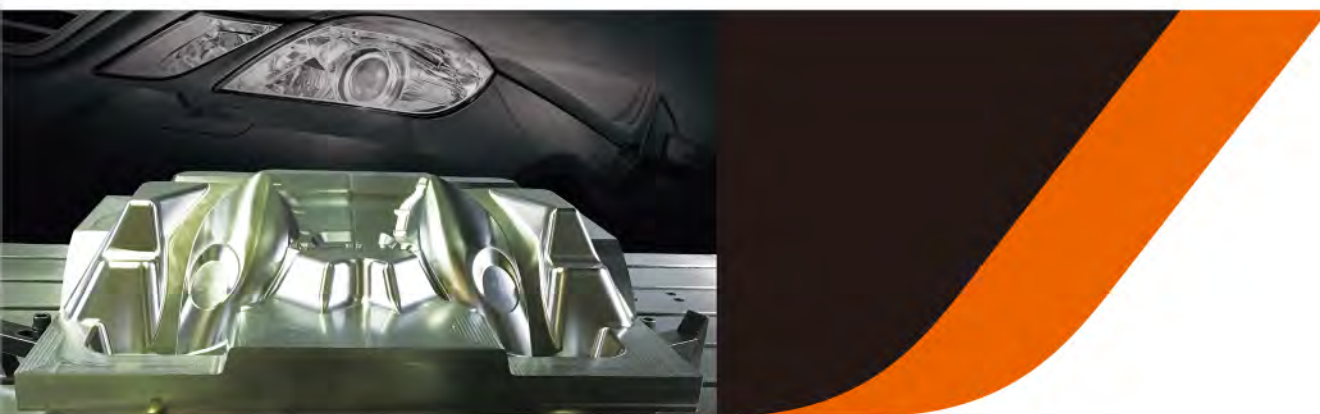


SF
SERIES



VISION WIDE TECH CO., LTD.

No.43, 17th Industrial Rd., Taiping, Taichung 41154, Taiwan

Tel: 886-4-22712000

Fax: 886-4-22712009

E-mail: info@visionwide.com.tw

Web: www.visionwide-tech.com



SF-E-20180201

SF
SERIES

High Efficiency Double Column Machining Center



SF series the most popular machining center

- ▶ High C/P value
- ▶ Complete range of specification
- ▶ Fulfill all kinds of machining requirements

Apply on parts and molds machining, especially.
Strong structural design and manufacturing quality
to ensure best machining performance and accuracy.

- ▶ Rapid traverse : 24 m / min
- ▶ Cutting feed rate: 10 m/ min
- ▶ X-axis: 2.1 / 2.6 / 3.1 / 4.1 m
- ▶ Y-axis: 1.2 / 1.6 / 2.0 / 2.3 / 2.7 m
- ▶ Z-axis: 800 / 1,000 mm



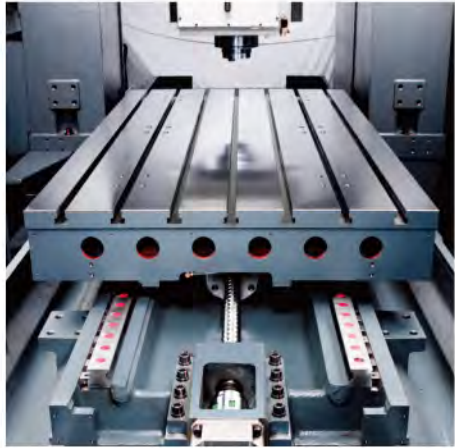
Model : SF-3116 and sheet metal guard with roof



Model : SF-2116 and sheet metal guard without roof

Full range of specification
High C/P value

Optimal rigid structure configuration



X axis

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

X axis with backlash gear deceleration mechanism transmission to enhance axial thrust 3 times, and significantly improve the axial thrust feed.



Y axis

Large span stepped design of Y axis makes guide ways close to beam and spindle which effectively increases rigidity of cutting load.

Y axis with motor and direct driven ball screw transmission, rotation accuracy of servo motor precisely transmit to ball screw, without any indirect parts transmission error.



Z axis

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

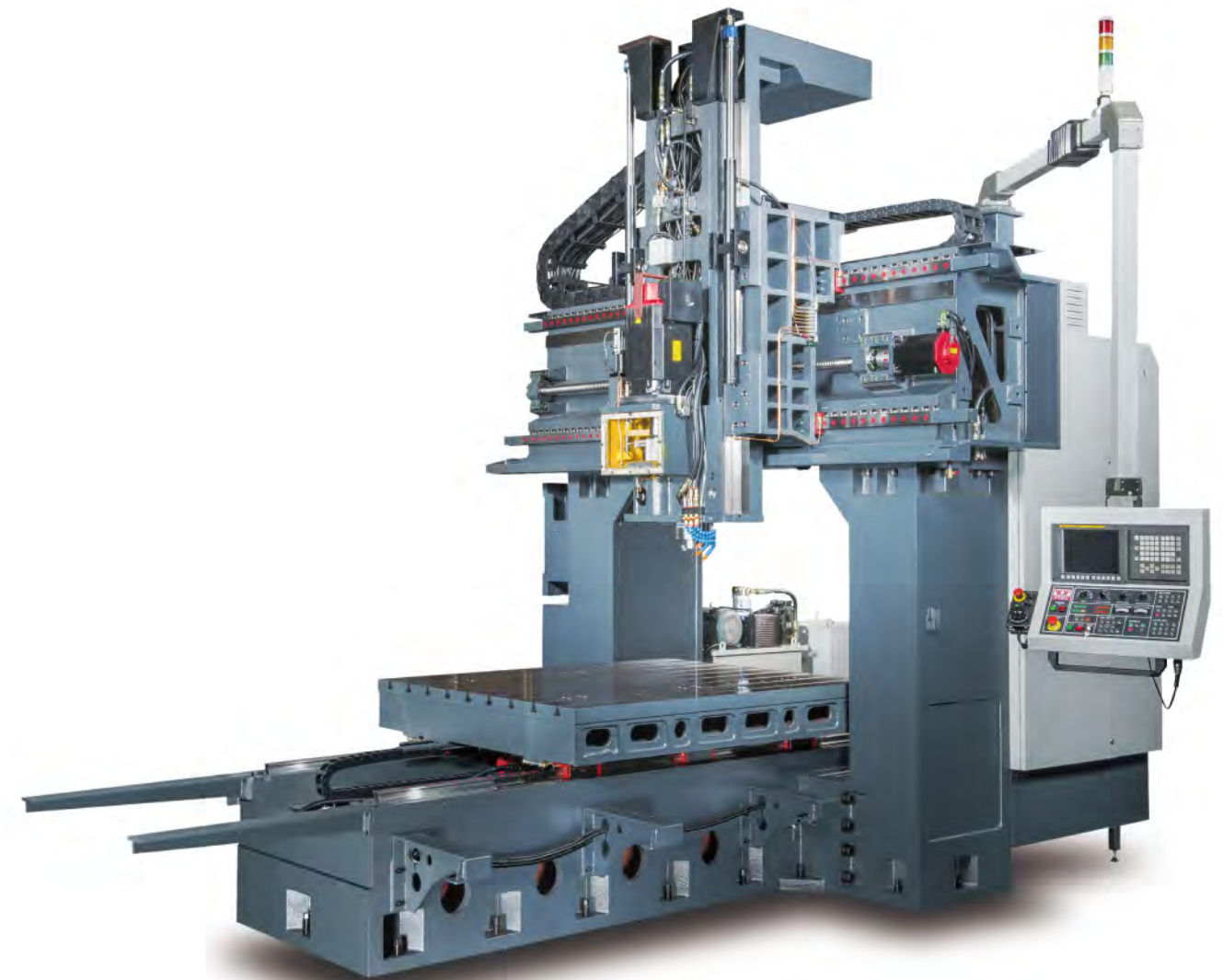
Economical twin hydraulic cylinders with pressured air assistance high speed balancing system achieve:

- Smoother movement
- Z-axis holds its position when power failure happens
- Excellent performance for power saving

Full casting structure provides long term accuracy stability.

Ultra-wide column structure with big dimension surface provides the best rigid support of spindle and YZ axis.

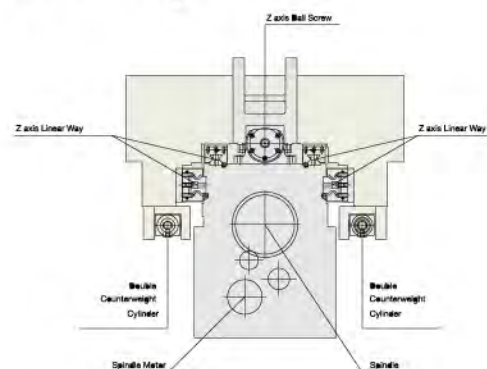
Spindle and thermal compensation function for environmental temperature change can be chosen to ensure the accuracy change within 0.02mm which influenced by environmental temperature change.



SF-2116 model with gear type spindle 6,000rpm

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 rigidity.
- Symmetric spindle gravity configuration, Z-axis call screw, spindle center and spindle motor configure at gravity point of Z-axis box structure centerline provide the best feed precision and thermal balance.
- Gear spindles made of Japan-made JIS-0 grade.
- 2-step gear type spindle provides high torque and high speed characteristics to ensure heavy cutting ability on surface finish.



Heavy Cutting Ability



Heavy cutting ability
Face milling:
Tool dia.:125mm
Cutting feed:1,000mm
Cutting width:100mm
Cutting depth:6.5mm
Removal rate:650cc/min



End milling :
Tool dia.:63mmx9
Cutting speed:800rpm
Cutting feed:400mm/min
Cutting depth:40mm
Cutting width:20mm
Removal rate:320cc/min



Gun drilling(u):
Tool dia.:32mm
Cutting speed:1500rpm
Cutting feed:500mm/min
Cutting depth:30mm
Removal rate:480cc/min
Coolant through spindle

spindle power=22/26kW, speed=4500rpm, material=S45C(mid carbon steel)
position = 1/2x(z travel)

Full range of specification
High C/P value

Spindle power and torque charts

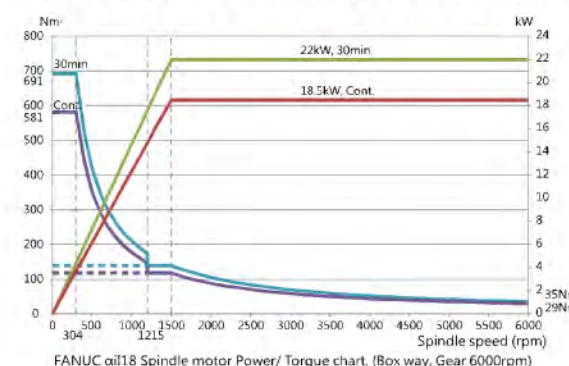
Box Way

FANUC Controller

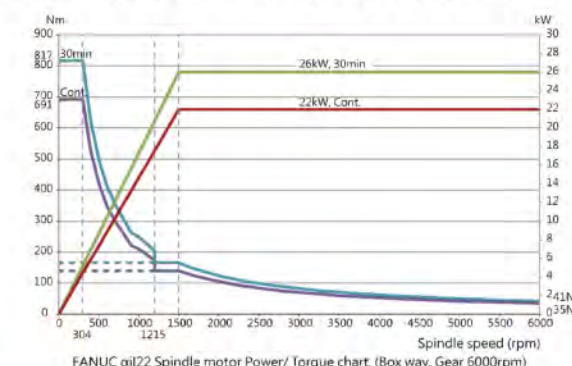
※ Standard accessory

Pic. No.	Motor type	Speed(rpm)	Drive type	Power(KW)	Torque(Nm)	Tool type
※ 1	FANUC αi18	6,000	Gear	18.5/ 22 (Cont. / 30min.)	581/ 691 (Cont. / 30min.)	ISO 50
2	FANUC αi18	6,000	Gear	22/ 26 (Cont. / 30min.)	691/ 817 (Cont. / 30min.)	ISO 50
3	FANUC αi18	4,000	Gear	18.5/ 22 (Cont. / 30min.)	748.7/ 890 (Cont. / 30min.)	ISO 50
4	FANUC αi18	4,000	Gear	22/ 26 (Cont. / 30min.)	890/ 1052 (Cont. / 30min.)	ISO 50

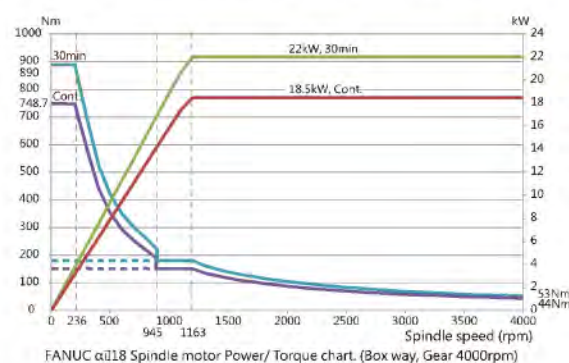
1. Gear ISO 50 αi18 / Spindle 6,000RPM(STD)



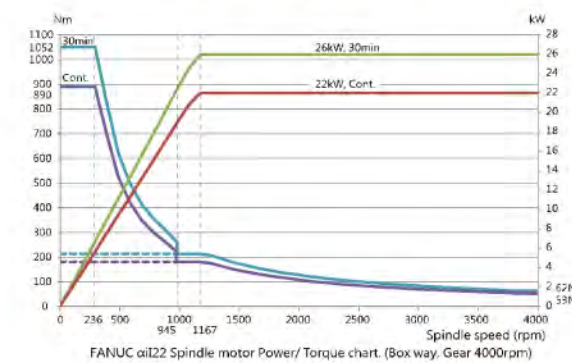
2. Gear ISO 50 αi22 / Spindle 6,000RPM



3. Gear ISO 50 αi18 / Spindle 4,000RPM



4. Gear ISO 50 αi22 / Spindle 4,000RPM



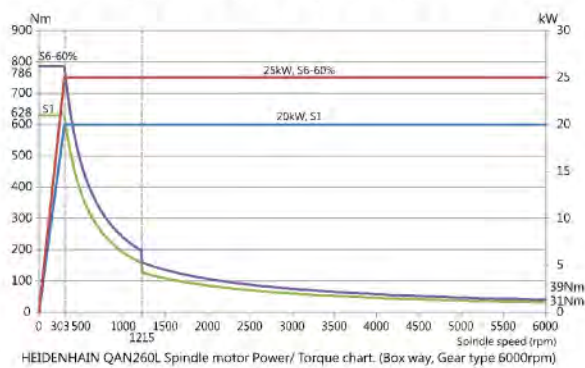
Spindle power and torque charts

Box Way

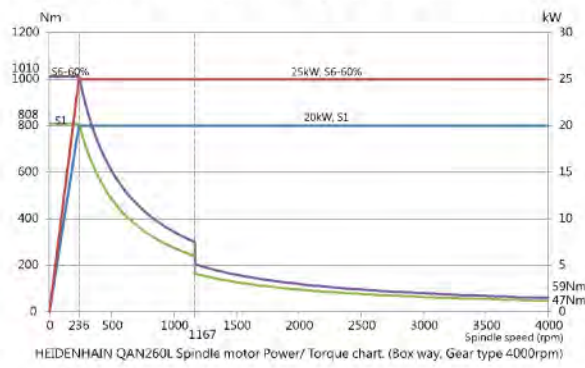
HEIDENHAIN Controllers

Pic. No.	Motor type	Speed(rpm)	Drive type	Power(KW)	Torque(Nm)	Tool type
5	HEIDENHAIN QAN 260L	6,000	Gear	20 / 25(Cont. / S6-60%)	628/ 786 (Cont. / S6-60%)	BT50
6	HEIDENHAIN QAN 260L	4,000	Gear	20 / 25(Cont. / S6-60%)	808/ 1010 (Cont. / S6-60%)	BT50
7	HEIDENHAIN QAN 260U	6,000	Gear	24 / 30(Cont. / S6-60%)	755/ 943 (Cont. / S6-60%)	BT50
8	HEIDENHAIN QAN 260U	4,000	Gear	24 / 30(Cont. / S6-60%)	970/ 1213 (Cont. / S6-60%)	BT50

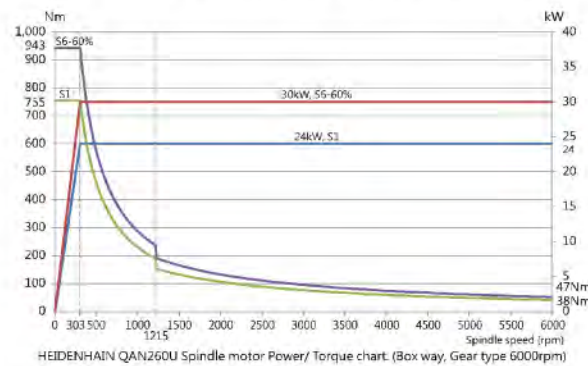
5. Gear BT50 QAN 260L /Spindle 6,000RPM



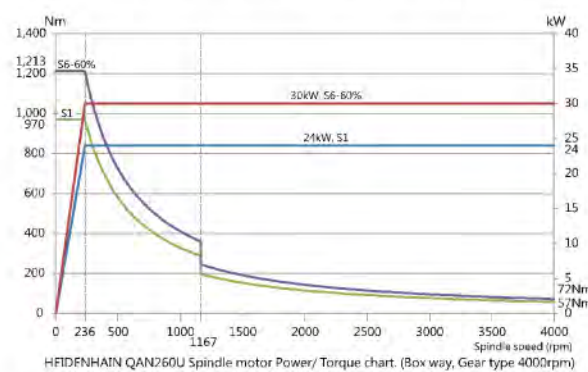
6. Gear BT50 QAN 260L /Spindle 4,000RPM



7. Gear BT50 QAN 260U /Spindle 6,000RPM



8. Gear BT50 QAN 260U /Spindle 4,000RPM



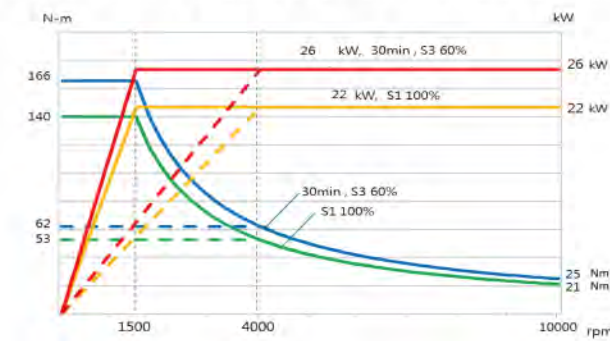
Full range of specification
High C/P value

Linear Way

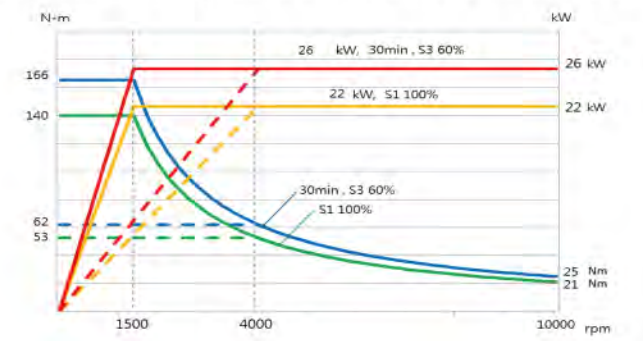
FANUC Controller

Pic. No.	Motor type	Speed(rpm)	Drive type	Power(KW)	Torque(Nm)	Tool type
9	FANUC α il 22	10,000	Direct-driven	22 / 26(Cont. / 30min)	140 / 166 (Cont. / 30min)	BT50
10	FANUC α ilT 22	10,000	Direct-driven	22 / 26(Cont. / 30min)	140 / 166 (Cont. / 30min)	BT50
11	FANUC α il 26	10,000	Direct-driven	L: 15 / 22(Cont. / 30 min) H: 26 / 30(Cont. / 30 min)	238 / 350 (Cont. / 30min)	BT40
12	FANUC α ilL 26	12,000	Direct-driven	L: 15 / 18.5(Cont. / 30 min) H: 26 / 30(Cont. / 30 min)	239 / 350 (Cont. / 30min)	BT40

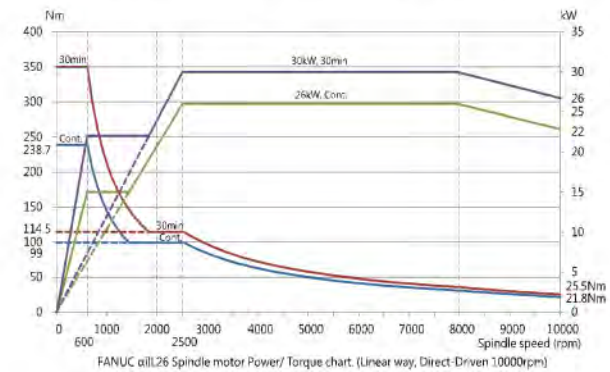
9. Direct-driven BT50 α il22 / Spindle 10,000RPM



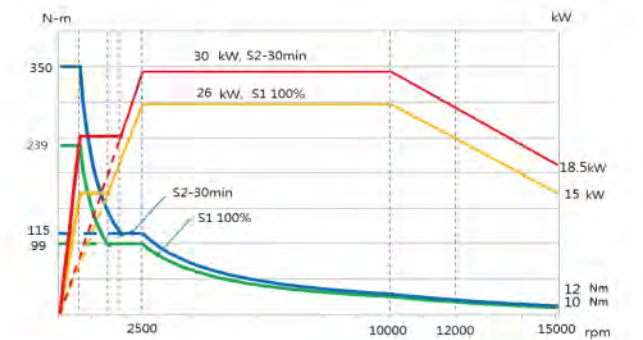
10. Direct-driven BT50 α ilT22 / Spindle 10,000RPM



11. Direct-driven BT50 α il26 / Spindle 10,000RPM



12. Direct-driven BT40 α ilL26 / Spindle 12,000RPM



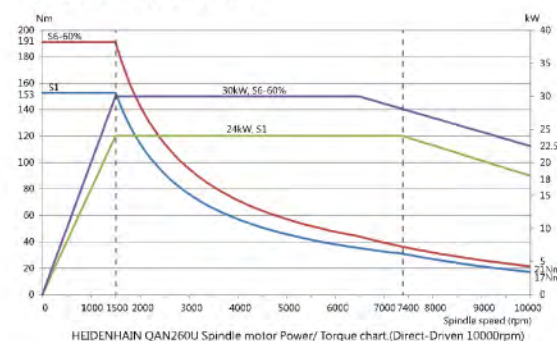
Spindle power and torque charts

Linear Way

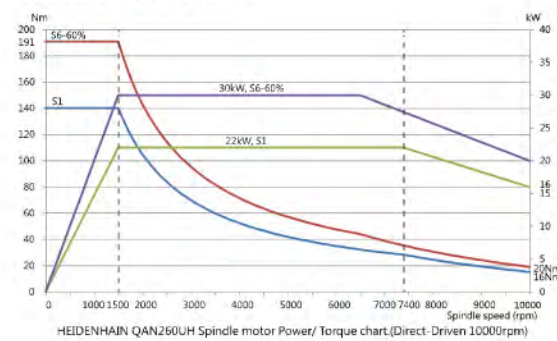
HEIDENHAIN Controllers

Pic. No.	Motor type	Speed(rpm)	Drive type	Power(KW)	Torque(Nm)	Tool type
13	HEIDENHAIN QAN 260U	10,000	Direct-driven	24 / 30(Cont. / S6-60%)	153/ 191 (Cont. / S6-60%)	BT50
14	HEIDENHAIN QAN 260UH	10,000	Direct-driven	22 / 30(Cont. / S6-60%)	140/ 191 (Cont. / S6-60%)	BT50
15	HEIDENHAIN QAN 260LH	12,000	Direct-driven	20 / 25(Cont. / S6-60%)	127/ 159 (Cont. / S6-60%)	BT40

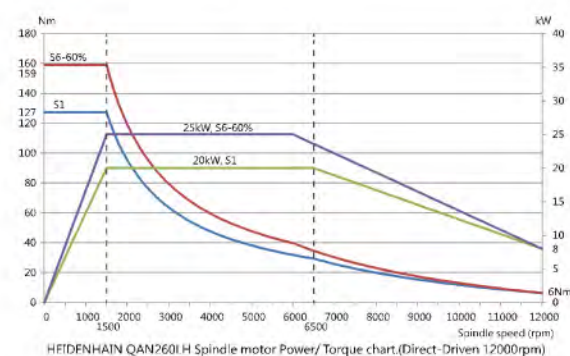
13. Direct-driven BT50 QAN 260U / Spindle 10,000RPM



14. Direct-driven BT50 QAN 260UH / Spindle 10000RPM

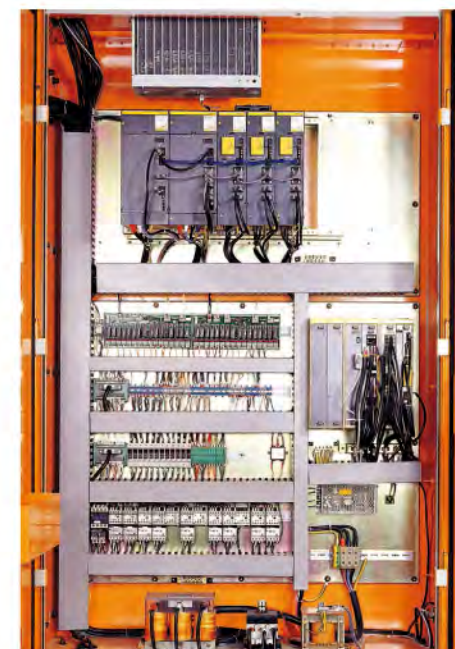


15. Direct-driven BT40 QAN 260LH / Spindle 12,000RPM



Full range of specification
High C/P value

Safe, friendly and reliable operation device



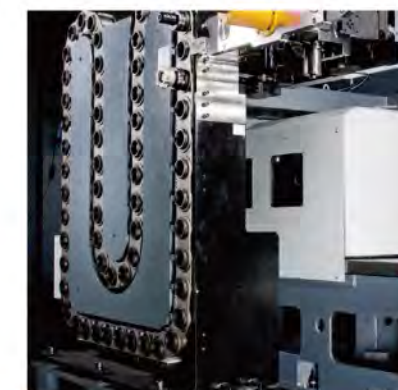
- Safe and reliable electrical circuit design
- CE compliant safety circuit design
- CE compliant EU regulation electrical parts for whole machine
- Anti-interference design on motor power cables
- Heat exchanger for electrical cabinet
- Main power protecting device
- Ethernet and RJ45 interface
- USB port



- Side-mount tool magazine to save floor space, 32 tools magazine (40 or 60 tools opt.)



- Floor-standing type vertical tool magazine



- Auto vertical-horizontal type magazine/ auto head attachment exchange (opt.)



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

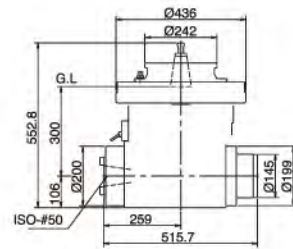


- Fast tool length measurement device at magazine side for mold cutting



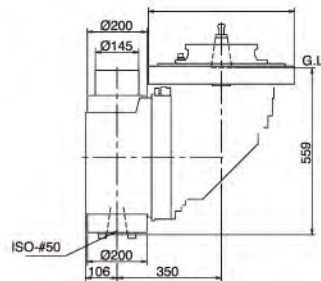
- Auto tool exchange, tool to tool 3 sec.

Auto multi-angle head attachment



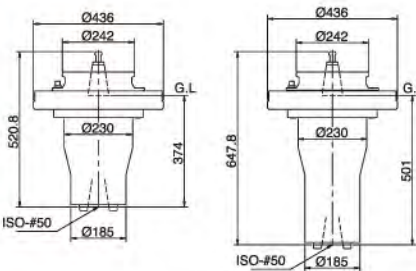
AC 90° angular head

Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
Machining coolant	External nozzle/ CTS 20/ 70 bar
Max. power	26 kW
Max. speed	3,000 rpm



AC 2-axis head

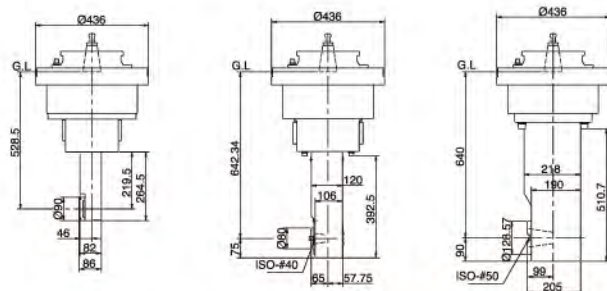
Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
B-axis indexing	Auto / 5° (manual 1°)
Machining coolant	External nozzle/ CTS 20/ 70 bar
Max. power	26 kW
Max. speed	3,000 rpm



AC extended head

Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
Max. power	26kW
Max. speed	4,000rpm

Various types of milling head



Tool clamping	Manual
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
Max. power	26 kW
Max. speed	800 rpm

Full range of specification
High C/P value

Intelligent multi-face machining

Tool center point management ,TCPM

5 axes specification tool center point management TCPM

Taking vertical workpiece coordinates as origin benchmark, workpiece coordinates are converted to new workpiece coordinates origin of new designated plane automatically.

Auto coordinates tool axis 3D conversion

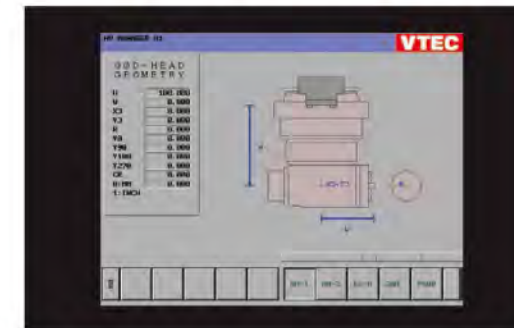
3-axis mechanical coordinates system can be automatically converted to machining coordinates system, easily achieving face milling, end milling, drilling and rigid tapping machining operations.

Head attachment dimensions correction

Intelligent compensation on each type of head attachments, 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 compensating heads



Auto compensating attachment heads:

Auto compensating horizontal head center and spindle center.
Auto compensating mechanism mass center and revolution center.

3D coordinates management:

- 1.V/H tool length and diameter compensation.
- 2.V/H working coordinate affine transformation.
- 3.V/H manual interrupting.
- 4.V/H 3D rigid tapping.

Heavy cutting ability

Through cutting depth test to show excellent heavy cutting rigidity

test specification: 22/26kW 4,500rpm spindle



Head attachment	Extended head	90 degree angular head	2-axis head
Tool type	BT-50 face milling tool-diameter $\phi 125/5$ edge		
Cutting material	S45C		
Spindle speed(rpm)	600		
Machining width(mm)	100		
Feed rate(mm/min)	1000		
Machining depth	5		
Removal rate(cc/min)	500		

Various head storage unit



- A Table type head bracket
- B Manual swiveling arm type head bracket (on operation side)
- C Auto swiveling arm type head bracket (on operation side)
- D Multi-heads magazine (magazine side)

User friendly operation interface

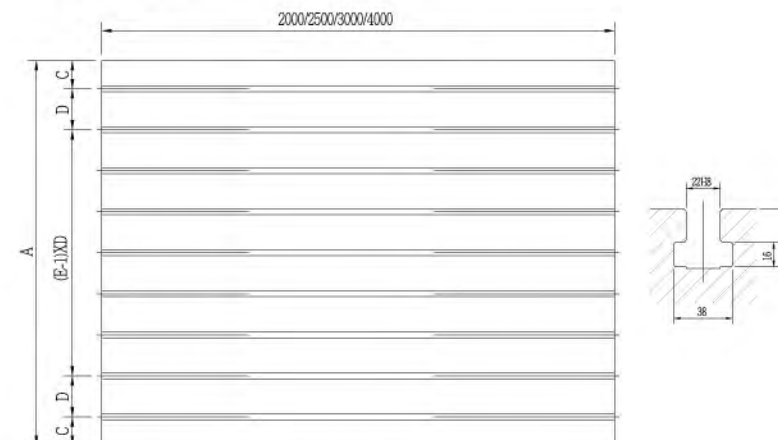


- Centralized pneumatic and hydraulic device system



- Modularized cart for oil cooling device and hydraulic unit

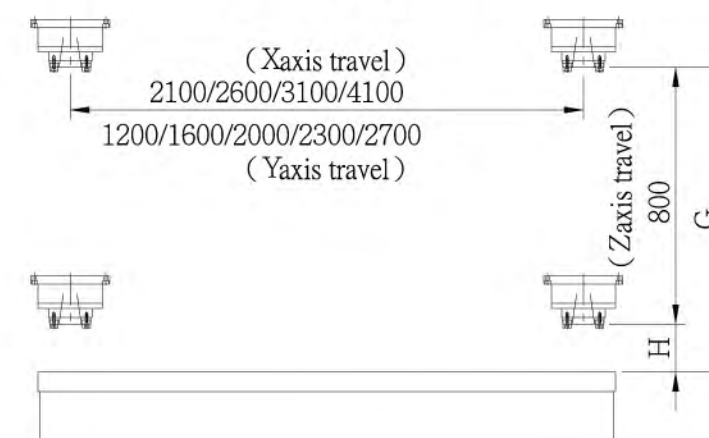
Table and T-slot



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

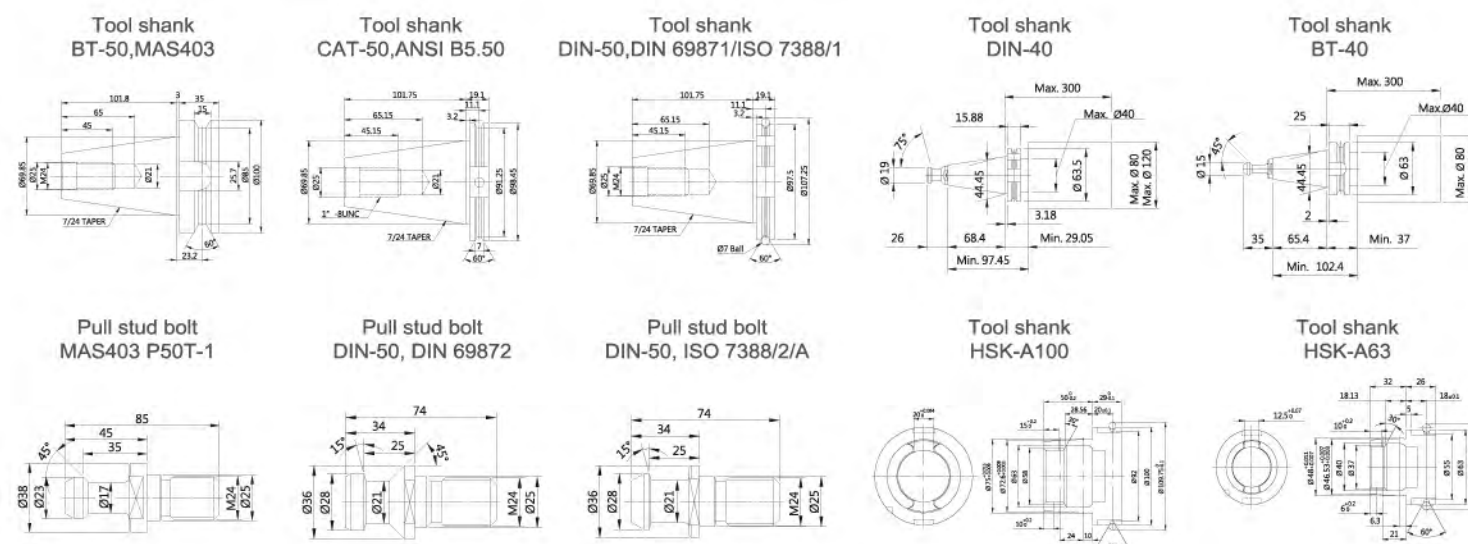
Working range



unit:mm

Spindle type	Box way gear type (BT-50)	Linear way Direct-driven (BT-50)	Linear way Built-in (HSK-A63)
H	150	128	128
G	135	129	129

Tool shank and Pull stud Dimension



Machine Dimension

SF-XX12/16/20 dimension

(Vertical type tool change: standard column height , box-way Z axis 800 mm)

unit:mm

Model	A	B	C	E	D	F
SF-2112	6750	8500	5000	2260	1275	3535
SF-2612	7700	9500				
SF-3112	9050	10500				
SF-4112	11050	12500				
SF-2116	6565	9400	5900	2435	1545	3980
SF-2616	7565	10400				
SF-3116	8565	11400				
SF-4116	10565	13400				
SF-2120	6565	9400	6300	2635	1745	4380
SF-2620	7565	10400				
SF-3120	8565	11400				
SF-4120	10565	13400				

SF-xx23/27 dimension

(Floor-standing vertical type tool change: columns add 200mm, box-way Z axis 1,020 mm)

unit:mm

Model	A	B	C	E	D	F
SF-2123	6565	9400	6600	3340	2135	5475
SF-2623	7565	10400				
SF-3123	8565	11400				
SF-4123	10565	13400				
SF-2127	6565	9400	7000	3540	2335	5875
SF-2627	7565	10400				
SF-3127	8565	11400				
SF-4127	10565	13400				

SF-xx23/27 dimension

(Floor-standing vertical-horizontal type tool change, multi-heads magazine: columns add 200mm , box-way Z axis 1,020 mm)

unit:mm

Model	A	B	C	E	D	F
SF-2123	6565	9400	7400	4530	2135	7260
SF-2623	7565	10400				
SF-3123	8565	11400				
SF-4123	10565	13400				
SF-2127	6565	9400	8000	4730	2335	7460
SF-2627	7565	10400				
SF-3127	8565	11400				
SF-4127	10565	13400				

Specification | SF-xx12/ xx16/ xx20 Series

MODEL			Unit	SF-2112	SF-2612	SF-3112	SF-4112	SF-2116	SF-2616	SF-3116	SF-4116	SF-2120	SF-2620	SF-3120	SF-4120
TRAVEL															
X axis			mm	2,100	2,600	3,100	4,100	2,100	2,600	3,100	4,100	2,100	2,600	3,100	4,100
Y axis			mm	1,200				1,600				2,000			
Z axis	Box way		mm	800				800 / 1,020(Opt.)				800 / 1,020(Opt.)			
	Linear way		mm	800				800 / 1,000(Opt.)				800 / 1,000(Opt.)			
Distance from spindle nose to table	Box way (2-step gear/ Belt-driven)	Z axis=800	mm	150-950 / 350-1,150 (column+200)				150-950 / 350-1,150(column+200)				150-950 / 350-1,150(column+200)			
		Z axis=1,020	mm	-				130-1,150(column+200)				130-1,150(column+200)			
	Linear way (2-step gear/ Direct-driven)	Z axis=800	mm	-				150-950 / 350-1,150(column+200)				150-950 / 350-1,150(column+200)			
		Z axis=1,000	mm	-				150-1,150(column+200)				150-1,150(column+200)			
Distance from spindle center to column			mm	453				453				453			
Distance between columns (port width)			mm	1,370				1,700				2,100			
TABLE															
Dimension			mm	2,000x1,100	2,500x1,100	3,000x1,100	4,000x1,100	2,000x1,500	2,500x1,500	3,000x1,500	4,000x1,500	2,000x1,800	2,500x1,800	3,000x1,800	4,000x1,800
T-slot(Width x Number x Pitch)			mm	22x7x150				22x9x160				22x11x160			
Max. table load			kg	4,000	5,000	6,000	8,000	8,000	9,000	10,000	12,000	8,000	9,000	10,000	12,000
SPINDLE															
Spindle motor(cont./30 min. rated)			kW	18.5/22kW (22/26kW Opt.)				18.5/22kW (22/26kW Opt.)				18.5/22kW (22/26kW Opt.)			
Spindle speed	Box way	2-step gear	rpm	6,000/ 4,000 (Opt.)				6,000/ 4,000 (Opt.)				6,000/ 4,000 (Opt.)			
		Belt-type		-				8,000(Opt.)/ 10,000(Opt.)				8,000(Opt.)/ 10,000(Opt.)			
	Linear way	Direct-driven		10,000(Opt.)/ 12,000(Opt.)				10,000(Opt.)/ 12,000(Opt.)				10,000(Opt.)/ 12,000(Opt.)			
		Built-in		-				-				-			
Spindle taper			-	ISO 50				ISO 50				ISO 50			
FEED															
Cutting feed rate			mm/min	1-10,000				1-10,000				1-10,000			
Rapid traverse			m/min	XY:24 Z:15			X:18 Y:24 Z:15	XY:24 Z:15			X:18 Y:24 Z:15	XY:24 Z:15			X:18 Y:24 Z:15
3 axis motor power (FANUC)			kW	XYZ:4			X:7 YZ:4	XYZ:4			X:7 YZ:4	XYZ:4			X:7 YZ:4
ACCURCY															
Positioning accuracy	Refer to JIS B6333		mm	±0.005/300, ±0.010/Full travel				±0.005/300, ±0.010/Full travel				±0.005/300, ±0.010/Full travel			
	Refer to VDI 3441		mm	P0.018		P0.020	P0.018	P0.018		P0.020	P0.018	P0.018		P0.020	P0.020
Repeatability	Refer to JIS-B6333		mm	±0.003		±0.003	±0.003	±0.003		±0.003	±0.003	±0.003		±0.003	±0.003
	Refer to VDI 3441		mm	Ps0.015		Ps0.018	Ps0.018	Ps0.015		Ps0.018	Ps0.018	Ps0.015		Ps0.018	Ps0.018
ATC															
ATC capacity	Vertical type tool change		pcs	32/40(Opt.)				32/40(Opt.)				32/40(Opt.)			
Max. tool weight			kg	18				18				18			
Tool size (DxL) (Full tools)			mm	Ø125				Ø125				Ø125			
Max. tool size (DxL) (next pocket empty)			mm	Ø180				Ø180				Ø180			
Tool shank			-	BT50/CAT50				BT50/CAT50				BT50/CAT50			
Pull stud			-	P50T-1				P50T-1				P50T-1			
OTHERS															
Power requirement			kVA	45				50				50			
Machine net weight			kg	20,500	22,500	24,500	28,000	20,000	22,000	24,000	27,500	21,000	23,000	25,500	29,500
Machine gross weight			kg	23,500	25,500	28,500	32,000	23,500	25,500	28,000	31,500	24,500	26,500	29,500	33,500
Max. space (LxWxH)			m	8.5 x 5.0 x 4.4	9.5 x 5.0 x 4.4	10.5 x 5.0 x 4.4	12.5 x 5.0 x 4.4	9.4 x 5.9 x 4.4	10.4 x 5.9 x 4.4	11.4 x 5.9 x 4.4	13.4 x 5.9 x 4.4	9.4 x 6.3 x 4.4	10.4 x 6.3 x 4.4	11.4 x 6.3 x 4.4	13.4 x 6.3 x 4.4

Specification | SF-xx23/ xx27 Series

MODEL			Unit	SF-2123	SF-2623	SF-3123	SF-4123	SF-2127	SF-2627	SF-3127	SF-4127
TRAVEL											
X axis			mm	2,100	2,600	3,100	4,100	2,100	2,600	3,100	4,100
Y axis			mm	2,300				2,700			
Z axis		Box way	mm	800 / 1,020 (Opt.)				800 / 1,020 (Opt.)			
Distance from spindle nose to table	Box way	Z axis=800	mm	450-1,250 (column+300)				450-1,250 (column+300)			
		Z axis=1,020	mm	230-1,250 (column+300)				230-1,250 (column+300)			
Distance from spindle center to column			mm	453				453			
Distance between columns (port width)			mm	1,700				2,100			
TABLE											
Dimension			mm	2,000x1,500	2,500x1,500	3,000x1,500	4,000x1,500	2,000x1,800	2,500x1,800	3,000x1,800	4,000x1,800
T-slot(Width x Number x Pitch)			mm	22x9x160				22x11x160			
Max. table load			Kg	8,000	9,000	10,000	12,000	8,000	9,000	10,000	12,000
SPINDLE											
Spindle motor(cont./30 min. rated)			kW	18.5/22 (22/26 Opt.)				18.5/22 (22/26 Opt.)			
Spindle speed	Box way	2-step gear	rpm	6,000/ 4,000 (Opt.)				6,000/ 4,000 (Opt.)			
		Belt-type	rpm	8,000(Opt.)/ 10,000(Opt.)				8,000(Opt.)/ 10,000(Opt.)			
Spindle taper			-	ISO 50				ISO 50			
FEED											
Cutting feed rate			mm/min	1-10,000				1-10,000			
Rapid traverse			m/min	X/Y/Z:24/20/15			X/Y/Z:18/20/15	X/Y/Z:24/20/15			X/Y/Z:18/20/15
3 axis motor power (FANUC)			kW	XYZ:4			X:7 YZ:4	XYZ:4			X:7 YZ:4
ACCURY											
Positioning accuracy	Refer to JIS B6333		mm	±0.005/300, ±0.010/Full travel				±0.005/300, ±0.010/Full travel			
	Refer to VDI 3441		mm	P0.018		P0.020	P0.020	P0.018		P0.020	
Repeatability	Refer to JIS-B6333		mm	±0.003		±0.003	±0.003	±0.003			
	Refer to VDI 3441		mm	Ps0.015		Ps0.018	Ps0.018	Ps0.015		Ps0.018	
ATC											
ATC capacity	Floor-standing type vertical tool change		pcs	32/40(Opt.)				32/40(Opt.)			
	Floor-standing type vertical-horizontal tool change		pcs	32(Opt.)/40(Opt.)/60(Opt.)				32(Opt.)/40(Opt.)/60(Opt.)			
Max. tool weight			kg	18				18			
Tool size (DxL) (Full tools)			mm	Ø125				Ø125			
Max. tool size (DxL) (next pocket empty)			mm	Ø215				Ø215			
Tool shank			-	BT50/CAT50				BT50/CAT50			
Pull stud			-	P50T-1				P50T-1			
OTHERS											
Power requirement			kVA	50				50			
Machine net weight			kg	22,500	24,500	26,500	30,500	24,000	26,000	28,000	32,000
Machine gross weight			kg	26,000	28,000	30,000	34,000	27,500	29,500	32,000	36,000
Max. space (LxWxH)			m	9.4 x 6.6 x 4.9	10.4 x 6.6 x 4.9	11.4 x 6.6 x 4.9	13.4 x 6.6 x 4.9	9.4 x 7.0 x4.9	10.4 x 7.0 x4.9	11.4 x 7.0 x4.9	13.4 x 7.0 x4.9
				9.4 x 7.4 x 4.9	10.4 x 7.4 x 4.9	11.4 x 7.4 x 4.9	13.4 x 7.4 x 4.9	9.4 x 8.0 x4.9	10.4 x 8.0 x4.9	11.4 x 8.0 x4.9	13.4 x 8.0 x4.9

Full range of specification
High C/P value

Standard Accessory and Function

- 1 FANUC 0i MFcontroller
- 2 6,000rpm 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 lubrication oil collector
- 7 Air blast through spindle
- 8 Wash gun and pneumatic interface
- 9 Cutting fluid cooling system
- 10 32 tools magazine with arm type ATC
- 11 Sheet metal guard (without roof)
- 12 Swiveling arm type operation panel
- 13 Screw type chip conveyor on table side
- 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 RJ 45 interface
- 21 XYZ axis absolute pulse coder feedback
- 22 XYZ axis travel hard limits protection
- 23 Spindle cutting load software protection
- 24 Remote monitoring software-standard (Not available for SIEMENS contoller)
- 25 Auto power off function
- 26 Vision Wide FX-100 graphical user interface
- 27 Foundation pads and bolts kits
- 28 Adjustment tool and tool kits
- 29 Technical manuals (operation, maintenance manual and circuit diagram)

Optional Accessory & Function

- 1 4,000rpm 2-step gear type spindle (Z axis box way)
- 2 8,000/ 10,000rpm belt-driven spindle
- 3 10,000(BT-50)/ 12,000(BT-40) rpm direct-driven spindle
- 4 Z axis travel 1,020mm(box way spindle head, for AC head attachment)
- 5 Z axis travel 1,000mm(linear way spindle head)
- 6 200/ 300/ 400/ 500mm higher column (SF-xx12 series only for 200mm higher column)
- 7 Spindle ring cutting coolant device(for no head attachment)
- 8 Coolant through spindle system 20/70 bar(Vertical spindle)
- 9 Coolant through tool holder interface
- 10 Coolant through tool holder 5/20 bar cutting fluid interface
- 11 Oil skimmer
- 12 Oil mist cooling device
- 13 40/60 tools magazine with arm type ATC
- 14 Sheet metal guard with roof
- 15 Chip auger on table side
- 16 Chip cart
- 17 Air conditioning for electrical cabinet
- 18 XYZ axis linear scale feedback
- 19 3 axis independent manual pulse generator
- 20 Sub working table
- 21 Rotary table
- 22 Interface reserved for fourth axis
- 23 Spindle cutting load hardware protection
- 24 Z axis retract function at power failure
- 25 Anti-collision and proecess simulation software
- 26 Remote monitoring software-professional (Not available for SIEMENS contoller)
- 27 Auto tool length measurement
- 28 Auto workpiece measurement
- 29 Transformer
- 30 Auto warm up function
- 31 Thermal compensation

Optional accessory for auto head attachment

- 1 Z axis travel 1,020mm(box way spindle head, for AC head attachment)
- 2 Auto AC 90 degree angular head/ AC extended head/ AC 2-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