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High Efficiency Double Column Machining Center



High Efficiency Double Column Machining Center

With Vision Wide tradition in making high rigidity machine structure, **F** series not only plays a high precision indicator in 5-face machining centers but also provides a full range of high efficiency cutting performance through its rigid structure design and excellent geometric accuracy.

- ▶ Auto head attachments exchanging system
- ▶ Fully auto 5-face machining capacity
- ▶ Exclusive accessories for 5-face machining
- ▶ ISO 230-2 standard



Photo: NF-3223 model with enclosed splash guard (without roof)

Full range of machine specification

- ▶ 4,000~6,000rpm gear type spindle
- ▶ X axis travel: NF series: 2~10M
HF series: 4~10M
- ▶ Y axis travel: NF series: 2,300/ 2,600/ 3,200/ 3,000/ 3,300/ 3,900mm
NF series: 3,500/ 4,000/ 4,200/ 4,700mm
- ▶ Z axis travel (box way): 920/ 1,020mm
- ▶ Z axis travel (linear way): can be expanded to 1,000/ 1,200/ 1400mm
- ▶ Port width: NF series: 2,400/ 2,700/ 3,200mm
HF series: 3,500/ 4,000mm
- ▶ XYZ-axis roller type linear way supplied by Germany Maker.

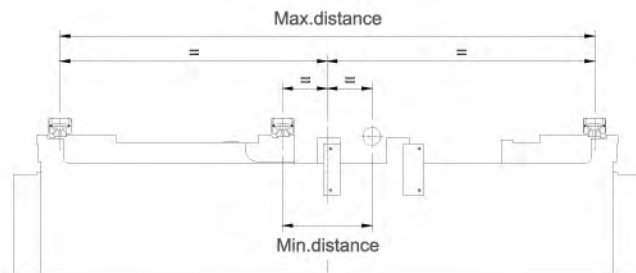


Photo: NF-3223 model w/ enclosed splash guard(w/o roof)

High rigid structure design

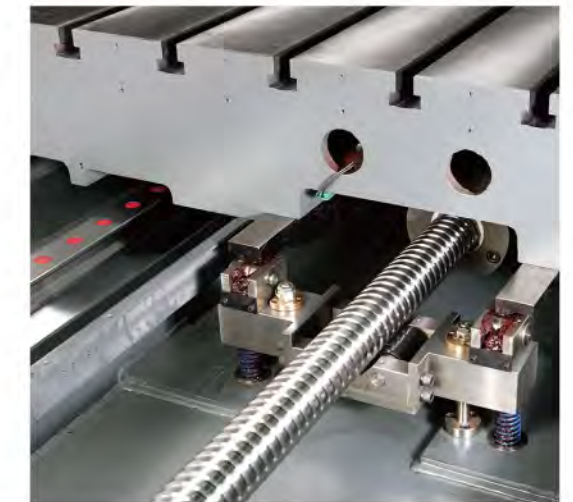
- Optimal streamline in structural design and stress-strain analysis.
- Symmetrical heat conduction in box shape structure.
- MEEHANITE grade casting iron.
- Stress relief heat treatment.
- Component machining stress eliminated by its natural frequency and resonance.

425x1,000mm large size column gives the beam a strong support.



Steady spindle head mechanism design

- Z axis balance system is oil and air separated type driven by pneumatic Z axis motion.
- Spindle head is balanced by two self-aligned hydraulic Cylinders.
- Spindle locates at the center of the 2 counter balancing cylinders, and Z driving ball screw and spindle head.



XYZ-axis with dual feedback positioning encoder

- Less rotation error between motor and screw
- Higher positioning accuracy
- Higher repeatability

Supporter mechanism

XY-axis precision supporter mechanism prevent ball screw sag, enhance higher positioning accuracy and ensure ball screw lifetime (X axis>4, Y axis>3).



- 1,130mm high rigid beam, with stepped design, and large span in Y axis for rigidity.
- Y axis with 65mm ultra-load guide way not only enhances more than 40% rigidity on higher cutting load but also extends longer lifetime.

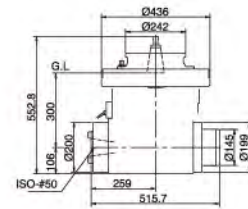


- 3 roller type linear ways in X axis, 30% stiffness higher than ball type, German roller guide way (SCNBERGER)
- Symmetric 3 roller type guide way, high straightness in full stroke
- Base with strong box-shape ribs allows the best dynamic horizontal accuracy under heavy work piece load.

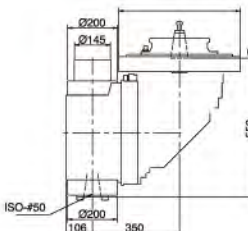


- Gear reducer in X-axis ensures high load capacity. Dynamic precision of servo motor can convey to precision screw.
- With 9kw(Fanuc) high power motor offers max force and high precision.

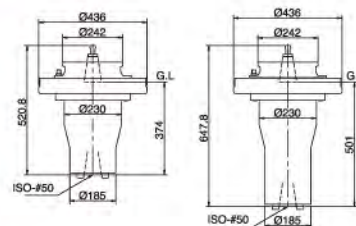
Auto multi-angle head attachment



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

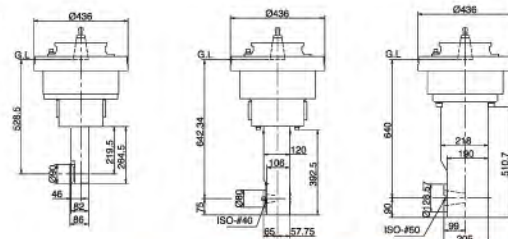


Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1°/ 5°
B-axis indexing	Auto / 5°(manual1°)
Machining coolant	External nozzle/ CTS 20/ 70 bar
Max. power	26 kW
Max. speed	3,000 rpm



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



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)

High Speed.
High Precision.
High Efficiency.

Intelligent multi-face machining

5-axis specification tool point center management TPCM

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

Auto coordinates tool axis 3D conversion

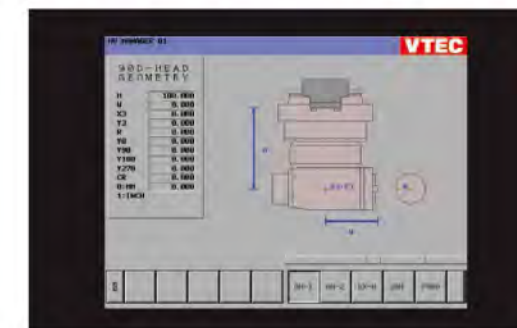
3-axis mechanical coordinates system can be automatically converted to machining coordinates system, easily achieving face milling, end milling, drilling and rigid tapping machining operations.

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

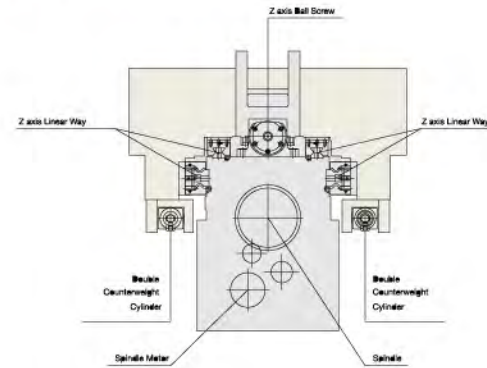
test specification: 22/26kW 4,500rpm spindle

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		



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.
- High speed belt-driven spindle can be chose 4,000/6,000/8,000/10,000 rpm



Face milling:

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



End milling:

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



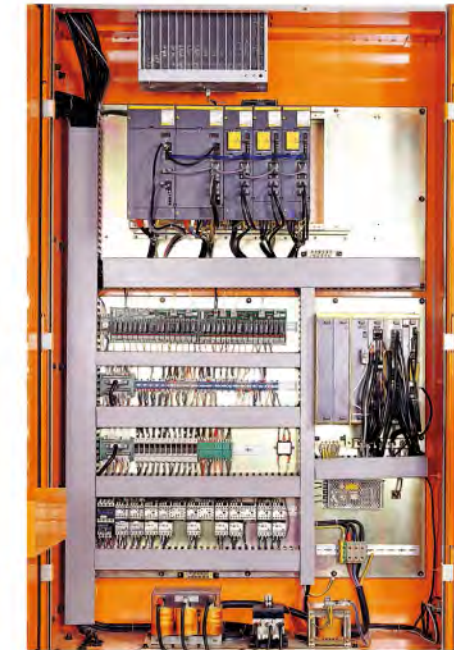
Gun drilling(u):

Total dia.: 32mm
Cutting speed: 1,500rpm
Cutting feed: 500mm/min
Cutting depth: 30mm
Removal rate: 480cc/min
Coolant through spindle

- Test specification: 22/26kw/6,000rpm

High Speed.
High Precision.
High Efficiency.

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



- Centralized auto lubrication system



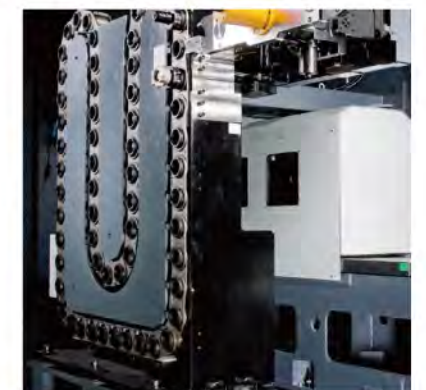
- Modularized machine design for oil cooling device and hydraulic unit.



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



- Vertical type magazine(opt.)



- 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

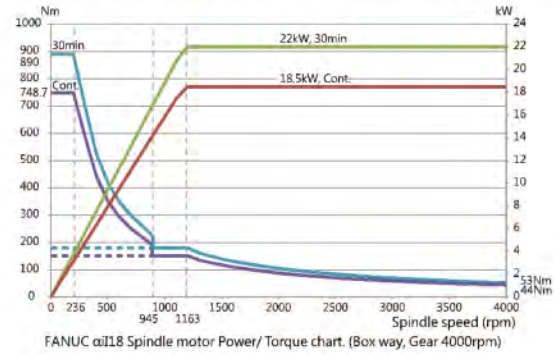


- Auto tool exchange, tool to tool 3 sec.

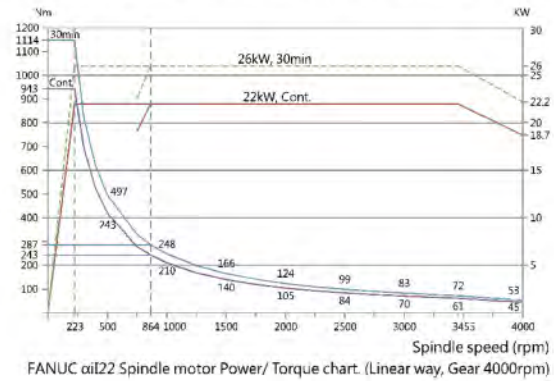
Spindle power and torque chart

1. Standard motors

A. Box way gear type BT50 α i18 / 7,000rpm/ spindle 4,000RPM

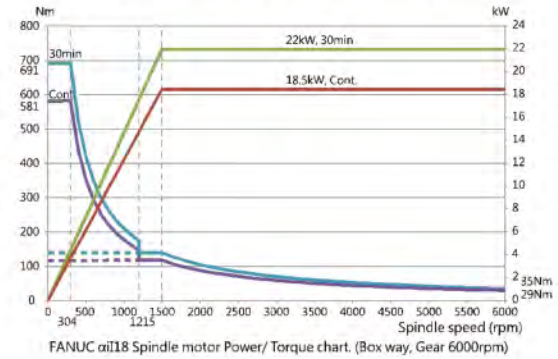


B. Box way gear type BT50 α i22 / 7,000rpm/ spindle 4,000RPM

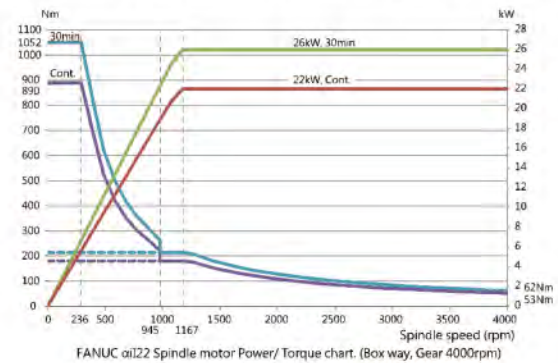


2. Optional motors (1) Z-axis box way

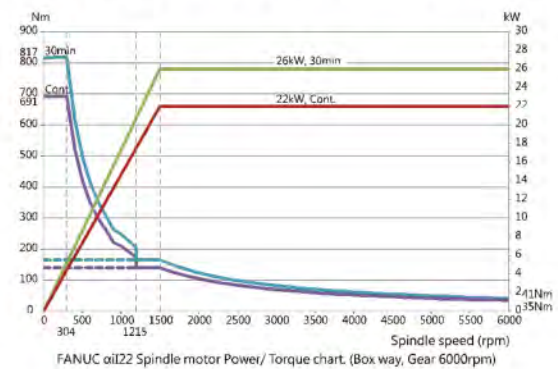
A. Box way gear type BT50 α i18 / 7,000rpm/ spindle 6,000RPM



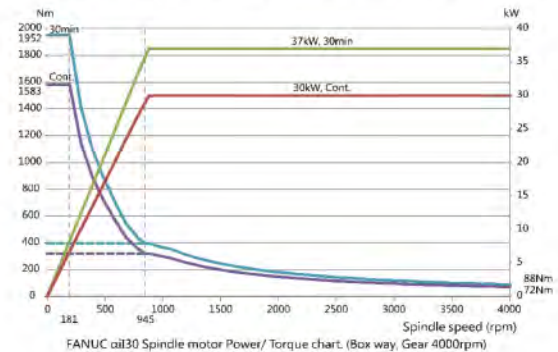
B. Box way gear type BT50 α i22 / 7,000rpm/ spindle 4,000RPM



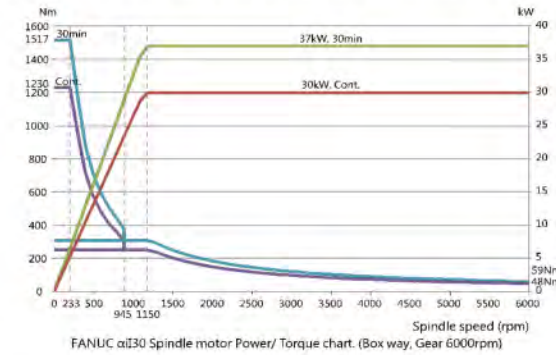
C. Box way gear type BT50 α i22 / 7,000rpm/ spindle 6,000RPM



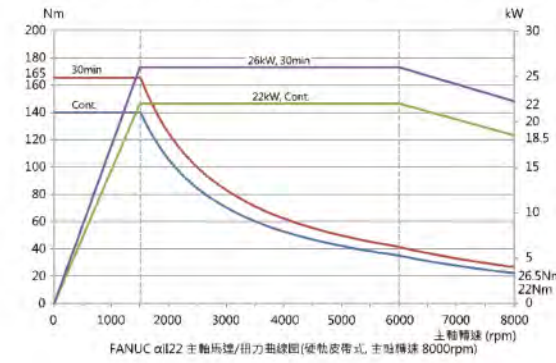
D. Box way gear type BT50 α i30 / 6,000rpm/ spindle 4,000RPM



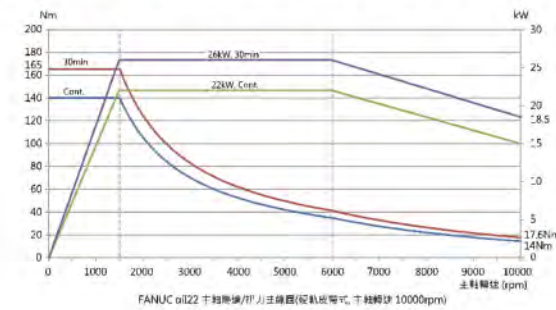
E. Box way gear type BT50 α i30 / 6,000rpm/ spindle 6,000RPM



F. Belt type BT50 α i22 / 10,000rpm/ spindle 8,000RPM

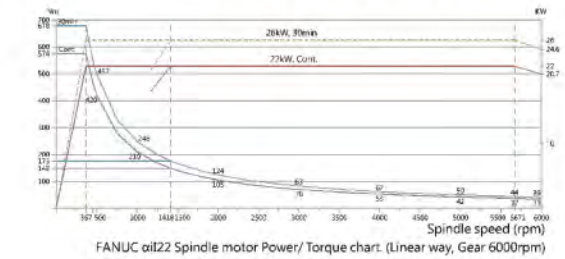


G. Belt type BT50 α i22 / 10,000rpm/ spindle 10,000RPM

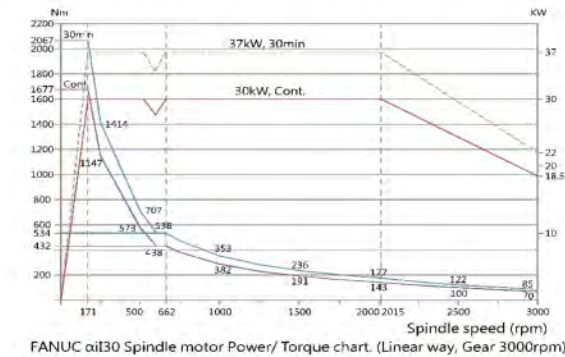


(2) Z-axis linear guide way

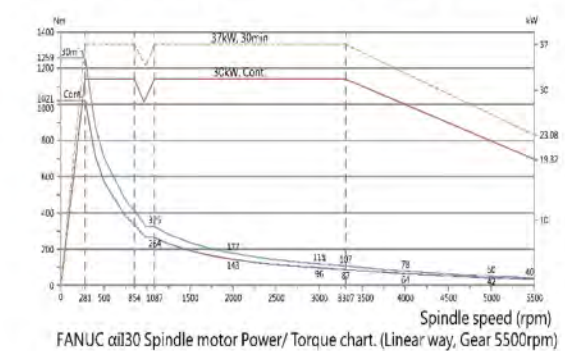
A. Gear type BT50 α i22 / 7,000rpm/ spindle 6,000RPM



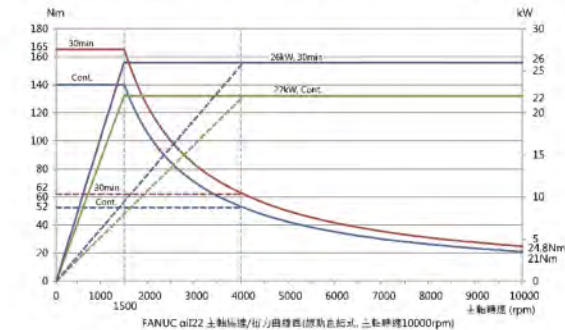
B. Gear type BT50 α i30 / 6,000rpm/ spindle 3,000RPM



C. Gear type BT50 α i30 / 6,000rpm/ spindle 5,500RPM



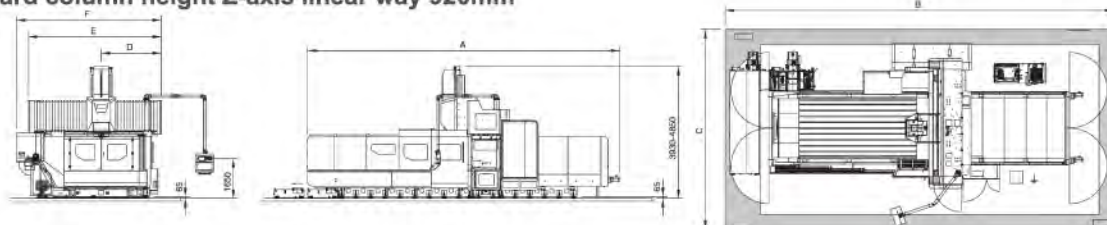
C. Direct driven BT50 α i22 / 10,000rpm/ spindle 10,000RPM



Machine Dimension | NF series

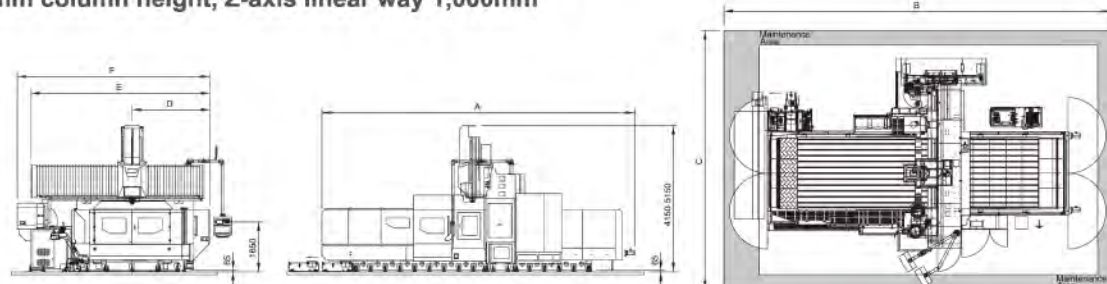
● NF-xx23/xx26/xx32 (vertical type tool change)

For standard column height Z-axis linear way 920mm



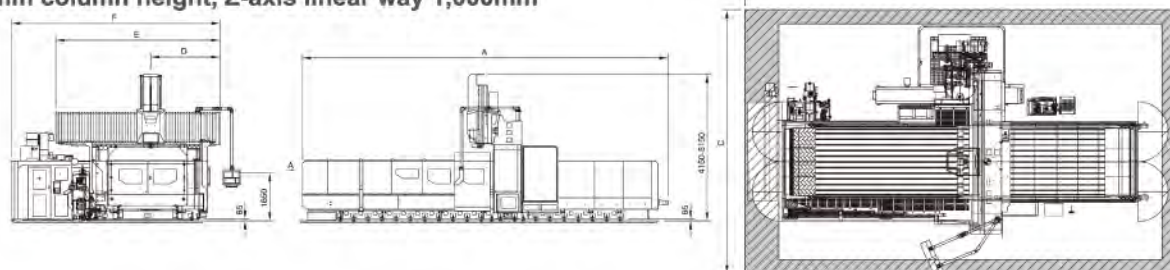
● NF-xx30/xx33/xx39 (floor-standing vertical type tool change)

For +200mm column height, Z-axis linear way 1,000mm



● NF-xx30/xx33/xx39 (floor-standing vertical-horizontal type tool change)

For +200mm column height, Z-axis linear way 1,000mm



Unit:mm

MODEL	A	B	C	D	E	F
NF-XX23						
NF-2223	6,800	9,200				
NF-3223	8,800	11,200				
NF-4223	10,800	13,200				
NF-5223	12,800	15,200	6,800	2,050	4,600	5,000
NF-6223	14,800	17,200				
NF-8223	19,900	22,000				
NF-10223	24,900	26,000				
NF-XX26						
NF-3226	8,800	11,200				
NF-4226	10,800	13,200				
NF-5226	12,800	15,200	7,200	2,250	4,900	5,400
NF-6226	14,800	17,200				
NF-8226	19,900	22,000				
NF-10226	23,900	26,000				
NF-XX32						
NF-3232	8,800	11,200				
NF-4232	10,800	13,200				
NF-5232	12,800	15,200	7,800	2,650	5,800	6,200
NF-6232	14,800	17,200				
NF-8232	19,900	22,000				
NF-10232	23,900	26,000				

MODEL	A	B	C	D	E	F
NF-XX30						
NF-3230	8,800	11,200				
NF-4230	10,800	13,200				
NF-5230	12,800	15,200	8,500	2,500	5,600	6,100
NF-6230	14,800	17,200				
NF-8230	19,900	22,000				
NF-10230	23,900	26,000				
NF-XX33						
NF-3233	8,800	11,200				
NF-4233	10,800	13,200				
NF-5233	12,800	15,200	8,800	2,700	6,100	6,600
NF-6233	14,800	17,200				
NF-8233	19,900	22,000				
NF-10233	23,900	26,000				
NF-XX39						
NF-3239	8,800	11,200				
NF-4239	10,800	13,200				
NF-5239	12,800	15,200	9,400	3,000	6,800	7,400
NF-6239	14,800	17,200				
NF-8239	19,900	22,000				
NF-10239	23,900	26,000				

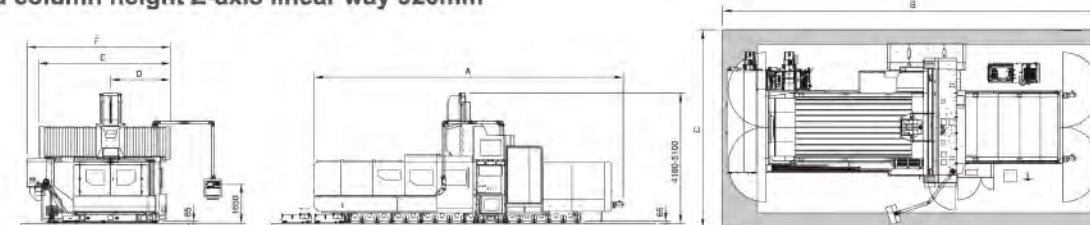
MODEL	A	B	C	D	E	F
NF-XX30						
NF-3230	8,800	11,200				
NF-4230	10,800	13,000				
NF-5230	12,800	15,200	9,000	2,300	5,300	6,900
NF-6230	14,800	17,200				
NF-8230	18,800	22,000				
NF-10230	22,800	26,000				
NF-XX33						
NF-3233	8,800	11,200				
NF-4233	10,800	13,200				
NF-5233	12,800	15,200	9,300	2,500	5,800	7,400
NF-6233	14,800	17,200				
NF-8233	18,800	22,200				
NF-10233	22,800	26,000				
NF-XX39						
NF-3239	8,800	11,200				
NF-4239	10,800	13,200				
NF-5239	12,800	15,200	10,000	2,800	6,400	8,100
NF-6239	14,800	17,200				
NF-8239	18,800	22,200				
NF-10239	22,800	26,000				

High Speed.
High Precision.
High Efficiency.

HF series

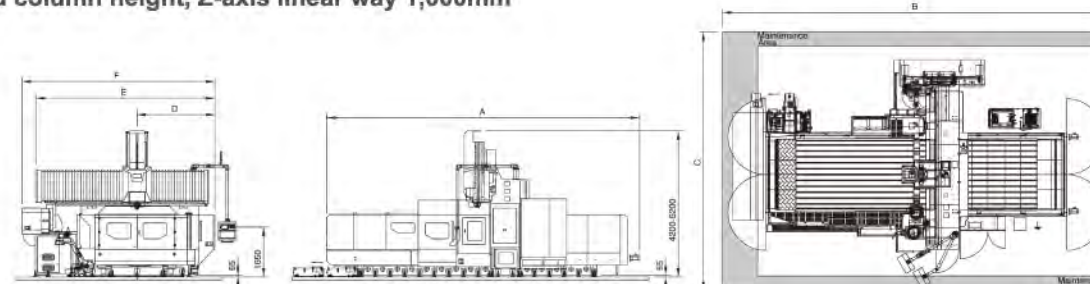
● HF-xx35/xx40 (vertical type tool change)

For standard column height Z-axis linear way 920mm



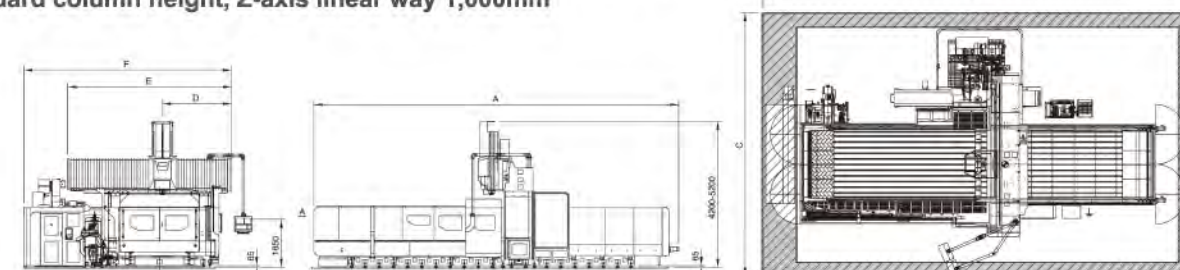
● HF-xx42/xx47 (floor-standing vertical type tool change)

For standard column height, Z-axis linear way 1,000mm



● HF-xx42/xx47 (floor-standing vertical-horizontal type tool change)

For standard column height, Z-axis linear way 1,000mm



Unit:mm

MODEL	A	B	C	D	E	F
HF-4235	10,800	14,000				
HF-5235	12,800	16,000				
HF-6235	14,800	18,000	8,200	2,570	5,850	6,050
HF-8235	19,500	23,000				
HF-10235	24,000	28,000				
HF-4240	10,800	14,000				
HF-5240	12,800	16,000				
HF-6240	14,800	18,000	8,700	2,820	6,350	6,550
HF-8240	19,500	24,000				
HF-10240	24,000	28,500				

MODEL	A	B	C	D	E	F
HF-4242	10,800	14,000				
HF-5242	12,800	16,000				
HF-6242	14,800	18,000	9,800	2,880	6,900	7,450
HF-8242	19,500	23,000				
HF-10242	24,000	28,000				
HF-4247	10,800	14,000				
HF-5247	12,800	16,000				
HF-6247	14,800	18,000	10,300	3,130	6,400	7,950
HF-8247	19,500	24,000				
HF-10247	24,000	28,500				

MODEL	A	B	C	D	E	F
HF-4242	10,800	14,000				
HF-5242	12,800	16,000				
HF-6242	14,800	18,000	10,000	2,880	6,900	7,650
HF-8242	19,500	23,000				
HF-10242	24,000	28,000				
HF-4247	10,800	14,000				
HF-5247	12,800	16,000				
HF-6247	14,800	18,000	10,500	3,130	6,400	8,150
HF-8247	19,500	24,000				
HF-10247	24,000	28,500				

NF Specification | NF-xx23/30 Series

MODEL			Unit	NF-2223	NF-3223/30	NF-4223/30	NF-5223/30	NF-6223/30	NF-8223/30	NF-10223/30
TRAVEL										
X axis			mm	2,200	3,200	4,200	5,200	6,200	8,200	10,200
Y axis			mm	2,300/ 3,000						
Z axis	Box way		mm	920/ 1,020(opt.)						
	Linear way		mm	1,000(opt.)/ 1,200(opt.)/ 1,400(opt.)						
Distance from spindle nose to table	Box way (2-step gear/Belt-driven)	Z axis=920	mm	150-1,070					100-1,020	
		Z axis=1,020		250-1,270(column +200mm)					200-1,220(column +200mm)	
	Linear way (2-step gear/Direct-driven)	Z axis=1,000	mm	235-1,235(column +200mm)					185-1,185(column +200mm)	
		Z axis=1,200		135-1,335(column +300mm)					85-1,285(column +300mm)	
		Z axis=1,400		135-1,535(column +500mm)					85-1,485(column +500mm)	
Distance from spindle center to column			mm	455						
Distance between columns (port width)			mm	2,400						
TABLE										
Dimension			mm	2,000x2,050	3,000x2,050	4,000x2,050	5,000x2,050	6,000x2,050	8,000x2,050	10,000x2,050
T-slot(Width x Number x Pitch)			mm	28x11x200(150)						
Max. table load			kg/m	9,000	13,000	16,000	20,000	22,000	24,000	26,000
SPINDLE										
Spindle motor(cont./30 min. rated)			kW	18.5/ 22(22/ 26opt.)(30/ 37opt.)						
Spindle speed	Box way	2-step gear	rpm	4,000/ 6,000(opt.)						
		Belt-driven		8,000/ 10,000(opt.)						
	Linear way	2-step gear		22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)						
		Direct-driven		10,000(opt.)						
Spindle taper				ISO NO.50						
FEED										
Cutting federate			mm/min	1-10,000						
Rapid traverse			m/min	X:24, Y:20, Z:15	X:24, Y:20/15 Z:15	X:18, Y:20/15, Z:15	X:12.5, Y:20/15, Z:15	X:10, Y:20/15, Z:15	X:8, Y:20/15, Z:15	
3 axis motor power (FANUC) (Z:box way/linear way)			kW	X:7, Y:4, Z:7/4			X:9, Y:4, Z:7/4			
ACCURY(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	P0.022			P0.032	P0.042		P0.045
Repeatability	Refer to JIS-B6333		mm	± 0.003						
	Refer to ISO 10791-2		mm	Ps0.016			Ps0.025	Ps0.033		Ps0.035
ATC										
ATC type/ capacity	Vertical type tool change		pcs	40/ 60(opt.)						
	Floor-standing type vertical tool change		pcs	40(opt.)/ 60(opt.)						
	Floor-standing type vertical-horizontal tool change		pcs	32(opt.)/ 40(opt.)/ 60(opt.)						
Max. tool weight			kg	18						
Tool shank			-	ISO NO.50						
Pull stud			-	P50T-1						
OTHERS										
Power requirement			kVA	60						
Pneumatic requirement			kg/cm ²	6						
Machine net weight			kg	29,000	33,400/34,900	38,400/40,400	43,400/45,400	48,000/50,400	56,000/60,400	64,000/70,400
Machine gross weight			kg	32,000	37,100/38,600	43,400/45,400	48,400/50,400	53,000/55,400	62,000/66,400	70,000/76,400
Max. space (LxWxH)	Vertical type tool change		m	9.2x6.8x4.9	11.2x6.8x4.9	13.2x6.8x4.9	15.2x6.8x4.9	17.2x6.8x4.9	22x6.8x4.9	26x6.8x4.9
	Floor-standing type vertical tool change				11.2x8.5x4.9	13.2x8.5x4.9	15.2x8.5x4.9	17.2x8.5x4.9	22x8.5x4.9	26x8.5x4.9
	Floor-standing type vertical-horizontal tool change				11.2x9.0x5.2	13.2x9.0x5.2	15.2x9.0x5.2	17.2x9.0x5.2	22x9.0x5.2	26x9.0x5.2

NF Specification | NF-xx26/33 Series

MODEL			Unit	NF-3226/33	NF-4226/33	NF-5226/33	NF-6226/33	NF-8226/33	NF-10226/33
TRAVEL									
X axis			mm	3,200	4,200	5,200	6,200	8,200	10,200
Y axis			mm	2,600/ 3,300					
Z axis	Box way		mm	920/ 1,020(opt.)					
	Linear way		mm	1,000(opt.)/ 1,200(opt.)/ 1,400(opt.)					
Distance from spindle nose to table	Box way (2-step gear/Belt-driven)	Z axis=920	mm	150-1,070				100-1,020	
		Z axis=1,020		250-1,270(column +100mm)				200-1,220(column +200mm)	
	Linear way (2-step gear/Direct-driven)	Z axis=1,000	mm	235-1,235(column +100mm)				185-1,185(column +200mm)	
		Z axis=1,200		135-1,335(column +300mm)				85-1,285(column +300mm)	
		Z axis=1,400		135-1,535(column +500mm)				85-1,485(column +500mm)	
Distance from spindle center to column			mm	455					
Distance between columns (port width)			mm	2,700					
TABLE									
Dimension			mm	3,000x2,450	4,000x2,450	5,000x2,450	6,000x2,450	8,000x2,450	10,000x2,450
T-slot(Width x Number x Pitch)			mm	28x13x200(150)					
Max. table load			kg/m	13,000	16,000	20,000	22,000	24,000	26,000
SPINDLE									
Spindle motor(cont./30 min. rated)			kW	18.5/ 22(22/ 26opt.)(30/ 37opt.)					
Spindle speed	Box way	2-step gear	rpm	4,000/ 6,000(opt.)					
		Belt-driven		8,000/ 10,000(opt.)					
	Linear way	2-step gear		22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)					
		Direct-driven		10,000(opt.)					
Spindle taper				ISO NO.50					
FEED									
Cutting feed rate			mm/min	1-10,000					
Rapid traverse			m/min	X:24, Y:20/15 Z:15	X:18, Y:20/15, Z:15	X:12.5, Y:20/15, Z:15	X:10, Y:20/15, Z:15	X:8, Y:20/15, Z:15	
3 axis motor power (FANUC) (Z:box way/linear way)			kW	X:7, Y:4, Z:7/4		X:9, Y:4, Z:7/4			
ACCURY(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	P0.022		P0.032	P0.042		P0.045
Repeatability	Refer to JIS-B6333		mm	±0.003					
	Refer to ISO 10791-2		mm	Ps0.016		Ps0.025	Ps0.033		Ps0.035
ATC									
ATC type/ capacity	Vertical type tool change		pcs	40/ 60(opt.)					
	Floor-standing type vertical tool change		pcs	40(opt.)/ 60(opt.)					
	Floor-standing type vertical-horizontal tool change		pcs	32(opt.)/ 40(opt.)/ 60(opt.)					
Max. tool weight			kg	18					
Tool shank			-	ISO NO.50					
Pull stud			-	P50T-1					
OTHERS									
Power requirement			kVA	60					
Pneumatic requirement			kg/cm ²	6					
Machine net weight			kg	36,400/38,400	41,400/43,900	46,400/48,900	51,000/53,900	60,000/63,900	69,000/73,900
Machine gross weight			kg	40,100/42,100	46,400/48,900	51,400/53,900	56,000/58,900	66,000/69,900	75,000/79,900
Max. space (LxWxH)	Vertical type tool change		m	11.2x7.2x4.9	13.2x7.2x4.9	15.2x7.2x4.9	17.2x7.2x4.9	22x7.2x4.9	26x7.2x4.9
	Floor-standing type vertical tool change			11.2x8.8x4.9	13.2x8.8x4.9	15.2x8.8x4.9	17.2x8.8x4.9	22x8.8x4.9	26x8.8x4.9
	Floor-standing type vertical-horizontal tool change			11.2x9.3x5.2	13.2x9.3x5.2	15.2x9.3x5.2	17.2x9.3x5.2	22x9.3x5.2	26x9.3x5.2

NF Specification | NF-xx32/39 Series

MODEL			Unit	NF-3232/39	NF-4232/39	NF-5232/39	NF-6232/39	NF-8232/39	NF-10232/39
TRAVEL									
X axis			mm	3,200	4,200	5,200	6,200	8,200	10,200
Y axis			mm	3,200/ 3,900					
Z axis	Box way		mm	920/ 1,020(opt.)					
	Linear way		mm	1,000(opt.)/ 1,200(opt.)/ 1,400(opt.)					
Distance from spindle nose to table	Box way (2-step gear/Belt-driven)	Z axis=920	mm	150-1,070				100-1,020	
		Z axis=1,020		250-1,270(column +200mm)				200-1,220(column +200mm)	
	Linear way (2-step gear/Direct-driven)	Z axis=1,000	mm	235-1,235(column +200mm)				185-1,185(column +200mm)	
		Z axis=1,200		135-1,335(column +300mm)				85-1,285(column +300mm)	
		Z axis=1,400		135-1,535(column +500mm)				85-1,485(column +500mm)	
Distance from spindle center to column			mm	455					
Distance between columns (port width)			mm	3,200					
TABLE									
Dimension			mm	3,000x2,450	4,000x2,450	5,000x2,450	6,000x2,450	8,000x2,450	10,000x2,450
T-slot(Width x Number x Pitch)			mm	28x13x200(150)					
Max. table load			kg/m	13,000	16,000	20,000	22,000	24,000	26,000
SPINDLE									
Spindle motor(cont./30 min. rated)			kW	18.5/ 22(22/ 26opt.)(30/ 37opt.)					
Spindle speed	Box way	2-step gear	rpm	4,000/ 6,000(opt.)					
		Belt-driven		8,000/ 10,000(opt.)					
	Linear way	2-step gear		22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)					
		Direct-driven		10,000(opt.)					
Spindle taper				ISO NO.50					
FEED									
Cutting feed rate			mm/min	1-10,000					
Rapid traverse			m/min	X:24, Y:15/12 Z:15	X:18, Y:15/12, Z:15	X:12.5, Y:15/12, Z:15	X:8, Y:15/12, Z:15	X:8, Y:15/12, Z:15	
3 axis motor power (FANUC) (Z:box way/linear way)			kW	*X:7, Y:4, Z:7/4		X:9, Y:4, Z:7/4			
ACCURY(X,Y,Z)(Measured by laser instrument)									
Positioning accuracy	Refer to JIS B6333		mm	±0.005/300, ±0.015Full travel					
	Refer to ISO 10791-2		mm	P0.022		P0.032	P0.042		P0.045
Repeatability	Refer to JIS-B6333		mm	±0.003					
	Refer to ISO 10791-2		mm	Ps0.016		Ps0.025	Ps0.033		Ps0.035
ATC									
ATC type/ capacity	Vertical type tool change		pcs	40/ 60(opt.)					
	Floor-standing type vertical tool change		pcs	40(opt.)/ 60(opt.)					
	Floor-standing type vertical-horizontal tool change		pcs	32(opt.)/ 40(opt.)/ 60(opt.)					
Max. tool weight			kg	18					
Tool shank			-	ISO NO.50					
Pull stud			-	P50T-1					
OTHERS									
Power requirement			kVA	60					
Pneumatic requirement			kg/cm ²	6					
Machine net weight			kg	40,500/42,500	44,500/48,000	50,500/54,000	55,500/58,500	64,500/68,500	73,500/78,500
Machine gross weight			kg	44,500/46,500	49,500/53,000	55,500/59,000	60,500/63,500	70,500/74,500	79,500/84,500
Max. space (LxWxH)	Vertical type tool change			11.2x7.8x4.9	13.2x7.8x4.9	15.2x7.8x4.9	17.2x7.8x4.9	22x7.8x4.9	26x7.8x4.9
	Floor-standing type vertical tool change		m	11.2x9.4x4.9	13.2x9.4x4.9	15.2x9.4x4.9	17.2x9.4x4.9	22x9.4x4.9	26x9.4x4.9
	Floor-standing type vertical-horizontal tool change			11.2x10 x5.2	13.2x10 x5.2	15.2x10 x5.2	17.2x10 x5.2	22x10 x5.2	26x10 x5.2

*NF-3239, Y7

HF Specification | HF-xx35/42 Series

MODEL			Unit	HF-4235/42	HF-5235/42	HF-6235/42	HF-8235/42	HF-10235/42
TRAVEL								
X axis			mm	4,200	5,200	6,200	8,200	10,200
Y axis			mm	3,500/ 4,200				
Z axis	Box way		mm	920/ 1,020(opt.)				
	Linear way		mm	1,000(opt.)/ 1,200(opt.)/ 1,400(opt.)				
Distance from spindle nose to table	Box way (2-step gear/Belt-driven)	Z axis=920	mm	280-1,200				
		Z axis=1,020		180-1,200				
	Linear way (2-step gear/Direct-driven)	Z axis=1,000	mm	165-1,165				
		Z axis=1,200		165-1,365(column +200mm)				
		Z axis=1,400		165-1,565(column +400mm)				
Distance from spindle center to column			mm	453				
Distance between columns (port width)			mm	3,500				
TABLE								
Dimension			mm	4,000x3,000	5,000x3,000	6,000x3,000	8,000x3,000	10,000x3,000
T-slot(Width x Number x Pitch)			mm	28x13x250(150)				
Max. table load			kg/m	20,000	24,000	28,000	32,000	36,000
SPINDLE								
Spindle motor(cont./30 min. rated)			kW	22/ 26(30/ 37opt.)				
Spindle speed	Box way	2-step gear	rpm	4,000/ 6,000(opt.)				
		Belt-driven		8,000/ 10,000(opt.)				
	Linear way	2-step gear		22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)				
		Direct-driven		10,000(opt.)				
Spindle taper				ISO NO.50				
FEED								
Cutting feed rate			mm/min	1-7,000				
Rapid traverse			m/min	X:10, Y:10, Z:12		X:8, Y:10, Z:12		
3 axis motor power (FANUC) (Z:box way/linear way)			kW	X:9, Y:7, Z:7 / 4				
ACCURY(X,Y,Z)(Measured by laser instrument)								
Positioning accuracy	Refer to JIS B6333		mm	±0.005/300, ±0.015Full travel				
	Refer to ISO 10791-2		mm	P0.040		P0.045		P0.050
Repeatability	Refer to JIS-B6333		mm	±0.003				
	Refer to ISO 10791-2		mm	Ps0.028		Ps0.035		Ps0.040
ATC								
ATC type/ capacity	Vertical type tool change		pcs	40/ 60(opt.)				
	Floor-standing type vertical tool change		pcs	40(opt.)/ 60(opt.)				
	Floor-standing type vertical-horizontal tool change		pcs	32(opt.)/ 40(opt.)/ 60(opt.)				
Max. tool weight			kg	18				
Tool shank			-	ISO NO.50				
Pull stud			-	P50T-1				
OTHERS								
Power requirement			kVA	65				
Pneumatic requirement			kg/cm²	6				
Machine net weight			kg	57,000/59,000	63,000/65,000	69,000/71,000	83,000/85,000	99,000/100,000
Machine gross weight			kg	61,000/63,000	68,000/70,000	75,000/77,000	91,000/93,000	107,000/108,000
Max. space (LxWxH)	Vertical type tool change		m	14x8.2x5.1	16x8.2x5.1	18x8.2x5.1	23x8.2x5.1	28x8.2x5.1
	Floor-standing type vertical tool change			14x9.4x5.1	16x9.4x5.1	18x9.4x5.1	23x9.4x5.1	28x9.4x5.1
	Floor-standing type vertical-horizontal tool change			14x10x5.2	16x10x5.2	18x10x5.2	23x10x5.2	28x10x5.2

HF Specification | HF-xx40/47 Series

MODEL			Unit	HF-4240/47	HF-5240/47	HF-6240/47	HF-8240/47	HF-10240/47
TRAVEL								
X axis			mm	4,200	5,200	6,200	8,200	10,200
Y axis			mm	4,000/ 4,700				
Z axis	Box way		mm	920/ 1,020(opt.)				
	Linear way		mm	1,000(opt.)/ 1,200(opt.)/ 1,400(opt.)				
Distance from spindle nose to table	Box way (2-step gear/Belt-driven)	Z axis=920	mm	280-1,200				
		Z axis=1,020		180-1,200				
	Linear way (2-step gear/Direct-driven)	Z axis=1,000	mm	165-1,165				
		Z axis=1,200		165-1,365(column +200mm)				
		Z axis=1,400		165-1,565(column +400mm)				
Distance from spindle center to column			mm	453				
Distance between columns (port width)			mm	4,000				
TABLE								
Dimension			mm	4,000x3,500	5,000x3,500	6,000x3,500	8,000x3,500	10,000x3,500
T-slot(Width x Number x Pitch)			mm	28x15x250(150)				
Max. table load			kg/m	20,000	24,000	28,000	32,000	36,000
SPINDLE								
Spindle motor(cont./30 min. rated)			kW	22/ 26(30/ 37opt.)				
Spindle speed	Box way	2-step gear	rpm	4,000/ 6,000(opt.)				
		Belt-driven		8,000/ 10,000(opt.)				
	Linear way	2-step gear		22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)				
		Direct-driven		10,000(opt.)				
Spindle taper				ISO NO.50				
FEED								
Cutting feed rate			mm/min	1-7,000				
Rapid traverse			m/min	X:10, Y:10, Z:12		X:8, Y:10, Z:12		
3 axis motor power (FANUC) (Z:box way/linear way)			kW	X:9, Y:7, Z:7 / 4				
ACCURY(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	P0.040		P0.045		P0.050
Repeatability	Refer to JIS-B6333		mm	± 0.003				
	Refer to ISO 10791-2		mm	Ps0.028		Ps0.035		Ps0.040
ATC								
ATC type/ capacity	Vertical type tool change		pcs	40/ 60(opt.)				
	Floor-standing type vertical tool change		pcs	40(opt.)/ 60(opt.)				
	Floor-standing type vertical-horizontal tool change		pcs	32(opt.)/ 40(opt.)/ 60(opt.)				
Max. tool weight			kg	18				
Tool shank			-	ISO NO.50				
Pull stud			-	P50T-1				
OTHERS								
Power requirement			kVA	65				
Pneumatic requirement			kg/cm ²	6				
Machine net weight			kg	58,000/60,000	64,000/66,000	70,000/72,000	84,000/86,000	100,000/101,000
Machine gross weight			kg	62,000/64,000	69,000/71,000	76,000/78,000	92,000/94,000	108,000/110,000
Max. space (LxWxH)	Vertical type tool change		m	14x8.7x5.1	16x8.7x5.1	18x8.7x5.1	24x8.7x5.1	28.5x8.7x5.1
	Floor-standing type vertical tool change			14x10x5.1	16x10x5.1	18x10x5.1	24x10x5.1	28.5x10x5.1
	Floor-standing type vertical-horizontal tool change			14x10.5x5.2	16x10.5x5.2	18x10.5x5.1	24x10.5x5.2	28.5x10.5x5.2

High Speed.
High Precision.
High Efficiency.



NF / HF Standard & Optional Accessories

Standard

- FANUC 0iMD controller
- Box way 4,000rpm 2-step gear type spindle (Z-axis box way)
- Z-axis travel 920mm
- Spindle oil cooler
- Twin hydraulic cylinders with pressured air assistance balancing system
- X, Y-axis ball screw support device (X-axis 4m above, Y-axis 3m above)
- Centralized auto lubrication system
- Independent lubrication oil collector
- Air blast through spindle
- Wash gun and pneumatic interface
- Cutting cooling system
- 40 tools magazine with arm type ATC
- Enclosed splash guard(without roof) (NF series, 2~6m standard)
- Four piece splash guard (NF series, 8~10m standard)(all HF series)
- Swiveling arm type operation panel
- Screw type chip conveyor on table sides
- Caterpillar type chip conveyor
- Heat exchanger for electrical cabinet
- Working lamp
- Operation cycle finish and alarm light
- Movable manual pulse generator
- Footswitch for tool clamping
- RJ45 interface
- XYZ-axis absolute pulse coder feedback
- XYZ-axis travel hard limits protection
- Spindle cutting load software protection
- Auto power off
- Vision Wide FX graphical user interface
- Foundation pads and bolts kits
- Adjustment tool and tool kits
- Technical manuals (operation, maintenance manual and circuit diagram)

Optional

- FANUC 31 IB/ SIEMENS 828D / HEIDENHAIN iTNC530/ MITSUBISHI M70 TypeA/ MITSUBISHI M720VS/ SIEMENS 840D
- Box way 6,000rpm 2-step gear type spindle
- Linear way 3000 /4000/5500/6000rpm 2-step gear type spindle
- 8,000/ 10,000rpm belt type spindle/ direct driven
- Z axis travel 1,020mm(box way spindle, for gear/ belt type spindle) (Unavailable with vertical-horizontal type auto tool change, multi-heads magazine on magazine side)
- Z axis travel 1,000/1,200/1,400mm (linear way spindle, for gear/ direct driven type spindle)
- Vertical type tool magazine 40/60T
- Floor-standing vertical type tool magazine 40/60T
- Floor-standing vertical-horizontal type tool magazine 40/60T
- Coolant through spindle system 20/70 bar(Vertical spindle)
- Spindle ring cutting coolant device(for no head attachment)
- Coolant through tool holder interface
- Coolant through tool holder 5/20 bar cutting fluid interface
- Oil skimmer
- Oil mist cooling device
- 60 tools magazine with arm type ATC
- Enclosed splash guard with roof (for NF-xx23/26 model, 2~6m) (not for HF series)
- Four piece splash guard (NF series, 2~6m)
- Enclosed splash guard (without roof) (NF series, 8~10m) (for all HF series)
- Overhead pendulum type operation panel
- Chip auger on table sides
- Chip cart
- Air conditioner for electrical cabinet
- XYZ-axis linear scale
- 3-axis independent manual pulse generator
- Sub working table
- Rotary table
- Interface preparation for fourth axis
- Z-axis retract function at power failure
- Auto tool length measurement
- Auto workpiece measurement
- Transformer
- Auto warm up

Optional accessory for auto head attachment

- Auto AC90 degree angular head/ AC 2-axis head/AC extended head
- Auto AC milling head/ small head/ customized head attachment
- vertical-horizontal type tool change 32/40/60 tool magazine(for NF-xx30/33/39 model) (For HF-XX42/47)
- Manual swiveling arm type head bracket on operation side(one head attachment)
- Auto swiveling arm type head bracket on operation side(one head attachment, one cover)
- Auto head magazine on magazine side(for NF-xx30/33/39 model) (For HF-XX42/47)
- AC90 angular head and 2-axis head offered the CTS 20/70 bar

※ For the specification of each model, please contact our sales representatives.