AW MILLER
TECHNICAL SALES, INC.
EAST AURORA, NY 716.652.8282 | HARMONY, PA 724.453.1690 | STE-LAURENT, QC 514.333.9174 | HARLEYSVILLE, PA 215.256.8281

INTEGREX e-H

Mazak

SERIES

INTEGREX e-H SERIES

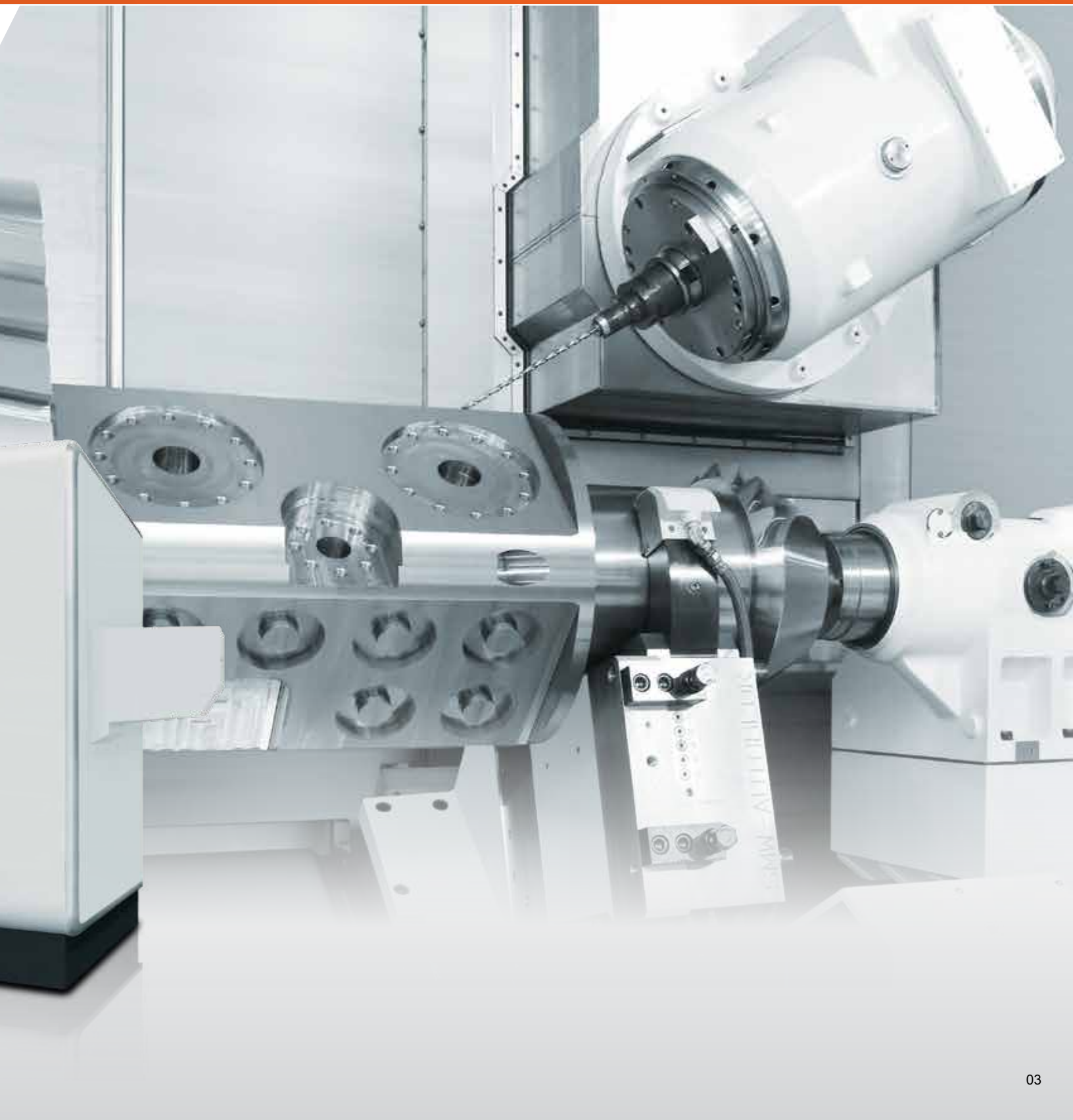
Advanced horizontal Multi-Tasking machines that can process large workpieces from turning to milling in a single setup

Large swing and Y-axis stroke for large workpieces

Powerful turning and milling spindles plus rigid machine construction for unsurpassed productivity

Wide variety of optional equipment to enhance versatility

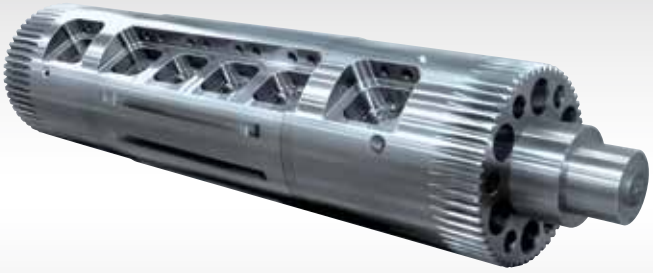
INTEGREX e-670H (4000U)
Shown with optional equipment



Process Integration

The INTEGREX e-H Series incorporates all machining processes from raw material input through final machining in one machine. It reduces production lead time, improves machining accuracy, reduces floor space requirements and initial cost, lowers operating expenses, simplifies operator requirements and enhances the work environment.

Previously, this sample printing machinery roll component with high-accuracy machining requirements required several machine tools with multiple machine and workpiece setups. INTEGREX "DONE IN ONE" processing produces it on one machine in a single setup, which realizes the benefits shown below while it substantially reduces in-process time and in-process inventory.



workpiece length: 2500 mm (98.43")

	Previous Production Process	INTEGREX e-H
Operators	Four	One
Machines	•Large turning center: One •Large vertical machining center + rotary table: One •Large horizontal boring mill: One •Large vertical machining center: One — Four	 One INTEGREX e-670H
Programs	Eight	One
Machine Setups (Loading and positioning workpieces)	Eight	One
Cutting Tools	Four	One
Fixtures	Three	None

Applications

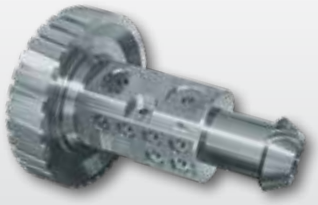
Aerospace

Construction machinery

Marine

Oil

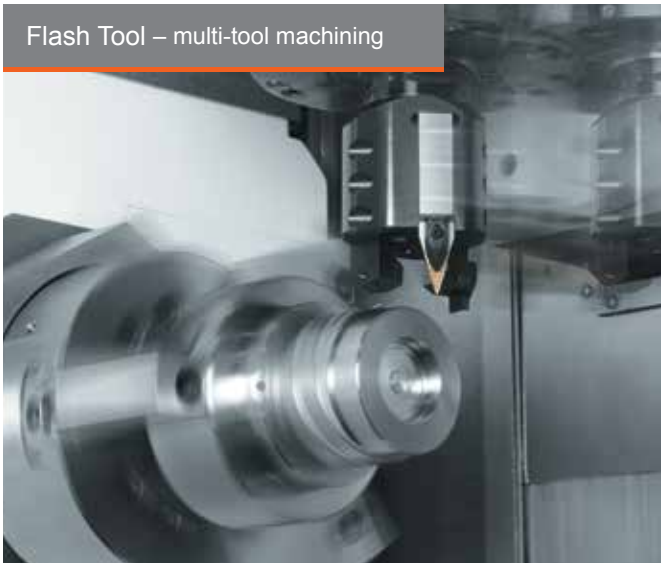
Energy



INTEGREX e-H Series:
Advanced machining capabilities

Gear hobbing

Flash Tool – multi-tool machining



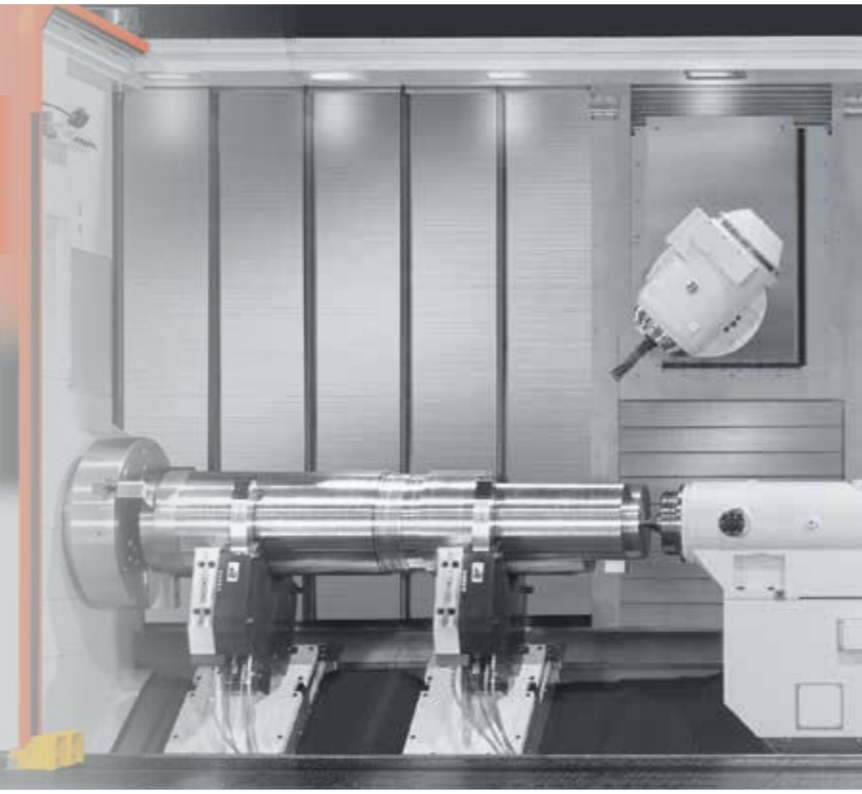
Shaping

B-axis turning

Mill turning

Mill turning: Both workpiece and milling tool rotate for high-efficiency turning of difficult-to-cut workpiece materials.
Note:Optional mill-turning CNC function required

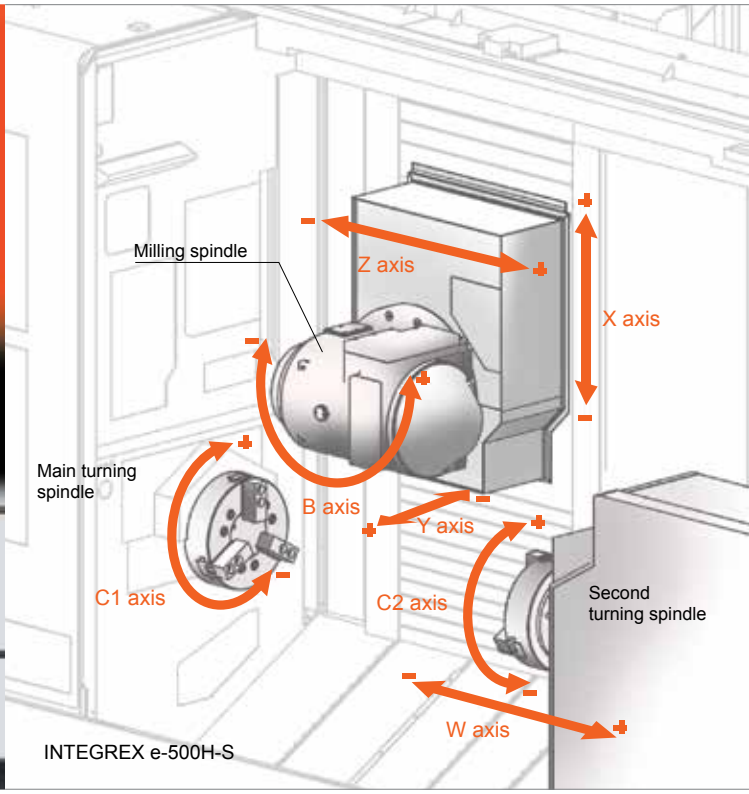
INTEGREX e-H Series



Designed for large workpieces – Incorporating more than 30 years of experience in the production of Multi-Tasking machines

- Powerful milling performance comparable to that of machining centers
- Largest Y-axis stroke in its class
- Wide range of options available, such as long boring bar system and rigid tool holder system with four clamping units

			Milling spindle
 INTEGREX e-500H Series	e-500H	1500U 3000U 4000U	10000 rpm [standard] 37 kW (50 hp) 260 N·m (192 ft·lbs) (40% ED/30-min. rating) 5000 rpm high torque [option] 37 kW (50 hp) 667 N·m (492 ft·lbs) (50% ED)
	e-500H-S	1500U 3000U	
 INTEGREX e-670H Series	e-670H	3000U 4000U 6000U	10000 rpm [standard] 37 kW (50 hp) 260 N·m (192 ft·lbs) (40% ED/30-min. rating) 5000 rpm high torque [option] 37 kW (50 hp) 667 N·m (492 ft·lbs) (50% ED)
	e-670H-S	3000U 4000U	
 INTEGREX e-800H	e-800H	4000U 6000U 8000U	10000 rpm [standard] 37 kW (50 hp) 260 N·m (192 ft·lbs) (40% ED/30-min. rating) 5000 rpm high torque [option] 37 kW (50 hp) 667 N·m (492 ft·lbs) (50% ED)

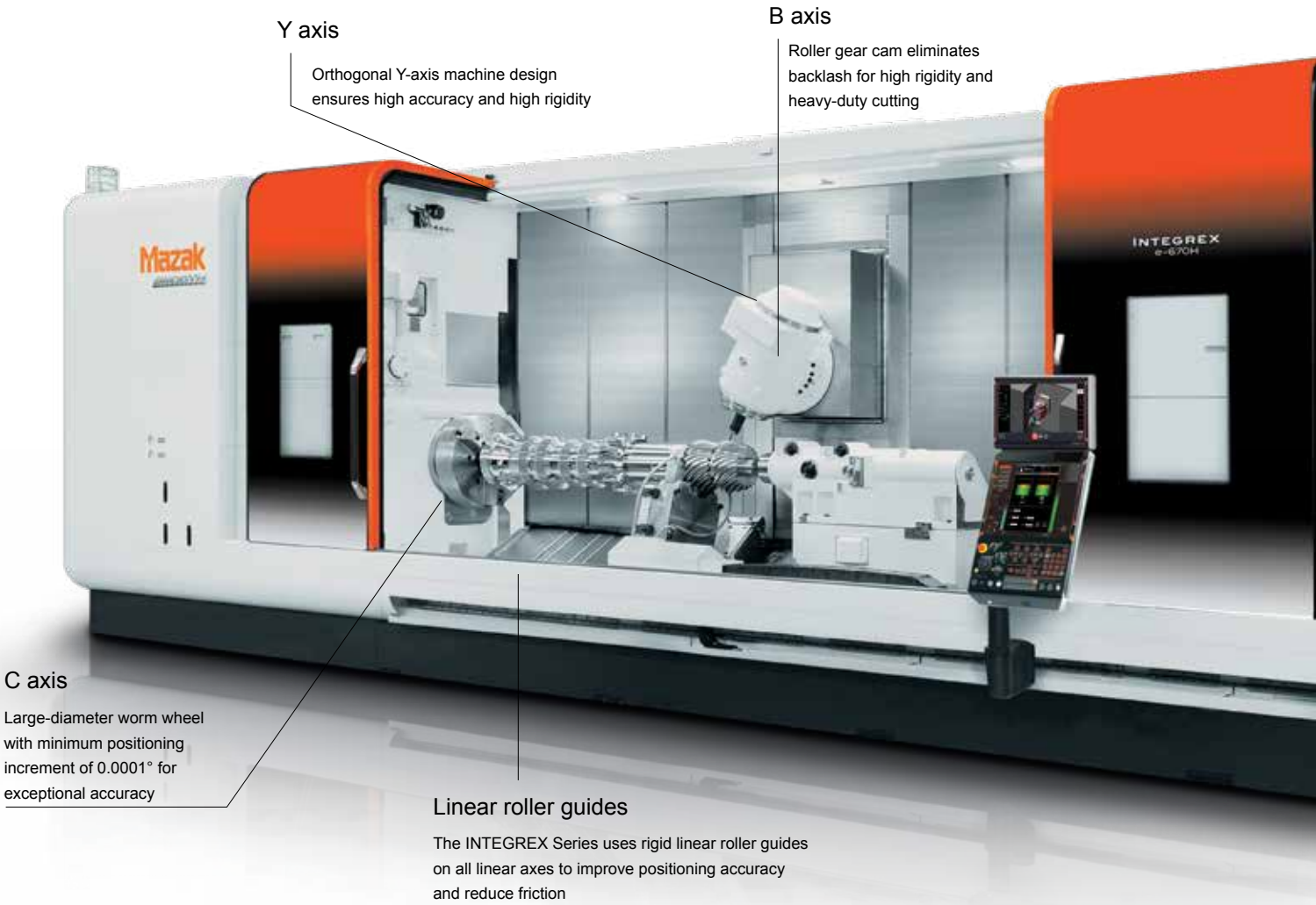


Y-axis stroke	Chuck size (Main turning spindle)	Tailstock/Max. supported weight*1	Chuck size (Second turning spindle)
500 mm (19.69")	15"～21"	NC tailstock MT No. 5 (1500U/3000U/4000U) 1.5 t MT No. 6 (3000U/4000U) [option] 3 t	15"～21"
670 mm (26.38")	18"～32"	NC tailstock MT No. 6 (3000U/4000U) 3 t #80 Metric center (4000U) [option] 7 t #80 Metric center (6000U) 7 t	18"～24"
800 mm (31.50")	24"～50"	NC tailstock #100 Metric center 15 t*2	

*1 Chuck included *2 Maximum weight when using supportive device

Higher Productivity and Higher Accuracy

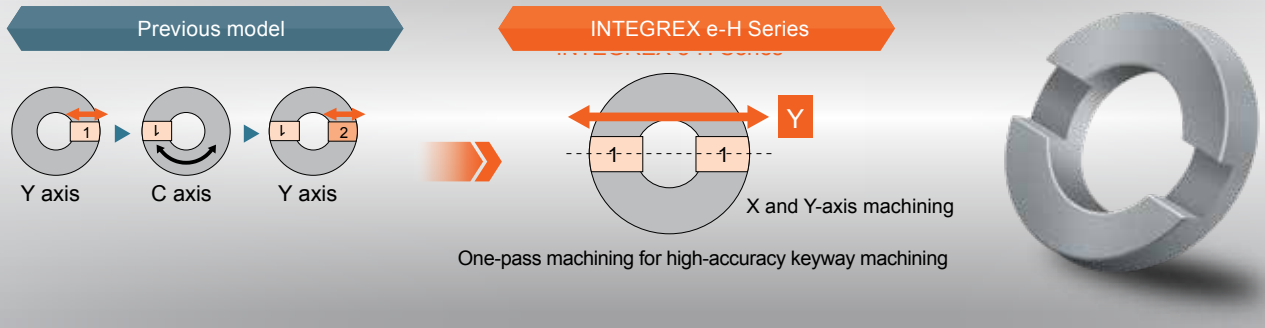
Orthogonal design provides large operation area and high-accuracy machining.



Large operation area

Longer X and Y-axis stroke for expanded machining versatility

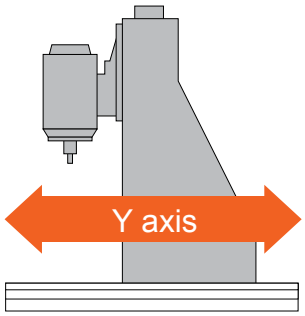
Machining requires no C-axis rotation, which improves machining pitch and accuracy



Y axis

High-rigidity construction

The INTEGREX e-H Series features a traveling column with orthogonal two-axis design. Linear roller guides on the Y-axis column provide high rigidity for heavy-duty machining.



High-accuracy Y-axis design

To ensure high-accuracy machining, the Y-axis column itself moves, which yields the same configuration for every position on the Y axis.

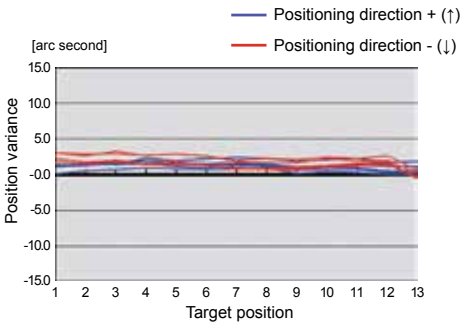
B axis

B-axis roller gear cam eliminates backlash
Minimum indexing increment: 0.0001°

B-axis indexing accuracy is two times better than the ISO standard.

		ISO tolerance	INTEGREX e-H Series	
			MAZAK STD.	Sample results
B axis	Positioning accuracy both directions	28 sec	14 sec	4.88 sec
	Positioning repeatability one direction (+)	8 sec	4 sec	2.77 sec
	Positioning repeatability one direction (+)	8 sec	4 sec	2.46 sec

Note: The above figures represent machine accuracies certified before shipment according to the MAZAK PRECISION STANDARD. The inspection is conducted following ISO-230 on a recommended foundation with room temperature controlled to 22° C ± 1°C after the machine has reached operating temperature.



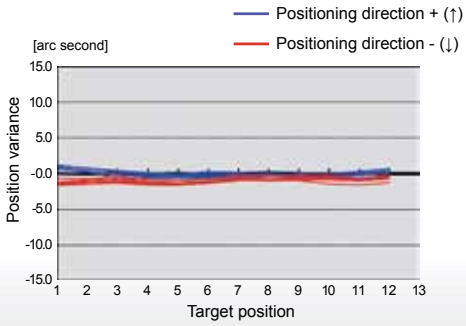
C axis

C-axis indexing increment: 0.0001°

C-axis positioning accuracy is two times better than ISO and is driven by a large-diameter worm wheel with a minimum positioning increment of 0.0001°.

		ISO tolerance	INTEGREX e-H Series	
			MAZAK STD.	Sample results
C axis	Accuracy of positioning both directions	28 sec	14 sec	3.4 sec
	Repeatability of positioning one direction (+)	8 sec	4 sec	0.5 sec
	Repeatability of positioning one direction (-)	8 sec	4 sec	1.0 sec

Note: The above figures represent machine accuracies certified before shipment according to the MAZAK PRECISION STANDARD. The inspection is conducted following ISO-230 on a recommended foundation with room temperature controlled to 22° C ± 1°C after the machine has reached operating temperature.



Ball screw core cooling on X, Y and Z axis (standard equipment)

Temperature-controlled cooling oil circulates through the ball screw cores to ensure stable machining accuracy over extended periods of high-speed operation.

Note: Not available for INTEGREX e-800H Z axis

Higher Productivity

Wide variety of optional equipment available to reduce machining processes and improve machining capability

Special tool holders optionally available for the INTEGREX e-H Series to enhance versatility

Special tool holders load/unload automatically to/from the milling spindle, which can be used for 5-axis machining. Long boring bars can load automatically to machine pipes such as those used in the oil industry.

Long boring bar system INTEGREX e-500H/e-670H/e-800H

Higher productivity for deep inner-diameter machining of large workpieces

- Max. tool length: 1000 mm (39.37"), 1500 mm (59.06"), (6000U, 8000U)
- Store tools in the long boring bar stocker
  -e-500H: 2 -e-670H: 3 -e-800H: 4
- Tool head is stored in the tool magazine and changed by the automatic tool changer

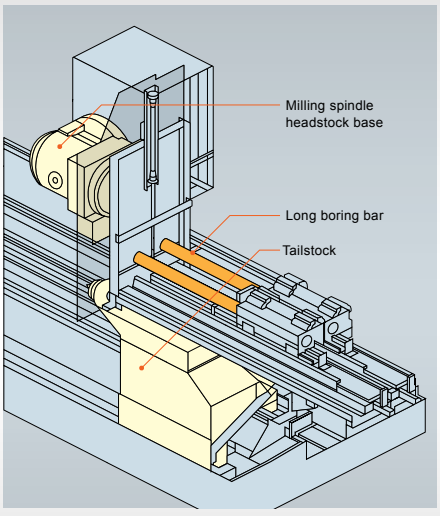
Note: ATC max. length: 1000 mm (39.37") (INTEGREX e-670H, INTEGREX e-800H)

The unique long boring bar system is extremely effective for inner-diameter and deep-hole machining of large workpieces that conventional turning centers cannot perform. Boring bars are stored in the stocker located over the tailstock. The INTEGREX e-670H and INTEGREX e-800H change the boring bar heads automatically. Heads are stored in the standard tool magazine.

Specifications

Machine model	e-500H	e-670H		e-800H
Universal	3000U/4000U	3000U/4000U	6000U	4000U/6000U/8000U
Max. tool diameter	ø100 mm (ø3.94")	ø120 mm (ø4.72")* (Boring bar head ATC)	ø120 mm (ø4.72")* (Boring bar head ATC)	ø120 mm (ø4.72")* (Boring bar head ATC)
Max. tool length	1000 mm (39.37")	1000 mm (39.37")	1500 mm (59.06")	1500 mm (59.06")
Max. tool length (Boring bar head ATC)	—	1000 mm (39.37")	1000 mm (39.37")	1000 mm (39.37")
Max. tool weight	170 kg (375 lbs)	180 kg (397 lbs)	180 kg (397 lbs)	240 kg (529 lbs)
Max. storage capacity	2 tools	3 tools	3 tools	4 tools

Note: During automatic tool change of the boring bar head, maximum swing is restricted to ø920 mm (ø36.22").
Only BT and CAPTO boring bar heads can be changed automatically.



U-axis tool INTEGREX e-670H/e-670H-S/e-800H

To machine complex workpiece features, a D'andrea TA-C 160 U-axis facing tool is available as an option.

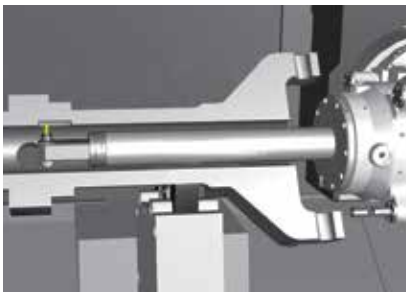
Note: Max. swing of U axis is ø1050 mm (ø41.34") (INTEGREX e-670H Series)

Rigid tool holder system with four clamping units INTEGREX e-670H/e-670H-S/e-800H

Special tool holders further increase the performable range of applications. They are rigidly clamped by the four clamping units. For higher productivity, they load from a special stocker the same way as standard tools, which reduces the number of machining processes.

Long angle mill holder

For rotary tool machining deep in workpiece bores.



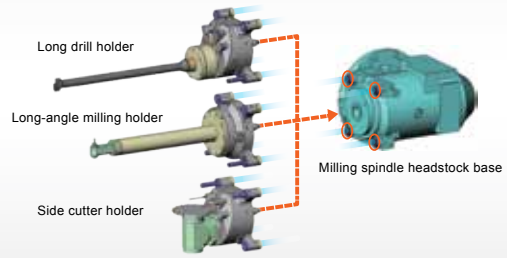
Long drill holder

Perform deep hole drilling to a maximum depth of 800 mm (31.50") with the long drill holder [max. speed 400 rpm; max. torque 191 N.m (141 ft.lbs)]. Drills load from a special stocker the same way as standard tools.

Side cutter holder

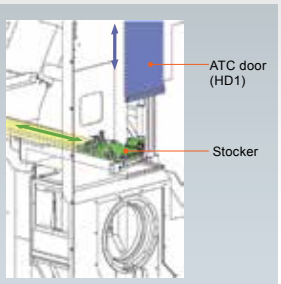
The 90° side cutter provides convenient high-accuracy groove cutting. High-rigidity clamping system with the milling spindle for high-performance cutting.

Use the rigid tool holder system with four clamping units to drill small-diameter holes deep in large bores and perform high-torque groove cutting with excellent access to the workpiece. In addition, special stockers are equipped on the top surface of the main/second spindle. Store a maximum of two of these milling holders.

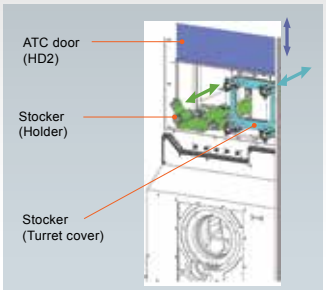


Maximum swing is restricted to ø920 mm

Stocker on HD1 side



Stocker on HD2 side



Specifications (HD1/HD2 stocker)

	HD1 stocker	HD2 stocker
Maximum storage capacity	1 tool	1 tool
Type of milling holder	Long drill holder	Long drill holder
	Long-angle milling holder	Side cutter holder

Note: When machine is equipped with 4-clamping unit rigid tool system, the number of long boring bars that can be stored is limited.

Higher Productivity and Higher Accuracy

Milling spindle

Powerful milling spindle for faster cycle times

High-output, high-torque milling spindle provides performance comparable to a machining center.

Integral spindle/motor

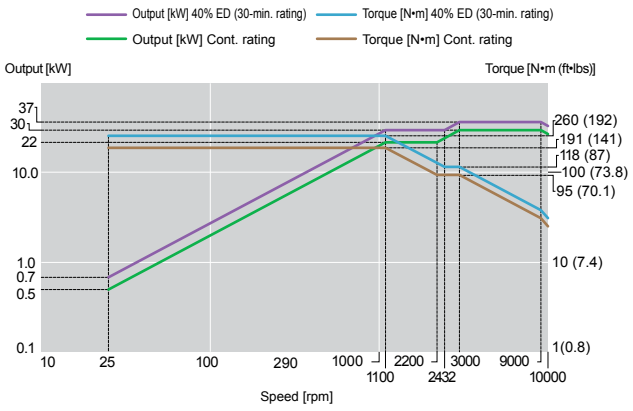
Integral spindle/motor design minimizes vibration during high-speed operation for exceptional surface finishes and maximum tool life.

Spindle temperature control

For high-accuracy machining, temperature-controlled cooling oil circulates around the spindle bearings and headstock to minimize any thermal change to the spindle.

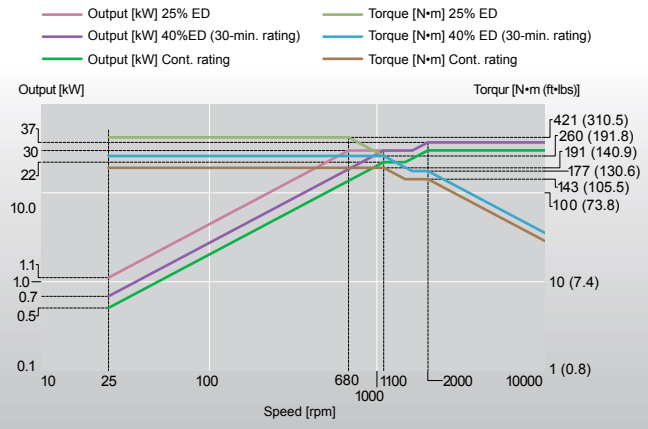
■ INTEGREX e-500H Series

10000 rpm milling spindle



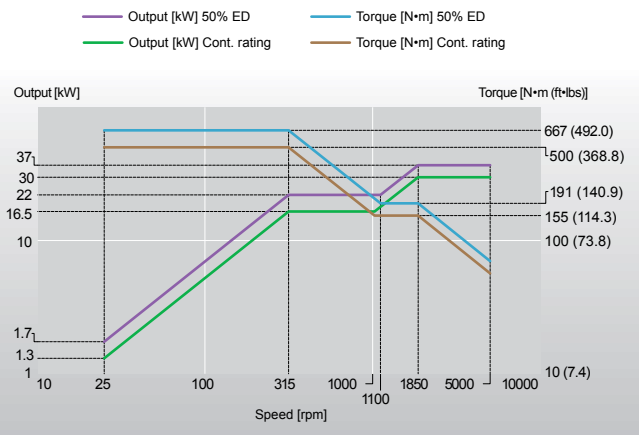
■ INTEGREX e-670H Series, INTEGREX e-800H

10000 rpm milling spindle



■ INTEGREX e-500H Series, e-670H Series, e-800H

5000 rpm high-torque spindle OPTION



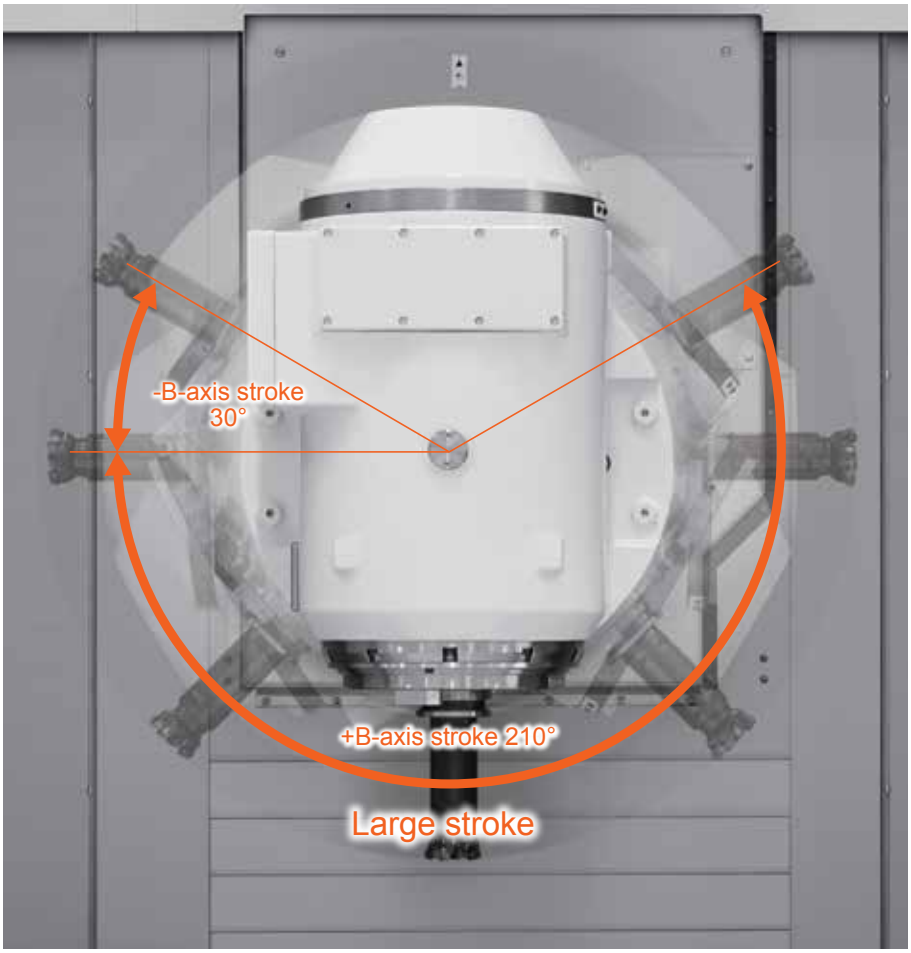
High-rigidity, high-accuracy B axis

Rigid roller gear cam on B axis

The B axis uses a roller gear cam for high-rigidity heavy-duty cutting. It minimizes friction coefficient and heat generation while it eliminates backlash to ensure high-accuracy positioning.

Large machining area

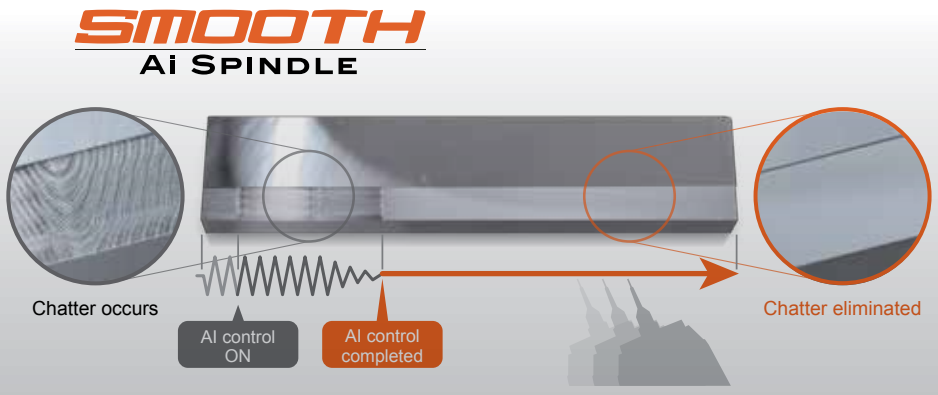
The single-spindle turret with automatic tool changer simplifies tool setup with minimal interference. The milling spindle provides excellent performance over a wide range of applications, from steel to high-speed machining of aluminum.



SMOOTH Ai Spindle

OPTION

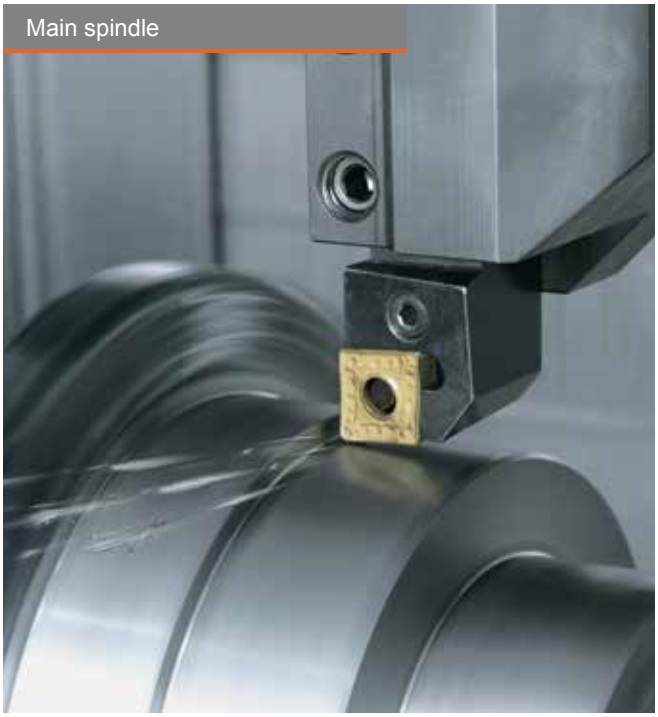
AI detects milling spindle vibration and automatically adjusts machining conditions to produce unsurpassed surface finishes and high productivity. Even an unskilled operator can make adjustments quickly.



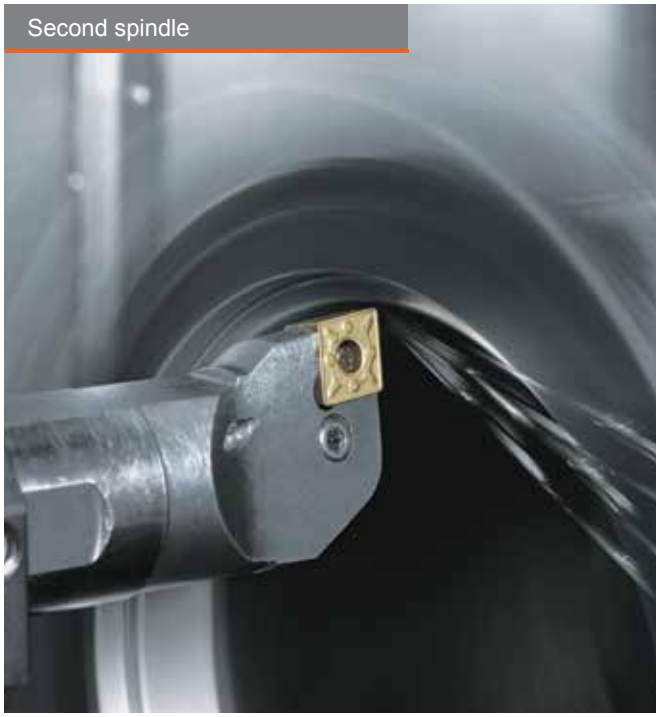
Main spindle/Second spindle

For a wide range of heavy-duty machining, the spindles feature high-output integral spindle/motors with two gear ranges. A worm wheel system with high positioning accuracy – the same as the machining center rotary tables – drives the C axis (0.0001° program increment).

Main spindle



Second spindle

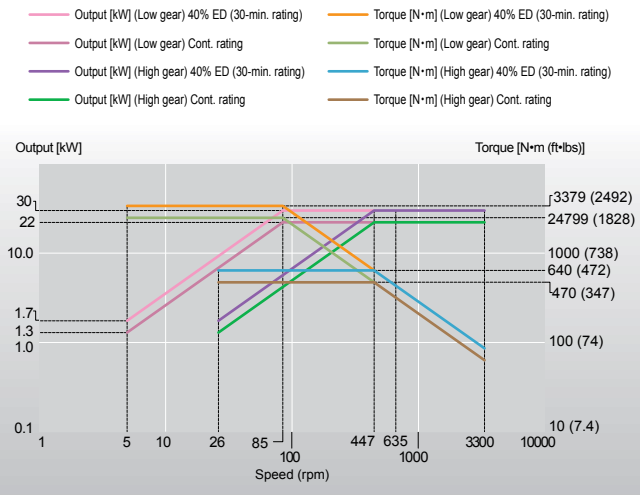


■ INTEGREX e-500H Series

3300 rpm spindle, bore ø104 mm (ø4.09")

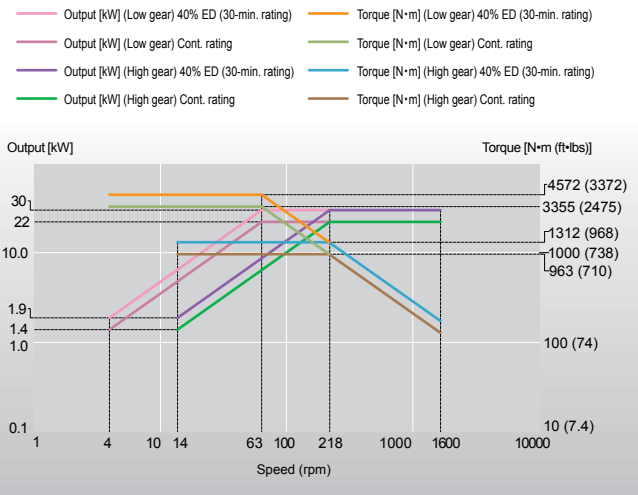
e-500H, e-500H-S main spindle (standard)

e-500H-S Second spindle (standard)



1600 rpm high-torque spindle, bore ø185 mm (ø7.28")

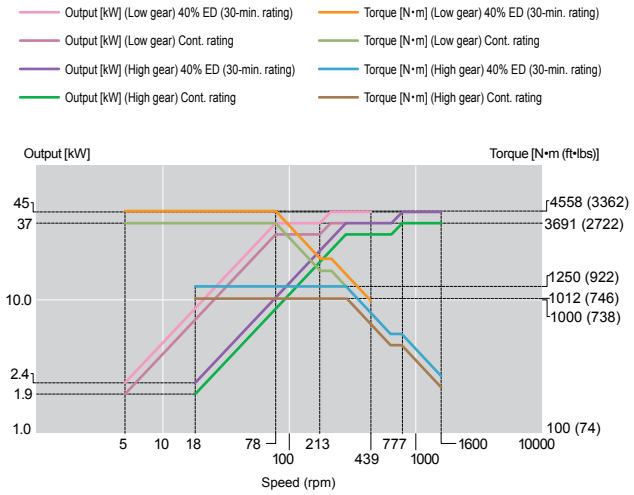
e-500H, e-500H-S main spindle (option)



INTEGREX e-670H Series

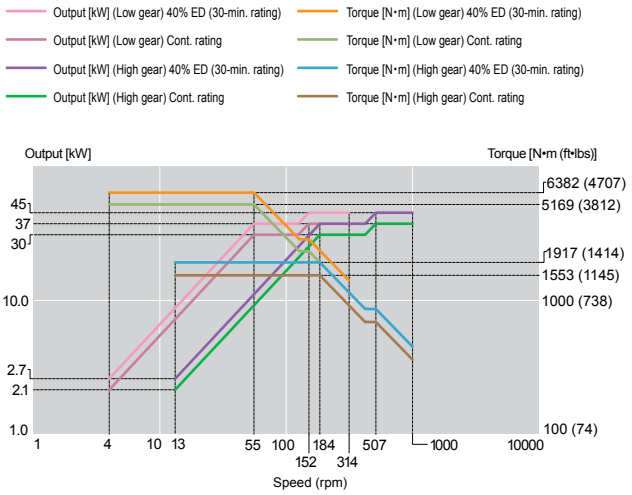
1600 rpm spindle, bore ø170 mm (ø6.69")

e-670H [3000U・4000U], e-670H-S main spindle (standard)
e-670H-S second spindle (standard)



1000 rpm spindle, bore ø260 mm (ø10.24")

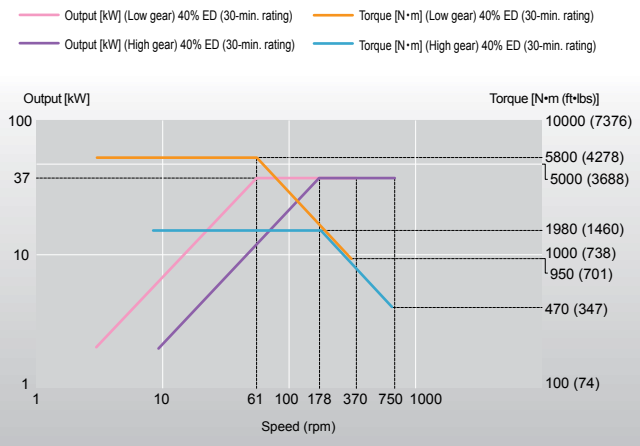
e-670H [6000U] main spindle (standard)
e-670H [3000U・4000U], e-670H-S main spindle (option)



INTEGREX e-670H Series

750 rpm spindle, bore ø320 mm (ø12.60")

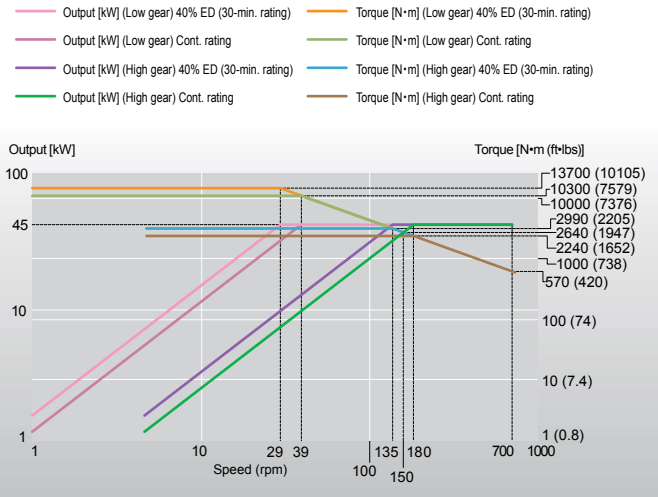
e-670H, e-670H-S main spindle (option)



INTEGREX e-800H

700 rpm spindle, bore ø275 mm (ø10.83")

e-800H main spindle (standard)



Higher Productivity and Higher Accuracy

NC Tailstock

On the CNC, the operator controls tailstock movement and thrust force in a simple operation. A menu key or M code on the setup screen sets tailstock thrust by 0.1 kN (22.5 lbs) and moves the tailstock to the desired position for optimal thrust force from roughing to finish. The tailstock body moves much faster than in a conventional system that pulls the tailstock by the machine carriage.

e-500H	MT No. 5 built-in center	Max. thrust 1.5 t	1500U/3000U/4000U
	MT No. 6 built-in center	Max. thrust 3.0 t	3000U OPTION /4000U OPTION
e-670H	MT No. 6 built-in center	Max. thrust 3.0 t	3000U/4000U
	Metric center #80	Max. thrust 7.0 t	4000U OPTION /6000U
e-800H	Metric center #100	Max. thrust 7.5 t	4000U/6000U/8000U

OPTION

Two-position tailstock quill (manual quill positioning) supports short workpieces

INTEGREX e-670H

The tailstock quill can extend a stroke of 250 mm (9.84") to support both short and long-shaft workpieces.

Tool magazine

Various magazine capacities (40 tools, standard; 80 and 120 tools, optional) meet the machining requirements of a wide variety of workpieces.

The INTEGREX e-H Series is available with four toolholder specifications.

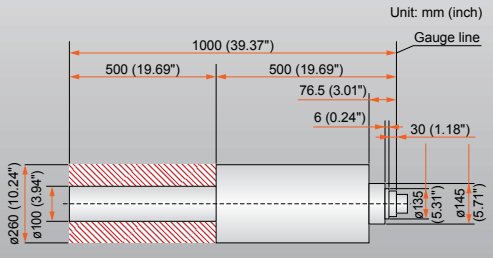
• Tool system

					Max. tool length
e-500H Series	BT-50 (CAT/MAS)	BBT-50 (CAT/MAS)	CAPTO C8	HSK-T100	500 mm (19.69")
e-670H Series					
e-800H					650 mm (25.59")

OPTION

Maximum automatic tool changer tool length: 650 mm (25.59")/1000 mm (39.37")

Optionally, manage tools up to 650mm (25.59") through the automatic tool changer and tool magazine on the INTEGREX e-500H or 1000 mm (39.37") on the INTEGREX e-670H and INTEGREX e-800H.



1000 mm (39.37") maximum tool length (CAPTO) [INTEGREX e-670H]

Steady rests

Choose from a variety of steady rests for efficient high-accuracy machining. Equip the INTEGREX e-800H with up to three (6000U) or four (8000U) steady rests.

Automatic steady rest

The CNC-operated automatic steady rest reduces positioning time considerably.

Machine model	INTEGREX e-500H INTEGREX e-670H INTEGREX e-800H

INTEGREX e-500H

Steady rest manufacturer/model	Gripping diameter
SMW SLU-X5M, SR5M	ø45 mm ~ ø310 mm (ø1.77"~ø12.20")
SMW SLU-X5.1M, SR5.1M	ø85 mm ~ ø350 mm (ø3.35"~ø13.78")
SMW K5M	ø80 mm ~ ø390 mm (ø3.15"~ø15.35")
SMW K5.1M	ø100 mm ~ ø410 mm (ø3.94"~ø16.14")

Large workpiece diameter capacity steady rest

Machine model	INTEGREX e-670H Series/INTEGREX e-800H

INTEGREX e-670H

Steady rest manufacturer/model	Gripping diameter
SMW SLU-X5Z, SR5Z	ø45 mm ~ ø310 mm (ø1.77"~ø12.20")
SMW SLU-X5.1Z, SR5.1Z	ø85 mm ~ ø350 mm (ø3.35"~ø13.78")
SMW K5Z	ø80 mm ~ ø390 mm (ø3.15"~ø15.35")
SMW K5.1Z	ø100 mm ~ ø410 mm (ø3.94"~ø16.14")
SMW K6Z	ø135 mm ~ ø460 mm (ø5.31"~ø18.11")
SMW K6.1Z	ø215 mm ~ ø510 mm (ø8.46"~ø20.08")

Two NC steady rests

Machine model	INTEGREX e-670H Series/INTEGREX e-800H

INTEGREX e-800H

Steady rest manufacturer/model	Gripping diameter
SMW K6Z	ø135 mm ~ ø460 mm (ø5.31"~ø18.11")
SMW K6.1Z	ø215 mm ~ ø510 mm (ø8.46"~ø20.08")
SMW KA7Z	ø340 mm ~ ø660 mm (ø13.39"~ø25.98")
SMW KA7.1Z	ø650 mm ~ ø910 mm (ø25.59"~ø35.83")

Ergonomics

Machine design focuses on ergonomics for unsurpassed ease of operation and maintenance

1

Minimum spindle center line height

The height from the floor to the center of the spindle is designed for easy workpiece loading/unloading and machine setup.

2

Movable CNC operation panel

Move the CNC operation panel on the Z axis for easy setup and automatic operation.

3

Large window

The large front door window gives the operator a convenient view of workpiece machining.

4

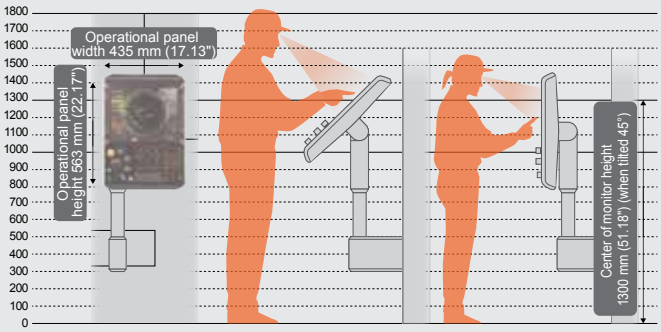
Wide door opening and convenient access for overhead crane

Easily load/unload workpieces with an overhead crane.

5

Adjustable CNC touch panel

For ease of operation, tilt the CNC touch panel to the optimal position for any operator's height.



Innovation for Higher Productivity

MAZATROL SMOOTH Ai

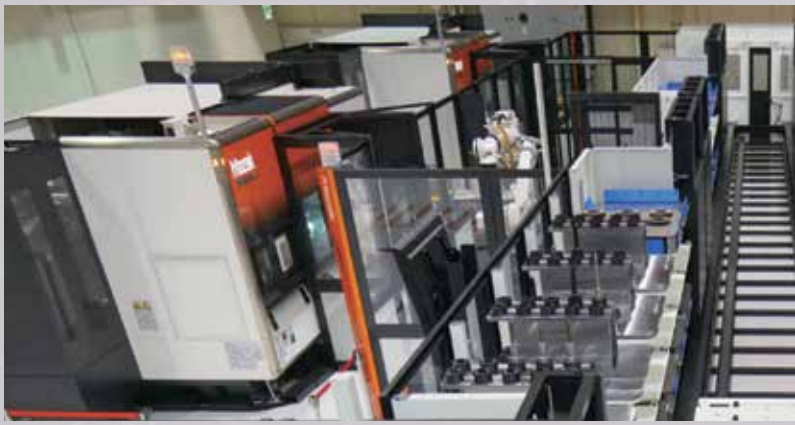
New MAZATROL Smooth CNC

Designed to provide unsurpassed productivity through even faster and higher-precision control while elevating production to the next level with AI and digital twin technology

- Touch screen operation — similar to using your smartphone/tablet
- MAZATROL Smooth graphical user interface for unsurpassed ease of operation
- CNC System integrates with your Windows® PC
- Latest hardware and software for unprecedented speed and precision
- Higher machining speed for high-accuracy 5-axis machining
- Fine-tuning function: Easy machining parameter setting for various workpieces
- MAZATROL TWINS: Software that enables real-time sharing and centralized management of various data for increased productivity

■ Automation

Advanced automation with robot and software

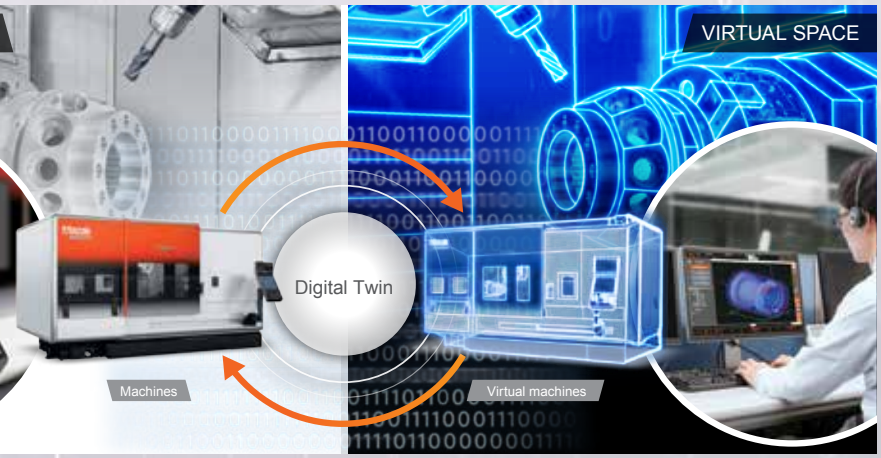


■ AI

Increase your productivity
with AI technology

■ Digital Twin

Create a virtual machine on your office PC for efficient setup and improved productivity



Shown with optional MAZATROL SmoothAi dual monitor

Innovative Functions for Higher Productivity

Innovative functions to improve productivity from programming to machining

Automatic programming

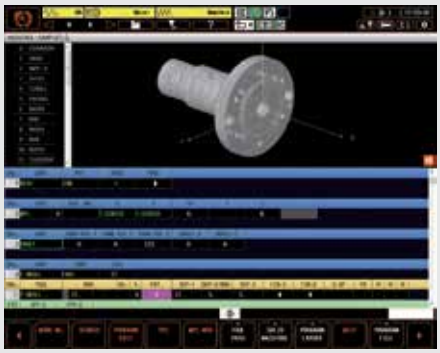
Solid MAZATROL

Generate a program automatically from 3D CAD data. AI learning draws on machining knowhow from programs created in the past, automatically calculates the machining process and generates the optimal program.

Import 3D CAD model

Required time for programming

2.5 min.



MAZATROL programming completed

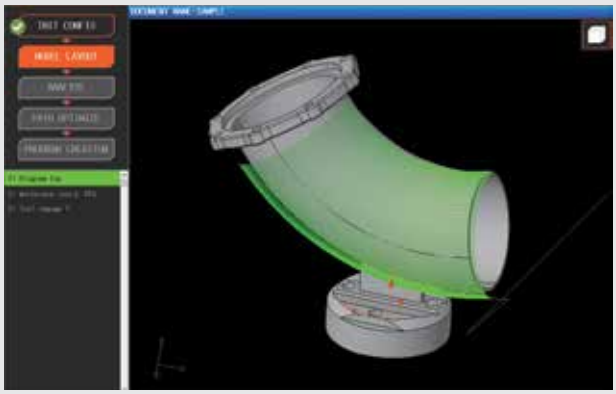
Simulation, test cutting (machining analysis, optimization)

SMOOTH Cutting Adviser

To optimize machining conditions, SMOOTH Cutting Adviser uses accumulated results to simulate and visualize machining processes on the MAZATROL SmoothAi CNC.

SMC PLUS OPTION

Compares the cutting point of the EIA program with the 3D model to change the correct command point and ensure both the correct tool path and high-accuracy finished surfaces.



Advanced Digital Technology

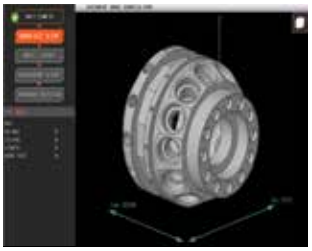
MAZATROL TWINS (software) for high productivity

OPTION

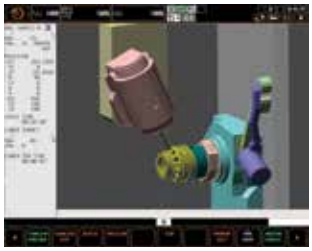
Virtual machines in your office accurately duplicate the operation of machines on your factory floor. Use available software together with machines equipped with the MAZATROL SmoothAi CNC for a substantial increase in production efficiency.

SMOOTH CAM Ai

Make and edit programs, perform simulation and analysis for multiple machines. Send the resulting data to machines in the factory for fast, accurate setups.



AI programming



Fast simulation

Machining analysis•Optimization

SMOOTH Project Manager

Manages project data for the entire factory. Synchronize data between the machine in the factory and the PC in the office.

SMOOTH Tool Management

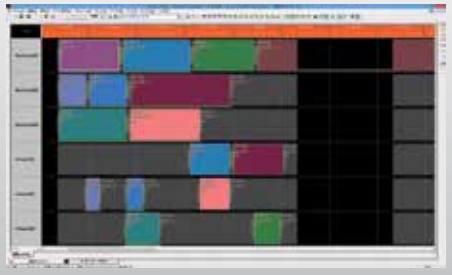
Manages a large volume of tool data for higher productivity.

SMOOTH Monitor AX • SMOOTH Link

To improve factory productivity, SMOOTH Monitor AX software monitors operational status and analyzes accumulated manufacturing data. View operational status and machining programs on tablets and smartphones with SMOOTH Link, so the operator can view necessary information instantaneously away from the monitor.

SMOOTH Scheduler

SMOOTH Scheduler software uses production data to create effective machining schedules. Schedules are displayed for convenient monitoring of production progress.



Standard Machine Specifications

INTEGREX e-500H Series

		INTEGREX e-500H			INTEGREX e-500H-S	
		1500U	3000U	4000U	1500U	3000U
Capacity	Max. swing	ø820 mm (ø32.28")			ø820 mm (ø32.28")	
	Max. supported weight (including chuck weight)	Shaft workpiece: 1500 kg (3307 lbs)			Chuck workpiece: 710 kg (1565 lbs)	
	Max. machining diameter	ø820 mm (ø32.28")			ø820 mm (ø32.28")	
Travel	X axis	870 mm (34.25")			870 mm (34.25")	
	Z axis	1598 mm (62.91")	3122 mm (122.91")	4138 mm (162.91")	1598 mm (62.91")	3122 mm (122.91")
	Y axis	500 mm (19.69")			500 mm (19.69")	
	W axis	1466 mm (57.72")	2990 mm (117.72")	3528 mm (138.90")	1529 mm (60.20")	2463 mm (96.97") (Equipped with one steady rest)
	B axis	-30° ～ 210°			-30° ～ 210°	
	C axis	360°			360°	
Spindle	Max. spindle speed[*1]	3300 rpm			3300 rpm	
	Spindle nose	A2-11			A2-11	
	Spindle bore	ø104 mm (ø4.09")			ø104 mm (ø4.09")	
	Bearing ID	ø150 mm (ø5.91")			ø150 mm (ø5.91")	
	Min. spindle indexing increment	0.0001°			0.0001°	
Second spindle	Max. spindle speed[*1]	—			3300 rpm	
	Min. spindle indexing increment	—			0.0001°	
Milling spindle	Milling spindle type	Single spindle turret with ATC			Single spindle turret with ATC	
	Max. spindle speed	10000 rpm			10000 rpm	
	Min. spindle indexing increment	0.0001°			0.0001°	
	Tool shank height	25 mm (1.00")			25 mm (1.00")	
	Boring bar shank diameter	ø50 mm (ø2.00")			ø50 mm (ø2.00")	
Feedrate	Rapid traverse rate: X axis	40 m/min (1575 ipm)			40 m/min (1575 ipm)	
	Rapid traverse rate: Z axis	40 m/min (1575 ipm)		30 m/min (1181 ipm)	40 m/min (1575 ipm)	
	Rapid traverse rate: Y axis	40 m/min (1575 ipm)			40 m/min (1575 ipm)	
	Rapid traverse rate: B axis	30 rpm			30 rpm	
	Rapid traverse rate: C axis	20 rpm			20 rpm	
	Rapid traverse rate: W axis	6 m/min (236 ipm)			12 m/min (472 ipm)	
Automatic tool changer system	Tool shank taper	No. 50			No. 50	
	Tool storage capacity	40 tools			40 tools	
	Max. tool diameter/ Length (from gauge line)/Weight	ø135 mm (ø5.31") [when adjacent pockets empty: ø260 mm (ø10.24")]/500 mm (19.69")/30 kg (66 lbs)			ø135 mm (ø5.31") [when adjacent pockets empty: ø260 mm (ø10.24")]/500 mm (19.69")/30 kg (66 lbs)	
	Tool selection method/ Tool change time (tool to tool)	MAZATROL Random memory (random pocket assignment)/1.8 sec			MAZATROL Random memory (random pocket assignment)/1.8 sec	
Tailstock	Center	MT No. 5			—	
	Travel	1466 mm (57.72")	2990 mm (117.72")	3528 mm (138.90")	—	
	Feedrate	6 m/min (236 ipm)			—	
	Max. thrust force	15.0 kN (3372 lbs)			—	
Motors	Spindle motor 40% ED (30-min. rating)[*2]	30 kW (40 hp)			30 kW (40 hp)	
	Second spindle motor 40% ED (30-min. rating)	—			30 kW (40 hp)	
	Milling spindle motor 40% ED (30-min. rating)	37 kW (50 hp)			37 kW (50 hp)	
Power requirements	Electrical power supply (Cont. rating)	98.2 kVA			102.0 kVA	
	Air supply	0.5 MPa (73 psi), 460 L/min (16.25 ft^3/min)			0.5 MPa (73 psi), 550 L/min (19.43 ft^3/min)	
Tank capacity	Coolant tank capacity	620 L (164 gal)	800 L (211 gal)	1165 L (308 gal)	700 L (185 gal)	1020 L (269 gal)
Machine size (with 40-tool magazine)	Machine height	3220 mm (126.77")			3220 mm (126.77")	
	Floor space requirement[*3]	6540 mm × 4600 mm (257.48" × 181.10")	8040 mm × 4600 mm (316.54" × 181.10")	9594 mm × 4600 mm (377.72" × 181.10")	7140 mm × 4600 mm (281.10" × 181.10")	8640 mm × 4600 mm (340.16" × 181.10")
	Weight	22600 kg (49824 lbs)	28600 kg (63051 lbs)	32600 kg (71869 lbs)	23800 kg (52469 lbs)	29800 kg (65697 lbs)

[*1] Max. spindle speed and max. turning length depend on chuck specifications.
[*2] Even within the specifications, machining is restricted with a standard outer diameter tool whose main cutting force exceeds 17658 N (1800 kgf).
[*3] Chip conveyor not included.

INTEGREX e-670H Series

		INTEGREX e-670H			INTEGREX e-670H-S	
		3000U	4000U	6000U	3000U	4000U
Capacity	Max. swing	ø1070 mm[*6](ø42.13")			ø1070 mm (ø42.13")	
	Max. supported weight (including chuck weight)	Shaft workpiece: 3000 kg (6614 lbs)		Shaft workpiece: 7000 kg (15432 lbs)	Shaft workpiece: 3000 kg (6614 lbs)	
	Max. machining diameter	ø1070 mm[*6] (ø42.13")			ø1070 mm (ø42.13")	
Travel	X axis	1025 mm (40.35")			1025 mm (40.35")	
	Z axis	3122 mm (122.91")	4138 mm (162.91")	6170 mm (242.91")	3122 mm (122.91")	4138 mm (162.91")
	Y axis	670 mm (26.38")			670 mm (26.38")	
	W axis	2879 mm (113.35")	3890 mm (153.15")	5054 mm (198.98") (Equipped with one steady rest)	3053 mm (120.20") (without steady rest)	3214 mm (126.54") (Equipped with one steady rest)
	B axis	-30° ～ 210°			-30° ～ 210°	
	C axis	360°			360°	
Spindle	Max. spindle speed[*1]	1600 rpm		1000 rpm[*7]	1600 rpm	
	Spindle nose	A2-11		Previous JIS A2-15[*8]	A2-11	
	Spindle bore	ø170 mm (ø6.69")		ø260 mm (ø10.24")	ø170 mm (ø6.69")	
	Bearing ID	ø240 mm (ø9.45")		ø330.2 mm (ø13.00")	ø240 mm (ø9.45")	
	Min. spindle indexing increment	0.0001°			0.0001°	
Second spindle	Max. spindle speed[*1]	—			1600 rpm	
	Min. spindle indexing increment	—			0.0001°	
Milling spindle	Milling spindle type	Single spindle turret with ATC			Single spindle turret with ATC	
	Max. spindle speed	10000 rpm			10000 rpm	
	Min. spindle indexing increment	0.0001°			0.0001°	
	Tool shank height	25 mm (1.00")			25 mm (1.00")	
	Boring bar shank diameter	ø50 mm (ø2.00")			ø50 mm (ø2.00")	
Feedrate	Rapid traverse rate: X axis	40 m/min (1575 ipm)			40 m/min (1575 ipm)	
	Rapid traverse rate: Z axis	40 m/min (1575 ipm)	30 m/min (1181 ipm)	18 m/min (709 ipm)	40 m/min (1575 ipm)	30 m/min (1181 ipm)
	Rapid traverse rate: Y axis	40 m/min (1575 ipm)			40 m/min (1575 ipm)	
	Rapid traverse rate: B axis	30 rpm			30 rpm	
	Rapid traverse rate: C axis	20 rpm			20 rpm	
	Rapid traverse rate: W axis[*2]	11 ~ 12 m/min (433 ~ 472 ipm)	6 ~ 12 m/min (236 ~ 472 ipm)	3 ~ 6 m/min (118 ~ 236 ipm)	12 m/min (472 ipm)	10 m/min (394 ipm)
Automatic tool changer system	Tool shank taper	No. 50			No. 50	
	Tool storage capacity	40 tools			40 tools	
	Max. tool diameter/ Length (from gauge line)/Weight	ø135 mm (ø5.31") [when adjacent pockets empty: ø260 mm (ø10.24")]/ 500 mm (19.69")/30 kg (66 lbs)			ø135 mm (ø5.31") [when adjacent pockets empty:ø260 mm (ø10.24")]/ 500 mm (19.69")/30 kg (66 lbs)	
	Tool selection method/ Tool change time (tool to tool)	MAZATROL Random memory (random pocket assignment)/1.8 sec			MAZATROL Random memory (random pocket assignment)/1.8 sec	
Tailstock	Center	MT No. 6		No. 80 metric center	—	
	Max. thrust force	30.0 kN (6744 lbs)		70.0 kN (15736 lbs)	—	
Motors	Spindle motor 40% ED (30-min. rating) [*3]	45 kW (60 hp)			45 kW (60 hp)	
	Second spindle motor 40% ED (30-min. rating)	—			45 kW (60 hp)	
	Milling spindle motor 40% ED (30-min. rating)	37 kW (50 hp)			37 kW (50 hp)	
Power requirements	Electrical power supply (Cont. rating)	103.6 kVA		109.9 kVA	104.6 kVA	
	Air supply	0.5 MPa (73 psi), 590 L/min (20.84 ft^3/min)			0.5 MPa (73 psi), 660 L/min (23.31 ft^3/min)	
Tank capacity	Coolant tank capacity	960 L (254 gal)	1110 L (293 gal)	1560 L (412 gal)	1060 L (280 gal)	1260 L (333 gal)
Machine size (with 40-tool magazine)	Machine height[*4]	3886 mm (152.99")			3886 mm (152.99")	
	Floor space requirement[*5]	8465 mm × 5100 mm (333.27" × 200.79")	9481 mm × 5100 mm (373.27" × 200.79")	12173 mm × 5100 mm (479.25" × 200.79")	9125 mm × 5100 mm (359.25" × 200.79")	10141 mm × 5100 mm (399.25" × 200.79")
	Weight	31000 kg (68342 lbs)	36000 kg (79365 lbs)	44500 kg (98105 lbs)	33000 kg (72751 lbs)	38000 kg (83774 lbs)

[*1] Max. spindle speed and max. turning length depend on chuck specifications.
[*2] Rapid traverse rate range of W axis (tailstock feed axis) is based on variable speed control.
[*3] Even within the specifications, machining is restricted with a standard outer diameter tool whose main cutting force exceeds 17658 N (1800 kgf).
[*4] Distance from floor to counter-balance with the X axis positioned at + O.T.
[*5] Chip conveyor not included.
[*6] Maximum swing is restricted to ø920 mm (ø36.22") when performing automatic tool change of boring bar head.
[*7] When the tailstock is in the high thrust range (30.7 kN to 70.0 kN), the spindle speed is limited to 500 rpm or less.
[*8] Because of the different tap size, add an adapter to a chuck that complies with the ISO702-1 standard.

Standard Machine Specifications

INTEGREX e-800H

		INTEGREX e-800H		
		4000U	6000U	8000U
Capacity	Max. swing	ø1300 mm (ø51.18")		
	Max. supported weight (including chuck weight)[*1]	Shaft workpiece: 15000 kg (33069 lbs)		
	Max. machining diameter	ø1300 mm (ø51.18")		
Travel	X axis	1300 mm (51.18")		
	Z axis	4380 mm (172.44")	6380 mm (251.18")	8380 mm (329.92")
	Y axis	800 mm (31.50")		
	W axis	4140 mm (162.99")	6055 mm (238.39") (Equipped with one steady rest)	6870 mm (270.47") (Equipped with two steady rests)
	B axis	-30° ～ 210°		
	C axis	360°		
Spindle	Max. spindle speed[*2]	700 rpm		
	Spindle nose	A2-20		
	Spindle bore	ø275 mm (ø10.83")		
	Bearing ID	ø355.6 mm (ø14.00")		
	Min. spindle indexing increment	0.0001°		
Milling spindle	Milling spindle type	Single spindle turret with ATC		
	Max. spindle speed	10000 rpm		
	Min. spindle indexing increment	0.0001°		
	Tool shank height	25 mm (1.00")		
	Boring bar shank diameter	ø50 mm (ø2.00")		
Feedrate	Rapid traverse rate: X axis	18 m/min (709 ipm)		
	Rapid traverse rate: Z axis	24 m/min (945 ipm)	18 m/min (709 ipm)	18 m/min (709 ipm)
	Rapid traverse rate: Y axis	18 m/min (709 ipm)		
	Rapid traverse rate: B axis	30 rpm		
	Rapid traverse rate: C axis	12.5 rpm		
	Rapid traverse rate: W axis[*3]	6 m/min (236 ipm)	3 ~ 6 m/min (118 ~ 236 ipm)	2 ~ 6 m/min (79 ~ 236 ipm)
Automatic tool changer system	Tool shank taper	No. 50		
	Tool storage capacity	40 tools		
	Max. tool diameter/Length (from gauge line)/Weight	ø135 mm (ø5.31") [when adjacent pockets empty: ø260 mm) (ø10.24")]/650 mm (25.59")/30 kg (66 lbs)		
	Tool selection method/Tool change time (tool to tool)	MAZATROL Random memory (random pocket assignment)/1.8 sec		
Tailstock	Center	No. 100 metric center		
	Max. thrust force	75.0 kN (16860 lbs)		
Motors	Spindle motor (40% ED)[*4]	45 kW (60 hp)		
	Milling spindle motor (40% ED)	37 kW (50 hp)		
Power requirements	Electrical power supply (Cont. rating)	125.6 kVA	131.4 kVA	
	Air supply	0.5 MPa (73 psi), 510 L/min (18.02 ft^3/min)		
Tank capacity	Coolant tank capacity	1800 L (476 gal)	2400 L (634 gal)	
Machine size (with 40-tool magazine)	Machine height	4650 mm (183.07")		
	Floor space requirement[*5]	12000 mm × 6000 mm (472.44" × 236.22")	14000 mm × 6000 mm (551.18" × 236.22")	16000 mm × 6000 mm (629.92" × 236.22")
	Weight	78600 kg (173280 lbs)	87300 kg (192460 lbs)	96500 kg (212743 lbs)

*1 Max. supported weight when using supportive device such as steady rest, etc.
*2 Max. spindle speed and max. turning length depend on chuck specifications.
*3 Rapid traverse rate range of W axis (tailstock feed axis) is based on variable speed control.
*4 Even within the specifications, machining is restricted with a standard outer diameter tool whose main cutting force exceeds 17658 N (1800 kgf).
*5 Depth dimension includes the operation panel (for details, refer to machine dimensions).

Standard and Optional Equipment

●: Standard ○: Option —: N/A

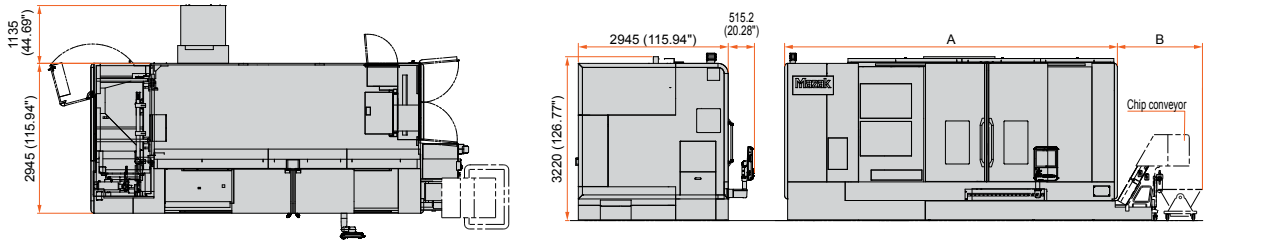
		e-500H	e-500H-S	e-670H	e-670H-S	e-800H
Machine	Main spindle bore ø104 mm (ø4.09") 3300 rpm	●	●	—	—	—
	Main spindle bore ø170 mm (ø6.69") 1600 rpm	—	—	●*4	●	—
	Main spindle bore ø185 mm (ø7.28") 1600 rpm	○	○	—	—	—
	Main spindle bore ø260 mm (ø10.24") 1000 rpm	—	—	○	○	—
	Main spindle bore ø275 mm (ø10.83") 700 rpm	—	—	—	—	●
	Main spindle bore ø320 mm (ø12.60") 750 rpm	—	—	○	○	—
	Variety of chucks/chuck cylinders (main spindle side)	○	○	○	○	○
	High/low chuck pressure	○	○	○	○	—
	40-tool magazine	●	●	●	●	●
	80-tool magazine	○	○	○	○	○
	120-tool magazine	○	○	○	○	○
	Automatic steady rest	○	○	○	○	○
	Variety of chucks/chuck cylinders (Second spindle side)	—	○	—	○	—
	Automatic tailstock	●	—	●	—	●
	Extended tailstock center 150 mm (ø5.91")	●	—	—	—	—
	Two position tailstock quill	—	—	○	—	—
	Status light (3 colors)	○	○	○	○	○
High accuracy	Absolute position detection (linear axes)	●	●	●	●	●
	X, Y, Z-axis pitch error compensation input	●	●	●	●	●
	Scale feedback (X, Y, Z axis)*1	○	○	○	○	○
	Hydraulic fluid temperature control system	○	○	○	○	○
	Coolant temperature control system	○	○	○	○	○
	Preparation for Mazak monitoring systemB (RMP600)	●	●	●	●	●
	MAZA-CHECK (software, reference sphere)*2	●	●	●	●	●
Safety equipment	Operator door interlock	●	●	●	●	●
	Overload detection system	○	○	○	○	○
	Automatic opening/closing front door	○	○	○	○	●
	Machining completion buzzer	○	○	○	○	○
Automation	Automatic tool eye	○	○	○	○	○
	Laser milling tool measurement system	○	○	○	○	○
	Long boring bar system*3	○	—	○	—	○
	Chuck open/close confirmation	●	●	●	●	●
	Automatic chuck open/close	○	●	○	●	○
	Double foot pedal chuck switch	○	○	○	○	○
	Tailstock body positioning by foot switch	○	—	○	—	○
	Visual tool ID	○	○	○	○	○
	Automatic workpiece measurement (RMP600)	○	○	○	○	○
	Auto power on/off + warm-up	●	●	●	●	●
	Rigid tool holder system with four clamping units*3	—	—	○	○	○
Coolant/ Chip disposal	Turret air blast (flood coolant nozzle)	○	○	○	○	○
	Spindle internal air blast	○	○	○	○	○
	Chuck jaw air blast	○	●	○	●	○
	Side discharge chip conveyor (ConSep2000)	○	○	○	○	○
	Chip conveyor (abrasion resistant) (ConSep2000)	—	—	○	○	○
	Chip bucket	○	○	○	○	○
	Mist collector	○	○	○	○	○
	Oil skimmer	○	○	○	○	○
	Coolant through milling spindle	●	●	●	●	●
	High pressure coolant 1.5 MPa (218 psi)	○	○	○	○	●
	Coolant tank (separate)	—	—	—	—	●
	SUPERFLOW coolant system	○	○	○	○	○
Other	Steps (inside the machine)	—	—	—	—	●
	External platform	—	—	—	—	●
	External steps with handrails	—	—	—	—	○
	MAZATROL SmoothAi dual monitor	○	○	○	○	○

*1 Z-axis scale feedback is standard equipment for the INTEGREX e-670H(6000U) and e-800H.
*2 RMP600 optional wireless touch probe required for MAZA-CHECK inspection procedure.
*3 Tool storage capacity is restricted when equipped with both long boring bar system and rigid tool holder system with four clamping units.
*4 ø260mm (ø10.24")(1000 rpm) is standard for INTEGREX e-670H (6000U).

Machine Dimensions

INTEGREX e-500H Series

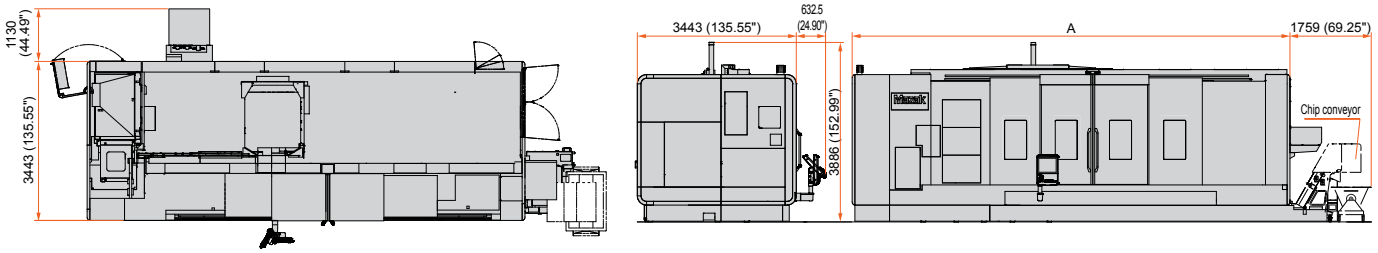
Unit: mm (inch)



	e-500H				e-500H-S	
	1500U	3000U	3000U with LBB	4000U	1500U	3000U
A	6540 (257.48")	8040 (316.54")	8040 (316.54")	9594 (377.72")	7140 (281.10")	8640 (340.16")
B	1672.1 (65.83")	1696 (66.77")	2254.8 (88.77")	2001 (78.78")	1682.1 (66.22")	1655 (65.16")

INTEGREX e-500H (1500U) with 40-tool magazine and chip conveyor ConSep2000 (option) shown

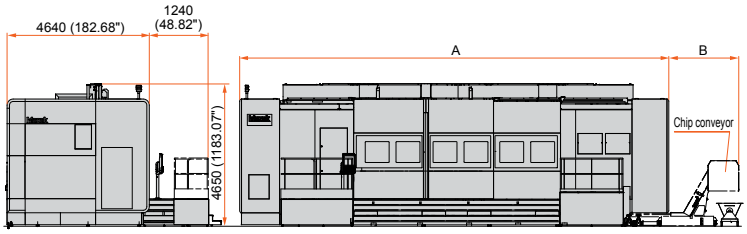
INTEGREX e-670H Series



	e-670H			e-670H-S	
	3000U	4000U	6000U	3000U	4000U
A	8465 (333.27")	9481 (373.43")	12173 (479.25")	9125 (359.25")	10141 (399.14")

INTEGREX e-670H (4000U) with 40-tool magazine and chip conveyor ConSep2000 (option) shown

INTEGREX e-800H



Shown with optional external front steps

	e-800H		
	4000U	6000U	8000U
A	12000 (472.44")	14000 (551.18")	16000 (629.92")
B	2376.7 (93.57")	2282 (89.84")	2250 (88.58")

INTEGREX e-800H (6000U) with 40-tool magazine and chip conveyor ConSep2000 (option) shown

MAZATROL SmoothAi Specifications

	MAZATROL	EIA
Number of controlled axes	Simultaneous 2 ～ 4 axes	Simultaneous 5 axes*
Minimum input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
High-speed, high precision control	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation	Shape compensation, Smooth corner control, Rapid traverse overlap, Rotary axis shape compensation, High-speed machining mode, High-speed smoothing control, 5-axis spline*, Path error suppression control*, Tool path optimization*
Interpolation	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Cylindrical interpolation, Polar coordinate interpolation, Constant lead threading, Re-threading*, Thread start point compensation*, Thread cut-speed override*, Synchronous tapping*	Positioning (interpolation), Positioning (non-interpolation), Linear interpolation, Circular interpolation, Spiral interpolation, Helical interpolation, Constant lead threading, Variable lead threading, Threading (C-axis interpolation type), Cylindrical interpolation*, Involute interpolation*, Fine spline interpolation*, NURBS interpolation*, Polar coordinate interpolation*, Re-threading*, Thread start point compensation*, Thread cut-speed override*, Synchronous tapping*
Feedrate	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Dwell (time/rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Variable acceleration control, G0 slope constant*	Rapid traverse, Cutting feed, Cutting feed (per minute), Cutting feed (per revolution), Inverse time feed, Dwell (time/rotation), Rapid traverse override, Cutting feed override, G0 speed variable control, Feedrate limitation, Time constant changing for G1, Variable acceleration control, G0 slope constant*
Program registration	Number of programs: 256 (Standard)/960 (Max.), Program memory: 2MB, Program memory expansion: 8MB*, Program memory expansion: 32MB*	
Control display	Display: 19" touch panel, Resolution: SXGA	
Spindle functions	S code output, Spindle speed limitation, Spindle speed override, Spindle speed reaching detection, Multiple position orient, Constant surface speed, Spindle speed command with decimal digits, Synchronized spindle control, Spindle speed range setting	
Tool functions	Number of tool offset: 4000, T code output for tool number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces), Tool life monitoring (wear)	Number of tool offset: 4000, T code output for tool number, T code output for group number, Tool life monitoring (time), Tool life monitoring (number of machined workpieces), Tool life monitoring (wear)
Miscellaneous functions	M code output, Simultaneous output of multiple M codes	
Tool offset function	Tool position offset, Tool length offset, Tool diameter/tool nose R offset, Tool nose shape offset, Tool wear offset, Fixed amount offset, Simple wear offset	Tool position offset, Tool length offset, Tool diameter/tool nose R offset, Tool wear offset, Fixed amount offset, Simple wear offset
Coordinate system	Machine coordinate system, Work coordinate system, Local coordinate system, Additional work coordinates (300 set)	
Machine functions	—	Rotary axis prefilter, Tilted working plane, Polygonal machining*, Hobbing II*, Shaping function*, Dynamic compensation II*, Tool center point control*, Tool radius compensation for 5-axis machining*, Workpiece positioning error compensation*, 5-axis tool length compensation*, 5-axis parameter select*
Machine compensation	Backlash compensation, Pitch error compensation, Geometric deviation compensation, Ai Thermal shield, Volumetric compensation*	
Protection functions	Emergency stop, Interlock, Pre-move stroke check, Barrier, SAFETY SHIELD (manual mode), SAFETY SHIELD (automatic mode), VOICE ADVISER	
Automatic operation mode	Memory operation	Memory operation, Tape operation, MDI operation, EtherNet operation*
Automatic operation control	Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Single process, Machine lock	Optional block skip, Optional stop, Dry run, Manual handle interruption, MDI interruption, TPS, Restart, Restart 2, Collation stop, Machine lock
Manual measuring function	Tool-setting data teach, Tool length teach, Touch sensor coordinates measurement, Workpiece offset measurement, WPC coordinate measurement, Measurement on machine, Tool eye measurement	Tool-setting data teach, Tool length teach, Tool offset teach, Touch sensor coordinates measurement, Workpiece offset measurement, Measurement on machine, Tool eye measurement
Automatic measuring function	WPC coordinate measurement, Automatic tool length measurement, Laser tool length/diameter measurement, Workpiece measurement, Sensor calibration, Tool eye auto tool measurement, Tool breakage detection	Automatic tool length measurement, Laser tool length/diameter measurement, Workpiece measurement, Sensor calibration, Tool eye auto tool measurement, Tool breakage detection
MDI measurement	Coordinate measurement, Laser measurement	
Peripheral network	PROFIBUS-DP*, EtherNet/IP*, CC-Link*, CC-Link IE Field Basic	
Interface	SD card interface, USB	
EtherNet	10M/100M/1Gbps	

* Option

INTEGREX e-H SERIES

Mazak

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