OKUMA

OPEN POSSIBILITIES

VT1000EX

Large Vertical CNC Lathe

VT1000EX

Large Vertical CNC Lathe

Revolutionizing productivity in machining difficult-to-cut materials Overwhelming turning capacity and stable operation over long hours

Difficult-to-cut materials such as Inconel, titanium, and stainless steel, which are widely used in the aerospace and energy industries, have high cutting resistance, so in order to improve productivity, they require high rigidity and a machining capacity not available on conventional machines.

When machining difficult-to-cut materials with conventional machine tools, the machining conditions must be lowered due to their poor machinability, and the cutting depth becomes smaller, concentrating the load on the nose and causing rapid wear of the tip.

As a result, machining time became longer, and the cost and work required for tip replacement increased, making it impossible to improve productivity.

The large vertical CNC lathe VT1000EX solves these problems with its overwhelming turning capacity that easily handles heavy-duty cutting of difficult-to-cut materials.

It achieves shorter machining times and reduced machining costs, revolutionizing productivity in machining hard-to-cut materials.

The VT1000EX is used for turning processes for aircraft parts and the like.

Aircraft engine parts
Engine case
Material: SUS630

Aircraft parts
Turbine disc
Material: Inconel

Photographs and images used in this brochure may include optional equipment.

High productivity The exceptionally high rigidity structure revolutionizes the productivity in machining difficult-to-cut materials.

Overwhelming turning capacity that improves productivity in machining difficult-to-cut materials

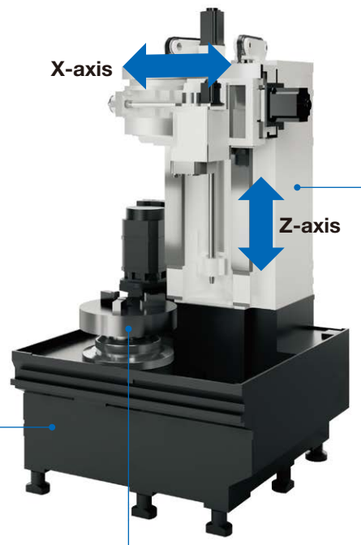
Exceptionally high rigidity structure achieved with a total weight of 19 tons

The VT1000EX, specialized for heavy-duty cutting of difficult-to-cut materials, employs a powerful base that firmly supports cutting loads to achieve an overwhelming machining capacity.
The high-power, high-torque spindle, supported by a powerful base, uses large bearings with a diameter of 260 mm (10.24 in). Furthermore, the feed axes on which the turret is attached have a sturdy column structure with wide guides that support powerful cutting on both the X-axis and Z-axis, and the total weight of the machine reaches 19 tons.
The exceptionally high rigidity structure maximizes the spindle's capabilities, revolutionizing productivity in machining difficult-to-cut materials.

A powerful base that achieves an overwhelming turning capacity

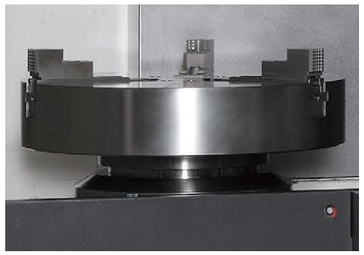
The sturdy base, which is wide and thick enough, provides strong support for the spindle and feed axes.

Note: Base dimensions.



A robust spindle for powerful machining

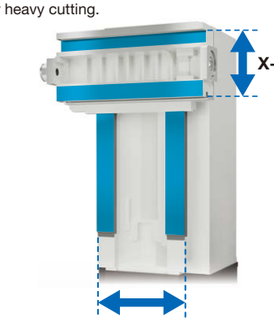
By enlarging the inner diameter of the spindle bearing, high rigidity is achieved, which allows it to firmly withstand large cutting loads and achieve stable, powerful machining.



Front bearing ID ø260 mm (ø10.24 in)

Sturdy column structure that can support large cutting loads

The sturdy column structure with wide guide surfaces and guide spans on the X-axis and Z-axis supports the large cutting loads caused by heavy cutting.



Overwhelming turning capacity reduces machining costs and human intervention

When machining difficult-to-cut materials with conventional machines, the cutting depth becomes smaller due to their poor machinability. This causes cutting loads to be concentrated on the nose, resulting in accelerated wear of the tip and increased costs.
In addition, changing the tip requires operator intervention, which resulted in repeated interruptions to machining, preventing productivity improvements.
The VT1000EX's overwhelming machining capacity allows for a large cutting depth, preventing cutting loads from concentrating on the nose, and reducing tip wear.
In addition, interrupted cutting can be avoided even when roughly cutting materials.
By suppressing tool damage that occurs during interrupted cutting, the tip's life is extended, reducing costs and also improving productivity by reducing interruptions to machining for tip replacement.

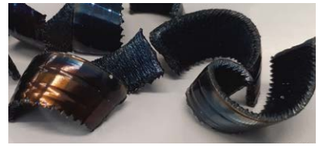
Machining capacity

Inconel 718: **6.7 mm² (0.01 in²)**
(Spindle load: 41%)[*1]

SUS630: **7.2 mm² (0.01 in²)**
(Spindle load: 39%)[*1]

Titanium: **8.4 mm² (0.01 in²)**
(Spindle load: 33%)[*1]

S45C: **10.0 mm² (0.02 in²)**
(Spindle load: 72%)[*1]



10 mm
(0.39 in)

*1. The spindle loads shown here are actual values, which are limited values by the limits of tool performance. The spindle loads vary depending on the turning diameter, tool, and cutting conditions, etc.

Large cutting depth allows the tip to be used for a long time

Cutting conditions

	Cutting area mm²	Cutting speed m/min	Cutting depth mm	Cutting feed mm/rev
SUS630	7.2	85	8	0.9
S45C	10.0	100	10	1

* The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting condition, and others.

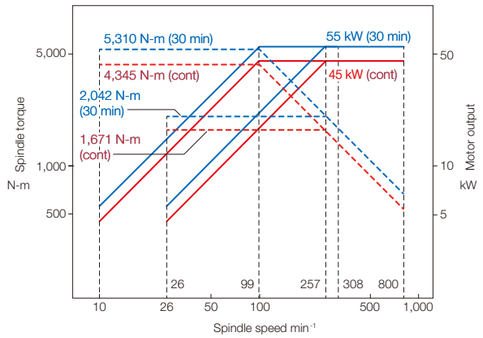
High-power, high-torque spindle that easily machines difficult-to-cut materials

Large parts made of difficult-to-cut materials that have high cutting resistance can be machined with high efficiency.

Max output: **55/45 kW (75/60 hp)**
(30 min/cont)

Max torque: **5,310/4,345 N-m (3,904/3,194 ft-lbf)**
(30 min/cont)

Spindle speed: **800 min⁻¹**



High productivity Expanding the machining area and improving area productivity

Achieving high productivity for large parts in space saving

Wide machining area for large parts

Sufficient internal space and axis travel for machining large parts are secured.

Max workpiece dimensions

Max turning diameter: ø1,000 mm (ø39.37 in)

Max machining length (height): 1,000 mm (39.37 in)

Max workpiece mass: 2,000 kg (4,400 lb)

Machining area

X-axis travel: 650 mm (25.59 in)

Z-axis travel: 1,000 mm (39.37 in)

Space-saving installation possible while handling large parts

The machine configuration is utilizing the features of vertical lathes. It enhances the rigidity of the machine and the machining area is expanded, while the installation area is saved.

Foot print
13.3 m²

Reliability Chip troubles are eliminated to maintain stable operation over long hours

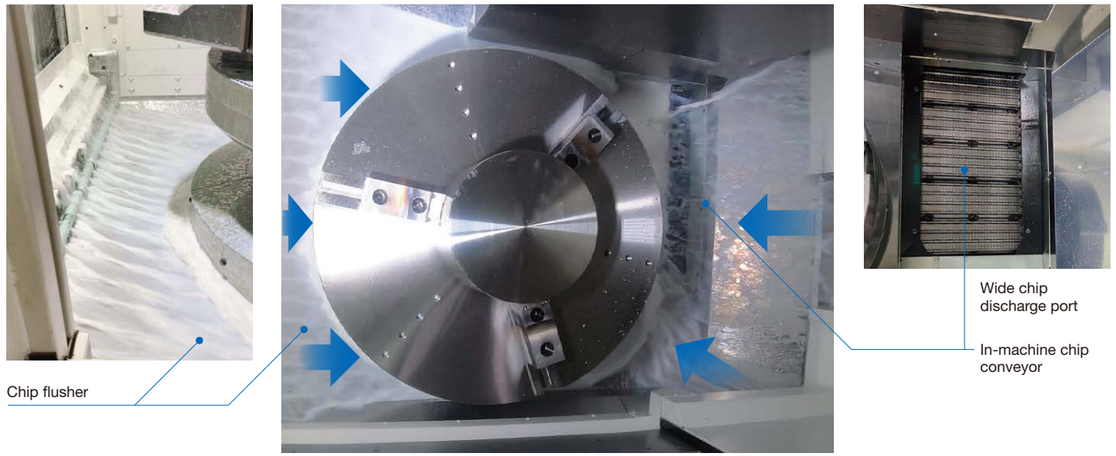
High chip discharge performance to meet high machining capacity

In-machine cover structure to prevent chips from accumulating in the machining chamber

The stainless steel tilt cover allows for smooth chip discharge.

Improving chip dischargeability and maximizing operating hours

The chip discharge port has been enlarged. In addition, a large amount of chip flusher is used to quickly discharge the large amount of chips generated during heavy-duty cutting from the machine.
Eliminating the accumulation of chips inside the machine reduces the frequency of cleaning inside the machine, maximizing the machine operating hours.



High pressure coolant for longer tool life
Cutting off chips for smooth chip discharge

High pressure coolant 20 MPa option

Machining difficult-to-cut materials generates high heat, shortening tool life.
The ultra-high pressure coolant of 20 MPa allows a large flow of coolant to cool the machining point, extending tool life.
Furthermore, it can cut chips that could not be cut with normal high pressure coolant, allowing for smooth chip discharge and stable operation over long hours.
A fully closed cover that can withstand ultra-high pressure coolant of 20 MPa is standard equipment.

* For pressures higher than 15 MPa, please prepare your own tool holder.

Manpower saving　Manpower-saving solutions to labor shortages

Solutions that reduce the operator's workload

Minimizing manual human labor and achieving continuous operation over long hours
An ATC magazine with 36 tools is installed as standard

An auto tool changer (ATC) and an ATC magazine that can store 36 tools are provided as standard.
By having spare tools and a wide variety of tools on hand, manual tool change work can be minimized, enabling continuous operation over long hours when machining difficult-to-cut materials.

Tool storage capacity

Chain: **36** tools
60 tools **(option)**

ATC time

T-T: **9.0** sec

Chain-type ATC magazine (36 tools: Standard)
Tools can be changed from the rear.

Troublesome coolant tank cleaning work is reduced dramatically to increase productivity
In addition, the environmental impact caused by the disposal of coolant is reduced

Sludgeless Tank option

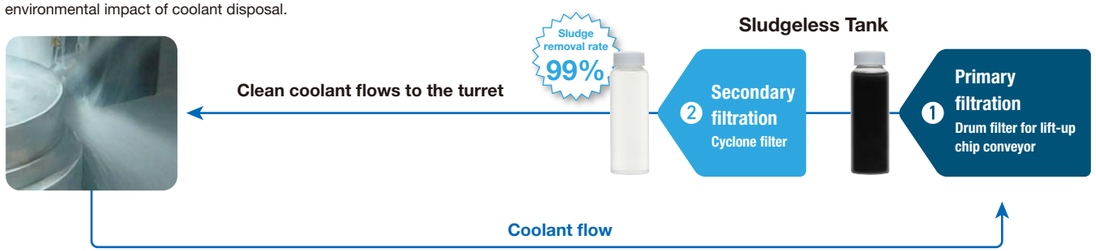
It is important to remove impurities (sludge) contained in the coolant for the stable operation of the machine, and coolant tank cleaning is indispensable. The Sludgeless Tank (option) circulates coolant at a constant speed in the tank to effectively collect sludge even during non-machining while reducing defects caused by the sludge contained in the coolant, such as scratches on machined surfaces and troubles of cutters, as well. Sludge accumulation in the tank is suppressed, which also drastically reduces the frequency of troublesome tank cleaning and enables stable operation over long hours. In addition, the frequency of coolant replacement can be greatly reduced, which also reduces the environmental impact of coolant disposal.

Sludge removal rate **99%** (when the material is casting and aluminum)
Notes: After secondary filtration (cyclone filter) permeation
Okuma evaluated removal rate

No tank cleaning for 3 years (Okuma equipment actual data)

No coolant replacement for 3 years (Okuma equipment actual data)

Note: If the Sludgeless Tank is chosen, it is necessary to select a hinge + scraper chip conveyor with a drum filter.



Automation　Automation support to further improve productivity

Flexible automation support

Compatible with robots and auto pallet changers (APC)
without reducing workability

Auto open/close side shutter option

A special automatic side shutter opening/closing option is available, allowing access from the left side by a robot or auto pallet changer (APC).
This enables automation without impairing the operator's workability from the front of the machine or ease of access to the inside of the machine.

The robot accesses the machine from the left side

Flexible automation to suit the factory layout

Auto open/close of the door on the front

An auto open/close function of the door on the front is provided as standard, allowing the robot to access the machine from the front.
Flexible automation is possible to suit the factory layout.

The robot accesses the machine from the front

Ease of use
Smooth and simple machine operation to reduce operator workload

Good access to the inside of the machine improves work efficiency

The opening is wide for easy operation. Heavy workpieces can be delivered with a crane

The opening is wider than the maximum swing, making it easy to load and unload workpieces.
With easy access to the inside of the machine, operators can easily perform setup changes and similar tasks.

When the front door is opened, the ceiling of the machining chamber is opened, allowing smooth loading and unloading of workpieces using a crane.

Swivel operation panel for excellent operability and visibility

A swivel 15-inch operation panel is adopted as a standard.
The panel swivels for an easy visual check of the inside of the machine for easy operation.

15-inch operation panel

High accuracy
Secured accuracy enables to reduce workload in controlling dimensions and realize stable machining over long hours

Outstanding dimensional stability greatly shortens compensation and warm-up time and improves productivity

Reliable machining with high accuracy and excellent thermal stability

The Thermo-Friendly Concept is an Okuma Intelligent Technology intended to achieve amazing machining accuracy with unique structural design and thermal deformation control technology. It eliminates the need for cumbersome dimensional compensation and warm-up and demonstrates outstanding dimensional stability, even when operation continues over many hours or when the ambient temperature in the factory changes.

Thermo-Friendly Concept
The Okuma Intelligent Technology that enables machines to autonomously maintain high accuracy stability

Thermo-Friendly structure gives outstanding thermal stability

~~Forced cooling and restraining of thermal deformation~~

1. Minimal temperature deviation
2. Manageable thermal deformation
3. Accurate compensation

Thermo Active Stabilizer - Construction (TAS-C)

Eliminate waste with the Thermo-Friendly Concept

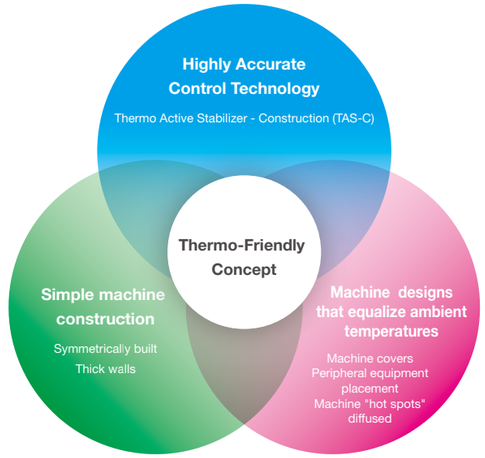
Okuma's Thermo-Friendly Concept achieves high dimensional stability not only when the room temperature changes, but also at machine startups or when machining is resumed. The warm-up operation time to stabilize thermal deformation is shortened, and the burden of dimensional correction when resuming machining is reduced.

Machine startup
Machining restart
Room temp change

High dimensional stability

TAS-C Thermo Active Stabilizer - Construction

When machining under changing ambient temperatures, machining dimensional changes are affected by expanding/contracting machine components as well as workpiece position. TAS-C, based on machine thermal characteristics, with appropriately placed temperature sensors and feed axis position data, will predict and accurately control thermal deformation in machine construction when ambient temperatures change.



Machining dimensional change over time minimized with outstanding dimensional stability

Energy-saving technology

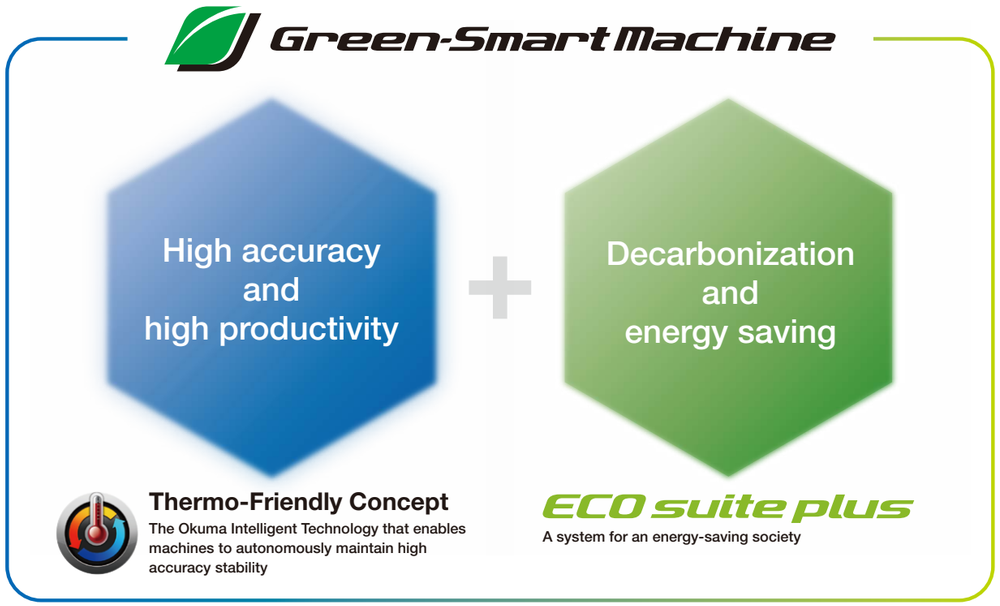
It contributes to providing both high productivity and high precision while being eco-friendly

Achieving high accuracy and high productivity while achieving decarbonization and energy saving

Green-Smart Machine
Powered by Intelligent Technology

Okuma has worked to reduce energy consumption in order to achieve carbon neutrality at the three factories in Japan which are our main production bases. We have realized high productivity through automation and process-intensive machining, in addition to high-accuracy machining, and we then introduced the use of green energy to transform the three domestic factories into carbon-neutral factories. "Green-Smart Machines" is our definition of Okuma's intelligent machine tools, which autonomously achieve stable dimensional accuracy and reduced energy consumption, to support environmentally friendly production. Our policy is to deploy "Green-Smart Machines" fully, to help achieve a carbon-free society. Starting with products manufactured at those carbon-neutral factories and distributing them globally, we will partner with our customers to address the social challenges faced by the manufacturing industry.

Green-Smart Machines are **environmentally friendly** products that autonomously achieve stable dimensional accuracies and reduced energy consumption.



The Okuma Intelligent Technology that enables machines to autonomously maintain high accuracy stability

Thermo-Friendly Concept

The unique concept of accepting temperature changes achieves consistent high accuracy without special coolers or excessive air conditioning.

- **Reduction of warm-ups and dimensional compensation**
  Reduce the time needed for daily warm-ups and dimensional compensation to adjust to ambient temperature changes.
- **Reduction of power used for air conditioning**
  Maintain high stability of dimensional accuracy even if the air conditioning temperature range is expanded.
- **Reduction of machine body coolers**
  Achieve outstanding dimensional accuracy without any special machine body cooling being required to maintain accuracy.

ECO suite plus — A system for an energy-saving society

The "ECO suite plus" retains the concept of achieving both high machining accuracy stability and energy savings (less carbon dioxide emissions) achieved by the Thermo-Friendly Concept and the "ECO suite" that was put into practical use in 2014. It is an energy-saving system with enhanced high-accuracy/-productive functionality and advanced eco-friendly support.

Ensure accuracy and actively turn off unnecessary peripherals

ECO Idling Stop

All auxiliary equipment when not needed (most of factory power consumption), can be turned off. The ECO Idling Stop button enables diligent idle stop operations even during machining and maintenance work. With ECO suite plus, the machine automatically detects the operating status, eliminating the need to push buttons while reducing carbon dioxide emission as much as possible without operator awareness.

Peripheral equipment runs only when needed

ECO Operation

By using only the required peripherals (chip conveyor, mist collector), energy-saving operations that also maintain high productivity are possible.
ECO suite plus enables more detailed tuning of operations to thoroughly support carbon dioxide emission reduction activities that do not reduce productivity.

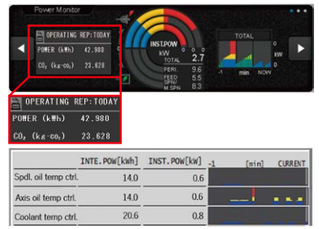
Confirming energy savings and analyzing reductions

ECO Power Monitor

Making it possible for the OSP control to analyze the operating status of each device.
The decarbonization cycle on the shop floor is supported through the three phases, 1. View, 2. Record, and 3. Analyze.

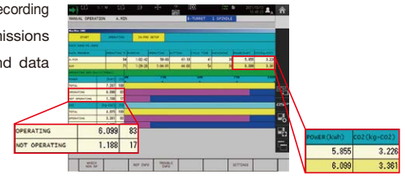
1 Check carbon dioxide emissions on the spot

With ECO suite plus, you can also check the power consumption of each device.



2 Simultaneously records operating status and carbon dioxide emissions

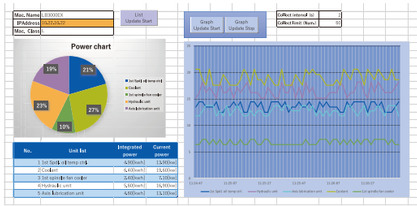
With ECO suite plus, recording carbon dioxide emissions for each device, and data output is possible.



3 Analyze carbon dioxide emissions and improve machine tool operation

With ECO suite plus, not only the display on the machine but data analysis for each device is also possible on a PC, to see a more detailed carbon dioxide emission analysis.

Example of utilizing One-Touch Spreadsheet (option) to create visual feedback of machine's power consumption and carbon dioxide emissions.



Various advanced technologies that increase productivity

Okuma's advanced technology - effective for shop floors

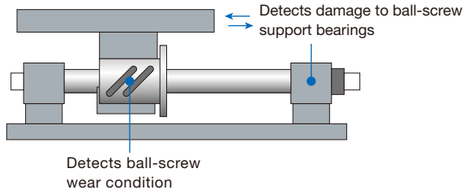
Detect signs of ball-screw failure, and reduce downtime

AI Machine Diagnosis Function option
Detects signs of failure

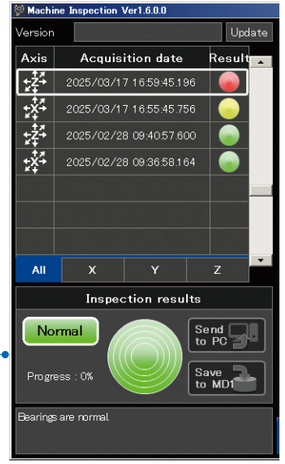
Okuma's AI-equipped control detects abnormalities in the feed axes, leading to the prevention of long machine downtime and achieving stable production over a long period of time. The operators themselves can easily diagnose the machine by following simple screen guidelines on the Okuma control.

Notes: AI diagnostic models are already installed, and diagnoses can be performed by the machine itself.
AI diagnostic models can be updated through Okuma's Connect Plan.
AbsoScale detection specs is required for ball-screw wear detection.

Execute diagnostic tests from the screen guidelines



Diagnosis by OSP-AI

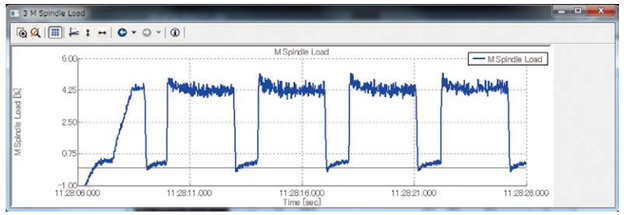


Diagnostic results per lamp color

Support for tracing and investigation when unexpected problems occur

Machine Data Logger option

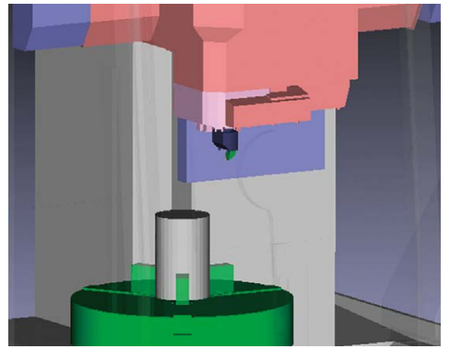
"Trace data" such as spindle and feed-axis load information and external sensor information is recorded in association with "event data" such as program and operation information. Command information such as the zero point number, zero offset amount, and tool compensation number, as well as operation information such as override and pause, are also recorded. This function is useful for identifying the cause of a problem.



Allowing operators to focus on making parts

Collision Avoidance System option
Collision prevention

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

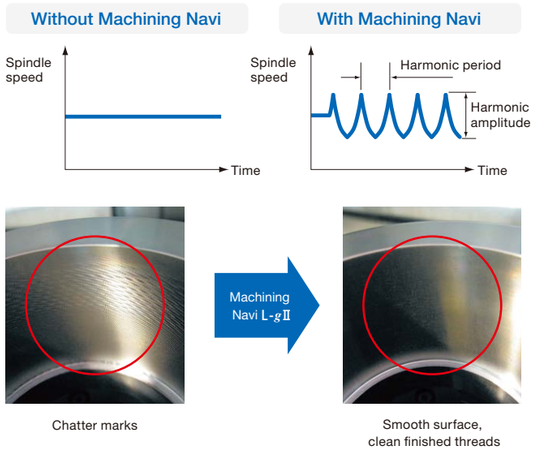


Virtual machine (Interference check)

Suppressing chatter during turning

Machining Navi L-*g*Ⅱ option
Cutting condition search function for turning

Varying the spindle speed in accordance with the best amplitude and period makes it possible to suppress chatter during turning. The use of optimum cutting conditions can extend the tool life and shorten the machining time, which is effective for deep hole boring bars and grooving.



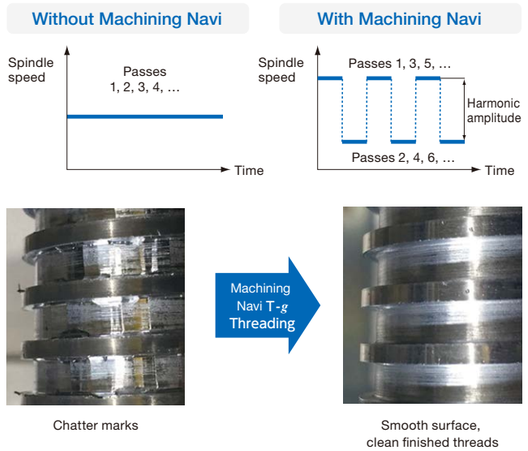
Chatter marks

Smooth surface, clean finished threads

Suppressing chatter during threading

Machining Navi T-*g* Threading option
Cutting condition search function for threading

The spindle speed is changed for each threading pass to interrupt the vibration periodicity and make it possible to suppress chatter during threading.



Chatter marks

Smooth surface, clean finished threads

Machine Specifications

			VT1000EX
Capacity	Max turning diameter	mm (in)	ø1,000 (ø39.37)
	Max swing diameter	mm (in)	ø1,000 (ø39.37)
	Max machining length (height)	mm (in)	1,000 (39.37)
	Max workpiece mass (w/ chuck)	kg (lb)	2,000 (4,400)
	Floor to spindle nose*1	mm (in)	1,318 (51.89)
Travels	X-axis travel	mm (in)	650 (25.59)
	Z-axis travel	mm (in)	1,000 (39.37)
Spindle	Speed	min^{-1}	10 to 800
	Speed ranges		2 auto ranges (2 gears)
	Type of spindle nose		Flat ø380
	Through-hole diameter	mm (in)	ø110 (ø4.33)
	Front bearing ID	mm (in)	ø260 (ø10.24)
Turret	Type		H1 (for turning only)
	No. of tools	tools	1
	OD tool shank dimensions	mm (in)	□25, □32 (1, 1.26)
	ID tool shank diameter	mm (in)	ø40, ø50 (ø1.57, ø1.97)
ATC	Tool shank		CAPTO C8
	Tool storage capacity	tools	36
	Tool selection		Fixed address type
	Max tool diameter	mm (in)	ø170 (ø6.69) (w/ adjacent) ø290 (ø11.42) (w/o adjacent)
	Max tool length	mm (in)	500 (19.69) (from gauge line)
	Max tool mass	kg (lb)	30 (66)
Feed rate	Rapid traverse X-, Z-axis	m/min (ipm)	X: 16, Z: 16 (629, 629)
Motors	Spindle drive	kW (hp)	55/45 (75/60) (30 min/cont)
	Axis drive	kW (hp)	X: 6.4, Z: 4.6 (8.5, 6.1)
	Coolant pump (50/60Hz)	kW (hp)	Turret: 1.5 (2) For in-machine cleaning: Left 1.1/1.1, Right 1.1/1.1
Machine size	Height*1	mm (in)	4,435 (174.61)
	Floor space (L × W)	mm x mm (in)	4,317 × 3,769 (169.96 ×148.39) (Including spindle lubricant tank and spindle cooler, excluding operation panel)
	Mass*2	kg (lb)	19,000 (41,800)
CNC			OSP-P300SA

*1. Machine height and center height may become taller depending on attached cylinder type.
*2. Mass of this machine only. This does not include ATC magazine or chuck, etc.

VT1000EX Standard Specifications & Accessories

Spindle	Nose	Flat ø380
	Speed	10 to 800 min^{-1}
	Motor output	55/45 (30 min/cont)
Turret		H1 (for turning only)
ATC	Tool shank	CAPTO C8
	Tool storage capacity	36 (chain)
Coolant system	Coolant tank	630L
	Coolant pump	
	Turret through	0.75/0.75kW (50/60Hz)
	Turret periphery	0.75/1.1kW (50/60Hz)
	Chip flusher	1.1/1.1kW (50/60Hz)
	Shower	1.1/1.1kW (50/60Hz)
Chuck open/close		Handy operation panel pushbutton switch
Front door auto open/close (includes tape SW)		
Front door interlock		
Full enclosure shielding		
Jack screws, foundation pads		
Work lamp		
Hand tools		
Lube monitor		
Spindle lubricant tank (separate)		
Spindle cooler (separate)		
Controller		OSP-P300SA
Thermo Active Stabilizer (TAS)		

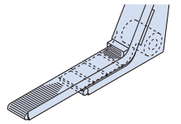
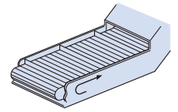
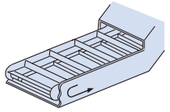
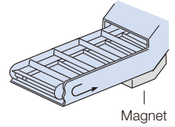
VT1000EX Optional Specifications & Accessories

ATC	Tool shank	BT50, CAT50
	Tool storage capacity	60 (chain)
Hydraulic power chuck (solid)		H01MA-24, H01MA-28 H01MA-32, H01MA-36
Manual Chuck	3 jaws	24", 28", 32", 36"
	4 jaws	24", 28", 32", 36"
Chuck-related		Chuck open/close foot pedal
		Chuck auto open/close confirmation
		Chuck pressure high/low switch (Grip change required)
		Chucking miss detection
Auto open/close side shutter		
Various toolings		Please refer to the separate diagram for tooling systems
Chip conveyor (Rear discharge)		Hinge type, scraper type Magnet scraper type Drum filter type
Chip bucket (H type)		Tilt: with/without
Sludgeless Tank		
Special turret through coolant pump		1.5/1.5 kW (50/60 Hz)
Turret through coolant high pressure compatible		4 MPa, 7 MPa, 20 MPa*1
Coolant gun		0.55/0.75kW (50/60Hz)
Oil skimmer		Belt system, screw type
Coolant level detection		Lowest level
Air blower		Chuck, turret
Air gun		
Mist collector		
In-process work gauging (radius measurement)		Radio wave
Touch Setter		Manual axis, auto/manual
High accuracy specs		AbsoScale (X-axis, Z-axis)
		Coolant temperature regulator (cooling only)
Automation specs		Robot
		APC

*1. For high pressures above 15 MPa, the tool holder must be prepared by the customer.

Various chip conveyors

Chip conveyor types and application

Type	Hinge + Scraper with drum filter	Hinge	Scraper	Magnet scraper
Applicable	For steel, castings, non-ferrous metal	For steel	For castings	For castings
Features	Filtration of long and short chips and coolant	General use	Magnet scraper more effective for sludge disposal Easy maintenance Blade scraper	Effective with sludge Not suited for nonferrous metals
Shape				

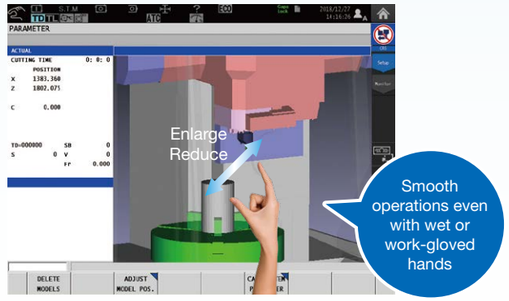
Note: The machine may need to be raised (platform) depending on the type of chip conveyor. Becomes hinge + scraper (with drum filter) if Sludgeless Tank (option) is selected.

Intelligent CNC

OSP suite OSP-P300SA

Smooth, comfortable operation with the feeling of using a smart phone

Improved rendering performance and use of a multi-touch panel achieve intuitive graphical operation. Moving, enlarging, reducing, and rotating 3D models, as well as list views of tool data, programs, and other information can be accomplished through smooth, speedy operations with the same feel as using a smart phone. The screen display layout on the operation screen can also be changed to suit operator preferences and customized for the novice and/or veteran machinists.

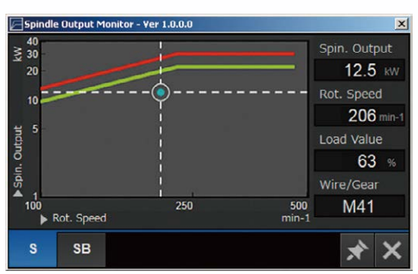


"Just what we wanted."—Refreshed OSP suite apps

This became possible through the addition of Okuma's machining expertise based on requests we heard from real, machine-shop customers. The brain power packed into the CNC, built by a machine tool manufacturer, will "empower shop floor" management.

Spindle Output Monitor
Increased productivity through visualization of motor power reserve

The specified spindle output (red line: short time rating, green line: continuous rating) and the spindle output in current cutting (blue circle) are simultaneously displayed on the screen, for real-time view of power reserve during cutting. This allows speeding up cutting by increasing the spindle speed or feed rate while monitoring the graph to ensure that the blue circle does not cross the lines.



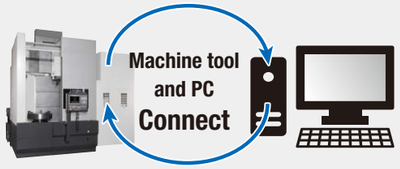
Scheduled Program Editor
Easy programing without keying in code

E-mail Notification
Monitoring utilization status even when away from the machine

Get Connected, Get Started, and Get Innovative with Okuma "Monozukuri" Connect Plan

Connect, Visualize, Improve

Okuma's Connect Plan is a system that provides analytics for improved utilization by connecting machine tools and visual control of factory operation results and machining records. Simply connect the OSP and a PC and install Connect Plan on the PC to see the machine operation status from the shop floor, from an office, from anywhere. The Connect Plan is an ideal solution for customers trying to raise their machine utilization.



OSP-P300SA

Standard Specifications

Basic specs	Control	Turning: X, Z simultaneous 2-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: 1,000 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, multi touch panel
	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.
	Programming	Program management, edit, scheduled programs, fixed cycles, special fixed cycles, tool nose R compensation, arithmetic operations, logic operations, math functions, variables, branch statements, auto programming (LAP4), programming help
	Machine operations	MDI, manual (rapid traverse, pulse handle), load meter, operations help, alarm help, sequence return, manual interrupt & auto return, data I/O, pitch error compensation, Cycle time reduction easy setting
	MacMan	Machining Management: machining results, machine utilization, fault data compile & report, external output
	Communications/Networking	USB ports, Ethernet, DNC-T1
High-speed / high-accuracy functions		Thermo Active Stabilizer - Construction (TAS-C)
Energy-saving functions	ECO suite plus	ECO Idling Stop, ECO Power Monitor*
	Power Regeneration System	Regenerative power is used when the spindle and feed axes decelerate to reduce energy waste

* The displayed power is an approximate value. If you need an accurate power value, please select the option to attach a wattmeter.

Kit Specifications / Optional Specifications

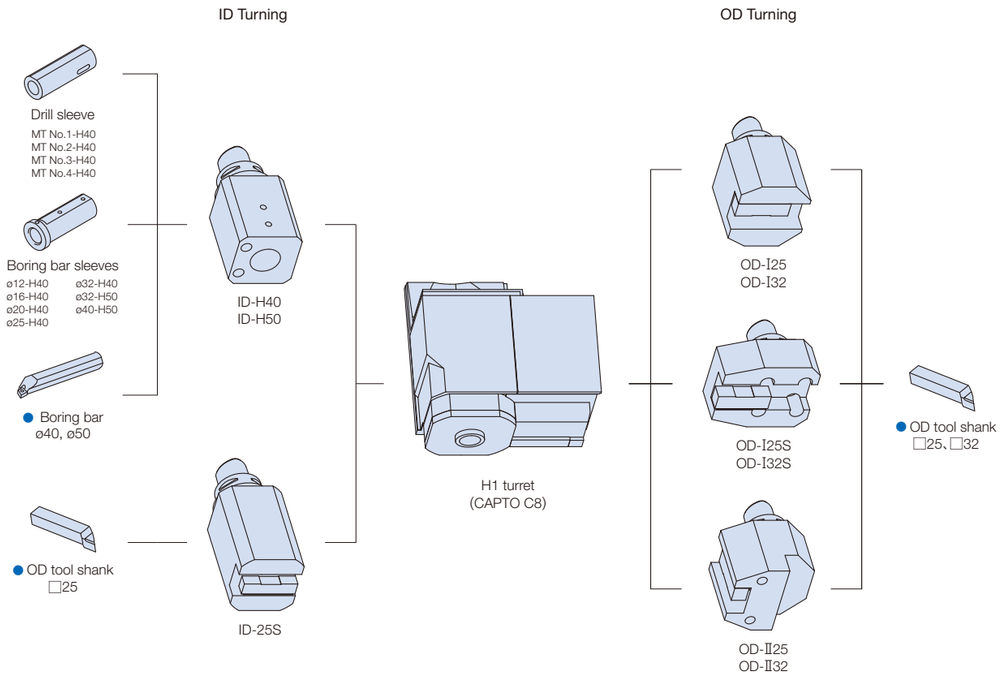
			NML E	NML D	3D E	3D D	OT-IGF E	OT-IGF D
Operation functions	Advanced One-Touch IGF-L						●	●
Programming	Work coordinate system select	10 sets	●	●	●	●	●	●
		50 sets						
		100 sets						
	Operation buffer (10 MB)							
	Circular threading			●		●		●
	Program notes			●		●		●
	User task 2 I/O variables, 8 each							
	Common variables 1,000 sets (Std: 200 sets)							
	Thread matching (spindle orientation required)							
	Threading slide hold (G34, G35)							
	Variable Spindle Speed Threading (VSST)							
	Inverse time feed							
	Manual cutting feed							
	Spindle dead-slow cut							
Monitoring	Real 3-D simulation*1				●	●	●	●
	Cycle time over check		●	●	●	●	●	●
	Load monitor (spindle, feed axis)				●	●	●	●
	Load monitor no-load detection (load monitor ordered)							
	AI Machine Diagnosis (feed axis)*2							
	Machine Data Logger							
	Tool life management			●		●		●
	Tool life warning							
	Operation end lamp (yellow)							
	Alarm lamp (red)							
	Operation end buzzer (electric buzzer)							
	Hour meters	Power ON						
		Spindle rotation						
		NC operating						
	NC operation monitor (counter, totaling)		●	●	●	●	●	●
	Status indicator (triple lamp) Type C		●	●	●	●	●	●

			NML E	NML D	3D E	3D D	OT-IGF E	OT-IGF D
Measuring	In-process work gauging		Included in machine specs					
	Z-axis auto zero offset by touch sensor							
External I/O, communication functions	RS-232C connector							
	Additional USB	2 additional ports possible						
	DNC link	DNC-T3						
		DNC-C / Ethernet*1						
		DNC-DT						
Automation / unattended operation	Harmonic Spindle Speed Control (HSSC)		●	●	●	●	●	●
	Auto power shutoff M02, alarm							
	Warm-up function (by calendar timer)							
	Tool shelter cycle							
	External program selections	A (pushbutton) 8 types						
		B (rotary switch) 8 stages						
		C1 (digital switch) BDC, 2-digit						
		C2 (external input) BDC, 4-digit						
	Cycle time reduction*1	Operation time reduction	●	●	●	●	●	●
High-speed / high-accuracy functions	AbsoScale X-axis, Z-axis							
Energy-saving functions ECO suite plus	ECO Operation	Chip conveyor / mist collector intermittent/linked operation						
		Spindle power peak cutting						
	ECO Power Monitor	On-machine wattmeter						
Other functions	Collision Avoidance System (CAS)							
	One-Touch Spreadsheet							
	Machining Navi L-gⅡ, T-g (Threading)							
	Mobile pulse handle (required)							
	Short circuit breaker							
	External M signals (2, 4, 8, 16 sets)							
	Edit interlock (C)							
	Multi-flute cutter function*3							
	OSP-VPSⅡ (Virus Protection System)							

* NML: Normal, 3D: Real 3D simulation, E: Economy, D: Deluxe
*1. Technical consultations required. *2. With AbsoScale detection specs, ball-screw wear detection is possible. *3. For CAPTO specs only

Tooling System

Unit: mm



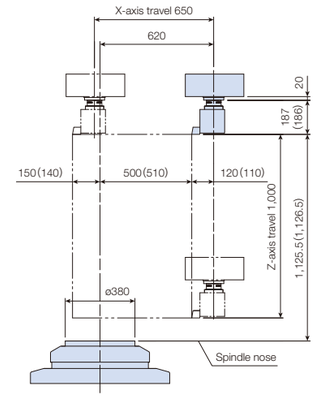
Note: ● Commercially available items

Working Ranges (CAPTO C8)

Unit: mm

OD cutting (for large workpieces)

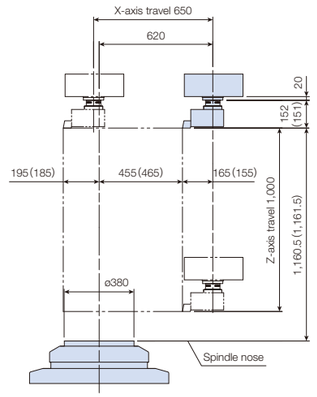
OD toolholder OD-I25
OD-I32



( ): For OD-I25

OD cutting (for long workpieces)

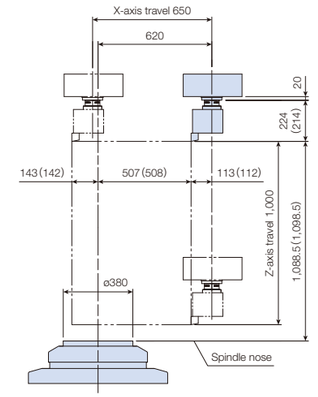
OD toolholder OD-I25S
OD-I32S



( ): For OD-I25S

End face cutting

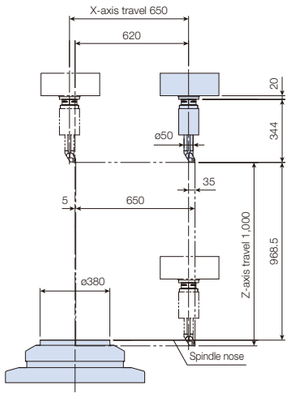
Endface toolholder OD-Ⅱ25
OD-Ⅱ32



( ): For OD-Ⅱ25

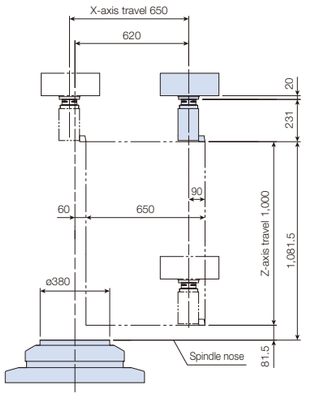
ID cutting

ID toolholder ID-H40
ID-H50



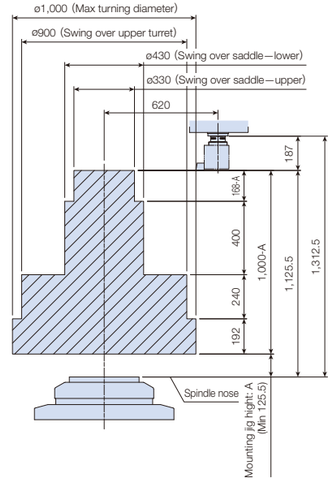
ID cutting

ID toolholder ID-25S



Unit: mm

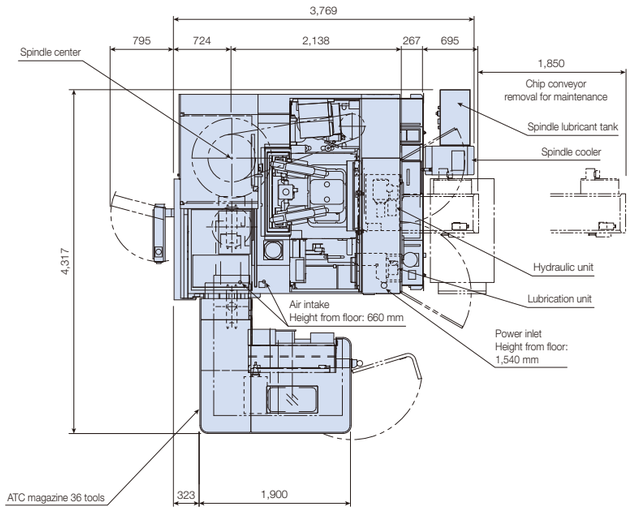
Maximum Workpiece Dimensions

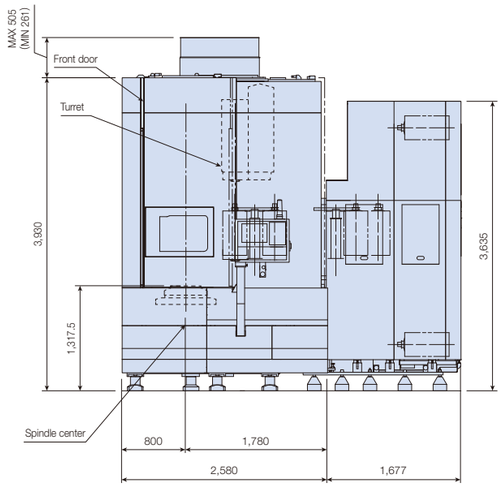


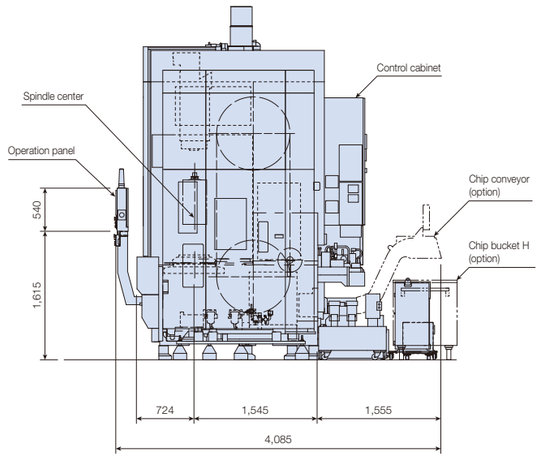
The diagram shows max workpiece and fixture dimensions in OD cutting when an OD-32I holder is used.

Dimensional and Installation Drawings

Unit: mm







VT1000EX

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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