

 **Matsura**

5-Axis Vertical Machining Center

# MX-330



**MAXIA**  
Innovation by  Matsura

# **Matsuura MX-330**

## Introducing the **MX-330** the latest addition to our market leading entry level 5 axis machine series

### Features

- **Matsuura** hand-built 5 axis quality; exceptional performance, low cost of ownership & assured residual value.
- Manned or Unmanned; ergonomic & dynamic design performance assures productivity.
- Equipped with the **Matsuura G-Tech 31i**; touch screen with large display for operator comfort & precise control.

### MAXIA BT40 Spindle Line up

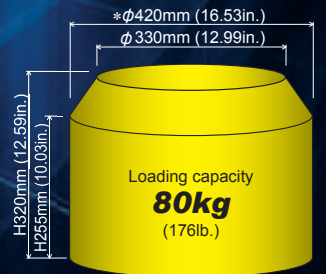
From high speed aluminum machining to pre-hardened steels; the MAXIA spindle options offered with the **MX-330** are the pinnacle of 70 years of prestigious **Matsuura** spindle technology. A 15000min<sup>-1</sup> with 65.1N·m of torque is installed as standard. A high-power 15000min<sup>-1</sup> with 119.3N·m and a high-speed 20000 min<sup>-1</sup> with 108.4N·m are available as options.

### Automation & Unmanned Package Option

**Matsuura's** legendary unmanned running technology with the **MX-330** comes in the form of a 10 pallet (CAPTO C6 compatible) & 90 tool option; offering superb profit enhancing lights out production utilizing minimal floorspace.



**New!**



\* Bullet shaped

**MAXIA**  
Innovation by  Matsuo

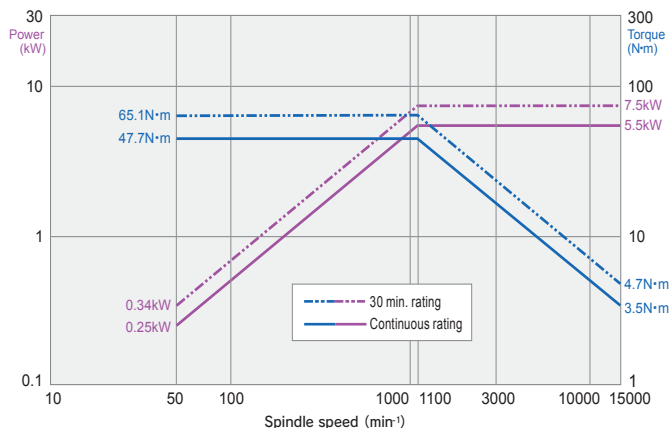
# MAXIA BT40 Spindles; The Industry Standard, Designed and Developed by *Matsuura* – the pioneers of highly rigid CNC Spindle Technology

Three State of the Art **MAXIA** Spindle Lineup;  
Built upon 70 years of **Matsuura** excellence

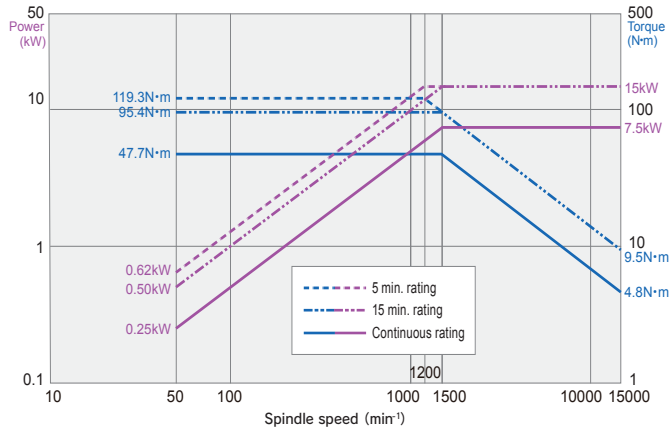


- In built reliability by superior design and sustained spindle performance from **Matsuura**'s engineering heritage.
- From high speed aluminum machining to pre-hardened steels; the exceptional performance in all machining environments is assured. A 15000min<sup>-1</sup> with 65.1N·m of torque is installed as standard. A high-power 15000min<sup>-1</sup> with 119.3N·m and a high-speed 20000 min<sup>-1</sup> & 108.4N·m are available as options.
- **Matsuura** control every aspect of our **MAXIA** Spindles creation; from design concept, to precision in-house component manufacture, to clean room assembly, to rigorous testing, to final installation & commission. Quality assurance & sustained Spindle performance – every time.
- Maintenance free Spindle technology; grease lubricated, low noise, environmentally friendly.

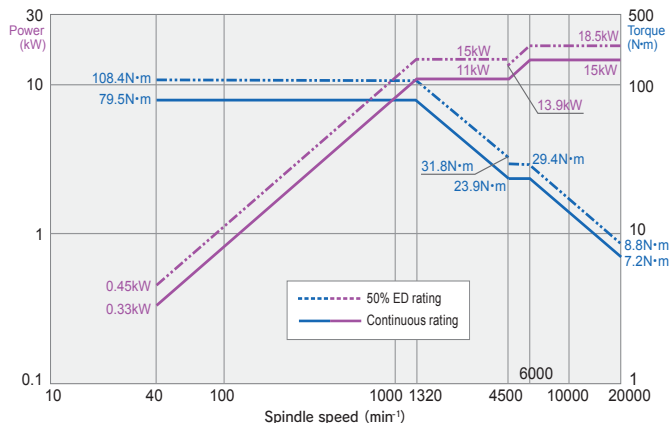
**Standard** 15000min<sup>-1</sup> (5.5/7.5kW,65.1N·m)



**Option** High-power type spindle  
15000min<sup>-1</sup> (7.5/15kW,119.3N·m)

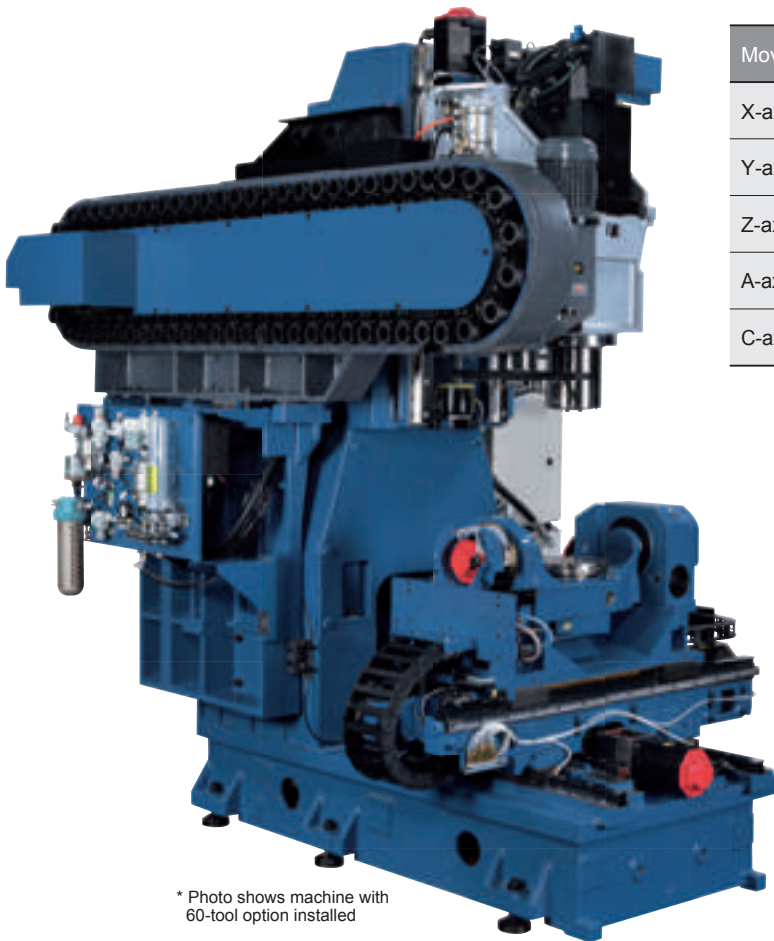


**Option** High-speed type spindle  
20000min<sup>-1</sup> (11/15,15/18.5kW,108.4N·m)



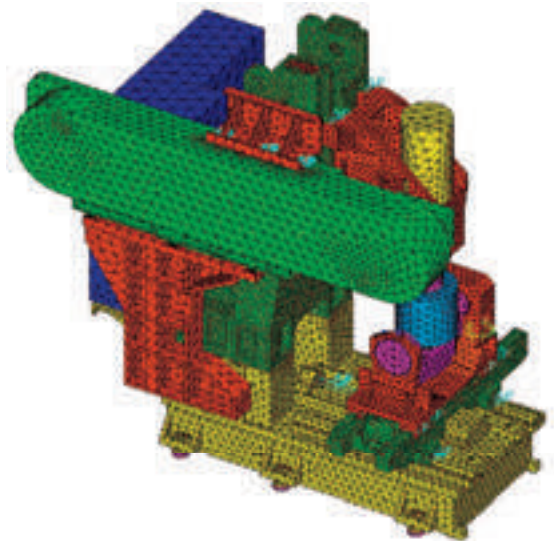
# Classic *Matsuura* Machine Build; a Commitment to Engineering Excellence

Machining any material for sustained periods of time to incredible accuracy requires the most rigid & tested machining structure. Designed with FEM analysis utilizing many decades of *Matsuura* machine know-how & heritage, the **MX-330** is the 5 axis platform for the precise creation of small components, where quality and sustained performance is a pre-requisite.



\* Photo shows machine with 60-tool option installed

| Movement and Ranges                            |          |             |
|--|----------|-------------|
| X-axis travel                                  | mm (in.) | 435 (17.13) |
| Y-axis travel                                  | mm (in.) | 465 (18.31) |
| Z-axis travel                                  | mm (in.) | 560 (22.05) |
| A-axis rotation angle (rotation on the X axis) | deg      | -125 ~ +10  |
| C-axis rotation angle (rotation on the Z axis) | deg      | 360         |



## ■ Cutting test results **Option** (High-power type spindle BT40 15000min<sup>-1</sup>, 119.3N·m)

|               | Part material | Tool size                   | Cutting width<br>Cutting depth        | Spindle speed              | Cutting feed rate          | Cutting capacity |           | Part material | Tool size       | Spindle speed             | Cutting feed rate        | Cutting capacity |
|---------------|---------------|-----------------------------|---------------------------------------|----------------------------|----------------------------|------------------|-----------|---------------|-----------------|---------------------------|--------------------------|------------------|
| <br>Face mill | Aluminum      | Ø80mm<br>(3.14)<br>3 blades | W=70mm<br>(2.75)<br>D=4mm<br>(0.15)   | 5500<br>min <sup>-1</sup>  | 5500<br>mm/min<br>(216.53) | 1540<br>cc/min   | <br>Drill | Aluminum      | Ø33mm<br>(1.29) | 1500<br>min <sup>-1</sup> | 450<br>mm/min<br>(17.71) | 385<br>cc/min    |
|               | Steel         | Ø80mm<br>(3.14)<br>5 blades | W=70mm<br>(2.75)<br>D=2.5mm<br>(0.09) | 1400<br>min <sup>-1</sup>  | 2000<br>mm/min<br>(78.74)  | 350<br>cc/min    |           | Steel         | Ø33mm<br>(1.29) | 1200<br>min <sup>-1</sup> | 200<br>mm/min<br>(7.87)  | 171<br>cc/min    |
| <br>End mill  | Aluminum      | Ø25mm<br>(0.98)<br>2 blades | W=22mm<br>(0.86)<br>D=6mm<br>(0.23)   | 15000<br>min <sup>-1</sup> | 8500<br>mm/min<br>(334.64) | 1122<br>cc/min   | <br>Tap   | Aluminum      | M36<br>× P4.0   | 120<br>min <sup>-1</sup>  | 480<br>mm/min<br>(18.89) |                  |
|               | Steel         | Ø20mm<br>(0.78)<br>4 blades | W=3mm<br>(0.11)<br>D=30mm<br>(1.18)   | 5000<br>min <sup>-1</sup>  | 4200<br>mm/min<br>(165.35) | 378<br>cc/min    |           | Steel         | M24<br>× P3.0   | 100<br>min <sup>-1</sup>  | 300<br>mm/min<br>(11.81) |                  |

\* The above data is based on actual cases. Depending on conditions, actual results may differ.

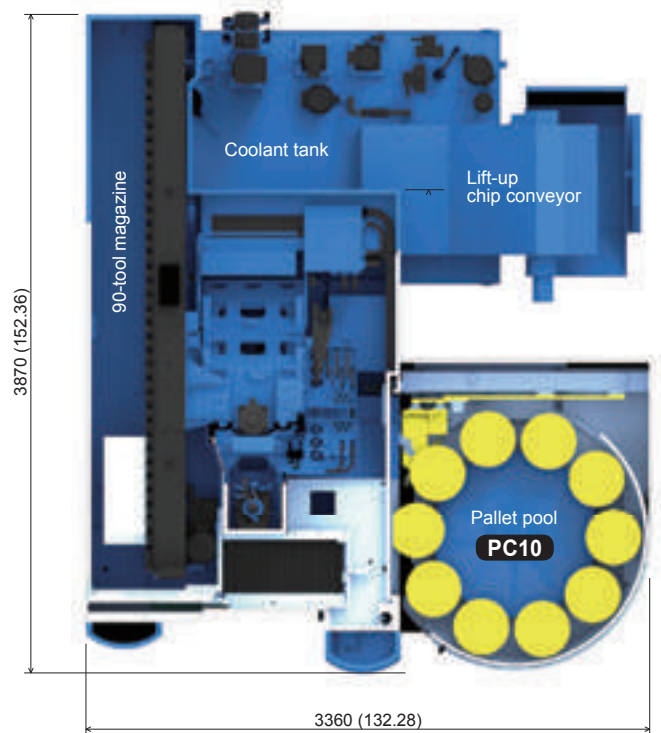
# Automation & Unmanned Production Package Option

**Matsuura's** legendary unmanned running technology with the **MX-330** comes in the form of a 10 pallet (CAPTO C6 compatible) and 90 tool option; offering superb profit enhancing lights out production utilizing minimal floor space

## Automation Package

Option

Pioneers of reliable unmanned production, the 10 pallet, 90 tool specification of the **MX-330** is carefully weighted to offer maximum return on investment. Each of the 10 pallets can accommodate  $\Phi 330$  mm x H 300mm Max. workpiece size.



| Item                   |                     | Specifications  |
|------------------------|---------------------|---|
| ATC                    |                     | 90tool  |
| APC                    | Number of pallets   | 10<br>(Floor pallet system)   |
|                        | Pallet type         | CAPTO C6  |
|                        | Max. workpiece size | $\phi 330\text{mm} \times \text{H}300\text{mm}$<br>(12.99 $\times$ 11.81 in.) |
|                        | Loading capacity    | 80kg (176 lb.)  |
| Through-pallet coolant |                     | 3 ports (Max. 19.6 MPa) <b>Option</b>   |

## PC1 (single pallet) CAPTO C6

Option

CAPTO C6, which excels at high-accuracy positioning and repeat accuracy, is adopted. Pallets are the same as for **MAM72-35V** allowing common use of fixtures.



## Three-port pressure supply system to fixtures

Option

Equipped with pressure supply ports for through-pallet-system fixtures. Supports pressures of up to 19.6 MPa.

## Robot interface + Automatic door

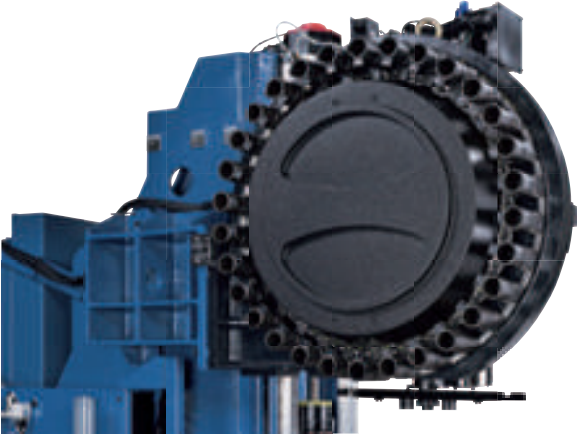
Option

Interface for connection with external workpiece transfer systems

# Options; Tailored to Your Process

## ATC

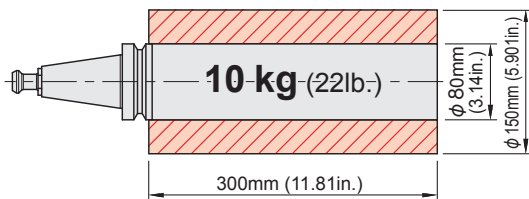
■ 30-tool drum magazine **Standard**



■ 60-tool chain magazine **Option**



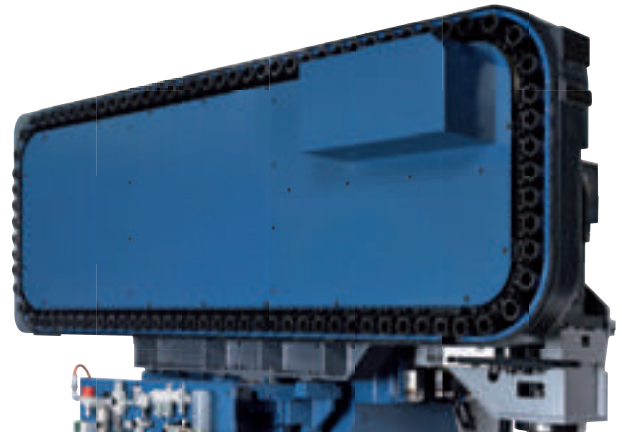
■ Tool specification



**Standard** BT40

**Option** HSK-A63

■ 90-tool chain magazine **Option**



## 4<sup>th</sup> / 5<sup>th</sup> axis rotary table

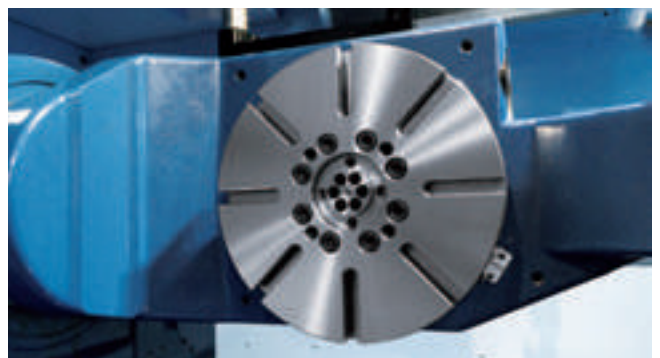
As with all machines in the **MX** Series, a proven, high performance trunnion table is utilized on the **MX-330**.

■  $\phi$ 250mm table **Standard**

Fixtures used with **MAM72-35V** can be mounted.



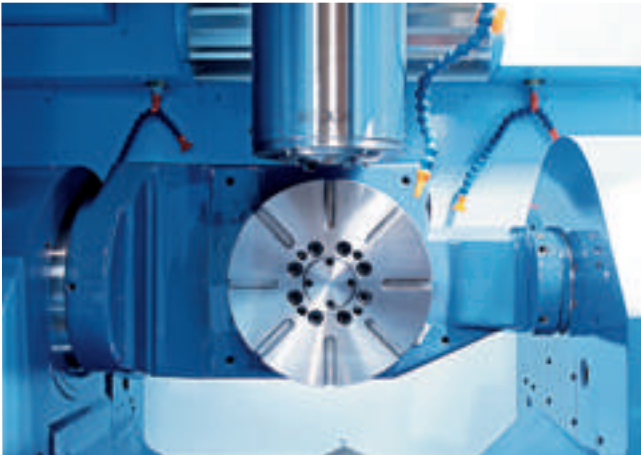
■ 6-port through-table coolant **Option**  
(Max. supply pressure 19.6MPa)



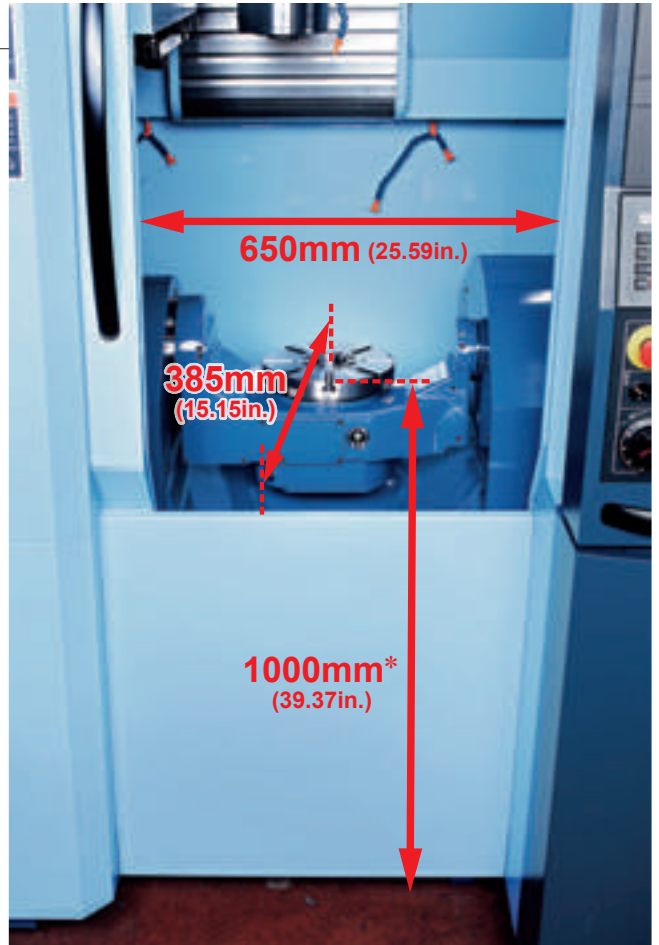
# Excellent Access to the Machining Enclosure

## Accessibility to workpiece and spindle

Operator comfort and efficiency is at the heart of the **MX-330** design. The main access door offers a generous 650mm of opening width, facilitating safe, fast & smooth load / unload operations. The distance from the front face of the machine to the center of the table is 385 mm, securing ergonomic access to the workpiece and spindle.



Minimal interference between the spindle head & table, offering excellent workpiece access to the cutting tool.



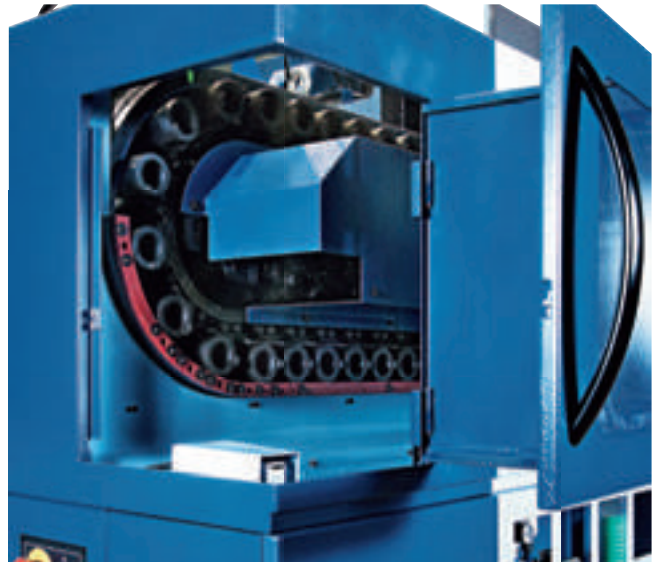
\*Pallet specification is 1020mm (40.15in.)

## Simple & Safe ATC Access

ATC door offers ample space & visibility for tool set up & maintenance operations.



**Standard** 30-tool drum magazine



**Option** 60-tool chain magazine



# Rapid Metal Removal Requires Ultra Efficient Chip Flow & Swarf Clearance

## Smooth and Efficient Swarf management – by Design

Steep angle gradients on telescopic guard covers & internal surfaces & powerful coolant wash system facilitate the rapid despatch of chips and swarf from the machining enclosure, delivering maintenance free extended machining without the need for manual intervention. For environments where vast amounts of metal removal take place, the options below are available.



**Standard** Chip-flush coolant

**Option** Spiral chip conveyor

**Standard** Chip-flow coolant



**Standard** Coolant tank



**Option** Lift-up chip conveyor

**Option** Chip bucket

# Operating Convenience Allowing Even Beginners to Use it With Confidence

## **MIMS** **Matsuura Intelligent Meister System**

Combining Craftsmanship, Skill and Ingenuity

**Matsuura's** original interface with uncompromising pursuit of usability

|             |   |          |  |
|-------------|---|----------|--|
| Environment | <b>Eco Meister</b>  | Accuracy | <b>Thermal Meister</b>   |
|             | Eco mode  |          | Stable accuracy  |
|             | Power savings   |          | <input type="checkbox"/> Spindle thermal displacement compensation<br><input type="checkbox"/> Environmental thermal displacement compensation <b>Option</b>   |
| Simple      | <b>Operability Meister</b>  | Secure   | <b>Reliability Meister</b>   |
|             | Hassle-free, simple operation   |          | Reduced machine downtime   |
|             | <input type="checkbox"/> Power cut-off function<br><input type="checkbox"/> Energy-saving devices installed<br><input type="checkbox"/> Eco-operation |          | <input type="checkbox"/> Preventive maintenance support function<br><input type="checkbox"/> Machine recovery support function<br><input type="checkbox"/> Electronic manual function<br><input type="checkbox"/> E-mail transmission function |

### New Operation Panel

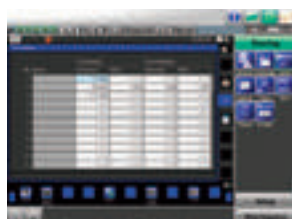
**Matsuura G-Tech 31i**

Equipped with a large 15-inch touch screen display, the **Matsuura G-Tech 31i** offers genuine ergonomic comfort & sustained operator performance

- Icons required for operation, setup and maintenance are displayed on screen.
- Screen icons required for each task - "Operation", "Setup", "Maintenance" - are displayed.
- Screen switching response time is improved by 50% compared to conventional panels.
- USB thumb drives and CF cards are also supported for data input/output.
- Customization is possible according to tasks to be performed.



Program management



Tool offset



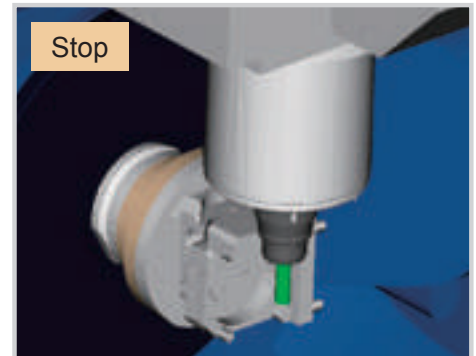
Electronic manual display



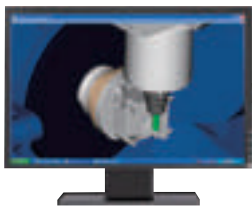
# Intelligent Protection System Option

Manual / Automatic operation Simultaneous 5-axis machining

This collision protection function is developed solely by **Matsuura**. It prevents machine collisions due to programming errors in automatic operation, and also prevents human error in advance during manual operation and workpiece setup.



■ On-line link with PC



PC



Machining center

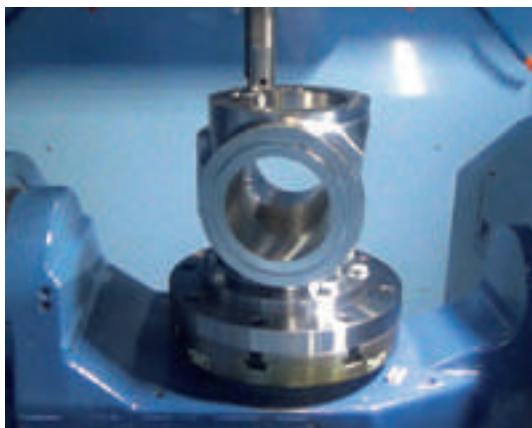
\* **The Intelligent Protection System** simulates your programmed components (tools, workpiece, fixtures, etc.) that match the machine model, alerting you to any possible interference or collision before actual machining takes place.

\* Prepare a PC on your side. Contact **Matsuura** for PC requirements.

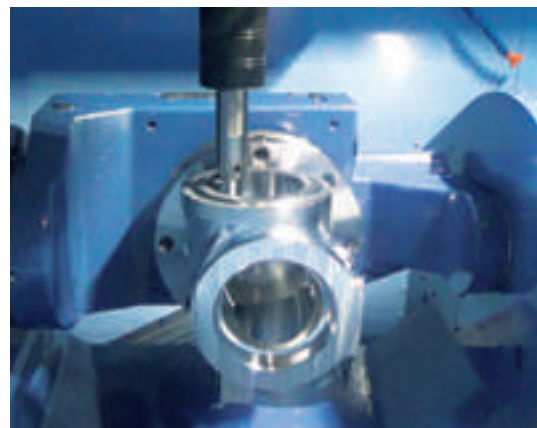
# Synchro Tip + Orbit machining Option Patent No. 5883535

Simple turning function combining orbit machining and C-axis rotation

Turning processes can also be performed on this machining center by using a synchro chip. 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)



\* orbit function

# 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 calibration sphere, in a mere 3 minutes without removing the workpiece. The high accuracy of the machine is maintained through quick and simple operations.

\* eZ-5 requires a separately available NC option to add macro variables.



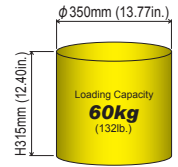
# Toward Full-Spec. Automation

## Smooth step-up from **MX-330** possible

5-Axis Vertical Machining Center

### **MAM72-35V**

The **MX-330** and our established **MAM72-35V** 5 axis machines both utilize CAPTO C6 pallets, offering seamless interaction and deployment of pallets and fixtures between both machines

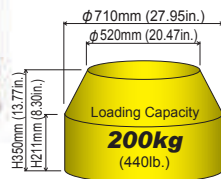


|                                 |                   | <b>MAM72-35V</b>                         |                                   |
|---------------------------------|-------------------|--|-----------------------------------|
| Travel (X / Y / Z)              | mm (in.)          | 550 / 440 / 580 (21.65 / 17.32 / 22.83)  |                                   |
| Travel (B / C)                  | deg               | -125 ~ +65 / 360                         |                                   |
| Working surface                 | mm (in.)          | φ130 (φ5.11)                             |                                   |
| Max. workpiece size             | mm (in.)          | φ350 x H315 (φ13.77 x H12.40)            |                                   |
| Loading capacity                | kg (lb.)          | 60 (132)                                 |                                   |
| Spindle speed                   | min <sup>-1</sup> | 12000 : BT40                             | <input type="checkbox"/> Standard |
|                                 |                   | 15000 / 20000 : BT40                     | <input type="checkbox"/> Option   |
| Rapid traverse rate (X / Y / Z) | m/min (ipm)       | 60 / 60 / 60 (2.36 / 2.36 / 2.36)        |                                   |
| Rapid traverse rate (B / C)     | min <sup>-1</sup> | 50 / 100                                 |                                   |
| Tool storage capacity           |                   | 60 : BT40                                | <input type="checkbox"/> Standard |
|                                 |                   | 120 / 160 / 200 / 240 / 280 / 320 : BT40 | <input type="checkbox"/> Option   |
|                                 |                   | 360 / 400 / 440 / 480 / 520 : BT40       | <input type="checkbox"/> Option   |
| Pallet storage capacity         |                   | 2  | <input type="checkbox"/> Standard |
|                                 |                   | 32: Tower pallet system                  | <input type="checkbox"/> Option   |
|                                 |                   | 40: Tower pallet system                  | <input type="checkbox"/> Option   |
| NC system                       |                   | <b>Matsura G-Tech 31i</b>                |                                   |

## **MX Series; Full Range**

5-Axis Vertical Machining Center

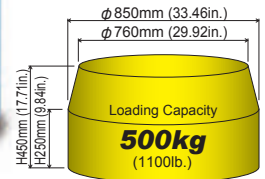
### **MX-520**



\* With restrictions

5-Axis Vertical Machining Center

### **MX-850**

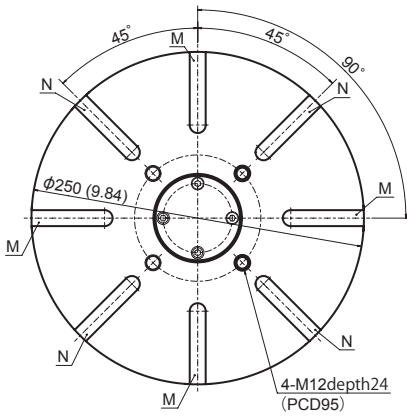


\* With restrictions

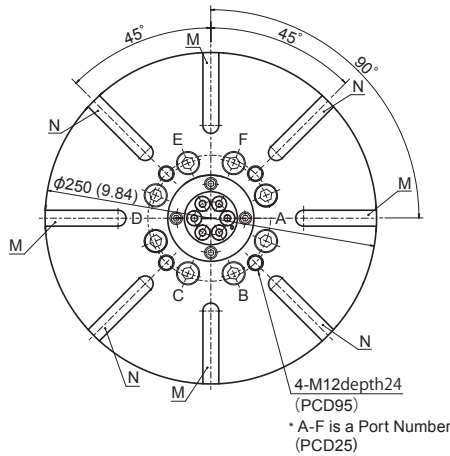
|                                 |                   | <b>MX-520</b>                                   |                                   | <b>MX-850</b>                                   |                                   |
|---------------------------------|-------------------|---|-----------------------------------|---|-----------------------------------|
| Travel (X / Y / Z)              | mm (in.)          | 630 / 560 / 510 (24.80 / 22.04 / 20.07)         |                                   | 900 / 780 / 650 (35.43 / 30.70 / 25.59)         |                                   |
| Travel (B / C)                  | deg               | -125 ~ +10 / 360                                |                                   | -125 ~ +30 / 360                                |                                   |
| Working surface                 | mm (in.)          | φ300 (φ11.81)                                   | <input type="checkbox"/> Standard | φ500 (φ19.68)                                   | <input type="checkbox"/> Standard |
|                                 |                   | φ500 (φ19.68)                                   | <input type="checkbox"/> Option   | φ700 (φ27.55)                                   | <input type="checkbox"/> Option   |
|                                 |                   | φ300 (φ11.81) + Flat Table                      |                                   | φ500 (φ19.68) + Flat Table                      |                                   |
| Max. workpiece size             | mm (in.)          | φ520 x H350 (φ20.47 x H13.77)                   |                                   | φ760 x H450 (φ29.92 x H17.71)                   |                                   |
|                                 |                   | φ710 x H350 (φ27.95 x H13.77) With restrictions |                                   | φ850 x H450 (φ33.46 x H17.71) With restrictions |                                   |
| Loading capacity                | kg (lb.)          | 200 (440)                                       |                                   | 500 (1100)                                      |                                   |
| Spindle speed                   | min <sup>-1</sup> | 12000 : BT40                                    | <input type="checkbox"/> Standard | 12000 : BT40                                    | <input type="checkbox"/> Standard |
|                                 |                   | 12000 (high torque type) : BT40                 | <input type="checkbox"/> Option   | 15000 : BT40                                    | <input type="checkbox"/> Option   |
|                                 |                   | 20000 : BT40                                    | <input type="checkbox"/> Option   | 20000 : BT40                                    | <input type="checkbox"/> Option   |
| Rapid traverse rate (X / Y / Z) | m/min (ipm)       | 40 / 40 / 40 (1.57 / 1.57 / 1.57)               |                                   |   |                                   |
| Rapid traverse rate (A / C)     | min <sup>-1</sup> | 17 / 33   |                                   |   |                                   |
| Tool storage capacity           |                   | 60 : BT40                                       | <input type="checkbox"/> Standard | 90 : BT40                                       | <input type="checkbox"/> Option   |
|                                 |                   | 90 : BT40                                       | <input type="checkbox"/> Option   |   |                                   |
| NC system                       |                   | <b>Matsura G-Tech 31i</b>                       |                                   |   |                                   |

**Top view** Unit: mm (in.)

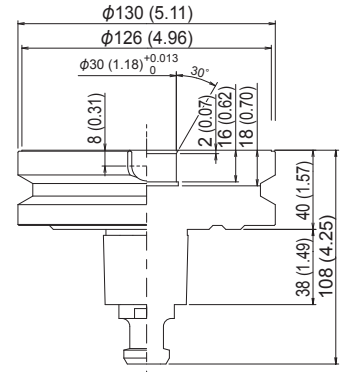
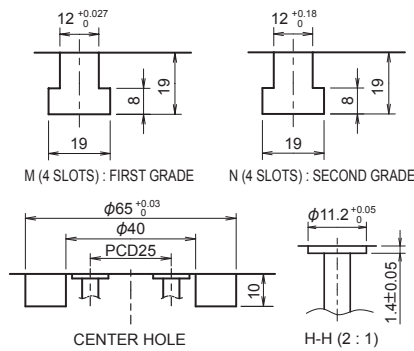
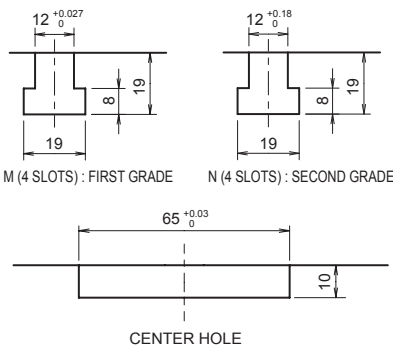
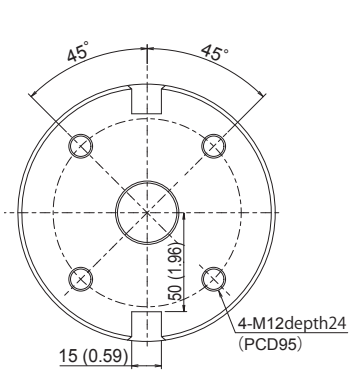
Table top view



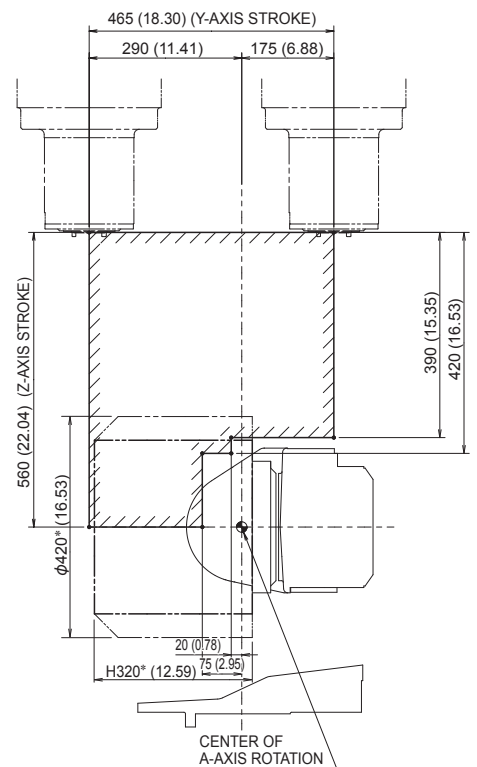
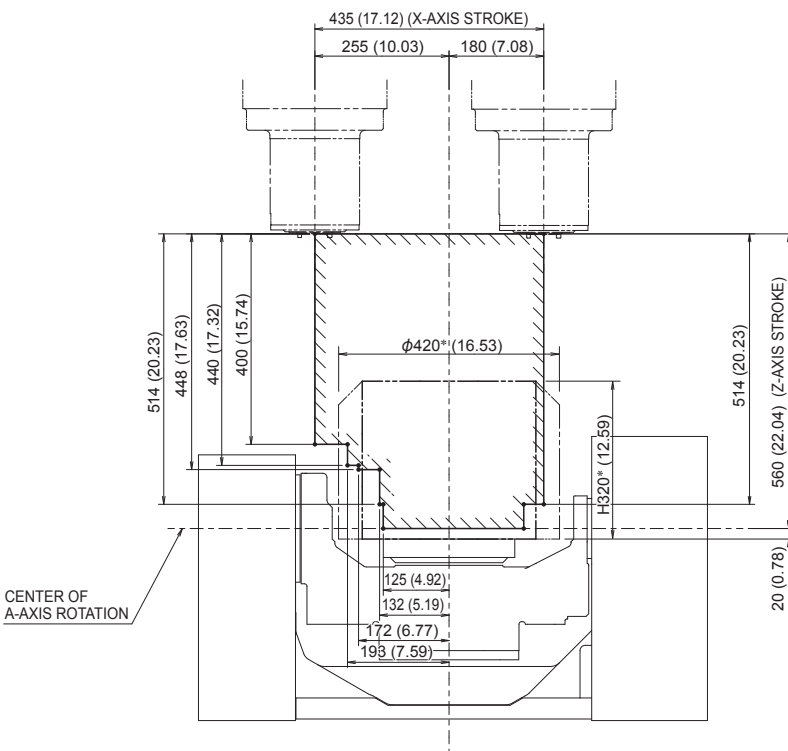
With through-table coolant holes **Option**



Pallet top view **Option**



**Stroke diagram** Unit: mm (in.)



\*Max. workpiece size

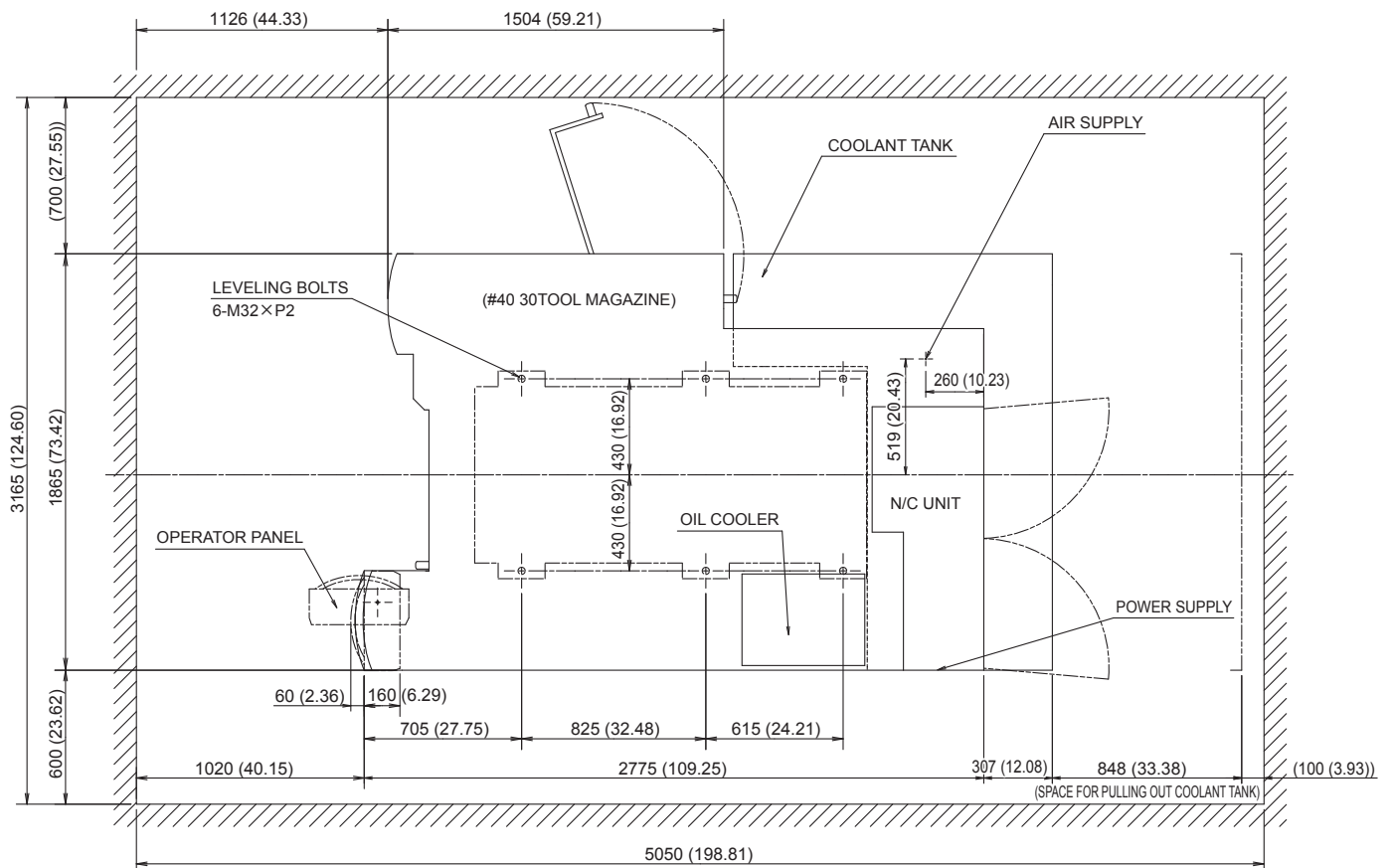
## Standard Machine Specifications

| ■ Movement and Ranges          |                   |  |
|--------------------------------|-------------------|--|
| X-axis stroke                  | mm (in.)          | 435 (17.13)  |
| Y-axis stroke                  | mm (in.)          | 465 (18.31)  |
| Z-axis stroke                  | mm (in.)          | 560 (22.05)  |
| A-axis rotation angle          | deg               | -125 ~ +10   |
| C-axis rotation angle          | deg               | 360  |
| ■ Table                        |                   |  |
| Working surface                | mm (in.)          | φ250 (φ9.84)   |
| Loading capacity               | kg (lb.)          | 80 (176)   |
| Max. workpiece size            | mm (in.)          | φ330×H320 (φ12.99×H12.59)<br>φ420×H320 (φ16.53×H12.59) (with restrictions) |
| ■ Spindle                      |                   |  |
| Spindle speed                  | min <sup>-1</sup> | 50 ~ 15000 (auto grease lubrication)                                       |
| Spindle speed change command   |                   | S5 digits direct command   |
| Type of spindle taper hole     |                   | 7/24 taper #40 (BT double contact type)                                    |
| Spindle bearing inner diameter | mm (in.)          | φ70 (φ2.75)  |
| Spindle motor output           | kW                | AC5.5/7.5  |
| Max. spindle torque            | N·m               | 65.1   |
| ■ Feedrate                     |                   |  |
| Rapid traverse rate X / Y / Z  | mm/min (ipm)      | 40000 (1574.8)   |
| A / C                          | min <sup>-1</sup> | 17 / 33  |
| Feedrate X / Y / Z             | mm/min (ipm)      | 1 ~ 40000 (0.03 ~ 1574.8)  |
| A / C                          | min <sup>-1</sup> | 17 / 33  |
| ■ Automatic Tool Changer       |                   |  |
| Type of tool shank             |                   | JIS B 6339 tool shank 40T  |
| Pullstud                       |                   | JIS B 6339 pullstud 40P  |
| Tool storage capacity          | tools             | 30 (Drum magazine)   |
| Max. tool diameter             | mm (in.)          | φ80 (φ3.14) (With adjacent tools)<br>φ150 (φ5.90) (Without adjacent tools) |
| Max. tool length               | mm (in.)          | 300 (11.81)  |
| Max. tool mass                 | kg (lb.)          | 10 (22.05)   |
| Method of tool selection       |                   | Memory random system   |

| ■ Power Sources   |  |   |
|---|--|---|
| Electrical power supply                                       | kVA  | 31 (Depends on the options provided)                                    |
| Power supply voltage  | V  | AC 200 / 220 ± 10%<br>Transformer required for the voltage except above |
| Power supply frequency  | Hz   | 50 / 60 ± 1   |
| ■ Tank Capacity   |  |   |
| Coolant tank capacity   | L  | 350   |
| Oil cooler tank capacity                                      | L  | 4 (Total capacity: 6)   |
| ■ Machine Size  |  |   |
| Machine weight  | kg (lb.)   | 6300 (13860)  |
| ■ NC System   |  |   |
| Control system  |  | <b>Matsura G-Tech 31i</b>   |
| ■ Standard Accessories  |  |   |
| 01. Total splash guard  | 02. ATC magazine guard                               |   |
| 03. ATC auto door   | 04. Spindle oil cooler                               |   |
| 05. Auto grease supply unit for feed axes                     | 06. Scale feedback (A/C axis)                        |   |
| 07. Coolant unit  | 08. Chip flush                                       |   |
| 09. Chip flow   | 10. Work light                                       |   |
| 11. Synchronized tapping function                             | 12. <b>AD-TAP</b> function                           |   |
| 13. <b>IPC</b> function                                       | 14. Spindle overload protection function             |   |
| 15. M-code counter (9 kinds)                                  | 16. Spindle thermal displacement compensation system |   |
| 17. Software tool for memory card program operation & editing |  |   |
| 18. <b>MIMS</b> (Matsura Intelligent Meister System)          | 19. Integrating spindle run hour meter               |   |
| 20. Integrating auto run hour meter                           | 21. Service tools and tool box                       |   |
| 22. Machine color paint                                       | 23. Leveling bolts, leveling plates                  |   |
| 24. Electronic manual   | 25. E-mailing function                               |   |
| 26. Fault diagnosis function                                  |  |   |

\* 2 years spindle warranty

## Floor plan Unit: mm (in.)



# List of Fittings

○ : Standard ▲ : Option

|  |     |                          |
|--|-----|--------------------------|
| <b>■ Spindle</b>   |     |                          |
| 15000min <sup>-1</sup> (BT40 auto grease lubrication)                            |     | ○                        |
| 15000min <sup>-1</sup> (BT40 auto grease lubrication)                            |     |                          |
| Spindle motor output   | kW  | Low: 7.5/15、High: 7.5/15 |
| Max. spindle torque  | N·m | 119.3                    |
| 20,000min <sup>-1</sup> (BT40 auto grease lubrication)                           |     |                          |
| Spindle motor output   | kW  | Low: 11/15、High: 15/18.5 |
| Max. spindle torque  | N·m | 108.4                    |
| <b>■ Tool Storage Capacity</b>   |     |                          |
| 30 tool (Drum magazine)  |     | ○                        |
| 60 tool (Chain magazine)   |     | ▲                        |
| 90 tool (Chain magazine)   |     | ▲                        |
| <b>■ Number of Pallets</b>   |     |                          |
| 1 (Single pallet)  |     | ▲                        |
| 10 (Floor pallet system)*  |     | ▲                        |
| <b>■ Automation Package</b>  |     |                          |
| Automation package (PC10 , 90tools , Spiral)                                     |     | ▲                        |
| <b>■ High Accuracy Control</b>   |     |                          |
| Scale feedback X-/Y-/Z-axis  |     | ▲                        |
| Environmental thermal displacement compensation (15000min <sup>-1</sup> spindle) |     | ▲                        |
| Environmental thermal displacement compensation (20000min <sup>-1</sup> spindle) |     | ▲                        |
| <b>■ Coolant</b>   |     |                          |
| 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   |     | ▲                        |
| Mist separator (without fire damper)   |     | ▲                        |
| Mist separator retrofitting  |     | ▲                        |
| Coolant temperature controller with tank 100L                                    |     |                          |
| <b>■ Automatic Measurement, Tool Breakage Detection</b>                          |     |                          |
| Automatic measurement / automatic alignment (optical , RENISHOW)                 |     | ▲                        |
| Automatic measurement / automatic alignment (optical , BLUM)                     |     | ▲                        |
| Tool breakage / full automatic tool length measurement (laser , BLUM)            |     | ▲                        |
| Tool breakage / full automatic tool length measurement (laser , RENISHOW)        |     | ▲                        |
| External tool breakage (30tools , contact)                                       |     | ▲                        |
| External tool breakage (60tools , contact)                                       |     | ▲                        |
| External tool breakage (90tools , contact)                                       |     | ▲                        |

\*Max. workpiece size : φ330× H300(mm)

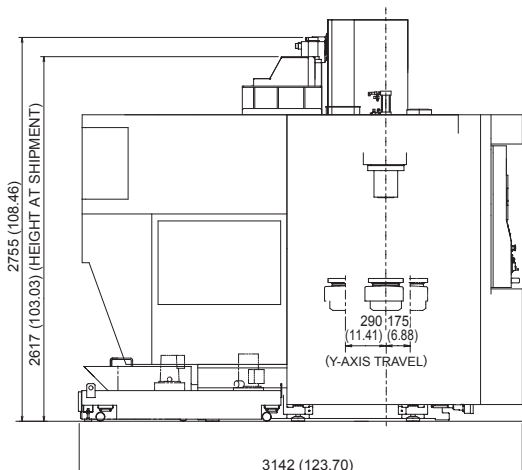
|  |   |
|--|---|
| <b>■ Chip Removal</b>                              |   |
| Chip bucket  | ▲ |
| Spiral chip conveyor                               | ▲ |
| Lift-up chip conveyor (scraper)                    | ▲ |
| Air blow for chip removal                          | ▲ |
| Workpiece cleaning gun (machine side)              | ▲ |
| <b>■ Operation/Maintenance Support</b>             |   |
| <b>Intelligent Protection System</b>               |   |
| Reliability Meister Plus Type A (with PC)          | ▲ |
| Reliability Meister Plus Type B (without PC)       | ▲ |
| Additional eight M functions                       | ▲ |
| Spindle load monitoring function                   | ▲ |
| Weekly timer                                       | ▲ |
| 3-color signal light (red, yellow, green from top) | ▲ |
| Optional block skip addition 2 to 9                | ▲ |
| External manual pulse generator                    | ▲ |
| eZ-5 (with calibration sphere)                     | ▲ |
| eZ-5 (without calibration sphere)                  | ▲ |
| Pressure supply system for fixtures                | ▲ |
| Rotary wiper (Air)                                 | ▲ |
| Rotary wiper (Electric)                            | ▲ |
| OP auto door                                       | ▲ |
| Robot interface + auto door                        | ▲ |
| Robot + auto door                                  | ▲ |
| <b>■ Optional Package</b>                          |   |
| High-speed, high-precision package                 | ▲ |
| 5-axis package                                     | ▲ |
| High-speed, high-precision 5-axis package          | ▲ |

## ■ Tool breakage detector (laser) Option

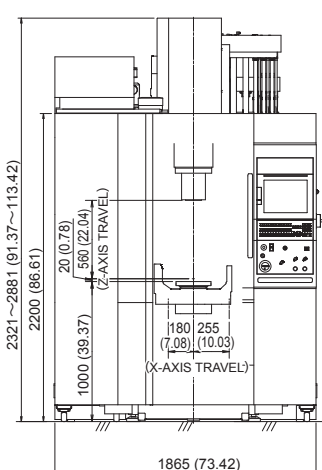


## External view Unit: mm (in.)

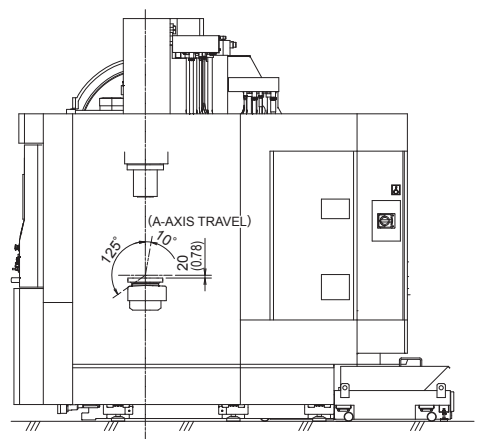
Left side view



Front view



Right side view





# Matsuura

URL : <http://www.matsuura.co.jp/>

E-MAIL : [webmaster@matsuura.co.jp](mailto:webmaster@matsuura.co.jp)

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#### MATSUURA MACHINERY CORPORATION

1-1 Urushihara-cho Fukui City 910-8530, Japan

TEL : +81-776-56-8106 FAX : +81-776-56-8151

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#### MATSUURA EUROPE GmbH

Berta-Cramer-Ring 21

D-65205 Wiesbaden-Delkenheim, Germany

TEL : +49-6122-7803-80 FAX : +49-6122-7803-33

URL : <http://www.matsuura.de/>

E-MAIL : [info@matsuura.de](mailto:info@matsuura.de)

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#### MATSUURA MACHINERY Ltd.

Gee Road, Whitwick Business Park, Coalville Leicestershire, LE67 4NH, England

TEL : +44-1530-511-400 FAX : +44-1530-511-440

URL : <http://www.matsuura.co.uk/>

E-MAIL : [sales@matsuura.co.uk](mailto:sales@matsuura.co.uk)

Facebook : [www.facebook.com/pages/Matsuura-Machinery-Ltd/427006380682983](https://www.facebook.com/pages/Matsuura-Machinery-Ltd/427006380682983)

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#### MATSUURA MACHINERY GmbH

Berta-Cramer-Ring 21

D-65205 Wiesbaden-Delkenheim, Germany

TEL : +49-6122-7803-0 FAX : +49-6122-7803-33

URL : <http://www.matsuura.de/>

E-MAIL : [info@matsuura.de](mailto:info@matsuura.de)

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#### ELLIOTT MATSUURA CANADA INC.

2120 Buckingham Road Oakville Ontario L6H 5X2, Canada

TEL : +1-905-829-2211 FAX : +1-905-829-5600

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

E-MAIL : [sales@elliottmachinery.com](mailto:sales@elliottmachinery.com)

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#### MATSUURA MACHINERY USA INC.

325 Randolph Ave., St.Paul, MN 55102, U.S.A.

TEL : +1-651-289-9700

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

E-MAIL : [info@matsuurausa.com](mailto:info@matsuurausa.com)

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

ИНЖЕНЕРНЫЙ ЦЕНТР СОЛДРИМ-МСК, ООО  
196158, Россия, г. Санкт-Петербург, Пулковское шоссе, 28А  
БЦ "Пулково Стар", оф.804  
тел./факс: +7 (812) 602-18-72, 602-18-73, 602-18-74  
тел./факс: +7 (495) 280-05-88  
e-mail: [soldream@soldream.ru](mailto:soldream@soldream.ru)  
<http://www.soldream.ru>

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