



CNC Double Column Machining Center

Box Way Series

■ FS ■ PC



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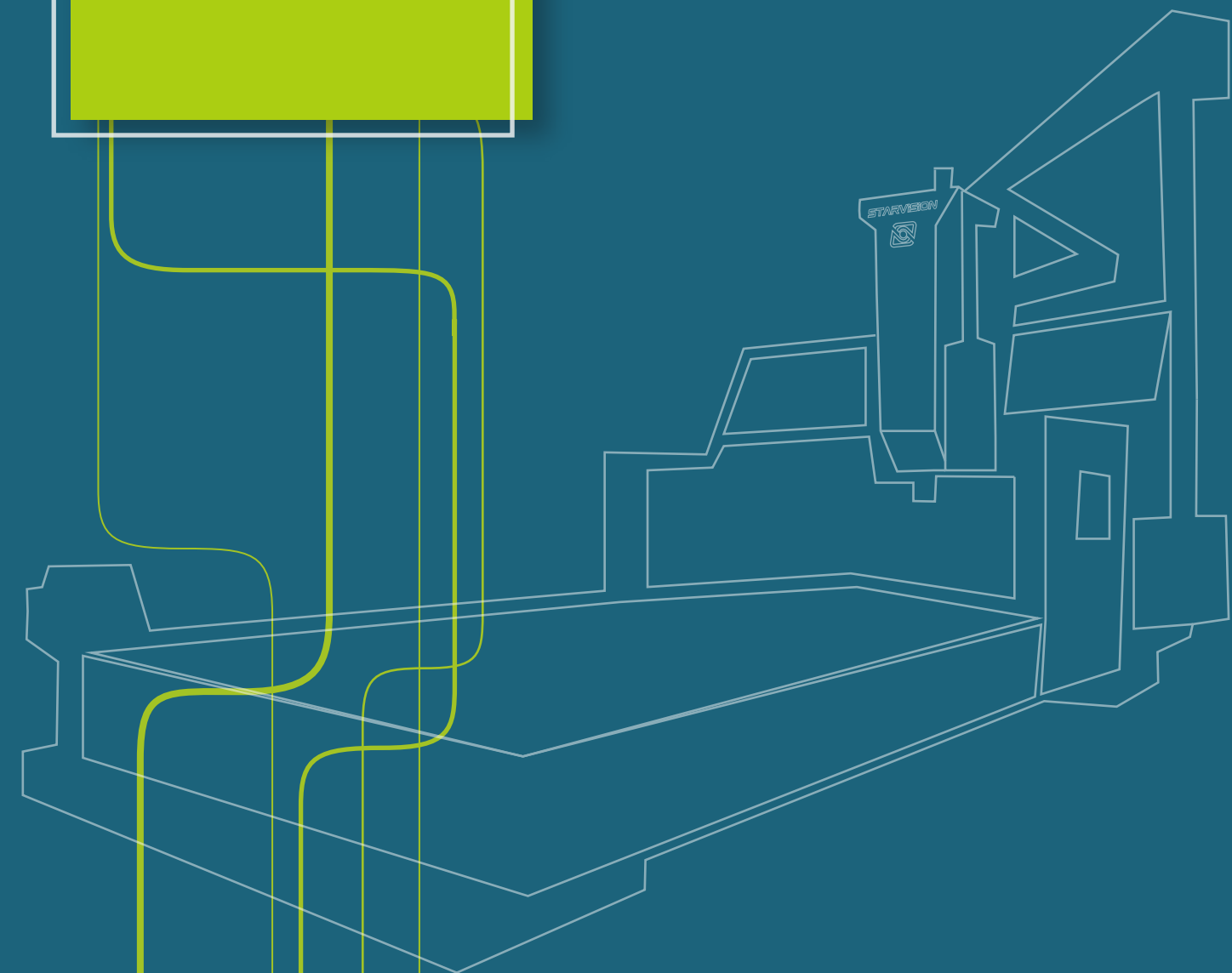
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DUPLICATE SIMPLE , SPECIALTY IRREPLACEABLE.



Starvision carries 25 years of professional experience in R&D, assembly Double Column Machining Center.

In 2008, we have signed a technical cooperation agreement with well-known German turning machine manufacturer- Monforts Werkzeugmaschinen GmbH and arranged an off-site training in Monforts Germany.

Starvision team integrates advanced technology and strict attitude into our own products. We set ourselves very high standards and always keep up constant know-how exchanges and innovations. These not only enhance our own technology but also strengthen our faith and passion to machine tool industry.



SUSTAINABILITY

More than selling products, Starvision persists in sustainable operation.



INTEGRITY

More than selling products, Starvision fulfills the promise.



SHARING

More than selling products, Starvision shares professional experience.



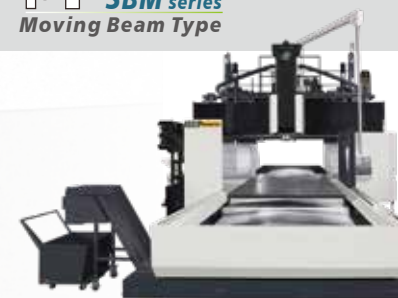
SERVICE

More than selling products, Starvision carries through after-sales responsibilities.



All series conform CE certificates

SBM series
Moving Beam Type



BCM series
Beam and Column Moving



V series
5-Axis



FS series
Box Way



PC series
Box Way



DX series
Linear Guideway



LG series
Linear Guideway



FG series
Linear Guideway

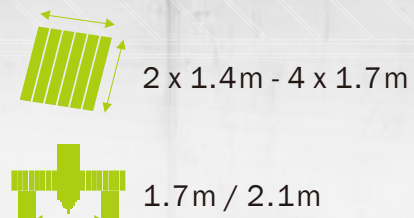


LS series
Linear Guideway



FS SERIES

Build for Medium / Light Processing



FS series is one of popular series in Starvision's product line. The structural design are processed by 3D finite element analysis (FEA) which makes sure the optimum structural patterns and stable cutting rigidity.



With high quality casting frame, three axes boxway design, and reliable Turcite B as the medium to absorb the vibration, we can ensure you to experience the best and stable cutting performance.



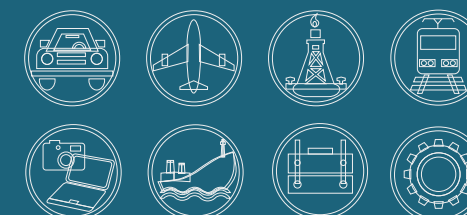
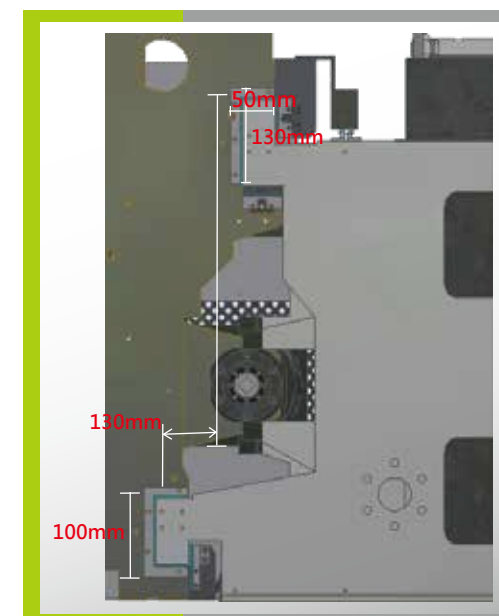
Column (STD.)



(Fully enclosed splash guard with roof / suspension panel are optional)


Y-axis crossbeam dual guideways was supported with 「Ladder - design」 construction


Due to the difference 130mm ladder-design between upper and lower box way of crossbeam, the headstock is not easy to title, and bear some thrust force on columns at the same time.



PC SERIES

Built for Heavy Cutting

 3 x 2m - 6 x 2m

 2.5m / 2.8m

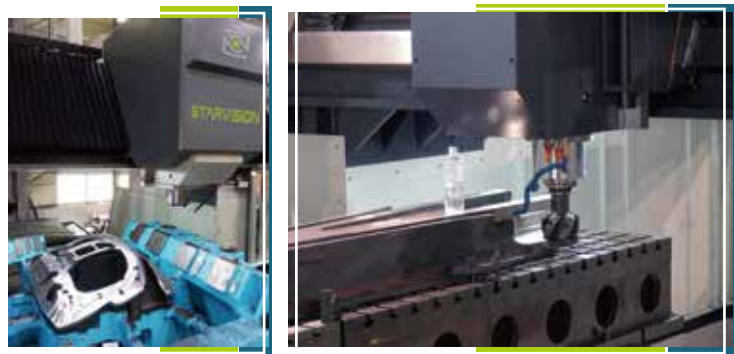
① Slant design of crossbeam



② Three box ways on Y axis



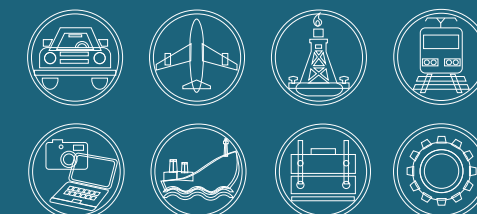
PC Series (Powerful Cutting) Double Column Machining Center has an unique design of three box type guide ways seated on a slant type cross beam which provides more rigidity to heavy cutting and ensures precise repeatability accuracy. The main bodies are all castings.



(Fully enclosed splash guard with roof / suspension panel are optional)



KRAFTVOLL





Precision Spindle

Various spindle motor selection, featuring high torque, low temperature-rise and long service life, meets different customers' machining requests.

1 Gear Drive Spindle

spindle speed 6,000 / 8,000 (opt.) rpm



Long nose



Short nose

2 Direct drive spindle

spindle speed 10,000 / 12,000 rpm



BT 50



BT40

3 Built-in spindle



HSK-A100 spindle speed 12,000 rpm
HSK-A63 spindle speed 24,000 rpm

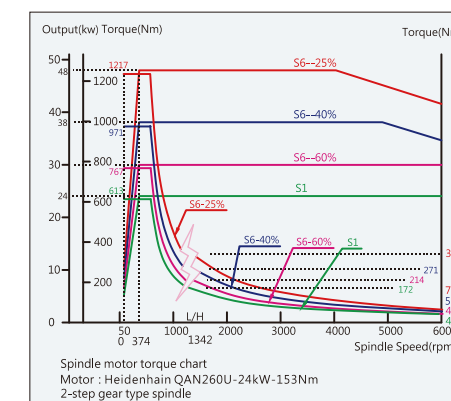
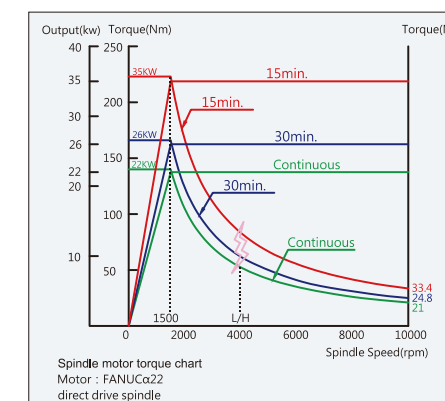
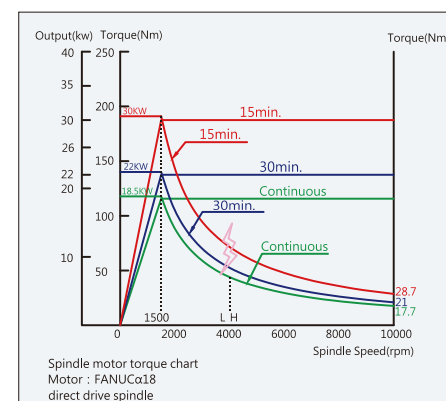
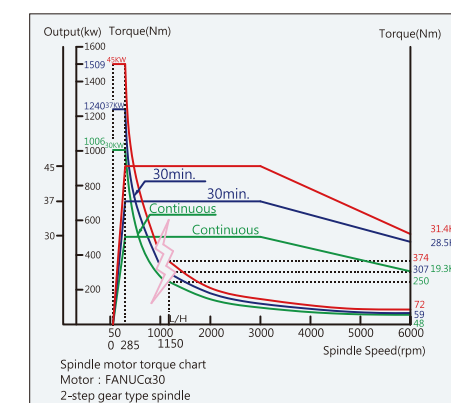
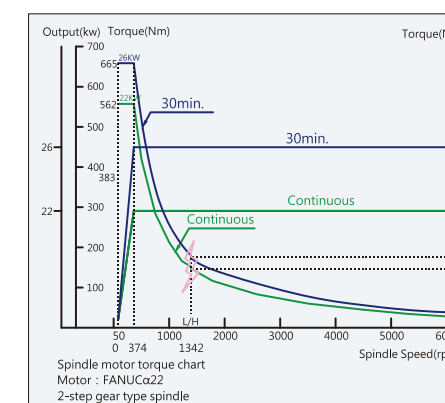
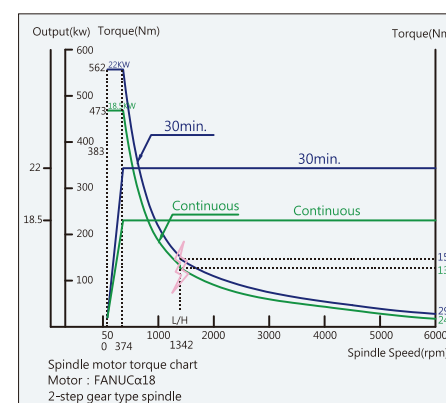


2-step Gearbox

- Using Japan made JIS Class 0 gears.
- High efficiency power transmission.
- Great torque output.
- All the bearings, gears and spindle are in oil shower lubrication to ensure a smooth operation of the gearbox and to make sure a constant temperature at all times.

New Headstock Design Offers - Various Spindle Torques

Spindle Torque



A Solution for Spindle Thermal Expansion (Opt.)

- Improve machine accuracy
- Reduce process errors
- Reduce machine warm-up time
- Prolong tool life
- Avoid the influence from environmental temperature

Displacement: Less Than 30μm



AC Automatic



AC2
Automatic 2-axis
Milling Head



Ac300
Automatic Extension
Milling Head



AC5
Automatic 90 Degree
Milling Head

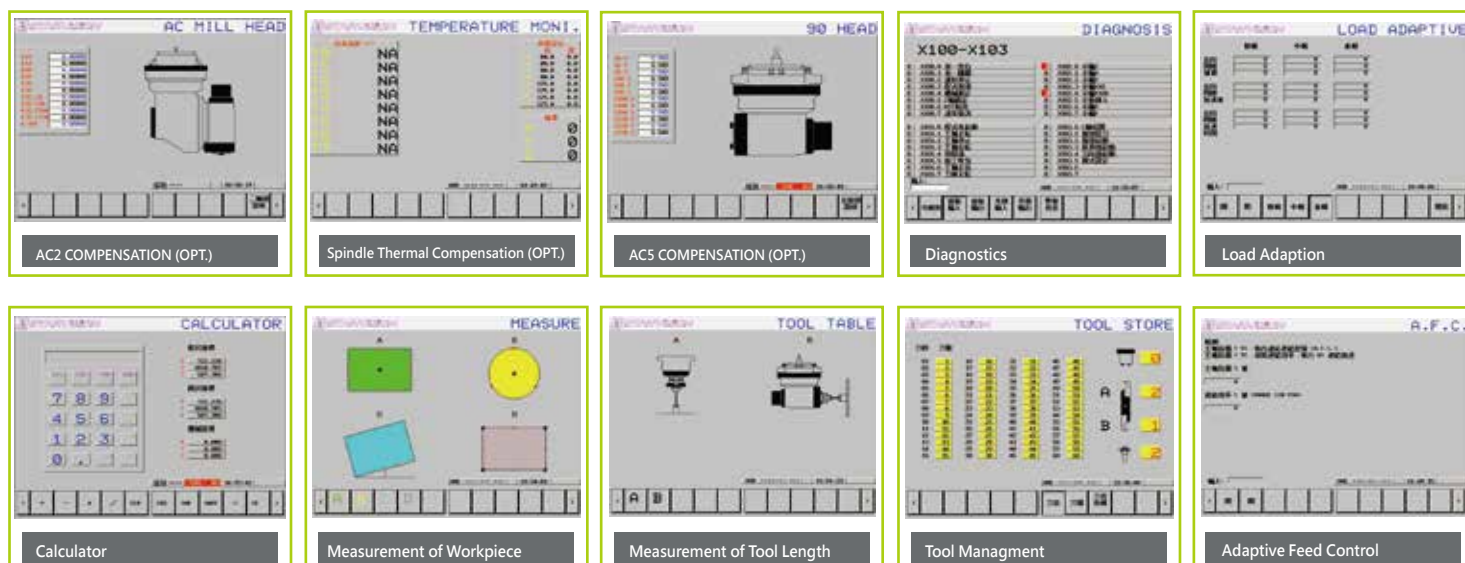
Model	AC2 2-axis	AC300 Extension	AC5 90 Degree
Max. Speed (rpm)	3,000	3,500	3,000
Max. Power (Kw)	26	26	26
Max. tool diameter	Ø150mm (6")	Ø150mm (6")	Ø150mm (6")
Spindle taper	BT50	BT50	BT50
Indexing angle	C axis auto 5°/2.5° index · manual 1° index A axis auto 5°/2.5° index · manual 1° index	N/A	C axis auto 5°/2.5° index · manual 1° index
Head changing	Automatic	Automatic	Automatic
Tool changing	Automatic vertical tool change	Automatic vertical tool change	Automatic horizontal tool change
Indexing accuracy	C: ±0.0025	-	C: ±0.0025
Rotation angle	A : ±110°	-	C: 360°
CTS	V	V	V



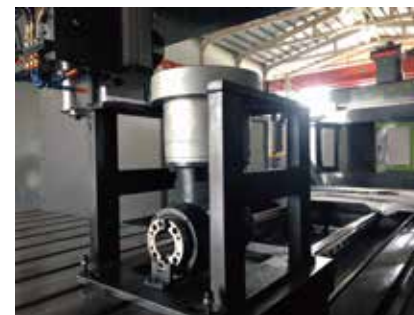
AHS (Servo)

Self-Developed Spindle Controller Asistant Software *StarGuide*

「StarGuide」 a controller asistant software which designs for spindle development. This software can improve machine accuracy, reduce process errors, prolong tool life and avoid the influence from environmental temperate. In accordance with different cutting conditions and settings, automatically adjusts the cutting feed rate to reach an optimized machining time.



MH Manual



MHS (T)



MHK2
Manual 2-axis
Milling Head
(8,000 rpm)



MH5
Manual 90 Degree
Milling Head



MH2
Manual 2-axis
Milling Head



MH300
Manual Extension
Milling Head



MH500
Manual Extension
Milling Head



MHB480
Manual Boring
and Milling Head

Model	MHK2 2-axis	MH5 90 Degree	MH2 2-axis	MH300 Extension	MH500 Extension	MHB480 90 Degree Boring
Max. Speed (rpm)	8,000 or 10,000	2,000	2,000	2,000	2,000	800 / 2,000
Max. Power (Kw)	11	26	26	26	26	26
Max. tool diameter	Ø100mm (3.9")	Ø150mm (6")	Ø150mm (6")	Ø150mm (6")	Ø150mm (6")	Ø150mm (6")
Spindle taper	BT50	BT50	BT50	BT50	BT50	BT50
Head changing	Manual	Manual	Manual	Manual	Manual	Manual
Tool changing	Manual	Manual	Manual	Manual	Manual	Manual
Rotation angle	C: 360°	C: 360°	C: 360°	-	-	C: 360°

MC Semi-automatic



MC2
Semi-automatic 2-axis
Milling Head

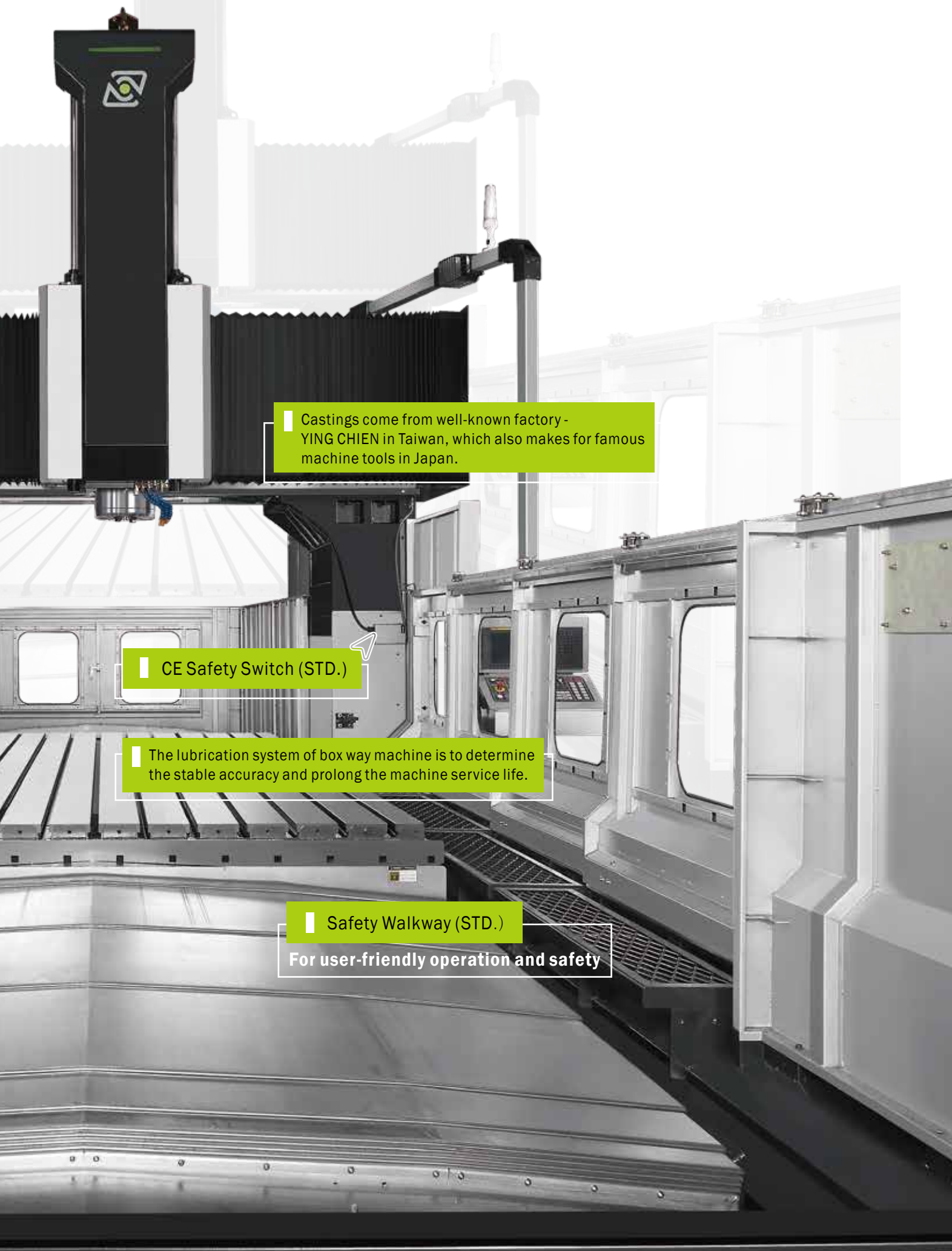


MC5
Semi-automatic 90 Degree
Milling Head

Model	MC2 2-axis	MC5 90 Degree
Max. Speed (rpm)	2,000	2,000
Max. Power (Kw)	26	26
Max. tool diameter	Ø150mm (6")	Ø150mm (6")
Spindle taper	BT50	BT50
Indexing angle	C axis auto 5° index A axis manual 5°/2.5° 1° index	C axis auto 5° index
Head changing	Manual	Manual
Tool changing	Manual clamping	Manual clamping
Rotation angle	C: 360°	C: 360°



MHS (A)



Castings come from well-known factory - YING CHIEN in Taiwan, which also makes for famous machine tools in Japan.

CE Safety Switch (STD.)

The lubrication system of box way machine is to determine the stable accuracy and prolong the machine service life.

Safety Walkway (STD.)
For user-friendly operation and safety

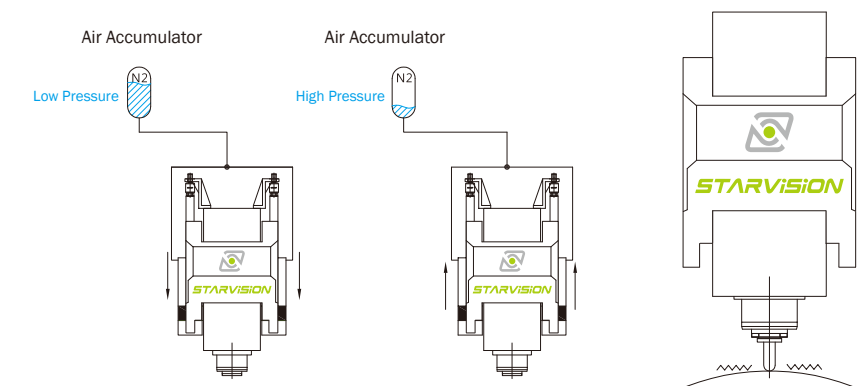


Energy Saving Z Axis Balance System

Z axis movement is counter-balanced by twin hydraulic cylinder and a nitrogen accumulator. A bladder accumulator can equilibrate hydraulic pulsation caused pressure, such as hysteresis caused overcut.

When abnormal power outage occurs, the Z axis position can be secured.

The whole system not only enhances the sensitivity of the Z-axis micro-movement, showing great flexibility and best dynamic stability, but also ensures the machine's optimal repeatability. In addition, it helps the energy saving up to 30%.



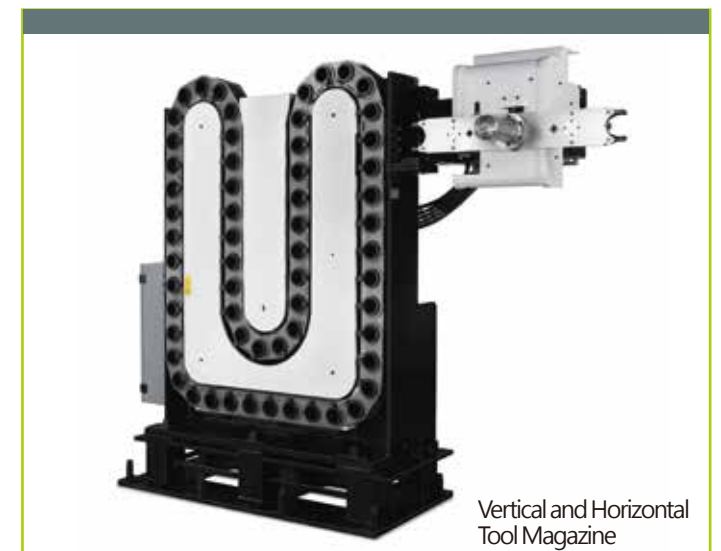
Tool Magazine Options

Automatic tool changer

Tool magazine selection is random, tools can be changed quickly.

Vertical Tool Magazine: 32(std.)/40/60/90/120 tools

Horizontal Tool Magazine: 32/40/60 tools



Automotive Industry



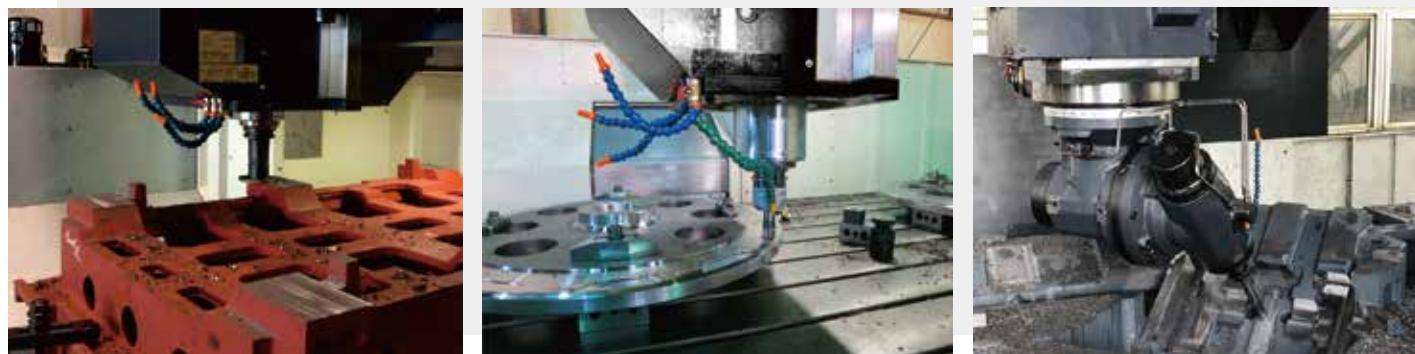
Aerospace Industry

Electronics Industry

Mold Industry



Industrial Machining



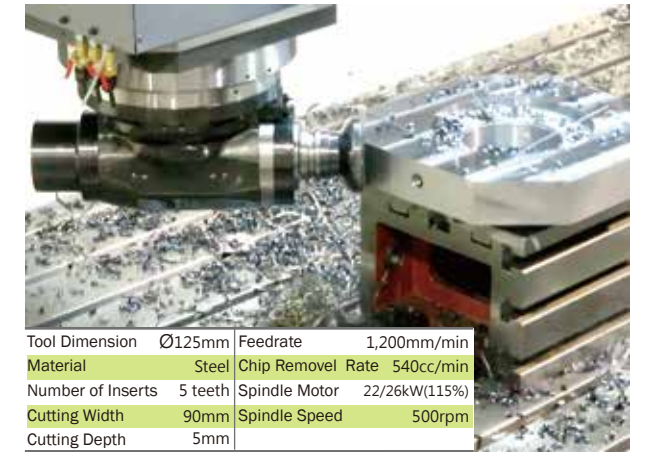
Application

Boring

Tool Dimension	Ø28mm	Feedrate	300mm/min
Material	S45C	Chip Removal Rate	0.375mm/tooth
Number of Inserts	2 teeth	Spindle Motor	22/26kW(115%)
Cutting Width	90mm	Spindle Speed	400rpm
Cutting Depth	15mm		



5-Face Machining



Tool Dimension	Ø125mm	Feedrate	1,200mm/min
Material	Steel	Chip Removal Rate	540cc/min
Number of Inserts	5 teeth	Spindle Motor	22/26kW(115%)
Cutting Width	90mm	Spindle Speed	500rpm
Cutting Depth	5mm		

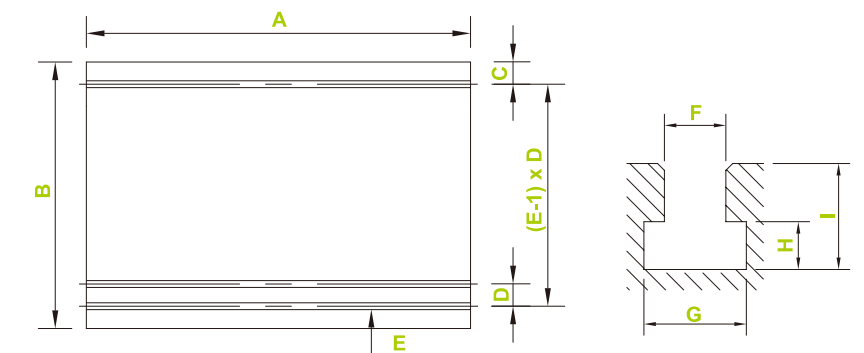
Rail Machining



Boring

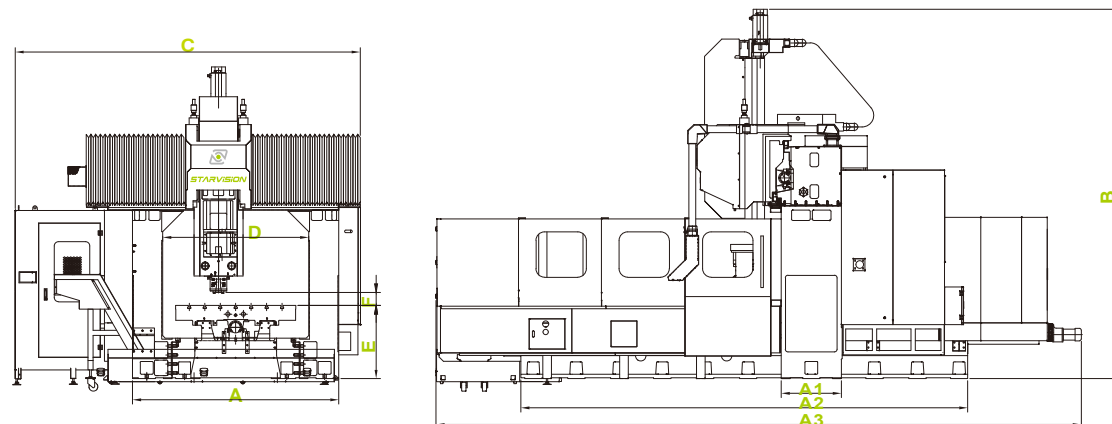


Table and T-Slot Dimensions



Model	Unit	A	B	C	D	E	F	G	H	I
FS-2216	mm	2,000	1,400	160	180	7	22H8	38	16	38
FS-2716	mm	2,500	1,400	160	180	7	22H8	38	16	38
FS-3216	mm	3,000	1,400	160	180	7	22H8	38	16	38
FS-4216	mm	4,000	1,400	160	180	7	22H8	38	16	38
FS-2220	mm	2,000	1,700	130	180	9	22H8	38	16	38
FS-2720	mm	2,500	1,700	130	180	9	22H8	38	16	38
FS-3220	mm	3,000	1,700	130	180	9	22H8	38	16	38
FS-4220	mm	4,000	1,700	130	180	9	22H8	38	16	38
PC-3223	mm	3,000	2,000	100	180	11	28H8	48	22	52
PC-4223	mm	4,000	2,000	100	180	11	28H8	48	22	52
PC-5223	mm	5,000	2,000	100	180	11	28H8	48	22	52
PC-6023	mm	6,000	2,000	100	180	11	28H8	48	22	52
PC-3226	mm	3,000	2,000	100	180	11	28H8	48	22	52
PC-4226	mm	4,000	2,000	100	180	11	28H8	48	22	52
PC-5226	mm	5,000	2,000	100	180	11	28H8	48	22	52
PC-6026	mm	6,000	2,000	100	180	11	28H8	48	22	52

FS Series

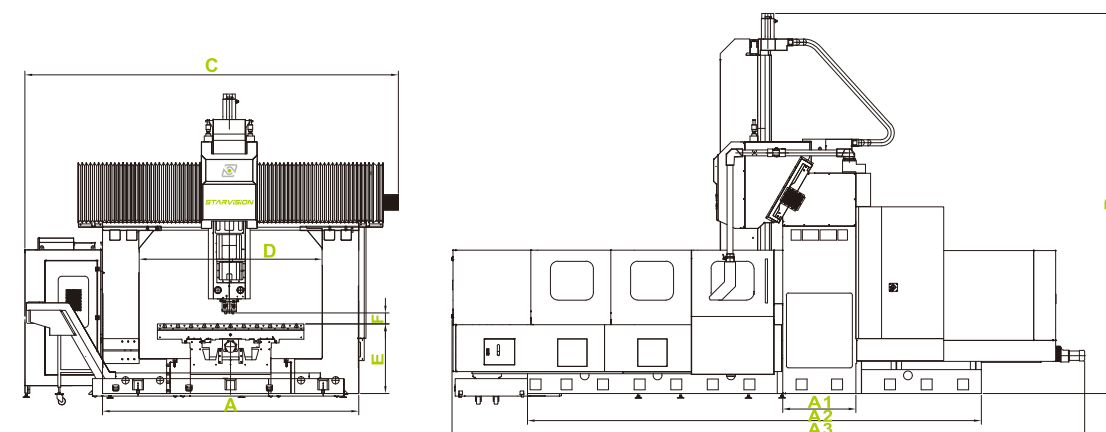


Model	Unit	A	B	C	D	E	F	A1	A2	A3
FS-2216	mm	2,400	4,700	4,100	1,700	850	150	700	4,200	6,700
FS-2716	mm	2,400	4,700	4,100	1,700	850	150	700	5,200	7,700
FS-3216	mm	2,400	4,700	4,100	1,700	850	150	700	6,200	8,700
FS-4216	mm	2,400	4,700	4,100	1,700	850	150	700	8,200	10,700
FS-2220	mm	2,800	4,700	4,500	2,100	850	150	700	4,200	6,700
FS-2720	mm	2,800	4,700	4,500	2,100	850	150	700	5,200	7,700
FS-3220	mm	2,800	4,700	4,500	2,100	850	150	700	6,200	8,700
FS-4220	mm	2,800	4,700	4,500	2,100	850	150	700	8,200	10,700

Model	Unit	FS-2216 / 20	FS-2716 / 20	FS-3216 / 20	FS-4216 / 20
Travel					
X axis	mm	2,200	2,700	3,200	4,200
Y axis	mm	1,600 / 2,000			
Z axis	mm	800 (1,000 opt.)			
Spindle nose to table	mm	150 - 950 (150 - 1,150 opt.)			
Distance between columns (max. workpiece width)	mm	1,700 (1,650) / 2,100 (2,050)			
Table					
Table dimensions (L)	mm	2,000	2,500	3,000	4,000
Table dimensions (W)	mm	1,400 / 1,700			
T-slot (width x number x pitch)		22 x 7 x 180 / 22 x 9 x 180			
Max, table load	kg	8,000	9,000	10,000	12,000
Spindle					
Spindle motor (cont./30 minute rate)	kW	18.5 / 22 (22 / 26 opt.)			
Spindle speed (gear box)	rpm	6,000 (8,000 opt.)			
Spindle taper		BT-50 / ISO-50 / CAT-50			
Feed					
Rapid feed-rate (X/Y/Z)	m/min	12 / 12 / 15			10 / 12 / 15
Cutting feed-rate	mm/min	7,000			
Accuracy					
Positioning accuracy	mm	±0.005 / 300 ; ±0.015 / full travel			
	mm	P0.03		P0.035	
Repeatability	mm	±0.003			
	mm	Ps0.025			Ps0.028
ATC					
Tool storage capacity	pcs	32T (40T / 60T opt.)			
Max. tool length	mm	350			
Max. tool weight	kg	20			
Tool size (full tools)	mm	Ø125			
Max. tool size (next pockets empty)	mm	Ø245			
Other					
Power consumption	kVA	65			
Compressed air	kg/cm²	6.5			
Machine weight (approx.)	tons	20 / 22	22 / 24	24 / 26	28 / 30
Machine floor space (L x W x H)(approx.)	m	8.4 x 5.1 (5.5) x 4.7	9.4 x 5.1 (5.5) x 4.7	10.4 x 5.1 (5.5) x 4.7	12.4 x 5.1 (5.5) x 4.7

※ All specification are subjected to change without prior notice.

PC Series



Model	Unit	A	B	C	D	E	F	A1	A2	A3
PC-3223	mm	3,500	5,400	5,500	2,500	950	150	1,000	6,200	8,700
PC-4223	mm	3,500	5,400	5,500	2,500	950	150	1,000	8,200	11,300
PC-5223	mm	3,500	5,400	5,500	2,500	950	150	1,000	10,200	13,100
PC-6023	mm	3,500	5,400	5,500	2,500	950	150	1,000	11,200	15,000
PC-3226	mm	3,800	5,400	5,800	2,800	950	150	1,000	6,200	8,700
PC-4226	mm	3,800	5,400	5,800	2,800	950	150	1,000	8,200	11,300
PC-5226	mm	3,800	5,400	5,800	2,800	950	150	1,000	10,200	13,100
PC-6026	mm	3,800	5,400	5,800	2,800	950	150	1,000	11,200	15,000

Model	Unit	PC-3223 / 26	PC-4223 / 26	PC-5223 / 26	PC-6023 / 26
Travel					
X axis	mm	3,200	4,200	5,200	6,000
Y axis	mm	2,300 / 2,600			
Z axis	mm	1,000 (1,200 opt.)			
Spindle nose to table	mm	150 - 1,150 (150 - 1,350 opt.)			
Distance between columns (max. workpiece width)	mm	2,500 (2,450) / 2,800 (2,750)			
Table					
Table dimensions (L)	mm	3,000	4,000	5,000	6,000
Table dimensions (W)	mm	2,000			
T-slot (width x number x pitch)		28 x 11 x 180			
Max. table load	kg	11,000	13,000	15,000	17,000
Spindle					
Spindle motor (cont./30 minute rate)	kW	18.5 / 22 (22 / 26 opt.)			
Spindle speed (gear box)	rpm	6,000 (8,000 opt.)			
Spindle taper		BT-50 / ISO-50 / CAT-50			
Feed					
Rapid feed-rate (X/Y/Z)	m/min	12 / 12 / 12	10 / 12 / 12		8 / 12 / 12
Cutting feed-rate	mm/min	7,000			
Accuracy					
Positioning accuracy	mm	±0.005 / 300 ; ±0.015 / full travel			
	mm	P0.035		P0.045	
Repeatability	mm	±0.003			
	mm	Ps0.028		Ps0.03	
ATC					
Tool storage capacity	pcs	32T (40T / 60T / 90T opt.)			
Max. tool length	mm	350			
Max. tool weight	kg	20			
Tool size (full tools)	mm	Ø125			
Max. tool size (next pockets empty)	mm	Ø245			
Other					
Power consumption	kVA	65			
Compressed air	kg/cm²	6.5			
Machine weight (approx.)	tons	35 / 37	39 / 41	45 / 47	50 / 52
Machine floor space (L x W x H)(approx.)	m	10.4 x 6.5 (6.8) x 5.4	13.0 x 6.5 (6.8) x 5.4	14.8 x 6.5 (6.8) x 5.4	16.7 x 6.5 (6.8) x 5.4

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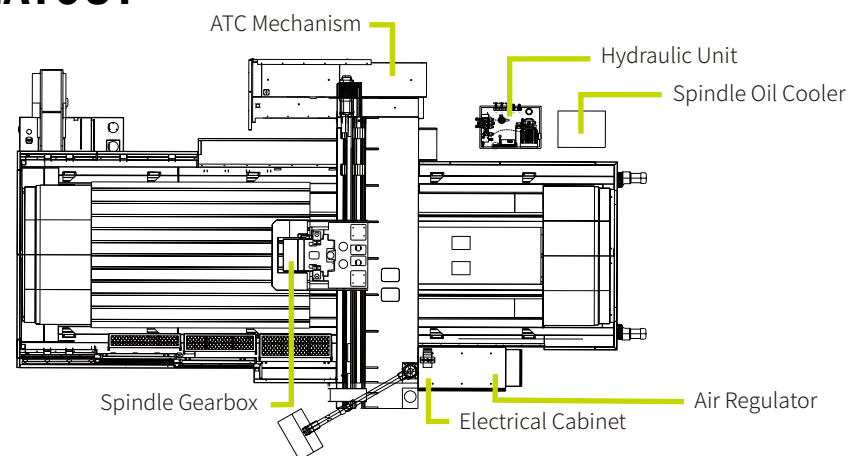
ACCESSORY LIST



Category	Description	FS series	PC series
Controller	FANUC 0i-MF Plus controller	●	●
	FANUC 31i-MB controller	○	○
	MITSUBISHI M80 / M830 controller	○	○
	SIEMENS 828 / 840D controller	○	○
	HEIDENHAIN TNC640 controller	○	○
Spindle	18.5/22 kW spindle motor	●	●
	22/26 kW spindle motor	○	○
	8,000 2-step gear drive spindle	○	○
	6,000 2-step gear drive spindle	●	●
	8,000 / 10,000rpm direct drive spindle	○	○
Z travel extension / higher column	Z travel 800mm	●	X
	Z travel 1,000mm	○	●
	Z travel 1,200mm	X	○
	100mm higher column (standard Z travel)	X	○
	200mm higher column (standard Z travel)	○	○
ATC	Automatic tool changer 32 tools	●	●
	Automatic tool changer 40/60/90 tools	○	○
	Semi splash guard	○	○
Splash guard	Fully enclosed splash guard (roof excluded)	●	●
	Fully enclosed splash guard (roof included)	○	○

Optional : ○ Standard: ● N/A : X

ACCESSORY LAYOUT



Category	Description	FS series	PC series
Mechanical	X / Y / Z axes absolute pulse coder	●	●
	Rigid tapping	●	●
	Twin hydraulic cylinders	●	●
	Nitrogen balancing system	●	●
	Automatic lubrication system	●	●
	Spindle oil cooler	●	●
	Air blast through spindle	●	●
	Manual pulse generator	●	●
	Working lamp	●	●
	3-color alarm lamp	●	●
	Heat exchanger for electrical cabinet	●	●
	Water gun and air gun interface	●	●
	Cutting coolant unit	●	●
	Twin auger chip removal system	●	●
	Belt type chip conveyor with cart	●	●
	Sub-table	○	○
	3 axes manual pulse generator for mold processing	○	○
	Coolant through spindle at 20 / 40 / 70 bar	○	○
	Coolant through tool holder interface	○	○
	Air conditioner for electrical cabinet	○	○
Measurement	Oil skimmer	○	○
	Transformer	○	○
	Oil mist device	○	○
Measurement	HEIDENHAIN linear scale	○	○
	Automatic tool measuring system	○	○
	Automatic work piece measuring system	○	○
4 th axis function	CNC rotary table	○	○
	4 th axis preparation	○	○
Others	Leveling bolts & blocks	●	●
	Tool box	●	●
	CE norm	○	○