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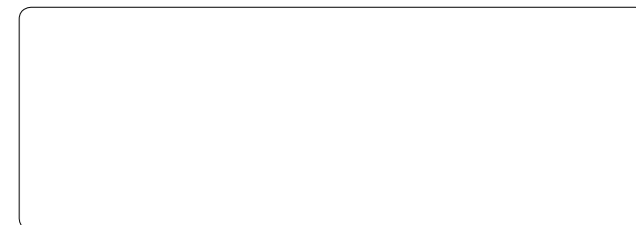
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- Product specifications and dimensions are subject to change without prior notice.
- The photos may show optional accessories.



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

 **Matsuura** 5-Axis Vertical Machining Center

MAM72-52V



MAXIA
Innovation by  Matsuura

One machine; One solution

**Small batch variety,
not volume production,
is the key to automation success**

In 1991, Mitsuba introduced the now legendary **MAM72 Series** of 5 axis machine tools, ushering in and defining a new age of unmanned and fully automated CNC machining production. Many decades of world leading CNC automation experience since then has culminated in our latest addition to the range; the **MAM72-52V**. It is an established fact that investors in Mitsuba multi-pallet machines produce more work, at a lower operating cost per part, and with significantly reduced operator dependency and associated manpower costs. Hand-built in Japan by dedicated Mitsuba engineers, the **MAM72-52V**, like its forebears, will continue to deliver value and profit many years after the initial investment cost is a distant memory.



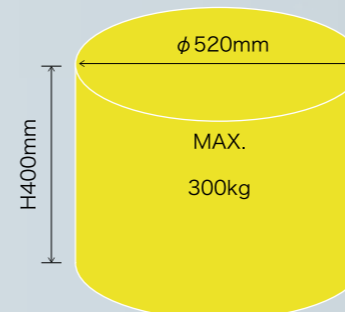
Matrix tool magazine



Tower pallet system



Swarf removal system



Max. Workpiece Size : $\phi 520 \times H400$ mm
Loading Capacity : 300 kg
X/Y/Z-Axis Travel : 1010 / 540 / 610 mm
B/C-Axis Rotation Angle : +30 ~ -125 / 360 deg

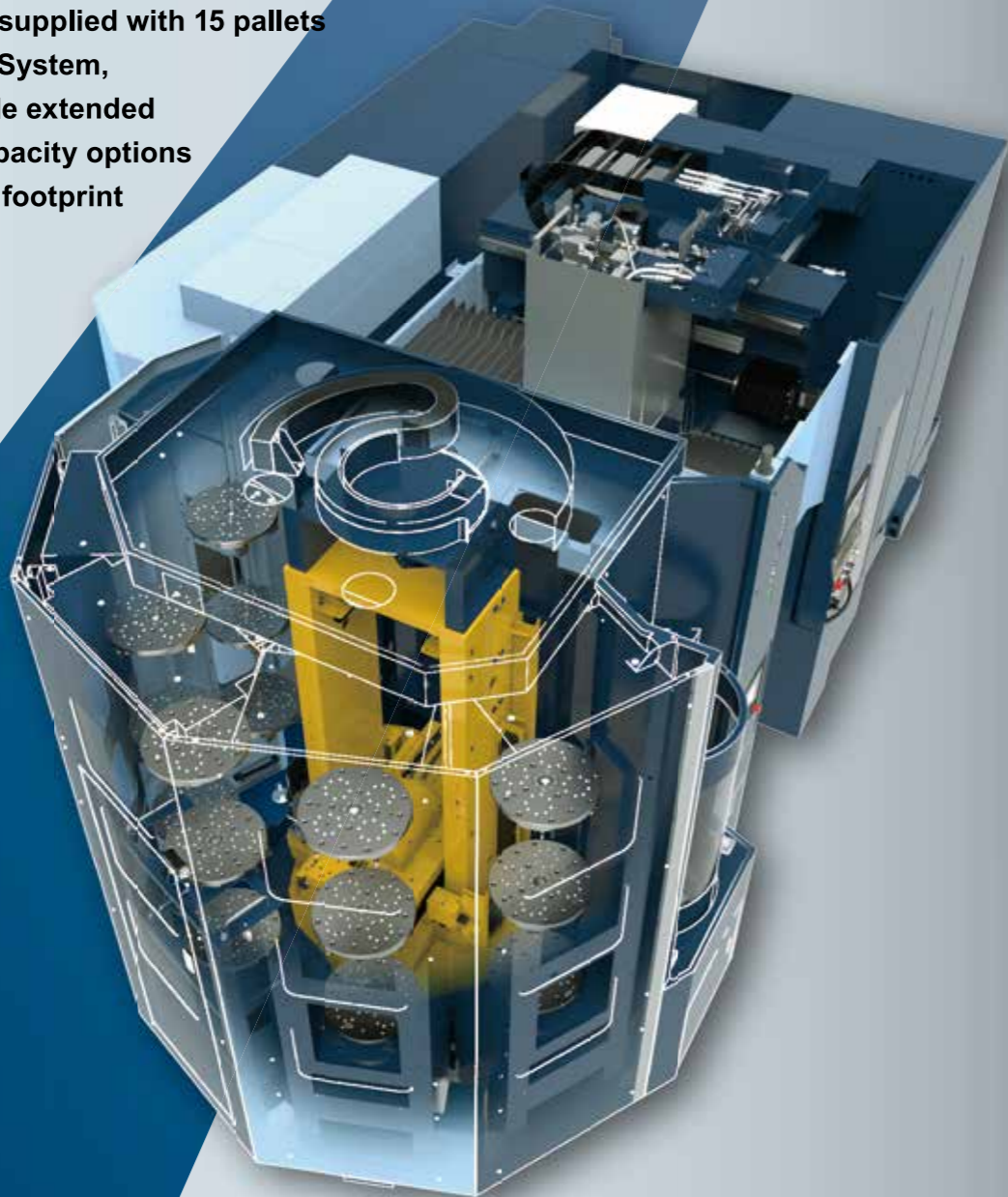
MAXIA
Innovation by Mitsuba

MAM72-52V

5-Axis Vertical Machining Center

Designed into the heart of the machine, and fitted as standard to the MAM72-52V is the proven Matsuura Tower Pallet Stoker System, enabling variable part, variable volume unmanned production with minimal operator attendance

The MAM72-52V is supplied with 15 pallets in the Tower Pallet System, delivering incredible extended automation and capacity options within a very small footprint



Easy pallet management and scheduling

Continuous operation is made possible by setting all necessary information into the schedule table. Order or priority of machining can be easily changed to meet production requirements. Pallet reserve, interrupt, priority and repeat can be set for each pallet. Pallet management screen is designed for easy operation and flexible production.



Scheduled operation	Machining operation according to schedule numbers
Interrupt pallet	Prioritizes highlighted pallet number in production schedule.
Reserve pallet	Reserves pallets for when unmanned run time is allowed.
Continuous operation	Repeated machining operation on a specific pallet (set as "continuous" pallets)
End Pallet setting	Finishing schedule operation when the machining on the specified pallet is completed
Auto call	Finished pallets are automatically transferred to the work station.



Matsuura IoT

Operation monitoring functions —Matsuura IoT

Option



Machine availability and performance can be monitored to improve process planning.

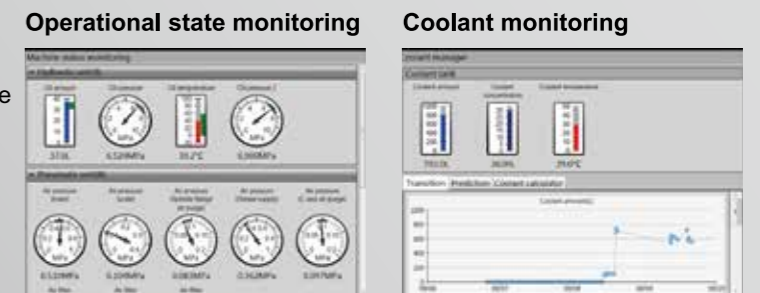
- ▶ Performance is monitored to check OEE. * Overall equipment efficiency.
- ▶ Data can be output to process data acquisition (PDA) systems.
- * Overall equipment efficiency (OEE) = availability x performance x quality
- * To calculate the "quality" value, an optional feature for automatic measurement/tool breakage detection is required.

Operation support function —Matsuura IoT

Option

Enhanced automated systems to reduce operator reliance and human errors.

- ▶ Monitors all supply systems relating to machine performance.
- ▶ Operators are notified if the machine requires attention.
- ▶ Current situation and history records can be analysed via a screen.



MAM72-52V

5-Axis Vertical Machining Center

Expandable and proven Automatic Tool Changer offers years of trouble free reliable service, supporting long periods of unmanned machining

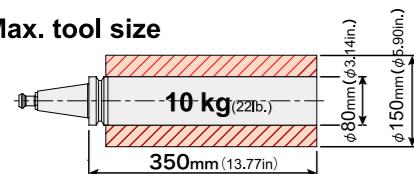
Matrix tool magazine

► Utilizing a high-speed servo drive, our rigorously tested new design Matrix tool magazines deliver maximum tool storage within a small ATC footprint. Standard tool storage is 330, although a 530 tool storage option is available

Standard 130tools

Option 170/210/250/290/330tools
370/410/450/490/530tools

Max. tool size



Type of tool shank : JIS B 6339 40T
Max. tool diameter : Ø80mm
ø150mm with no adjacent tools
Max. tool length : 350mm
Max. tool weight : 10kg



330 tool base magazine

Servo (rack and pinion/ball screw)

Servo

8.7 seconds

13.4 seconds

25 tools

The maximum tool storage capacity decreases by 40 when 25 large diameter tools are accommodated.

Enables manual calling/storing of a tool even when a separate tool is located in the tool change position.

Option

Operator-friendly design



Swiveling operation panel

Tool setup door with a generous opening width

Tool magazine operation panel

Located conveniently on the Matrix ATC, a tool management touch screen is installed giving total control of ATC functionality, and the status of individual tools. Status at a glance operability such as set-up, editing and confirmation of data for all tools in the magazine as well as tool reset & tool life management can be controlled from this panel.



User friendly tool management screen

Equipped with tool life management as standard, the unmanned capability of the machine is enhanced.

- By creating tool lists you can check and search specific tool data.
- With the load / unload function you can store tool data on a temporary basis.



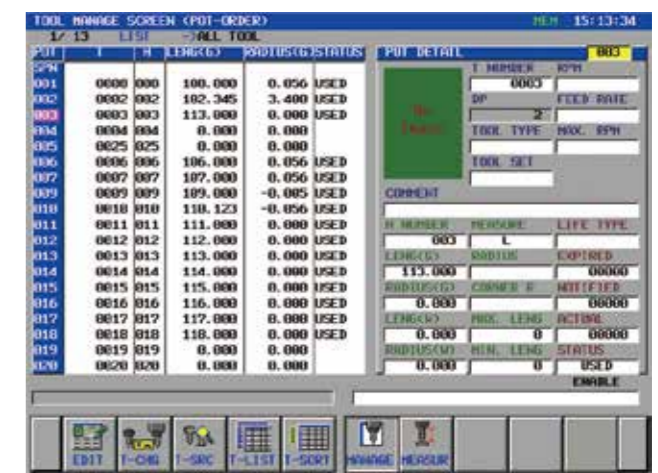
Tool life management

- Time and frequency of usage is updated on the tool table after tool change.
- Once the current tool life value exceeds the set value a warning is displayed.
- Spare tools can be set using the same T number. A spare tool is automatically selected once a tool's life has expired.

Tool pre-check

Option

- This function checks that necessary tools are set up before starting machining.
- Prevents alarms and unplanned stops during unmanned operation.



MAM72-52V

5-Axis Vertical Machining Center

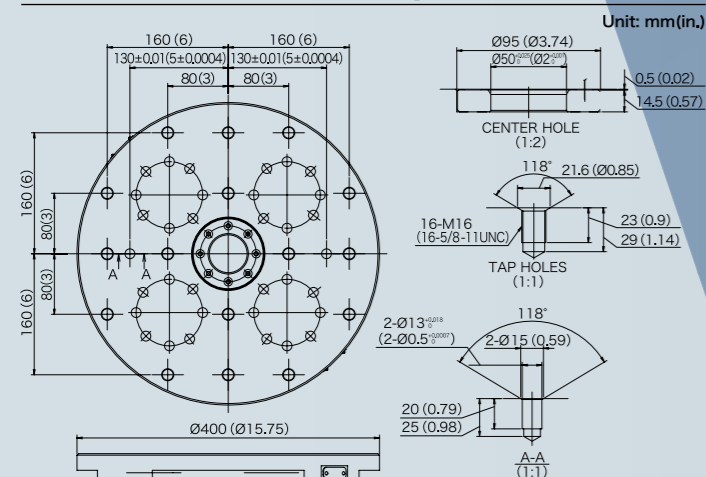
Designed to maximise process efficiency

High speed, unerring accuracy and longevity of sustained performance are assured with our proven 4th / 5th axis design

- ▶ Direct Drive; 4th / 5th high performance motors
- ▶ High accuracy & resolution scale feedback system; installed as standard.



MAM72-52V Pallet Top View



[4th-/5th-axis specifications]

	4th axis (tilting axis)	5th axis (rotating axis)
Feed rate	50min ⁻¹	100min ⁻¹
Allowable cutting torque	373Nm	255Nm
Brake torque	4,150Nm	3,000Nm
Drive system	DD (1:1)	DD

Unrestricted access to the machining enclosure assures safety and comfort

- ▶ The operator door opens 700 mm wide, which facilitates workpiece setup and maintenance work.
- ▶ Good access to the workpiece and spindle: distance from machine front (oil pan edge) to pallet center: 564 mm, that to spindle center: 134 mm.
- ▶ The height from the floor to the pallet top is 1050mm, enhancing the operator experience when working on set-ups.



① Operator door opening width	700mm
② Distance from machine front to pallet center	564mm
③ Distance from machine front to spindle center	134mm
④ Height from floor to pallet top	1050mm

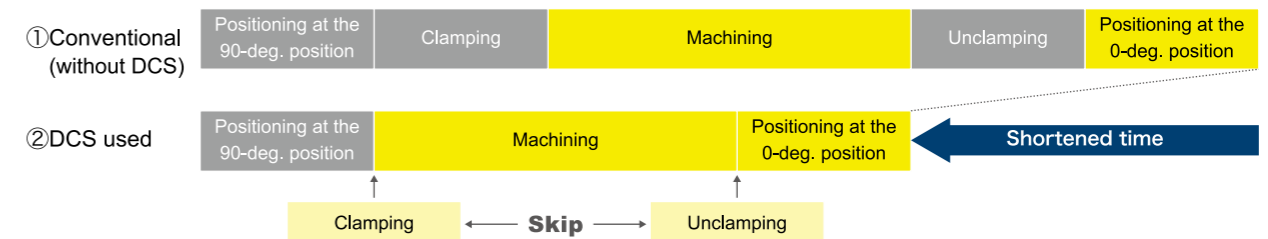
DCS (Dynamic Clamp System)

Patent 4931744

The key to shorter indexing times is the rotating / tilting axes clamp / unclamp time. Matsuura's DCS function is the world's first revolutionary clamping system. It monitors the load level applied to the DD-motor and only clamps the axes when a set load level is exceeded. The axes remain unclamped even during machining as long as the load level is within the pre-set range. This automatic clamp ON/OFF function eliminates unnecessary clamping time, resulting in drastically reduced machining cycle time.

- ▶ Within the set load range: Machining with axes unclamped (clamping/unclamping skipped)
- ▶ Exceeding the set load range: Machining with axes clamped (automatic clamping when the set load is detected)

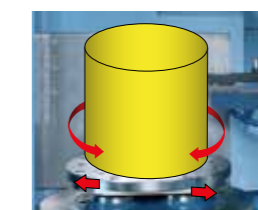
Light machining



ADC (Automatic Acc. & Dec. Control)

Patent 4748781

The feed-axis (Y/Z/B/C) acceleration and deceleration are automatically tuned according to the workpiece inertia (during ATC operation). This function reduces indexing time by up to 6%.



Large inertia (Y-/B-/C-axis and Z-axis normal acceleration/deceleration)

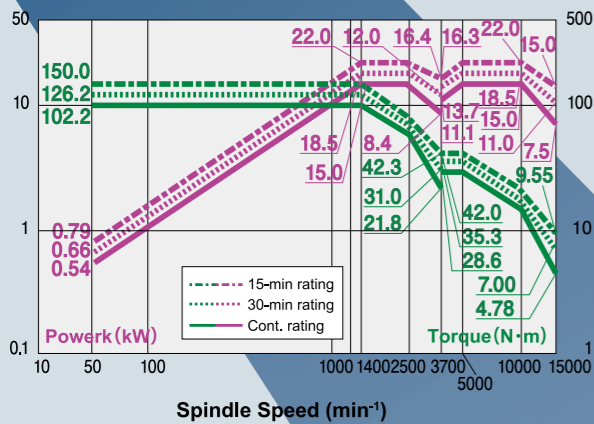


Small inertia (Y-/B-/C-axis and Z-axis optimal acceleration/deceleration)

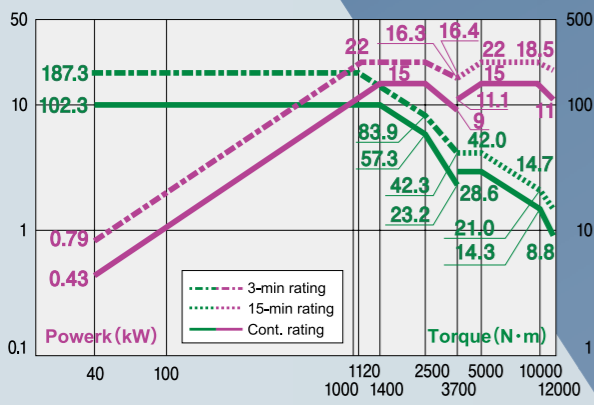
MAM72-52V

5-Axis Vertical Machining Center

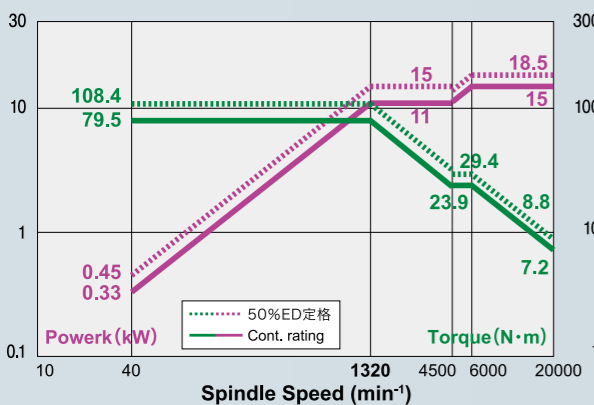
MAXIA Spindles High Speed, High Rigidity Spindle



Standard 15000min⁻¹ (15/22kW)



Option 12000min⁻¹ (15/22kW)



Option 20000min⁻¹ (Low: 11/15 kW, High: 15/18.5 kW)

MAXIA Spindles from Matsuura – the pioneers of high speed spindles.

Renowned the world over for their reliability, precision, rigidity & outstanding durability and performance, Maxia is the brand name for Matsuura spindles – the leading technology innovators for HSM spindles.

Equipped with a proven auto-grease lubrication system.

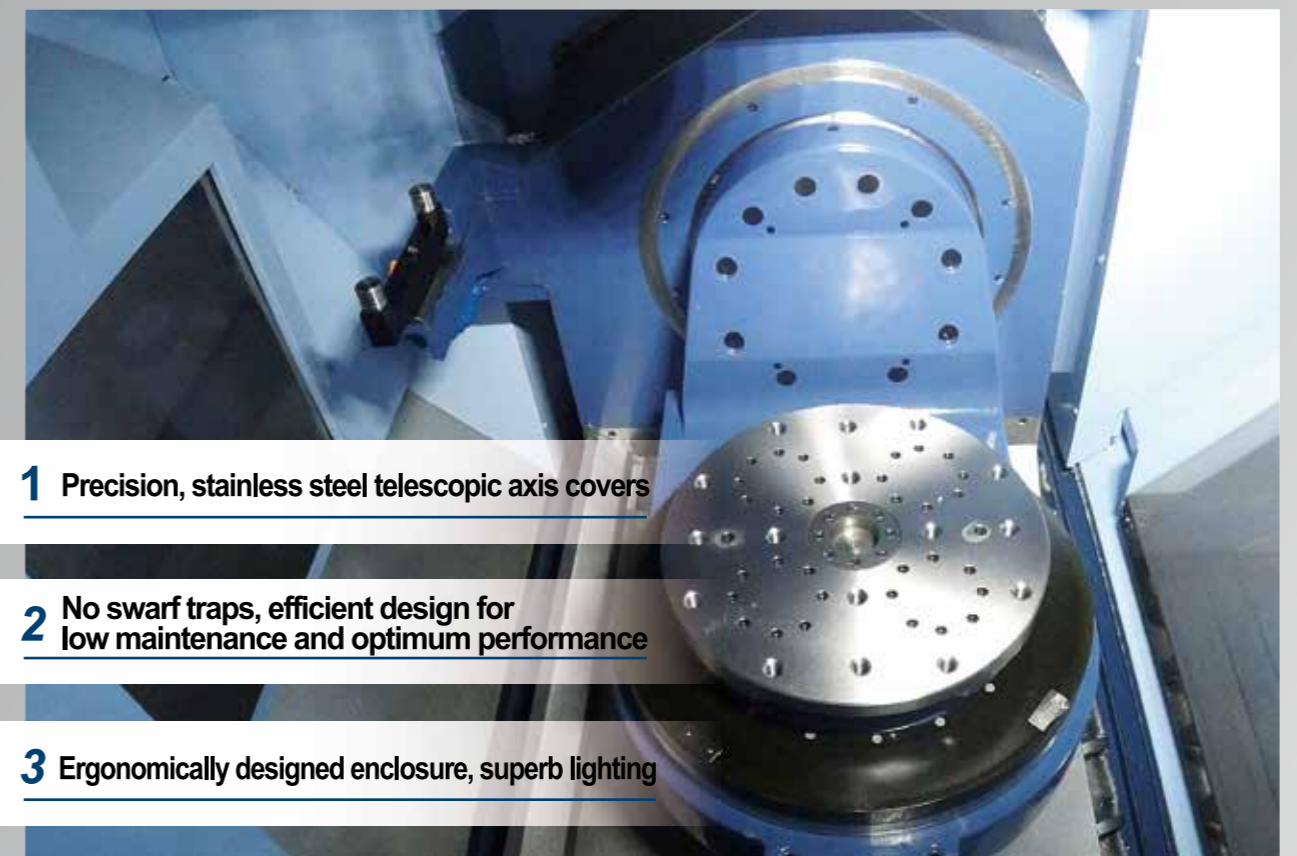
Pursuing ever more reliable (and maintenance free) technologies, the proven auto-grease spindle lubrication system is a standard feature on Maxia Spindles – delivering maintenance free operation for life.

Reliable Chip Removal

1. Spiral chip conveyor 2sets Standard
Conveying capacity 38L/min
2. Lift-up chip conveyor with drum filter Standard
Conveying capacity 18.6L/min
3. Large-sized coolant tank Standard
This tank has a capacity of 1,000 liters suitable for extended unmanned operation.



insight MAM72-52V [Inside the Machine]



- 1 Precision, stainless steel telescopic axis covers
- 2 No swarf traps, efficient design for low maintenance and optimum performance
- 3 Ergonomically designed enclosure, superb lighting

MAM72-52V

5-Axis Vertical Machining Center

Easy Operation

Maximum functionality and optimised performance

MIMS

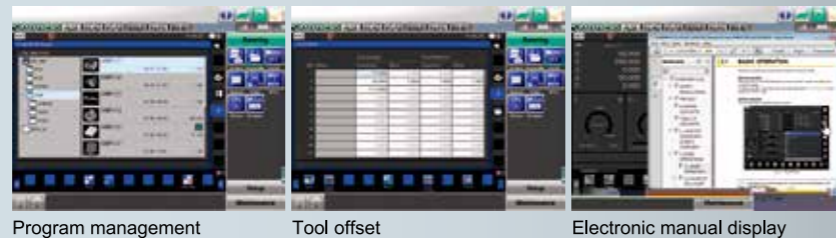
Matsura Intelligent Meister System



- Secure**
 - Reliability Meister**
 - Reduced machine downtime**
 - Preventive maintenance support function
 - Machine recovery support function
 - Electronic manual function
 - E-mail transmission function
- Simple**
 - Operability Meister**
 - Hassle-free, simple operation**
 - Tool setup support
 - Workpiece setup support
- Accuracy**
 - Thermal Meister**
 - Stable accuracy**
 - Spindle thermal displacement compensation
 - Environmental thermal displacement compensation
 - X/Y/Z thermal displacement compensation
- Environment**
 - Eco Meister**
 - Eco mode**
 - Power savings**
 - Power cut-off function
 - Energy-saving devices installed
 - Eco-operation

Operation Panel

Matsura G-Tech 311
(IHMI, 15-inch touch panel type)
Usability is drastically upgraded with context-sensitive screen icons and quick screen displays.



Program management

Tool offset

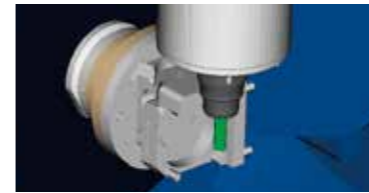
Electronic manual display

Intelligent Protection System

Collision prevention function

Standard

This collision protection function is developed solely by Matsura. It prevents machine collisions due to programming or setup errors in automatic operation as well as human errors in manual operations.



On-line link with PC



PC



Machining center

* The **Intelligent Protection System** simulates your programmed components (tools, workpiece, fixtures, etc.) that match the machine model, alerting you to any possible interference or collision before it actually happens.
* Prepare a PC on your side. Contact Matsura for PC requirements.

Synchro Tip + Orbit machining

Patent No. 5883535 Option

Simple turning function combining orbit machining and C-axis rotation

Turning processes can also be performed on this machining centre by using synchro tip. Since turning and machining can now be done in one process, no additional setup time is required for the turning process.



* **Synchro Tip** (Orbit machining + C-axis rotation)

eZ-5

Advanced 5-axis error measurement and correction

Geometric error correction is essential for multi-axis machine tools. eZ-5 completes measurement using a touch probe and a calibration sphere only within 3 minutes. The high accuracy of the machine is maintained through quick and simple automatic operations.

* eZ-5 requires a separately available NC option for additional macro variables.

* An option for schedule operation is available.



Automatic measurement (interactive)

Operators can create measurement programs through interactive inputting or selection without being conscious of macro programs.



Blum



Renishaw

MAM72-52V Specification / Equipment

[Specification / Equipment]

Standard Machine Specifications

Movement and Range		
X-axis travel	[mm]	1010
Y-axis travel	[mm]	540
Z-axis travel	[mm]	610
B-axis rotation angle	[deg]	+30 ~ -125
C-axis rotation angle	[deg]	360
Pallet		
Working surface	[φmm]	400
Loading capacity	[kg]	300
Max. workpiece size	[mm]	φ520 x H 400
Spindle		
Spindle speed	[min ⁻¹]	40 - 15000 (grease lubrication)
Spindle speed change command		S5-digit Direct Command
Type of spindle taper		7/24 taper #40 (BT2 dual contact type)
Spindle bearing inner diameter	[φmm]	80
Max. spindle torque	[N·m]	150/1400min ⁻¹
Feed Rate		
Rapid traverse rate X / Y / Z	[mm/min]	6000
B / C	[min ⁻¹]	50/100
Feedrate X / Y / Z	[mm/min]	1 - 60000
B / C	[min ⁻¹]	50/100
Automatic Tool Changer		
Type of tool shank		JIS B 6339 tool shank 40T
Pullstud		JIS B 6339 pullstud 40P
Tool storage capacity	[pcs]	130(Matrix magazine: 330-tool base)
Max. tool diameter (隣接工具あり)	[φmm]	80
(隣接工具なし)	[φmm]	150 Storage locations are restricted.
Max. tool length	[mm]	350
Max. tool mass	[kg]	10
Methods of tool selection		Fixed address system

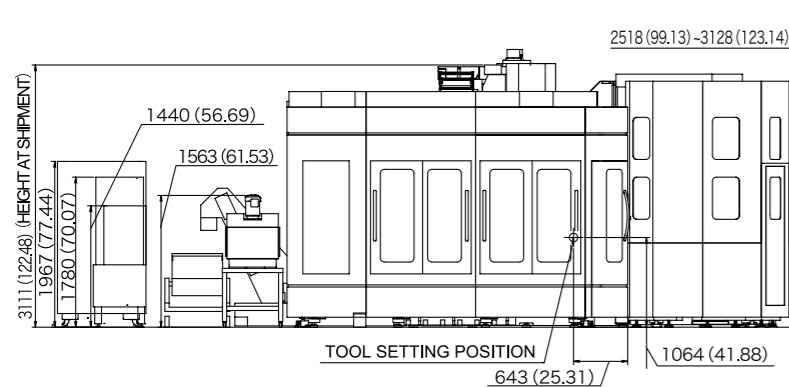
Automatic Pallet Changer		
Number of pallets		15 (Tower pallet system)
Power Sources		
Electrical power supply	[kVA]	91 (depends on the optional features)
Power supply voltage	[V]	AC 200/220±10% Transformer required for a voltage other than above
Power supply frequency	[Hz]	50/60±1
Air pressure to be supplied	[MPa]	0.54 - 0.93
Tank Capacity		
Hydraulic unit tank	[L]	40
Coolant tank	[L]	1000
Oil cooler tank	[L]	22 (total capacity:26)
Machine Size		
Machine weight	[kg (lb.)]	20400(44880)(PC15/130ATC)
NC System		
Control System		Matsura G-Tech31i
Standard Accessories		
AD-TAP function		IPC function
Auto grease supply unit for feed axes		Spiral chip conveyor
Lift-up conveyor (scraper, drum, spiral, water sol)		
M-code counter (9kinds)		Standard mechanical tool and tool box
Machine color paint		Levelling pads and bolts
Scale feedback for B/C		
Spindle thermal displacement compensation		
MIMS (Matsura Intelligent Meister System)		
DD Motor for B/C		Intelligent Protection System
Spindle runhour meter		Automatic operation runhour meter
* 2 years spindle warranty		

List of Fittings

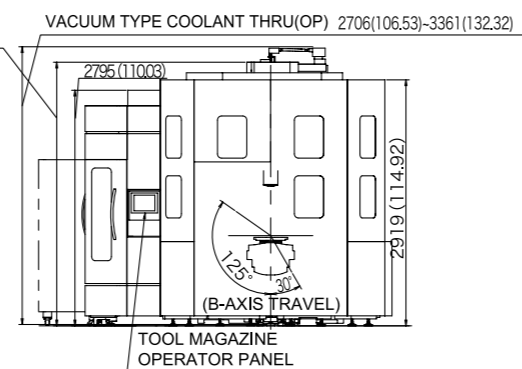
Spindle		
15000min ⁻¹ (BT40 grease lubrication)		○
12000min ⁻¹ (BT40 grease lubrication)		○
Spindle motor output	[kW]	15/22 ▲
Max. spindle torque	[N·m]	187 ▲
20000min ⁻¹ (BT40 grease lubrication)		○
Spindle motor output	[kW]	Low:11/15, High:15/18.5 ▲
Max. spindle torque	[N·m]	108.4 ▲
ATC		
130tools(Matrix magazine, 330-tool base)		○
170/210/250/290/330tools(Matrix magazine, 330-tool base)		▲
370/410/450/490/530tools(Matrix magazine, 530-tool base)		▲
APC		
PC15(Tower pallet system)		○
PC1 APC auto door		▲
High Accuracy Control		
Scale feedback X-Y-Z-axis		▲
Coolant		
Vacuum type coolant through A 7MPa		▲
Vacuum type coolant through A 14MPa		▲
Vacuum type coolant through C 2MPa		▲
Vacuum type coolant through C 7MPa		▲
Coolant flow checker		▲
Mist separator (without fire damper)		▲
Mist separator (with fire damper)		▲
Coolant temperature controller with 100-liter tank (separately installed, small size)		▲
Coolant temperature controller with 200-liter tank (separately installed, large size)		▲
Coolant temperature controller with 350-liter tank (separately installed, large size)		▲
Ceiling shower coolant		▲
Automatic Measurement, Tool Breakage Detection		
Ip.measure/auto.centering (optic,blum,matsura macro)		▲
Ip.measure/auto.centering (optic,blum,blum macro)		▲
Ip.measure/auto.centering (blum macro only)		▲
Ip.measure/auto.centering (optic,renishaw,matsura macro)		▲
Ip.measure/auto.centering (optic,renishaw,renishaw macro)		▲

○:Standard ▲:Option	
Ip.measure/auto.centering (renishaw macro only)	▲
Tool breakage / fully automatic tool length measurement (touch)	▲
Tool breakage / fully automatic tool length measurement (laser, blum)	▲
Tool breakage / fully automatic tool length measurement (laser, renishaw)	▲
External tool breakage (for matrix magazine, touch)	▲
Safety Device	
Automatic fire extinguisher	▲
Swarf Management	
Lift-up conveyor (scraper, drum, oil sol)	▲
Chip bucket	▲
Chip removal air blow	▲
Workpiece cleaning gun (Main unit side)	▲
Workpiece cleaning gun (APC side)	▲
Operation/ Maintenance Support	
Eight additional M functions	▲
Spindle load monitoring function	▲
Weekly timer	▲
3-Color signal light (red, yellow, green from top)	▲
100 VAC outlet 3A	▲
Movable manual pulse generator	▲
Tool pre-check function	▲
eZ-5 (with calibration sphere)	▲
eZ-5 (without calibration sphere)	▲
eZ-5 schedule operation support	▲
Pressure supply system for fixtures (pallet through)	▲
Rotary wiper (air type)	▲
Rotary wiper (electric type)	▲
Operation monitoring functions -Matsura IoT	▲
Processing Support	
Synchro tip + Orbit function	▲
Optional Package	
High-speed, High-precision Package	▲
5-Axis Package	▲
High-speed, High-precision / 5-Axis Package	▲
Value Package	▲

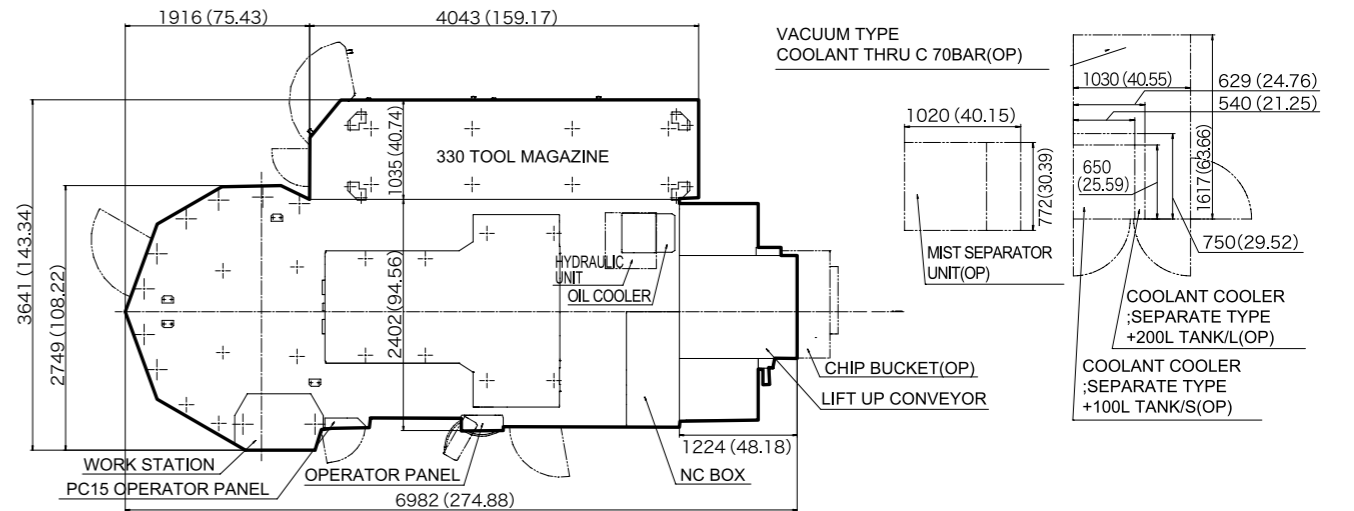
[Left Side View]



[Front View]

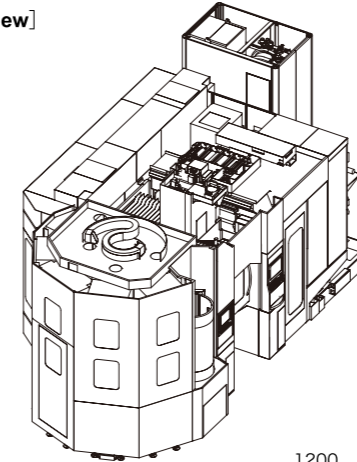


MAM72-52V Floor Plan (Unit: mm(in.))

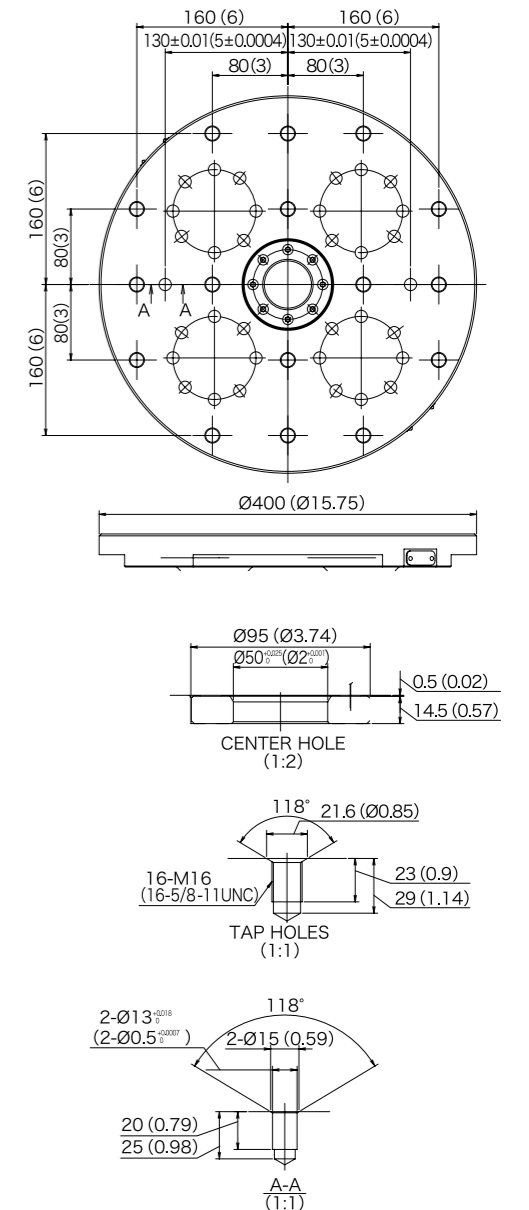


MAM72-52V External View (Unit: mm(in.))

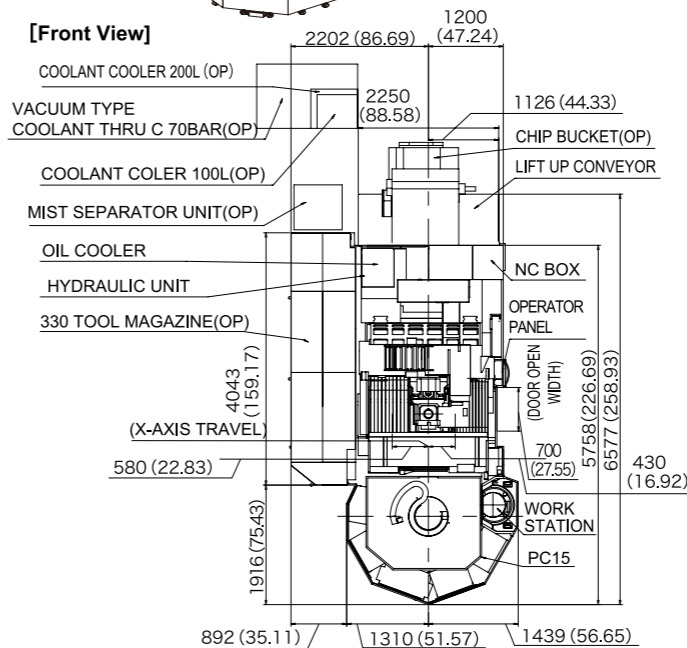
[Bird's eye view]



MAM72-52V Pallet Top View (Unit: mm(in.))



[Front View]



[Right side view]

