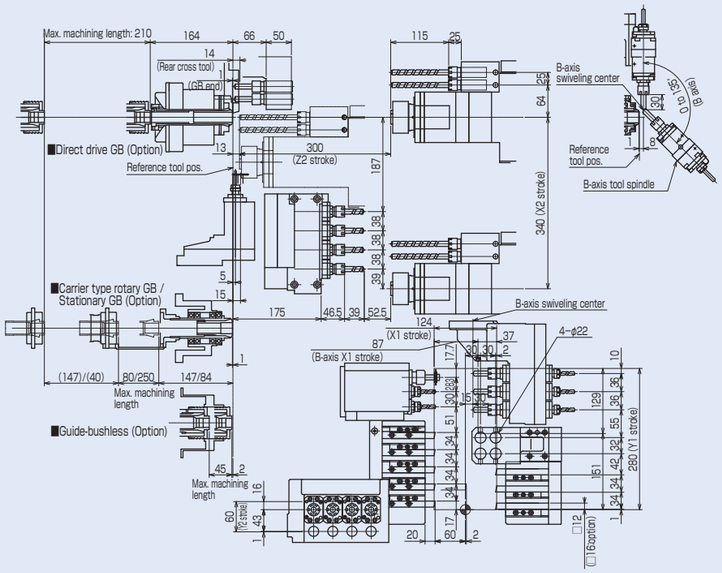
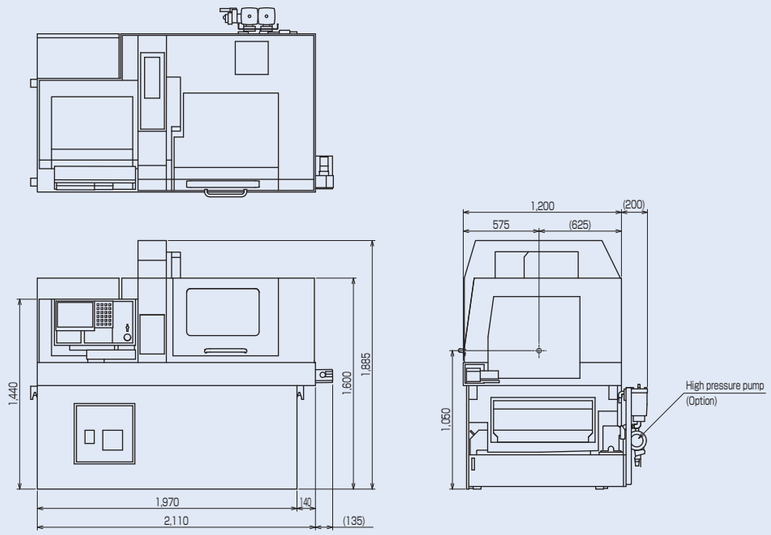
Tooling zone



External view



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The specifications of this catalogue are subject to change without prior notice.

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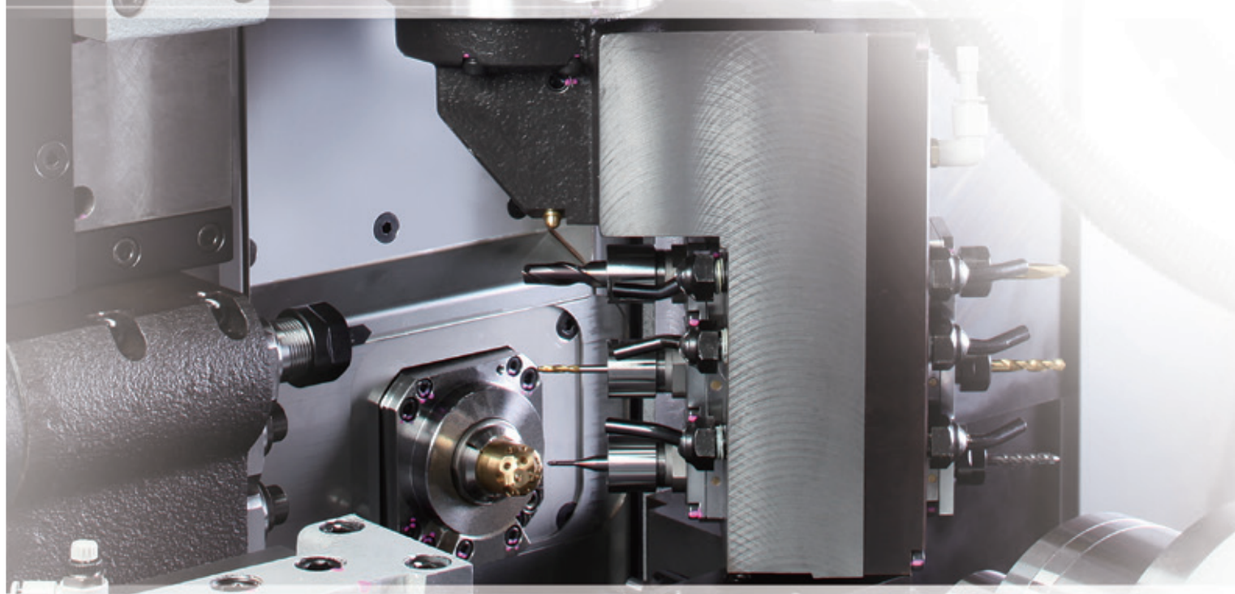
PRECISION TSUGAMI

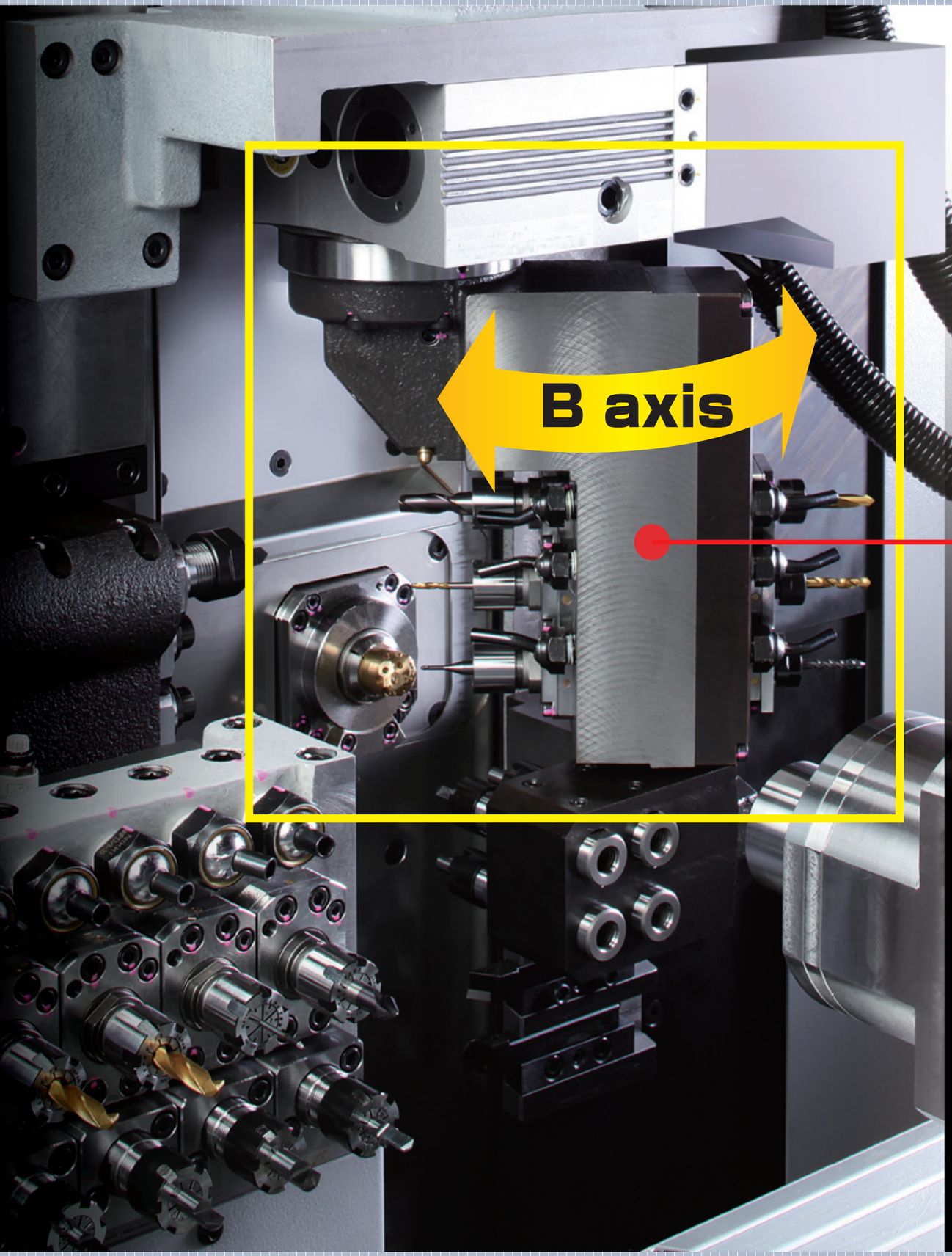
CNC Precision Automatic Lathe

HS207
HS207-5AX (5-axis simultaneously controlled type)

With CE mark

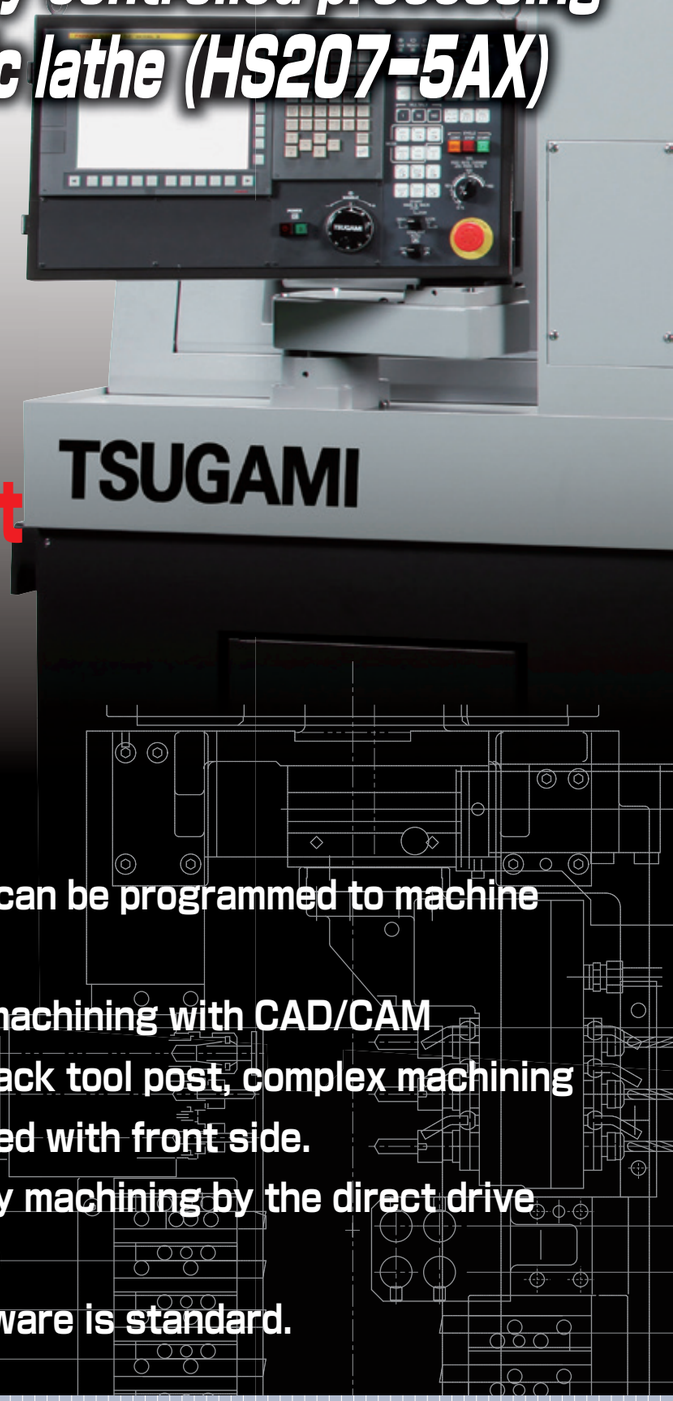


Swiveling B-axis tool post for sculpted geometries
Ultimate swissturn for complex-machining



•B-axis versatility for machining complex parts

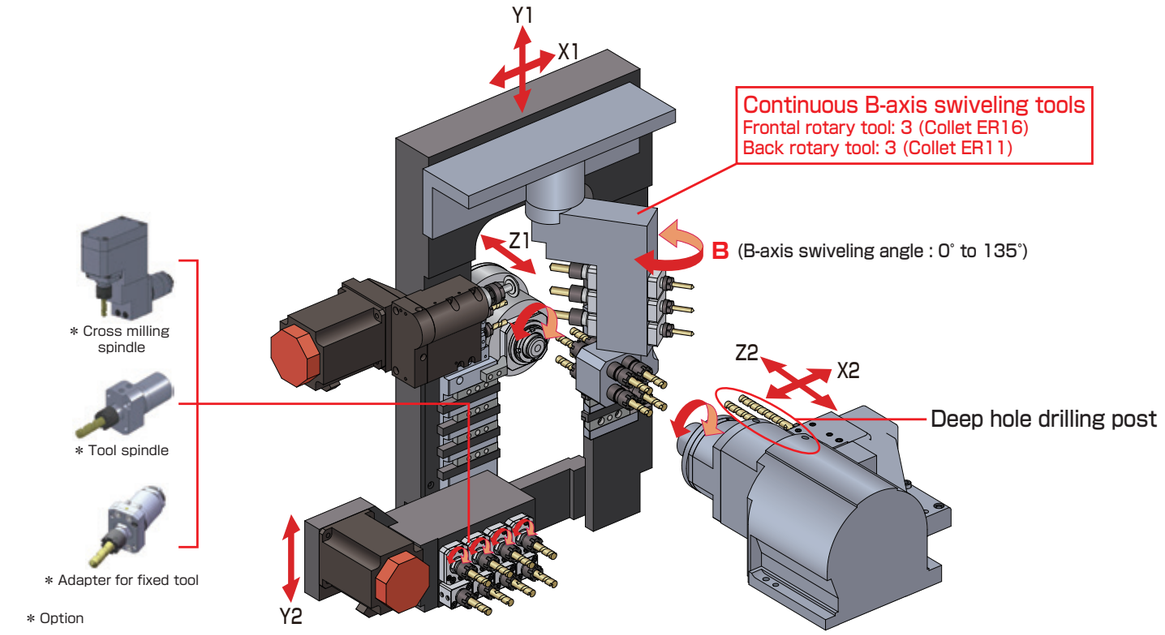
•5-axis simultaneously controlled processing now on the automatic lathe (HS207-5AX)



Continuous B-axis swiveling tool post

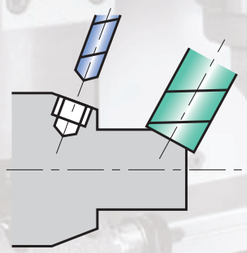
- B-axis swiveling tool spindle can be programmed to machine virtually any angle.
- Simultaneous 4-axis, 5-axis machining with CAD/CAM
- Thanks to the Y-axis of the back tool post, complex machining on back side can be overlapped with front side.
- High speed and high accuracy machining by the direct drive rotary guide bushing (Option)
- Automatic programming software is standard.

Continuous B-axis swiveling tool post



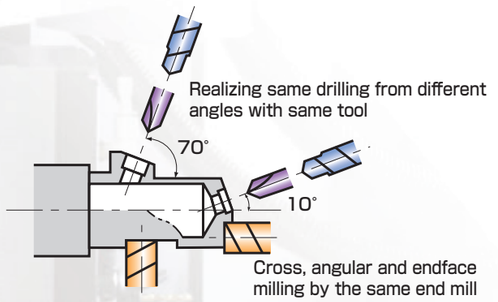
Thanks to the B-axis control, virtually any angle can be indexed and processed by NC programs

- ●Drilling
- ●Tapping
- ●End milling (with Y-axis control)



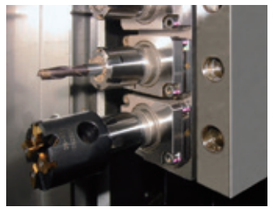
Mutual use of tool with the B-axis control

- ●Reducing the number of tools with mutual use of tool
- ●Shortened cycle time.



Thread whirling or hobbing is possible without a dedicated attachment thanks to the B-axis control.

●Thread whirling (Lead angle can be specified by B-axis control.)



●Holder (Non-through hole)＊
- Max. barstock dia ϕ6
- Max. lead angle 15°
- Max. machining length 20mm

＊Option

●Hobbing (Lead angle is specified by B-axis control.)

●Max. machining module 0.3(0.5)＊
●Cutter arbor : option

＊Depends on materials and cutting conditions.

B-axis commanding Two patterns are performed with B-axis tool post

(1) Step indexing cutting

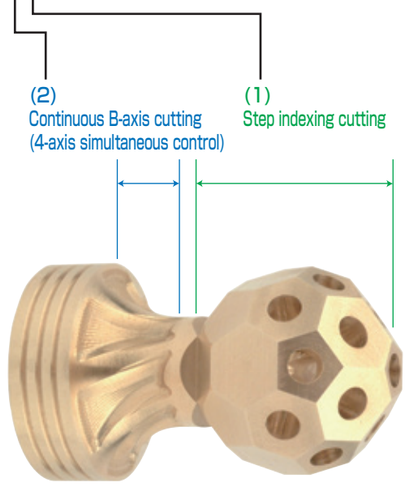
After indexing B-axis tool post by the B-axis positioning command, angular-drilling, -tapping or -end-milling can be executed.

(2) Continuous B-axis cutting

The B-axis moves continuously by the simultaneous controlling with the other controlled axes C1,Z1,B1,X1,(Y1).

Function		Programming	Required options
(1) Step indexing cutting		● manual programming ● Automatic programming software (Standard accessory)	N.A.
(2) Continuous B-axis cutting	4-axis simultaneous control 5-axis simultaneous control	● CAD/CAM ＊Mastercam ①Mastercam CAM system ②Post processor for HS207 (Dedicated program) If a customer has the mastercam CAM system ①, only the post processor for HS207 ② is necessary.	AI contour control function (HS207-5AX: Standard)

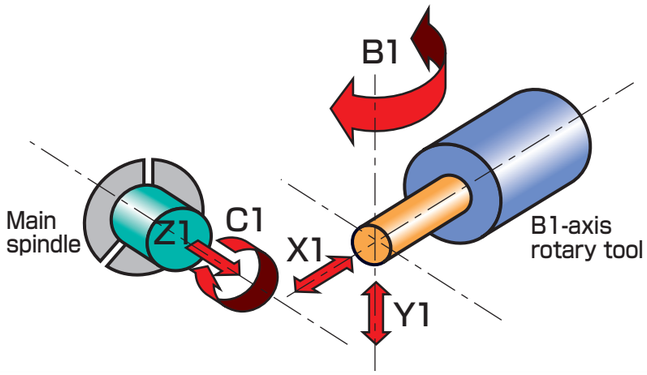
＊Consult Mastercam agent.



B-axis processing partition example

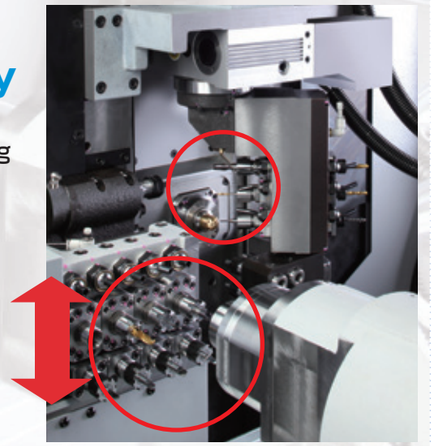
4 axis/5 axis-simultaneous control processing is made possible with CAD/CAM software.

- ●4-axis simultaneous control : C1,Z1,B1,X1,(Y1) axis —HS207
- ●5-axis simultaneous control : C1,Z1,B1,X1,Y1 axis —HS207-5AX



Combining of complex-machining capabilities and high productivity

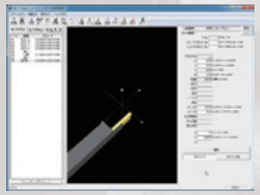
- ●Thanks to the Y-axis of the back tool post, complex machining on back side can be overlapped with front side.
- ●The deep hole drilling (up to 100mm) is realized by mounting the deep hole drill holder besides the back spindle.



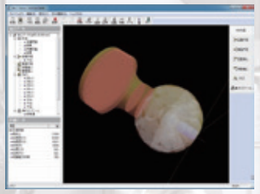
Enhanced programming capability is possible with HS-7 Abile standard software

The 3D simulation function enables the user to check the operations of the main/back spindles from any angle.
Customized software works in perfect harmony with the machine to produce high quality standardized programs.

Tool data

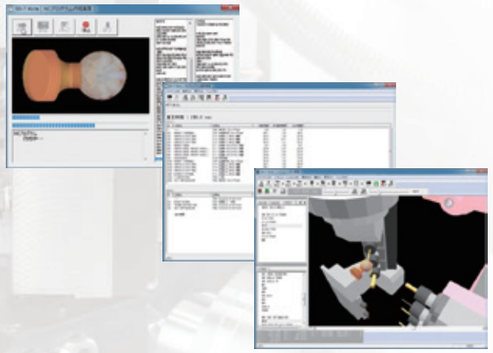


Geometrical data



Input the tool data and the geometrical data.

From creating programs to simulations are executed automatically.



Specifications/Options

Machine standard specifications

Name		HS207	HS207-5AX
Machining range, machining capacity	Bar stock chucking dia.	φ3 to φ20 mm	
	Max. machining length	250 mm (Stationary guide bushing (OP.))	
		80 mm (Carrier type rotary guide bushing (OP.))	
		210 mm (Direct-drive rotary guide bushing (OP.))	
		45 mm (Guide-bushing-less-kit (OP.))	
	Max. main spindle drilling diameter	φ10	
	Max. main spindle tapping diameter	M10	
	Max. back spindle chucking dia.	φ20	
	Max. back spindle drilling diameter	φ8	
	Max. back spindle tapping diameter	M6	
	Max. cross drilling diameter	φ6	
	Max. cross tapping diameter	M5	
B-axis tool spindle	Max. drilling diameter	φ6	
	Max. tapping diameter	M5	
	Max. spindle speed	5,000 min^{-1}	
Machine	Main spindle speed	200 to 10,000 min^{-1}	
	Back spindle speed	200 to 10,000 min^{-1}	
	Total tool storage capacity	35	
	Tool size	□12 mm x 100 mm	
	Rapid traverse rate	32 m/min (X1, Y1: 24 m/min, Y2: 15 m/min)	
Motors	Main spindle	2.2/3.7 kW	
	Back spindle	1.5/2.2 kW	
	Cross drill of front tool post	0.75 kW	
	Swiveling tool spindle	1.0 kW	
Others	Weight	3,300 kg	
	Power source requirement	14.6 kVA	
	Width x depth x height	2,110 x 1,200 x 1,885	

NC standard specifications

Item	HS207	HS207-5AX
NC unit	FANUC 32i-B	FANUC 31i-B5
Axis names	X1, Z1, Y1, X2, Z2, Y2, C1, C2, B1	
Least input increment	0.001 mm (diameter value for X1/X2-axis)	
Least command increment	X1/X2 axis: 0.0005 mm, others: 0.001 mm	
Max. programmable value	±8 digit	
Interpolation method	Linear/Circular	
Rapid traverse rate	32 m/min (X1/Y1 axis: 24 m/min, Y2 axis: 15 m/min)	
Feedrate	1 to 6,000 mm/min	
Feedrate override	0 to 150% in 10% increments	
Dwell	G04 0 to 99999.999	
ABS/INC command	X, Z, Y, C, B: Absolute, U, W, V, H: Incremental	
Tool offset pairs	99	
LCD/MDI	10.4" color LCD	
Display language	English	
Part program storage size	64 Kbytes (equivalent to 80 m tape length for each path)	
Number of registerable programs	63	
Auxiliary functions	Main: 5-digit, Back: 3-digit	
Spindle functions	S 5 digits	
Tool functions	T 4 digits	

Machine standard accessories

Name	Name
Front tool post : 3-spindle cross drill	Door interlock (Tooling zone side door/Main spindle side door)
Deep hole drill holder (φ20 x 2 holes)	Coolant level detector
Main spindle C-axis / Back spindle C axis	Spindle cooling unit
Automatic programming software	Standard tools
Tool-height compensation function	Transit clamps
Tool counter	Automatic power shut-off
Periodic maintenance screen	Back spindle air purge
Main spindle adapter	Cross drill air purge
Back spindle adapter	Main spindle brake

NC standard accessories

Name	Name
Chasing function	Tool nose radius compensation
Continuous thread cutting	HRV control
Manual pulse generator	Multiple repetitive cycle
Memory card I/O interface	Extended part program editing
Back ground editing	Canned cycle drilling
Run time/parts number display	Rigid tap (Main spindle, back spindle, cross/back tool)
Custom macro	Cut-off detection (Differential speed detection)
Constant surface speed control	Spindle speed fluctuation detection
Spindle synchronization control (Rotation, phase)	Stored stroke check 2,3
Z1/Z2-axis synchronous control	3-dimensional coordinate conversion
Tool geometry / wear offset	AI contour control function (HS207-5AX)
Programmable data input	Data server function (HS207-5AX)
Chamfering, corner R	

Options

Name		Name		Name	
Guide bushing	Stationary guide bushing	Chip disposal	Chip conveyor	NC function	Thread cutting cycle retract
	Carrier type rotary guide bushing	Operation support functions	Automatic tool setting		Number of registerable programs extension 1
	Direct-drive rotary guide bushing		Tool set gauge		Standard program storage size : 120 programs
	Guide-bushless kit	Machine maintenance and monitoring functions	Tap breakage detector		128 KB: 250 programs
Advanced function system	Main spindle 15-degree index		Signal indicator		256 KB: 500 programs
	Back spindle brake	Tooling equipments	Thread whirling holder		512 KB: 1000 programs
	Back spindle 15-degree index		Hob cutter arbor		Polar coordinate interpolation
	0.1 μm resolution		Drill holder		Cylindrical interpolation
Live tools (Back tool post)	Tool spindle	NC function	AI contour control function (HS207)		Display language
	Cross milling spindle		RS232C interface	Safety and other	External illumination
	Back tool adapter		Inch/metric conversion		Internal illumination
Coolant system	High-pressure pump (1.5 MPa)		Abnormal load detection		Automatic fire distinguisher
	M code oil blow		Part program storage size 128 Kbytes		
	Mist separator		Part program storage size 256 Kbytes		
Work discharge system	Work conveyor		Part program storage size 512 Kbytes		
	Work catcher		G-code system B/C		
	Front discharge		Direct drawing dimension program		
	Rear discharge		Variable-lead thread cutting		

Option

Work catcher

Conveying the workpiece discharged from back spindle through the chute

Back milling spindle

Mounted on the back drive for cross drilling or milling etc.

Back tool spindle

Mounted on the back drive for endface off-center drilling or off-center tapping etc.