

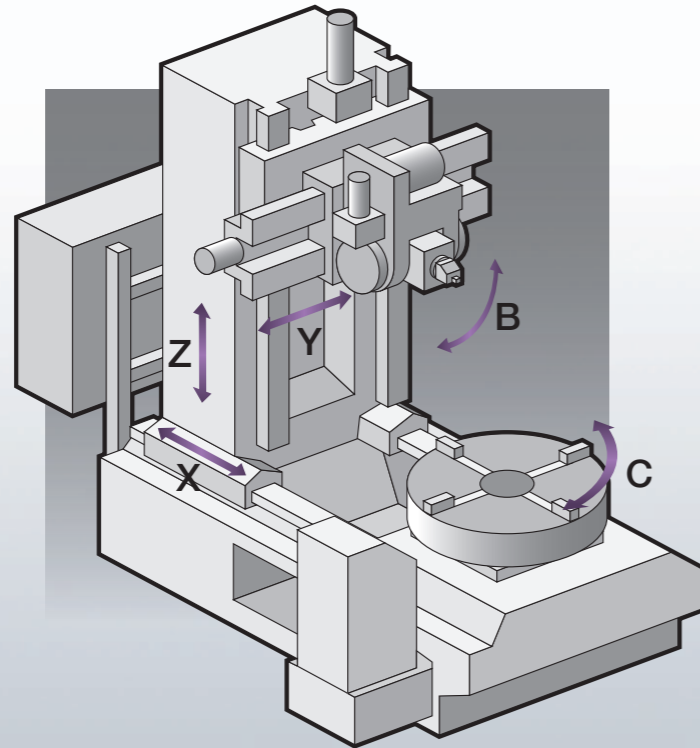
5-Axis Vertical Multitasking Machine
VTM-80YB



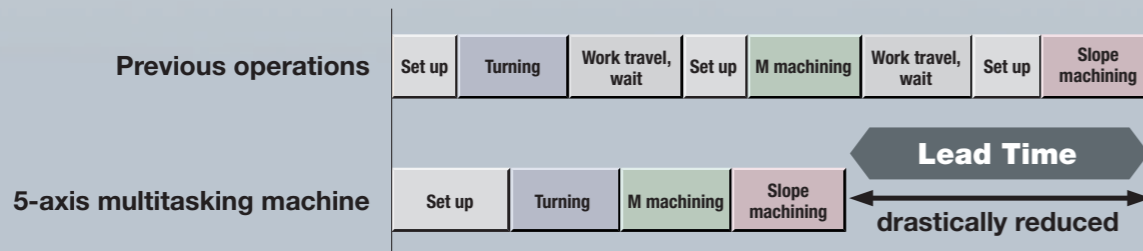
5-Axis Vertical Multitasking Machine *VTM-80YB*



Process-intensive machining of the big, intricately shaped parts 1-chuck turning, multi-sided and slope machining applications



Huge reduction in lead time with process-intensive machining



Photos shown in this brochure may also show optional equipment.

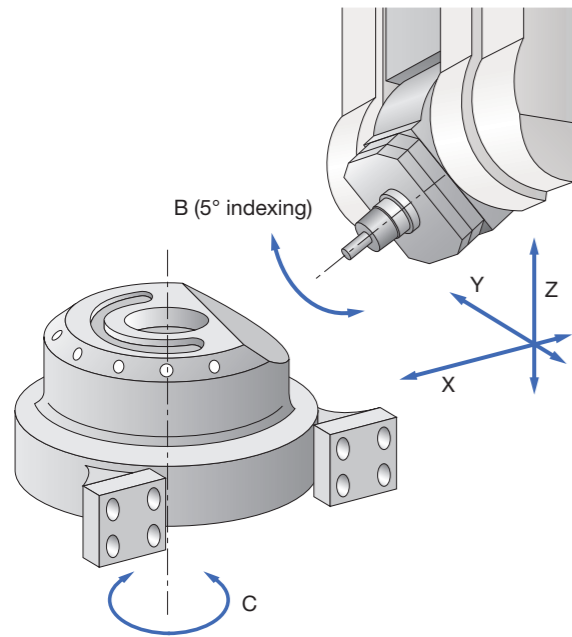
1-chuck multi-sided machining

Inclined surfaces (B-axis 5° indexing) can be machined in addition to turning and vertical/horizontal machining.

One-chuck multi-sided machining provides for huge setup time reductions and improved accuracy.

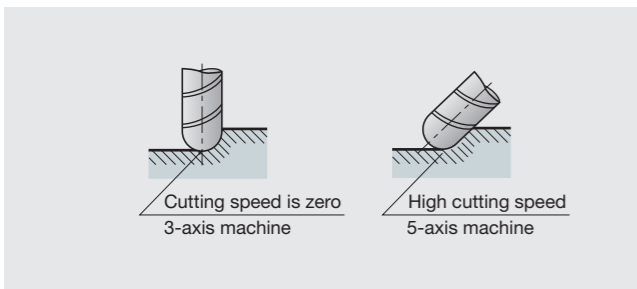
Reduced setup time, improved machining accuracy

VTM-YB series machines enable multi-sided machining with a single chucking thanks to 5-axis control (4 axes simultaneously). This greatly reduces the time required for setup, eliminates installation error, and improves accuracy.



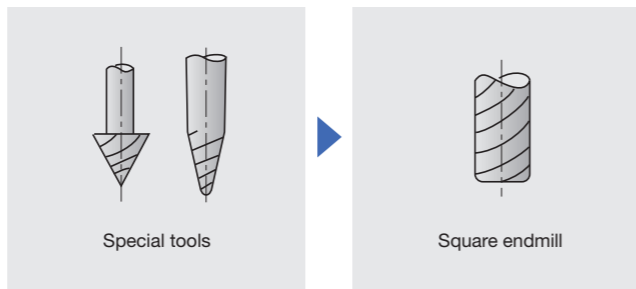
Shorter cycle times

Tool side cutting on the straight portion greatly reduces machining time compared with point contact cutting using a ball-nose end mill. Cutting can also be done on angles that avoid interference with short tools that are superior in cutting hard surfaces.



Lower tooling costs

Cutting efficiency is improved and tool life extended by cutting with the tool at an angle to the machined surface, leading to lower costs. Specially shaped tools and fixtures are unnecessary, so tool and fixture costs can be reduced.



High rigidity and accuracy for highly efficient machining

Milling tool spindle enables multi-sided machining

Vertical, horizontal, and slope machining made possible by the milling tool spindle (5° B-axis indexing)

High rigidity and accuracy

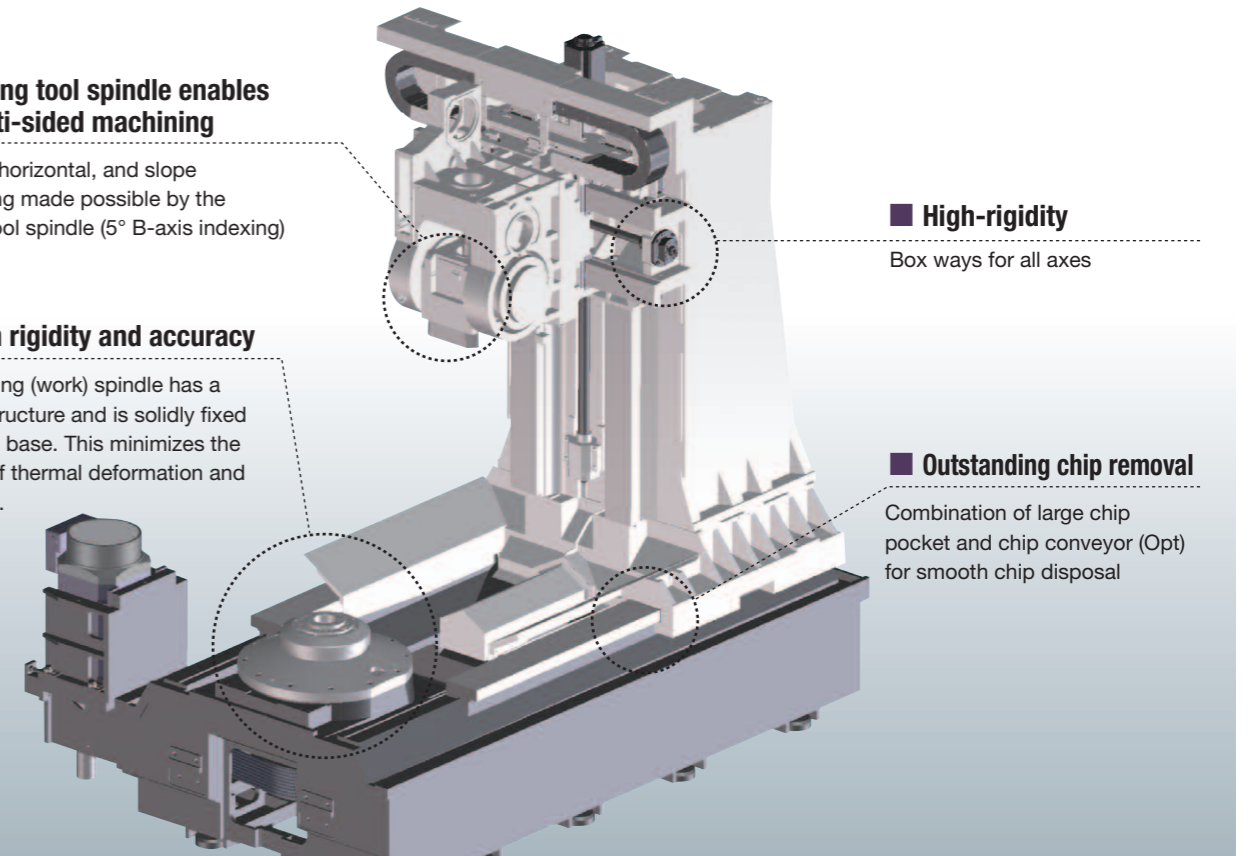
The turning (work) spindle has a flange structure and is solidly fixed to a rigid base. This minimizes the effects of thermal deformation and vibration.

High-rigidity

Box ways for all axes

Outstanding chip removal

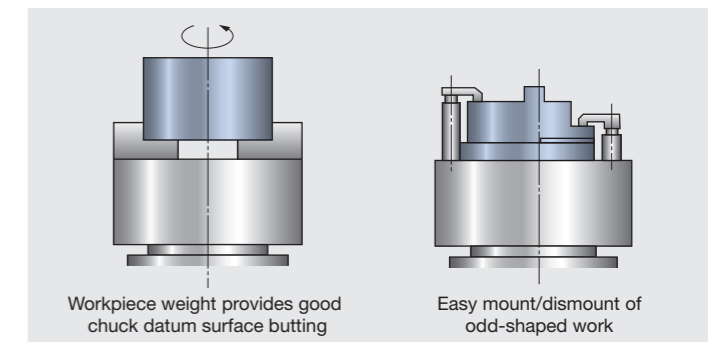
Combination of large chip pocket and chip conveyor (Opt) for smooth chip disposal



- Turning (work) spindle torque is 3,221/2,359 N-m (30 min/cont) (OSP-P300S). Gear head system makes heavy cutting possible.
- Two-point support of large-diameter turning spindle enables highly accurate machining.
- The milling tool spindle is locked with curvic coupling while turning (work spindle) applications get outstanding results even in heavy cutting.

Excellent chuck surface contact with workpiece's own weight gives stable machining

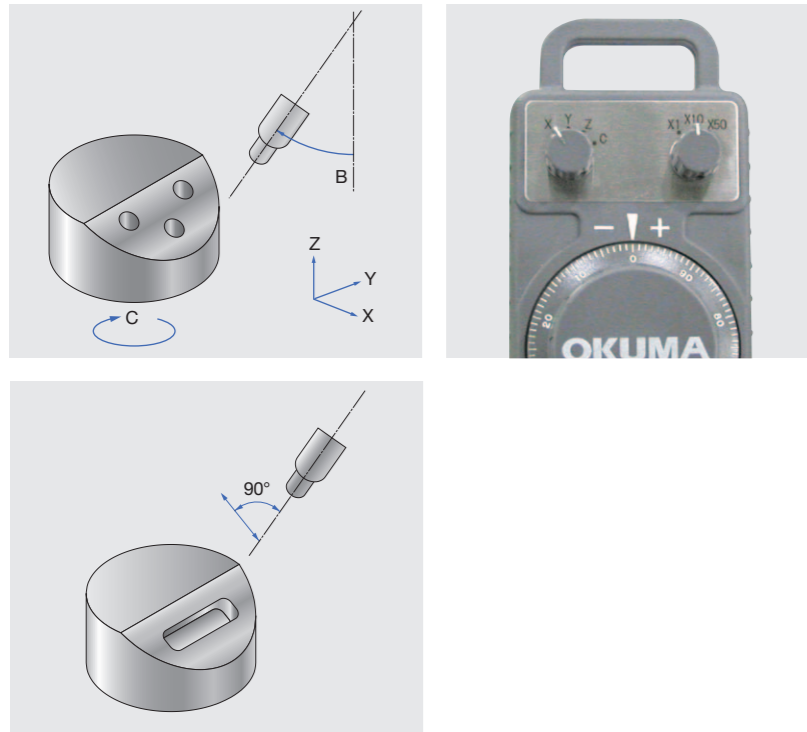
- Stable, high-accuracy machining of everything from thin workpieces to large-diameter, heavy workpieces thanks to excellent contact between workpiece and chuck datum surface using the workpiece's own weight.
- Easy, stable chucking is possible even with difficult-to-chuck workpieces.



Wide variety of options

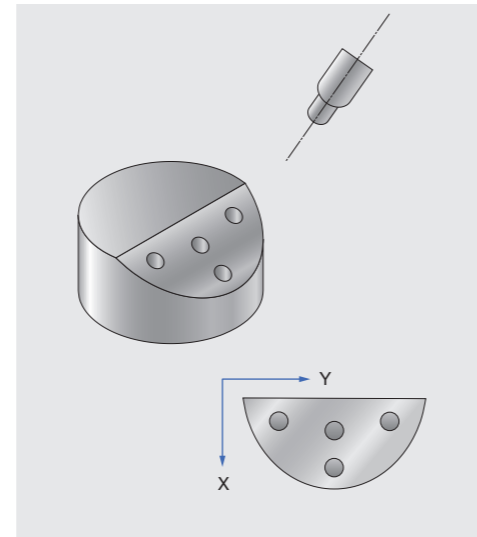
Axial and right-angle handle tool feed

Handle feed can be done in the axial and right-angle directions with the tool spindle tilted. With this function, hole drilling in angled surfaces, tool release, and plane machining of slopes can all be performed simply with the pulse handle.



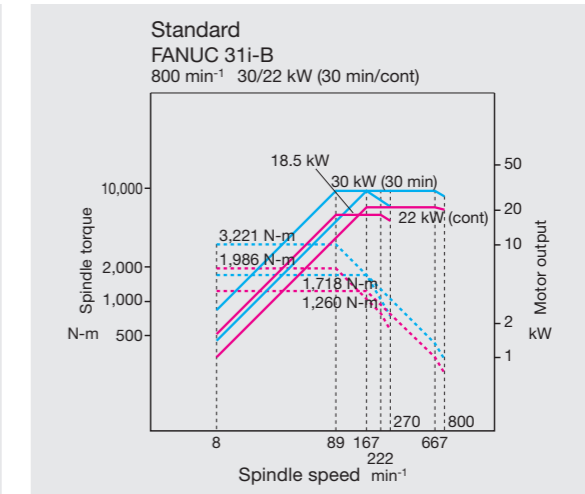
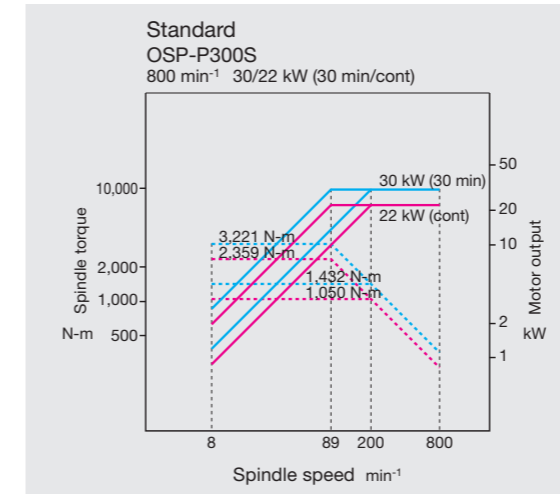
Three-dimensional coordinate change

Using angle commands and the center and direction of rotating coordinates, programs for shape machining, hole drilling on slopes, and other operations can set coordinates around any axis with just the X-Y plane program.

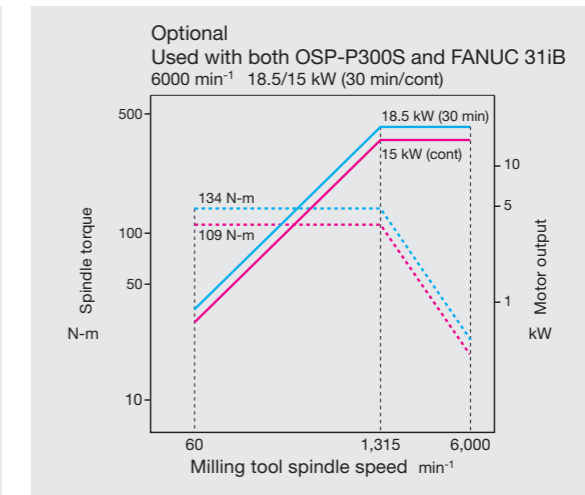
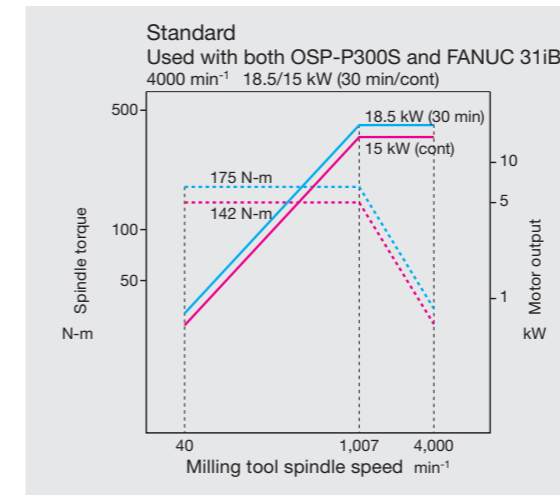


Spindle power / torque diagrams

Turning (work) spindle power / torque diagrams



Milling tool spindle power / torque diagrams



A world's first— collision prevention in auto or manual operating modes

Collision Avoidance System (OSP-P300S)



Novice operators feel safer — get jobs done quicker!

Collision-Free Machining

Automatic operation

- NC movements checked in real time
- Movement stopped before the programmed block containing a collision risk

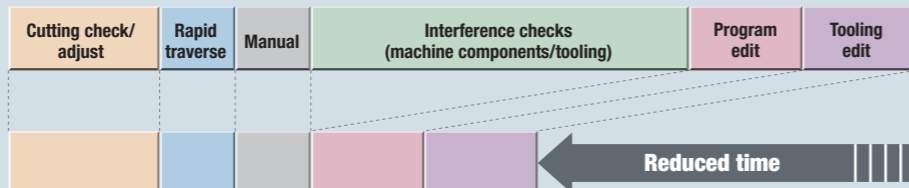
Manual operation

- Real-time just-ahead checks of manual movements
- Manual movement stopped when collision just ahead detected

Program check

- Fast possible collision checks just prior to actual machining

W/o CAS
First part



Examples of machining capacity (actual data)

Turning

- OD heavy-duty (S45C)

Removal rate	6.8 mm ²
Cutting speed	130 m/min
Cutting depth	10 mm
Feedrate	0.68 mm/rev

Milling

- Face milling (S45C)

Tool	ø100 5-blade
Removal rate	230 cm ³ /min
Cutting speed	200 m/min
Cutting depth	70 × 3 mm
Feedrate	0.35 mm/blade

- End milling (S45C)

Tool	ø30
Removal rate	130 cm ³ /min
Cutting speed	30 m/min
Cutting depth	30 × 15 mm
Feedrate	230 mm/min

- Tapping (S45C)

M24P3

Machine specifications

Model	Unit	VTM-80YB	
Capacity	Max machining diameter	mm (in.)	ø800 (31.50)
	Max swing diameter	mm (in.)	ø1,010 (39.76)
	Max turning length	mm (in.)	1,135 (44.69)
	Table diameter	mm (in.)	ø800 (31.50)
	Maximum chuck size	mm (in.)	ø900 (35.43)
	Max workpiece load	kg (lb)	1,500 (3,300) (w/chuck)
Travel	X-axis travel	mm (in.)	1,120 (44.09)
	Y-axis travel	mm (in.)	710 (±355) (27.95 <±13.98>)
	Z-axis travel	mm (in.)	1,135 (44.69)
	C-axis travel	deg	360
	C-axis minimum input increment	deg	0.001
	B-axis travel	deg	90° [Opt: NC indexing 120°]
	B-axis indexing angle	deg	Every 5° [Opt: NC indexing]
Turning spindle	Spindle speed	min ⁻¹	8 to 800 (high-speed)
	Spindle speed ranges		Infinitely variable × 2
	Type of spindle nose		JIS A2-11
	Spindle front bearing diameter	mm (in.)	ø200 (7.87)
	Through-hole diameter	mm (in.)	ø110 (4.33)
	Diameter/taper		ø115/120
	Floor to spindle nose	mm (in.)	1,150 (45.28)
	Spindle support		2-point roller bearing spindle support
	Turret type		ATC single tool
	Standard tool	mm (in.)	□25, □32 (1 × 1, 1-1/4 × 1-1/4)
Milling tool spindle	Boring bar diameter	mm (in.)	ø40, ø50 (ø1-1/2, ø2)
	Maximum spindle speed	min ⁻¹	4,000 (with op 6,000 B-axis NC)
Milling tool spindle	No. of spindle shift steps		Infinitely variable
	Spindle shape		BT50 (BIG-PLUS®)
	Front diameter	mm (in.)	ø90 (3.54)
Tool change	Tool shank		BT50
	Pull stud		P50T-2
	Max tools (magazine capacity)	tool	36 [Opt: 60, 120]
	Max tool diameter	mm (in.)	170 (6.70) <w/o adjacent 300 (11.82)>
	Max length (from gauge line)	mm (in.)	500 (19.69)
	Max tool mass	kg (lb)	30 [Opt: 40] (66 [88])
Feed axis	Cutting federate X, Y, Z	mm/rev (ipr)	0.001 to 500.000 (0.00004 to 19.69)
	Rapid feedrate X-axis	m/min (fpm)	24 (78.74)
	Y-axis	m/min (fpm)	24 (78.74)
	Z-axis	m/min (fpm)	20 (65.62)
	C-axis	min ⁻¹	20
Motors	Turning spindle (work)	kW (hp)	OSP: VAC 30/22 (40/30) (30 min/cont) FANUC: AC 30/22 (40/30) (30 min/cont)
	Milling tool	kW (hp)	AC 18.5/15 (25/20)
	X-axis	kW (hp)	OSP: BL 4.6 (6.13) FANUC: AC 6 (8)
	Y-axis	kW (hp)	OSP: BL4.6 (6.13) FANUC: AC7 (9.33)
	Z-axis	kW (hp)	OSP: BL4.6 (6.13) FANUC: AC6 (8)
Machine size	Required floor space (L × W)	mm (in.)	4,885×4,870 (192.32×191.73)
	Height	mm (in.)	4,245 (167.13)
	Weight	kg (lb)	23,000 (50,600)
CNC			OSP-P300S, FANUC 31i-B

[]: Optional

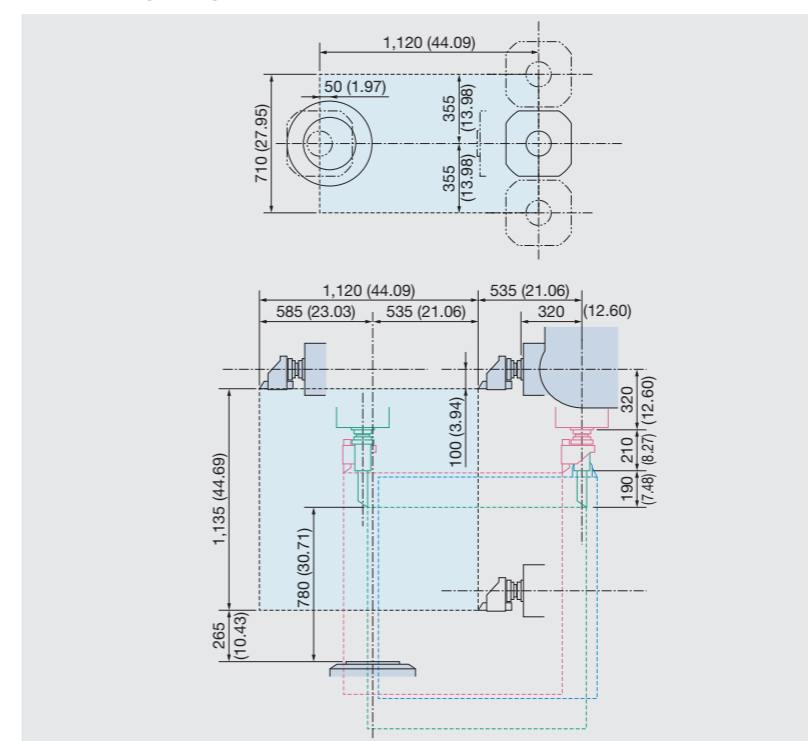
Standard specifications and accessories

	OSP-P300S	FANUC 31i-B
Controller		
Turning spindlehead	ø200 (8 to 800 min ⁻¹ , 30/22 kW)	
Spindle cooling system	Oil controller	
Milling tool spindle	ø90 (4,000 min ⁻¹ , 18.5/15 kW)	
Turret	ATC single tool [L/M]	
Automatic tool changer	BT50 (BIG-PLUS®), 36-tool magazine	
Coolant system	Tank 500-L (132.1 gal)	
Milling tool spindle side through	Pump motor 0.75/0.37 kW	
Turret front/back nozzle	Pump motor 1.21/0.73 kW	
Shower, chip flushing	Pump motor 1.21/0.73 kW	
Work lamp	LED	
Full-enclosure shielding	Without ceiling	
Chuck open/close switch	Pushbutton	
Chuck clamp direction switch	Parameter type	
Spindle brake	○	
Door interlock	○	
Foundation pad, leveling screws	○	
Work tools, tool box	○	
Lube monitor	A-1	
AbsoScale (scale feedback)	X-Y-Z axis	

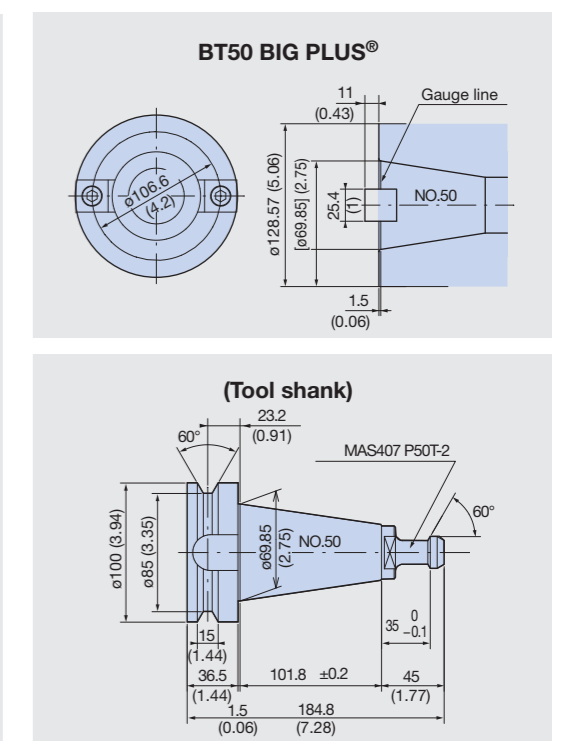
Optional specifications and accessories

Milling tool spindle speed	60 to 6,000 min ⁻¹ (B-axis NC)
B-axis indexing angle	120°
0.001° indexing (with 5° indexing)	
ATC magazine tool capacity	60-tool, 120-tool
Automatic pallet changer rotation	2APC
Setup station (auto rotation)	
Full enclosure shielding with ceiling	
Coolant pump (medium pressure)	
Coolant level sensor	Lower sensor, upper & lower sensors
Milling tool spindle thru-spindle coolant	
1.5 Mpa	
4 Mpa	
7 Mpa	
Front door auto open-close (w/area sensor)	
Automatic power shutoff	
Circuit breaker	
Hour meters	
Touch setter (ATS)	
In-process work gauging; wireless	
Chuck clamp direction key switch	
Chuck air blower	
Foundation bolts, anchors	
Coolant gun	
Air gun	
Chip conveyor	Hinged type Scraper type Magnet scraper type
Chip bucket	With/without tilt
Oil skimmer	
Mist collector	
Chuck	H01MA-32 H01MA-36 H01MA-40
Cylinder	HH960C150
Pallet for APC installed	
Chuck auto open/close confirm	
Chuck pressure high/low change	
Chuck jaws, standard	Soft jaws, hard jaws Forming soft jaws, special jaws
AbsoScale (scale feedback)	B-axis (B-axis NC)
Electric buzzer	

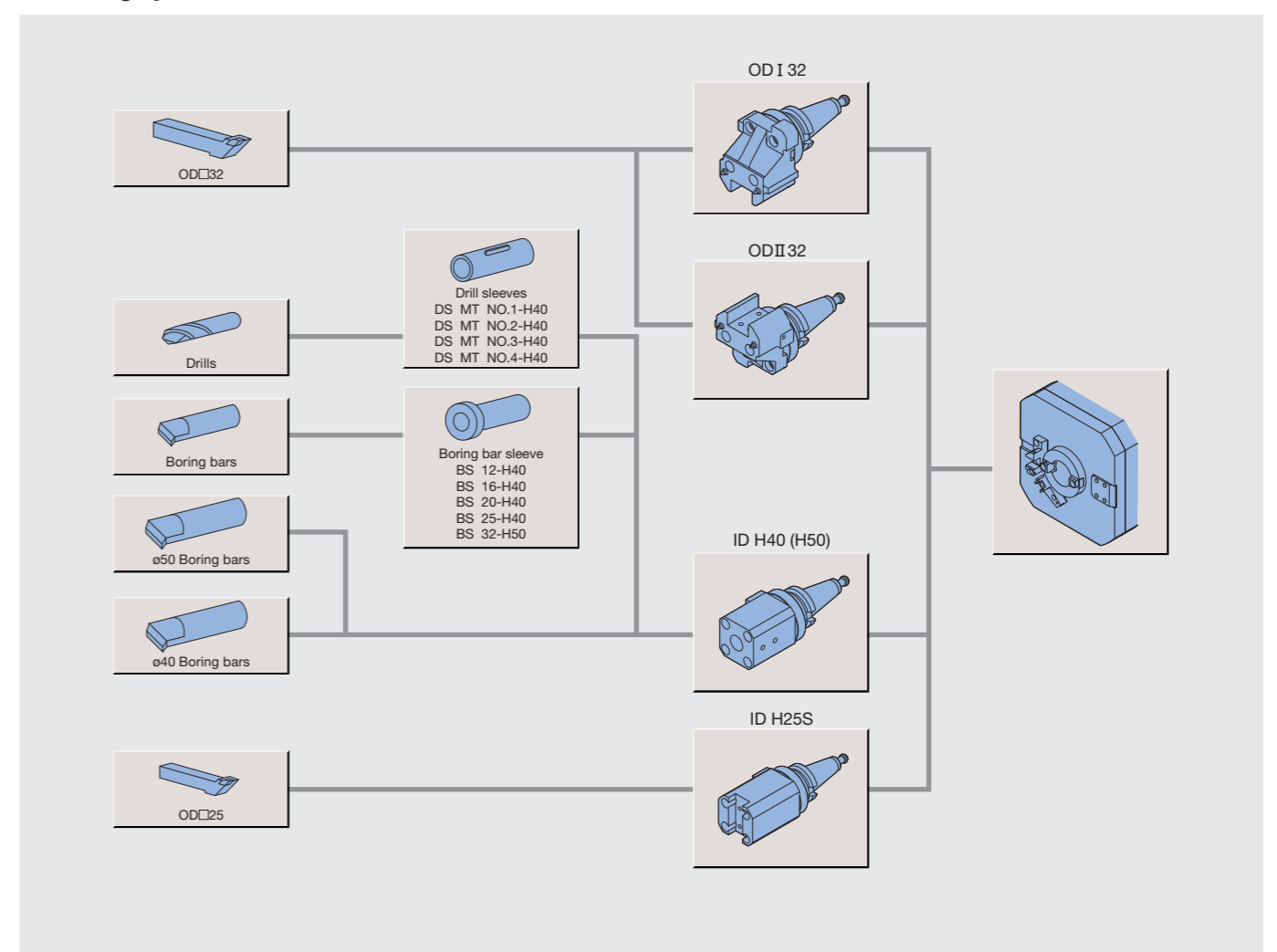
Working ranges



Tool spindle nose shape



Tooling system



Okuma Control OSP-P300S

Standard Specifications

Basic Specs	Control	Turning: X, Z simultaneous 2-axis, Multitasking: X-Y-Z or X-Z-C simultaneous 3-axis
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Min / Max inputs	8-digit decimal, ±99999.999 to 0.001 mm, 0.001", Decimal: 1 μm, 10 μm, 1 mm (1°, 0.01°, 0.001°)
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands (S5), override 50 to 200%, Constant cutting speed, max turning speed designate
	Tool commands	2-digit tool no. + 4-digit tool no. (max tool registration: 1000 sets)
	Tool compensation	Tool offset: 20 sets per tool, Tool wear comp: 20 sets per tool, Nose R comp: 20 sets per tool
	Display	15-inch color display operational panel, touch panel
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Program capacity	Program storage: 2 GB, operation buffer: 2 MB
Operations	Easy Operation	"Single-mode operation" for a series of operations from a single screen. Bundled tool control: tool shape, tool tilt, tool offsets per tool number. Tool data sharing between machining operations, One-Touch IGF, Collision Avoidance System. Easy-to-use operation panel supports complete machine control.
	Programing	Program management, edit, multitasking, scheduled programs, fixed cycles, special fixed cycles, tool nose R compensation, M-spindle synchronized tapping, fixed drilling cycles, arithmetic operations, logic operations, math functions, variables, branch statements, auto programming (LAP4), programming help
	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operations help, alarm help, sequence return, manual interrupt & auto return, threading slide hold, data I/O
	MacMan	Machining Management: machining results, machine utilization, fault data compile & report, external output
	Com / Net	USB ports, Ethernet
High speed/accuracy	AbsoScale (X-Y-Z axis), Pitch error compensation (X-Y-Z-C axis)	

Optional Specifications

Item	Kit	NML		3D		OTM	
		E	D	E	D	E	D
New operations							
Advanced One-Touch IGF-L Multitasking						●	●
Programming							
Program coordinates	10 sets	●	●	●	●	●	●
	50 sets						
	100 sets						
Circular threading			●		●		●
Program notes			●		●		●
User task 2 I/O variables, 8 each							
High Y-axis alignment							
1,000 common variables (200 is standard)							
Thread matching							
Threading slide hold (G34, G35)							
Variable spindle speed threading							
Inverse time feed							
Spindle synchronized tapping		●	●	●	●	●	●
Manual cutting feed							
Spindle dead-slow cutting							
Maximum M tool spindle speed limit for each tool							
Helical machining							
Coordinate convert		●	●	●	●	●	●
Profile generate		●	●	●	●	●	●
Coordinate calculation functions (including NCYL command)		●	●	●	●	●	●
Coordinate shifting, rotation, copying		●	●	●	●	●	●
3-dimensional coordinate conversion							
Monitoring							
Collision Avoidance system*	Included in machine specs						
One-Touch Spreadsheet							
Real 3-D simulation*				●	●	●	●
Cycle time over check		●	●	●	●	●	●
Load monitor (spindle, feed axis)				●	●	●	●
Load monitor no-load detection (load monitor ordered)							
Tool life management			●		●		●
Tool life prior notice							
Operation end buzzer (electric buzzer)							
Hour meters	Power ON						
	Spindle rotation						
	NC operating						
NC operation monitor (counter, totaling)		●	●	●	●	●	●
Operation end lamp (yellow)							
Alarm lamp (red)							
Status indicator (3-color C type)		●	●	●	●	●	●

Item	Kit	NML		3D		OTM	
		E	D	E	D	E	D
Measuring							
Z-axis automatic zero offset by touch sensor							
C-axis automatic zero offset by touch sensor							
Gauge data output	File output						
Y-axis gauging							
External Input/Output and Communication Functions							
Additional RS-232-C channel							
2 channels (Std 1 channel)							
USB	2 additional ports possible						
DNC links	DNC-T3						
	DNC-C / Ethernet *						
	DNC-DT						
	FL-net *						
Automation / Untended Operation							
Harmonic spindle speed control (HSSC)			●	●	●	●	●
Auto power shutoff MO2, alarm							
Warmup function (by calendar timer)							
Tool retract cycle							
External program selections	A (pushbutton), 8 types						
	B (rotary switch), 8 stages						
	C1 (digital switch), 2-digit BCD						
	C2 (external input), 4-digit BCD						
Cycle time reduction*	Operation time reduction		●	●	●	●	●
Other functions							
Circuit breaker							
External M signals [(2, 4, 8 sets ())]							
Edit interlock							

*1. NML: Normal, 3D: Real 3D simulation, E: Economy, D: Deluxe

*2. Engineering discussions required.

○ Indicates essential specifications

FANUC 31i-B

Basic Control Functions

Item	Specifications
Controlled axes	5: X, Y, Z, B, C, (4 simultaneously excluding B-axis), Scale feedback (X-Y-Z axis)
Interpolation	Positioning, linear, taper, circular, threading
Command system	Absolute / incremental
Least input increment	X-, Z-axes all 0.001 mm (X-axis is diameter command)
Max programmable dimension	8-digit (decimal point input allowed)

Standard Specifications

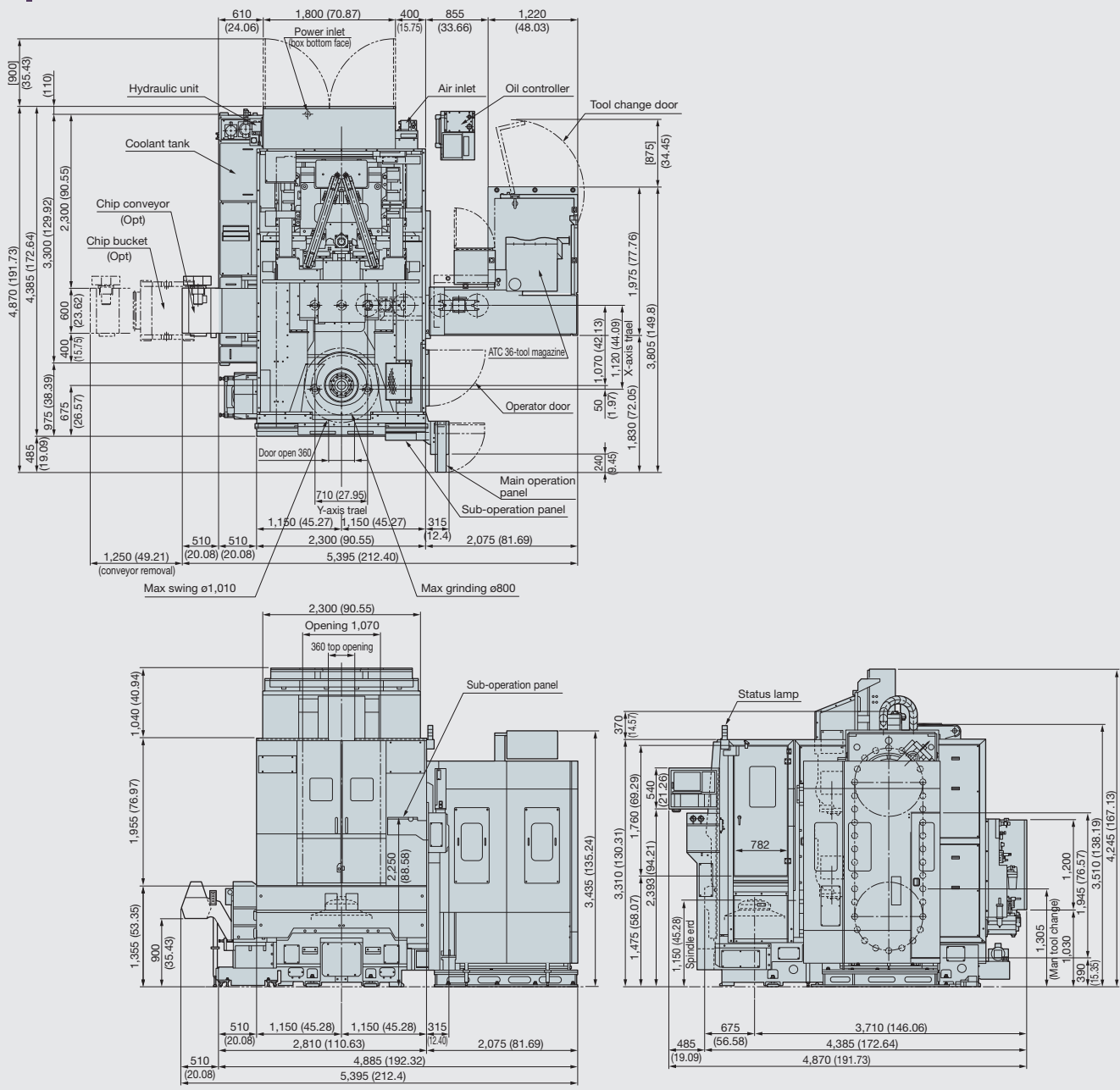
Item	Specifications	Item	Specifications
Program input	MDI key input	Programming	Auto coordinate system setting
	ISO/EIA input		Optional block skip
	RS-232-C input/output interface		Canned cycles for drilling
Display	LCD Display 10.4" color		Part program storage length 160 m (64 KB)
	Language: English		No. of registerable programs: 63
	Graphics function, dynamic graphics display		M code multiple commands (same block max 3 commands)
Turning (work) spindle control	S4-digit direct command		Manual guide
	Constant surface speed control		Work coordinate system (G54 to G59)
	Spindle override, 50 to 150% (10% each)		Extension program editing
Zero return	Manual and auto zero return		Flat surface selection
	Auto second zero return (ATC)	3-dimensional coordinate conversion	
Tool functions	Tool selection A code (fixed address)	Input/output interface (RS-232-C)	
	Tool offset ±6 digits, T code, 999 pairs	One USB memory input/output port (program input/output only)	
	Tool geometry/wear compensation	Programmable data input	
	Incremental offset	Cs contouring control	
	Tool offset value counter input	AI contouring control I	
	Direct input of tool offset value measured A	Synchronized control axis extension	
Feed functions	Threading range, lead command, 0.001 to 500.0 mm/rev	Polar coordinate interpolation	
	Feedrate override 0 to 200% (10% each)	Cylindrical interpolation	
	Rapid traverse override: 0, 10, 25, 50, 100%	Pitch error compensation for VTM-YB	
Automatic operations	Manual pulse generator (0.001, 0.01, 0.1 mm)	Tool life management for multitasking machine	
	Single block	Program input	
	Feed hold	Other functions	
	Dry run	Background editing	
Manual operations	Machine lock	Sequence No. search	
	Optional stop	Program No. search	
	Jog feed	Buffer register	
	Spindle: CW, CCW, inching, stop	Backlash compensation	
Programming	Coolant: On, Off, Auto	Stored stroke check 1	
	Portable pulse handle	Y-axis offset	
	Circuit interpolation by R programming	Run hour and parts count display	
	Tool nose radius compensation	Rigid tapping (M axis)	
	Dwell	Continuous threading	
	Canned cycles	Macro executor	
Coordinate system shift	Advanced preview control		
		Custom macro B	

Optional Specifications

Name	Specifications
Programming	Canned cycles for multitasking
	Optional block skip 9 pcs
	Chamfering/corner R
	Helical interpolation
Part program storage length	320 m, 640 m, 1,280 m, 2,560 m, 10,240 m, 20,480 m
No. of registerable programs	125 to 4,000

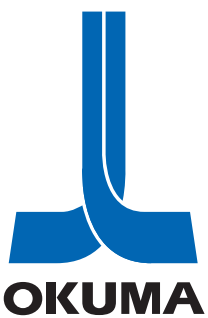
Item	Specifications
Other functions	External work number selection
	High speed skip function
	Abnormal load detection
	3-dimensional tool offset
	Addition of custom macro common variables Total 600
	Program restart
	Oriented spindle stop (4 points)
	RS-232-C 1 ch additional
	Spare M codes (4, 8)
	Status indicator
	Electric buzzer
	Circuit breaker
	Power shutoff
	Relocation detector
	Operation panel AC 100V, 1A outlet (1)
	Control panel AC 100V, 1A outlet (1)

VTM-80YB Dimensional Drawing / Installation Drawing (OSP-P300S)



When using Okuma products, always read the safety precautions mentioned in the instruction manual and attached to the product.

● The specifications, illustrations, and descriptions in this brochure vary in different markets and are subject to change without notice.
Pub No. VTM-80YB-E-(1a)-200 (Nov 2014)



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