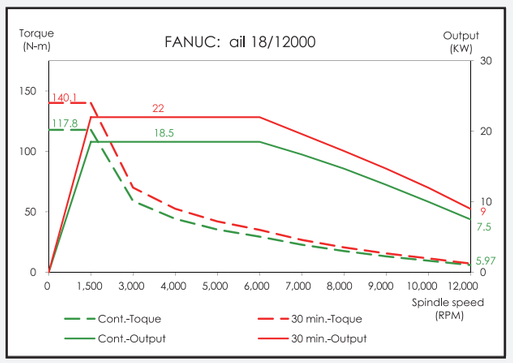




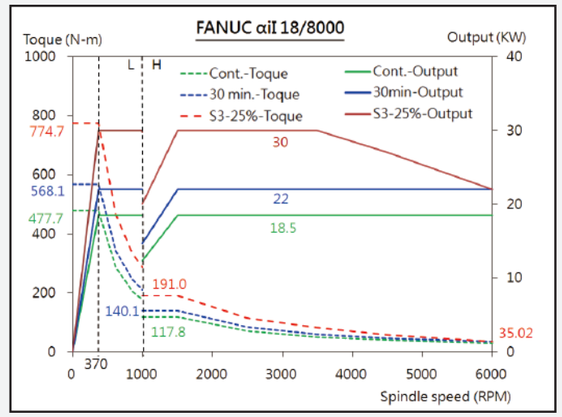


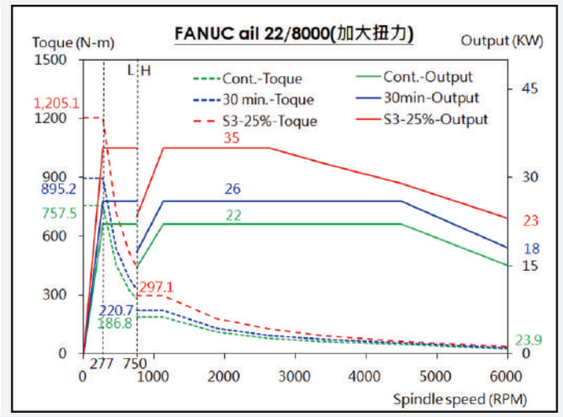


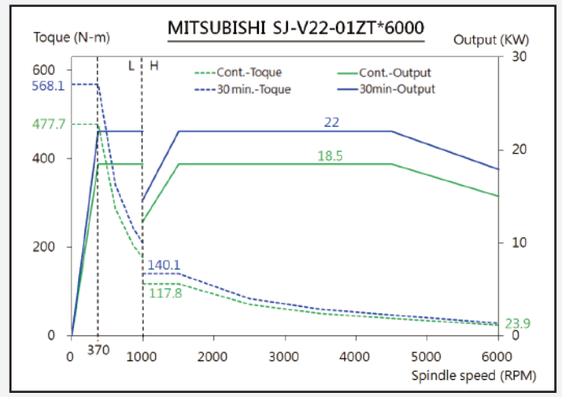


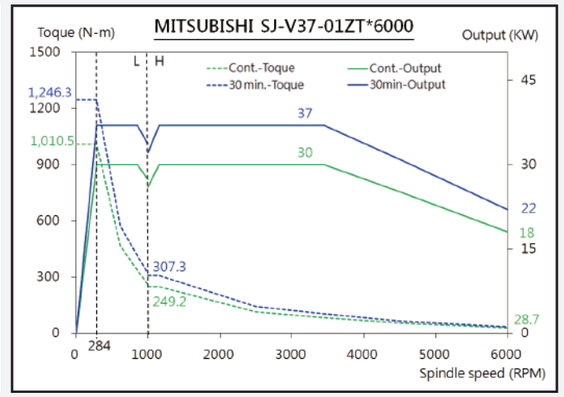


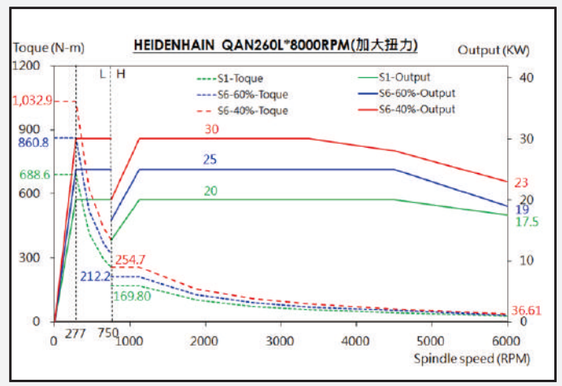
■ DDS_6000rpm

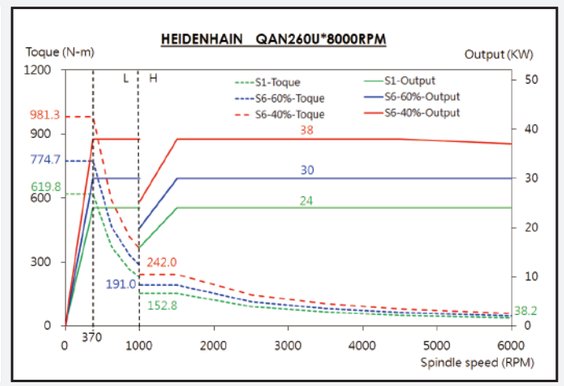








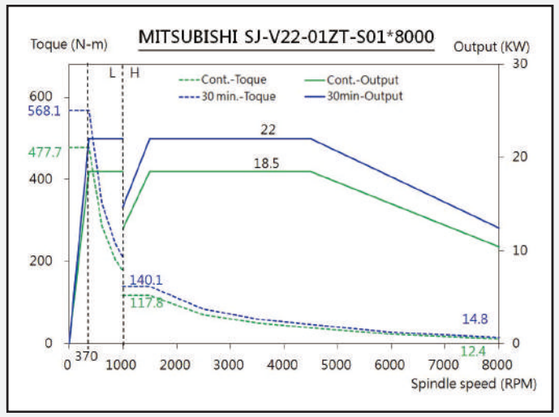


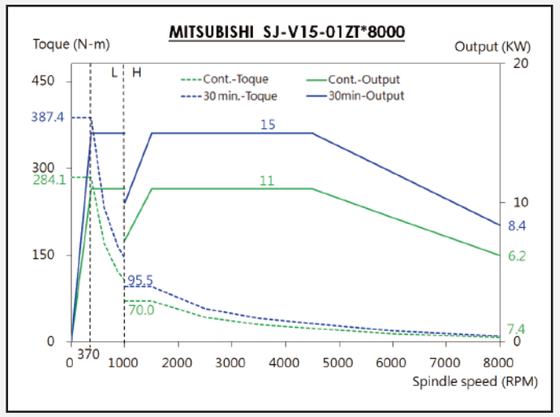


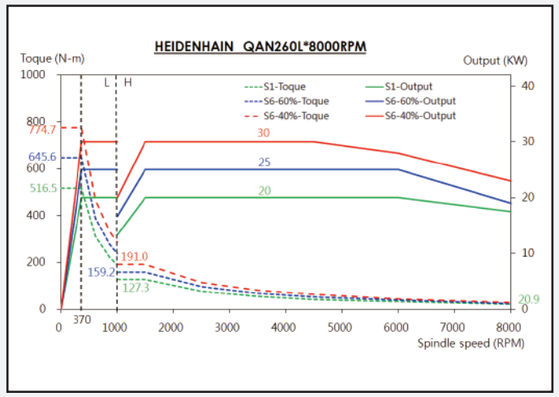
All the results featured in this calogue were produced under shich testing condilion in a special zed testing enviroment.
Under dfferent festing conditions and in less than ideal tesing environments. That the rest results vary fom those shown in this catalogue.

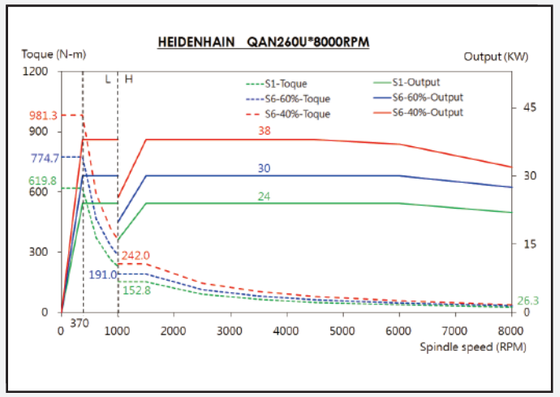
06 Spindle Torque Diagrams

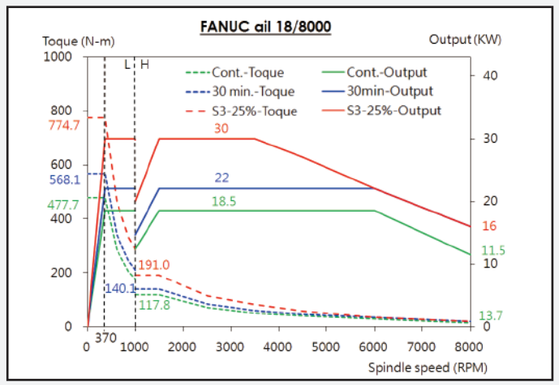
■ Gear_8000rpm

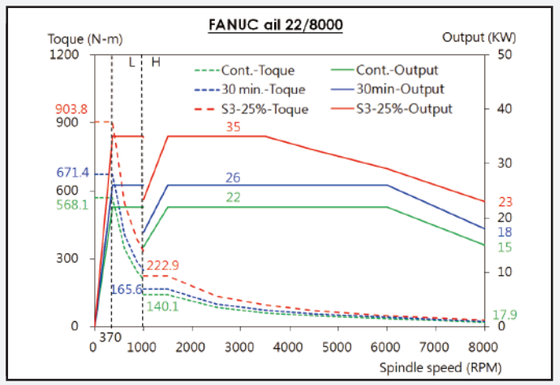




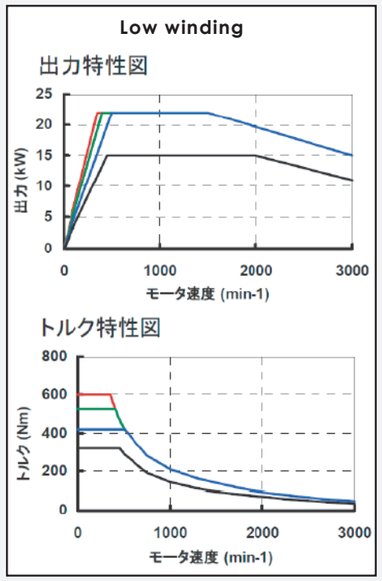


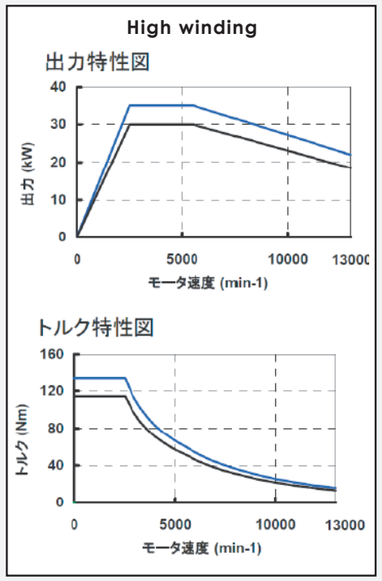




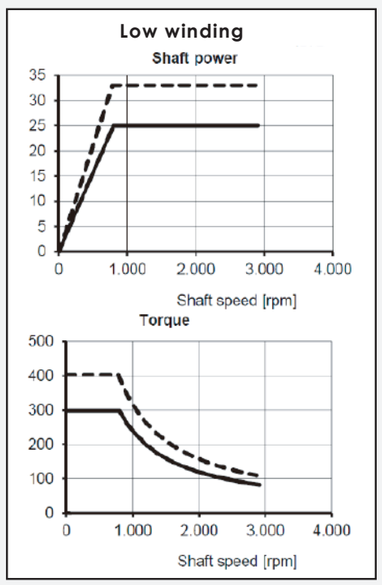


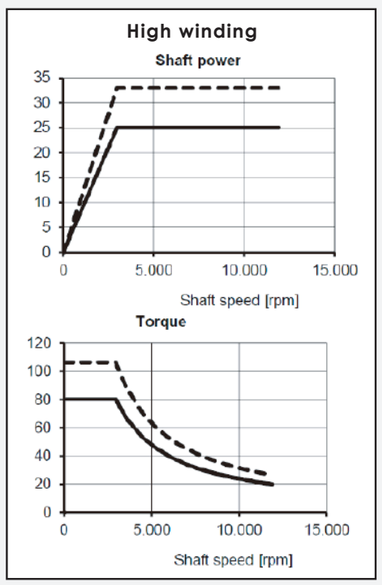
■ #50_Built-in_Fanuc_Bil 160LL*13000





■ #50_Built-in_Mitsubishi_AC 240/330/6*12000

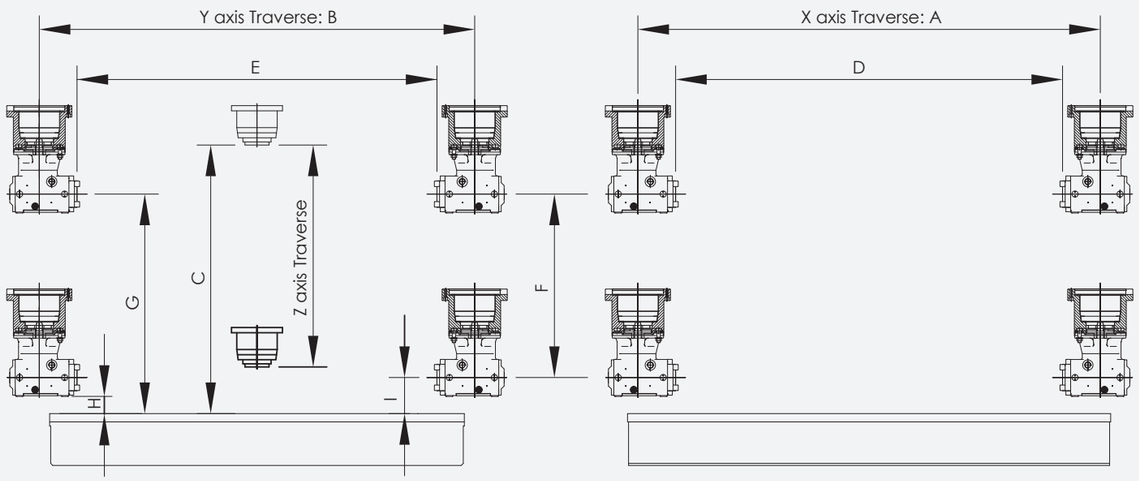




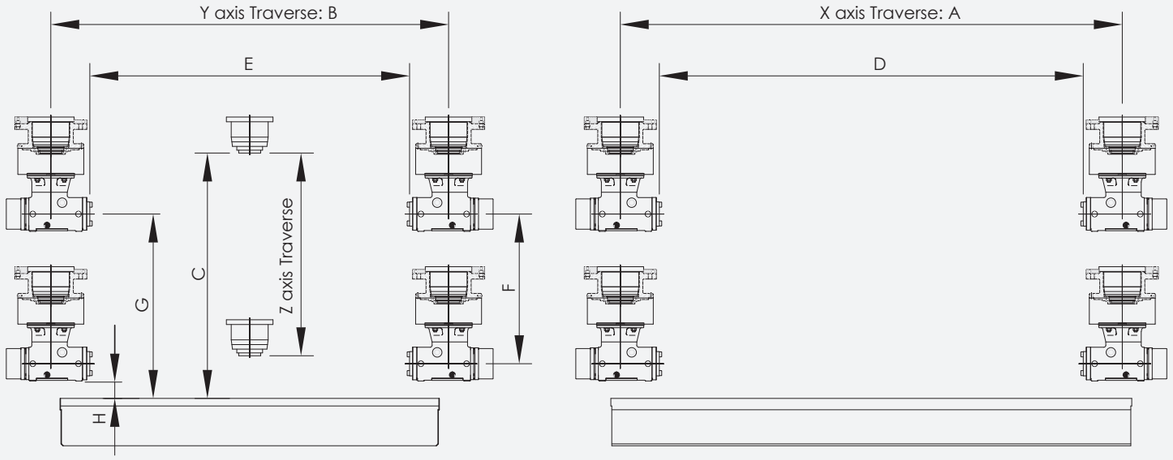
All the results featured in this calogue were produced under shich testing condilion in a special zed testing enviroment.
Under dfferent festing conditions and in less than ideal tesing environments. That the rest results vary fom those shown in this catalogue.

07 Machining Range Of The Angle Head

■ HF-M90L



■ HF-S90L

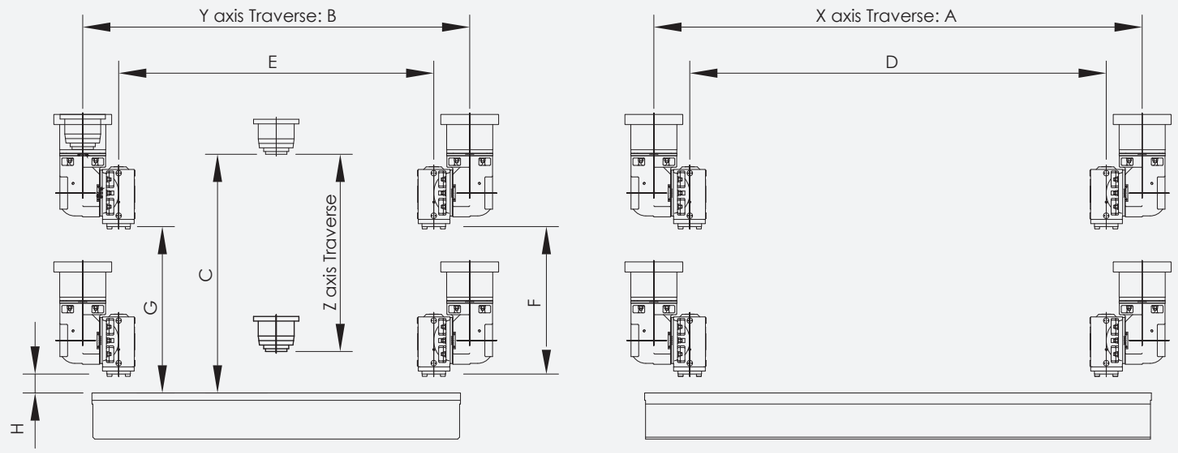


Unit : mm **( ) :** Opt.

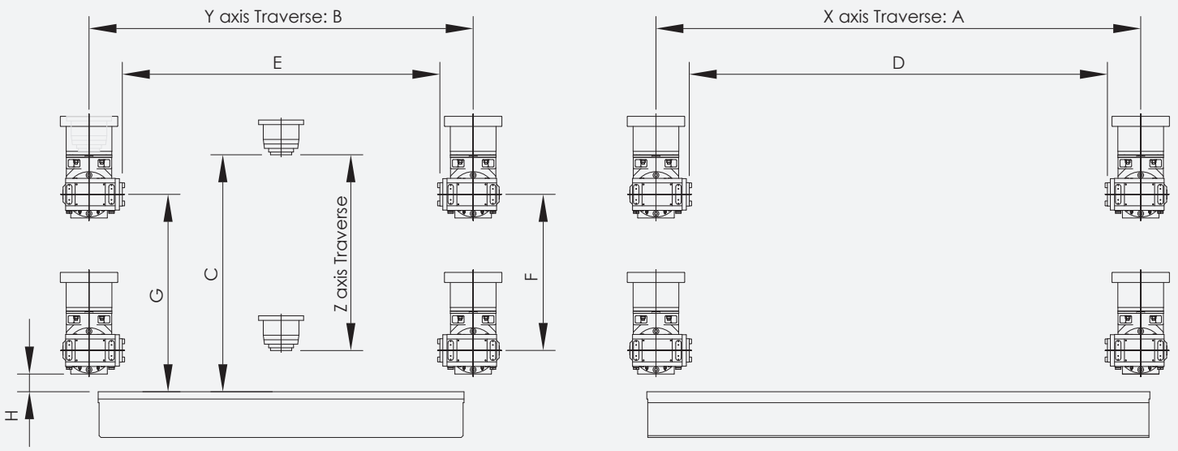
MODEL	Z-TRAVEL	COLUMN HIGH	A	B	C	D		E		F		G		H	I
						M90L	S90L	M90L	S90L	M90L	S90L	M90L	S90L		
HSA-320	780 780 1000 1200	1900 2000 2200 2400	3000	2000	980 1080 1280 1480	2636	2588	1636	1588	602.5 702.5 902.5 1102.5	517 617 817 1017	743.5 843.5 1043.5 1243.5	658 758 958 1158	50	141
HSA-420			4000	2000		3636	3588	1636	1588						
HSA-323			3000	2300		2636	2588	1936	1888						
HSA-423			4000	2300		3636	3588	1936	1888						
HSA-523			5000	2300		4636	4588	1936	1888						
HSA-327			3000	2700		2636	2588	2336	2288						
HSA-427			4000	2700		3636	3588	2336	2288						
HSA-527			5000	2700		4636	4588	2336	2288						
HSA-627			6000	2700		5636	5588	2336	2288						
HSA-428	780 1000 1200	2000 2200 2400	4000	2800	1040 1240 1440	3636	3588	2436	2388	662.5 862.5 1062.5	577 777 977	803.5 1003.5 1203.5	718 918 1118		
HSA-528			5000	2800		4636	4588	2436	2388						
HSA-532			5000	3200		4636	4588	2836	2788						
HSA-632			6000	3200		5636	5588	2836	2788						
HSA-536			5000	3600		4636	4588	3236	3188						
HSA-636			6000	3600		5636	5588	3236	3188						
HSA-736			7000	3600		6636	6588	3236	3188						
HSA-836			8000	3600		7636	7588	3236	3188						

07 Machining Range Of The Angle Head

■ HF-MU360L(V)



■ HF-MU360L(H)

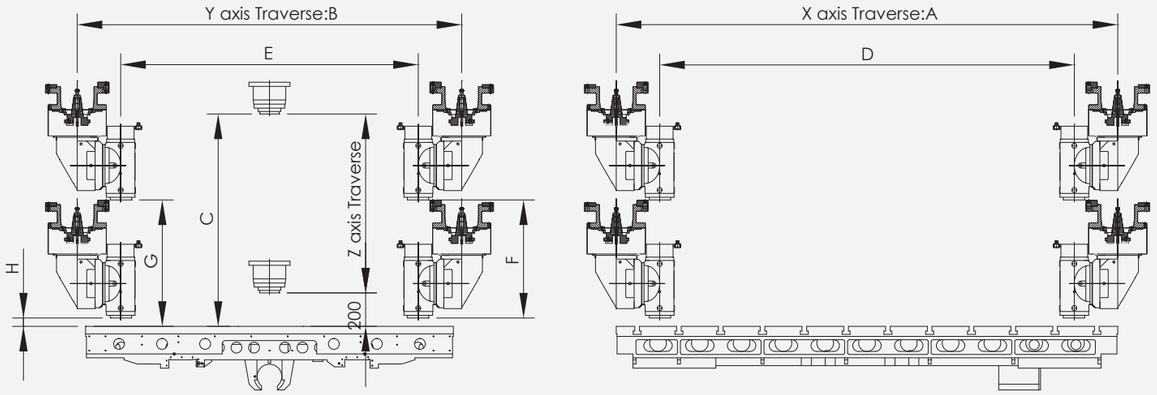


Unit : mm **( ) :** Opt.

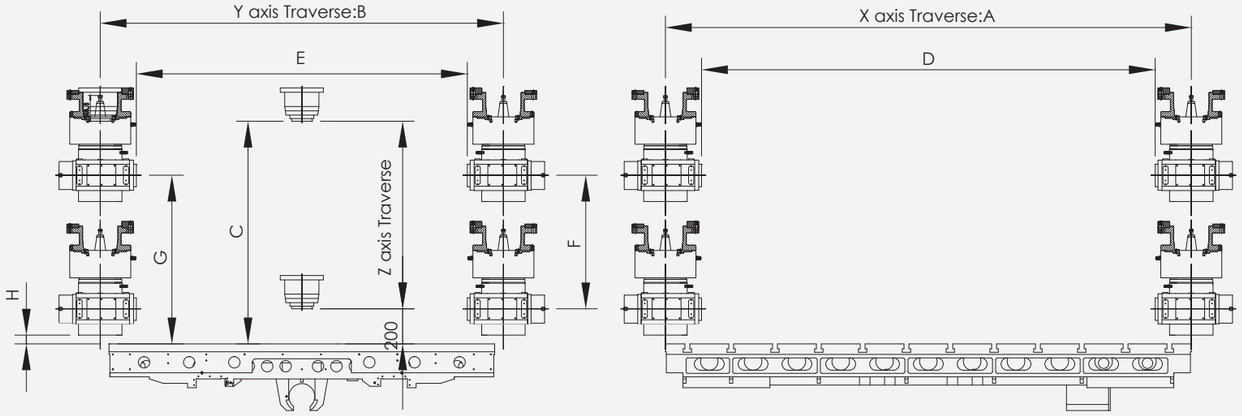
MODEL	Z-TRAVEL	COLUMN HIGH	A	B	C	D		E		F		G		H	
						V	H	V	H	V	H	V	H	V	H
HSA-320			3000	2000		2610	2636	1610	1636						
HSA-420			4000	2000		3610	3636	1610	1636						
HSA-323			3000	2300		2610	2636	1910	1936						
HSA-423	780	1900	4000	2300	980	3610	3636	1910	1936	511.5	564.5	561.5	743.5		50
HSA-523	780 1000	2000 2200	5000	2300	1080 1280	4610	4636	1910	1936	611.5 811.5	780 864.5	661.5 861.5	843.5 1043.5		63.5 50
HSA-327	1200	2400	3000	2700	1480	2610	2636	2310	2336	1012	1064.55	1062	1243.5		50
HSA-427			4000	2700		3610	3636	2310	2336						
HSA-527			5000	2700		4610	4636	2310	2336						
HSA-627			6000	2700		5610	5636	2310	2336					50	
HSA-428			4000	2800		3610	3636	2410	2436						
HSA-528			5000	2800		4610	4636	2410	2436						
HSA-532			5000	3200		4610	4636	2810	2836						
HSA-632	780 1000	2000 2200	6000	3200	1040 1240	5610	5636	2810	2836	571.5 771.5	624.5 824.5	621.5 821.5	803.5 1003.5		50
HSA-536	1200	2400	5000	3600	1440	4610	4636	3210	3236	971.5	1024.5	1022	1203.5		
HSA-636			6000	3600		5610	5636	3210	3236						
HSA-736			7000	3600		6610	6636	3210	3236						
HSA-836			8000	3600		7610	7636	3210	3236						

07 Machining Range Of The Angle Head

■ HF-SU360L(V)



■ HF-SU360L(H)

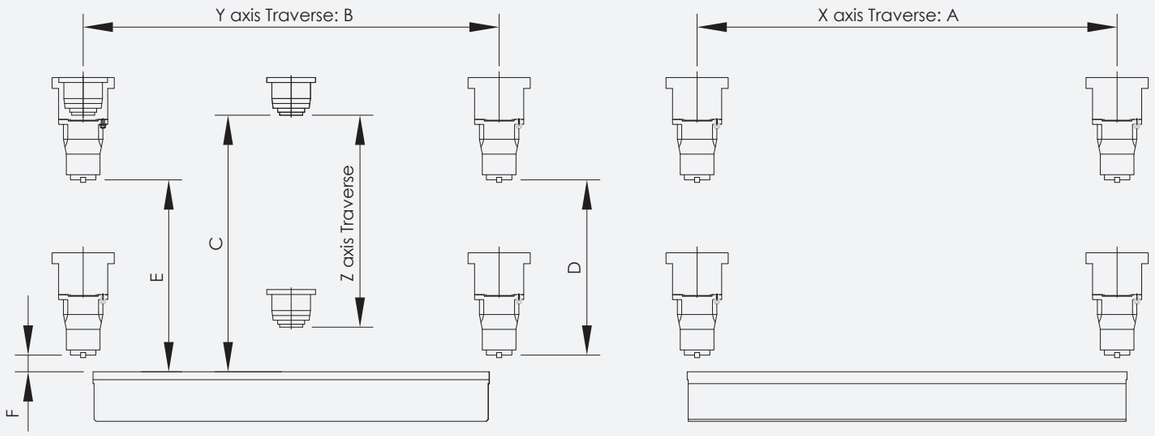


Unit : mm **( ) :** Opt.

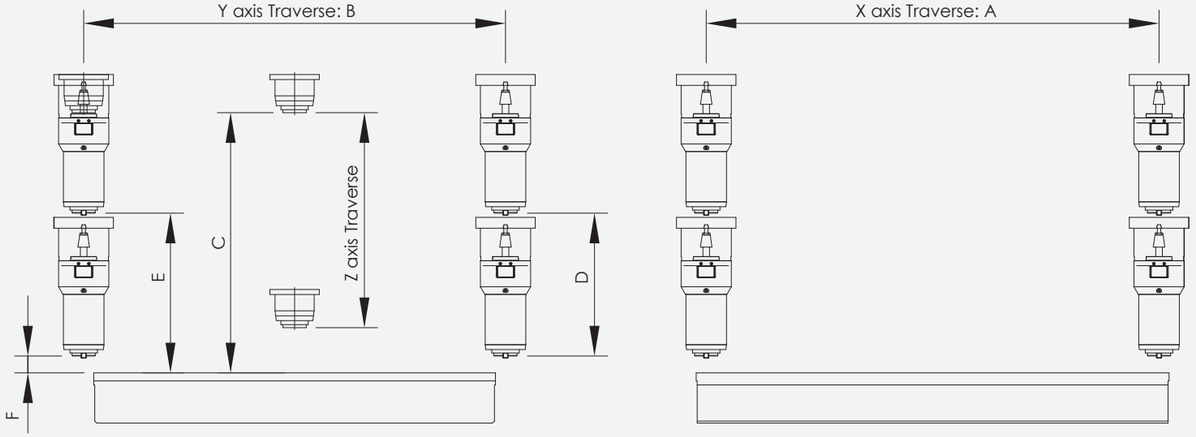
MODEL	Z-TRAVEL	COLUMN HIGH	A	B	C	D		E		F		G		H	
						V	H	V	H	V	H	V	H	V	H
HSA-320	780 780 1000 1200	1900 2000 2200 2400	3000	2000	980 1080 1280 1480	2480	2588	1480	1588	416 516 716 916	472 572 772 972	466 566 766 966	672 772 972 1172	50	50
HSA-420			4000	2000		3480	3588	1480	1588						
HSA-323			3000	2300		2480	2588	1780	1888						
HSA-423			4000	2300		3480	3588	1780	1888						
HSA-523			5000	2300		4480	4588	1780	1888						
HSA-327			3000	2700		2480	2588	2180	2288						
HSA-427			4000	2700		3480	3588	2180	2288						
HSA-527			5000	2700		4480	4588	2180	2288						
HSA-627			6000	2700		5480	5588	2180	2288						
HSA-428	780 1000 1200	2000 2200 2400	4000	2800	1040 1240 1440	3480	3588	2280	2388	476 676 876	532 732 932	526 726 926	732 932 1132		
HSA-528			5000	2800		4480	4588	2280	2388						
HSA-532			5000	3200		4480	4588	2680	2788						
HSA-632			6000	3200		5480	5588	2680	2788						
HSA-536			5000	3600		4480	4588	3080	3188						
HSA-636			6000	3600		5480	5588	3080	3188						
HSA-736			7000	3600		6480	6588	3080	3188						
HSA-836			8000	3600		7480	7588	3080	3188						

07 Machining Range Of The Angle Head

■ HF-ME35L



■ HF-ME50L

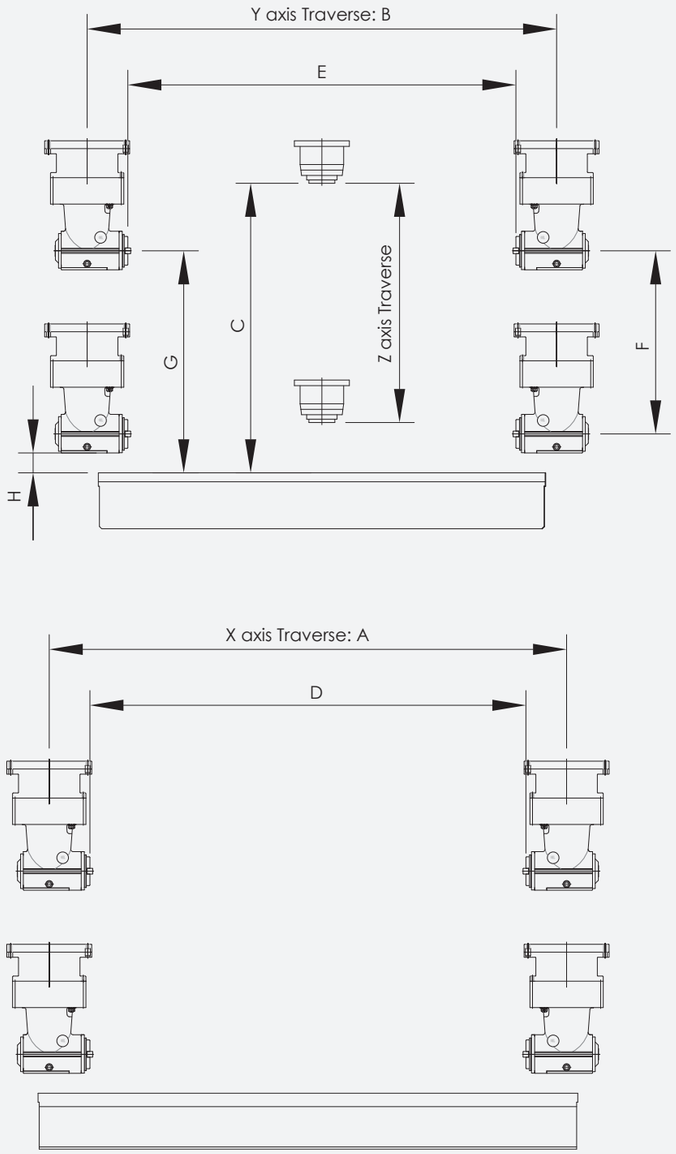


Unit : mm **( ) :** Opt.

MODEL	Z-TRAVEL	COLUMN HIGH	A	B	C	D		E		F
						ME35L	ME50L	ME35L	ME50L	
HSA-320	780 780 1000 1200	1900 2000 2200 2400	3000	2000	980 1080 1280 1480	580 680 880 1080	430 530 730 930	630 730 930 1130	480 580 780 980	50
HSA-420			4000	2000						
HSA-323			3000	2300						
HSA-423			4000	2300						
HSA-523			5000	2300						
HSA-327			3000	2700						
HSA-427			4000	2700						
HSA-527			5000	2700						
HSA-627			6000	2700						
HSA-428	780 1000 1200	2000 2200 2400	4000	2800	1040 1240 1440	640 840 1040	490 690 890	690 890 1090	540 740 940	
HSA-528			5000	2800						
HSA-532			5000	3200						
HSA-632			6000	3200						
HSA-536			5000	3600						
HSA-636			6000	3600						
HSA-736			7000	3600						
HSA-836			8000	3600						

07 Machining Range Of The Angle Head

■ GY_automatic 90 degree head_N75

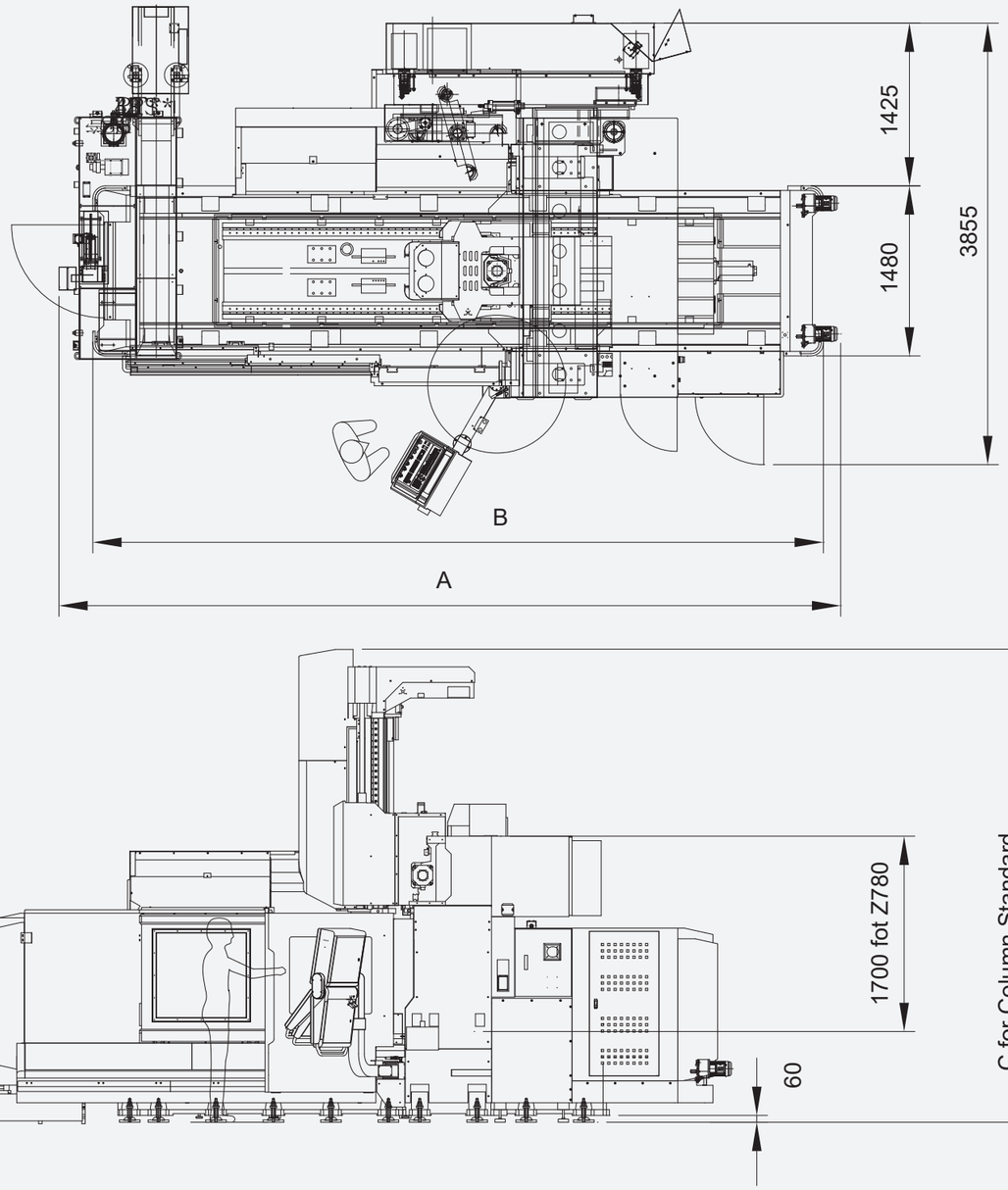


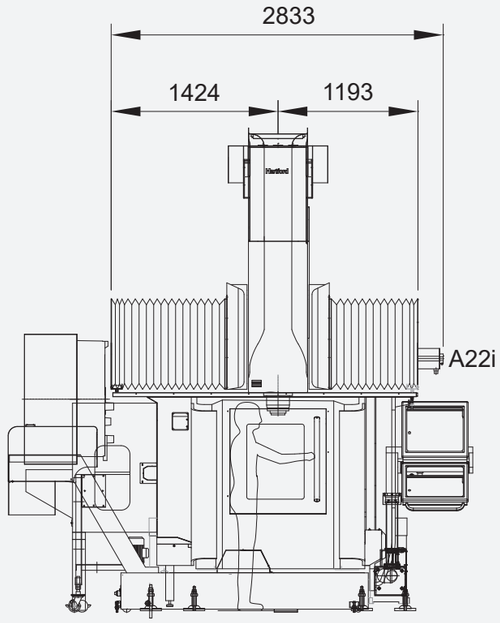
Unit : mm **( ) :** Opt.

MODEL	Z-TRAVEL	COLUMN HIGH	A	B	C	D	E	F	G	H
HSA-320	780 780 1000 1200	1900 2000 2200 2400	3000	2000	980 1080 1280 1480	2636	1636	543 643 843 1043	678 778 978 1178	50
HSA-420			4000	2000		3636	1636			
HSA-323			3000	2300		2636	1936			
HSA-423			4000	2300		3636	1936			
HSA-523			5000	2300		4636	1936			
HSA-327			3000	2700		2636	2336			
HSA-427			4000	2700		3636	2336			
HSA-527			5000	2700		4636	2336			
HSA-627			6000	2700		5636	2336			
HSA-428	780 1000 1200	2000 2200 2400	4000	2800	1040 1240 1440	3636	2436	603 803 1003	738 938 1138	
HSA-528			5000	2800		4636	2436			
HSA-532			5000	3200		4636	2836			
HSA-632			6000	3200		5636	2836			
HSA-536			5000	3600		4636	3236			
HSA-636			6000	3600		5636	3236			
HSA-736			7000	3600		6636	3236			
HSA-836			8000	3600		7636	3236			

08 Machine Dimension

■ HSA-X212



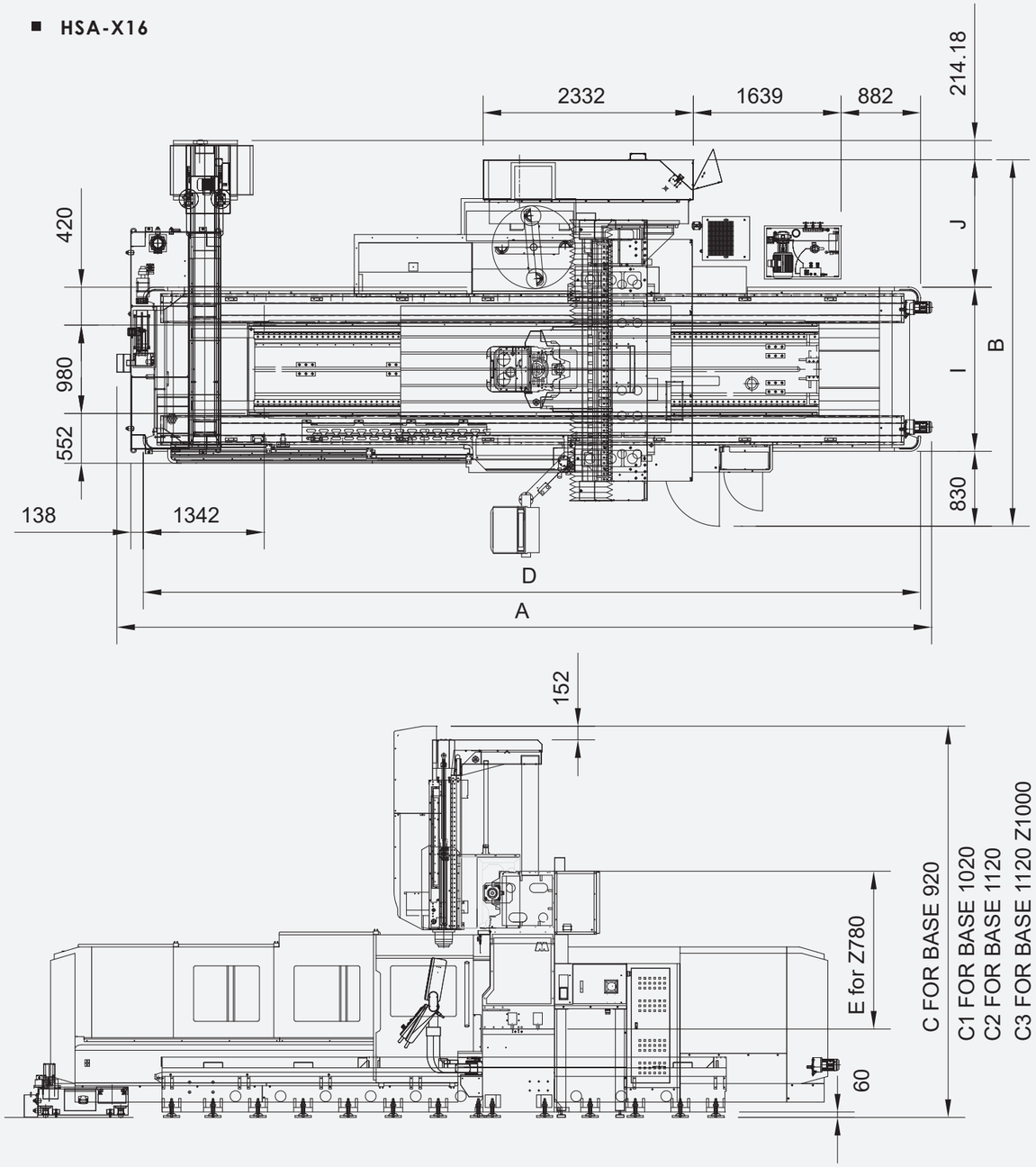


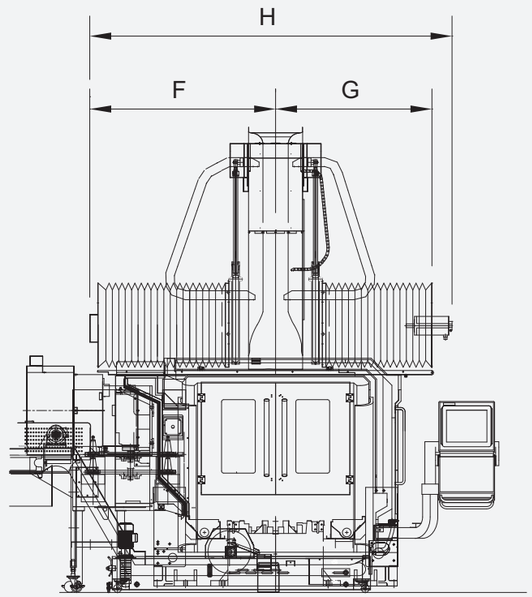
Unit : mm

Modle	A	B
HSA-2212	6800	6355
HSA-3212	8800	8355

08 Machine Dimension

■ HSA-X16



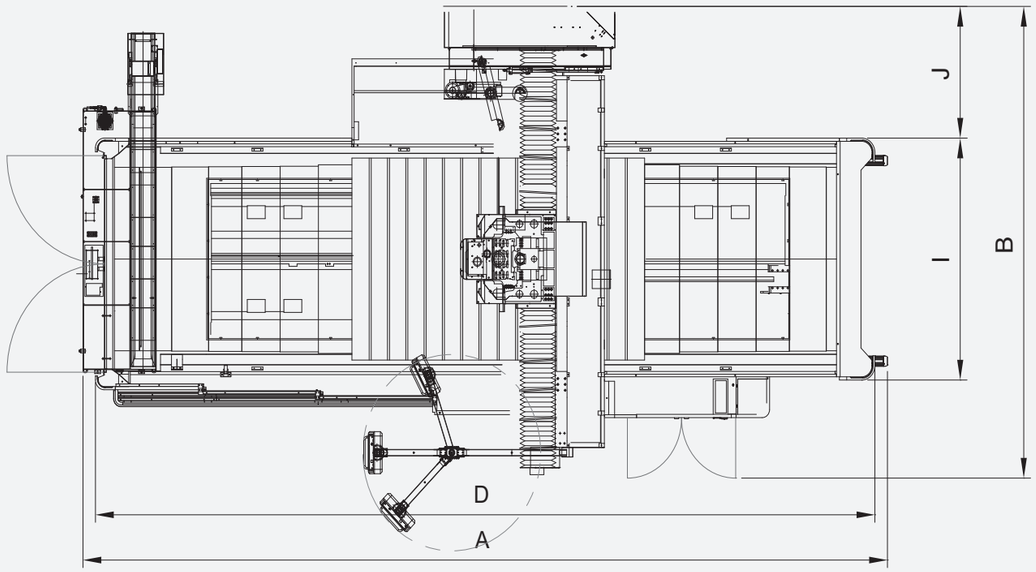


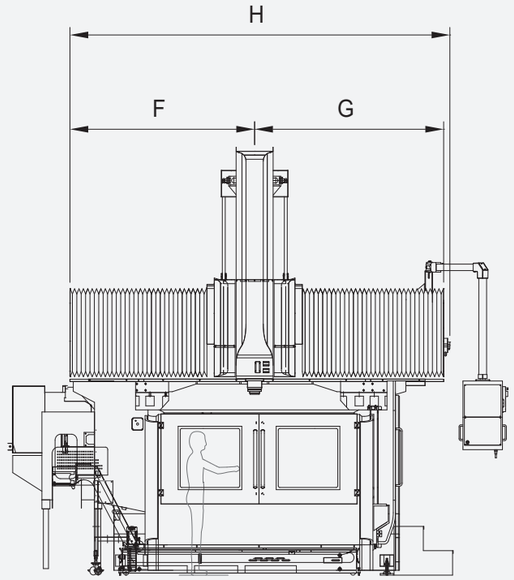
Unit : mm

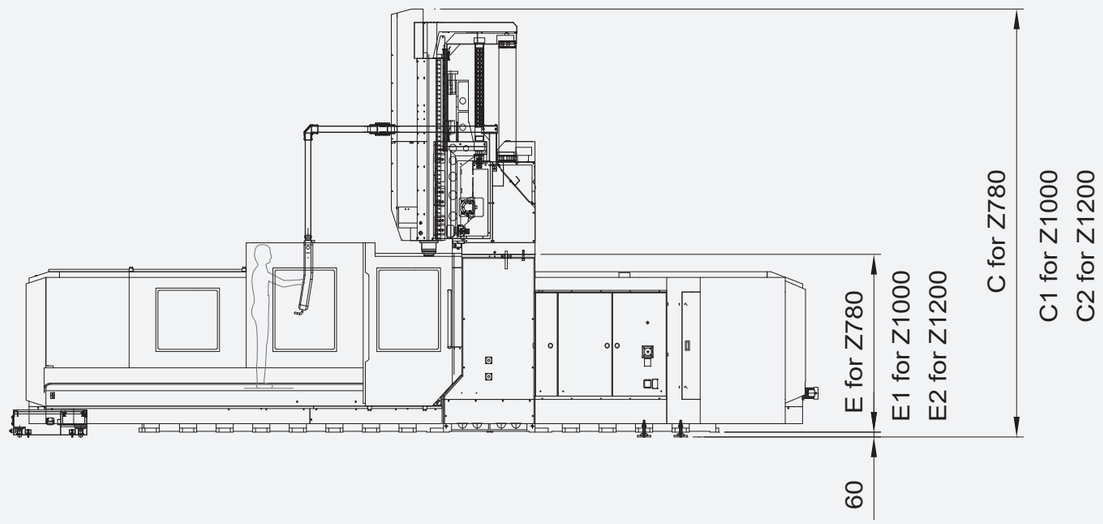
Modle	A	B	C	C1	C2	C3	D	E	F	G	H	I	J
HSA-216	6682	4063	4338	4438	4538	5038	6266	1750	1733.5	1458.5	3379.5	1820	1413
HSA-316	9040	4063	4338	4438	4538	5038	8624	1750	1733.5	1458.5	3379.5	1820	1413

08 Machine Dimension

■ HSA-X20/X23/X27/X28/X32/X36







Unit : mm

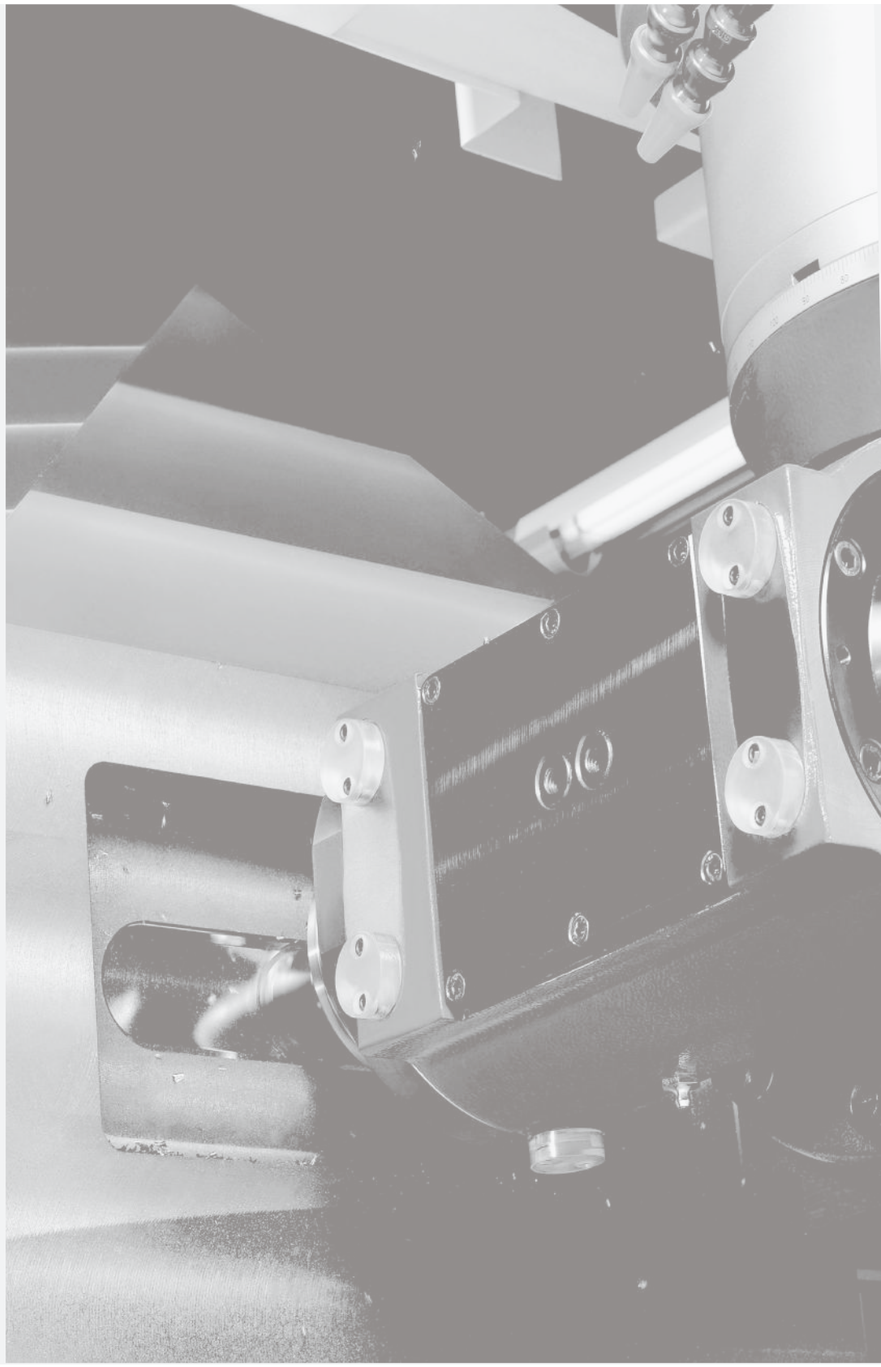
Modle	A	B	C	C1	C2	D	E	E1	E2	F	G	H	I	J
HSA-320	9078	4955	4800/4900	5300	5700	8796	1900/2000	2200	2400	2125	2185	4394	2194	1630
HSA-420	11078	4955	4800/4900	5300	5700	10796	1900/2000	2200	2400	2125	2185	4394	2194	1630
HSA-323	9078	5255	4800/4900	5300	5700	8796	1900/2000	2200	2400	2200	2260	4579	2494	1630
HSA-423	11078	5255	4800/4900	5300	5700	10796	1900/2000	2200	2400	2200	2260	4579	2494	1630
HSA-523	13078	5255	4800/4900	5300	5700	12796	1900/2000	2200	2400	2200	2260	4579	2494	1630
HSA-327	9000	5840	4800/4900	5300	5700	8795	1900/2000	2200	2400	2525	2585	5195	2994	1630
HSA-427	11000	5840	4800/4900	5300	5700	10795	1900/2000	2200	2400	2525	2585	5195	2994	1630
HSA-527	13000	5840	4800/4900	5300	5700	12795	1900/2000	2200	2400	2525	2585	5195	2994	1630
HSA-627	15200	5840	4800/4900	5300	5700	14995	1900/2000	2200	2400	2525	2585	5195	2994	1630
HSA-428	11000	5840	4900	5300	5700	10795	2000	2200	2400	2525	2585	5195	2994	1630
HSA-528	13000	5840	4900	5300	5700	12795	2000	2200	2400	2525	2585	5195	2994	1630
HSA-532	13000	6240	4900	5300	5700	12795	2000	2200	2400	2750	2810	5670	3394	1630
HSA-632	15200	6240	4900	5300	5700	14995	2000	2200	2400	2750	2810	5670	3394	1630
HSA-536	13150	6740	4900	5300	5700	12945	2000	2200	2400	3025	3085	6195	3794	1730
HSA-636	15350	6740	4900	5300	5700	15145	2000	2200	2400	3025	3085	6195	3794	1730
HSA-736	17350	6740	4900	5300	5700	17145	2000	2200	2400	3025	3085	6195	3794	1730
HSA-836	19350	6740	4900	5300	5700	19145	2000	2200	2400	3025	3085	6195	3794	1730

09 Machine Specifications

		Unit	HSA-2212 / 3212	HSA-216 / 316	HSA-320 / 420	HSA-323/423/523	HSA-327/427/527/627
Table	Working Surface	mm	2000 / 3000 × 1100	2000 / 3000 x 1400	3000 / 4000 x 1800	3000 / 4000 / 5000x 2200	3000 / 4000 / 5000 / 6000 x 2200
	T-slot Width × Pitch (Number)	mm	22 x 160 (6)	22 x 180 (7)	22 x 250 (11 / 15)	28 x 250 (11 / 15 / 19)	28 x 250 (11 / 15 / 27 / 23)
	Max. Load (Average)	kg/m²	3500 / 4500	8000 / 10000	10000 / 12000	10000 / 12000 / 15000	10000 / 12000 / 15000 / 18000
Travel	X-axis Travel	mm	2250 / 3250	2250 / 3250	3000 / 4000	3000 / 4000 / 5000	3000 / 4000 / 5000 / 6000
	Y-axis Travel	mm	1200	1600 ; 1500(opt. for Z-axis box guideway)	2000	2300	2700
	Z-axis Travel	mm	780	780	780 opt. 1000/1200	780 opt. 1000/1200	780 opt. 1000 / 1200
	Distance from Spindle End to Table	mm	450	430	450	450	450
	Distance Between Two Columns	mm	1300	1600	2000	2300	2800
	Distance from Spindle End to Table #50	mm	Z780_Column1700 : 120~900 Z780_Column1900 : 320~1100	Z780 : 160~940 Z1000 : 140~1140	Z780 : 200~980 Z1000 : 280~1280 Z1200 : 280~1480	Z780 : 200 ~980 Z1000 : 280 ~1280 Z1200 : 280 ~1480	Z780 : 200~980 Z1000 : 280~1280 Z1200 : 280~1480
	Distance from Spindle End to Table #40	mm	Z780_Column1700 : 180~960 Z780_Column1900 : 380~1160	Z780 : 220 ~ 1000	Z780 : 260~1040 Z1000 : 340~1340 Z1200 : 340 ~1540	Z780 : 260 ~1040 Z1000 : 340~1340 Z1200 : 340 ~1540	-
Spindle	Spindle Nose Taper		#40 #50	#40 #50	#40 #50	#40 #50	#50
	Spindle Speed (DDS)	rpm	10000 opt.15000 only on #40 opt.12000 only on #50	#40 10000 / 15000 / 20000 #50 10000 / 12000	#40 15000 / 20000 #50 10000 / 12000	#40 15000 / 20000 #50 10000 / 12000	10000 / 12000
	Spindle Speed (Gear)	rpm	6000 only on #50 opt. 8000	#50 6000 / 8000	#50 6000 / 8000	#50 6000 / 8000	6000 / 8000
	Spindle Speed (Built-in)	rpm	-	-	#50 12000	#50 12000	12000
Feed	Cutting Feedrate (X / Y / Z)	m/min	10 / 10 / 10	X:12 Y:12 Z:12/7(opt for Z-axis box guideway)	12 / 12 / 12	X:12/10/8 Y:12 Z:12	X:12/10/8 Y:12 Z:12
	Rapid Traverse Rate (X / Y / Z)	m/min	24 / 24 / 20	X:24 Y:24 Z:20/15(opt for Z-axis box guideway)	20 / 18 / 16	X:20/20/14 Y:18 Z:16	X:20/14/10 Y:18 Z:16
ATC	Tool Capacity	pcs	A : 24 opt. 32 / 40 only on #50	#40 A : 32 (40) ; #50 A : 32(40 / 60) S:20	A : 32 / 40 / 60	A : 32 (40 / 60)	A : 32 / 40 / 60
	Max. Tool Weight	kg	#40:7 #50:18	#40:7 #50:18	#40 A : 7 #50 A : 20	#40:7 #50:20	A : 20
	Max. Tool Size (Dia. × Length)#40	mm	75 x 300	Ø 75x 300L	Ø 75x 300L	Ø 75 x 300L x 7kg	-
	Max. Tool Size (Dia. × Length)#50	mm	110 x 350(24T) / 125 x 350(32T/40T)	Ø 125x 300L	Ø 125x 300L	Ø 125 x 300L x 20kg	Ø125 x 400L x 20kg
	Tool Shank		BT50(BBT40/BBT50/CAT40/CAT50/DIN)	BT-50 (CAT50/DIN/BBT50) BT-40 (CAT50/DIN/BBT40/HSK-A63)	#40 BT-40(CAT40/DIN/BBT40/HSK-A63) #50 BT-50(CAT50/DIN/BBT50)	#40：11 / 7.5 DDS for Fanuc #50：22/18.5(18.5/15 DDS for Fanuc)	BT-50(BBT-50/CAT-50/DIN69871A)
	Pull Stud Bolt		P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P40T-1 / P50T-1 (CAT-40/DIN 69872)	#40 P40T-1 #50 P50T-1	#40 P40T-1 #50 P50T-1	MAS-P50T-1/DIN69872A(PD50TA)
Motor	Spindle Drive Motor (Continuous / 30 min)	kw	#40: 11 / 7.5 #50: 18.5 / 15 (22 / 26)	#40: 7.5 / 11 (opt.15 / 18.5) #50: 15 / 18.5 (opt.18.5 / 22,22 / 26)	#40: 7.5 / 11 (opt.15 / 18.5) #50: 18.5 / 22 (opt.22 / 26,30 / 37)	#40: 7.5 / 11 (opt.15 / 18.5) #50: 18.5 / 22 (opt.22 / 26,30 / 37)	18.5 / 22 (15 / 18.5 DDS)
Positioning Accuracy	Positioning Accuracy (JIS B6330), without linear scale	mm	±0.010	±0.010	±0.010	±0.010 / ±0.012 / ±0.012	±0.010 / ±0.012 / ±0.012
	Repeatability (JIS B6330), without linear scale	mm	±0.003	±0.003	±0.003	±0.003	±0.003
	Positioning Accuracy (JIS B6330), with linear scale	mm	±0.008	±0.008	±0.008	±0.008 / ±0.010 / ±0.010	±0.008 / ±0.010 / ±0.010
	Repeatability (JIS B6330), with linear scale	mm	±0.003	±0.003	±0.003	±0.003	±0.003
	Positioning Accuracy 3-Axis Accuracy (VDI 3441, repeat 5 time)	mm	0.015	0.015 / 0.016	0.016 / 0.018	0.016 / 0.018 / 0.026	0.016 / 0.018 / 0.028
	Repeatability 3-Axis Accuracy (VDI 3441, repeat 5 time)	mm	0.014	0.014	0.014 / 0.015	0.014 / 0.015 / 0.021	0.014 / 0.015 / 0.24
Other	Required Air Pressure	kg/cm²	6.5	6.5	6.5	6.5	6.5
	Electric Power Requirement	KVA	#50 : 35-65 #40 : 25-60	45 / 50	40 - 70	40 - 75	40 - 75
	Machine Weight	kg	14720 / 18220	18000 / 21000	Z780 : 27500 / 30500 Z1000 : 28500 / 31500 Z1200 : 29500 / 32500	Z780 : 30100 / 34100 / 38100 Z1000 : 31420 / 35420 / 39420 Z1200 : 32000 / 36200 / 40200	Z780 : 33370 / 37370 / 45370 Z1000 : 34690 / 38690 /46690 Z1200 : 35470 / 39470 / 47470
	Floor Space	mm	8535 / 10535 x 5745	8630 / 10630 x 5880	11245 / 13245 x 6600	11415 / 13415 / 15415 x 6900	11650/13650/15650/17650 x 7500
	Machine dimension (L x W x H)	mm	Z780 : 6800 / 8800 x 3855 x 4120	6712 / 9040 x 4619.5 x 4338(Z780)	9080 / 11080 x 4955 x 4800 (2780) (Z1000 : H5300 / Z1200 : H5700)	9145 / 11145 / 13145 x 5255 x 4800 (Z780)	9077 / 11077 / 13077 / 15077 x 5914.5 x 4796 (2780)

09 Machine Specifications

		Unit	HSA-428 / 528	HSA-532 / 632	HSA-536 / 636 / 736 / 836
Table	Working Surface	mm	4000 / 5000 x 2500	5000 / 6000 x 2500	5000 / 6000 / 7000 / 8000 x 3000
	T-slot Width × Pitch (Number)	mm	28 x 250 (15 / 19)	28 x 250 (19 / 23)	28 x 250 (19 / 23 / 27 / 31)
	Max. Load (Average)	kg/m²	18000 / 20000	20000 / 23000	21000 / 24000 / 27000 / 30000
Travel	X-axis Travel	mm	4000 / 5000	5000 / 6000	5000 / 6000 / 7000 / 8000
	Y-axis Travel	mm	2800	3200	3600
	Z-axis Travel	mm	780 opt. 1000 / 1200	780 opt. 1000 / 1200	780 opt. 1000 / 1200
	Distance from Spindle End to Table	mm	450	450	450
	Distance Between Two Columns	mm	2800	3200	3600
	Distance from Spindle End to Table #50	mm	Z780 : 260~1040 Z1000 : 240~1240 Z1200 : 240~1440	Z780 : 260 ~1040 Z1000 : 240 ~1240 Z1200 : 240 ~1440	Z780 : 260~1040 Z1000 : 240~1240 Z1200 : 240~1440
	Distance from Spindle End to Table #40	mm	-	-	-
Spindle	Spindle Nose Taper		#50	#50	#50
	Spindle Speed (DDS)	rpm	10000 / 12000	10000 / 12000	10000 / 12000
	Spindle Speed (Gear)	rpm	6000 / 8000	6000 / 8000	6000 / 8000
	Spindle Speed (Built-in)	rpm	12000	12000	12000
Feed	Cutting Feedrate (X / Y / Z)	m/min	X:10/8 Y:12 Z:12	8 / 12 / 12	X:8/8/8/6 Y:18 Z:16
	Rapid Traverse Rate (X / Y / Z)	m/min	X:16/12 Y:18 Z:16	X:12/10 Y:18 Z:16	X:14/12/10/8 Y:18 Z:16
ATC	Tool Capacity	pcs	A : 32 / 40 / 60	A : 32 / 40 / 60	A : 32 / 40 / 60
	Max. Tool Weight	kg	A : 20	A : 20	A : 20
	Max. Tool Size (Dia. × Length)#40	mm	-	-	-
	Max. Tool Size (Dia. × Length)#50	mm	Ø125 x 400L x 20kg	Ø125 x 400L x 20kg	Ø125 x 400L x 20kg
	Tool Shank		BT-50 (BBT-50 / CAT-50 / DIN69871A)	BT-50 (BBT-50 / CAT-50 / DIN69871A)	BT-50 (BBT-50 / CAT-50 / DIN69871A)
	Pull Stud Bolt		MAS-P50T-1 / DIN69872A (PD50TA)	MAS-P50T-1 / DIN69872A (PD50TA)	MAS-P50T-1 / DIN69872A (PD50TA)
Motor	Spindle Drive Motor (Continuous / 30 min)	kw	18.5 / 22 (15 / 18.5 DDS)	18.5 / 22 (15 / 18.5 DDS)	18.5 / 22 (15 / 18.5 DDS)
Positioning Accuracy	Positioning Accuracy (JIS B6330), without linear scale	mm	±0.012	±0.012	±0.012
	Repeatability (JIS B6330), without linear scale	mm	±0.003	±0.003	±0.003
	Positioning Accuracy (JIS B6330), with linear scale	mm	±0.010	±0.010	±0.010
	Repeatability (JIS B6330), with linear scale	mm	±0.003	±0.003	±0.003
	Positioning Accuracy 3-Axis Accuracy (VDI 3441, repeat 5 time)	mm	0.018 / 0.026	0.026	0.026 / 0.028 / 0.030 / 0.030
	Repeatability 3-Axis Accuracy (VDI 3441, repeat 5 time)	mm	0.015 / 0.021	0.021	0.021 / 0.024 / 0.024 / 0.026
Other	Required Air Pressure	kg/cm²	6.5	6.5	6.5
	Electric Power Requirement	KVA	40 - 75	45 - 70 (532)	45 - 75
	Machine Weight	kg	Z780 : 39000 / 44000 Z1000 : 39500 / 44500 Z1200 : 40000 / 45000	Z780 : 46000 Z1000 : 46500 Z1200 : 47000	780 : 56000 / 62000 / 67000 / 72000 Z1000 : 56500 / 62500 / 67500 / 72500 Z1200 : 57000 / 63000 / 68000 / 73000
	Floor Space	mm	13650 / 15650 x 7500	15744 x 7900	15200 / 17200 / 19200 / 21200 x 8450
	Machine dimension (L x W x H)	mm	Z780 : 11077 / 13077 x 5610.5 x 4896	Z780 : 13105 / 15105 x 6300 x 4896	Z780 : 13148 / 15148 / 17148 / 19148 x 6511 x 4896



Disclaimer / Performance Note
Specifications and dimensions are subject to change without notice.
For actual weight, the shipped product shall prevail.