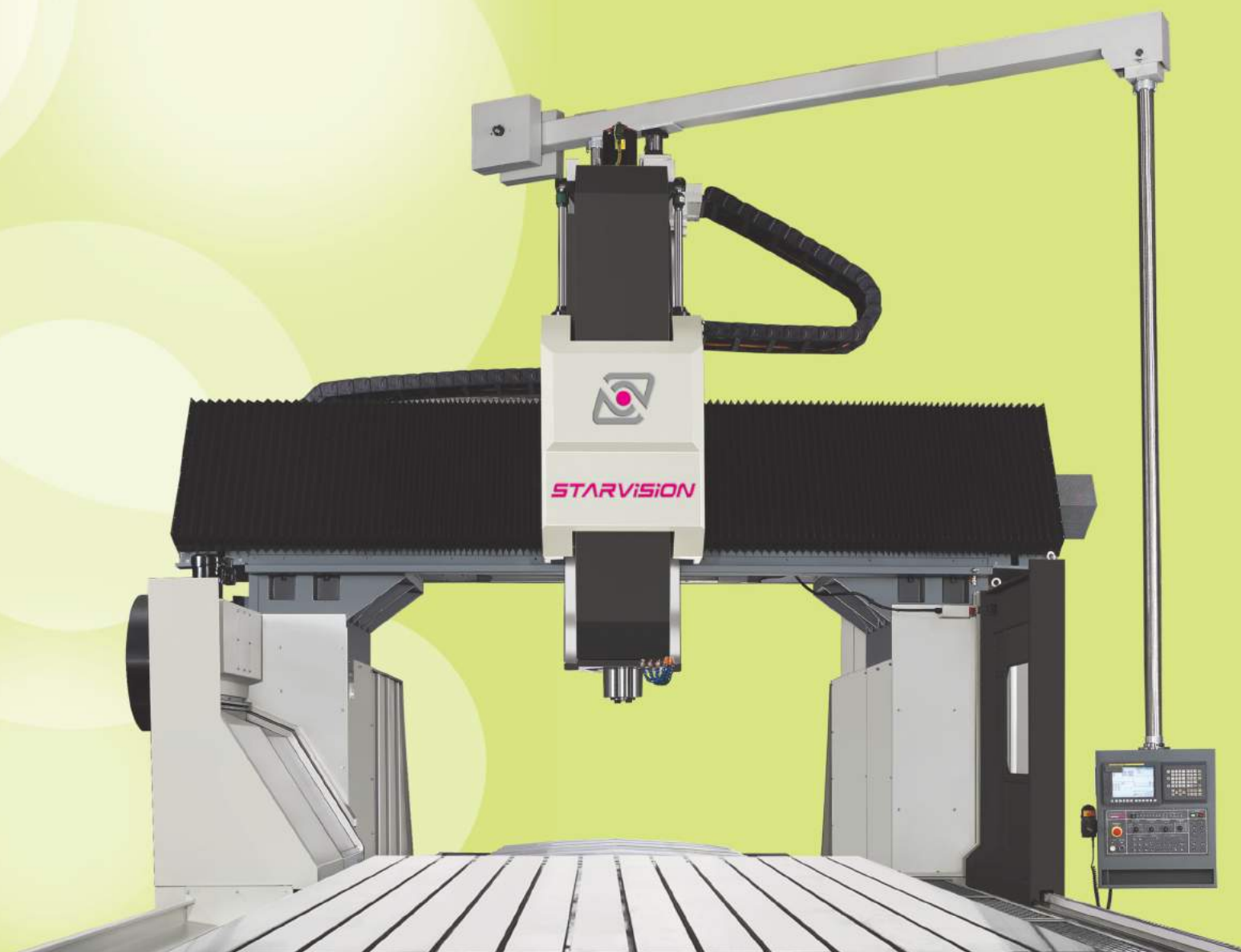


# CNC Double Column Machining Center

Box Way Series





## PURSUE EXCELLENCE. STRIVE TO DO BETTER.

Starvision carries 20 years of professional experience in R&D, assembly, quality control and marketing Double Column Machining Center.

In 2008, we have signed a technical cooperation agreement with well-known German turning machine manufacturer A. 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.

**Concentrate on the quality of our product and fulfill the needs of our customers.**









Our goal is, with support from the best suppliers, making a concerted effort to offer the best Starvision Double Column Machining Center to our customers.

**SUSTAINABILITY**  
More than selling products,  
Starvision persists in sustainable operation.

**SHARING**  
More than selling products,  
Starvision shares professional experience.

**INTEGRITY**  
More than selling products,  
Starvision fulfills the promise.

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

 <p><b>Box way</b> <b>FS series</b></p> <p>Z-axis 800 (opt.1,000) mm Y-axis 1,600 / 2,000mm X-axis 2,200 - 4,200mm</p>	 <p><b>Box way</b> <b>PC series</b></p> <p>Z-axis 1,000 (opt.1,200) mm Y-axis 2,300 / 2,600mm X-axis 3,200 - 6,000mm</p>
 <p><b>Linear way</b> <b>DX series</b></p> <p>Z-axis 800 (opt.1,000) mm Y-axis 1,600 / 2,000mm X-axis 2,200 - 4,200mm</p>	 <p><b>Linear way</b> <b>LG series</b></p> <p>Z-axis 1,000 (opt.1,200) mm Y-axis 2,300 / 2,600mm X-axis 3,200 - 6,000mm</p>
 <p><b>Linear way</b> <b>FG series</b></p> <p>Z-axis 1,000 (opt.1,200) mm Y-axis 2,600mm X-axis 3,200 - 10,200mm</p>	 <p><b>Linear way</b> <b>LS(I) series</b></p> <p>Z-axis 1,000 (opt.1,200) mm Y-axis 3,000 / 3,500mm X-axis 4,200 - 10,200mm</p>
 <p><b>Linear way</b> <b>LS(II) series</b></p> <p>Z-axis 1,000 (opt.1,200 / 1,500) mm Y-axis 3,000 / 3,500 / 4,000 / 4,500mm X-axis 4,200 - 10,200mm</p>	 <p><b>Crossbeam Moving</b> <b>SBM series</b></p> <p>Z-axis 1,000 (opt.1,200 / 1,500) mm W-axis 1,000 (opt.1,250 / 1,500) mm Y-axis 2,800 - 5,300mm X-axis 4,200 - 10,200mm</p>

# FS-SERIES

Box Way Series

## MORE RIGIDITY

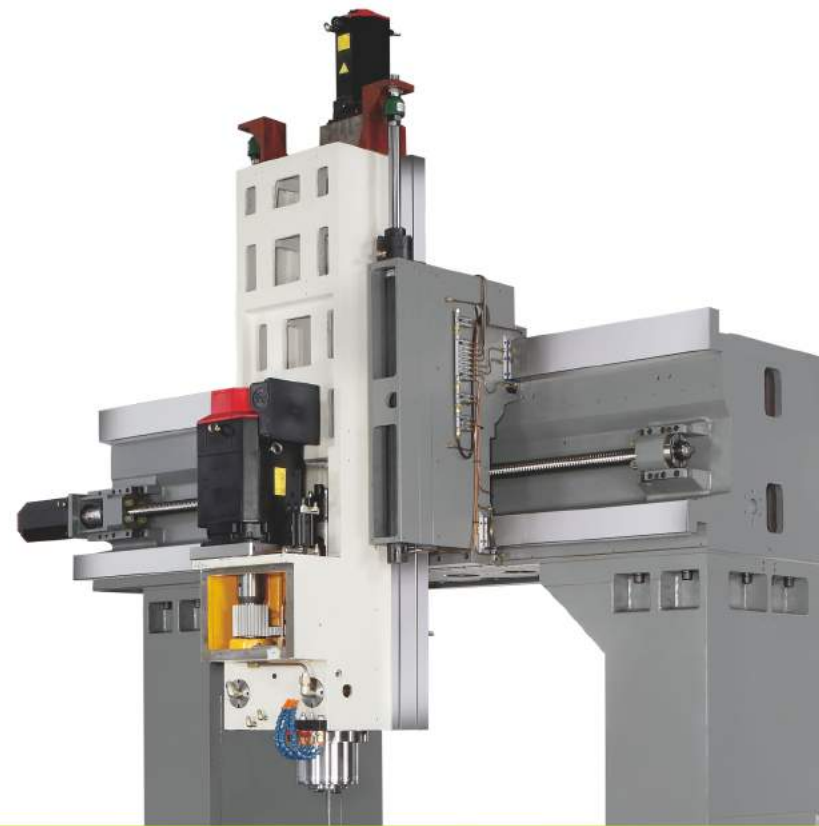
The structural design of FS series are processed by the 3D finite element analysis (FEA) which makes sure the optimum structural patterns and stable cutting rigidity. With high quality cast iron frame, three axes boxway design, and reliable Turcite B as the medium to absorb the vibration, we can ensure you to experience the best and stable machining performance.



2 x 1.4m - 4 x 1.7m



1.7m / 2.1m



# stabil

(Fully enclosed splash guard with roof is optional)

# PC-SERIES

Box Way Series

## BUILT FOR HEAVY CUTTING

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.



3 x 2m - 6 x 2m



2.5m / 2.8m



# kraftvoll

(Semi splash guard and higher suspension type controller panel are optional)



## High Precision Spindles

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



Long nose

Gear drive spindle



Short nose

Gear drive spindle



## 2-step Gearbox

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



Direct drive spindle BT 50

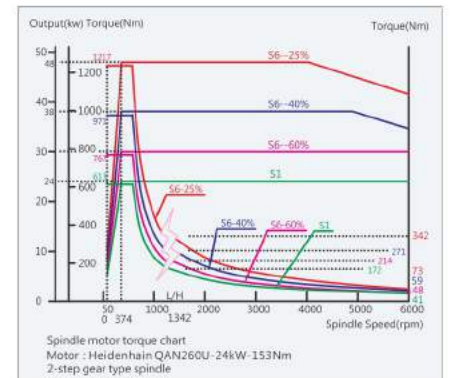
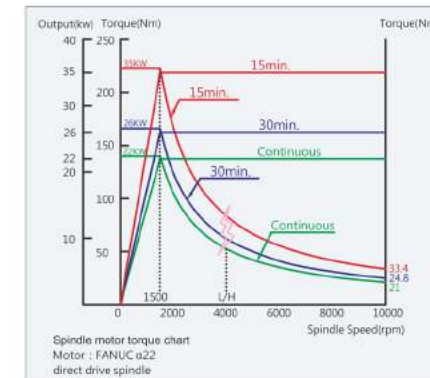
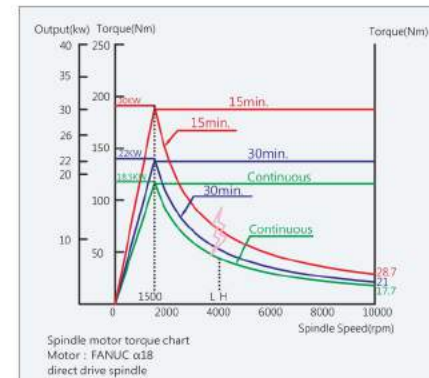
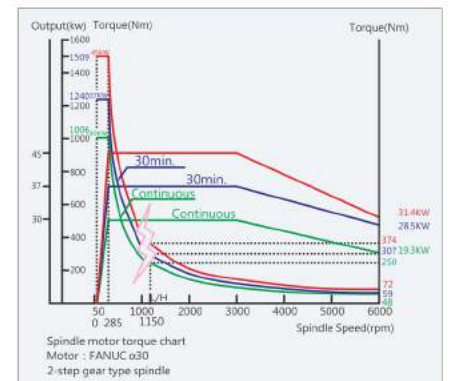
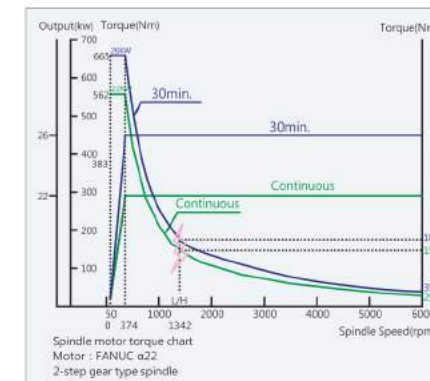
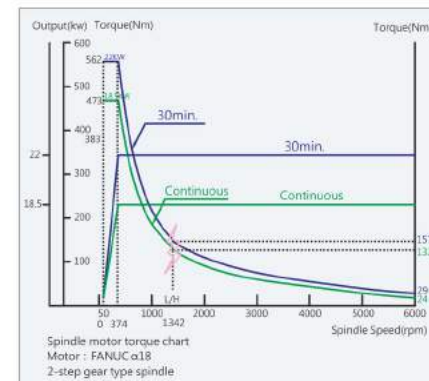


Direct drive spindle BT 40

(Big ceramic bearing)

## All New Headstock Design Offers Various Spindle Torques

### Spindle Torque





**Safety Walkway**

Standard for user-friendly operation and safety



**Organized Electrical Cabinet**

- Conforms to CE safety regulation.
- Fully enclosed design.
- Equipped with a heat exchanger to maintain stable temperature.
- Alarm message and self-diagnosis functions provide safety protection during operation and maintenance.



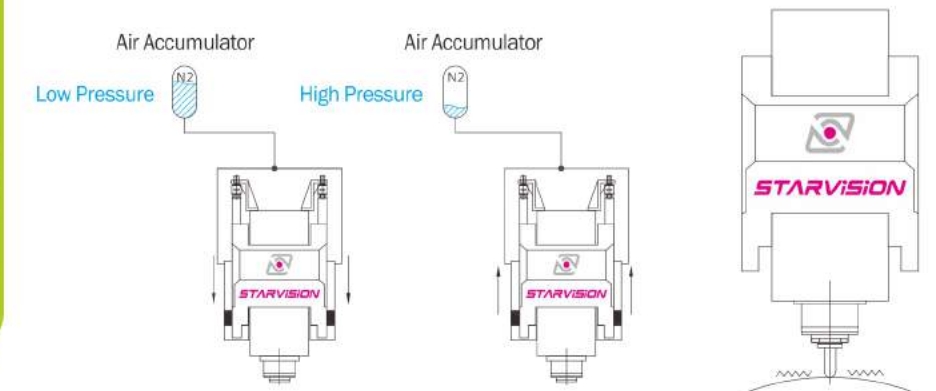
**Convenient Quick Plug**

- One step connection
- Easy maintenance
- Great protection



**Energy Saving Z Axis Balance System**

Z axis movement is counter-balanced by twin hydraulic cylinder and 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%.



# VARIOUS MILLING HEADS

## Automatic Clamping



## Automatic Indexing & Manual Clamping



## Manual Head



**Testing Machine**

We have this special testing machine to make sure every milling head you purchased is carefully assembled and fully tested at Starvision. Moreover, this machine is also participated in continuing development and improvement of our milling heads.

## Splash Guard Selection



Semi Splash Guard



Fully Enclosed Splash Guard Without Roof



Fully Enclosed Splash Guard With Roof

## AC Series Milling Heads

With AHS Automatic head station, a fully automatic solution realizes optimum machining efficiency.

- AHS(H)- one head and one cover at operator side
- AHS(S)- multi heads and one cover at ATC side



Automotive Industry



Aerospace Industry

Electronics Industry

Mold Industry



Industrial Machining

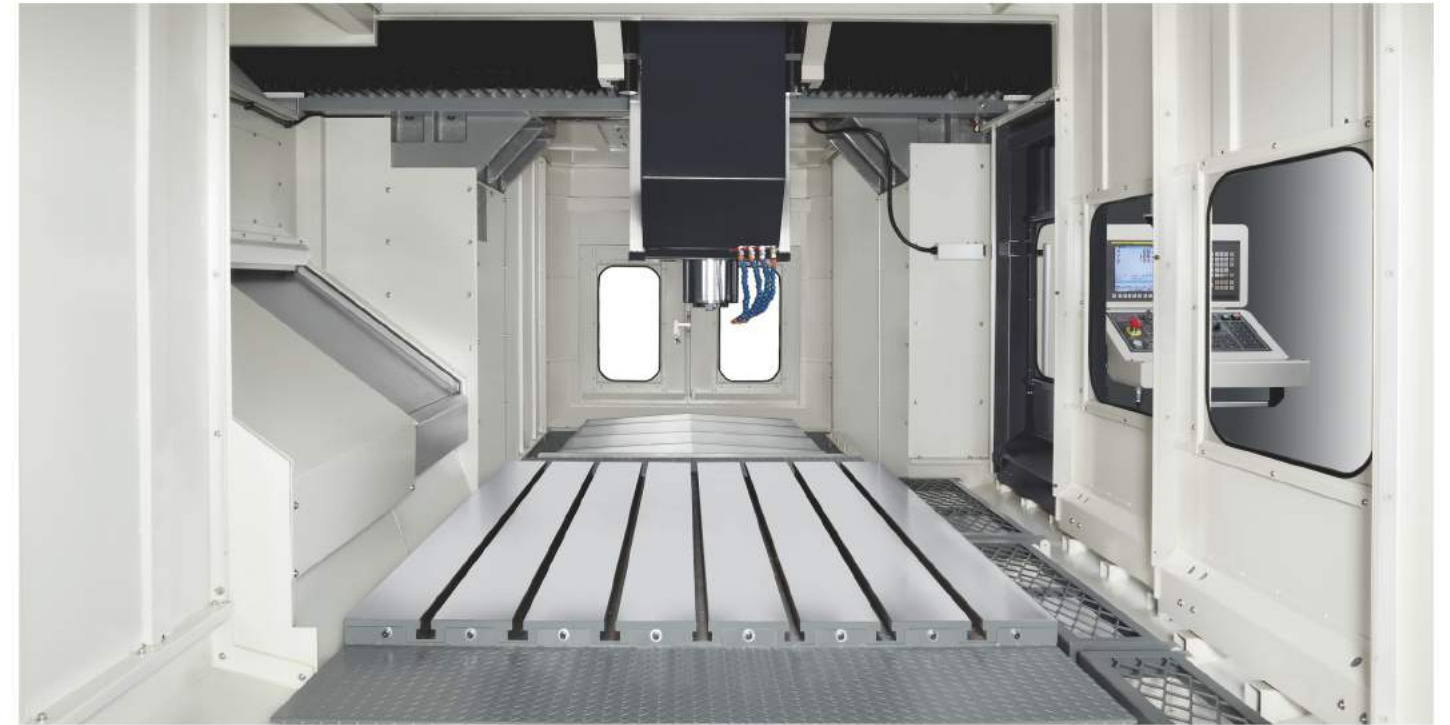
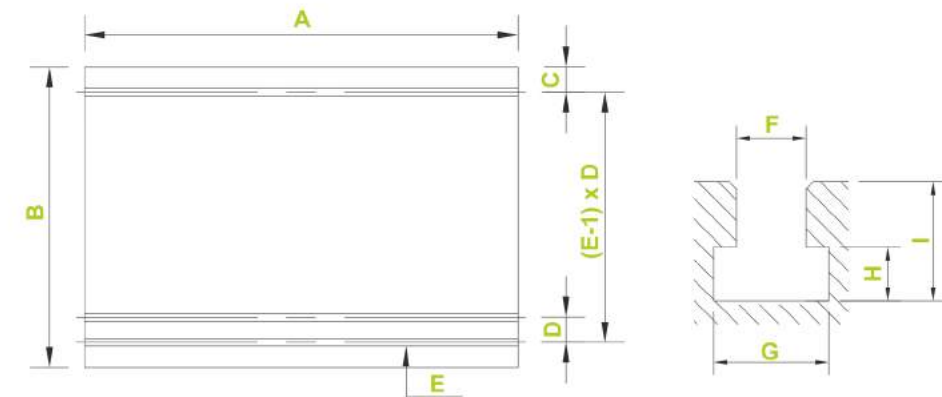


Table and T-Slot Dimensions

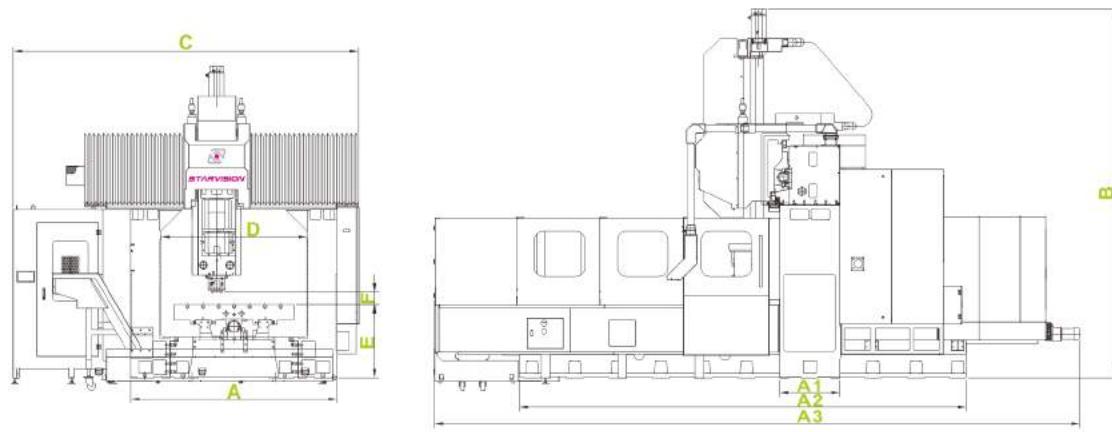


Model	Unit	A	B	C	D	E	F	G	H	I
FS-2216	mm	2,000	1,400	160	180	7	22H8	38	16	38
FS-2716	mm	2,500	1,400	160	180	7	22H8	38	16	38
FS-3216	mm	3,000	1,400	160	180	7	22H8	38	16	38
FS-4216	mm	4,000	1,400	160	180	7	22H8	38	16	38
FS-2220	mm	2,000	1,700	130	180	9	22H8	38	16	38
FS-2720	mm	2,500	1,700	130	180	9	22H8	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



# MACHINE SPECIFICATIONS

## FS series

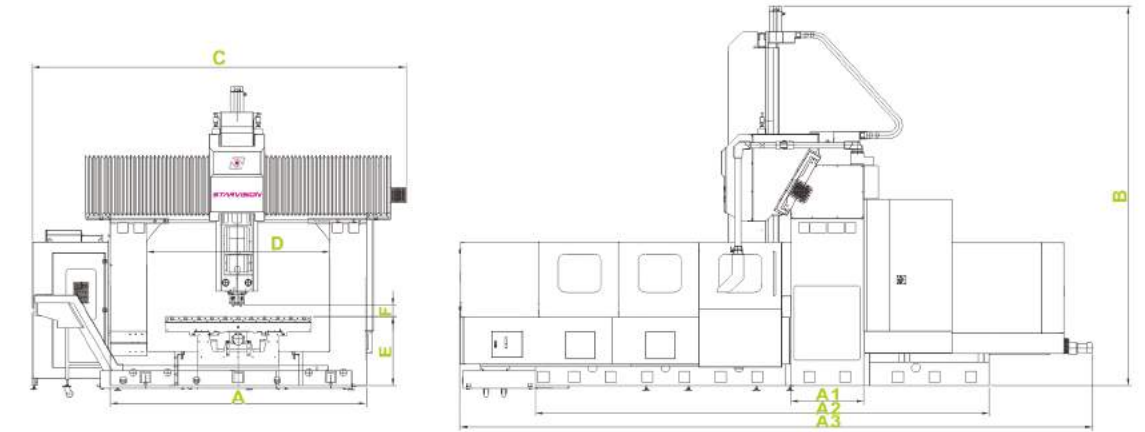


Model	Unit	A	B	C	D	E	F	A1	A2	A3
FS-2216	mm	2,400	4,700	4,100	1,700	850	150	700	4,200	6,700
FS-2716	mm	2,400	4,700	4,100	1,700	850	150	700	5,200	7,700
FS-3216	mm	2,400	4,700	4,100	1,700	850	150	700	6,200	8,700
FS-4216	mm	2,400	4,700	4,100	1,700	850	150	700	8,200	10,700
FS-2220	mm	2,800	4,700	4,500	2,100	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 rated)	kW	18.5 / 22 (22 / 26 opt.)			
Spindle speed (gear box)	rpm	4,500 (6,000 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 (24T / 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/cm <sup>2</sup>	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 rated)	kW	18.5 / 22 (22 / 26 opt.)			
Spindle speed (gear box)	rpm	4,500 (6,000 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 (24T / 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/cm <sup>2</sup>	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

※ All specification are subjected to change without prior notice.

# ACCESSORY LIST



Category	Description	FS series	PC series
Controller	FANUC Oi-MF controller	●	●
	FANUC 31i-MB controller	○	○
	MITSUBISHI M70 controller	○	○
	SIEMENS 840D controller	○	○
	HEIDENHAIN TNC640 controller	○	○
Spindle	18.5/22 kW spindle motor	●	●
	22/26 kW spindle motor	○	○
	4,500 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)	○	○
	300mm higher column (standard Z travel)	○	○
ATC	Automatic tool changer 32 tools	●	●
	Automatic tool changer 24/40/60 tools	○	○
	Automatic tool changer 90 tools	X	○
Splash guard	Semi splash guard	○	○
	Fully enclosed splash guard (roof excluded)	●	●
	Fully enclosed splash guard (roof included)	○	○
Milling head function	Manual: 90° angular milling head / high-speed 2-axis head / 2-axis head / extend head / boring head	○	○
	Semi-automatic: 90° angular milling head / 2-axis head / extend head / boring head-Vertical / Horizontal ATC and AHS inapplicable	○	○
	Automatic: 90° angular milling head / 2-axis head / extend head / boring head	○	○
	Vertical / Horizontal automatic tool changer (40 / 60 / 90 tools)	X	○
	Manual head station (Table type)	○	○
	Manual head station (Arm type)	○	○
Automatic head station	X	○	

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	●	●
	RS-232 interface	●	●
	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	○	○
	Oil skimmer	○	○
	Transformer	○	○
Oil mist device	○	○	
Measurement	HEIDENHAIN linear scale	○	○
	Automatic tool measuring system	○	○
	Automatic work piece measuring system	○	○
4 <sup>th</sup> axis function	CNC rotary table	○	○
	4 <sup>th</sup> axis preparation	○	○
Others	Leveling bolts & blocks	●	●
	Tool box	●	●
	CE norm	○	○

Optional: ○ Standard: ● N/A: X