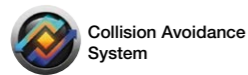


5-Axis Vertical Multitasking Machine

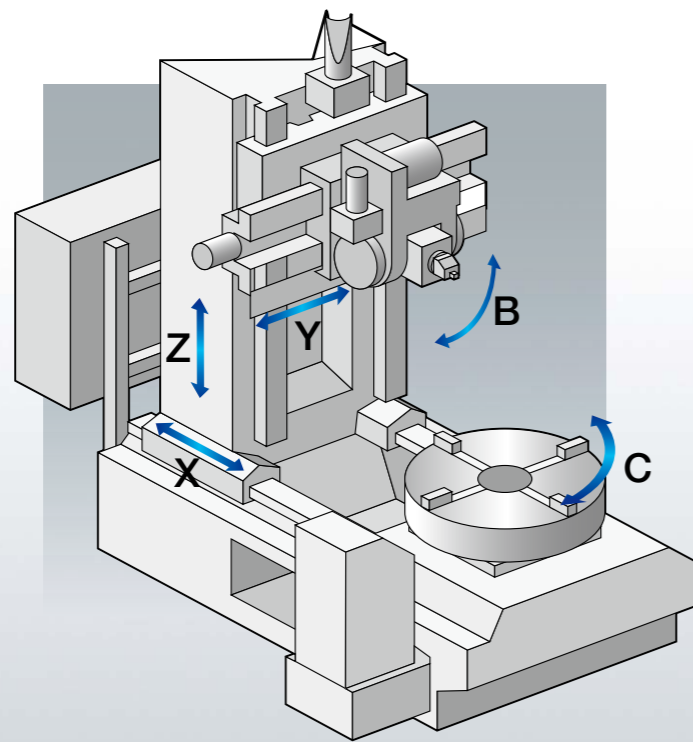
VTM-80YB



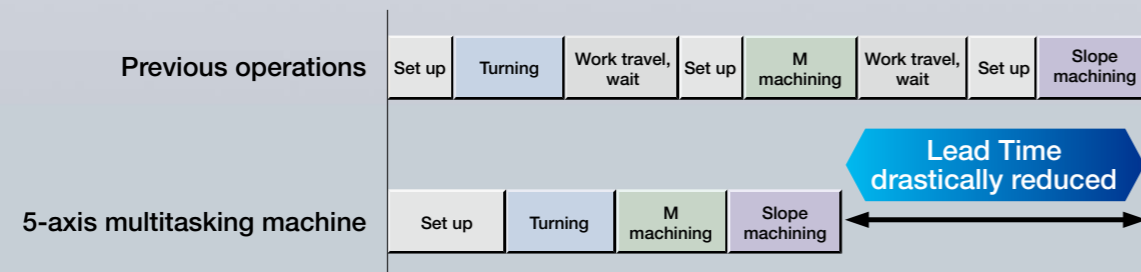
5-Axis Vertical Multitasking Machine **VTM-80YB**



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



Huge reduction in lead time with process-intensive machining



Photos shown in this brochure may show optional equipment.

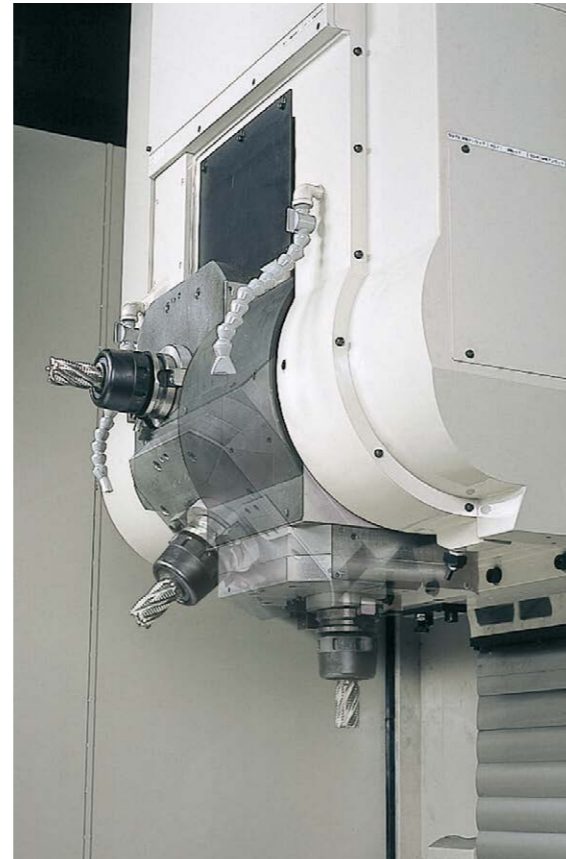
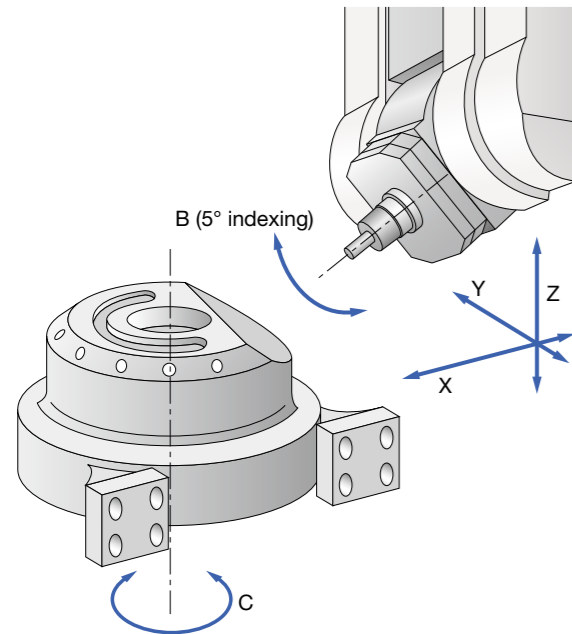
1-chuck multi-sided machining

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.

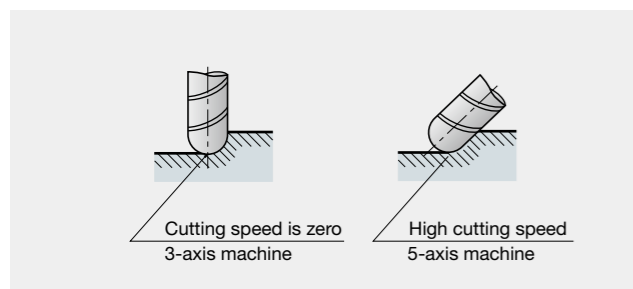
Reduced setup time, improved machining accuracy

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.



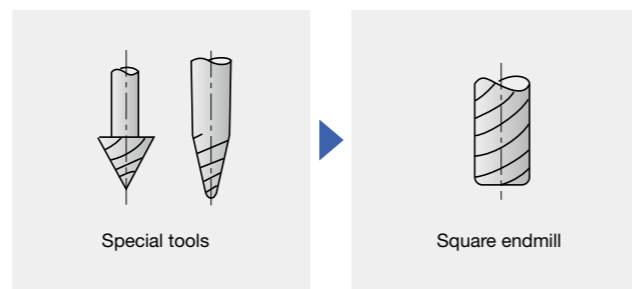
Shorter cycle times

Tool side cutting on the straight portion greatly reduces cycle times 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

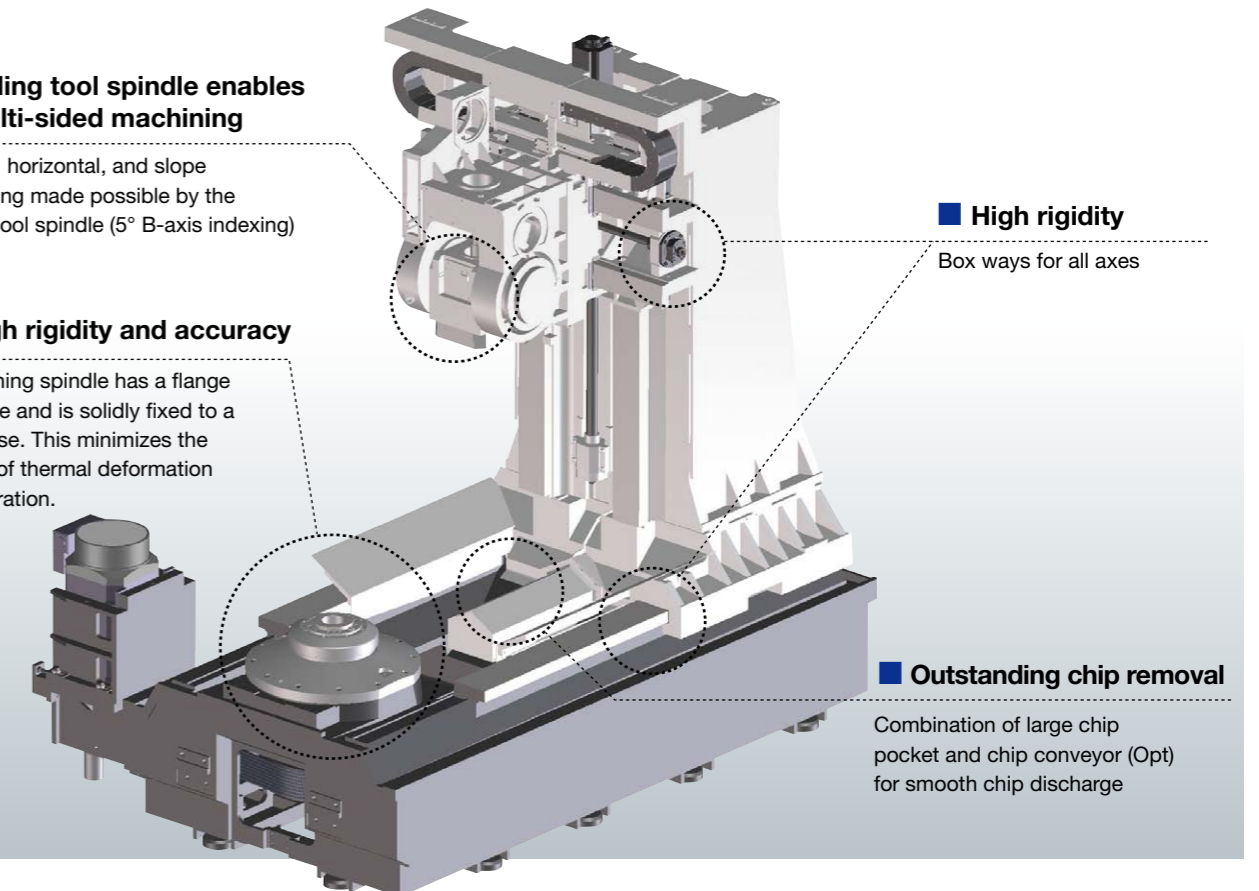
The turning spindle has a flange structure and is solidly fixed to a rigid base. This minimizes the effects of thermal deformation and vibration.

High rigidity

Box ways for all axes

Outstanding chip removal

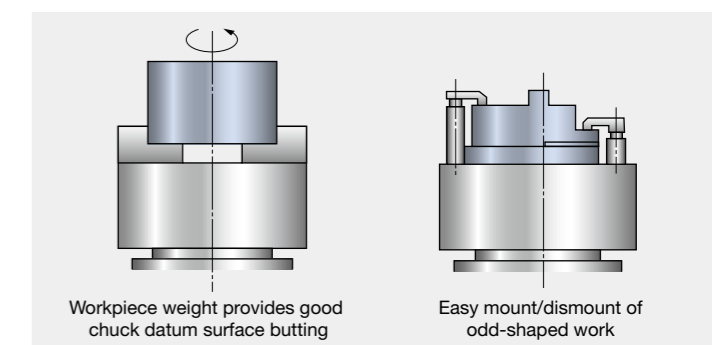
Combination of large chip pocket and chip conveyor (Opt) for smooth chip discharge



- Turning spindle torque is 3,221/2,359 N-m (30 min/cont) (OSP-P300SA). 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

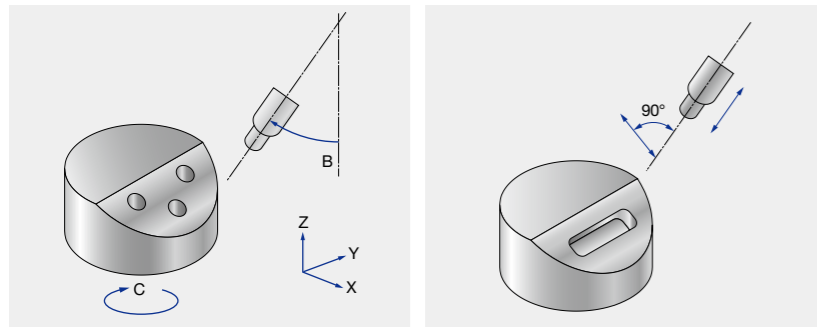
- Stable, high-accuracy machining of everything from thin workpieces to large-diameter, heavy workpieces thanks to excellent contact between workpiece and chuck datum surface using the workpiece's own weight.
- Easy, stable chucking is possible even with difficult-to-chuck workpieces.



Wide variety of options

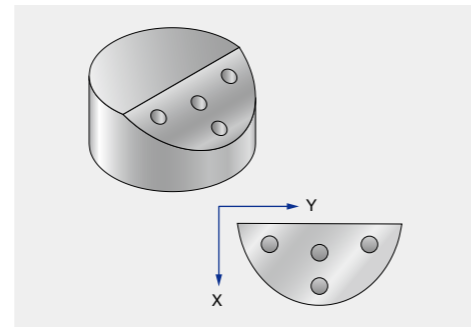
Axial and right-angle pulse handle tool feed

Pulse 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.



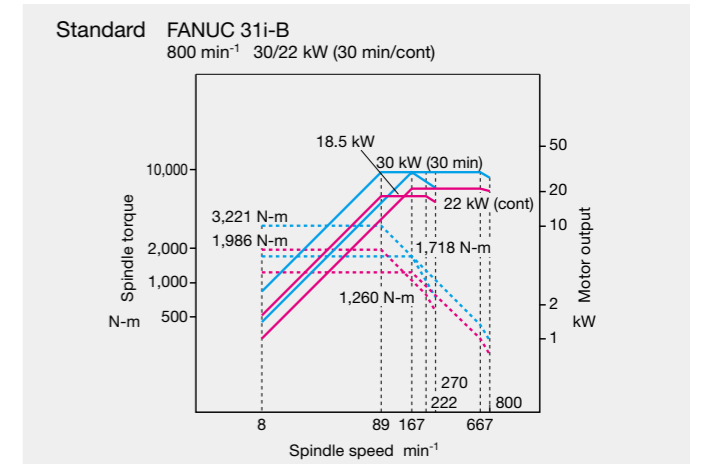
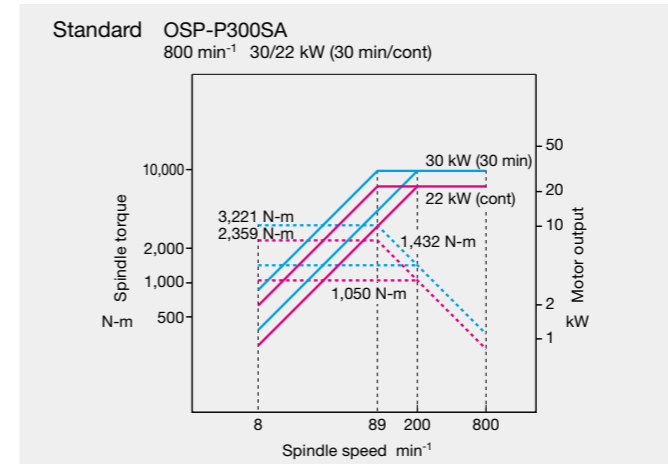
Three-dimensional coordinate change

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.



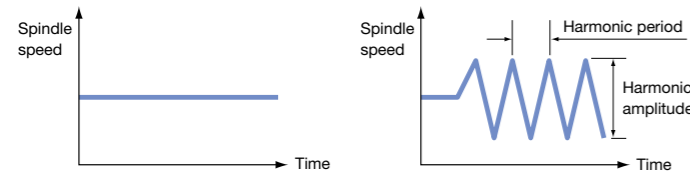
Spindle output/torque diagrams

Turning spindle output/torque diagrams



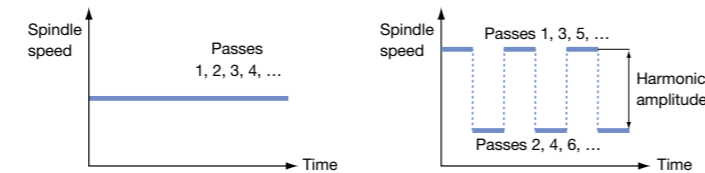
Cutting condition search function for turning **Machining Navi L-g** (guided, harmonic spindle speed control) (Optional)

Varying the spindle speed in accordance with the best amplitude and period makes it possible to suppress chatter during turning operations. Tool life can be extended and cycle time reduced with use of the optimum cutting conditions, producing significant effects in drilling/boring bar, threading, and grooving applications.

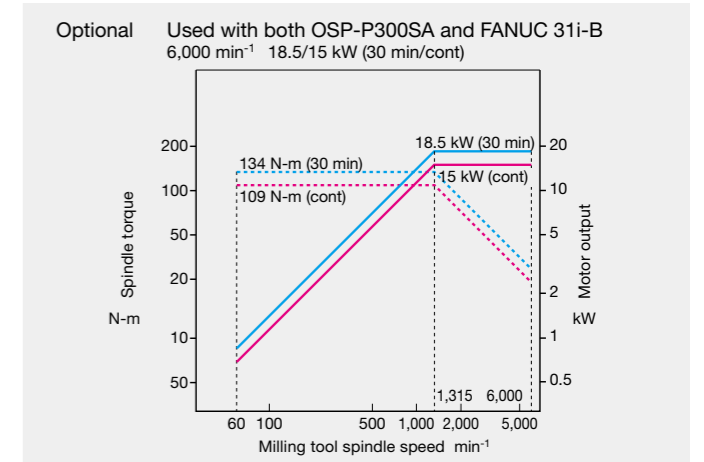
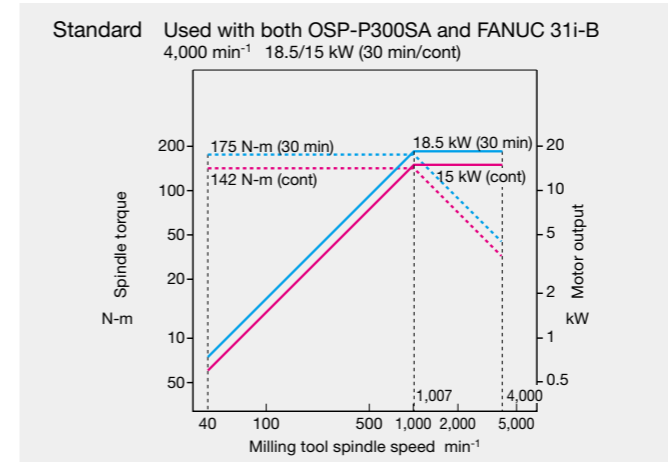


Cutting condition search in threading **Machining Navi T-g** (Optional)

Machining Navi T-g (threading) provides optimum control, increasing or decreasing spindle speed on each pass to inhibit the periodic vibrations that are a cause of chatter.



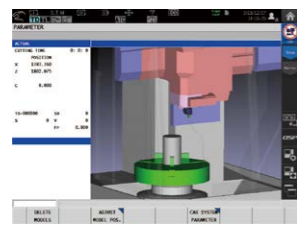
Milling tool spindle output/torque diagrams



Collision prevention **Collision Avoidance System** (Optional)

World's first "collision-free machine"

CAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

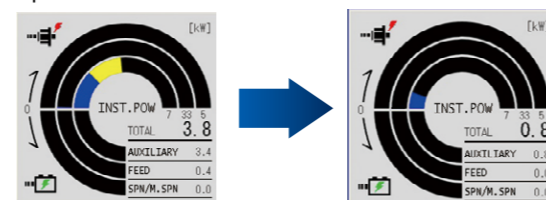


Virtual machine (collision check)

Next-Generation Energy-Saving System

ECO suite

- **ECO Idling Stop** for operation of necessary units only
- **ECO Power Monitor** for visual graphic of power
- Intermittent/continuous operation of chip conveyor and mist collector during operation — **ECO Operation** (Optional)
- Example of a Power Monitor check



Before ECO Idling Stop

After ECO Idling Stop

[data visualization examples]

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
Feed rate	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
Feed rate	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
Feed rate	230 mm/min

- Tapping (S45C)

M24P3

Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting, and other conditions.

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)	
Travels	X axis	mm (in)	1,120 (44.09)	
	Y axis	mm (in)	710 (±355) (27.95 <±13.98>)	
	Z axis	mm (in)	1,135 (44.69)	
	C axis	deg	360	
	C axis (min control angle)	deg	0.001	
	B axis	deg	90° [NC indexing 120°]	
	B-axis indexing angle	deg	Every 5° [NC indexing]	
Turning Spindle	Speed	min ⁻¹	8 to 800 (high-speed)	
	Speed ranges		Infinitely variable × 2	
	Type of spindle nose		JIS A2-11	
	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 (milling tool spindle)	Turret type		ATC single tool
		Standard tool	mm (in)	□25, □32 (1, 1-1/4)
Milling Tool	Boring bar diameter	mm (in)	ø40, ø50 (ø1-1/2, ø2)	
	Maximum spindle speed	min ⁻¹	4,000 [6,000 with NC B axis]	
Tool Change	Speed ranges		Infinitely variable	
	Shape, tapered bore		BT50 (BIG-PLUS®)	
	Front diameter	mm (in)	ø90 (3.54)	
	Tool shank		BT50	
	Pull stud		MAS 2	
Feed Axes	Max tools (magazine capacity)	tool	36 [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 [40] [66 [88]]	
	Rapid traverse	X axis Y axis Z axis C axis	m/min (fpm)	24 (78.74) 24 (78.74) 20 (65.62) 20
Motors	Turning spindle	kW (hp)	OSP: 30/22 (40/30) (30 min/cont) FANUC: 30/22 (40/30) (30 min/cont)	
	Milling tool	kW (hp)	18.5/15 (25/20)	
	X axis	kW (hp)	OSP: 4.6 (6.13) FANUC: 5.5 (7.5)	
	Y axis	kW (hp)	OSP: 4.6 (6.13) FANUC: 5.5 (7.5)	
	Z axis	kW (hp)	OSP: 4.6 (6.13) FANUC: 4.0 (5.3)	
Machine Size	Required floor space (L × W)	mm (in)	OSP: 5,256 × 4,860 (206.93 × 191.34) FANUC: 5,256 × 4,775 (206.93 × 187.99)	
	Height	mm (in)	4,350 (171.26) (With ceiling cover)	
	Weight	kg (lb)	23,000 (50,600)	
CNC			OSP-P300SA, FANUC 31i-B	

[]: Optional

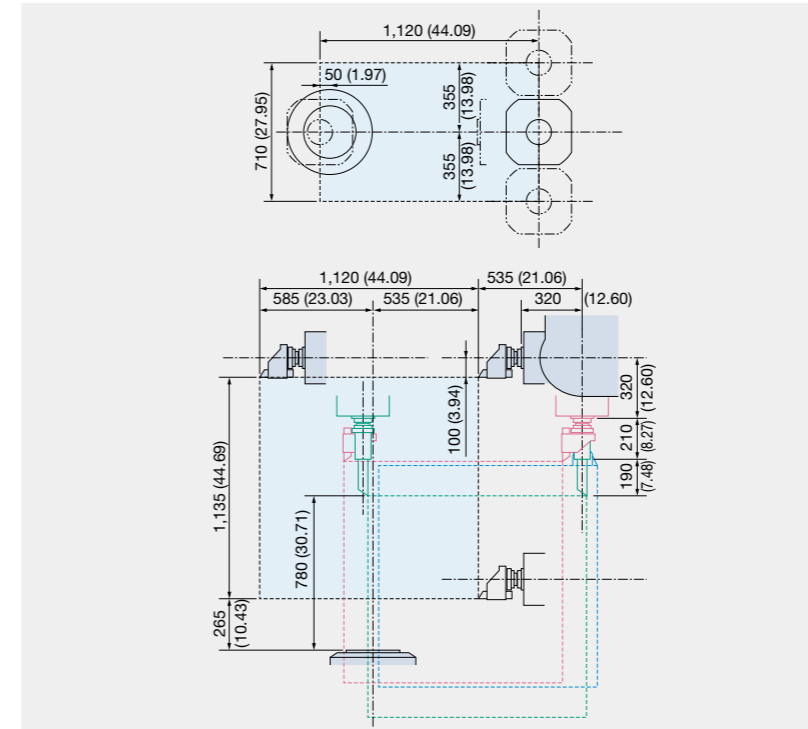
Standard Specifications & Accessories

	OSP-P300SA	FANUC 31i-B
Control	OSP-P300SA, FANUC 31i-B	
Turning headstock	ø200 (8 to 800 min ⁻¹ , 30/22 kW)	
Spindle cooler	Oil temperature 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 pads, leveling screws	○	
Hand tools, tool box	○	
Lube monitor	A-1	
AbsoScale (scale feedback)	X-Y-Z axes	

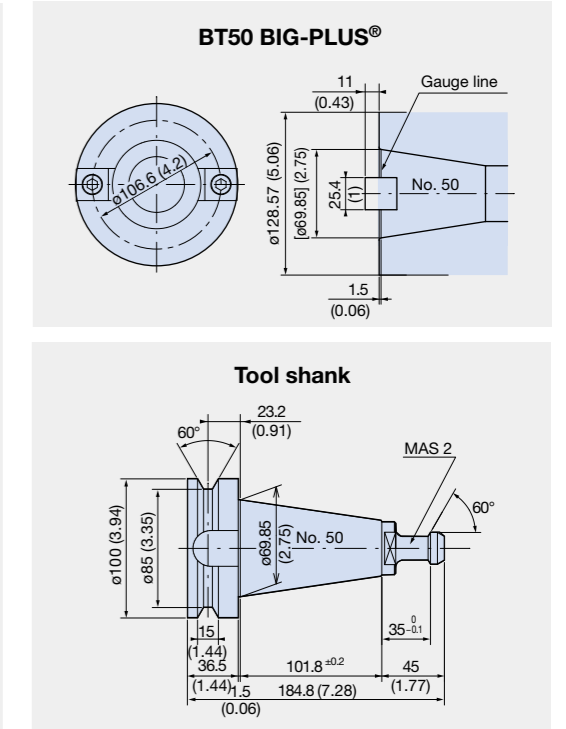
Optional Specifications & Accessories

Milling tool spindle speed	60 to 6,000 min ⁻¹ (NC B axis)
B-axis indexing angle	120°
	0.001° indexing (with 5° indexing)
ATC magazine tool capacity	60-tool, 120-tool
Automatic pallet changer; rotary-shuttle 2-APC	
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 (blast)	
Foundation bolts, anchors	
Coolant gun	
Air gun	
Chip conveyors	Hinged Scraper Magnet scraper
Chip bucket	With/without tilt
Oil skimmer	
Mist collector	
Chucks	H01MA-32 H01MA-36 H01MA-40
Cylinder	HH960C150
APC pallets (mounted)	
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 (NC B axis)
Electric buzzer	

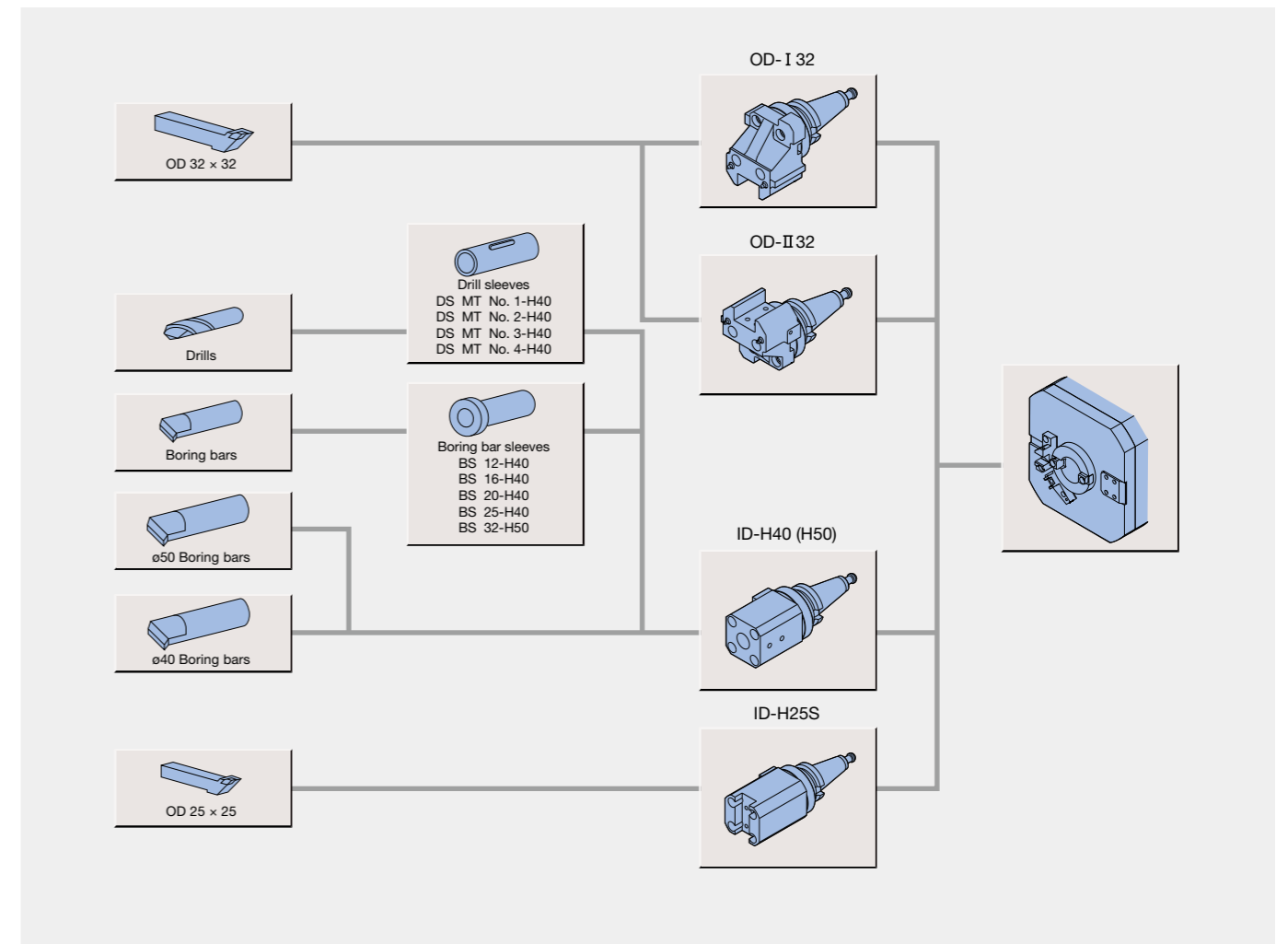
Working Ranges



Milling Tool Spindle Nose



Tooling System



OSP-P300SA

Standard Specifications

Basic Specs	Control	Turning: X, Z simultaneous 2-axis, Multitasking: X-Y-Z-C simultaneous 4-axis
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Min / Max command	±99999.999 mm, ±99999.999° 8-digit decimal, command unit: 0.001 mm, 0.01 mm, 1 mm, 0.001°, 0.01°, 1°
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands, override 50 to 200%, Constant cutting speed, optimum turning speed designate, oriented spindle stop (electric)
	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: 4 GB, operation buffer: 2 MB
Operations	"suite apps"	Applications to graphically visualize and digitize information needed on the shop floor
	"suite operation"	Highly reliable touch panel suited to shop floors. One-touch access to suite apps.
	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, 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, slope machining
	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)	
Energy-saving function	ECO suite	ECO Idling Stop, ECO Power Monitor

Optional Specifications

Item	Kit specs *1	NML		3D		OTM	
		E	D	E	D	E	D
New operations							
Advanced One-Touch IGF-L Multitasking						●	●
Programming							
Operation backup capacity extension (10 MB)							
Program coordinates	10 sets	●	●	●	●	●	●
	50 sets						
	100 sets						
Circular threading		●	●	●	●	●	●
Program notes		●	●	●	●	●	●
User task 2 I/O variables [8 each, 16 each, 24 each]							
Y-axis alignment compensation							
1,000 common variables (200 is standard)							
Thread matching							
Threading slide hold (G34, G35)							
Variable spindle speed threading (VSSST)							
Inverse time feed							
Manual cutting feed							
Spindle dead-slow cutting							
Maximum M tool spindle speed limit for each tool							
Helical cutting							
Coordinate convert		●	●	●	●	●	●
Profile generate		●	●	●	●	●	●
Coordinate calculator (including NCYL command)		●	●	●	●	●	●
Coordinate shift / rotate / copy		●	●	●	●	●	●
3-dimensional coordinate conversion							
Monitoring							
Collision Avoidance system *2	Included in machine specs						
One-Touch Spreadsheet							
Real 3D simulation *2				●	●	●	●
Cycle time over check		●	●	●	●	●	●
Load monitor (spindle, feed axis)				●	●	●	●
Load monitor no-load detection (load monitor ordered)							
Tool life management		●	●	●	●	●	●
Tool life warning							
Operation end buzzer (electric buzzer)							
Hour meters	Power ON						
	Spindle rotation						
	NC operating						
NC operation monitor (counter, totaling)		●	●	●	●	●	●
Status indicator (3-color C type)		●	●	●	●	●	●
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							

Item	Kit specs *1	NML		3D		OTM	
		E	D	E	D	E	D
External Input/Output and Communication Functions							
RS-232C connector							
USB	2 additional ports possible						
DNC links	DNC-T3						
	DNC-C / Ethernet *2						
	DNC-DT						
Automation / Untended Operation							
Harmonic spindle speed control (HSSC)		●	●	●	●	●	●
Auto power shutoff M02, 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 *2	Operation time reduction	●	●	●	●	●	●
High-speed, High-accuracy							
Hi-Cut Pro		●	●	●	●	●	●
ECO suite Energy-saving functions							
ECO Operation							
Spindle power peak cutting							
Other functions							
Machining Navi L-g, T-g (threading)							
Mobile pulse handle (required)							
Machine Data Logger							
Feed shaft retract							
Turning spindle speed setting							
Profile helical cutting							
OSP-VPS (Virus Protection System)							
Circuit breaker							
External M signals 2, 4, 8, 16 sets							
Edit interlock							

*1. NML: Normal, 3D: Real 3D simulation, OTM: One-Touch M, E: Economy, D: Deluxe
 *2. Engineering discussions required.

FANUC 31i-B

Controller Specifications

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-, Y-, Z-axes all 0.001 mm (X-axis is diameter command)
Max programmable dimension	8-digit (decimal point input allowed)

Standard Specifications

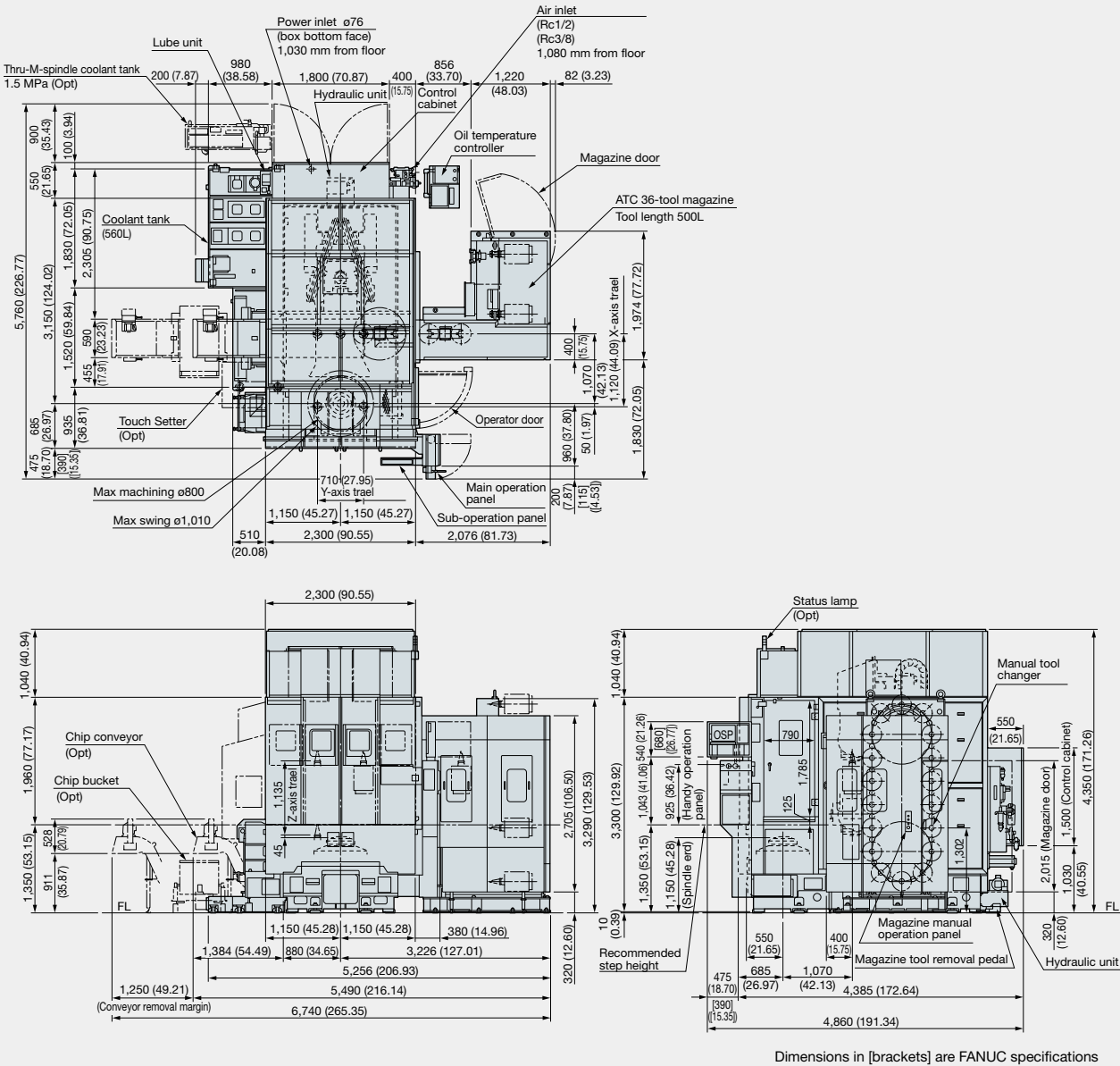
Item	Specifications	Item	Specifications
Program input	MDI key input ISO/EIA input	Programming	Tool nose radius compensation
Display	LCD Display 10.4" color Language: English Graphics function, dynamic graphics display		Canned cycles for drilling
Work spindle control	S4-digit direct command Constant surface speed control Spindle override, 50 to 150% (10% each) Oriented spindle stop (1 point)		Part program storage length 160 m (64 KB)
Zero return	Manual and auto zero return Auto second zero return (ATC)		No. of registerable programs: 63
Tool functions	Tool selection A code (fixed address) Tool compensation ±6 digits, T code, 999 pairs Tool geometry/wear compensation Incremental offset		Manual guide i
Feed functions	Threading range, lead command, 0.001 to 500.0 mm/rev Feedrate override 0 to 200% (10% each) Rapid traverse override: 0, 10, 25, 50, 100%		Work coordinate system (G54 to G59)
Automatic operations	Single block Feed hold Dry run Machine lock Optional stop		Extension program editing
Manual operations	Jog feed Spindle: CW, CCW, inching, stop Coolant: On, Off, Auto		Flat surface selection
			3-dimensional coordinate conversion
			One USB memory input/output port (program input/output only)
		Programmable data input	
		Cs contouring control	
		AI contouring control I	
		Polar coordinate interpolation	
		Cylindrical interpolation	
		Pitch error compensation for VTM-YB	
		Tool life management for multitasking machine	
		Program input	Program protect key switch
		Other functions	Background editing
			Y-axis offset
			Run hour and parts count display
			Rigid tapping (M axis)
			Continuous threading function
			Custom macro

Optional Specifications

Name	Specifications	Item	Specifications
Programming	Canned cycles for multitasking	Other functions	Portable pulse handle
	Chamfering/corner R		External program number selection
	Helical interpolation		High speed skip function
	Part program storage length		Abnormal load detection Spindle + feed axes
	320 m, 640 m, 1,280 m, 2,560 m, 5,120 m, 10,240 m, 20,480 m		3-dimensional tool offset
No. of registerable programs	125, 250, 500, 1,000, 2,000, 4,000		Addition of custom macro common variables Total 600
			Program restart
			Oriented spindle stop (4 points)
			RS-232C 1ch, 2ch
			Spare M codes (4, 8)
		Status indicator	
		Electric buzzer	
		Circuit breaker	
		Power shutoff	

VTM-80YB
Dimensional Drawing / Installation Drawing

Unit: mm (in)



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.
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