Matsuura

5-Axis Vertical Machining Center

MAM72-35V

MAXIA
Innovation by Matsuura

Matsuura

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

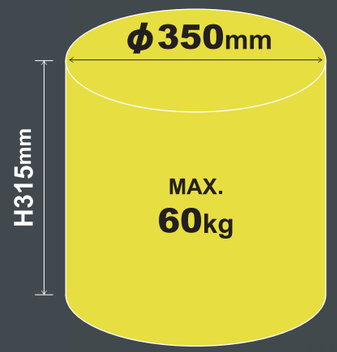
This product is subject to all applicable export control laws and regulations

FM0-E2.0 202005 3000 EE

Matsuura MAM72-35V

The beginning of a new era. The ultimate 5 axis production machining centre.

The ***MAM 72*** series has an excellent reputation and a long history in the world of 5 axis machining.
The ***MAM72-35V*** series continues that tradition, constantly evolving to meet up to date production demands.
A proven platform for extended periods of unmanned operation with multiple products and varied production volumes. With multiple pallets and proven 5 axis technology the MAM72 series optimizes available time and improves productivity while maintaining ease of operation. A true 'revolution in the way you work'



Max. Workpiece Size : ϕ350 × H315 mm
Loading Capacity : 60 kg
X/Y/Z-Axis Travel : 550 / 440 / 580 mm
B/C-Axis Rotation Angle : +65 ～ -125 / 360 deg

UP DATE

New ATC Matrix Magazine option

2 types of high capacity storage systems, configured to your demands.
(330 magazine base or 530 magazine base)

Expandable Pallet Magazine option

APC available are:
PC2, PC32, PC40, PC49, PC60 with single workstation
PC38 and PC47 with twin workstation.

Improved Operation with iHMI

Larger screen and icons for easier viewing and reduced errors.

Productivity
New matrix type tool magazine

Expandability
Pallet magazine options have been extended

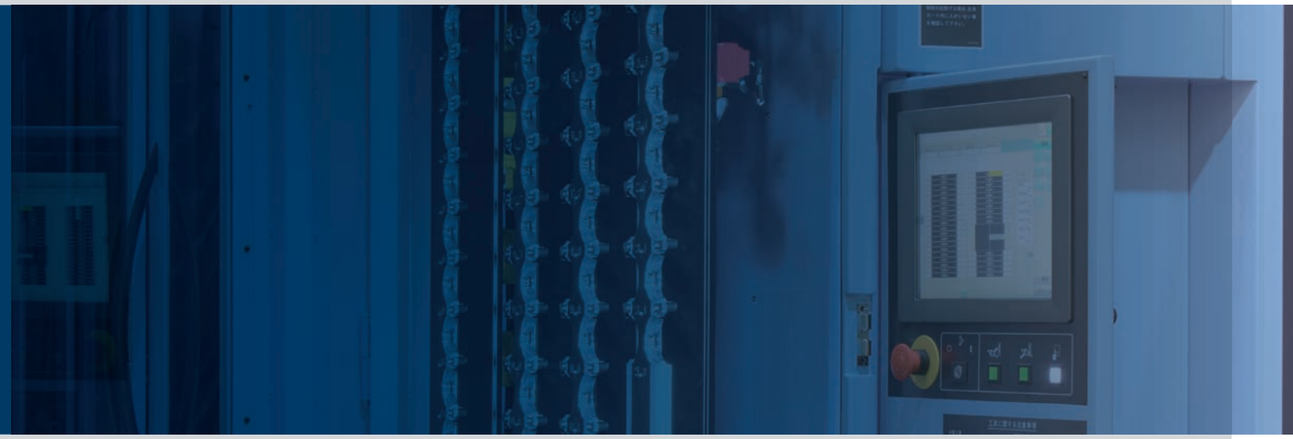
Usability
Improved operation with iHMI

MAXIA
Innovation by Matsuura

MAM72-35V

5-Axis Vertical Machining Center

Capable of extended periods of unmanned operation with multiple products and varied production volumes



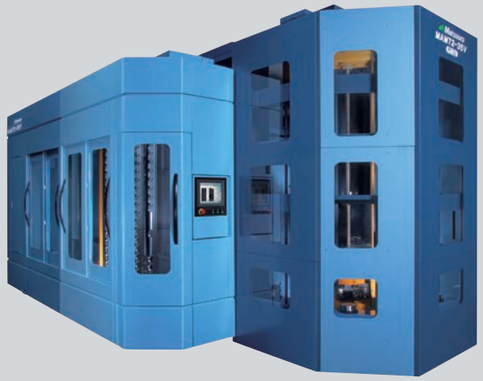
Choose the tool magazine that suits your needs.

60 tool chain magazine — Standard

- Chain driven 60 tool magazine.

Matrix tool magazine — option

- 330 tool magazine/530 tool magazine.
- With a servo drive providing higher speed, the newly developed matrix magazines have a small footprint while offering high tool storage capacity (330 tools/530 tools).



		330 tool base magazine
Drive type	Horizontal/vertical axis	Servo (rack and pinion/ball screw)
	Conveyor arm	Servo
Tool loading time	Shortest	8.7 seconds — 50% less than previously
	Longest	13.4 seconds — 39% less than previously
Large diameter tool		25 tools — An increase of 9 The maximum tool storage capacity decreases by 40 when 25 large diameter tools are accomodated.
Independent tool preparation pot		option Even while a tool is in standby position further tools can be loaded / unloaded to / from the magazine.

Tool setup door.

Swiveling operation panel

Tool magazine operation panel

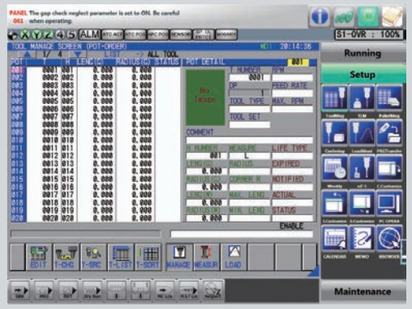
The screen switches according to the category, such as setup, maintenance and alarms.
Setting, search and confirmation for each type of item can be performed on the screen.

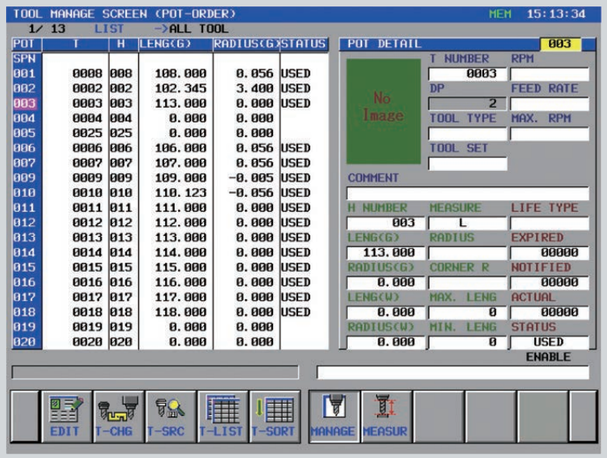
- Tool/pot search.
- All tool screen display.
- Setting, editing and confirmation of data for tools in the magazine.
- Tool life warning screen.
- Tool reset/centering screen.

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 exeeds 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

- Confirms tools are available before machining begins.
- Prevents alarms and unplanned stops during unmanned operation.

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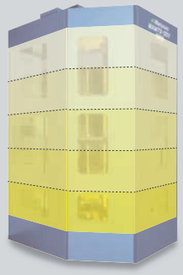
Multipallet system offers flexibility for multiple product and volume unmanned production.

PC2 Standard

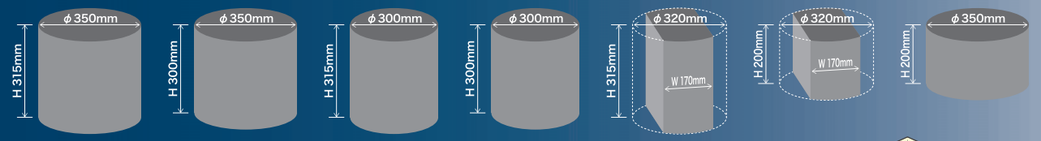
NEW PC32/40



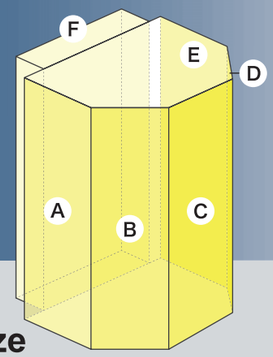
NEW PC49/60

PC38/47 option

* Limits exist for workpiece size and storage position.

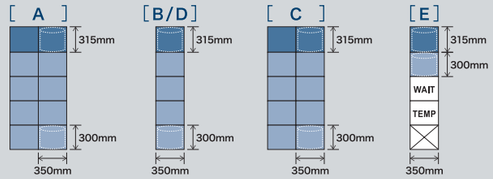


The number of pallets stored can be increased without changing the machine body and floor size, through optimization of the workpiece size and stocker configuration.



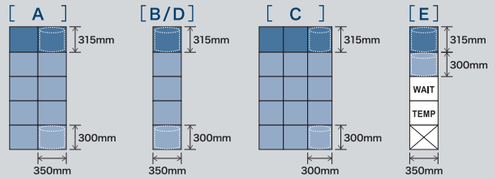
Pallet stocker configuration and workpiece size

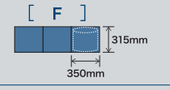
PC32



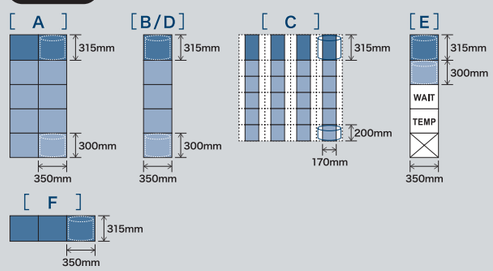
[F]
No setting

PC40

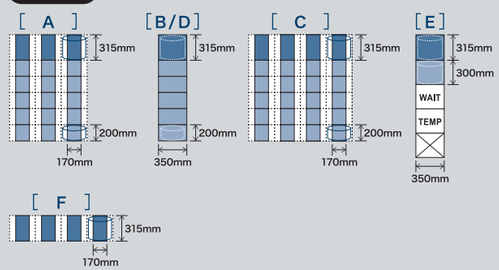




PC49



PC60

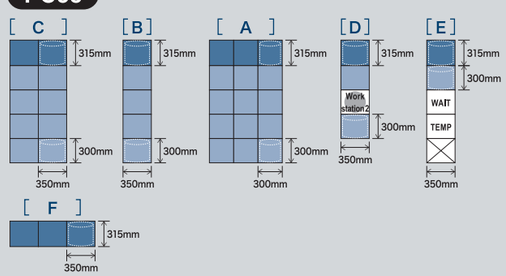


2 Workstations

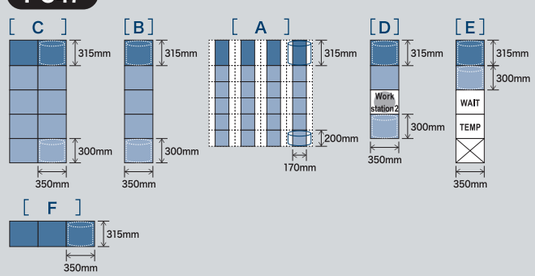
Setup can be performed by 2 operators simultaneously, shortening the pallet loading time.

- Workstation 1: Work setup.
- Workstation 2: Call a different pallet.

PC38



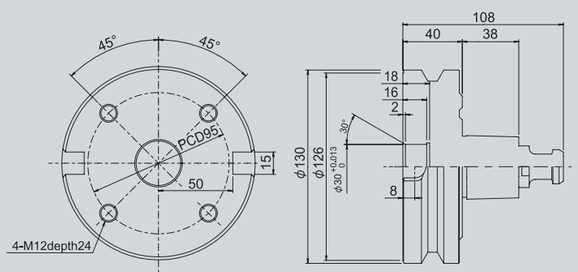
PC47



Compact with high precision

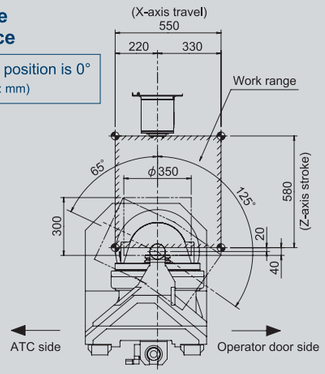
The pallet clamping system is Capto C6 offering high positional accuracy and rigidity.

[Pallet top view(unit: mm)]

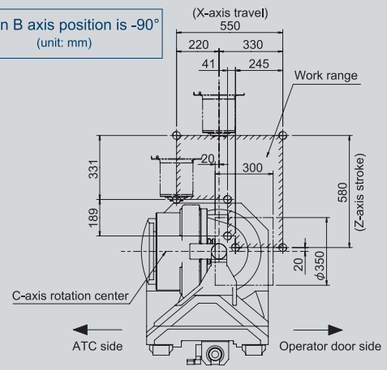


Work piece interference

When B axis position is 0° (unit: mm)



When B axis position is -90° (unit: mm)



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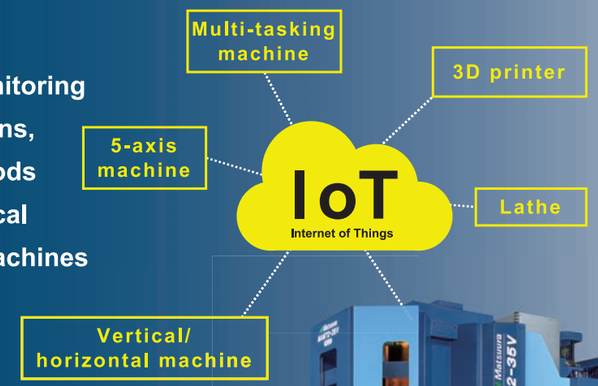
Extended Unmanned Operation Support Functions

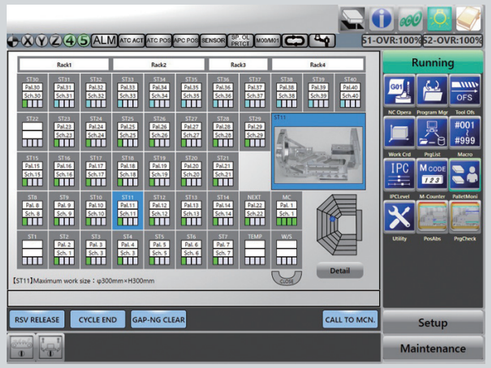
Comes equipped with work monitoring and operational support functions, providing security for long periods of unmanned running. Mechanical support functions to confirm machines operation and condition.

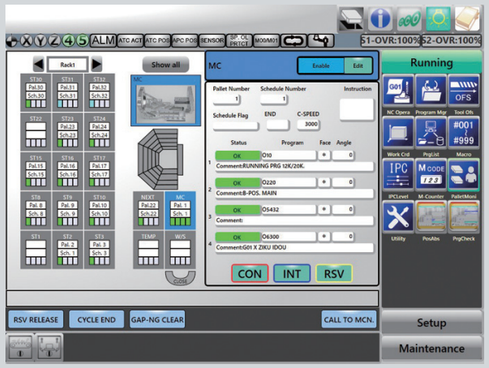


Easy pallet management and scheduling

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 pallets according to the set schedule number.
Interrupt pallet	Prioritizes highlighted pallet number in production schedule.
Reserve pallet	Reserves pallets for when unmanned run time is allowed.
Continuous operation	Continually machines specified pallets only.
End Pallet setting	Stops machining after a certain pallet number has been completed.





Operation monitoring functions —Matsuura IoT

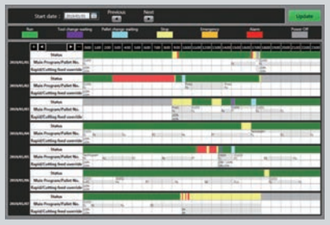
Machine availability and performance can be monitored to improve process planning.

- Performance is monitored to check OEE. * Overall equipment efficiency.
- Data can be output to process data acquisition (PDA) systems.

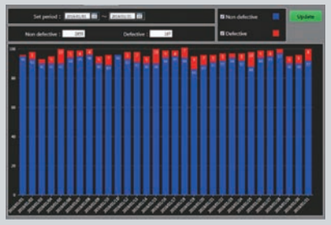
* Overall equipment efficiency (OEE) = availability x performance x quality

Overall operation ratio display

Operational state display



Machining performance display

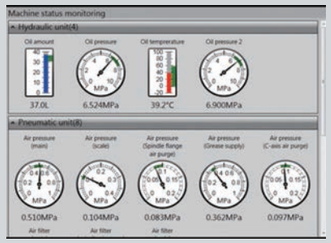


Operation support function —Matsuura IoT

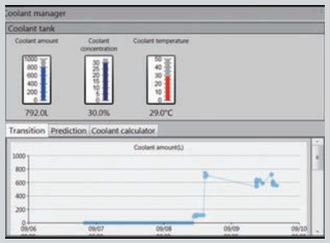
Enhanced automated systems to reduce operator reliance and human errors.

- 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.

Operational state monitoring



Coolant monitoring



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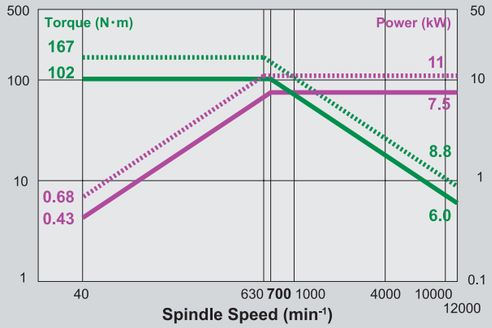
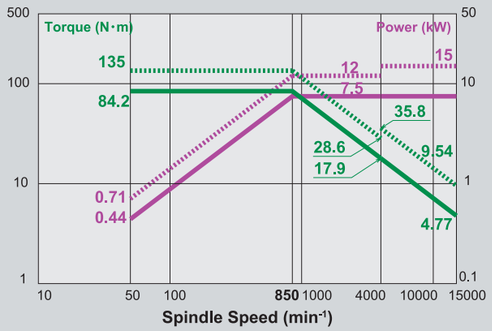
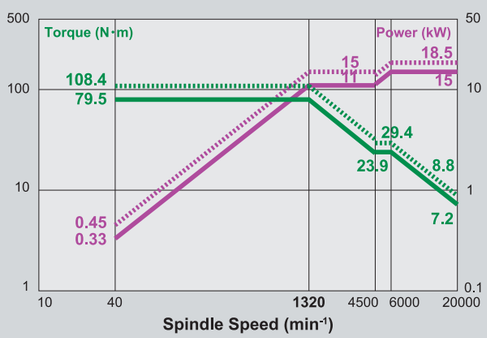
MAXIA Spindles High Speed, High Rigidity Spindle



Standard 12000min-1 (7.5/11kW)



option 15000min-1 (Low : 7.5/12kW、High : 7.5/15kW)



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.

DD motors fitted on rotating and tilting axes

DD motors (direct drive motors) used on revolving and inclined axes.

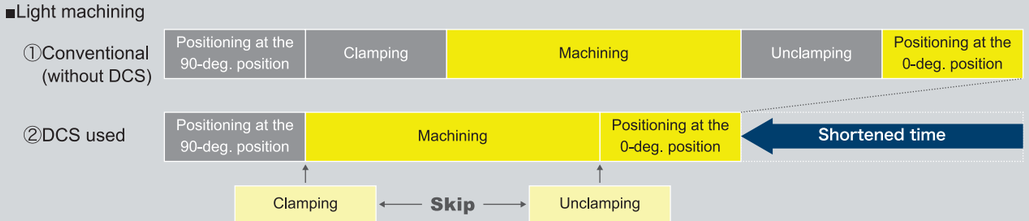
- Rotational speed 50min^{-1}, 100min^{-1}
- Utilization of both high speed and high precision contributes to a shortening of machining time.
- As gears are not used there is no friction, providing maintenance free operation with no need for lubricants.
- Also, no noise is generated, giving smooth operation.

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: Unclamped axes machining (clamp / unclamp command is skipped during light cutting)
- Exceeding the set load range: Clamped axes machining (clamp / unclamp command is not skipped during heavy duty cutting)

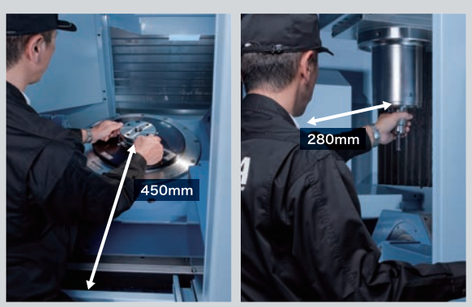
■Light machining



Workpiece and spindle accessibility

Easy access for the operator to work on the pallet or main spindle.

- 450mm to the centre of pallet.
- 280mm to the centre line of main machine spindle.
- 1,000 from floor to pallet surface.



MAM72-35V

5-Axis Vertical Machining Center

Easy Operation

Maximum functionality and optimised performance

MIMS

Matsuura 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

Matsuura G-Tech 31i
(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 Matsuura. 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

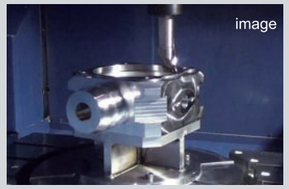
* The ***Intelligent Protection System*** simulates your programmed components (tools, workpiece, fi xtures, etc.) that match the machine model, alerting you to any possible interference or collision before it actually happens.
* Prepare a PC on your side. Contact Matsuura for PC requirements.

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)

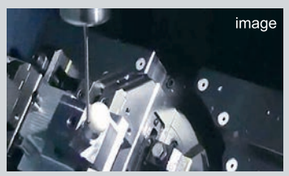
eZ-5

option

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.

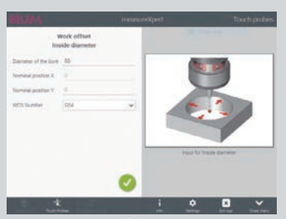
* eZ-5 requires a separately available NC option for additional macro variables.



option

Automatic measurement (interactive)

Intuitive and user-friendly input supports screens to guide operators through the process of automatic measurement and part setup.



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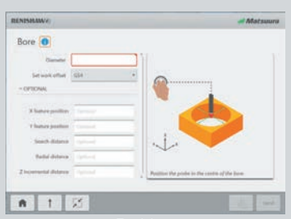


Renishaw

MAM72-35V Specification / Equipment

[Specification / Equipment]

Standard Machine Specifcations

Movement and Range		
X-Axis Travel	[mm(in.)]	550 (21.65)
Y-Axis Travel	[mm(in.)]	440 (17.32)
Z-Axis Travel	[mm(in.)]	580 (22.83)
B-Axis Rotation Angle	[deg]	+65 ～ -125
C-Axis Rotation Angle	[deg]	360
Pallet		
Working Surface	[mm(in.)]	φ130
Loading Capacity	[kg(lb.)]	60 (132)
Max. Workpiece Size	[mm(in.)]	φ350 × H315 (φ13.77 × H12.4)
Spindle		
Spindle Speed	[min-1]	40 - 12000 (Grease Lubrication)
Spindle Speed Change Command		S5-digit Direct Command
Spindle Taper		7/24 taper #40 (BT dual contact type)
Spindle Bearing Inner Diameter	[mm(in.)]	φ80 (φ3.14)
Spindle Drive Motor	[kW]	AC 7.5 / 11 (Continuous / 30min)
Max. Spindle Motor Torque	[N·m]	167 / 630min-1
Feed Rate		
Rapid Traverse Rate X / Y / Z	[mm(in.)/min]	60000 / 60000 / 60000 (2362.2)
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.]	60 (chain magazine)
Max. Tool Diameter	[mm(in.)]	φ80 (φ3.14) (with adjacent tools) φ150 (φ5.90) (without adjacent tools) Storage locations are restricted.
Max. Tool Length	[mm(in.)]	350 (13.77)
Max. Tool Mass	[kg(lb.)]	10 (22)
Methods of Tool Selection		Memory Random System
Tool Changing Time	[sec]	1.1 (Tool to Tool) 5.9 (Chip to Chip)

Automatic Pallet Changer		
Number of Pallets		2
Power Sources		
Power Capacity	[KVA]	58 (depends on the optional features)
Voltage	[V]	AC 200 / 220±10% Transformer required for a voltage other than above
Frequency	[Hz]	50 / 60±1
Air volume to be supplied (maximum flow volume)	[NL / min]	450
Tank Capacity		
Hydraulic Oil Tank Capacity	[L]	40
Coolant Tank Capacity	[L]	400
Oil Cooler Tank Capacity	[L]	10
Machine Size		
Machine weight	[kg(lb.)]	12300 (27060) (PC2 / 60ATC)
Machine weight	[kg(lb.)]	15900 (34980) (PC32 / 330ATC)
NC System		
Control System		Matsuura G-Tech 31i

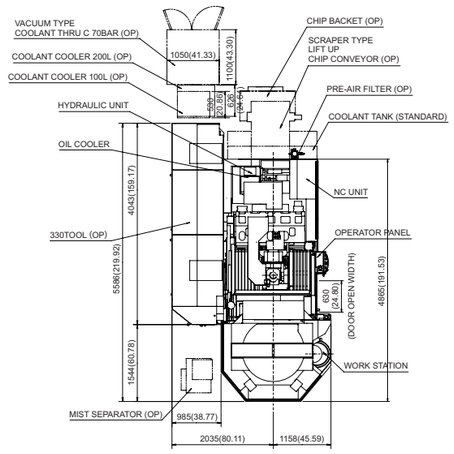
Standard Accessories	
01. ***AD-TAP*** Function	02. ***IPC*** Function
03. 9 sorts of M-code Counters	04. Standard Mechanical Tool and Tool Box
05. Machine Color Paint	06. Scale Feedback for B/C
07. Auto Grease Supply Unit for Feed Axes	08. DD Motor for B/C
09. ***Intelligent Protection System***	10. Levelling Pads and Bolts
11. ***MIMS*** (Matsuura Intelligent Meister System)	
12. Spindle thermal displacement compensation	13. Spindle runhour meter
14. Automatic operation runhour meter	

* 2 years spindle warranty

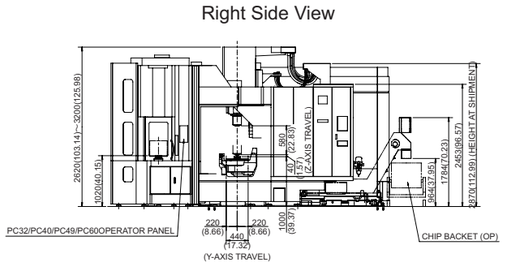
MAM72-35V External View (Unit: mm(in.))

PC32 PC40 PC49 PC60

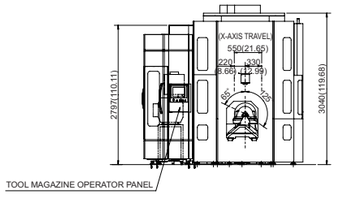
Top View



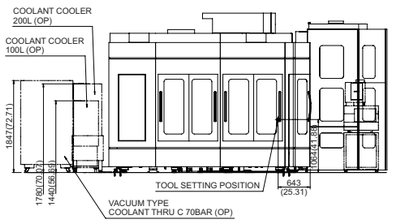
Right Side View



Front View



Left Side View



Optional Specification and Equipment

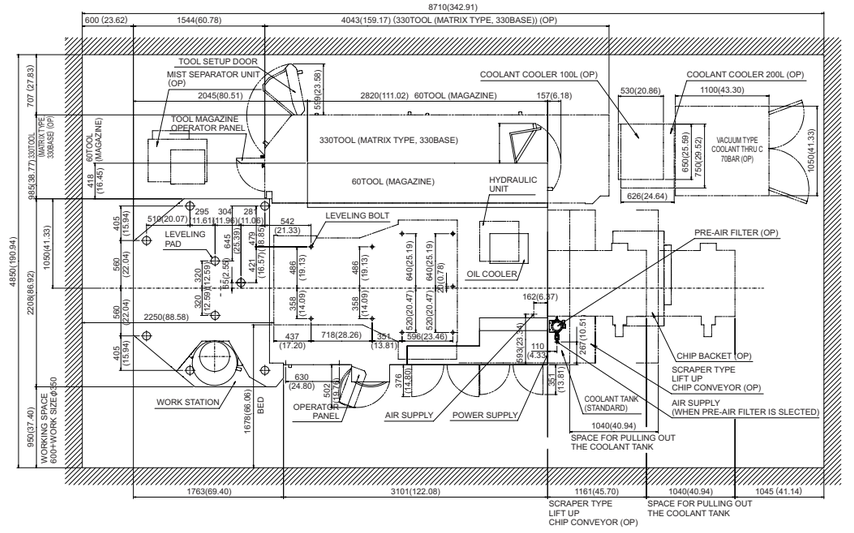
○: Standard ▲: Option

Spindle		
12,000min-1 (BT40 Grease Lubrication)		○
15,000min-1 (BT40 Grease Lubrication)		
Spindle motor output	[kW] Low : 7.5 / 12、High : 7.5 / 15	▲
Spindle max. torque	[N・m] 135 (850min-1)	
20,000min-1 (BT40 Grease Lubrication)		
Spindle motor output	[kW] Low : 11 / 15、High : 15 / 18.5	▲
Spindle max. torque	[N・m] 108.4	
ATC		
60 tools (Chain Magazine)		○
130 / 170 / 210 / 250 / 290 / 330 tools (based on 330-tool Matrix Magazine)		▲
370 / 410 / 450 / 490 / 530 tools (based on 530-tool Matrix Magazine)		▲
High-precision Control		
Scale Feedback X/Y (HEIDENHAIN)		▲
Scale Feedback X/Y/Z (HEIDENHAIN)		▲
APC		
PC2		○
PC32 (Tower Pallet System) 1 Work Station		▲
PC40 (Tower Pallet System) 1 Work Station		▲
PC49 (Tower Pallet System) 1 Work Station		▲
PC60 (Tower Pallet System) 1 Work Station		▲
PC38 (Tower Pallet System) Twin Work Stations		▲
PC47 (Tower Pallet System) Twin Work Stations		▲
Coolant		
Coolant Tank		○
Vacuum-Type Coolant Through A 7MPa		▲
Vacuum-Type Coolant Through A 14MPa		▲
Vacuum-Type Coolant Through B 7MPa		▲
Vacuum-Type Coolant Through B 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 (installed separately); small 100L		▲
Coolant Temperature Controller with 200-liter Tank (installed separately); large 200L		▲
Automatic Measurement, Tool Breakage Detection		
I.p.measure/auto.centering (optic,renishaw,matsuura macro)		▲
I.p.measure/auto.centering (optic,renishaw,renishaw macro)		▲
I.p.measure/auto.centering (renishaw macro only)		▲
I.p.measure/auto.centering (optic,blum,matsuura macro)		▲
I.p.measure/auto.centering (optic,blum,blum macro)		▲
I.p.measure/auto.centering(blum macro only)		▲
Tool breakage / fully automatic tool length measurement (Touch)		▲
Laser broken tool detection (blum)		▲
External tool breakage (for Chain Magazine, Touch)		▲
External tool breakage (for Matrix Magazine, Touch)		▲
Safety Device		
Automatic Fire Extinguisher		▲

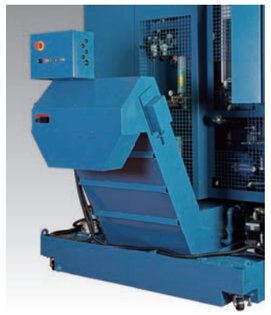
Reliability Meister Plus	
Reliability Meister Plus TYPE A	▲
Reliability Meister Plus TYPE B	▲
Swarf Management	
Total Splash Guard	○
ATC Auto Door	○
Spiral Chip Conveyor	▲
Lift-Up Conveyor (scraper, drum, Spiral, Aqueous)	▲
Chip Removal Air Blow	▲
Chip Bucket	▲
Workpiece Cleaning Gun (Main unit side)	▲
External Nozzle 20BAR (with spindle through)	▲
External Nozzle 70BAR (with spindle through)	▲
Control / Maintenance Support	
AD-TAP Function	○
IPC Function	○
Work Light	○
MIMS	○
Intelligent Protection System	○
Feed Axis Auto Lubricator	○
Eight additional M functions	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
3-Color Signal Light (red, yellow, green from top)	▲
Movable Manual Pulse Generator	▲
Optional Block Skip 2 ～ 9	▲
Tool Pre-Check Function	▲
Rotary Wiper (air type)	▲
Rotary Wiper (electric type)	▲
Semi Dry Unit	▲
100 VAC outlet 3A	▲
eZ-5 (with Calibration Sphere)	▲
eZ-5 (without Calibration Sphere)	▲
Pressure Supply System for Fixtures	▲
Processing Support	
Tail Stock	▲
Tool ID System Balluf Format-A	▲
Tool ID System Balluf Format-B	▲
Tool ID System Balluf Format-C	▲
Tool IC System	▲
Synchro tip + Orbit function	▲
Optional Package	
High-speed, High-precision Package	▲
5-Axis Package	▲
High-speed, High-precision / 5-Axis Package	▲
Value Package	▲
TRUE PATH	▲

MAM72-35V Floor Plan (Unit: mm(in.))

PC32 PC40 PC49 PC60



Lift-up chip conveyor is an essential option for unmanned operation.



Lift-up Chip Conveyor Option