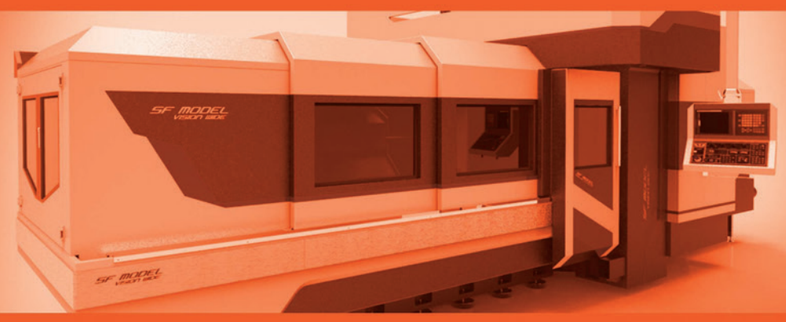
SF SERIES



WIDEN YOUR CUTTING VISION

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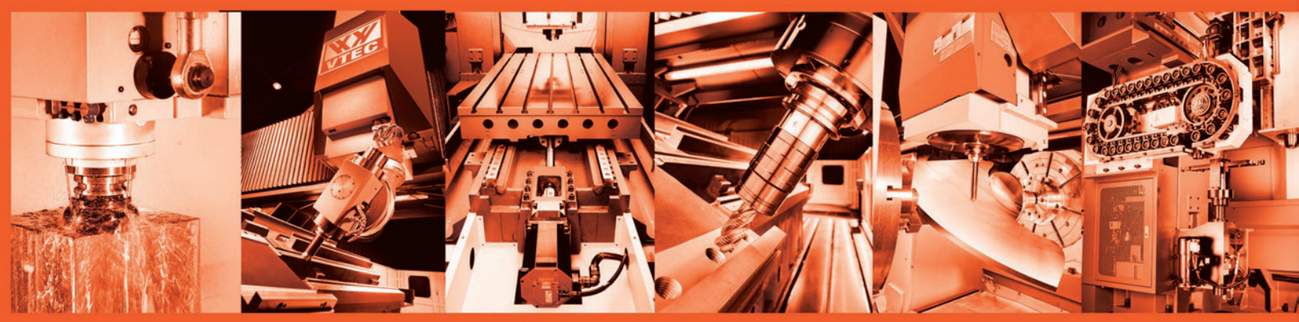
Web: www.visionwide-tech.com

TAIWAN EXCELLENCE

ISO9001

SF SERIES



High Speed Double Column Machining Center

High Speed , High Precision , High Performance

VTEC

VISION WIDE TECH CO., LTD.

SF SERIES

SF High Speed Double Column Machining Center

SF series is designed for

• being the most proper devices in parts & mold industry to meet high accuracy and high performance requirement.

• being the key technical indicators and high speed machining.

Rapid traverse: 24m/min

Cutting feed rate: 10m/min

High torque gear type spindle: 4,000~6,000rpm

X-axis travel: 2.1/2.6/3.1/4.1m

Y-axis travel: 1.2/1.6/2.0/2.3/2.7m

Z-axis travel: 800/1,020mm

Port width: 1,380/1,700/2,100mm

Roller type linear guide way for XY-axis

Box guide way for Z-axis

Photo: SF-2116 model with full type splash guard without roof

SF SERIES

SF High Speed Double Column Machining Center

SF series is designed for

• being the most proper devices in parts & mold industry to meet high accuracy and high performance requirement.

• being the key technical indicators and high speed machining.

Rapid traverse: 24m/min

Cutting feed rate: 10m/min

2-step gear type spindle:3000~6000rpm

Direct driven type spindle: 10,000~15,000rpm

Built-in type spindle: 18,000rpm

X-axis travel: 2.1/2.6/3.1/4.1m

Y-axis travel: 1.2/1.6/2.0/2.3/2.7m

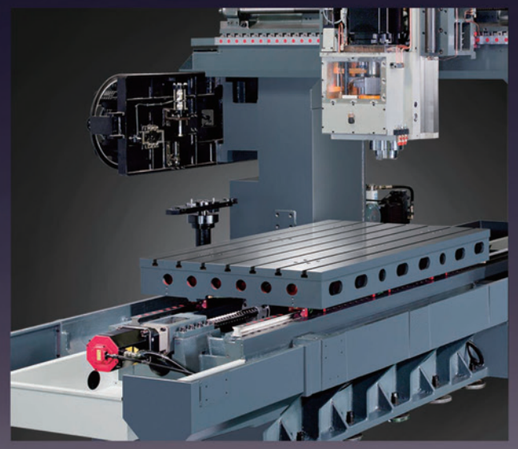
Z-axis travel: 800/1,000mm

Port width: 1,380/1,700/2,100mm

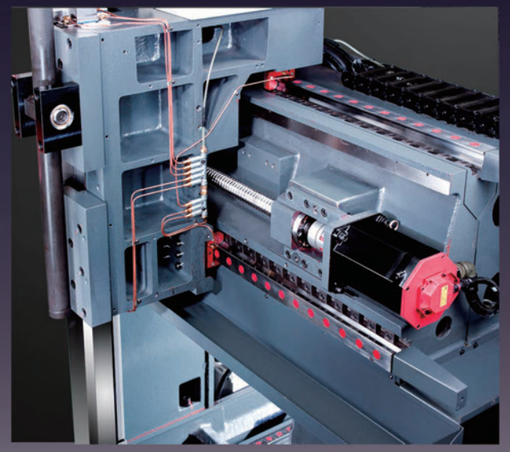
Roller type linear guide way for XYZ-axis

Photo: SF-3116 model with full type splash guard with roof

Optimal rigid structure configuration



Ultra-wide base of X-axis with thick high rigidity table enhances table load capacity and ensures accuracy at the best dynamic level .



Stepped design of Y-axis making guide ways closed to beam and spindle effectively increases rigidity of cutting load.

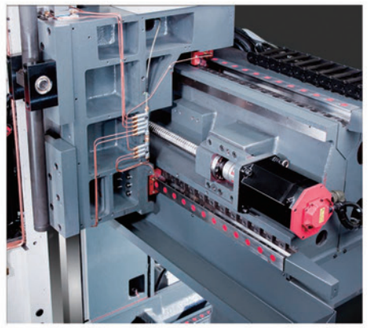
Large span dual guide way supporter on base effectively ensures table load and straightness.

With Vision Wide high precision tradition, thick and lightweight structure design offers heavy cutting rigidity in high speed cutting.

Photo: SF-2112 model with built-in type spindle 18,000rpm

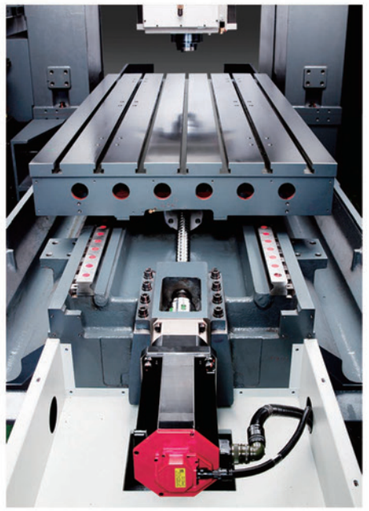
SF SERIES

Optimal precision mechanism configuration



High responding transmission mechanism design equips with high power motor to present outstanding acceleration/ deceleration dynamic machining performance.

Y-axis ball screw is driven by motor directly to reduce indirect transmission error from parts and effectively to improve positioning accuracy of Y-axis.



Without backlash gear deceleration mechanism transmission in Y-axis effectively enhances axial thrust three times.

Unlike traditional belt type transmission mechanism configuration in X,Y-axis, it effectively reduces the error from belt type transmission and enhances high speed transmission feed positioning accuracy and repeatability.

Feed axes in whole machine are equipped with external encoder feedback device.

X,Y-axis use high rigidity roller type linear ways, providing static and dynamic rigidity more than 30% of ball type linear way.

Z-axis 15m rapid traverse, 0.5G high acceleration/deceleration performance to achieve contour accuracy of high speed mold machining.

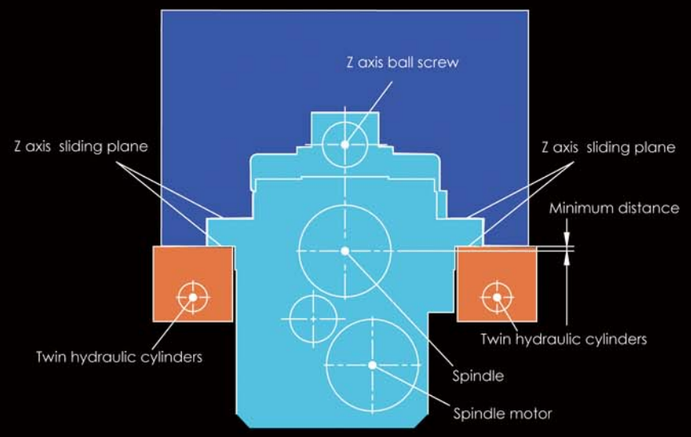
Economical twin hydraulic cylinders with pressured air assistance high speed balancing system achieve:

- Smoother movement
- Z-axis retract function at power failure
- Excellent performance for power saving

- Full casting structure provides long term accuracy stability.
- Ultra-wide column structure with large dimension surface provides the best rigid support to spindle and YZ-axis.
- Spindle and thermal compensation function for environmental temperature change can be chosen to ensure the accuracy change within 0.02mm which influenced by environmental temperature change.

Photo:SF-2112 model, gear type spindle 6,000rpm

SF SERIES



Optimal central symmetric spindle system design Strong, stable, durable, and scalability

Minimum distance between spindle center and Z-axis roller way not only shortens cutting lever arm but also significantly improves cutting rigidity.

Symmetric spindle gravity configuration, Z-axis ball screw, spindle center and spindle motor configure at gravity point of Z-axis box structure centerline provide the best feed precision and thermal balance of Z-axis.

Gear spindles made of Japan-made JIS-0 grade precision gears are with high precision, low noise and high efficiency transmission performance.

2-step gear type spindle provides high torque and high speed characteristics to ensure heavy cutting ability on surface finish of high speed cutting.

Direct driven and built-in type high speed spindle with high rigidity and low friction roller linear way of Z-axis improve excellence performance of high acceleration/deceleration and micro feed.

Heavy cutting ability

End milling:
tool dia.:63mmx9 inserts
cutting speed:800rpm
cutting feed:400mm/min
cutting depth:40mm
cutting width:20mm
removal rate:240cc/min

Face milling:
tool dia.:125mm
cutting feed:1,000mm
cutting width:100mm
cutting depth:7.5mm
removal rate:750cc/min

Gun drilling:
tool dia.:69mm
cutting speed:880rpm
cutting feed:80min/min
coolant through spindle

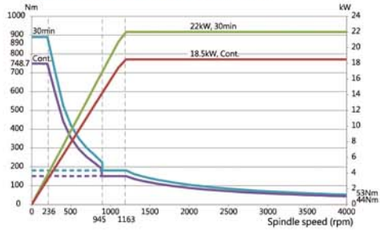
High speed cutting ability

Face milling:
tool dia.:40mm
cutting feed:1,000mm
cutting depth:2mm
removal rate:850cc/min
Test specification: 22/26kW/ 4500rpm spindle

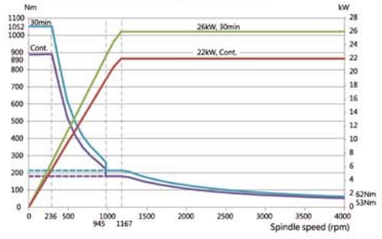
Spindle power and torque chart

3,000, 4,000, 5,500, 6,000, 8,000, 10,000, 18,000rpm spindle speed can be chose according to different kind of machining.

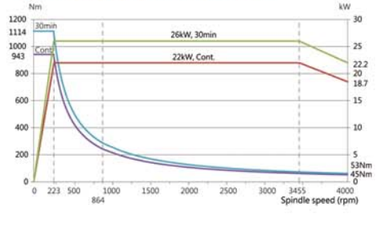
Fanuc a18-18.5/22 kW box way gear type 4,000rpm



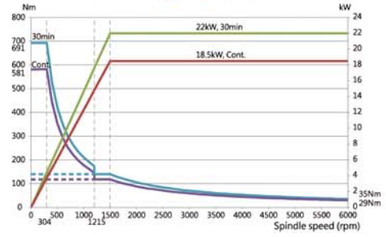
Fanuc a22-18.5/22 kW box way gear type 4,000rpm



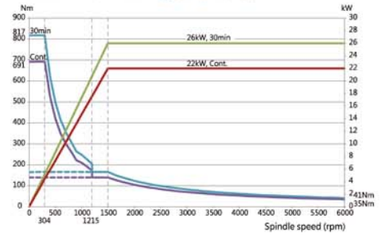
Fanuc a22-22/26 kW linear way gear type 4,000rpm



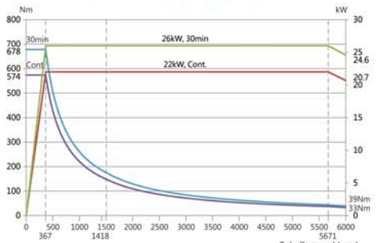
Fanuc a18-18.5/22 kW box way gear type 6,000rpm



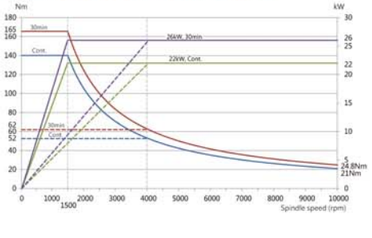
Fanuc a22-18.5/22 kW box way gear type 6,000rpm



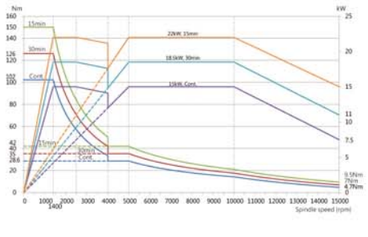
Fanuc a22-22/26 kW linear way gear type 6,000rpm



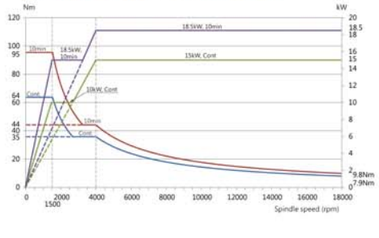
Fanuc a22-22/26 kW linear way direct-driven 10,000rpm



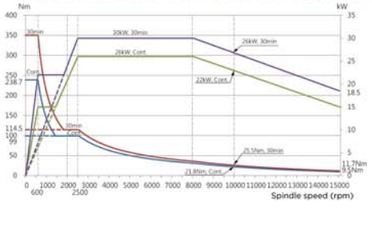
Fanuc aiiT15-15/18.5 kW linear way direct-driven 15,000rpm



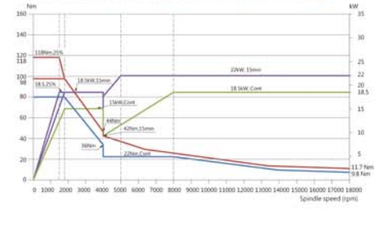
Fanuc BiI112M-15/18.5 kW linear way built-in 18,000rpm



Fanuc a IiL26-L:15/22 H:26/30 kW linear way direct-driven 10,000/15,000rpm



Fanuc BiI112L-L:15/18.5 H:18.5/22 kW linear way built-in 18,000rpm

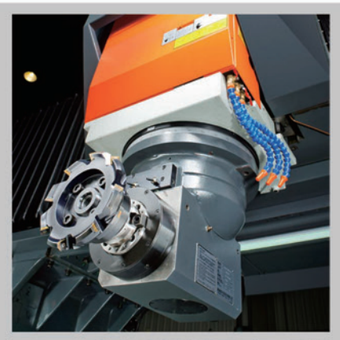


For other specification requirements, please contact our sales representatives.

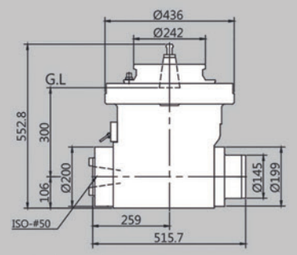
SF SERIES

- Large diameter indexing mechanism
- B/C-axis auto 5° indexing
- C-axis auto 1° indexing
- Auto tool clamping device
- Flood coolant function
- AC 90° angular head with coolant through spindle

Spindle power and torque chart

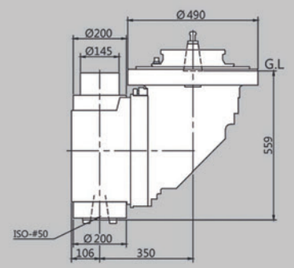


AC90 degree angular head



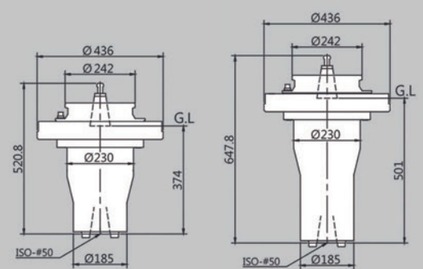
AC90 degree angular head	
Tool clamping:	Auto hydraulic clamping
Head clamping:	Auto hydraulic clamping
C-axis index:	Auto 1°/5°
Machining coolant:	External nozzle/ coolant
Max. power:	26kW
Max. speed:	3000rpm

AC 2-axis head



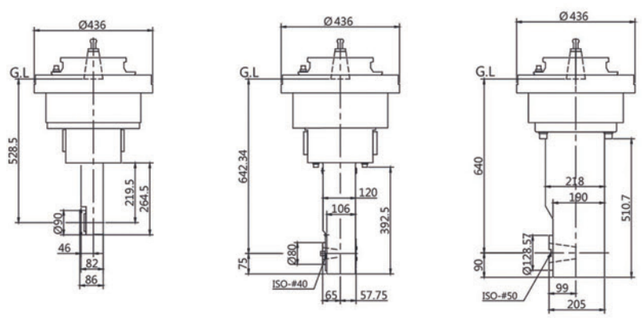
AC90 degree angular head	
Tool clamping:	Auto hydraulic clamping
Head clamping:	Auto hydraulic clamping
C-axis index:	Auto 1°/5°
B-axis index:	Auto 5°(manual 1°)
Machining coolant:	External nozzle
Max. power:	26kW
Max. speed:	3000rpm

AC extended head



AC extended head	
Tool clamping:	Auto hydraulic clamping
Head clamping:	Auto hydraulic clamping
Max. power:	26kW
Max. speed:	4000rpm

Various types of milling heads

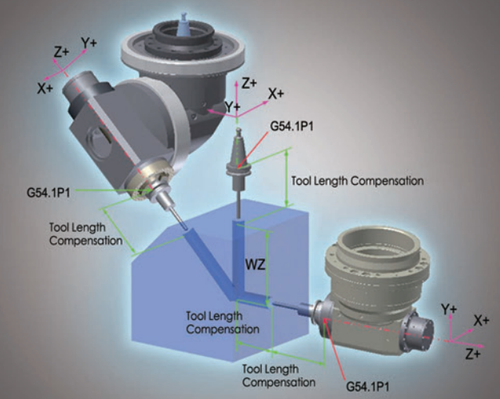


Various types of milling head	
Tool clamping:	Manual
Head clamping:	Auto hydraulic clamping
C-axis index:	Auto 1°/5°
Max. power:	26 kW
Max. speed:	Over 800rpm

Intelligent multi-faced machining

Tool center point management TCPM

Each type of head attachment with tool center point management, takes vertical workpiece as origin benchmark, and converts the workpiece coordinates to any new specify plane of workpiece coordinates automatically.



Head attachment dimensions correction

Intelligent compensation on each type of head attachments dimensions, rotation center, tool size, workpiece coordinates system correction management, and greatly simplifies the complexity of programming and operation to achieve perfect auto multi-angle machining.

Auto coordinates tool axis 3D conversion

3-axis mechanical coordinates system can be automatically converted to machining coordinates system, easily achieving face milling, end milling, drilling and rigid tapping machining operations.

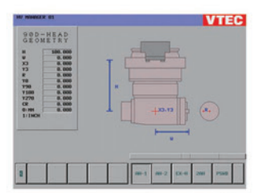
Heavy cutting ability

Through cutting depth test to show excellent heavy cutting rigidity.

Head attachment	Extended head	90 degree angular head	2-axis head
Tool type	BT50 face milling tool-diameter Ø125/5 edge		
Cutting material	S45C		
Spindle speed(rpm)	600		
Machining width(mm)	100		
Feed rate(mm/min)	1000		
Machining depth(mm)	5	7	6
Removal rate(cc/min)	500	700	600

FX500 5-face machining function:

- V/H tool diameter correction
- V/H spindle origin correction
- V/H working coordinate affine transformation
- V/H 3D rigid tapping
- V/H manual interrupting



Safe, friendly and reliable operation interface

Safe and reliable electrical circuit design

CE compliant safety circuit design

CE compliant EU regulation electrical parts for whole machine

Auto locking operation door protection switch

Z-axis retract function at power failure

Anti-interference design on motor power cables

Overload and phase protecting device on servo motors

3-axis over travel and hard limit protection

Heat exchanger for electrical cabinet

Main power protecting device

EU regulation softkey operation panel

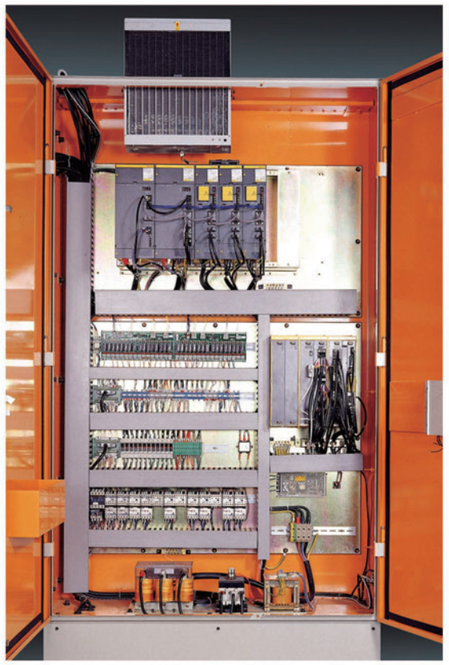
Ethernet and RS232 interface

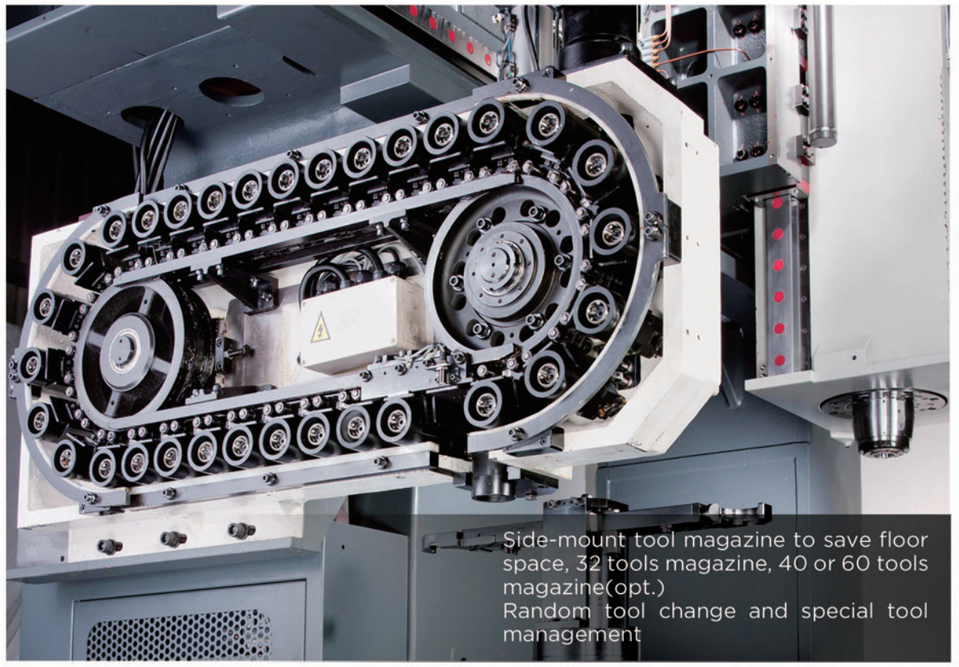
USB port

Sectional type design of sliding door type at operator's side extends the space for workpiece loading.

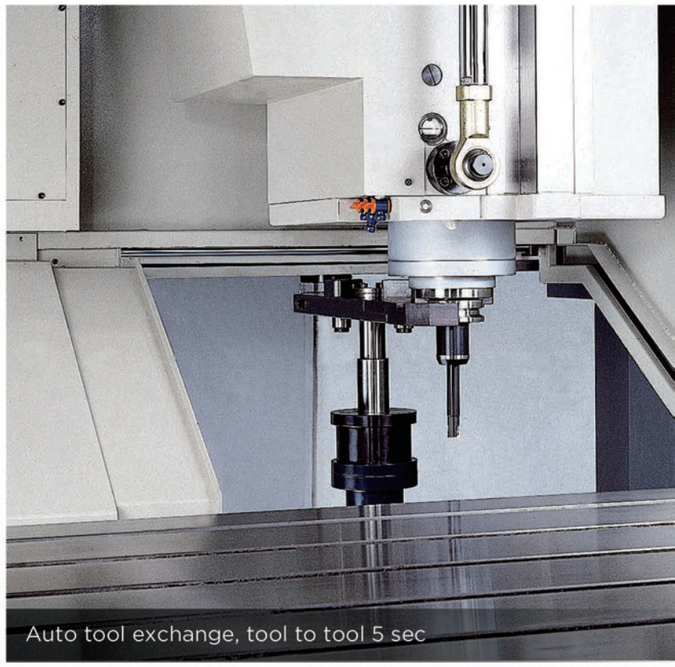
Open-outward doors at both ends of the machine offer safety and large door open space.

Overhead pendulum type operation panel for users offers an easy-measuring, easy-programming, and safe working environment.

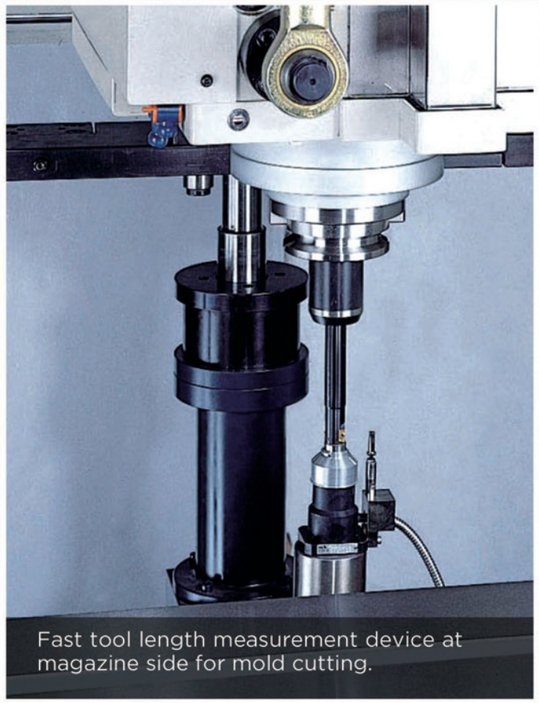




Side-mount tool magazine to save floor space, 32 tools magazine, 40 or 60 tools magazine(opt.)
Random tool change and special tool management



Auto tool exchange, tool to tool 5 sec

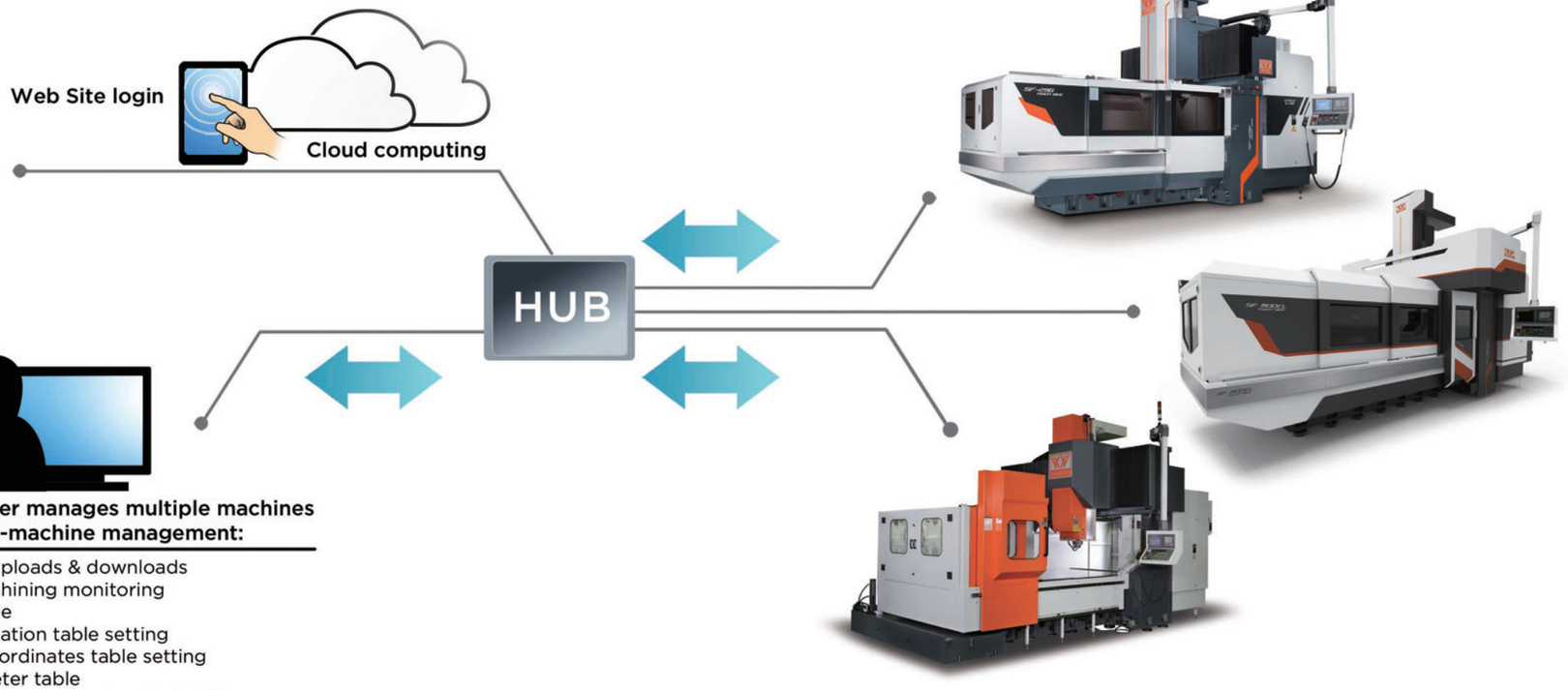


Fast tool length measurement device at magazine side for mold cutting.

Fluid nozzles for spindle provides best spray angle. (opt. for no head attachment)

Spindle power and torque chart

VW-FRM software is designed to provide intelligent operation, efficient management and real time service. Through network and cloud computing service to provide one to multi-machine program management, and real time monitoring to operational status of each machine.

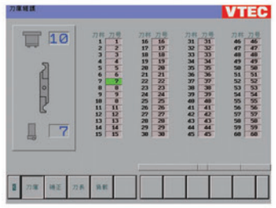


One computer manages multiple machines
One to multi-machine management:

NC program uploads & downloads
Real time machining monitoring
Alarm message
Tool compensation table setting
Workpiece coordinates table setting
Marco parameter table
Alarm by short message service (opt.)
Machine utilization rate statement (opt.)
VW-FX remote monitoring function

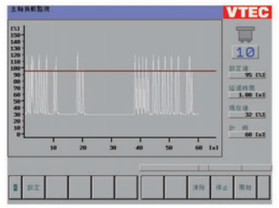
VW-FX intelligent function

Tool List



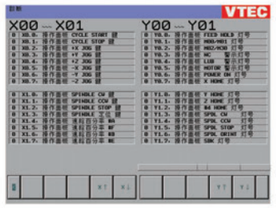
Tool table data
Tools status refer to ATC

Tool Load Manager



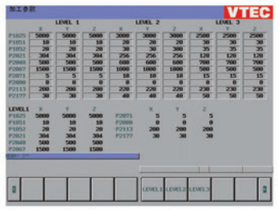
Over load alarm for each tool
Setting range 0-120%
No need any further external hardware

Machine Status



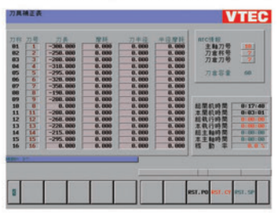
Fast mappings of I/O and program comment
Quick maintenance

Machining Parameter



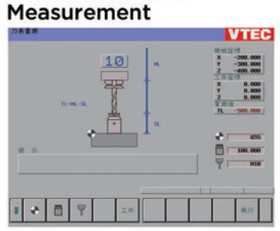
Additions 3 parameters for machining
The best efficiency machining modules
The highest precision machining modules
The smoothest machining modules

Tool Compensation



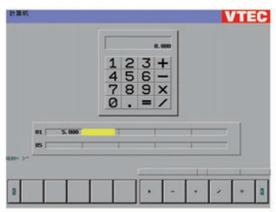
Tool compensation data
Duty rate information

Manual Tool Compensation & Measurement



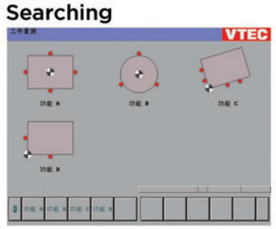
Fast tool compensation
Manual tool compensation

Calculator



+,−,×,÷arithmetic operations
Sine, cosine and tangent function
10 sets memory registering

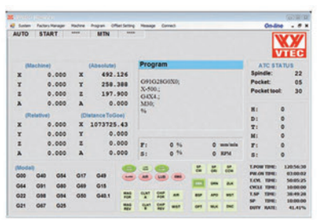
Work Piece Coordinate Searching



Get the middle point of a rectangle geometry
Get the radius and center of a circular geometry
Calculate the tilled angle between a line and X axis
Get the corner of the included angle

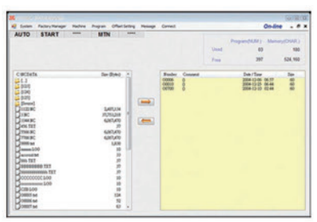
VW-FRM Remote control

Machine Status Monitor



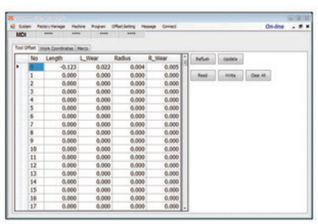
Tools status refer to ATC
Duty rate information
Coordinates display
Running program display
Running function display

Program Manager



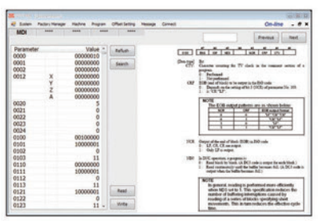
NC memory file manager
Data Server file manager
Simple and quick transfer

Tool Compensation



Tool compensation data
Variable value setting in Macro

Machine Parameter

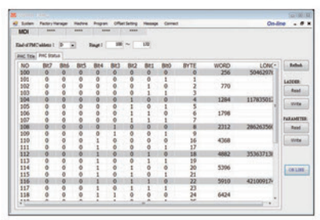


Built-in e-book for quick lookup
Easy parameter backup

Factory Manager

Operation time counter
Duty rate counter
Machined parts counter

Machine Status Detecting

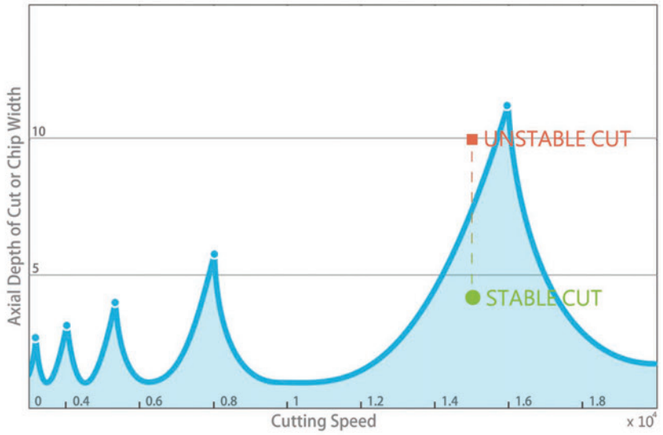


Quick checking of machine status by a remote PC(Timer/Keep relay/Counter/Data)

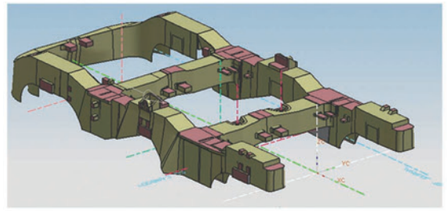
SF SERIES

Optimal cutting application from the analyzation of the combination between CAD/CAM and LOBE analysis

To provide best cutting conditions and recommendations on combination between tool and machine.

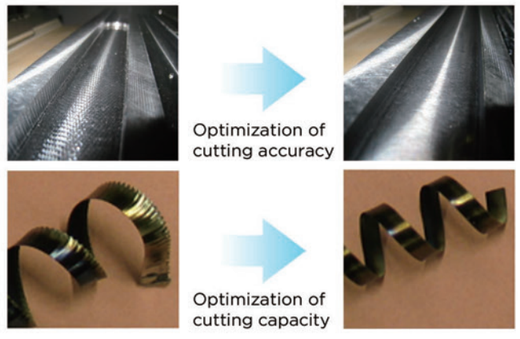


Providing estimate cutting time and 2D/3D cutting path optimization analysis



Spindle speed:2500rpm
Cutting depth:4mm

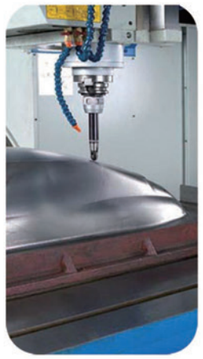
Spindle speed:3500rpm
Cutting depth:5mm



Modularized Production-After components assembled and tested. After assembling & testing , these parts will be assembled in the main production line.

Strict production processes and quality management system

Complete quality check procedures to create high machine quality



3-D Mold cutting test

Noise and vibration test

CMM inspection

Laser Alignment inspection

Parts quality check

Reliability test

Accuracy inspection during machine making

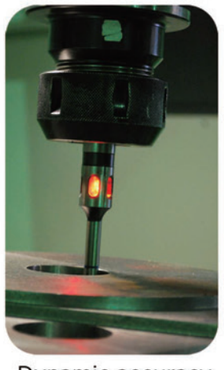
We commit for "Quality First" by following P-D-C-A process in every production segment, using the advanced instruments and strict quality standards.

Machine performance test

Machine function tests

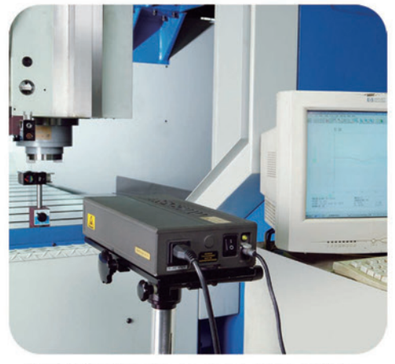
Positioning accuracy inspection

Heavy cutting test



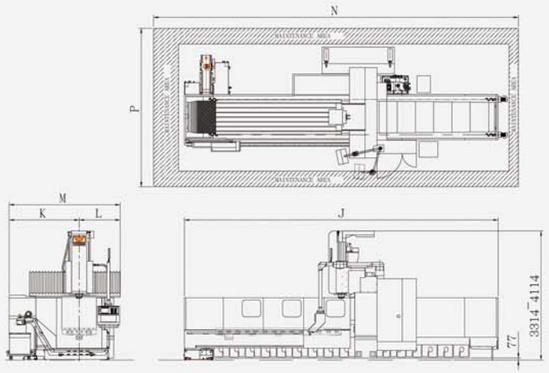
Dynamic accuracy cutting test ISO 10791-7

2-axis accuracy inspection ISO 10791-6



Positioning accuracy inspection ISO 10791-4

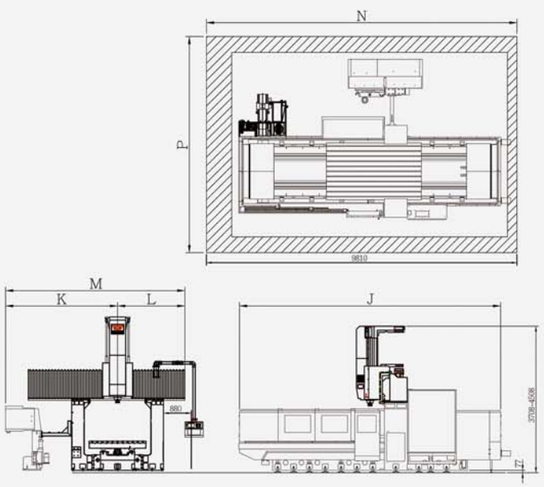
Machine Dimension



SF-xx12/16/20 dimension
(vertical type tool change)

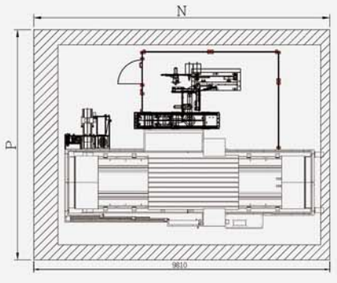
Unit: mm

Model	J	K	L	M	N	P
SF-2112	6250	2260	1310	3570	7880	5050
SF-2612	7250				8880	
SF-3112	8250				9880	
SF-4112	10250				11880	
SF-2116	6250	2430	1550	3980	7810	5350
SF-2616	7250				8810	
SF-3116	8250				9810	
SF-4116	10250				11810	
SF-2120	6250	2630	1750	4380	7810	5750
SF-2620	7250				8810	
SF-3120	8250				9810	
SF-4120	10250				11810	



SF-xx23/27 dimension
(floor-standing vertical type tool change)

Model	J	K	L	M	N	P
SF-2123	6250	4140	1926	6066	7810	7230
SF-2623	7250				8810	
SF-3123	8250				9810	
SF-4123	10250				11810	
SF-2127	6250	4340	2126	6466	7810	7630
SF-2627	7250				8810	
SF-3127	8250				9810	
SF-4127	10250				11810	



SF-xx23/27 dimension
(floor-standing vertical-horizontal type tool change, multi-heads magazine)

Model	J	K	L	M	N	P
SF-2123	6250	3340	1926	5266	7810	6430
SF-2623	7250				8810	
SF-3123	8250				9810	
SF-4123	10250				11810	
SF-2127	6250	3540	2126	5666	7810	6830
SF-2627	7250				8810	
SF-3127	8250				9810	
SF-4127	10250				11810	

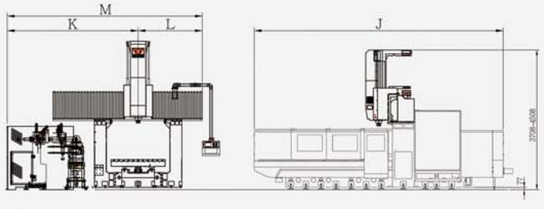
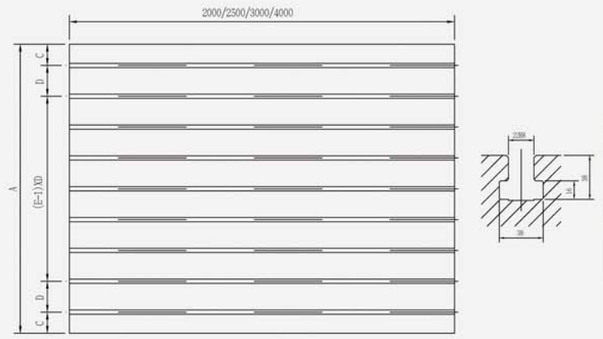
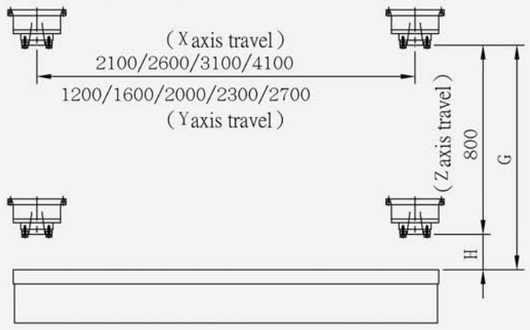


Table and T-slot



			unit : mm	
	A	C	D	E (pcs)
SF-XX12	1100	100	150	7
SF-XX16 /23	1500	110	160	9
SF-XX20 /27	1800	100	160	11

Working range

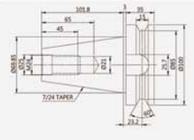


Vertical Machining Working Range (Without Head Attachment)

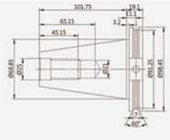
			Unit : mm	
Spindle	Box way gear type (BT-50)	Linear way direct driven type(BT-50)	Linear way direct driven type(BT-40)	Linear way Built-in type (HSK-A63)
H	150	185	163	164
G	950	985	963	964

Tool Shank & Pull Stud Dimension

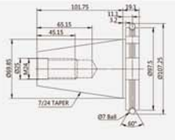
Tool shank
BT-50, MAS403



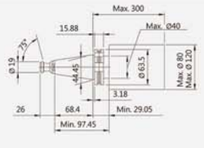
Tool shank
CAT-50, ANSI B5.50



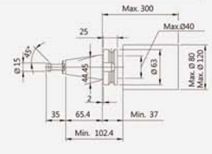
Tool shank
DIN-50, DIN 69871/ISO 7388/1



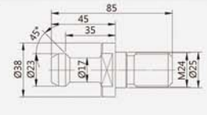
Tool shank
DIN-40



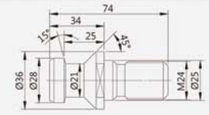
Tool shank
BT-40



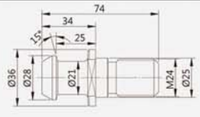
Pull stud bolt
MAS403 P50T-1



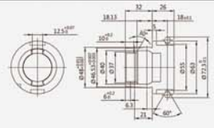
Pull stud bolt
DIN-50, DIN 69872



Pull stud bolt
DIN-50, ISO 7388/2/A



Tool shank
HSK-A63



SF Series

Specification/ Model			Unit	SF-2112	SF-2612	SF-3112	SF-4112
TRAVEL							
X axis			mm	2,100	2,600	3,100	4,100
Y axis			mm	1,200			
Z axis	Box way		mm	800			
	Linear way		mm	800			
Distance from spindle nose to table	Box way (2-step gear/ Belt-driven)	Z axis=800	mm	150-950/350-1,150(column+200mm)			
		Z axis=1,020	mm	-			
	Linear way(2-step gear)		mm	150-950			
	Linear way(Direct-driven BT50/10,000rpm)		mm	185-985			
	Linear way(Direct-driven BBT-40/10,000rpm)		mm	163-963			
	Linear way(Built-in HSK-A63/18,000rpm)		mm	164-964			
Distance from spindle center to column			mm	453			
Distance between columns (port width)			mm	1,370			
TABLE							
Dimension			mm	2,000×1,100	2,500×1,100	3,000×1,100	4,000×1,100
T-slot(Width x Number x Pitch)			mm	22 x 7 x 150			
Max. table load			kg	4,000	5,000	6,000	8,000
SPINDLE							
Spindle motor(cont./30 min. rated)			kW	18.5/22(22/26 opt.)			
Spindle speed	Box way	2-step gear	rpm	4,500/6,000(opt.)			
		Belt-driven	rpm	8,000(opt.)/10,000(opt.)			
	Linear way	2-step gear	rpm	22/26kW:4,500/6,000(opt.)			
		Direct-driven	rpm	10,000(BT-50)(opt.)/15,000(BBT-40)(opt.)			
		Built-in	rpm	18,000(opt.)			
Spindle taper				ISO NO. 50 (HSK-A63/BBT-40 opt.)			
FEED							
Cutting feed rate			mm/min	1-10,000			
Rapid traverse			m/min	X/Y : 24 Z : 15			X : 18 · Y : 24 · Z : 15
3 axis motor power (FANUC)			kW	X/Y/Z : 4			X : 7 · Y/Z : 4
ACCURACY(X,Y,Z)(Measured by laser instrument)							
Positioning accuracy	Refer to JIS B6333		mm	±0.005/300, ±0.015 Full travel			
	Refer to ISO 10791-2		mm	P0.02		P0.03	
Repeatability	Refer to JIS B6333		mm	±0.003			
	Refer to ISO 10791-2		mm	Ps0.015		Ps0.025	
ATC (opt. driect-driven & built-in spindle, please contact our sales representatives)							
ATC capacity	Vertical type tool change		pcs	32/40(opt.)			
	Floor-standing type vertical tool change		pcs	Not available			
	Floor-standing type vertical-horizontal tool change		pcs	Not available			
Max. tool weight			kg	18			
Tool size (DxL) (Full tools)			mm	Φ125x380L			
Max. tool size (DxL) (next pocket empty)			mm	Φ180x380L			
Tool shank				BT 50/ CAT 50			
Pull stud				P50T-1			
OTHERS							
Power requirement			KVA	45			
Machine net weight			kg	20,500	22,500	24,500	28,000
Machine gross weight			kg	23,500	25,500	28,500	32,000
Max. space (LxWxH) Vertical type tool change Floor-standing type vertical tool change Floor-standing type vertical-horizontal tool change			m	7.88x5.05x4.15	8.88x5.05x4.15	9.88x5.05x4.15	11.88x5.05x4.15

*1 For the specification of linear way spindle head with AC head attachment. Please contact our sales representatives.

SF-2116/23	SF-2616/23	SF-3116/23	SF-4116/23	SF-2120/27	SF-2620/27	SF-3120/27	SF-4120/27
2,100	2,600	3,100	4,100	2,100	2,600	3,100	4,100
1,600/2,300				2,000/2,700			
800/1,020(opt.)				800/1,020(opt.)			
800/1,000(opt.)(Not available for SF-xx23 model)*1				800/1,000(opt.)(Not available for SF-xx27 model)*1			
150-950/350-1,150(column+200mm)				150-950/350-1,150(column+200mm)			
130-1,150(column+200mm)				130-1,150(column+200mm)			
150-950				150-950			
185-985				185-985			
163-963				163-963			
164-964				164-964			
453				453			
1,700				2,100			
2,000×1,500	2,500×1,500	3,000×1,500	4,000×1,500	2,000×1,800	2,500×1,800	3,000×1,800	4,000×1,800
22 x 9 x 160				22 x 11 x 160			
8,000	9,000	10,000	12,000	8,000	9,000	10,000	12,000
18.5/22(22/26 opt.)(30/37 opt.)				18.5/22(22/26 opt.)(30/37 opt.)			
4,000/6,000(opt.)				4,000/6,000(opt.)			
8,000(opt.)/10,000(opt.)				8,000(opt.)/10,000(opt.)			
22/26kW:4,000/6,000(opt.);30/37kW:3,000(opt.)/5,500(opt.)				22/26kW:4,000/6,000(opt.);30/37kW:3,000(opt.)/5,500(opt.)			
10,000(BT-50)(opt.)/15,000(BBT-40)(opt.)				10,000(BT-50)(opt.)/15,000(BBT-40)(opt.)			
18,000(opt.)				18,000(opt.)			
ISO NO. 50 (HSK-A63/BBT-40 opt.)				ISO NO. 50 (HSK-A63/BBT-40 opt.)			
1-10,000				1-10,000			
X : 24 · Y : 24/20 · Z : 15			X : 18 · Y : 24/20 · Z : 15	X : 24 · Y : 24/20 · Z : 15			X : 18 · Y : 24/20 · Z : 15
X/Y/Z : 4			X : 7 · Y/Z : 4	X/Y/Z : 4			X : 7 · Y/Z : 4
±0.005/300, ±0.015 Full travel				±0.005/300, ±0.015 Full travel			
P0.02		P0.03		P0.02		P0.03	
±0.003				±0.003			
Ps0.015		Ps0.025		Ps0.015		Ps0.025	
32/40(opt.)				32/40(opt.)			
32(opt.)/40(opt.)(Not available for SF-xx16 model)				32(opt.)/40(opt.)(Not available for SF-xx20 model)			
32(opt.)/40(opt.)/60(opt.)(Not available for SF-xx16 model)				32(opt.)/40(opt.)/60(opt.)(Not available for SF-xx20 model)			
18				18			
Φ125x380L				Φ125x380L			
Φ180x380L				Φ180x380L			
BT 50/ CAT 50				BT 50/ CAT 50			
P50T-1				P50T-1			
50				50			
20,000/22,500	22,000/24,500	24,000/26,500	27,500/30,500	21,000/24,000	23,000/26,000	25,500/28,000	29,500/32,000
23,500/26,000	25,500/28,000	28,000/30,000	31,500/34,000	24,500/27,500	26,500/29,500	29,500/32,000	33,500/36,000
7.81x5.35x4.15 7.81x7.86x4.15 7.81x8.26x4.15	8.81x5.35x4.15 8.81x7.86x4.15 8.81x8.26x4.15	9.81x5.35x4.15 9.81x7.86x4.15 9.81x8.26x4.15	11.81x5.35x4.15 11.81x7.86x4.15 11.81x8.26x4.15	7.81x5.75x4.15 7.81x8.26x4.15 7.81x8.66x4.15	8.81x5.75x4.15 8.81x8.26x4.15 8.81x8.66x4.15	9.81x5.75x4.15 9.81x8.26x4.15 9.81x8.66x4.15	11.81x5.75x4.15 11.81x8.26x4.15 11.81x8.66x4.15

Standard Accessory

1. FANUC 0iMD controller
2. 4,000rpm 2-step gear type spindle (Z-axis box way)
3. Spindle oil cooler
4. Twin hydraulic cylinders with pressured air assistance balacing system
5. Centralized auto lubrication system
6. Independent lubricarion oil collector
7. Air blast through spindle
8. Wash gun and pneumatic interface
9. Cutting coolant system
10. 32 tools magazine & arm type ATC
11. Enclosed splash guard (without roof)
12. Swiveling arm type operation panel
13. Screw type chip conveyor on table sides
14. Caterpillar type chip conveyor
15. Heat exchanger for electcrical cabinet
16. Working lamp
17. Operation cycle finish and alarm light
18. Movable manual pulse generator
19. Footswitch for tool clamping
20. RS232 and RJ45 interface
21. XYZ-axis absolute pulse coder feedback
22. XYZ-axis travel hardware limits protection
23. Spindle overloading protected by software
24. Auto power off
25. Vision Wide FX graphical user interface
26. Foundation pads and bolts kits
27. Adjustment tool and tool kits
28. Technical manuals (operation, maintenance manual and circuit diagram)

Optional Accessory & Function

1. 6,000rpm 2-step gear type spindle (Z-axis box way)
2. 3,000/4,000/5,500/6,000 2-step gear type spindle (Z axis linear way)
3. 8,000/ 10,000rpm belt-driven spindle
4. 10,000(BT-50)/ 15,000(BT-40)rpm direct-driven spindle
5. 18,000 (HSK-A63) rpm built-in spindle
6. Z-axis travel 1,020mm (box way spindle head, for AC head attachment)
7. Z-axis travel 800/1,000mm (linear way spindle head)
8. 200/ 300/ 400mm higher column(SF-xx12 series only for 200mm higher column)
9. Spindle ring cutting coolant device (for without head attachment)
10. Coolant through spindle system 20/70 ba (Vertical spindle)
11. Coolant through tool holder interface
12. Coolant through tool holder 5/20 bar cutting fluid interface
13. Oil skimmer
14. Oil mist cooling device
15. 40/60 tools magazine & arm type ATC
16. Enclosed splash guard with roof
17. Chip auger on table sides
18. Chip cart
19. Air conditioner for electrical cabinet
20. XYZ-axis linear scale
21. 3-axis independent manual pulse generator
22. Sub working table
23. Rotary table
24. Interface preparation for fourth axis
25. Z axis retract function at power failure
26. Auto tool length measurement
27. Auto workpiece measurement
28. Transformer
29. Auto warm up

Optional accessory for auto head attachment

1. Z-axis travel 1,020mm (box way spindle head, for AC head attachment)
2. Auto AC90 degree angular head/ AC extended head/ AC two-axis head
3. Auto AC milling head/ small head/ customized head attachment
4. Manual 90 degree angular head/ extended head/ universal head
5. Manual swiveling arm type head bracket on operation side(one head attachment)
6. Auto swiveling arm type head bracket on operation side(one head attachment, one cover)
7. AC90 degree angular head coolant through spindle system 20bar