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

 **Matsuura**

5-Axis Multi-Tasking Machining Center

# MAM72-42V



NON PC



PC2



PC5



PC11

**MAXIA**  
Innovation by  Matsuura

Products are subject to all applicable export control laws and regulations.





# MAM72-42V

## Matsuura MAM72 Series The Clear Leader in 5-Axis Machining

With the advent of globalization a new economic reality has dawned for Western manufacturers, heralding a new era of competition from not only established markets, but also emerging economies such as China & India. The big question for CNC operations in the Western hemisphere is: "How do we compete with low wage economies & a seemingly endless race to the bottom of the cost chain?"

**There is only one answer for these concerns: Unmanned multi pallet, multi axes CNC production processing.**

Matsuura lead the field in unmanned multi pallet CNC production solutions, in both 4 axes horizontals & 5 axis milling & mill turn configurations. Our **MAM72** Series of 5 axis multi pallet machine tools have been the clear market leader for machines in their class for over a decade with in excess of 500 highly productive machines supplied to some of the worlds leading OEM manufacturers & their tier one & tier two subcontractors.

Completing our range of **MAM72** 5-axis products is the **MAM72-42V** for the production of small to medium sized complex geometric workpieces - in short batches or for long periods of reliable lights out unmanned production. This formidable multi pallet 5 axis machine tool emerges from our rich & prestigious heritage in the design & manufacture of class leading production processes & solutions, & incorporates many decades of Matsuura's hard won knowledge, expertise & total quality ethos.



MAM72-25V



MAM72-3VS



MAM72-35V



MAM72-3VM



MAM72-42V



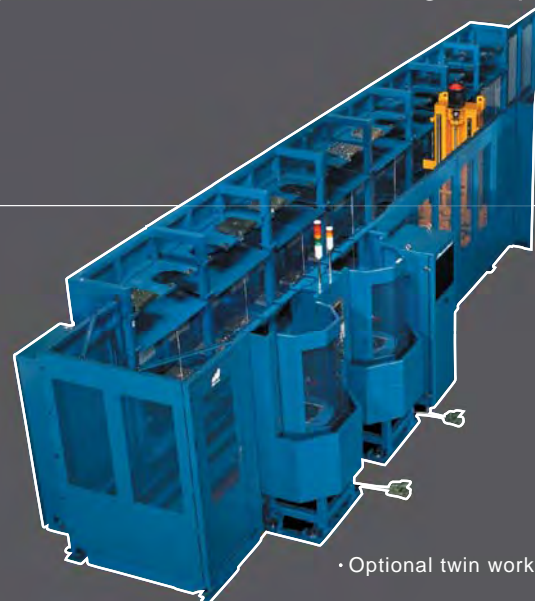
MAM72-63V





# Ultimate Flexibility & Versatility

Matsuura have long extolled the virtues of the extremely cost effective nature of unmanned production. To those ends Matsuura have invested in decades of R & D, resulting in the proven high productivity multi pallet systems across our entire range of machine tools, & operated by some of the worlds leading companies.



• Optional twin work stations

## option Linear Pallet System

- With multiple installations in various configurations all over the world, Matsuura's Linear Pallet System will offer your business years of unmatched, reliable productivity and operation. 4 and 5-axis machines (horizontal and vertical) can all be served by the same Linear Pallet System, providing they have the same pallet dimensions.

# Vast Array of Options in any Configuration Tailored to your Process

## ATC Tool Magazine

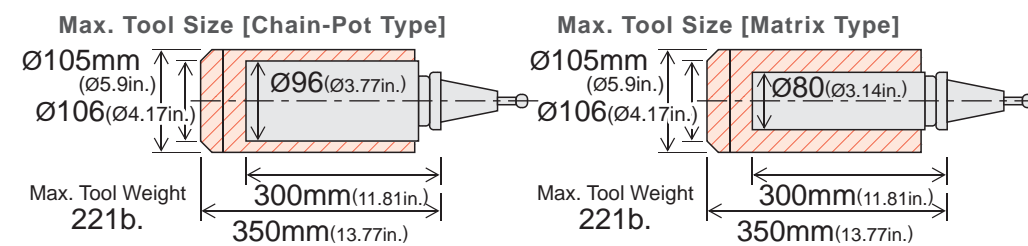
- 40 tool ATC chain-pot magazine supplied as standard.
- An optional matrix type tool magazine can store up to 320 tools. The benefits of a larger capacity ATC can be realized when long periods of unmanned running & volume production are required, offering the ability to have duplicate "sister" tooling available in the event of tool damage, or when machining extremely complex shapes requiring many different tools.



40 tools ATC



Option 240 tools ATC



Number of Tools	
Standard	40(Chain-Pot Type)
Option	80(Chain-Pot Type)
Option	~240(Matrix Type)
Option	~320(Matrix Type)
Option	~520(Matrix Type)

## APC Pallet Changer

APC option line-up for continuous unmanned production

APC
PC2 / PC5 / PC11 / PC17 / PC24



NON-PC



PC2



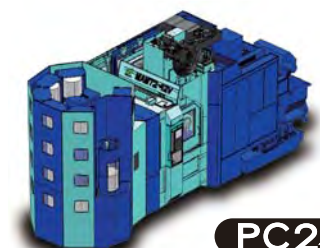
PC5

Floor Pallet System



PC11

Floor Pallet System



PC24

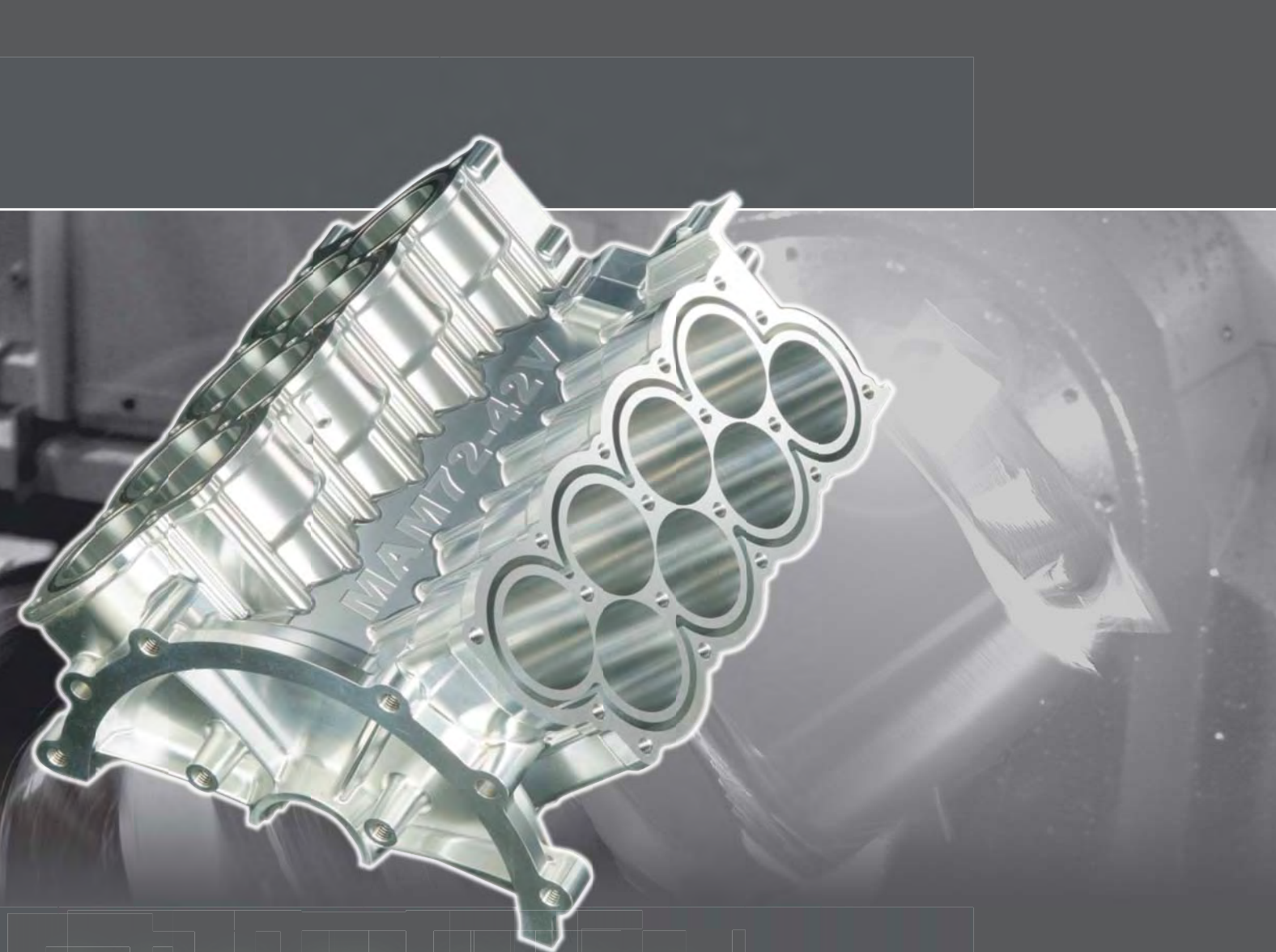
Tower Pallet System

## Matsuura Hi-Tech Spindle

BT40	Spindle Line-Up
Standard	12,000min <sup>-1</sup>
Option	15,000min <sup>-1</sup>
Option	20,000min <sup>-1</sup>
Option	30,000min <sup>-1</sup>

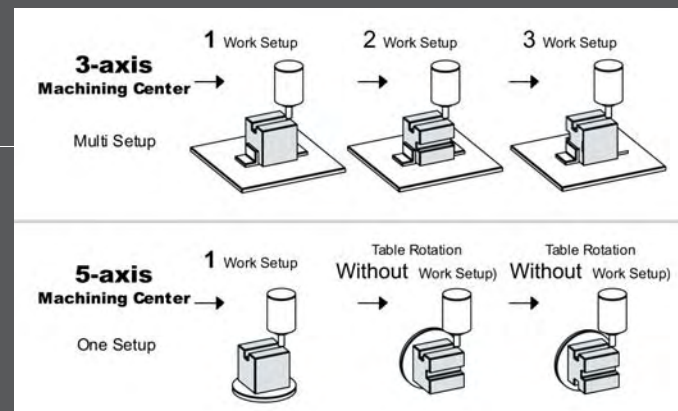






# 5-Axis Machining: Limitless Possibilities

The global CNC market now has a clear, competitive choice for the cost effective "one hit machining" of tolerance critical, large & complex components in short run batches or long unattended production runs



## One Hit Process, One Set Up

The concept behind 5-axis machining is to complete the component in "one hit, one loading", greatly reducing set up times. Because of this process of "one hit, one loading", set up times between different operations are eliminated. In addition to this, errors caused by set up changeover & fixturing, usually between 2 or more different machine tools, are also eliminated, adding assured precision to the process.

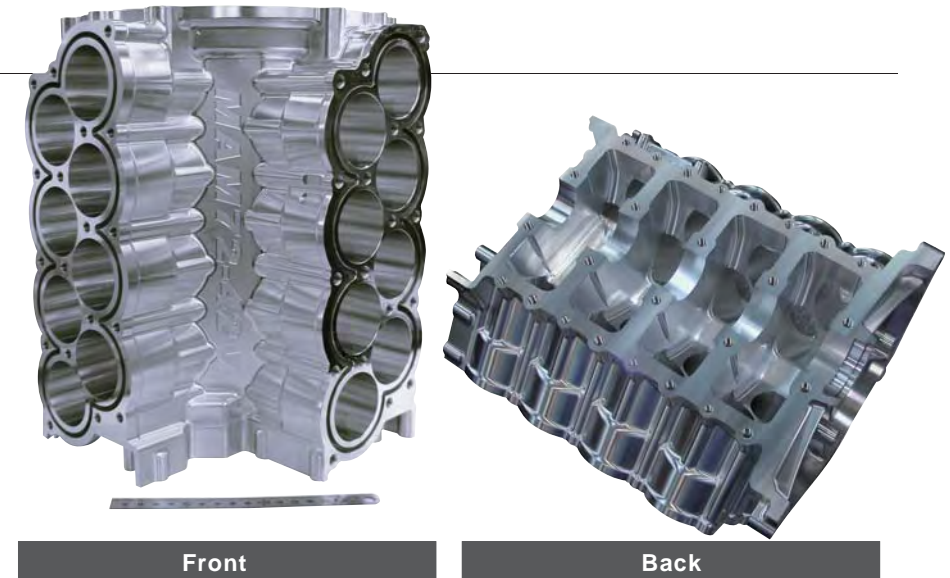
# Embrace Matsuura 5-Axis Technology Now & Reap the Rewards

## 5-Axis Machining Example

Sample:W16 Engine Block  
Material:A7075  
Tools:22  
CycleTime:52 hours 45 minutes

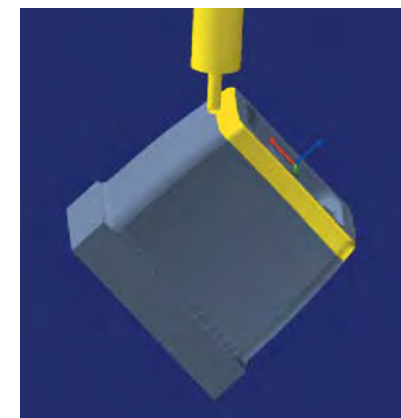
### Benefit

This complex W16 engine block was machined in just two operations. By achieving a shorter tool overhang, greater rigidity is assured, s tool life is extended & metal removal rates are exceptionally high.



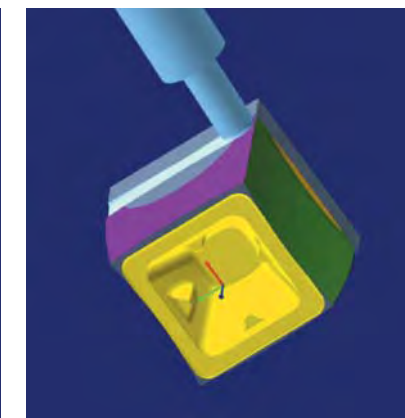
## High Speed High Accuracy 5-axis Mold Machining Example

Sample:Mold Example  
Material:CENA1(HRC40)  
Tools:5  
CycleTime:11 hours



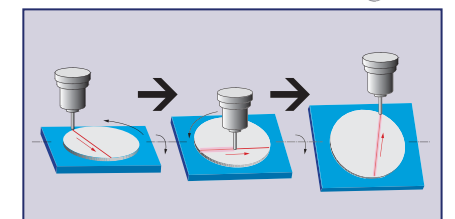
### Benefit

By utilising the dynamics of the 4th / 5th table, a short cutter overhang can be applied to many workpieces in many materials, vastly improving surface finish.



### Benefit

5 axis heel cutting is utilised for the outer machining of the workpiece. The outer curved surface is machined using the bottom edge of a square or radius end mill. Comparing this tool to a ball end mill the larger cutting volume of a square or radius end mill faster metal removal rates are achieved.



### Benefit

TCPC (Tool Centre Point Control) aids simple set up & machining of a workpiece. An "on machine" function, this allows users to change aspects of the job at hand without resorting to changing the post processor.





## Optimized Structure for 5-Axis Machining

The **MAM72-42V**, as with all Matsuura multi axes products, has been designed as a fully fledged & integrated 5 axis machine tool not just a 3 axes machine tool with "bolt on" 4th & 5th table. Due to the design integration at the machines inception, the **MAM72-42V** has an optimized work enclosure, offering maximum working envelopes and limiting interference with the axes strokes.

NON-PC

with PC

option

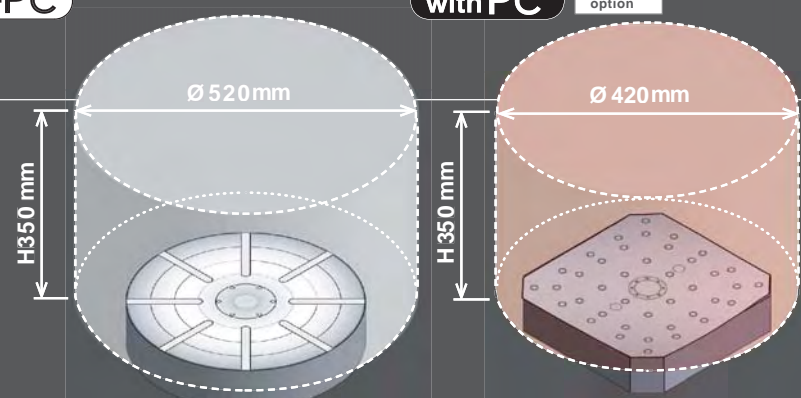


Table Size : Ø300mm  
Loading Capacity : 235kg

with PC : □300mm  
Loading Capacity : 200kg

### Maximum Work Size

· Larger work sizes can be accommodated, with some restrictions. Please consult your Matsuura dealer for assessment of your work size.

## Highly Rigid Structure

### Robust & Compact A/C-Axis Table, In-House Design

· The A/C axes motors generate exceptionally high speed rotation and high torque. Supplied as standard, the B/ C axis are equipped with a proven scale feedback system, delivering superb repeatability and many years of reliable, highly accurate operation.

A/C-Axis Table Specification	
Rotation Speed (A/C)	30 / 50 min <sup>-1</sup>
Max. Acceleration (A/C)	1,730 / 4,054 deg/sec <sup>2</sup>
Max. Table Cutting Torque (A/C)	1,080 / 240 Nm
Table Break Torque (A/C)	2,152 / 1,610 Nm
Min. Indexing (A/C)	0.001 deg
Pallet* Clamping Force	41.5 kN
Indexing Accuracy (A/C)	5/5 sec.
Indexing Repeatability (A/C)	±2/±2 sec.

※ Pallet is available on **with PC** Machine

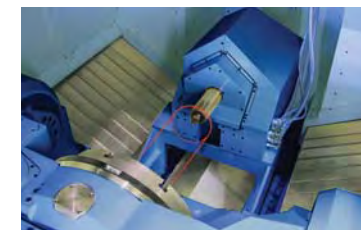


NON-PC

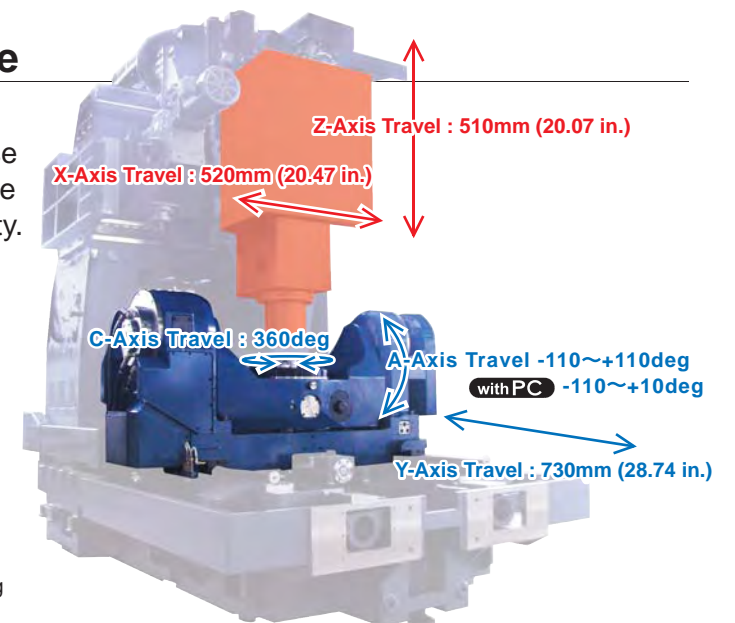
### Optimized 5-Axis Machine Structure

· Integrated into the design of the **MAM72-42V**, the Matsuura A/C-axis table has been designed in-house using FEM analysis. Configured with robust twin side supports, the table achieves maximum design rigidity.

· Both the APC & single table variant of the **MAM72-42V** achieve similar travels & offer superb manoeuvrability. The diagram shown features the twin pallet version.



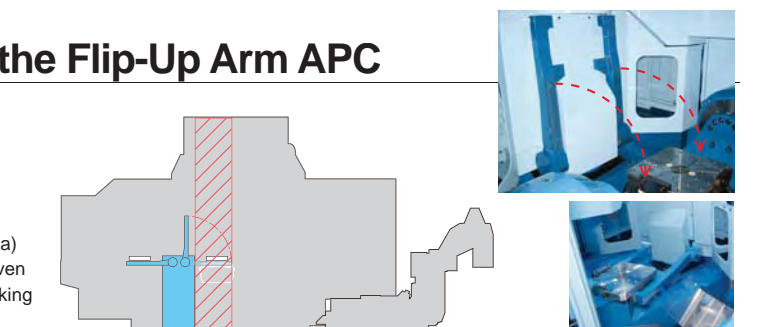
· Optional TAILSTOCK is available for machining of long slender workpieces



### Developed & proven by Matsuura the Flip-Up Arm APC

· By folding up the APC arm, we could minimize the length of machine.

On conventional machines there is a dead space (shown as a hatched area) generated by the fixed nature of the APC arm mechanism. Matsuura's proven Flip-Up Arm APC eliminates this dead space, utilizing the whole of the working area.



### Thru Table Vacuum Clamping option

· 6 Port Thru Table Clamping System is available as an option.



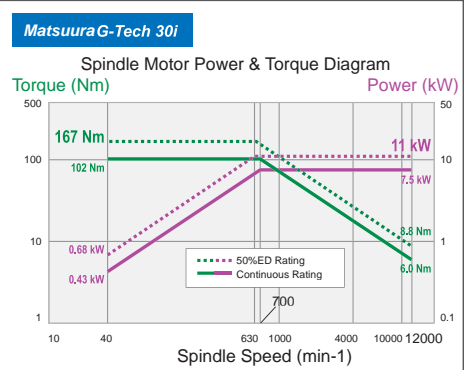
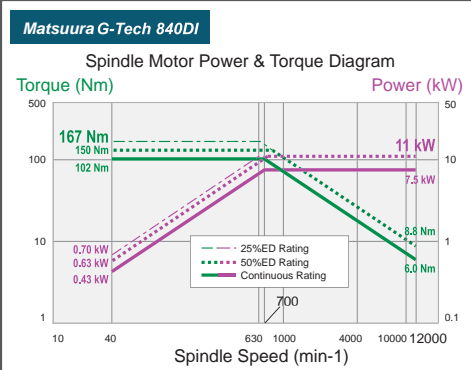


# Highly Reliable Spindle

From Matsuura by Matsuura:Hi-Tech Spindles to suit a vast array of industrial uses & a myriad of materials

## Matsuura Hi-Tech Spindle

BT40 Spindle Specification	
Max. Rotation Speed	12,000 min <sup>-1</sup>
Motor Power	7.5 / 11 kW
Motor Torque	167 Nm / 630 min <sup>-1</sup>
Bearing Lubrication	Grease



# Matsuura Hi-Tech Spindle

## Designed & Assembled "in-house"



· 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 as an actual measured value than 1pm (0.000039 in.) at the spindle nose.

## Eco-Friendly Grease Lubrication



The Spindle bearing is lubricated by an automated grease supply system. Low noise operation, with minimum air requirement. Eco friendly & maintenance free.

※20,000 min<sup>-1</sup> spindle provide with spindle grease auto supply system

## Vacuum Type Coolant Turu Spindle

option

· This function prevents coolant from dripping & scattering in the machine enclosure & in the ATC during tool change. A vacuum mechanism aspirates the remaining coolant in the circuit.

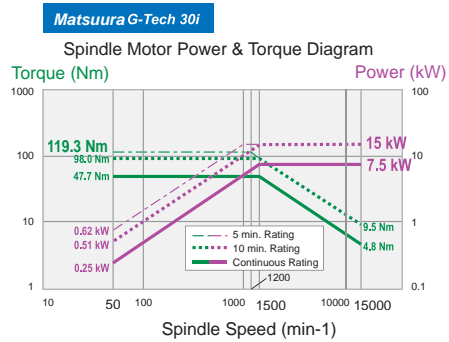
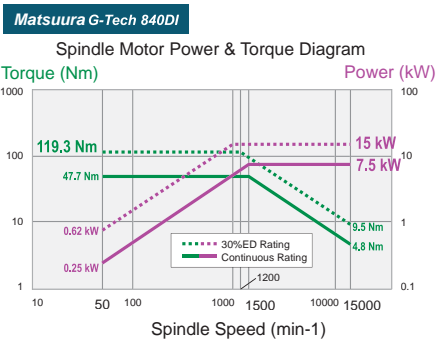
## Spindle Thermal Displacement Compensation

option

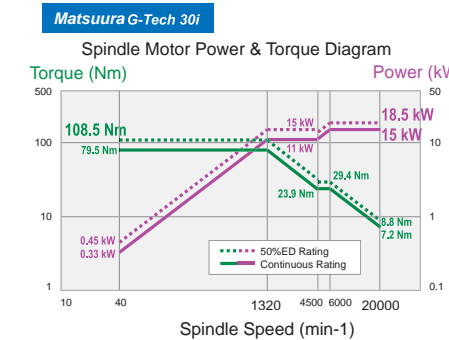
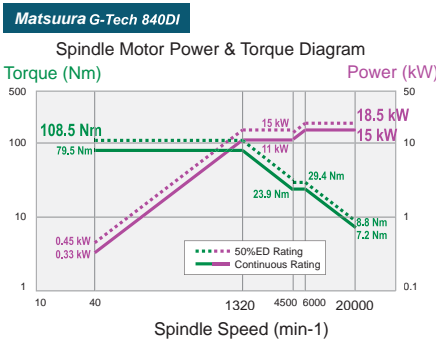
· Matsuura's own Thermal Displacement Compensation function assures long periods of accurate machining performance.

## Spindle Specifications / Spindle Motor Power & Torque Diagrams

BT40 Spindle Specification	
Max. Rotation Speed	15,000 min <sup>-1</sup>
Motor Power	7.5 / 15 kW(10HP)
Motor Torque	119.3 Nm / 1,200 min <sup>-1</sup>
Motor Torque	Oil-Air



BT40 Spindle Specification	
Max. Rotation Speed	20,000 min <sup>-1</sup>
Motor Power	7.5 / 11 kW(15HP)
Motor Torque	70.7 Nm / 1,500 min <sup>-1</sup>
Bearing Lubrication	Spindle Grease Auto Lubrication



· Optional BT40 30,000 min<sup>-1</sup> is available





## Ergonomic & User Friendly

Designed around the operator to maximise their productivity, efficiency & comfort, the **MAM72-42V** offers superb ergonomic functionality.



Front (Work Station Side)



Operator Side

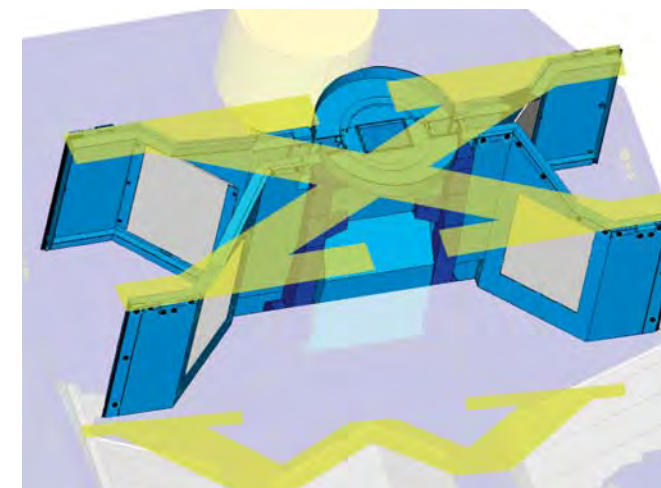
### Both Side Accessibility

- Wide and capacious machine access at both the APC station and enclosure door.
- Tempered glass in the main enclosure window assures clearer vision for longer periods.

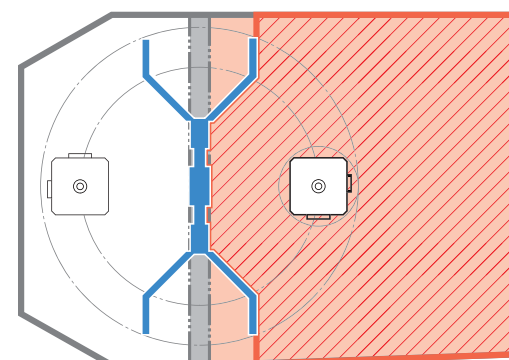
## Reliable Swarf Management

### Swarf Management

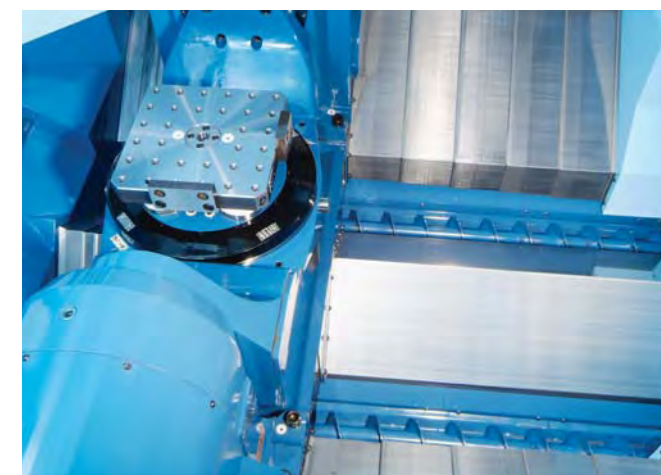
- Featured only on Matsuura products, our proven X-Type APC door design eliminates all opportunities for swarf to become trapped & build up, eventually causing machine downtime



X-Type APC door and W-Type cover



This exclusive Matsuura X-Type door design still maintains the **MAM72-42V's** largest in class working envelope & workpiece accommodation



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

### Lift-Up Chip Conveyors option

#### Scraper Type

- Drum Filter
- Coolant Tank Capacity 670ℓ
- Oily Coolant Applicable (less than 10 cSt)

#### Hinge Type

- Drum Filter
- Coolant Tank Capacity 600 ℓ
- Only Water Solution Coolant Applicable (less than 10 cSt)
- ※In case of using oily coolant, please consult Matsuura



# The Latest High Performance NC System

NC system is selectable from

**Matsuura G-Tech 840DI** OR **Matsuura G-Tech 30i**

**Matsuura G-Tech 30i**

**Matsuura G-Tech 840DI**

## Matsuura G-Tech 840DI

- Equipped with the latest high performance CPU, Windows XP Professional, graphical user interface, USB port.
- 10.4 inch color LCD, soft keys vertically arranged.
- Expanded media for data backup such as PC card drive, USB Memory, USB

### For High Speed and a Finer Surface Finish

Machining for General Parts or Mold & Die  
**Advanced Zee LagY**

Machining for more Complex, Precision Parts  
**IZ-1/COMP**

- Max.5,000 Block Look Ahead + Spline Interpolation
- After compressing a maximum of 50 blocks and engaging the 100 Block Look Ahead function, IZ-1/COMP interpolates & applies to the B-Spline to the nearest point selected.

※ Windows XP is a registered trademark of the Microsoft Corporation

## Matsuura G-Tech 30i

- High speed CPU and FSSB, internal CNC bus, optical fiber cables used for high speed data transfer.
- Nanometer resolution.
- 10.4 inch color LCD, soft keys vertically arranged, Compact Flash Port, PC file management structure

### For High Speed and a Finer Surface Finish

Machining for General Parts or Mold & Die  
**IZ-1/15F**

Machining for more Complex, Precision Parts  
**IZ-1/30NF, IZ-2/150NF**

- Look Ahead Linear Acc./dec.+ Nano Interpolation

- Executing the max. 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.

# NC Software

## Proven Software Performance for 5-Axis Machining

Following functions are available on the **Matsuura G-Tech 840DI**  
Similar ones are available on the **Matsuura G-Tech 30i**

### Handy Man II

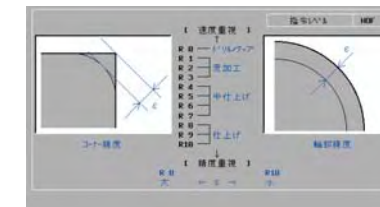
- Handy Man II provides major savings by reducing set-up, programming, operating & maintenance times.

**Handy Man II**

### High-Speed Precision Machining Program Support Function

- When utilizing this software, setting the required part accuracy level is quick, simple and user friendly, allowing you to prioritize precision against speed.

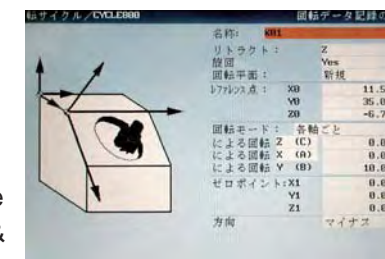
**IPC**



### Easy Programming (3+2-Axis)

option

- G-Tech 840DI offers, as standard feature, CYCLE800 which takes over necessary calculations of coordinate values including necessary axes motions. When rotary axes are moved, rather complex calculations, in line with machine axes configuration, should be made for re-calculating and establishing suitable work coordinate system for the new surface & its orientation.



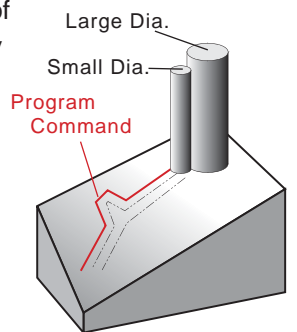
**Cycle800**

### Tool Diameter Interpolations on 5-Axis

option

**CUT3DC etc...**

- CUT3DC 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.



### NC Package

option

- Packages of NC Software, tailored to your production, are available. Please consult your Matsuura dealer for full details & assessment of your requirements.

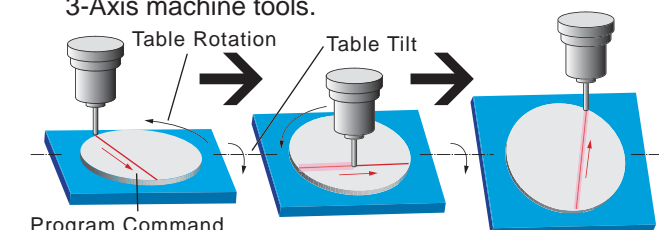
**5-axis related Option Package**  
RTCP(TRAORI, CUT3DC, Cycle800, etc...)  
**High Speed High Precision Package**

### Automatically Controlled Toolpath / Tool Speed

option

**TRAORI**

- 5-Axis Transformation (TRAORI) is the kinematics transformation function of G-Tech840DI which realizes easy tool center point programming for 5-Axis machining. The path and path velocity of the tool center point, can be programmed based on the workpiece coordinate system, in the same way as that for 3-Axis machine tools.

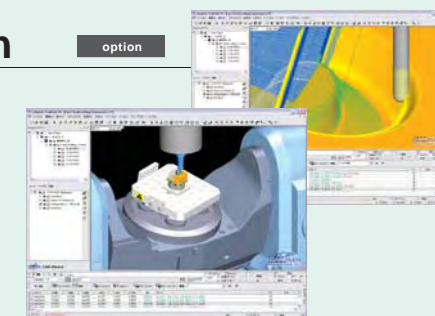


Tool center point moves according to the program command with table tilt/rotation.

### Post Processor CAMplete TruePath

option

- CAMplete TruePath provides everything you need to analyze, edit, optimize and verify 5-axis toolpaths in a seamless 5 view 3D environment. Take control of your post processing and reap the benefits from your Matsuura 5-axis machine.



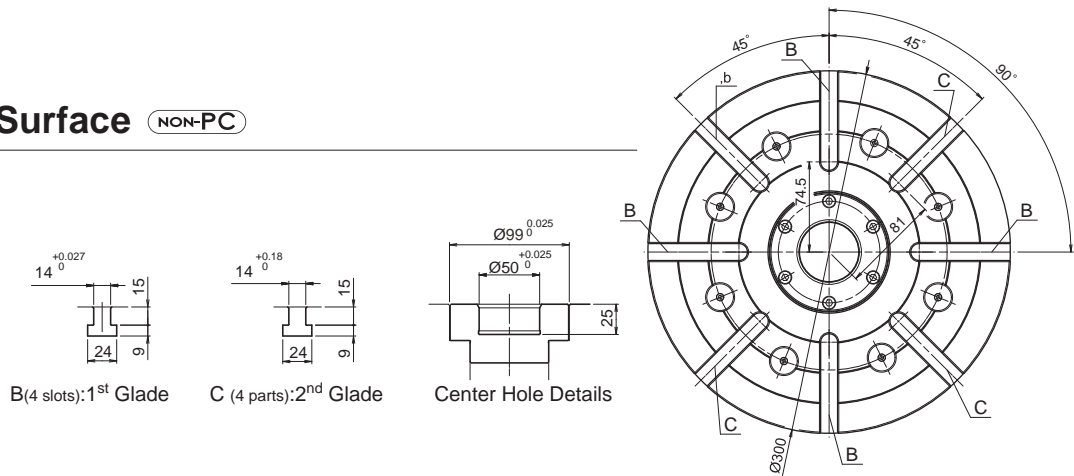
**CAMplete TRUEPATH**  
Matsuura 5-axis Solutions



Main Specifications

NON-PC	
■ Movement & Ranges	
X-Axis Travel	520 mm (20.47 in.)
Y-Axis Travel	730 mm (28.74 in.)
Z-Axis Travel	510 mm (20.07 in.)
A-Axis Travel	-110~+110 deg
A-Axis Travel with PC	-110~+10 deg
C-Axis Travel	360 deg
■ Table / Pallet	
Working Surface	ø300 mm (ø11.81 in.)
Working Surface with PC	300 × 300 mm (11.81 x 11.81 in.)
Loading Capacity	235 kg (507 lb.)
Loading Capacity with PC	200 kg (440 lb.)
Max. Work Size	ø520 x H350 mm ( ý20.47 x H13.77)
Max. Work Size with PC	ø420 x H350 mm ( ý16.53 x H13.77)
■ Spindle : BT40	
Spindle Speed Range	40~12,000 min <sup>-1</sup> (Grease Lubrication)
Type of Spindle Taper Hole	7/24 Taper BT40
Spindle Bearing Inner Diameter	ø80 mm (ø3.14 in.)
Max. Spindle Torque	167 Nm / 630 min <sup>-1</sup>
Spindle Motor (Low Speed:Continuous / 40%)	AC 7.5 / 11 kW
Spindle Motor (High Speed:Continuous / 30 min.)	AC 7.5 / 11 kW
■ Feedrate	
Rapid Traverse (X/Y/Z)	50,000 mm/min (1,968.5 ipm)
Rapid Traverse (A/C)	30/50 min <sup>-1</sup>
Rapid Feed Acceleratio (X/Y/Z)	0.89 / 0.9 / 1.12 G
Rapid Feed Acceleratio (A/C)	1,730 / 4,054 deg/sec. <sup>2</sup>
Min.Movement Increment (X/Y/Z)	0.001 mm (0.000039 in.)
Min.Movement Increment (A/C)	0.001 deg
■ Automatic Tool Changer	
Type of Tool Shank	JIS B 6339 40T
Type of Retention Knob	JIS B 6339 40P
Number of Tools	40 (Chain-Pot Type)
Max. Tool Diameter	Ø96 mm (Ø3.77 in.)
Max. Tool Diameter when the pockets on both sides are empty	Ø150 mm (Ø5.90 in.)
Max. Tool Length	300 mm (11.81 in.)
Max. Tool Length when the tool diameter is ø106 mm (ø4.17 in.)	350 mm (13.77 in.)
Max. Tool Weight	10 kg (22 lb.)
Methods of Tool Selection	Memory random
Tool Cahnge Arm	Double grip type

Table SurfaceNON-PC

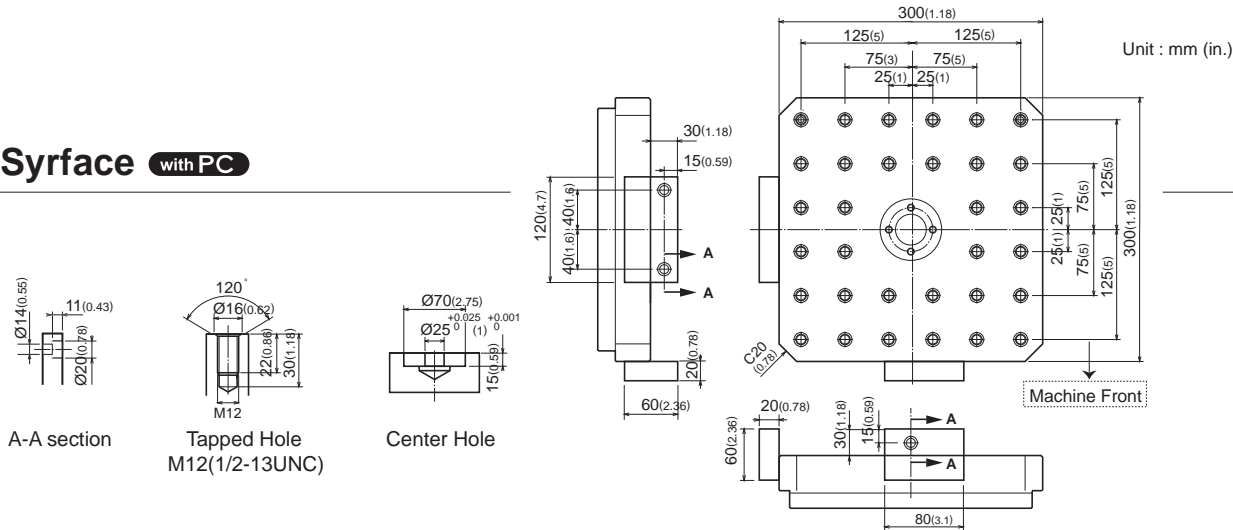


■ Power Supply	
Input Power	50 kVA
Voltage	AC 200/220±10% V
Frequency	50/60±1 Hz
Air Source	0.54~0.93 MPa
Required Air Volume	50 (max.300 N·/min )
■ Tank Capacity	
Hydraulic oil tank capacity	40 ℓ
Coolant tank capacity	600 ℓ
■ Standard Accessories	
01.Total splash guard	
02.ATC Auto Door	03.Synchronized Tapping
04.AD-TAP Function	05.IPC Function
06.Spindle oil cooler	07.Feed axis grease auto supply
08.Coolant unit	09.Spiral chip conveyor
10.Chip flush system	11.Movable manual pulse generator
12.Spindle overload protect	13.Workpiece counter (9 sorts of M function)
14.Work Light (fluorescent)	15.Standard mechanical tools & tool box
16.Machine color paint	
17.Levelling plates and bolts (not utilised for the foundation)	
18.Scale feedback for A & C -axis	
19.Handy ManII Y/F	
20.CD-ROM for Memory Card Operation only for MatsuuraG-Tech 30i	
21.Matsuura Safety Specification	

Equipment

■ Spindle		
12,000 min <sup>-1</sup> (L7.5/11 kW, H5.5/10 kW,Grease Lubrication)		○
15,000 min <sup>-1</sup> (L7.5/15 kW, H7.5/15 kW,Oil-Air Lubrication)		▲
20,000 min <sup>-1</sup> (7.5/11 kW, Auto Grase Supply)		▲
30,000 min <sup>-1</sup> (L13/17.5 kW, H18.5/22 kW,Oil-Air Lubrication)		▲
■ ATC		
40 (BT40 Chain Pot Type)	○	320 (BT40 Matrix Type) ▲
80 (BT40 Chain Pot Type)	▲	360 (BT40 Matrix Type) ▲
120 (BT40 Matrix Type)	▲	400 (BT40 Matrix Type) ▲
150 (BT40 Matrix Type)	▲	440 (BT40 Matrix Type) ▲
180 (BT40 Matrix Type)	▲	480 (BT40 Matrix Type) ▲
210 (BT40 Matrix Type)	▲	520 (BT40 Matrix Type) ▲
240 (BT40 Matrix Type)	▲	
■ High Accuracy Control		
Scale Feedback System	XY-Axis	▲
Scale Feedback System	Z-Axis	▲
Scale Feedback System	XYZ-Axis	▲
Scale Feedback System	A-Axis	○
Scale Feedback System	C-Axis	○
Spindle Thermal Displacement Compensation		▲
■ APC		
NON-PC		○
PC2		▲
PC5 (Floor Pallet System)		▲
PC11 (Floor Pallet System)		▲
PC24 (Tower Pallet System)		▲
PC17~ (Linear Pallet System)		▲
■ Coolant		
Coolant Unit		○
Vacuum Type Coolant Thuru	Type A	▲
Vacuum Type Coolant Thuru	Type B	▲
Vacuum Type Coolant Thuru	Type C (2MPa)	▲
Vacuum Type Coolant Thuru	Type C (5MPa)	▲
Vacuum Type Coolant Thuru	Type C (7MPa)	▲
Coolant Flow Checker		▲
Mist Separator Unit		▲
Mist Separator Unit with Fire Protect Damper		▲
Coolant Temperature Controller	Tank 100 ℓ	▲
Coolant Temperature Controller	Tank 200 ℓ	▲

Pallet Surfacewith PC

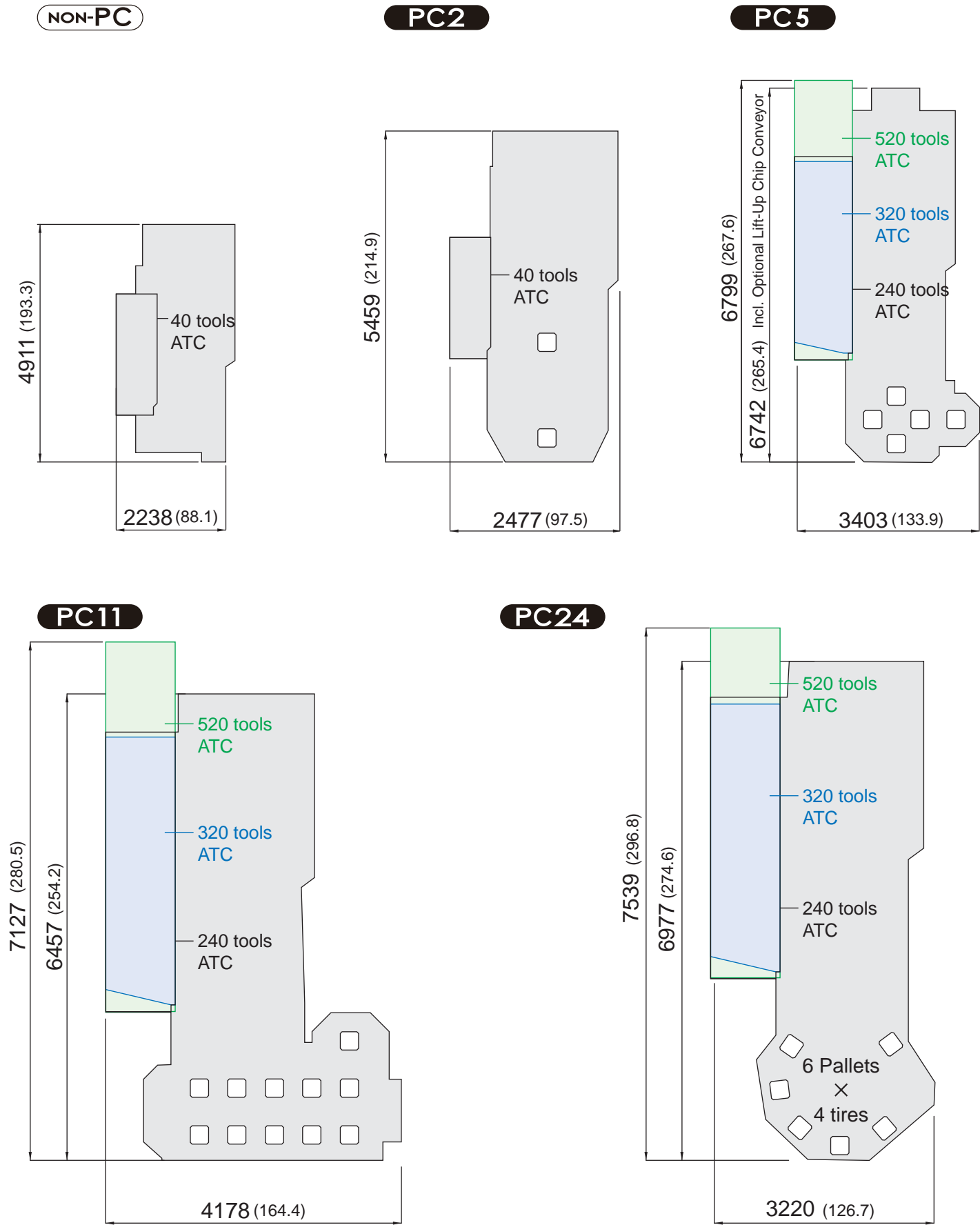


○ : Standard ▲ : Option	
■ Swarf Manegement	
Total Enclosure Gurad	○
ATC Auto Door	○
Spiral Chip Conveyor	○
Chip Flush System	○
Lift-Up Chip Conveyor (Hinge Type, Drum Filter)	▲
Chip Bucket	▲
Air Blow For Chip/Swarf Removal	▲
Workpiece Cleaning Gun (Machine Side)	▲
■ Operation / Maintenance	
AD-TAP Function	○
IPC Function	○
Handy ManII Y/F	○
Feed-Axis Grease Auto Supply	○
Work Light	○
8 Sets of Extra M Function	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
Spindle Run Hour Meter	▲
Rotary Wiper (Air Supply System)	▲
Rotary Wiper (Electrical System)	▲
Cumulative Run Hour Display Unit	▲
Work Counter	○
External Manual Pulse Generator	○
Program End Announcement Light (RedYellow, Green)	▲
■ Safety Features	
Matsuura Safety Specification	○
■ In-Process Measurement / Broken Tool Detection	
In-Process Measurement / Auto Centerring (Touch Probe)	▲
Broken Tool Detection / Auto Tool Length (Touch Sensor)	▲
Broken Tool Detection / Auto Tool Length (Laser Sensor)	▲
In-Process Measurement (Touch Probe)+Broken Tool Detection(Touch Sensor)	▲
In-Process Measurement (Touch Probe)+Broken Tool Detection(Laser Sensor)	▲
■ Tailstock	
Tail Stock System	▲



Top View ※All Machines Height is same as 3,000 mm ( 118.1 in. )

Unit : mm (in.)



Spindle Movement Interference

Unit : mm (in.)

