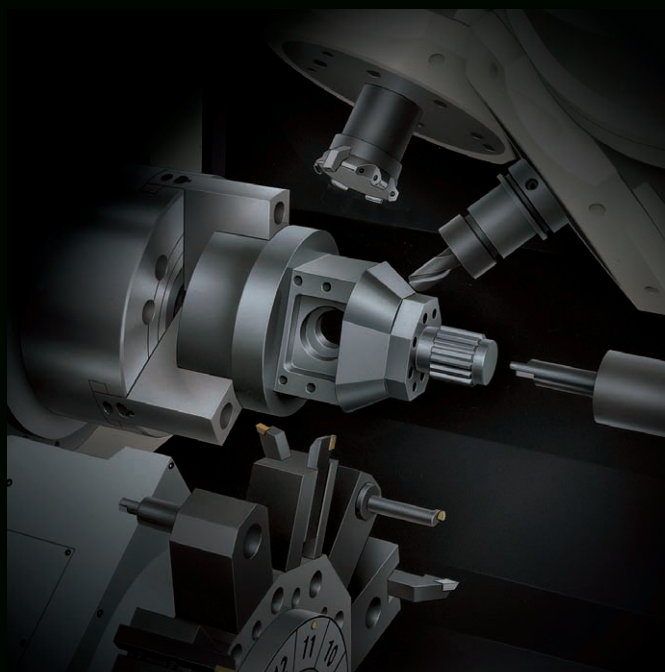




Multifunction Machines

MacTURN 250/350

Multifunction machines

MacTURN250/350

Lower turret

Highly efficient
simultaneous 4-axes
machining

Roller guide

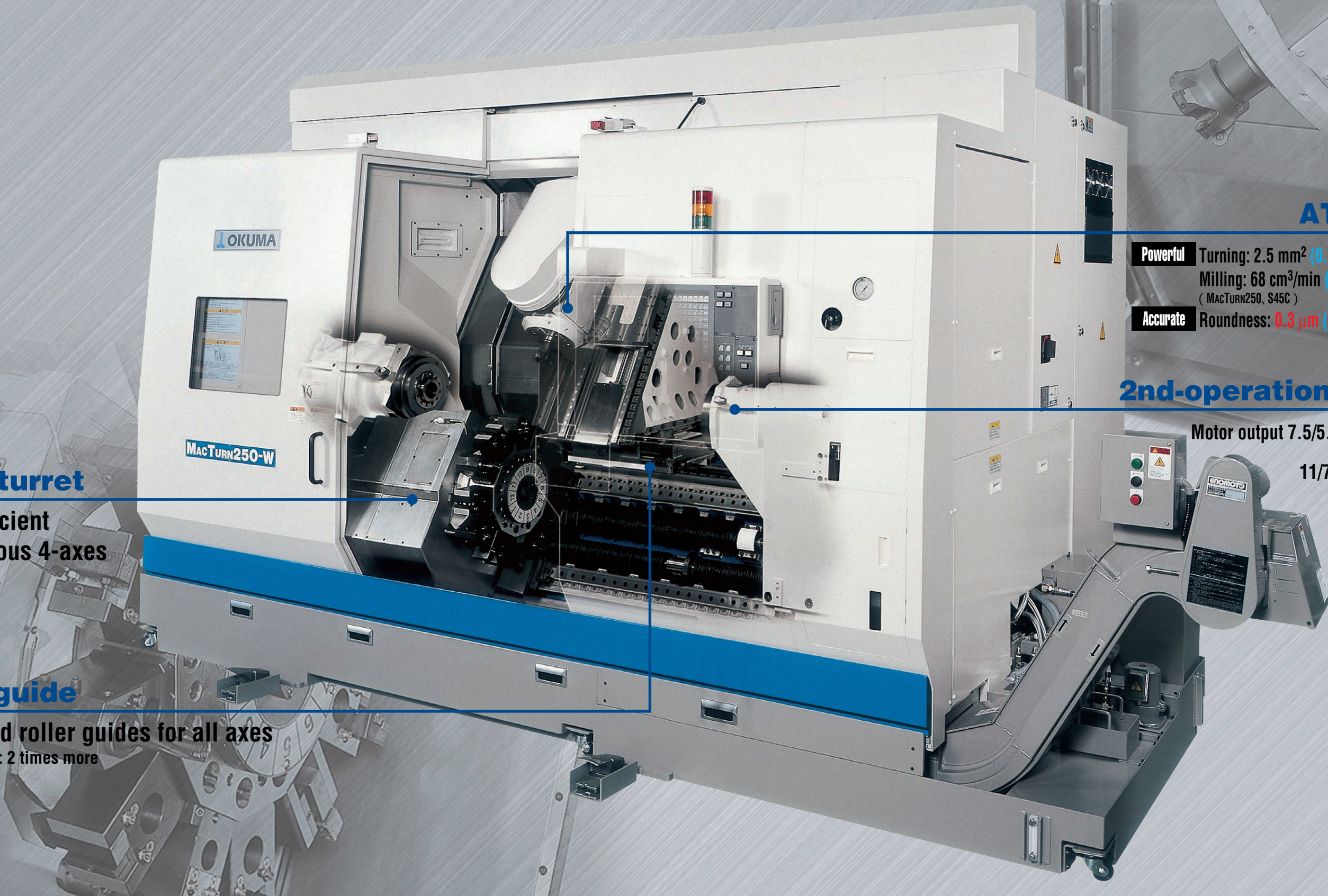
Highly rigid roller guides for all axes
Ball guide ratio: 2 times more

ATC turret

Powerful Turning: 2.5 mm² (0.0039 in.²) (actuals)
Milling: 68 cm³/min (4.15 in.³/min) (actuals)
(MacTURN250, S45C)
Accurate Roundness: 0.3 μm (11.81 μin.) (actuals)

2nd-operation spindle

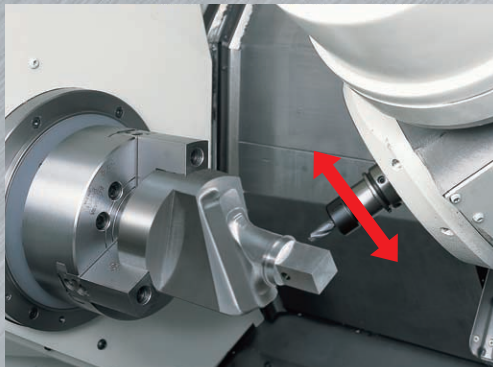
Motor output 7.5/5.5 kW (10/7.5 hp)
(MacTURN250)
11/7.5 kW (15/10 hp)
(MacTURN350)



9-axis control multifunction MacTurns give you 120% satisfaction

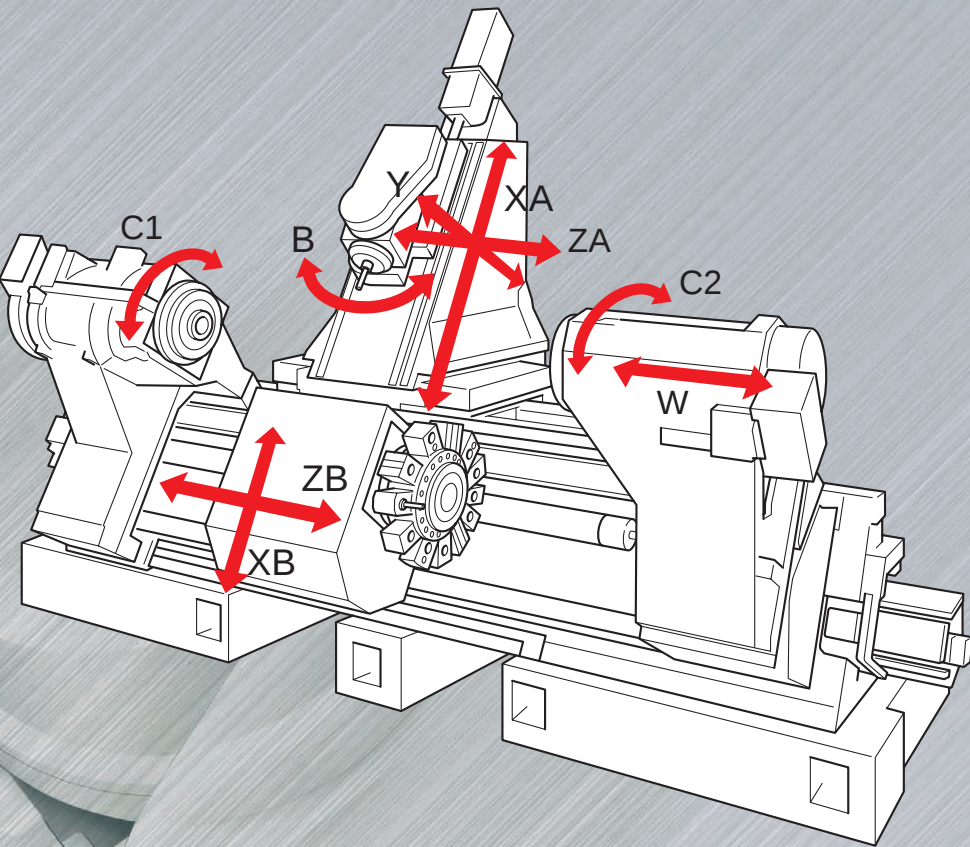
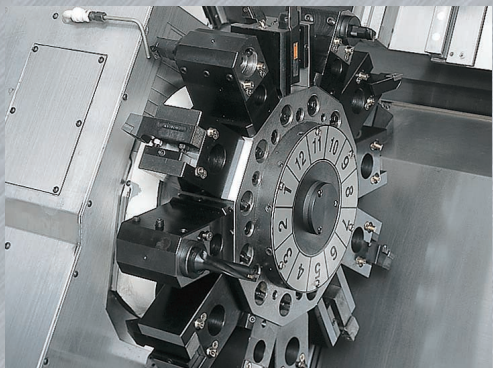
Wider area Y-axis travel

Y-axis travel 160 mm (6.30 in.) (MacTURN250)
190 mm (7.48 in.) (MacTURN350)



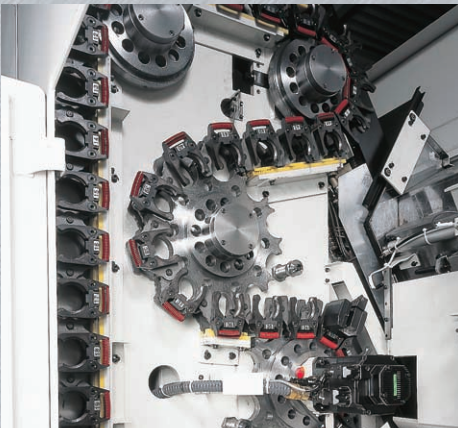
Highly efficient V12 lower turret

Highly efficient, simultaneous 4-axis machining with upper and lower turrets



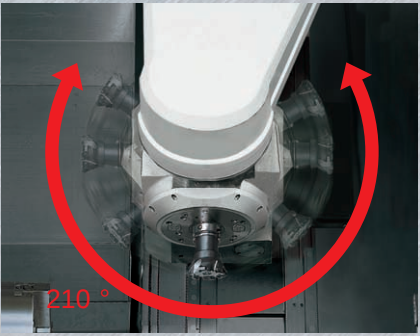
Long untended operations ATC magazine

This is an NC automatic tool changer. With the magazine on the saddle, tool changes can be done anywhere.



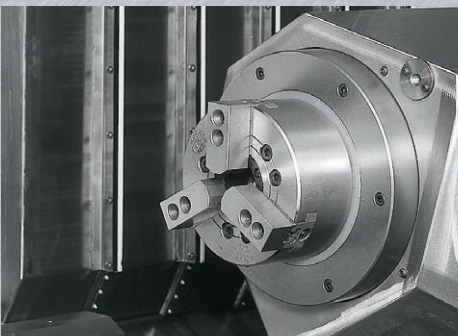
Indexing angle: 1 degree (standard) B-axis for slope work

Easier setups using the pulse handle to manually feed the B-axis.



Integrated operations 2nd-operation spindle

2nd-operation spindle enables 1 or 2 integrated operations (front/back turning, live tool machining)



MacTURN250/350



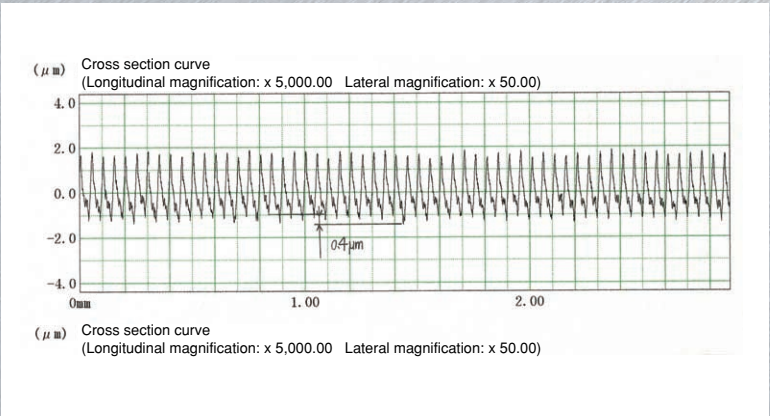
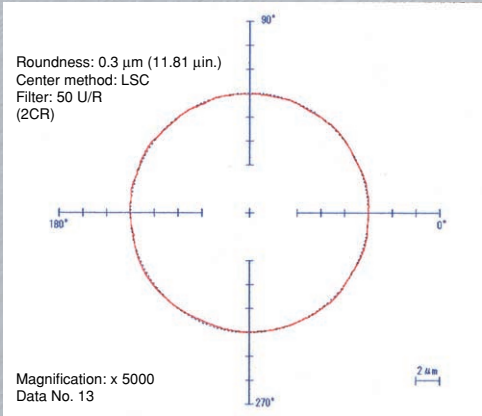
Highly accurate machining

Roundness **0.3 μm (11.81 $\mu\text{in.}$)**
(actual value)

Workpiece material BSB
Spindle speed 3,000 min⁻¹

Surface roughness **0.4 μm (15.75 $\mu\text{in.}$)**
(blade edge uniformity) (actual value)

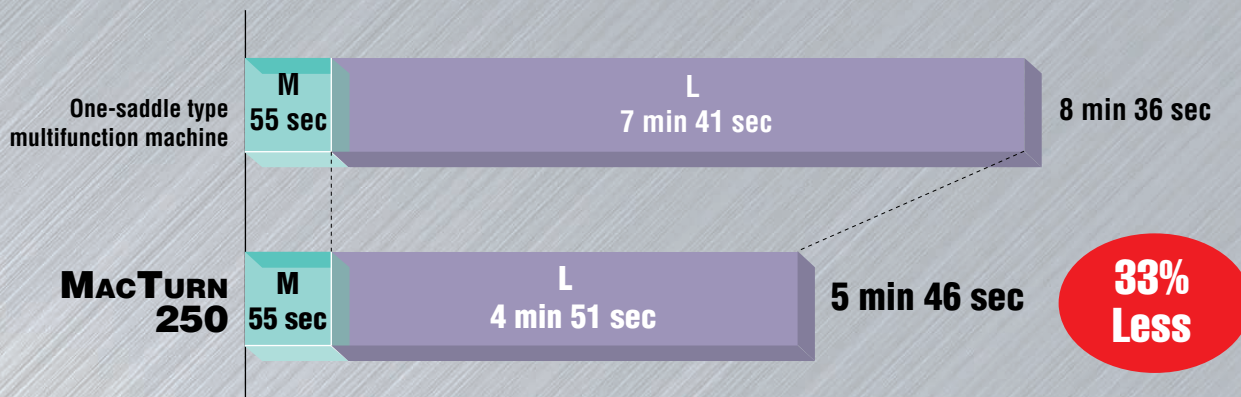
Workpiece material BSB
Spindle speed 2,500 min⁻¹



Increase in productivity **1.5 times more**

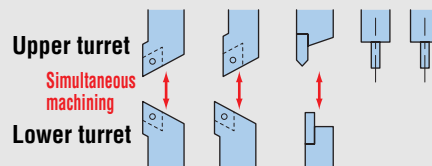
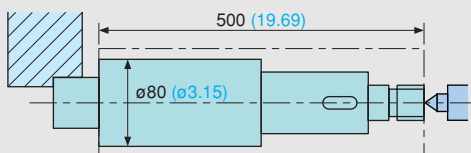
Simultaneous machining with upper and lower turrets

• Comparison of cycle times

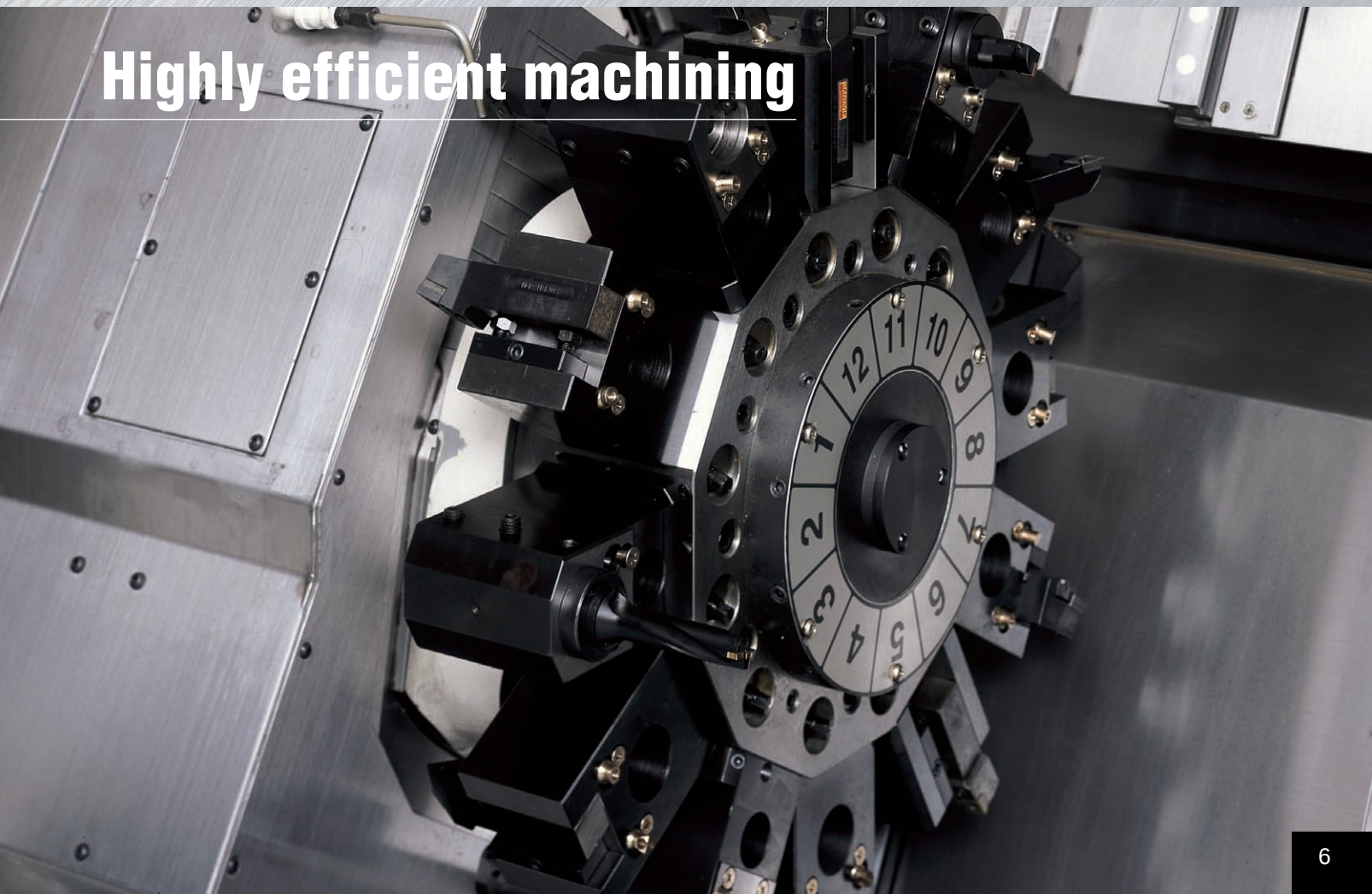


Workpiece shape and tooling

• No. of tools used: 8



Highly efficient machining



Machine structure for high accuracy and productivity

Large capacity VAC motors

Heavy cutting at high speed with our highly rigid spindle, based on accumulated expertise in design and advanced manufacturing.

Powerful turning example

MacTURN250/350
(Workpiece material: S45C)

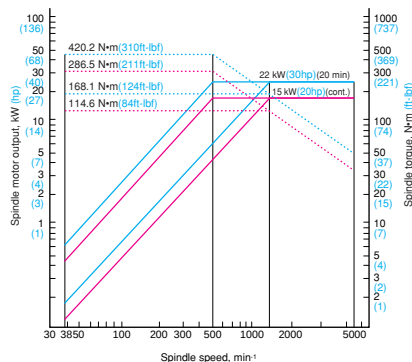
Heavy-duty cutting	•OD cutting	2.5 mm ² (0.0039 in. ²)
	Cutting speed	100 m/min (328 fpm)
	Cutting depth	5 mm (0.20 in.)
	Feedrate	0.5 mm/rev (0.02 ipr)
	•Drill	ø32 (ø1.26 in.) (HSS)
	Cutting speed	30 m/min (98 fpm)
	Feedrate	0.4 mm/rev (0.016 ipr)



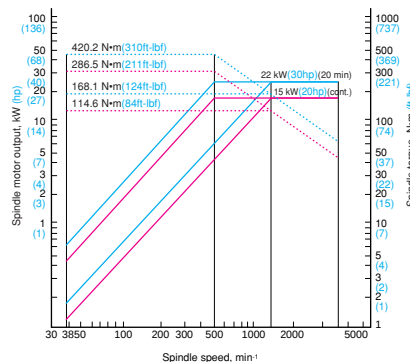
• Spindle motor

MacTURN250/350 VAC 22/15 kW (30/20 hp)
(20 min/cont)

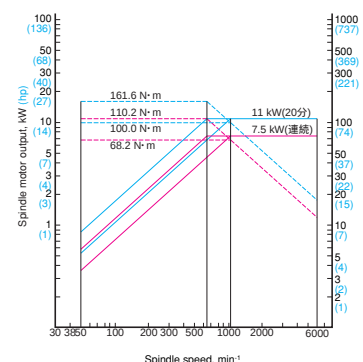
5,000 min⁻¹ specs
[φ100 (φ3.921) std spindle]



3,800 min⁻¹ specs
[φ120 (φ4.72) big-bore spindle]



MacTURN250
VAC 11/7.5 kW(20 min/cont)
6,000 min⁻¹ spec



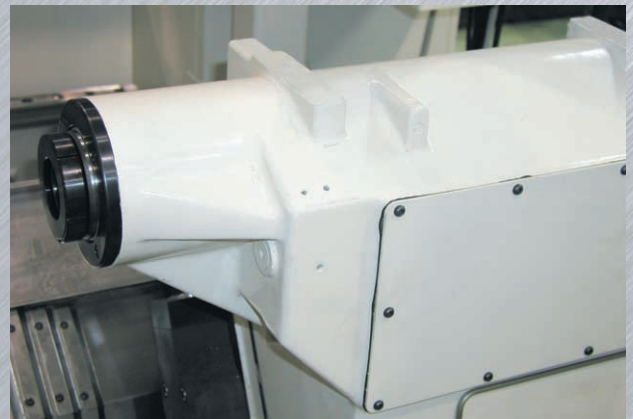
M-spindle thru-coolant

Improves chip disposal, tool life, and machining accuracy of deep hole machining.
(1.5 MPa, 3.0 MPa, 7.0 MPa)



Tailstock

An auto towalong type, the tailstock clamps automatically and accurately positions for rigid shaft-work operations.



High-capacity live-tool machining

The M-spindle motor provides full-power from the low to the high speed range for robust live-tool machining.

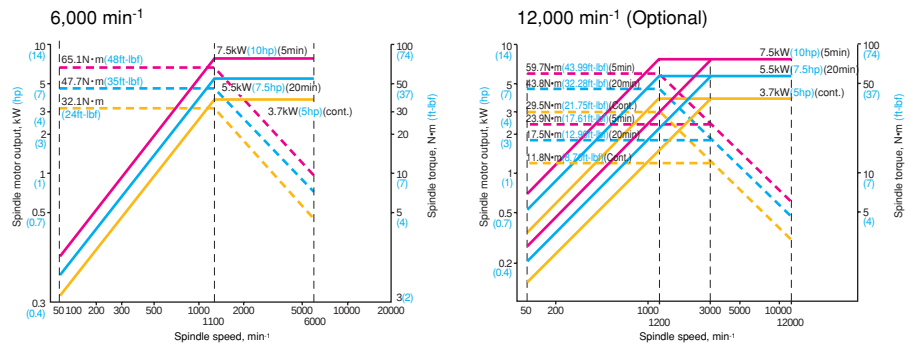
Powerful milling example

MacTURN250/350
(Workpiece material: S45C)

Face milling	ø80	face milling (4-blade)
	(ø3.15)	Cutting width 59.5 mm (2.34 in.)
		Cutting depth 1.6 mm (0.06 in.)
		Feedrate 0.3 mm/rev. (0.01 ipr)
		Metal removal 68 cm ³ /min (4.15 in. ³ /min)

End milling	ø20	(4-flute)
		Cutting depth 10 mm (0.39 in.)
		Feedrate 0.1 mm/rev. (0.004 ipr)
Tapping	M16	P2

- **M-tool motor**
MacTURN250/350
VAC 7.5/5.5/3.7 kW (10/7.5/5 hp)
(5 min/20 min/cont)



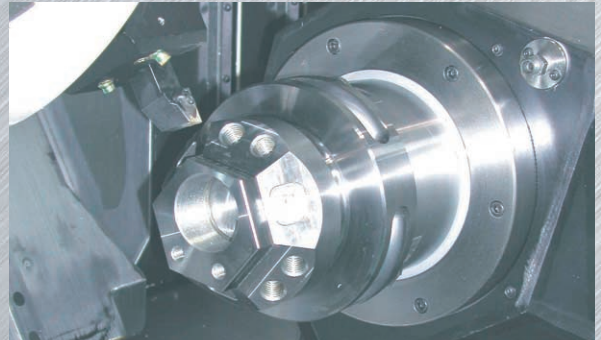
Powerful 2nd-operation spindle

The 2nd-operation spindle also has the extra power needed for complete primary/secondary operations.

2nd-operation spindle example

MacTURN250/350
(Workpiece material: S45C)

Heavy-duty cutting	•OD cutting	1.5 mm ² (0.002 in. ²)
	Cutting speed	100 m/min (328 fpm)
	Cutting depth	5 mm (0.20 in.)
	Feedrate	0.3 mm/rev (0.01 ipr)

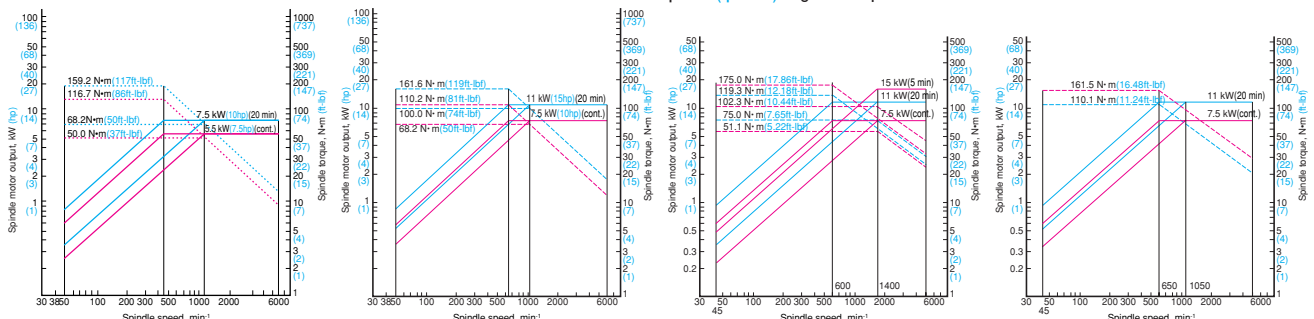


MacTURN250-W
VAC 7.5/5.5 kW (10/7.5 hp)
(20 min/cont)
6,000min⁻¹ spec

MacTURN250-W/350-W
VAC 11/7.5 kW (15/10 hp)
(20 min/cont)
6,000min⁻¹ spec

MacTURN350-W
VAC 15/11/7.5 kW
(5 min/20 min/cont)
5,000 min⁻¹ spec
ø100 (ø3.94) big-bore spindle

MacTURN350-W
VAC 11/7.5 kW (20 min/cont)
5,000 min⁻¹ spec
ø100 (ø3.94) big-bore spindle



Versatile machining variations

Hobbing

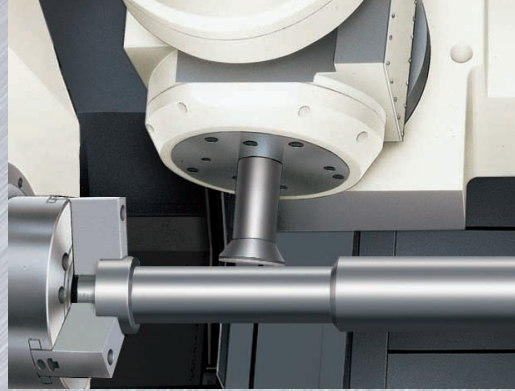
Gear cutting with hob cutter

- Hob speed $1,000 \text{ min}^{-1}$
- Feedrate: 2 mm/rev (0.079 ipr)



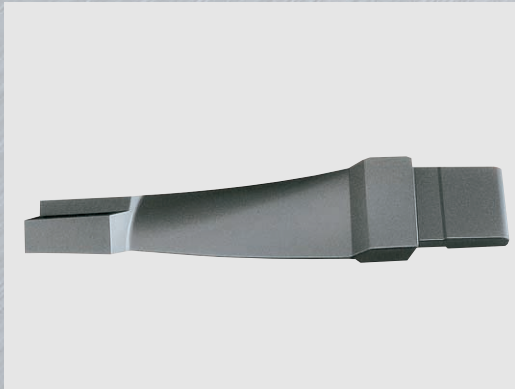
Grinding

Grinding with the M-spindle's cup grinding wheel



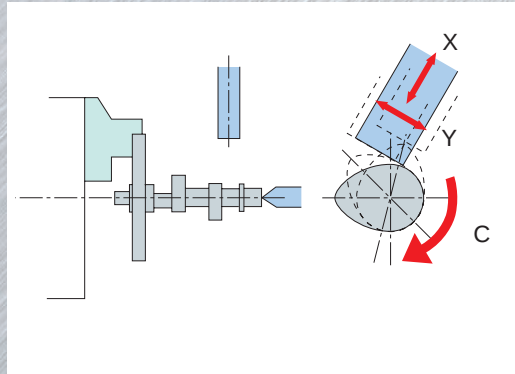
Blade machining

Highly accurate machining and synchronized control, even for highly accurate shaping of complicated blades



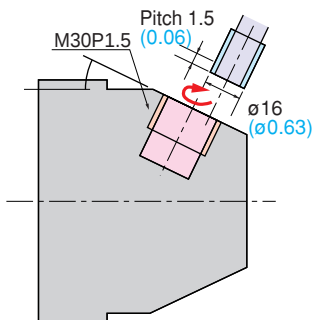
Eccentric cutting (cam)

Eccentric cutting for cams and similar shapes can be programmed and machined very efficiently.



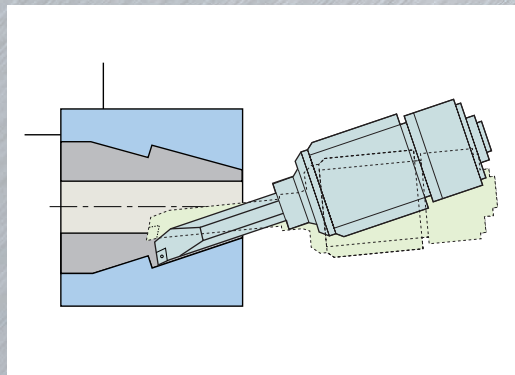
Helical cutting

Done with small-diameter rotating tools in big holes. Helical cutting on slopes also possible.



B-axis reverse taper turning

You can turn reverse tapers as shown below by drawing the B-axis gradually back along the slope at the desired angle.

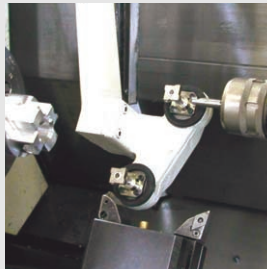


Optional equipment



44/80/120-tool ATC

Larger tool capacity for wider range of machining



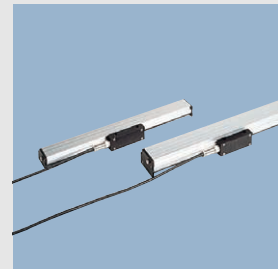
Touch sensor

Auto cutting-point measurement and tool offset/breakage detection



Hybrid coolant

Okuma's hybrid coolant system lets you cut with oil and cool down with water, so you save coolant and extend the life of your tools.



ABSO SCALE

This high-speed high-resolution [0.1 mm (4 min.)] optical absolute position encoder developed by Okuma improves machining accuracy by avoiding ball-screw thermal expansion and backlash.



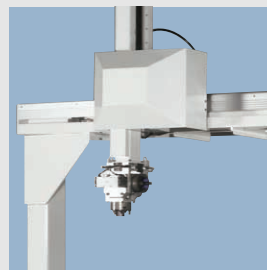
Infrared in-process gauging

By ATC-delivered, high-precision wireless touch sensor - for superb auto work gauging (dual dia/radius gauging).



High-pressure coolant unit (7 Mpa specification)

High-pressure coolant flushes chips, efficiently cools tool tips, and extends tool life.



OGL gantry loaders

Able to handle a flexible arrangement of workpieces, Okuma gantry loaders help automate production lines, and with massive stackers provide long runs.



Bar feeders

With part catchers, long and automated operations also possible with the various bar feeder systems available.

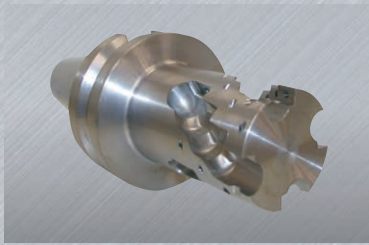
Various chip conveyors

• Chip conveyor types and applications

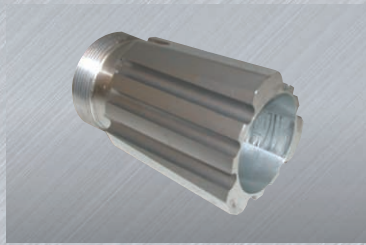
Type	Hinge	Scraper	Magnetic scraper	Hinge Scraper + Drum Filter
Application	Used generally for NC lathes	- For cast iron - Easy for maintenance - Blade scraper (Magnetic scraper more effective for sludge)	- For cast iron - Suitable for sludge	- For cast iron and steel - Coolant filtered from aluminum or cast iron chips (long or short)
Shape				

* A stand may be necessary depending on the type of conveyor. * Chip conveyors developed for machining hard materials are also available.

Machining examples



- Material: SCM415
- Product: Tool



- Material: S45C
- Product: Bearing



- Material: SKD
- Product: Die



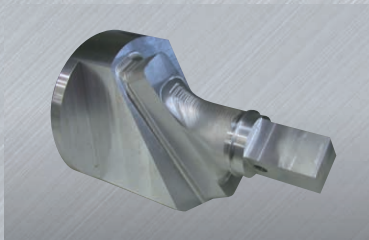
- Material: Aluminum
- Product: Engine parts



- Material: Aluminum
- Product: Construction parts



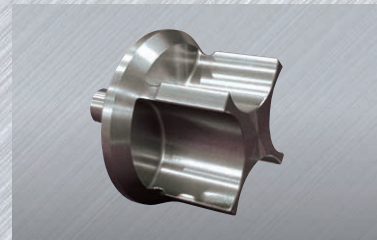
- Material: FC
- Product: Pump parts



- Material: Stainless steel or equivalent
- Product: Aircraft parts

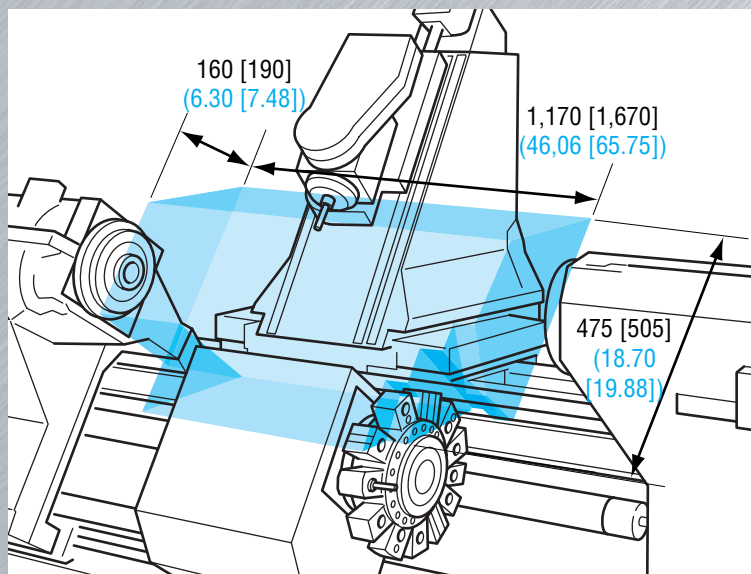


- Material: Aluminum
- Product: Automobile parts



- Material: Stainless steel
- Product: Atomic parts

Machining range



Note: [] for MACTURN350. Please see "Working range" on page 14 for details.

Machine specifications

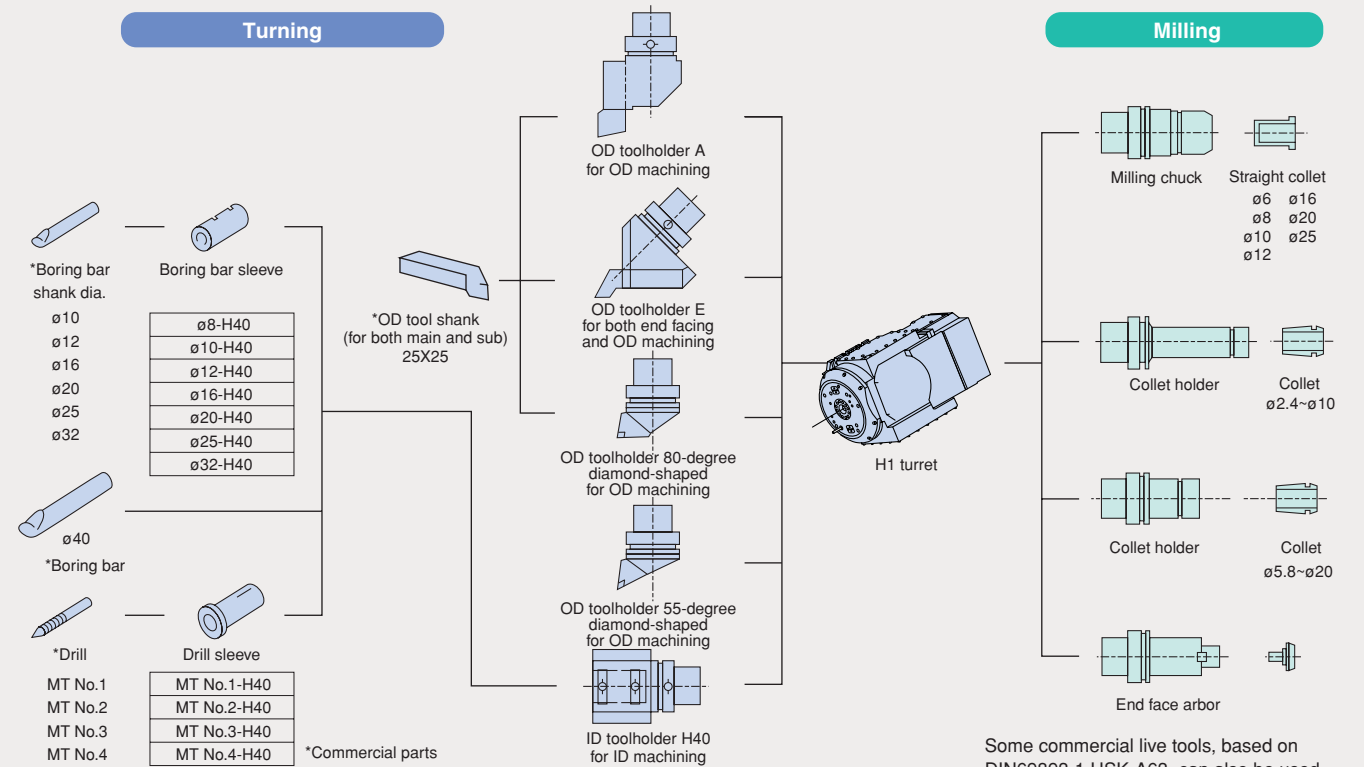
			MacTURN 250		MacTURN 250-W	MacTURN 350		MacTURN 350-W
				C×1000	×1000		C×1500	×1500
Capacity	Between centers	mm (in.)	T	1,000 (39.37)		T	1,000/1,500 (39.37/59.06)	
	Swing over saddle	mm (in.)		ø550 (ø21.65)			ø550 (ø21.65)	
	Max machining dia.	mm (in.)		ø530 (ø20.87)			ø530 (ø20.87)	
	Max machining dia.	mm (in.)		ø550 (ø21.65)			ø550 (ø21.65)	
	Max work length	mm (in.)		1,025 (40.35)			1,625 (63.98)	
Travels	X axis	mm (in.)		XA: 475 (18.70), XB: 160 (6.30)			XA: 505 (19.88), XB: 210 (8.27)	
	Z axis	mm (in.)		ZA: 1,170 (40.06), ZB: 1,155 (45.47)			ZA: 1,670 (65.75), ZB: 1,655 (65.16)	
	Y axis	mm (in.)		160 (+80~-80) {6.30 (+3.15~-3.15)}			190 (+95~-95) {7.48 (+3.74~-3.74)}	
	C axis	Degree		360-degree (rotary axis control angle 0.001-degree)			360-degree (rotary axis control angle 0.001-degree)	
	B-axis indexing angle	Degree		1°			1°	
Spindle	Spindle speed	min ⁻¹ {rpm}		5,000			5,000	
	Speed ranges			auto 2-speed (coil switching)			auto 2-speed (coil switching)	
	Spindle nose			JIS A 2-6			JIS A 2-6	
	Tapered bore	mm (in.)		ø62 (ø2.44)			ø62 (ø2.44)	
	Bearing dia	mm (in.)		ø100 (ø3.94)			ø100 (ø3.94)	
2nd-operation spindle	Spindle speed			—	6000		—	6000
	Speed ranges			—	Auto 2-speed*1		—	Auto 2-speed*1
	Spindle nose	mm		—	ø140 flat (5.51)		—	ø140 flat (5.51)
	Tapered bore	mm		—	ø43 (1.69)		—	ø43 (1.69)
	Bearing dia	min ⁻¹		—	ø80 (3.15)		—	ø80 (3.15)
Turret	Type			ATC			ATC	
	No. of tools			1 for both L-and M-tools			1 for both L-and M-tools	
	Tool shank/boring bar shank dia	mm (in.)		□25 / ø40 (□0.98 / ø1.57)			□25 / ø40 (□0.98 / ø1.57)	
M-spindle	Speed range	min ⁻¹		6,000			6,000	
	Coolant			M-spindle thru-coolant			M-spindle thru-coolant	
Feedrate	Rapid traverse	m/min (ipm)		X: 30 Z: 40 Y: 26 C: 400 min ⁻¹ (X: 1181 Z: 1575 Y: 1024)	X: 30 Z: 40 Y: 26 C: 400 min ⁻¹ (X: 1181 Z: 1575 Y: 1024) C1:400min ⁻¹ C2:400min ⁻¹		X: 30 Z: 40 Y: 26 C: 400 min ⁻¹ (X: 1181 Z: 1575 Y: 1024)	X: 30 Z: 40 Y: 26 C: 400 min ⁻¹ (X: 1181 Z: 1575 Y: 1024) C1:400min ⁻¹ C2:400min ⁻¹
	ATC			HSK-A63, KM63, CAPTO C6 (selections)			BT40 BIG PLUS	
Tailstock	Tool shank type			30			30	
	No. of tools			ø90 / ø120 (ø3.54 / ø4.72)			ø90 / ø120 (ø3.54 / ø4.72)	
	Max tool dia	mm (in.)		Face tools and side tools 250 (9.84)			Face tools and side tools 300 (11.81)	
	Max tool length	mm (in.)		5 (11)			7 (15)	
	Max tool weight	kg (lb)		5 x 100 (excluding shank) (11 x 3.94)			7 x 100 (excluding shank) (15 x 3.94)	
	Max tool moment	kg x mm (lb x in.)		Random address			Random address	
	Tool selection			—	ø90 (3.54)		—	ø90 (3.54)
Motors	Quill tapered bore	mm (in.)		—	MT No. 5 (live center)		—	MT No. 5 (live center)
	Quill travel	mm (in.)		—	150 (5.91)		—	150 (5.91)
	Programmable tailstock			—	Auto tow-along type		—	Auto tow-along type
	Main spindle	kW (hp)		VAC 22/15 (30/20) (20 min/cont)			VAC 22/15 (30/20) (20 min/cont)	
Machine size	2nd-operation spindle			VAC 7.5/5. 5 (10/7.5) (20 min/cont)			VAC 11/7.5 (20 min/cont)	
	M-spindle	kW (hp)		VAC 7.5/5. 5/3. 7 (10/7.5/5) (5 min/20 min/cont)			VAC 7.5/5. 5/3. 7 (10/7.5/5) (5 min/20 min/cont)	
	Coolant	kW (hp)		0.25 x 3, 0.8			0.25 x 3, 0.8	
	Height	mm (in.)		2,900 (114)			2,950 (116)	
CNC	Floor space	mm (in.)		3,820 x 2,645 (150 x 100)			4,560 x 2,910 (180 x 115)	
	Weight (without ATC magazine)	kg (lb)		12,500 (27,600)			13,700 (30,140)	
	Okuma			OSP-E100L				

*1. Coil switching

Optional accessories and specifications			MacTURN 250	MacTURN 250-W	MacTURN 350	MacTURN 350-W
Spindle	Big-bore specs: ø120 (ø4.72) bearing, A2-8, 3,800min ⁻¹		○	○	○	○
2nd-operation spindle	Spindle bearing ø80mm (ø3.15 in.) 6,000min ⁻¹ 7.5/5.5kW (10/7.5 hp)		-	○	-	○
	Spindle bearing ø80mm (ø3.15 in.) 6,000min ⁻¹ 11/7.5kW (10/7.5 hp)		-	○	-	○
	Spindle bearing ø100mm (ø3.94 in.) 5,000min ⁻¹ 11/7.5kW (10/7.5 hp)		-	○	-	○
Lower turret	V12 VDI (for L-tool only)		○	○	○	○
	V12 VDI (for both L- and M-tools)		○	○	○	○
M-spindle	M-spindle speed 12,000min ⁻¹		○	○	○	○
B-axis	B-axis indexing angle 0.001°		○	○	○	○
ATC	Tool shank type (HSK-A63, KM63, CAPTO C6)	Standard	○	○	○	○
	No. of tools (44, 80, 120)		○	○	○	○
Tailstock	Tailstock thrust pressure high/low selection		○	○	○	○
	Tailstock live center type MTNo.4		○	○	○	○
	Programmable tailstock (NC controlled)		○	○	○	○
Steadyrest	Steadyrest		○	○	○	○
ABSOSCALE	ABSOSCALE XA, ZA, Ys, XB		○	○	○	○
Coolant	Spindle coolant (A, B)		○	○	○	○
	Shower coolant system (A, B)		○	○	○	○
	High-pressure coolant 1.5MPa, 3.0MPa, 7MPa		○	○	○	○

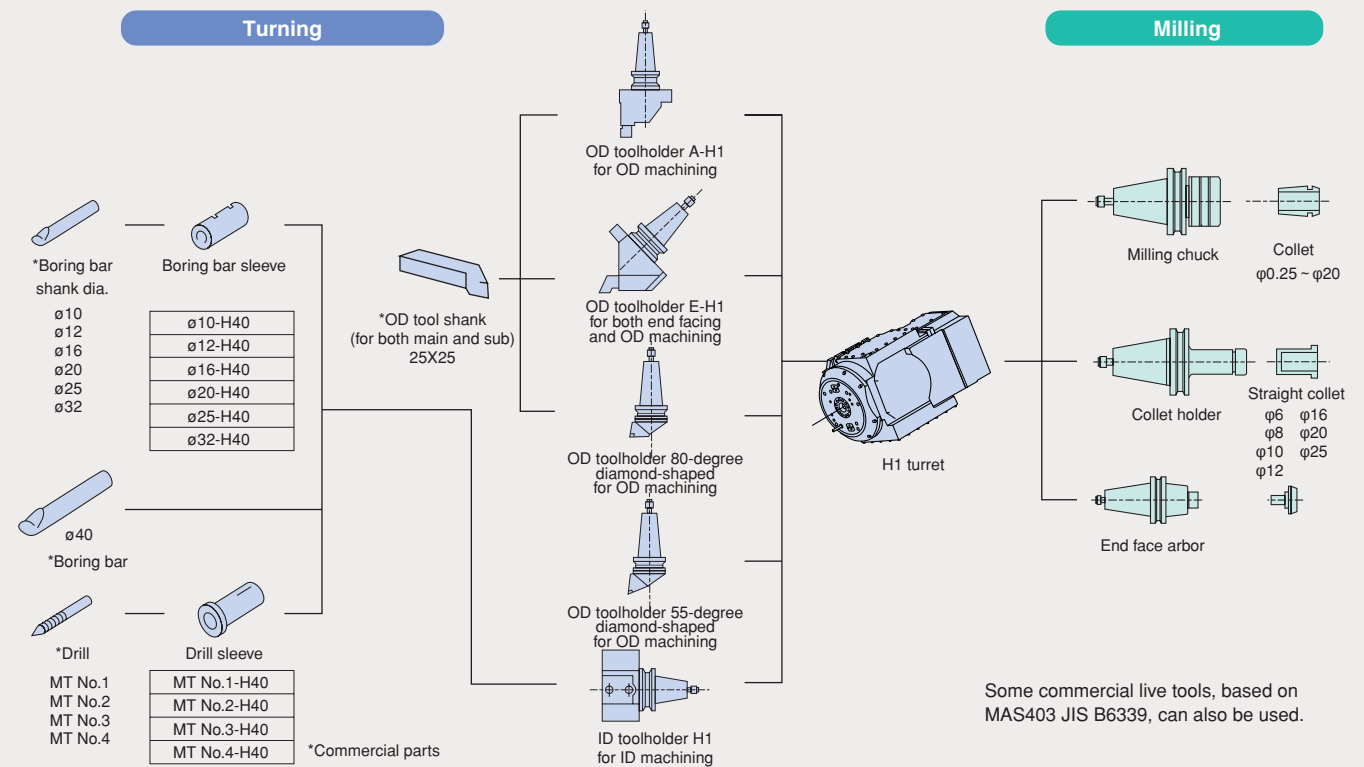
Note: Please consult your Okuma representative for delivery details.

Tooling system MacTURN250 (HSK-A63, KM63, CAPTO C6)



Above drawing for HSK-A63

Tooling system MacTURN350 (BT40 Big Plus)



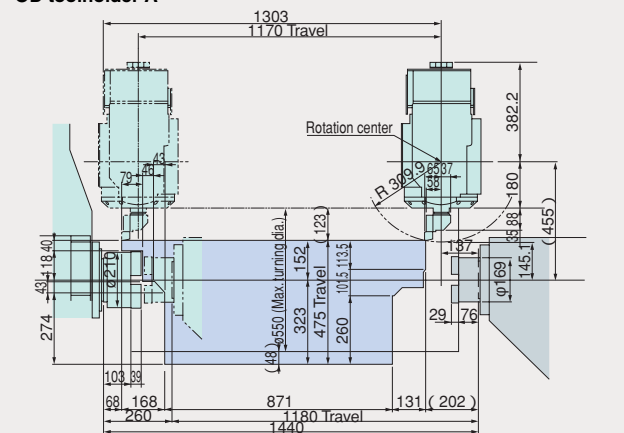
Some commercial live tools, based on MAS403 JIS B6339, can also be used.



Working range (W-axis specs)

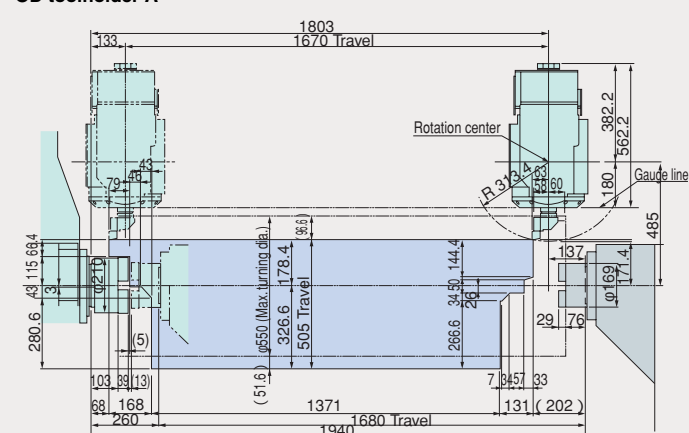
MACTURN250

- OD toolholder A

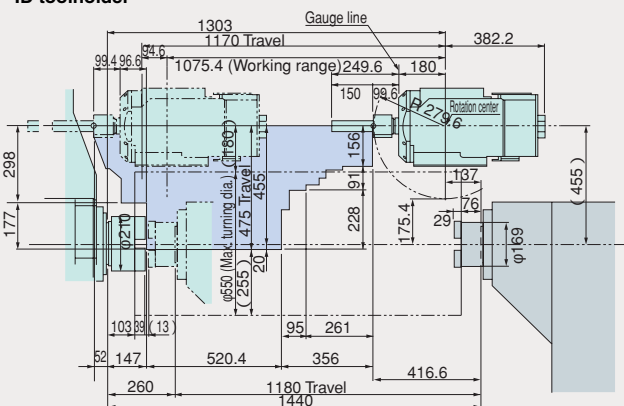


MACTURN350

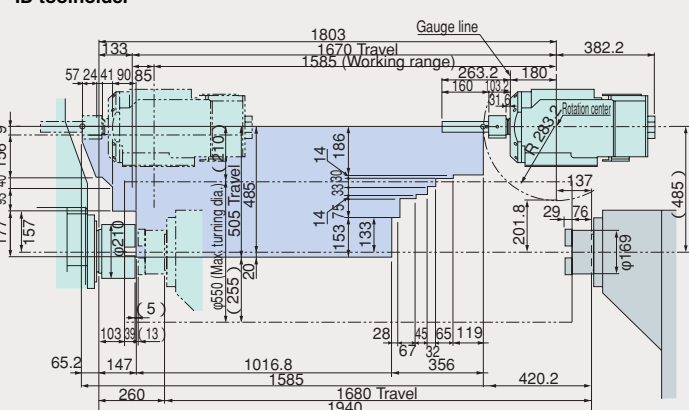
- OD toolholder A



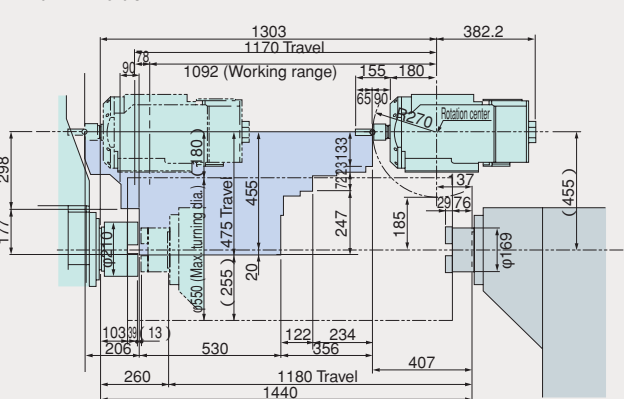
- ID toolholder



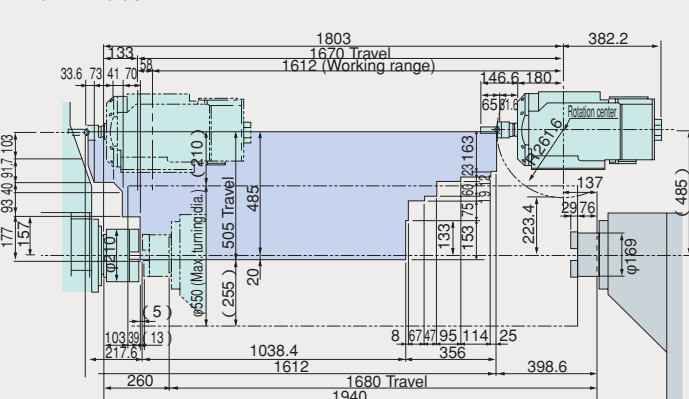
- ID toolholder



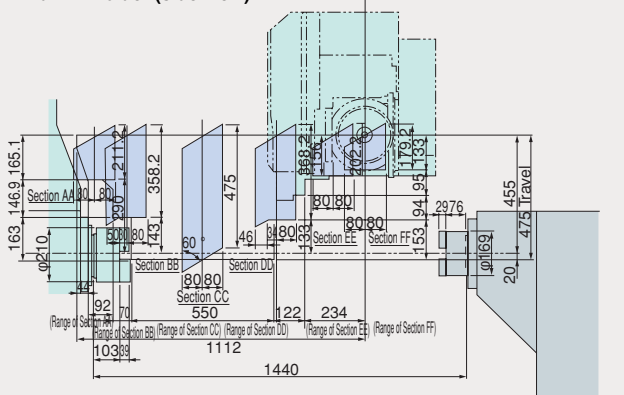
- End mill holder



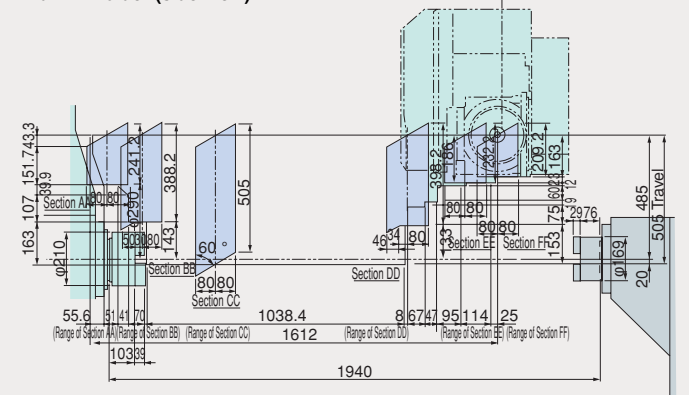
- End mill holder



- End mill holder (side view)



• End mill holder (side view)



Note: Drawings above show HSK-A63

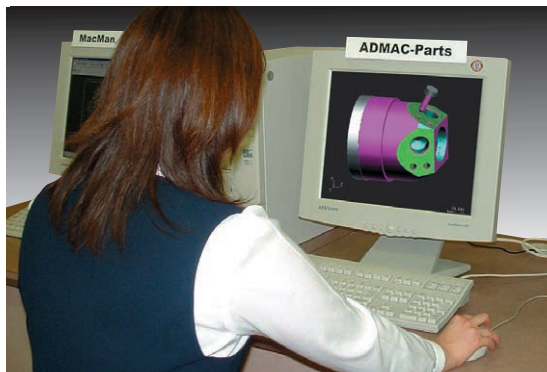
Note: Drawings above show BT40 Big Plus

Access MacTURN production support tool via IT Plaza

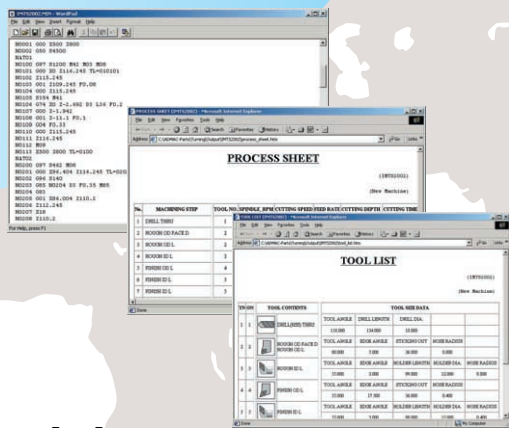
Efficiency improved from the pre-operation stage!

CAD/CAM software created by Okuma

ADMAC-Parts Turning



ADMAC-Parts integrates design and production to minimize the cycle from CAD design to cutting. Using the MACTURN can improve efficiency in upstream processes as well as machining processes.



IT on MT

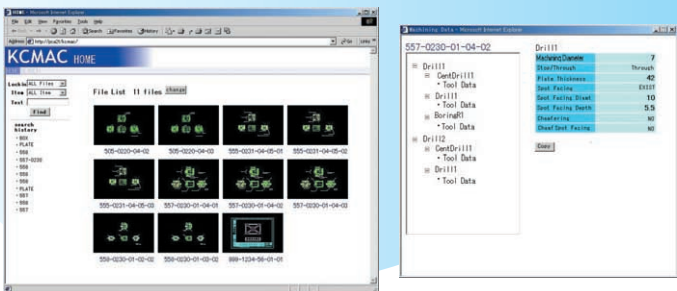


Passing on successful techniques

Machining expertise database

KCMAC Knowledge Creation for Machining

Creating new techniques by transferring and sharing techniques and expertise to produce quality products.



Bridge to customers

Pool of information

okumamerit.com
Mechanics, Electronics, Resource, Information and Technology

Okuma makes all information required to produce quality products openly available, including clues and technical know-how.

URL: <http://www.okumamerit.com>

IT Plaza

Production information network presented by Okuma
OSP-E100, ADMAC-Parts, KCMAC, and MacMan can help you.

Central to IT Plaza

Intuitive CNC

OSP-E100



The OSP Browser gives instant access to information

Real 3-D simulation lets you experience the cutting process without making a single chip

OSP-WinX manipulates machines

One touch IGF-XM enhances machining

Solving all your problems with our reliable machining technology accessed via IT technology.



Easily pick up any standstill in production

Production control software

MacMan

Instantly picks up the production plan and actual work site performance data.

Ideal for controlling production of a variety of workpieces, small volumes, and products with short leadtime.



OSP-E100L CNC

Standard Specifications

Basic Functions	Control	X, Z simultaneous 2-axis turning, X, Z, C simultaneous 3-axis multi-axis machining
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Tape format	N4, G3, X+53, Y+53, Z+53, I+53, K+53, F+53, S4, T6, M3
	RS-232-C interface	RS-232-C interface, 1 channel
	Floppy disk input/output	3.5" floppy disk drive (built-in type) Input/output a program via OSP or MS-DOS (FAT) formats Accepts long file names, Auto ISO/EIA code recognition
	Programming	Auto ISO/EIA code recognition; absolute, incremental, or both
	Min input increment	X-axis: 1 μm (0.00004 in.) [dia], Z-axis: 1 μm (0.00004 in.), C-axis: 0.001-degree
	Max input dimension	8-digit decimal, ±99999.999 mm
	Programmable units	1 μm (0.00004 in.), 10 μm (0.0004 in.), 1 mm (0.04 in.) (Freely selectable)
	Decimal point data	1 μm (0.00004 in.), 10 μm (0.0004 in.), 1 mm (0.04 in.) increments
Operations	Feed	Feedrates are listed in the machine specs; override: 0 to 200%, dwell: 0.01 to 99999.99 sec.
	Tooling	Tool selection: 12 sets, tool offset (compensation): 32 sets, max offset value: ±99999.999 mm Auto tool offset: calculated from input wear and measured values
	Spindle VAC motor drive	Direct spindle speed commands (S4), constant cutting speed, spindle speed override (50 to 200%), optimum turning speed designation
	Live tool VAC motor drive	Direct spindle speed command
	Display	10.4" color TFT, six LEDS for display of operating conditions
	Manual operation	Spindle (jog, CW, CCW), tool rotation, pulse handle, X-/Z-axis manual feed
	Multitasking	Program writing, editing during cutting
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Door interlock	Safety function to interlock machine movement when the door is opened or closed
	NC torque limiter	Instant detection of machine collision to minimize machine damage
Other Functions	Hi-G control	Calculates motor speed and torque per mathematical speed control—for fast and stable positioning
	MacMan (Machining Management)	Machining progress is calculated and displayed for each main program Machine operating time (power supply, cutting) is calculated and displayed Machine operating time is calculated and displayed in time charts Machining results, operating results, operating records, and trouble information are output to a floppy disk
	OSP-WinX	Featuring easy-to-manipulate screen windows Pop-up function displays Quick closing windows
	Sequence number search	Cursor advances to a specified sequence number in the selected program
	Load meter	Displays feed axis and spindle loads, with peak value hold
	Sequence restart	To restart from the beginning of an interrupted sequence
	Manual interrupt/auto return	For manual operations during automatic operation; automatic return to interrupt point
	Threading slide hold	Slide hold during threading (optional for G34/G35 non-fixed cycles)
	Programming	Two programs can be edited simultaneously on one screen, and programs can be edited during operation
	Program capacity	One program: 128 KB [320 m (1050 ft)], Program storage: 128 KB [320 m (1050 ft)]

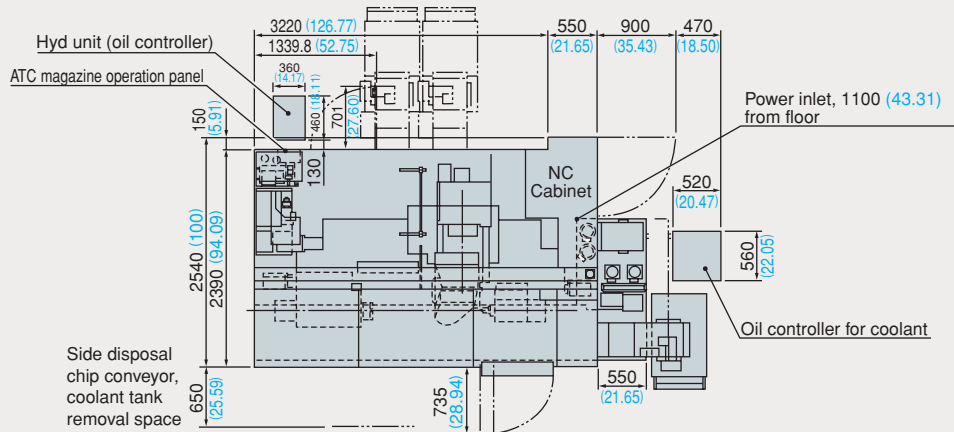
OSP-E100L CNC

Optional Specifications

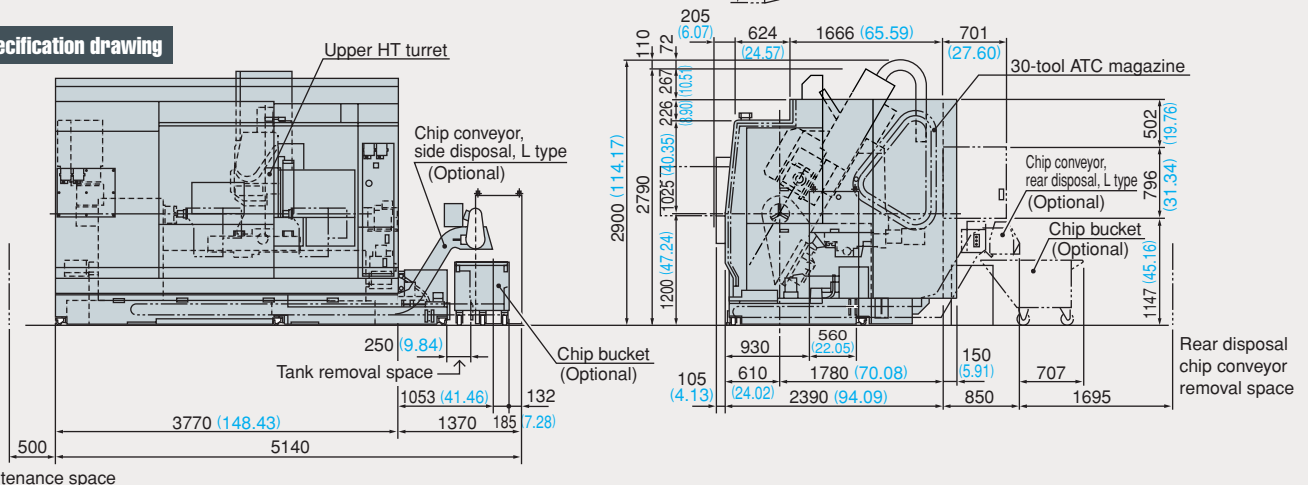
Kit Specifications										Kit Specifications																			
NML		3D	One-Touch IGF		One-Touch IGF-M		N	K																					
E	D	E	D	E	D	E			D	E	D	E	D	E	D														
NK: Non-kit specs										NK: Non-kit specs																			
Interactive Functions										External I/O, Communication Functions																			
One Touch IGF-XL (including LAP4 and Real 3D)										IT Plaza set (requires system link and cable connections)		OSP browser																	
One Touch IGF-XL for multifunction machines (includes LAP4 and Real 3D)												IT Plaza network * (DNC-T3)																	
Programming																													
Lathe auto programming (LAP4)										Additional RS-232-C channel [1 chan, 2 chan] (Standard specs include 1 channel)																			
Circular threading																													
User Task 2		Sub-programs, math functions, logic operations								RS-232-C connecting cable		Maker _____																	
		I/O variables, eight each (including above)										Type _____																	
Tool offset (Standard: 32 sets)		Tool offset: 96 sets								RS-232-C connecting cable		Maker _____																	
Tool wear compensation												Type _____																	
Common variables: 1000 (Standard: 200)										DNC link (requires system link and cable connections)		DNC-B (includes dedicated channel)*																	
Thread matching (spindle orientation required)												DNC-C1 (includes dedicated channel)*																	
Threading slide hold (G34, G35)												DNC-C2 (includes dedicated channel)*																	
Multifunction machines												DNC-C3 (includes dedicated channel)*																	
										Coordinate conversion								DNC-RT *											
										Profile generation																			
Flat turning																													
Programming Capacity										Automated / Untended Operation																			
Program storage		512 KB (1280 m) (4200 ft)								Spindle orientation, electric																			
		Standard: 128 KB (320 m)										Auto power shutoff								M02, alarm									
		1024 KB (2560 m) (8400 ft)								Warmup function (by calendar timer)																			
		(1050 ft) 4096 KB (10240 m) (33600 ft)																											
Operation buffer		512 KB (1280 m) (4200 ft)								Tool retract cycle																			
		Standard: 128 KB (320 m)																											
Monitoring																						External program selections		A (pushbutton) 8 types B (rotary switch) 8 stages C1 (digital switch) BCD, 2-digit C2 (external input) BCD, 4-digit					
Real 3D simulation																													
Cycle time over check										Okuma loader (OGL) interfaces		Included in loader specs																	
Load monitor (spindle, feed axis)																													
Tool life management										Third party robot and loader interface *		TYPE B (machine) TYPE C (robot and loader) TYPE D TYPE E																	
Operation end buzzer																													
Chucking miss detection																		Bar feeders		Bar feeder (main) Interface only Maker _____ Type _____									
Work counters																										Included in machine specs			
		Count only, () pieces																											
		Cycle stop, () pieces																											
		Start disabled, () pieces								Cycle time reduction functions*		Cycle time reduction Chuck open/close during spindle rotation Auto tailstock advance/retract during spindle rotation																	
Hour meters		Power ON																											
		Spindle rotation																											
		NC operating																											
NC operation monitor (includes counter and monitoring function)																													
NC work counter (stops at full count with alarm)										High-Speed/high-Accuracy Functions																			
Operation end lamp (yellow)										ABSOSCALE (XA,ZA) *																			
Alarm lamp (red)										1/10-μm (0.00004-in.) control *																			
Status display with 3-color signal tower Type C [Type A, Type B]										Pitch error compensation (XA, ZA)																			
Gauging										Other Functions																			
In-process work gauging										Short circuit breaker																			
Z-axis auto zero offset (touch sensor)										External M signals [2 sets, 4 sets, 8 sets]																			
C-axis auto zero offset by touch sensor																													
Gauging data output		RS-232-C		Standard channel																									
				Additional channels																									
Post-process work gauging interfaces		Set levels (5-level, 7-level)																											
		BCD																											
		CEJ MATIC (export specification)																											
		RS-232-C (includes dedicated channel)																											
Touch setter [M, A]										Included in machine specs																			
Size catcher		A (without caliper)																											
		B (with 150-mm (5.91-in.) caliper)																											

MacTURN250

Installation drawing



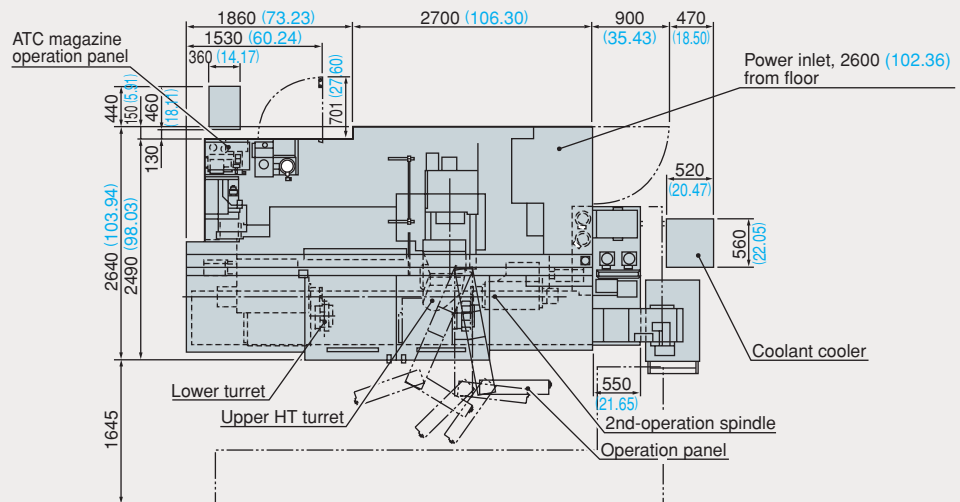
Specification drawing



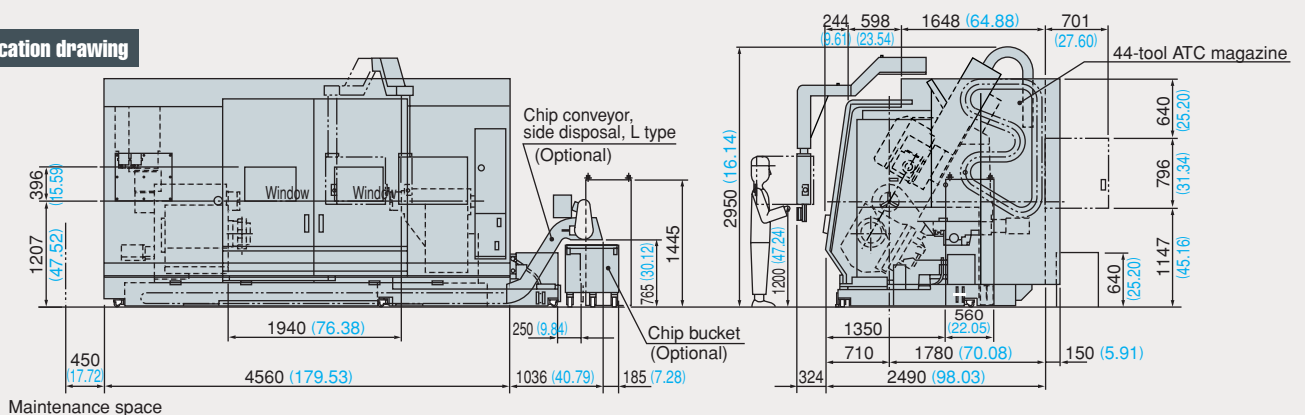
Maintenance space

MacTURN350

Installation drawing

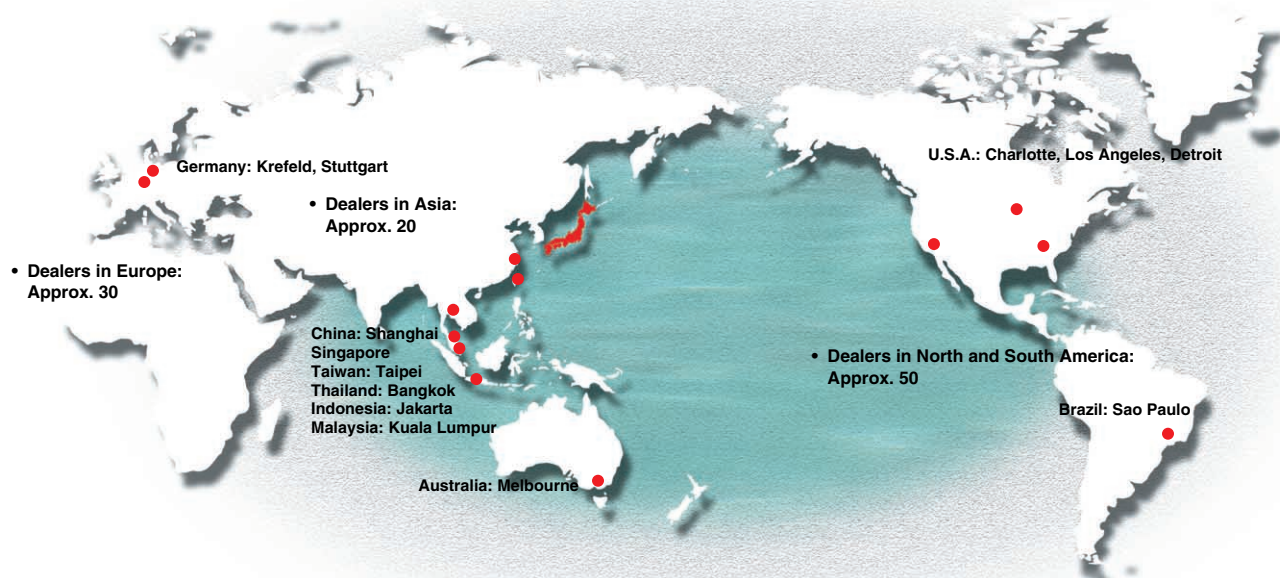


Specification drawing

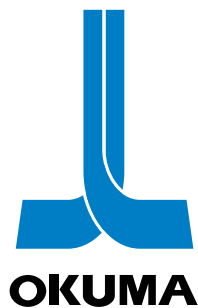


Maintenance space

OKUMA GLOBAL SUPPORT NETWORK



◆ Measurements listed in this brochure are in mm (in.) format with 25.4 mm = 1 in.; other units are as indicated.



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

This product is subject to Japanese government regulations under the Foreign Exchange and Foreign Trade Control Act with regard to strategic goods. When further transport of this product to another country is being considered, prior consultation with Okuma Corporation is required.

OKUMA Corporation, OGUCHI-CHO, NIWA-GUN, AICHI 480-0193, JAPAN • TEL (0587) 95-7825 • FAX (0587) 95-6074

● The specifications, illustrations, and descriptions in this brochure vary in different markets and are subject to change without notice.
Consult your local Okuma representative for specific end-user requirements. Pub No. MACTURN250/350-(1)-300 (Oct 2002) Printed in Japan

