

 **Matsura**

5-Axis Horizontal Machining Center

MAM72-100H



MAXIA
Innovation by  Matsura

MAM72-100H

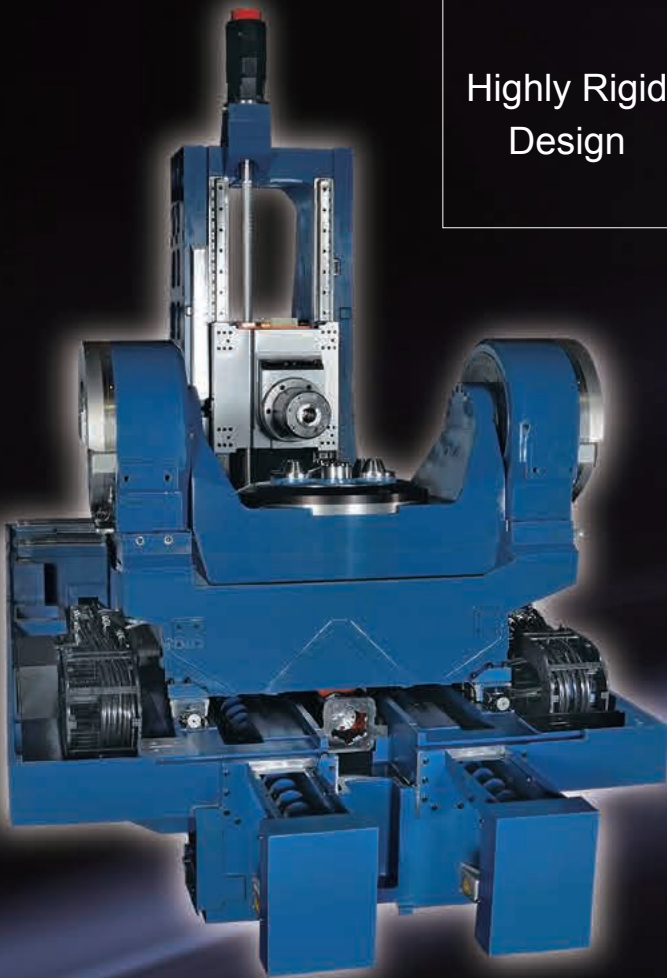
The best just got a little better – and bigger.
Workpiece size increased to $\phi 1020\text{mm}$

Increased Capacity from the same machine footprint.

New Touch Screen Operation. New Diverse Tool changer Options.

Highly Rigid
Design

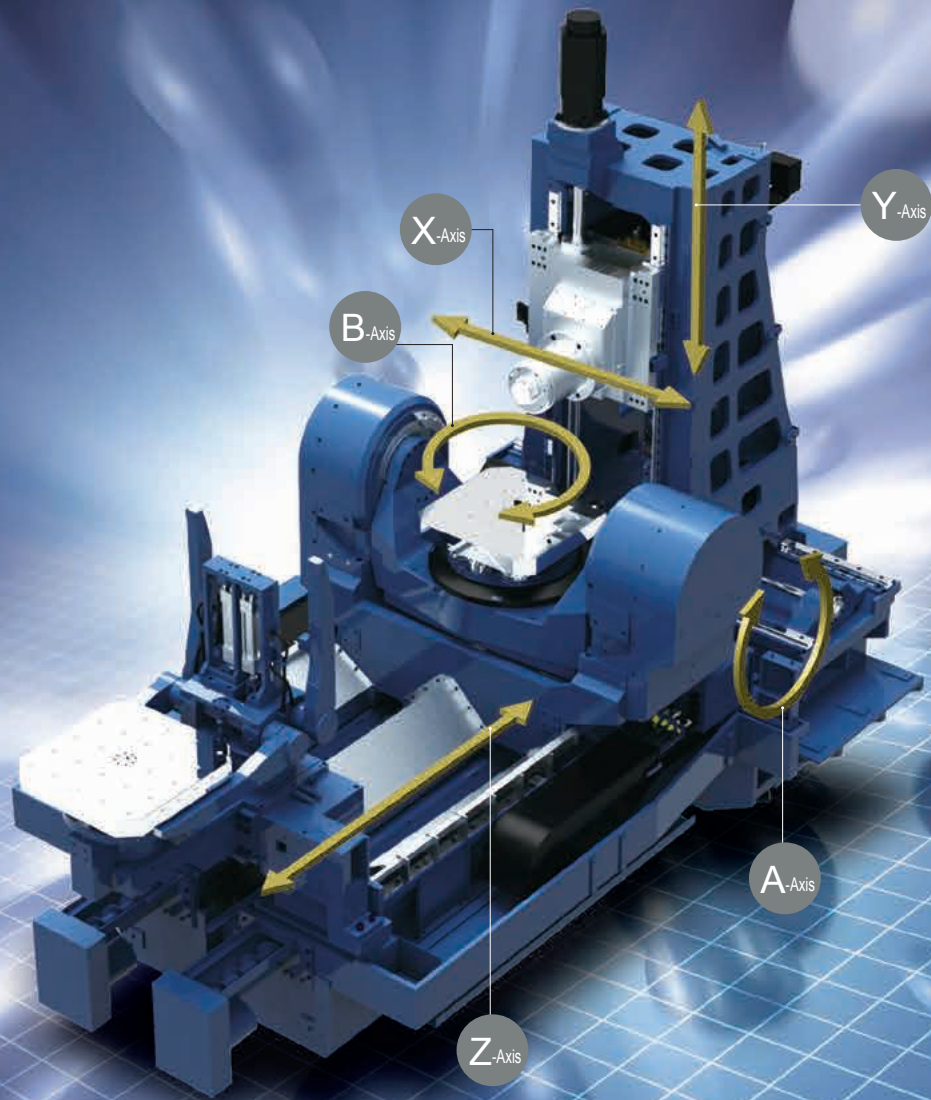
Machining the hardest materials for sustained periods of time to incredible accuracy requires the most rigid & tested machining structure. Designed with FEM analysis utilizing 80 years of **Matsuura** machine know-how heritage, the **MAM72-100H** is the 5 axis platform for the most arduous environments, where quality and sustained performance is paramount.



Pylon bracket (titanium)



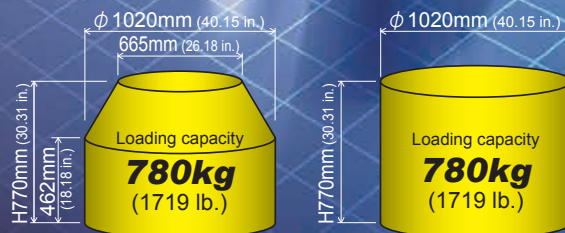
Aircraft part (titanium)



Movement and Ranges

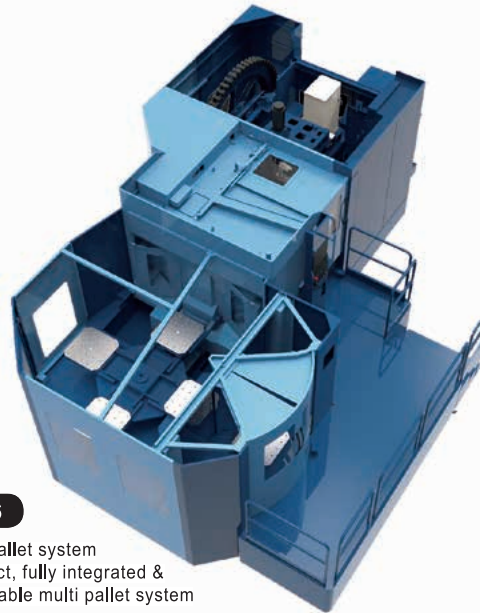
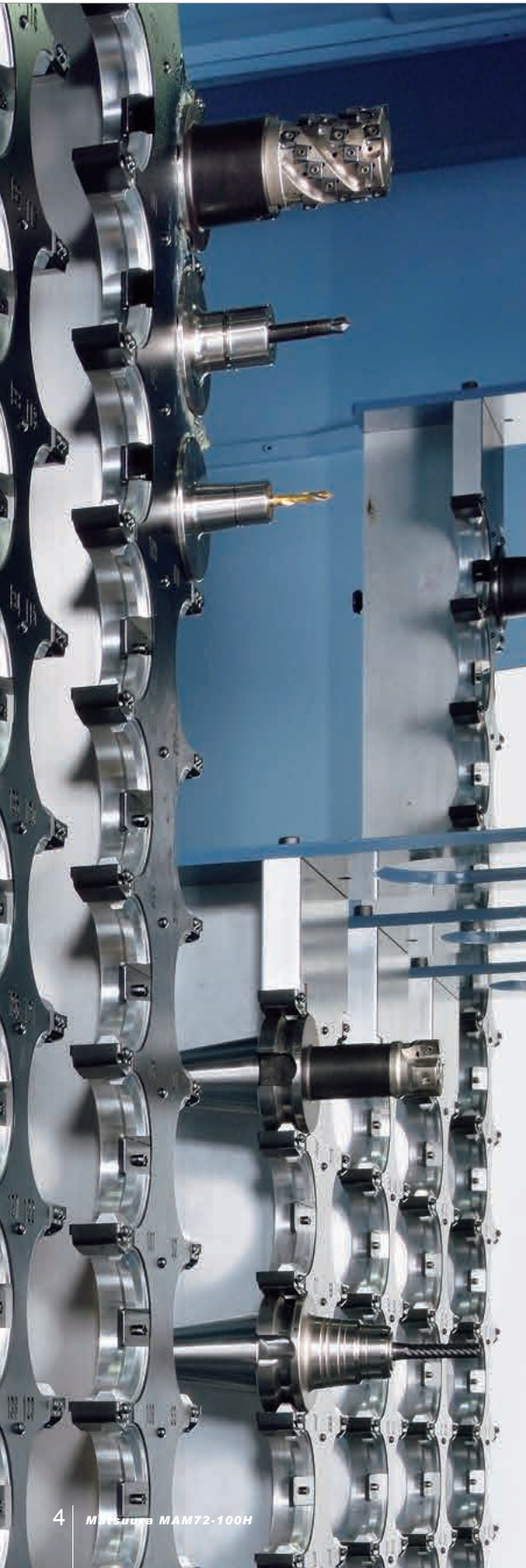
X-Axis Travel (mm (in.))	1050 (41.33)
Y-Axis Travel (mm (in.))	920 (36.22)
Z-Axis Travel (mm (in.))	960 (37.79)
A-Axis Travel (deg)	-120 ~ +30
B-Axis Travel (deg)	360

■ Maximum workpiece size



A-axis angle -99 ~ +14 deg
 Maximum workpiece shape may differ depending on the A-axis angle.

Choose from a Wealth of Options Designed for Extended Unmanned Operation. Diverse Array of Tool and Pallet Options; Tailored to your Process.



PC6

Floor Pallet system
Compact, fully integrated & expandable multi pallet system

Multi Pallet Systems

Option

Proven APC Options to match & exceed your production needs.

800 Square Pallet

Option

Loading Capacity is 640kg(Standard 780kg) and Maximum Work Size is same as Standard.

Pressure supply system for fixtures

Option

An option for pressure supply ports for fixtures, working with the through-pallet system, is available.
(Max.19.6MPa,2ports)

* The pressure supply source, solenoid valves, pressure switches, gap sensors, joints and hoses, should be prepared by the customer.

Drum Magazine

Standard

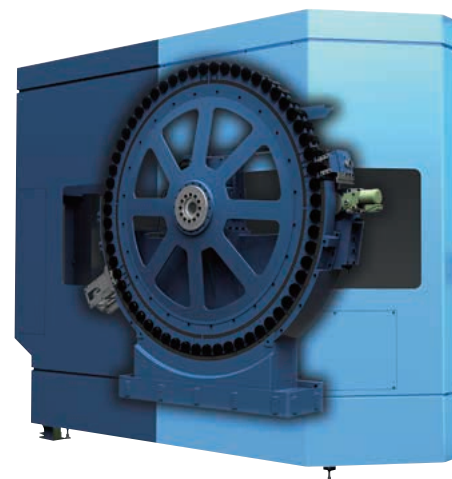
The automatic tool changer is equipped with a **Matsuura** designed & proven drum-type tool magazine driven by a servomotor for short tool indexing time, low noise and low vibration.

Drum Magazine
60 tools with fixed address system

Chain Magazine

Option

Chain Magazine
120tools



Twin Pallets and 60 Tools Drum Type ATC is the Standard **MAM72-100H** Specification.
 New Matrix Tools magazines are available as options, including High Speed Type ATC possessing 209 tools & a Large Capacity Type ATC with 245 tools.

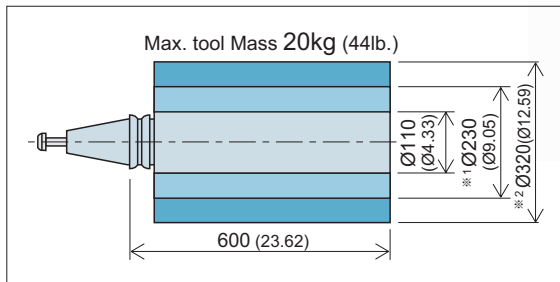
Matrix Magazine

Option

Tool transfer is rapid & reliable thanks to the servo-driven tool transfer arm. The “High Speed Type ATC” with a capacity of 209 tools and the “Large Capacity Type ATC” with storage of 245 tools are provided to match your production requirements. Support for variable part variable lot-size production / extended unmanned operation / high-speed machining is further enhanced.

High-speed type	Capacity up to 209 tools (114 / 144 / 174 / 209) • Tool transfer time shortened by optimizing the tool rack arrangement
High-capacity type	Capacity up to 245 tools (120 / 150 / 180 / 210 / 245)

■ Max. tool size (units: mm (in.))



- ※ 1 No adjacent tool (Store position is limited)
 - ※ 2 No adjacent tool (Store position is limited)
- When Ø320 (Ø12.59) tools are set next to each other, there should be 2 empty pots in between.

Matrix Magazine
 High-capacity type
 Option



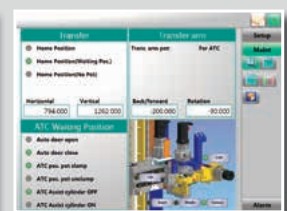
A large, use to navigate touch-screen interface allows swift access to tool data editing. Operation Manuals are also accessed via this touch screen panel.



All tool screen



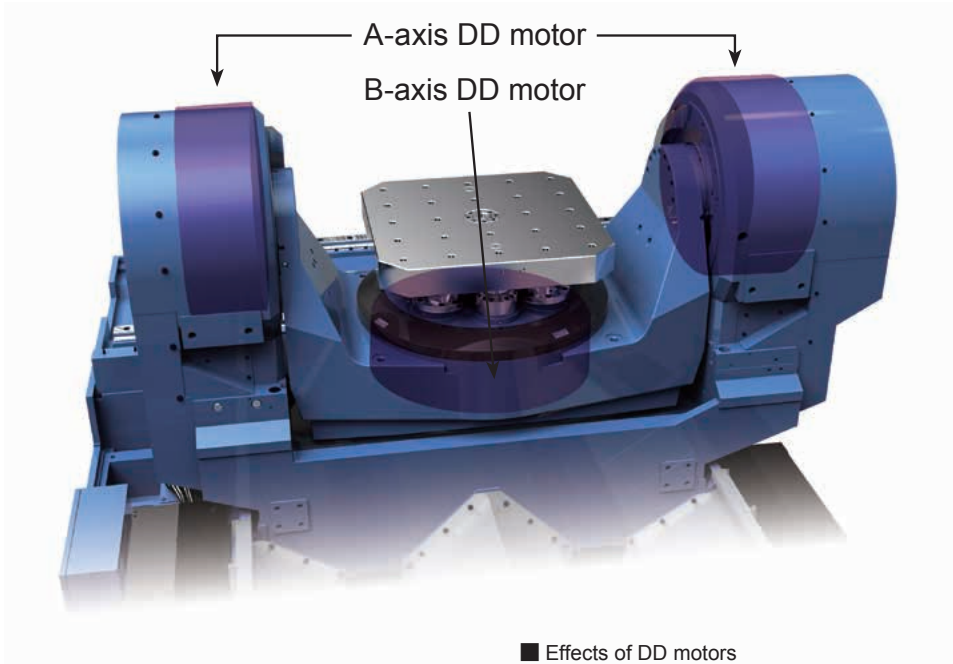
Detailed tool information display



Status screen

High Speed Rotation & High Accuracy Positioning : **Matsuura's** Unique DD Technology

Ultra Robust DD Motor



■ Effects of DD motors

High speed, high precision A / B Axis – powered by Direct Drives

The A- / B-axis table configured with state of the art direct drive motors operate at a maximum feedrate of 50 min⁻¹ (A-axis: tilting axis) or 75 min⁻¹ (B-axis: rotating axis), ensuring high speed and high precision.

Faster acceleration	A 50min ⁻¹
Faster traverse & cutting speeds	
Zero parts wear	B 75min ⁻¹
Sustained long term accuracy	

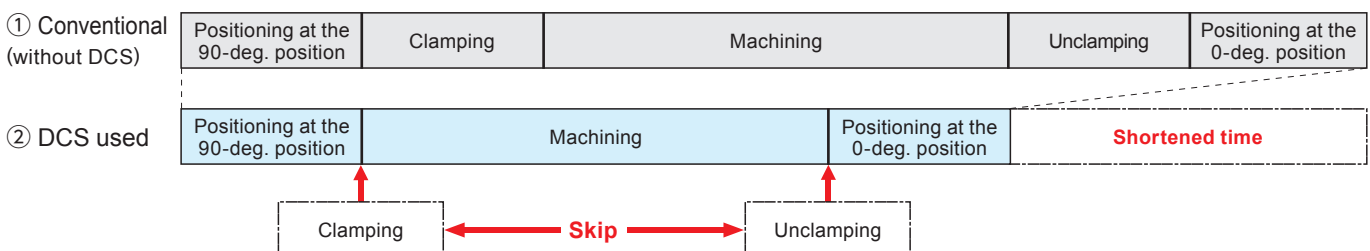
DCS (Dynamic Clamp System)

Patent 4931744

The key to shorter indexing times is the rotating-/tilting-axis clamping/unclamping time. **Matsuura's** DCS function is the world's first revolutionary clamping system. The load level applied to the DD motor is monitored, and the table is clamped only when the load level has exceeded the setting value. The table remains unclamped even during machining as long as the load level is within the preset load range. This automatic clamp ON/OFF function eliminates unnecessary clamping time, which drastically reduces the machining cycle time.

- Within the preset load range ⇒
Machining with the table unclamped
(clamping/unclamping skipped for light machining)
- Exceeded the preset load range ⇒
Machining with the table clamped
(clamping/unclamping not skipped for heavy machining)

■ Light machining



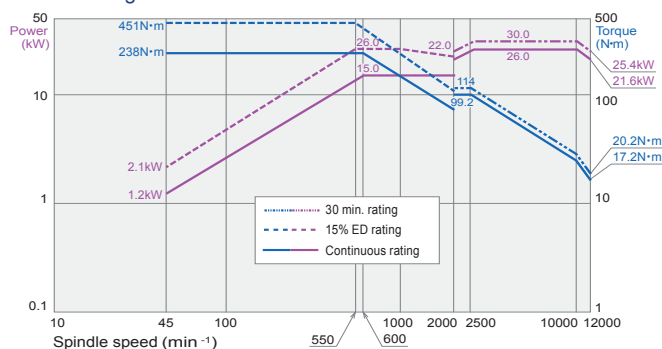
MAXIA Spindles; The Industry Standard, Designed and Developed by **Matsuura** – the pioneers of CNC Spindle Technology.

MAM72-100H; Three State of the Art MAXIA Spindle Lineup

■ Spindle motor power & torque diagram

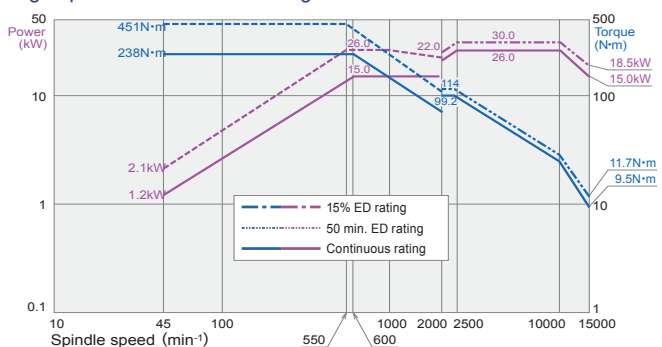
[BT50 12000min⁻¹] Standard

Wide coverage from aluminum to difficult-to-cut materials



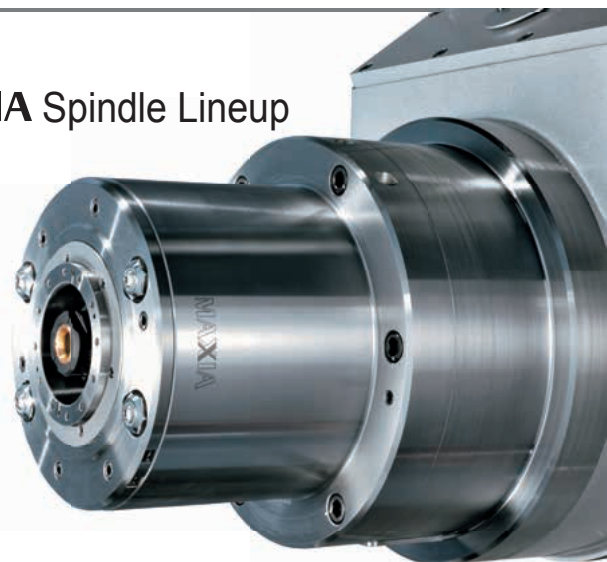
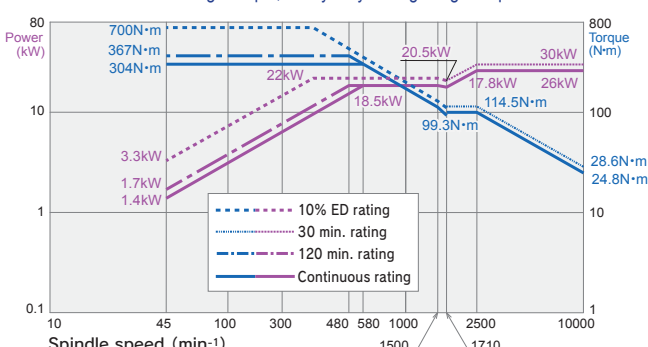
[BT50 15000min⁻¹] Option

High-speed aluminum machining



[BT50 10000min⁻¹] Option

Difficult-to-cut materials / high-torque, heavy-duty cutting High-torque motor (700N·m)

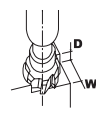
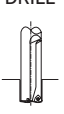
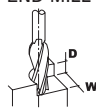



*15000 min⁻¹ (HSK type)

*The "HSK-A100" tooling system (clamping force: 45 kN) is available as an option.

■ Cutting Performance [BT50 10000min⁻¹]

(inch)

		Spindle speed	Feed rate	Quantity	Spindle load			Spindle speed	Feed rate	Quantity	Spindle load			
 FACE MILL	A5052	Ø100mm (3.94) 4teeth carbide	W = 80mm (3.15) D = 5mm (0.2)	5500 min ⁻¹	9000mm/min (354.3)	3600 cc/min	136%	 DRILL	A5052	Ø52mm (2.05) carbide	1500 min ⁻¹	400mm/min (15.75)	849 cc/min	109%
	S50C	Ø160mm (6.3) 10teeth carbide	W = 100mm (3.94) D = 7mm (0.28)	300 min ⁻¹	800mm/min (31.5)	560 cc/min	104%		S50C	Ø52mm (2.05) carbide	1500 min ⁻¹	220mm/min (8.66)	467 cc/min	110%
 END MILL	A5052	Ø25mm (0.98) 2teeth carbide	W = 20mm (0.79) D = 15mm (0.59)	10000 min ⁻¹	8000mm/min (315)	2400 cc/min	132%	 TAP	A5052	M42× P4.5 HSS	120 min ⁻¹	540mm/min (21.26)	Solid tap function is used	20%
	S50C	Ø25mm (0.98) 4teeth carbide	W = 3mm (0.12) D = 40mm (1.58)	5000 min ⁻¹	6000mm/min (236.2)	720 cc/min	135%		S50C	M42× P4.5 HSS	80 min ⁻¹	360mm/min (14.17)	Solid tap function is used	54%

※ These are resulting data. In some cases, the catalogue data may not be obtained, depending on difference in the conditions.

The Pinnacle of **Matsuura** Spindle Expertise

The heart of the machine; the Spindle. **Matsuura** control every aspect of the Spindles inception, from design to manufacture, from assembly to testing.

Assembled in a Clean Room Environment

Matsuura's Spindle Engineers work in a dedicated Clean Room complex to assure the highest standards of build quality & reliability. Our ultra precision spindles are guaranteed to have a runout of less than 1 µm* (0.000039 in.) - this is an actual measured value at the spindle nose.

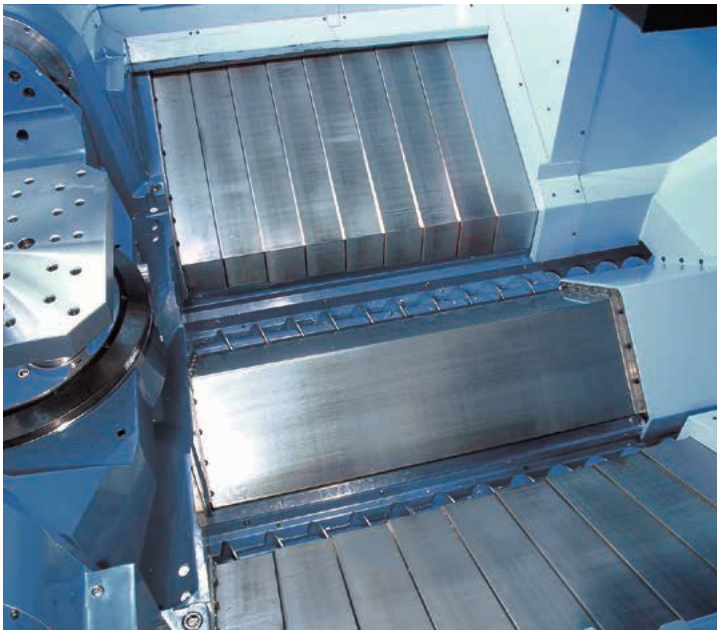
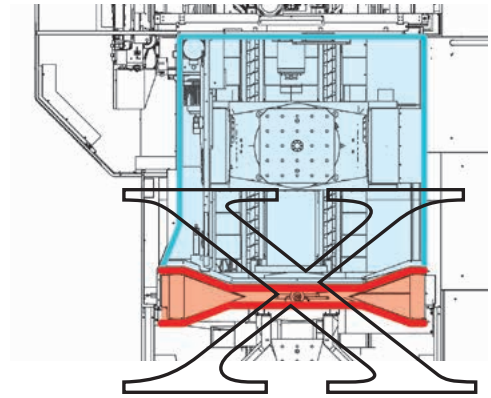
※ These are resulting figures, and not guaranteed figures.

Rapid Metal Removal Requires Ultra Efficient Chip Flow & Swarf Clearance



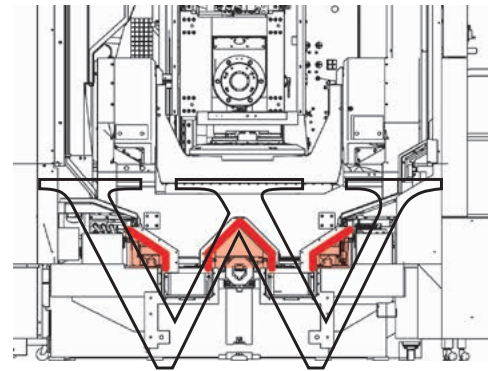
X-Type APC Door

The exclusive **Matsuura** X-Type APC door design eliminates all possibility of chip traps & swarf build up, halting valuable production for maintenance & preventing machine downtime.



W-Type Slide Cover

By integrating steep angled steel Z-Axis covers, swarf is efficiently directed into 2 gutters, where standard spiral chip conveyors rapidly transport waste material out of the enclosure.



Lift-Up Chip Conveyors

Option

Scraper Type

- Drum Filter
- Oily Coolant Applicable (less than 10 cSt)

Hinge + Scraper Type

- Drum Filter
- Only Water Solution Coolant Applicable

Spiral Chip Conveyor

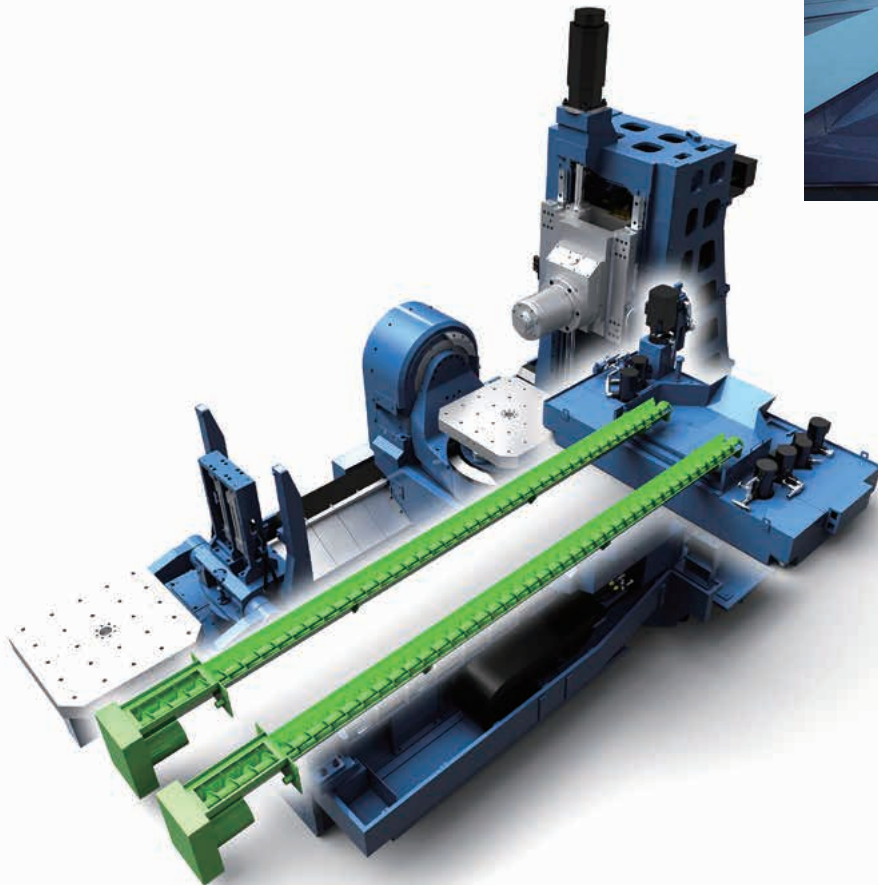
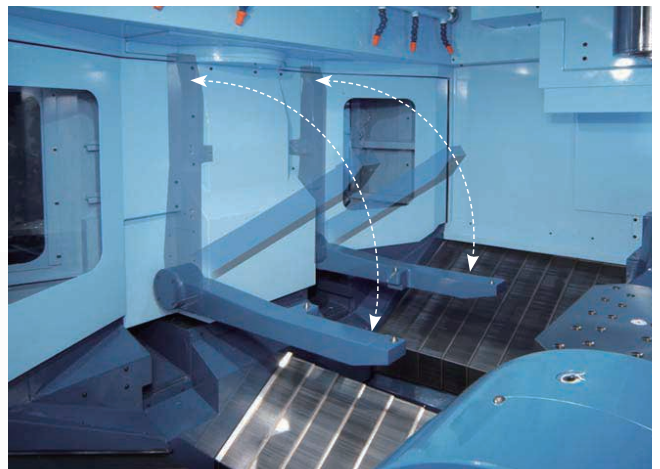
Standard

To accommodate high volumes of metal removal of all types, a wide variety of swarf management system designs are available.

Flip Up Arm APC

Patented

Matsuura's patented flip-up arm APC configuration shortens the machine length considerably and reduces the overall machine footprint significantly.



Ergonomic functionality by design aids efficient operation

Operability / Accessibility

APC door possesses a colossal 1380mm wide entrance for the safe loading & unloading of heavy billets and finished components. An established and proven operator platform design is available & recommended. The operator door also offers excellent access to the machining enclosure with a generous 840mm width opening.



A world of 5 axis excellence & functionality at your fingertips. State of the art 5 axis NC controls – developed in-house by **Matsuura**

Automatically Controlled Toolpath/ Tool Speed

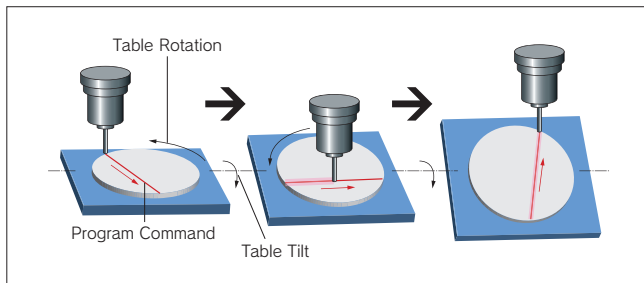
Option

TCPC

Matsuura G-Tech 31i

Tool Center Point Control (TCPC)

Tool center point moves according to the program command with table tilt/rotation.



Tool center point moves according to the program command with table tilt/rotation.

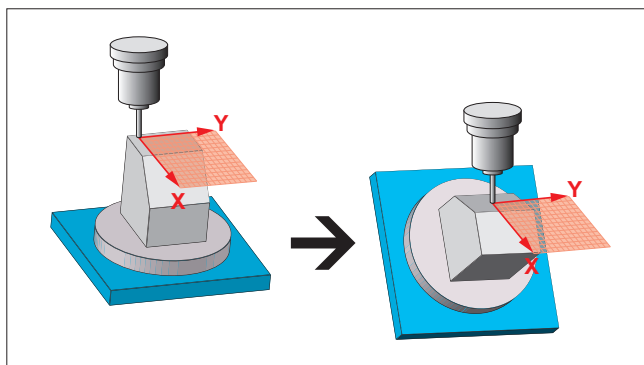
Easy Programming (3+2-Axis)

Option

Tilted Working Plane Command(TWP)

Matsuura G-Tech 31i

Tilted working plane command which takes over necessary calculations for coordinate values including necessary axes motions. When rotary axes are moved, rather complex calculations, in the with machine axes configuration, should be made for re-calculating and establishing suitable work coordinate system for the new surface & its orientation.



Optimized Functions for High Speed Machining

Matsuura G-Tech 31i

Machining for General Parts or Mold & Die

Standard **IZ-1/15F**

Machining for more Complex, Precision Parts

Option **IZ-1/30NF, IZ-2/150NF**

(Look Ahead Linear Acc./dec.+nano interpolation)

Executing the maximum 200 (IZ-1/30NF) or 600* (IZ-2/150NF) -block look ahead linear acc./dec. before interpolation achieves a smooth acc./dec. across the multiple blocks calculated by nano order.

*max.1,000 block available as option.

High-Speed Precision Machining Program Support Function

Standard

IPC / AD-TAP

Matsuura G-Tech 31i

IPC (Adjustment Function for High Speed /Accuracy Marching)

For high speed cutting applications, **Matsuura**'s proven and pioneering software is recommended. When utilizing this software, setting the required part accuracy level is quick, simple and user friendly, allowing you to prioritize precision against speed.

AD-TAP

Matsuura's unique spindle motor control technology- AD-TAP, intelligently optimizes the torque V speed characteristics of the spindle motor, depending on the size of the tap used. This provides average reduction of 20% in tapping time. (Patented)

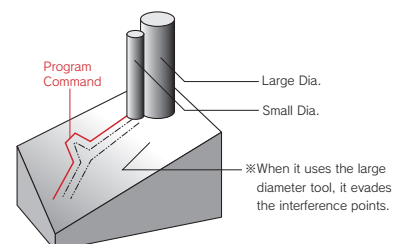
Tool Diameter Interpolations on 5-Axis

Option

Three Dimensional Cutter Compensation

Matsuura G-Tech 31i

3-dimensional cutter compensation sets the value of tool-off-sets automatically for simultaneous 5-Axis machining according to the pre-set value. It enables the safe & automatic use of different diameter tools during 5-Axis machining with the table tilted.



Digitized Meister knowledge, skills and ingenuity *Matsuura's* unique interface to maximize rapid operation and usability

<div style="background-color: #ccc; padding: 5px; text-align: center; font-weight: bold;">Environment</div>	<div style="background-color: #ccc; padding: 5px; font-weight: bold;">Eco Meister</div> <p>Power saving</p> <ul style="list-style-type: none"> ■ Power cut-off function ■ Energy-saving devices installed 	<div style="background-color: #ccc; padding: 5px; text-align: center; font-weight: bold;">Accuracy</div>	<div style="background-color: #ccc; padding: 5px; font-weight: bold;">Thermal Meister</div> <p>Stable accuracy</p> <ul style="list-style-type: none"> ■ Spindle thermal displacement compensation ■ X/Y/Z thermal displacement compensation ■ Environmental thermal displacement compensation
<div style="background-color: #ccc; padding: 5px; text-align: center; font-weight: bold;">Simple</div>	<div style="background-color: #ccc; padding: 5px; font-weight: bold;">Operability Meister</div> <p>Fuss-free simple operation</p> <ul style="list-style-type: none"> ■ Tool setup support ■ Workpiece setup support 	<div style="background-color: #ccc; padding: 5px; text-align: center; font-weight: bold;">Secure</div>	<div style="background-color: #ccc; padding: 5px; font-weight: bold;">Reliability Meister</div> <p>Machine downtime reduction</p> <ul style="list-style-type: none"> ■ Preventive maintenance support ■ Failure cause analysis ■ Electronic manuals ■ E-mail function

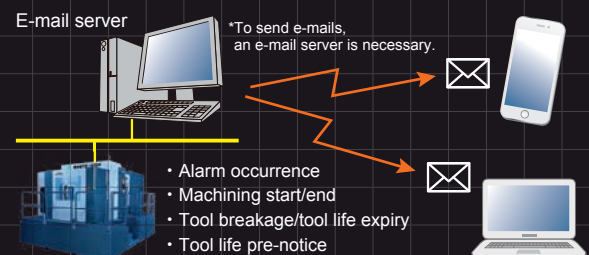
15-inch touch panel screen adopted [Matsuura G-Tech 31i](#)

The machine is equipped with a new operating system that features a 15-inch touch panel. Icons required for operation, setup and maintenance are displayed on the screen. Screen display can be switched by single-tapping, and can be customized as needed.



E-mail function

At the occurrence of an alarm during operation, an e-mail message to notify the alarm can automatically be sent to the registered e-mail addresses. The operating status or machining progress status notification is also possible.



A maximum of 10 e-mail addresses can be set for each notification item.

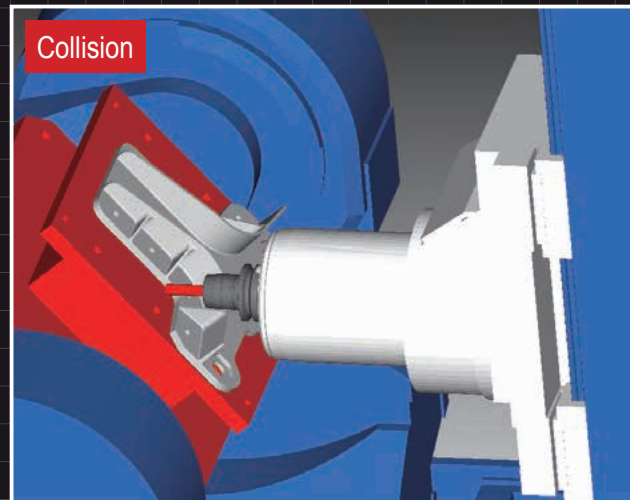
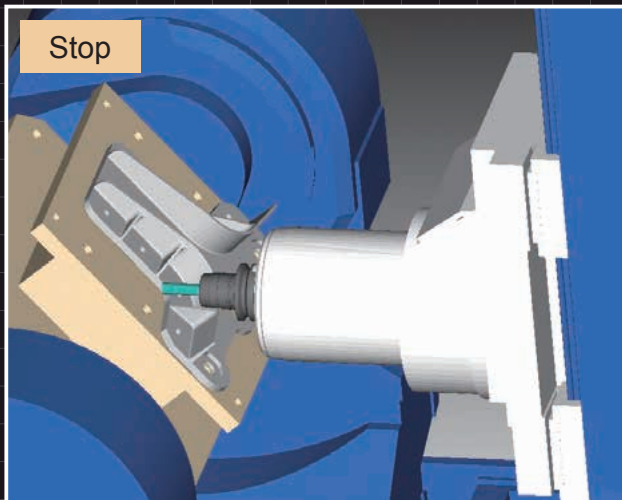
Electronic manuals

Electronic manuals can be viewed on the main operation panel. Search features and bookmarks ensure quick access to the information you are looking for.



Intelligent Protection System

Ultra Safe Collision Protection <Safe • Secure>



Intelligent Protection System



Manual / automatic operation supported
Simultaneous 5-axis machining supported

Intelligent Protection System



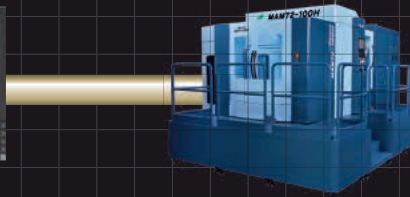
On-Line Link with PC

**Intelligent Protection System* simulates your programmed component alerting the user to any interference or collision before any actual machining.

*Requires end user PC -consult **Matsuura** for full specifications.



External PC



Machining center

Collision Avoidance during Setup

Collision check available during manual operation as well.

Also, tool compensation data registered in the NC unit is automatically linked with the Intelligent Protection System PC.

Collision Avoidance during Automatic Operation

Collision check can be activated during simulation. The collision check function renders the part in real time on screen.

Standard Accessories

Software	Machine model data
Communication cable	PC communication board

* A high quality communication cable is provided to route from the control box.

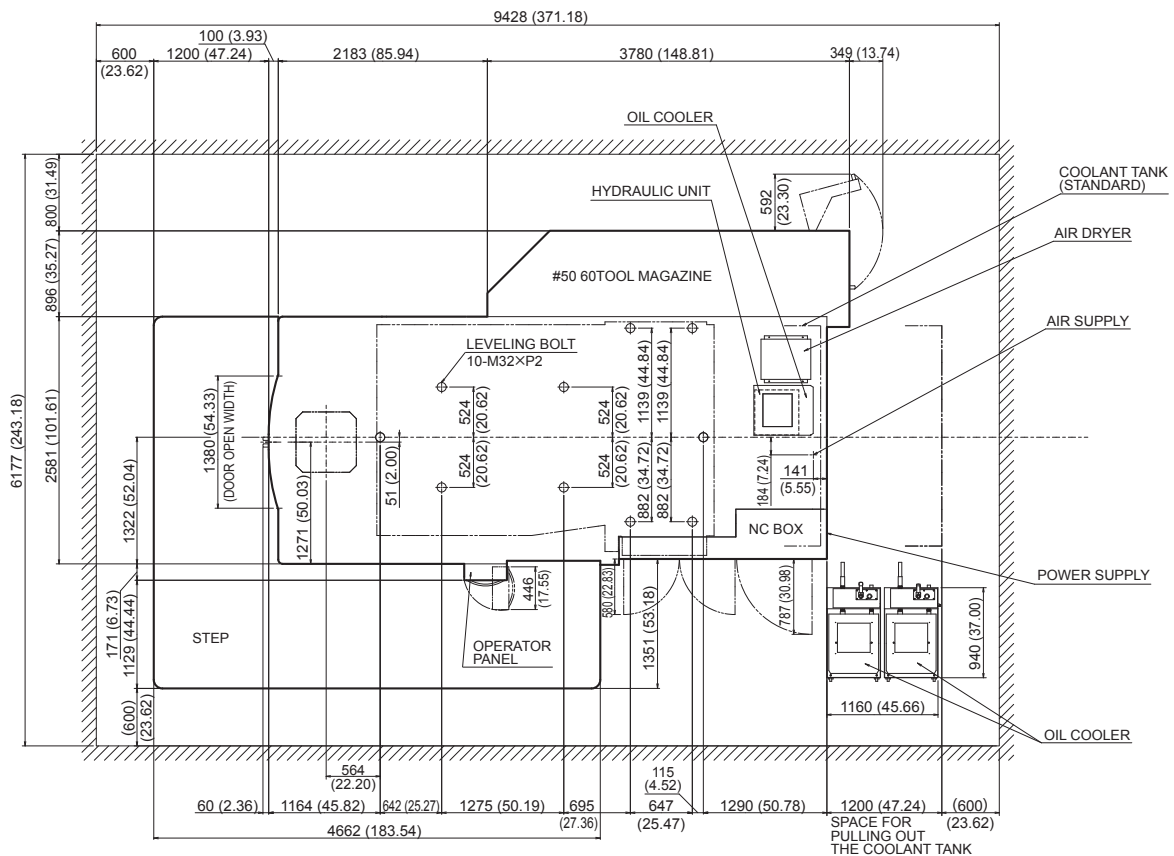
Standard Machine Specifications

■ Movement and Ranges		
X-Axis Travel	mm (in.)	1050 (41.33)
Y-Axis Travel	mm (in.)	920 (36.22)
Z-Axis Travel	mm (in.)	960 (37.79)
A-Axis Travel	deg	-120 ~ +30
B-Axis Travel	deg	360
■ Pallet		
Working Surface	mm (in.)	630×630 (24.80×24.80)
Loading Capacity	kg (lb.)	780 (1719)
Max. Work Size	mm (in.)	Ø1020×H770 (Ø40.15×30.31) (with restrictions)
■ Spindle		
Spindle Speed Range	min ⁻¹	45 ~ 12000
Spindle Drive Motor (Contin. / 30min)	kW	15 / 22 / 26 (Low Speed : continuous / 40% / 15%) 26 / 30 / 30 (High Speed : continuous / 30 min / 60%)
Max. Spindle Torque	N·m	451 (550min ⁻¹)
■ Feedrate		
Rapid Traverse Rate (X/Y/Z)	mm/min(ipm)	60000 / 60000 / 50000 (2362.20 / 2362.20 / 1968.50)
Rapid Traverse Rate (A/B)	min ⁻¹	50 / 75
Feedrate (X/Y/Z)	mm/min(ipm)	60000 / 60000 / 50000 (2362.20 / 2362.20 / 1968.50)
Feedrate (A/B)	min ⁻¹	50 / 75
■ Automatic Tool Changer		
Type of Tool Shank		JIS B 6339 tool shank 50T
Type of Retention knob		JIS B 6339 pullstud 50P
Max. Tool Diameter	mm (in.)	Ø110 (Ø4.33) : Adjacent tool exists Ø230 (Ø9.05) : No adjacent tool (Store position is limited) Ø320 (Ø12.59) : No adjacent tool (Store position is limited) When Ø320(Ø12.59) tools are set next to each other, there should be 2 empty pots in between.
Max. Tool Length	mm (in.)	600 (23.62)
Max. Tool Mass	kg (lb.)	20 (44)
Tool Changing Time (tool to tool)	sec.	2.2 (When tool mass is less than 10kg (22 lb.)) 3.1 (When tool mass is over 10kg (22 lb.))

■ Power Sources		
Power Capacity	kVA	108
Volume of Compressed Air	NL/min	600
■ Tank Capacity		
Coolant tank	L	600
■ Machine Size		
Machine weight	kg (lb.)	22000 (48400)
■ NC System		
Control System		Matsura G-Tech 31i
■ Standard Accessories		
01. Total Splash Guard	02. ATC Auto Door	
03. Synchronized Tapping	04. AD-TAP Function	
05. IPC Function	06. Spindle Oil Cooler	
07. Auto Grease Supply Unit	08. Cooler for Direct Drive motor	
09. Coolant Unit	10. ChipFlush	
11. Spiral Chip Conveyor (right and left)	12. Spindle Overload Protect	
13. Work Light	14. Standard Mechanical Tools & Tool box	
15. Machine Color Paint	16. Leveling Pads & Bolts	
17. ScaleFeedback for the A/B Axis	18. MIMS	
19. Intelligent Protection System	20. Spindle Run Hour Meter	
21. Automatic Operation Run Hour Meter	22. Movable Manual Pulse Generator	
23. PC tool for memory card program operation and editing		
24. Operator Platform		

* 2 years spindle warranty

Floor Plan Units: mm (in.)



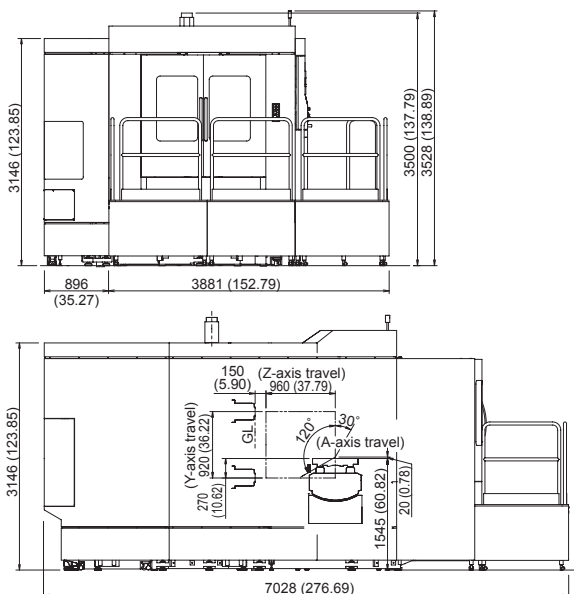
List of Fittings

○ : Standard ▲ : Option

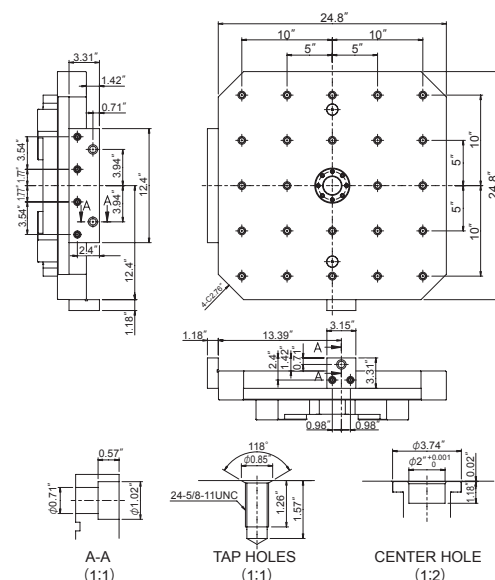
■ Spindle		
12000 min ⁻¹ (BT50 Oil Air)		○
10000 min ⁻¹ (BT50 Oil Air)		▲
Spindle Drive Motor	kW	26 / 30
Max. Spindle Torque	N·m	700 (300min ⁻¹)
15000 min ⁻¹ (BT50 Oil Air)		▲
10000 min ⁻¹ (HSK-A100 Oil Air)		▲
12000 min ⁻¹ (HSK-A100 Oil Air)		▲
20000 min ⁻¹ (HSK-A100 Oil Air)		▲
■ ATC		
60 tools (Drum Magazine Fixed Address)		○
120 tools (Chain Magazine)		▲
120 / 150 / 180 / 210 / 245 tools	(Matrix Magazine 245 base)	▲
114 / 144 / 174 / 209 tools	(Matrix Magazine 209 base)	▲
■ High Accuracy Control		
Scale Feedback	X/Y/Z-Axis	▲
■ APC		
PC2		○
PC6 (Floor Pallet System)		▲
■ Pallet		
Working Surface	mm (in.)	800×800 (31.5×31.5)
Loading Capacity	kg (lb.)	640 (1411)
Max. Work Size	mm (in.)	Ø1000× H770 (Ø39.37×30.31) (with restrictions)
■ Coolant		
Coolant Unit		○
Coolant Thru Spindle	Vacuum Type Coolant Thru A (7MPa)	▲
Coolant Thru Spindle	Vacuum Type Coolant Thru A (14MPa)	▲
Coolant Thru Spindle	Vacuum Type Coolant Thru B (7MPa)	▲
Coolant Thru Spindle	Vacuum Type Coolant Thru B (14MPa)	▲
Coolant Thru Spindle	Vacuum Type Coolant Thru C (2MPa)	▲
Coolant Thru Spindle	Vacuum Type Coolant Thru C (7MPa)	▲
Coolant Flow Checker		▲
Mist Separator Unit	(without Fire Protect Damper)	▲
Mist Separator Unit	(with Fire Protect Damper)	▲
Coolant Temperature Controller	Separate Type, 100L Tank	▲
Coolant Temperature Controller	Separate Type, 200L Tank	▲
■ In-Process Measurement + Tool Breakage		
In-Process Measurement/Auto Centering (Optical Touch Probe)		▲
Broken Tool Detection/Auto Tool Length Measurement (Touch Sensor)		▲
Broken Tool Detection/Auto Tool Length Measurement (Laser Sensor)		▲
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection (Touch Sensor)		▲
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection (Laser Sensor)		▲

■ Swarf Management	
Total Splash Guard	○
ATC Auto Door	○
Spiral Chip Conveyor	○
Chip Flush System	○
External Nozzle	2 MPa with Spindle Thru ▲
External Nozzle	7 MPa with Spindle Thru ▲
Lift-Up Chip Conveyor (Scraper, Hinge + Scraper)	▲
Chip Bucket	▲
Chip removing air blow	▲
Workpiece Cleaning Gun (Machine Side)	▲
Workpiece Cleaning Gun (APC Side)	▲
■ Operation/Maintenance Support	
AD-TAP Function	○
IPC Function	○
MIMS	○
■ Intelligent Protection System	
Auto Grease Supply Unit for Feed Axes	○
Work Light	○
Movable Manual Pulse Generator	○
Spindle Run Hour Meter	○
Automatic Operation Run Hour Meter	○
Additional Eight M Functions	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
Rotary Wiper (air driven)	▲
Rotary Wiper (electrically driven)	▲
Optional Block Skip	▲
Reliability Meister Plus	▲
■ Interface	
Robot interface	▲
FASTEMS interface	▲
■ Safety Regulation	
Matsura Safety Specification	○
Auto. Fire Extinguisher	▲
■ Option Package	
Hi-Speed Hi-Precision Package	▲
5-Axis Package	▲
Hi-Speed Hi-Precision / 5-Axis Package	▲
Value Package	▲

External View Units: mm (in.)



Pallet Top View Units: in.





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- Product specifications and dimensions are subject to change without prior notice.
 - The photos may show optional accessories.



This product is subject to all applicable export control laws and regulations

