

 **Matsura**

5-Axis Vertical Machining Center

MAM72-63V



PC2

MAXIA
Innovation by  Matsura

Matsura **MAM72 Series** The Clear Leader in **5-Axis Machining**

For almost a decade, Matsura's **MAM72 Series** of simultaneous 5-axis machines has been the clear market leader for machines in their class.

Highly productive and reliable excellence through constant and cost effective innovation are the main reasons why the Matsura **MAM72 Series** has maintained its market leading position over the years in all industry sectors, throughout all its model variants.

Meeting the global market demand for ever lower costs, shorter delivery times, long periods of unmanned production and elimination of set up times have led the way for Matsura to produce high quality, cost effective 5-axis machines and processes.

Incorporating the vast experience Matsura has gained over the years in high performance 5-axis machining, the market now has a clear choice for the cost effective "one hit machining" of tolerance critical, large and complex components - the Matsura **MAM72-63V**.



MAM72-25V



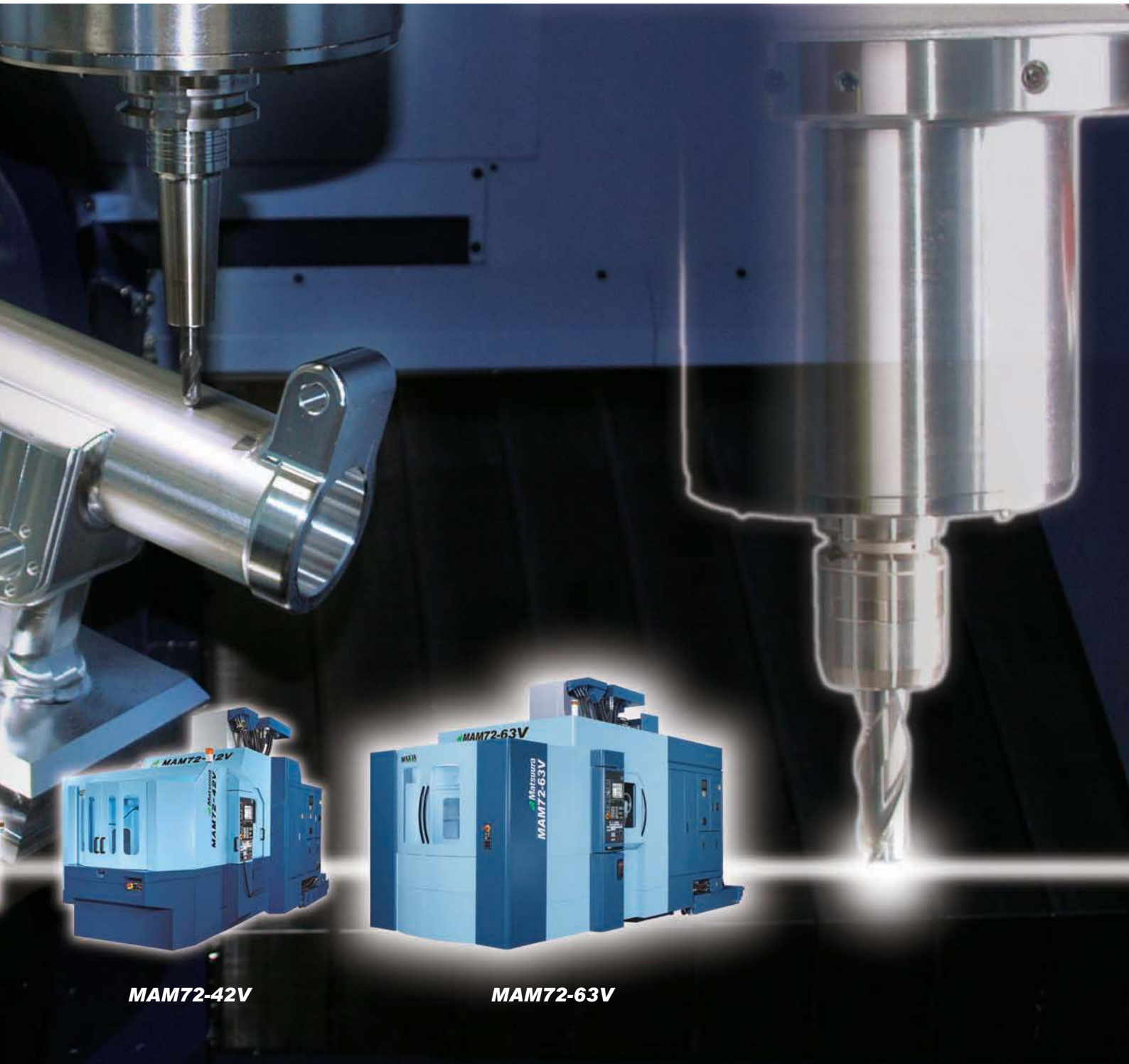
MAM72-3VS



MAM72-35V



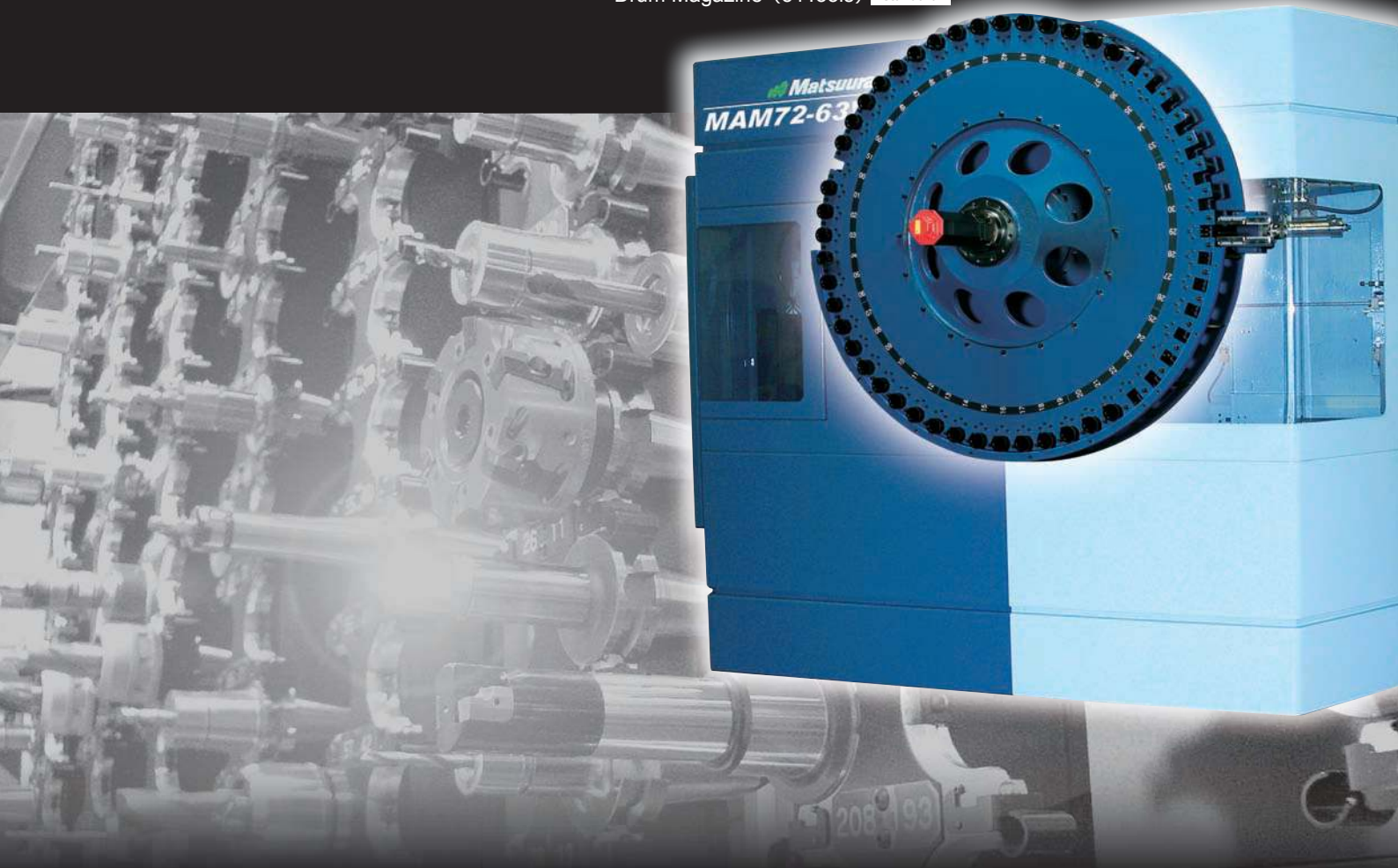
MAM72-3VM



MAM72-42V

MAM72-63V

MAXIA
Innovation by  Matsura



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.



Linear Pallet System **option**

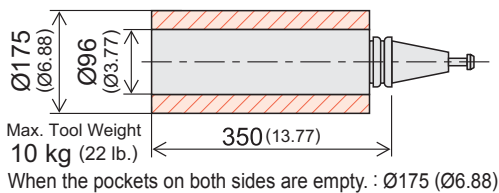
- 5-Axis vertical machining center × 1 (**MAM72-63V**)
- Horizontal machining center × 2 (**H.Plus-405**, **H.Plus-500**)
- **PC93** + Robot system

New & Proven ATC – Fast & Reliable

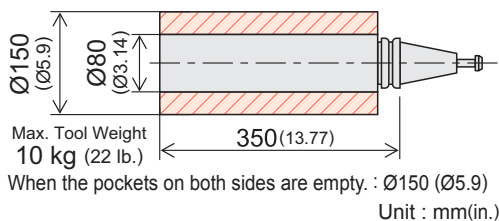
ATC Tool Magazine

- Matsuura's own new & proven 51 station (standard) rotary ATC design offers users unique benefits in terms of the speed of tool change &, due to the reduction of mechanical parts, greater long term reliability. This new design, already a standard feature on Matsuura Horizontal **H.Plus** products, also improves the quality of the workplace environment being substantially quieter than other ATC designs. An optional Matrix type ATC is available – now with capacity for up to 520 tools to meet & support the growing demand for long periods of unmanned running & sister tooling.

Max. Tool Size [Drum Magazine]



Max. Tool Size [Matrix Magazine]



Matrix Magazine (320T) option

BT40 Drum Magazine	
51 tools (Fixed Address)	standard
52 tools (Memory Random)	option

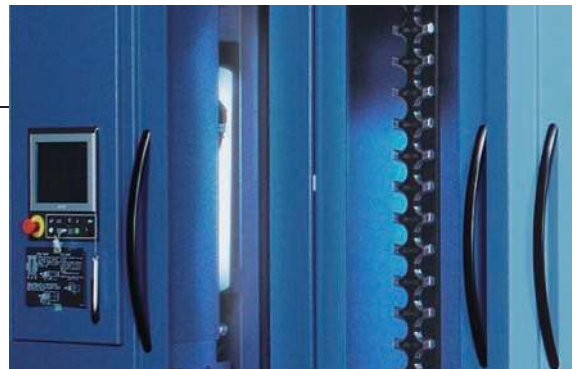
BT40 Matrix Magazine option		
240T	320T	520T
120 tools	120 tools	360 tools
150 tools	160 tools	400 tools
180 tools	200 tools	440 tools
210 tools	240 tools	480 tools
240 tools	280 tools	520 tools
	320 tools	

BT50 Chain Magazine option	
60 tools	120 tools

BT50 Matrix Magazine option			
150 tools	150 tools	210 tools	240 tools

Fluorescent lamp

- All Matsuura ATC's are ergonomically designed for operator comfort & process efficiency. High brightness fluorescent lighting is installed in the ATC enclosure. This is available with the Matrix Magazine options.



ATC Operation Panel

- A new larger 10 inch screen has been added to the ATC – allowing effortless data control of all aspects of ATC management & functionality.



All Tools

NG Tools

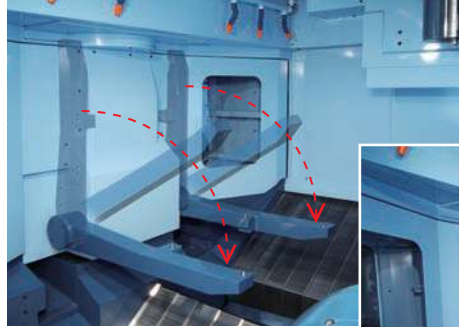
Auto Recovery



Vast Array of Options in any Configuration Tailored to your process

Matsuura's own unique Flip Up Arm APC

· Matsuura's own & patented Flip Up Arm APC configuration shortens the machine length considerably & significantly reduces the overall machine footprint. Now an established feature on certain twin & multi pallet Matsuura 5-axis product lines, this APC design has proven itself to be one of the most reliable & trouble free currently available on the market.



Thru-Table / Pallet Clamping

option

· A dynamic, versatile & reliable Thru-Table / Pallet Clamping System is available as an option

NON-PC: 6 Port

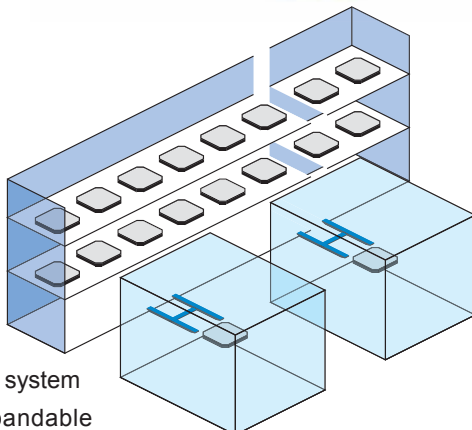
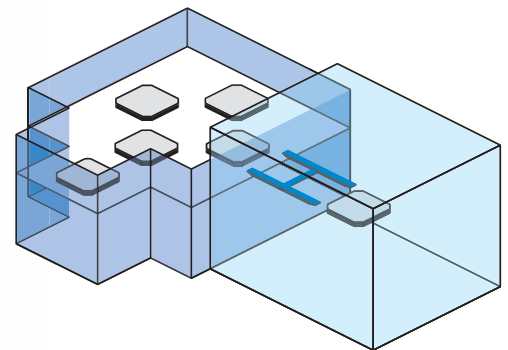
with PC: 2 Port

APC Pallet Systems

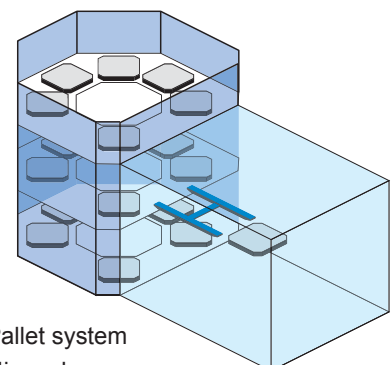
option

· APC option line-up for continuous unmanned production.
· Non-PC is standard.

PC6 Floor Pallet system
Compact, fully integrated & expandable multi pallet system



PC17~ Linear Pallet system
Twin deck & fully expandable linear pallet system



PC18 Tower Pallet system
Vertically aligned space saving multi pallet system

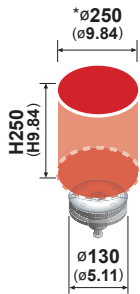
MAM72 Series

MAM72-25V



Loading Capacity : 40kg
(88lb.)

Max. Work Size



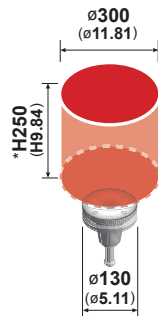
*In case of **PC**,
 $\phi 300$ ($\phi 11.81$) applicable.

MAM72-3VS



Loading Capacity : 60kg
(132 lb.)

Max. Work Size



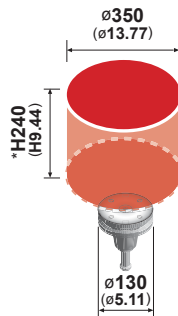
*H315(H12.40) applicable on the top
Stackers in the PC Magazine.

MAM72-35V



Loading Capacity : 60kg
(132 lb.)

Max. Work Size



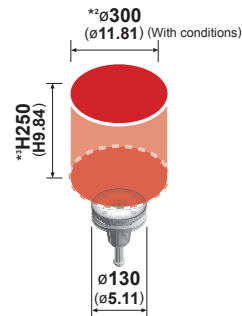
*H315(H12.40) applicable on the top
Stackers in the PC Magazine.

MAM72-3VM



Loading Capacity : *60kg
(132 lb.)

Max. Work Size



*1 Max. work weight on the pallet
magazine(PC90) is altogether 2,520kg.

*2 When the stackers on both sides are
empty, $\phi 300$ ($\phi 11.81$) applicable.

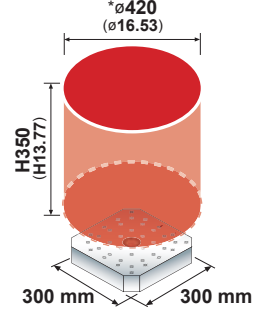
*3 H315(H12.40) applicable on the
top Stacker in the PC Magazine.

MAM72-42V



Loading Capacity : 200kg
(440 lb.)

Max. Work Size



*In case of **PC**, $\phi 520$ ($\phi 20.47$) applicable.
(Working Surface $\phi 300$ mm)

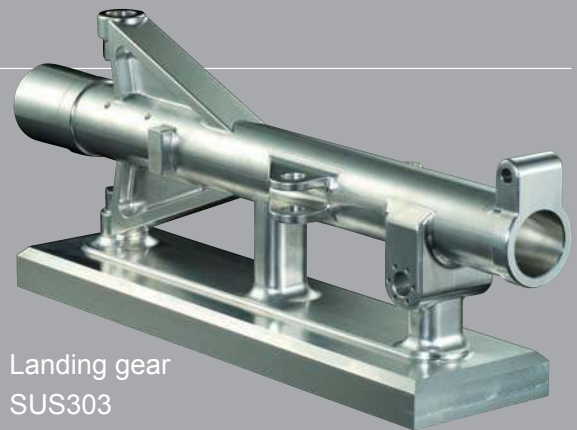
Unit : mm(in.)

5-Axis Machining Example #1

- Landing Gear component machined in a single operation with one set up, taking full advantage of the $\phi 800$ ($\phi 31.49$) worksizes capacity and 150 degree A-Axis stroke.

Highlights

1. One hit, one set up 5 axis machining from solid billet
2. Solid billet size: 800 x 400 x 200
(31.49 x 15.74 x 7.87)
3. Versatile machining platform for irregular unwieldy components



Work : Landing gear

Material : SUS303

No. of tools : 14

5-Axis Machining Example #2

- Blisk machining from solid – high accuracy geometry & impeccable surface finish required. Long periods of stable & accurate machining establishes the credentials of Matsuura's own Thermal Meister™ software. (Thermal Displacement Compensation for Spindle & Feed Axis.)

Highlights

1. Billet size: $\phi 420$ x H100
($\phi 16.53$ x H3.93)
2. Material: SUS303 requiring highly rigid machine platform
3. Simultaneous 5-axis machining
4. Utilising TCPC function (inclined plane machine command)

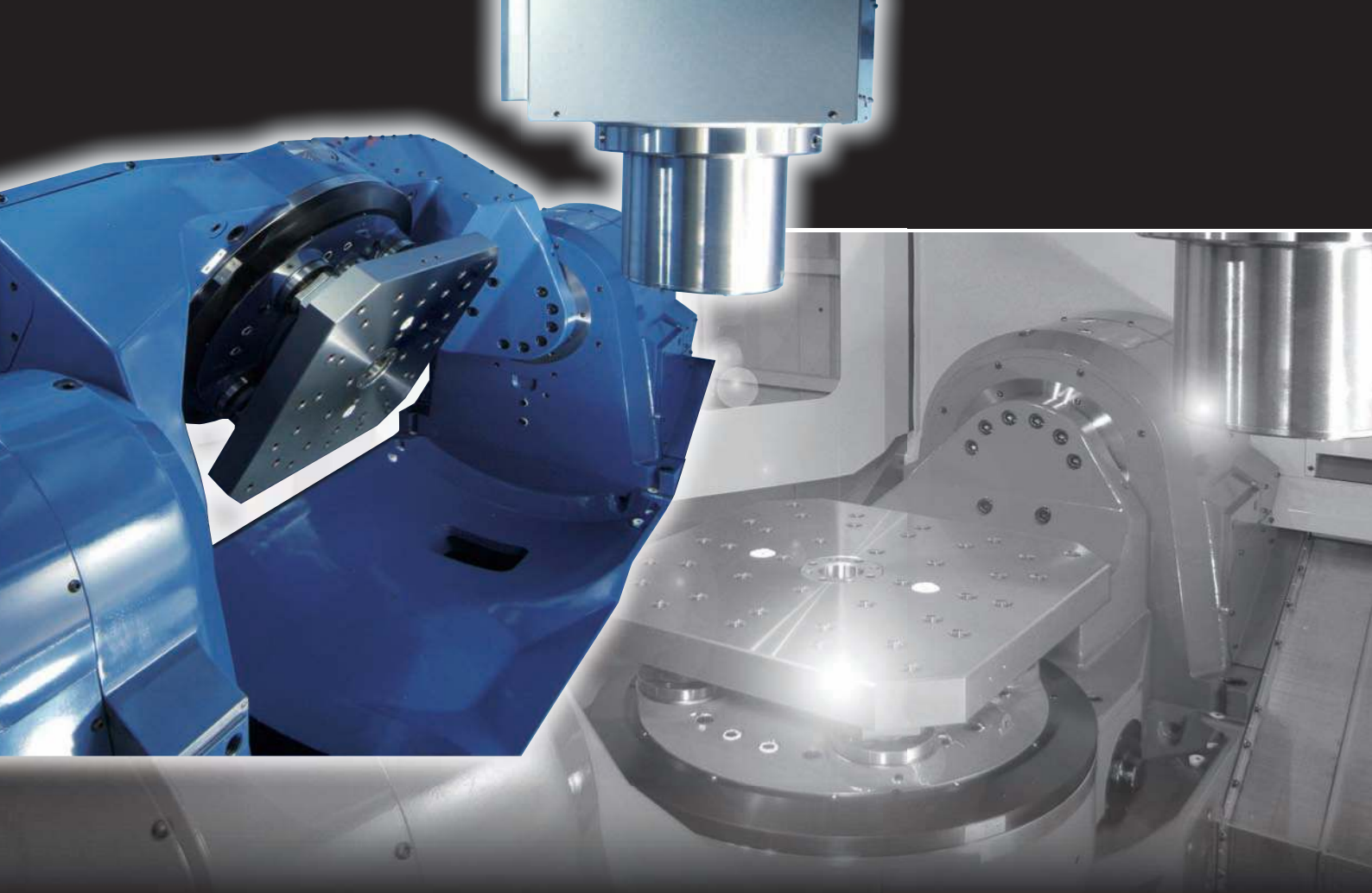


Work : Blisk

Material : SUS303

No. of tools : 6

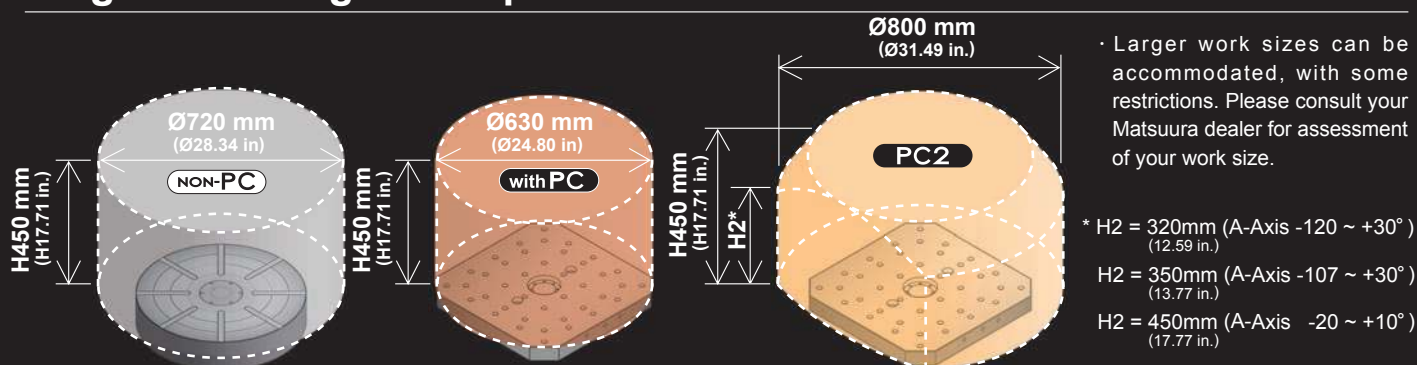
Unit : mm(in.)



Optimized Design for 5-Axis Machining

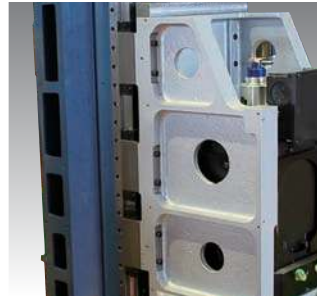
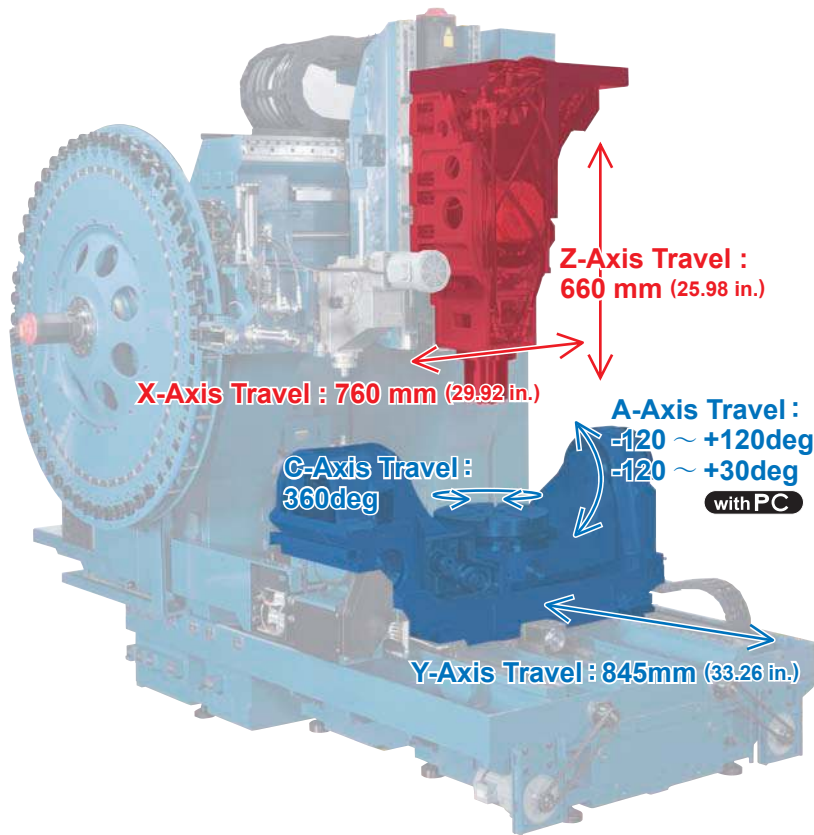
The **MAM72-63V**, as with all Matsuura multi axis products, has been designed as a fully fledged & integrated 5-axis machine tool not just a 3-axis machine tool with "bolt on" 4th & 5th table. Due to total design integration from the inception of the machine, the **MAM72-63V** has an optimized work enclosure, that offers the maximum working envelop while minimizing interference throughout all movements of the machine axes.

Largest Working Envelope in its Class



Highly Rigid Structure

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



- Triple Slide Packs are utilised on the Z-Axis, assuring maximum rigidity.



- To maintain high accuracy for the lifetime of the machine, parallelism & straightness are set to within 2 microns for the full axis stroke during manufacture.



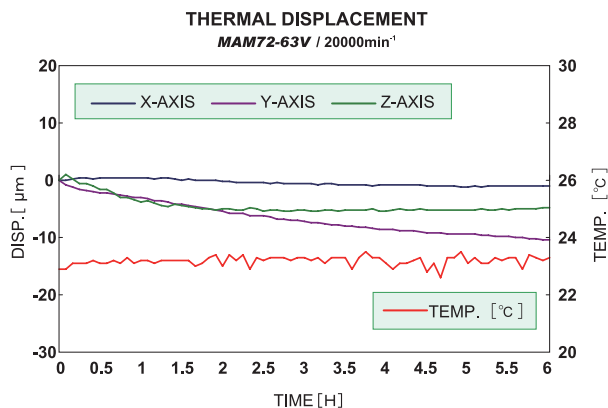
- All supplied components, such as the Roller Guides, are of the finest quality available.



- Integrated fully into the design of the **MAM72-63V**, the Matsuura designed & tested A / C-axis table has been created utilising FEM analysis.



- The span of the A / C-axis between the roller guides has been calculated to offer maximum performance.



- Thermal Meister™ monitors the temperature of the spindle and the X, Y and Z axes and supplies a constant feed of compensation values to the NC to maintain assured accuracy.



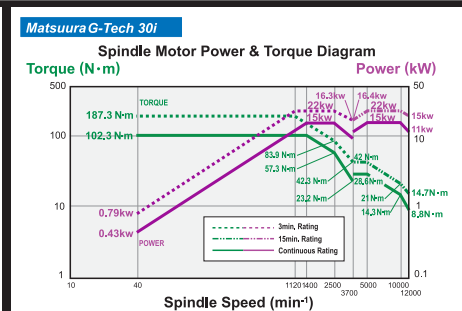
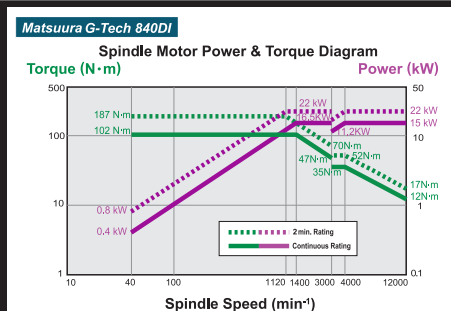
Highly Reliable Spindle

Designed by Matsuura for Matsuura – world leading Hi-Tech Spindle technology for all industries & a myriad of materials.

Matsuura Hi-Tech Spindle

BT40 Spindle Specification standard

Max. Rotation Speed	12,000 min ⁻¹
Motor Power	15 / 22 kW(30HP)
Motor Torque	187 N·m / 1,120 min ⁻¹
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 than 1 μm (0.000039 in.) as the actual measured value at the spindle nose.

Eco-Friendly Grease Lubrication

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



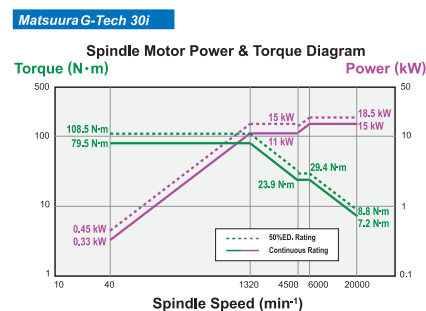
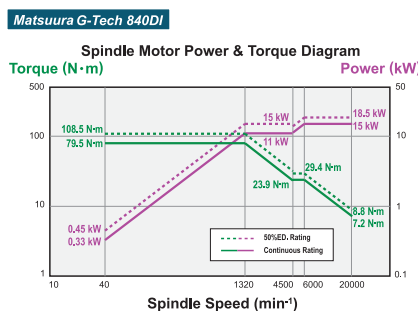
※ 20,000min⁻¹ spindle provide with spindle grease auto supply system

Vacuum Type Coolant Thru Spindle option

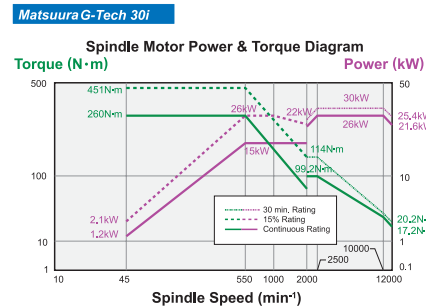
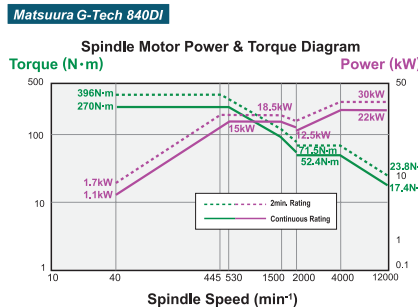
· This function prevents coolant from dripping & scattering in the machine enclosure & in the ATC during tool change. A vacuum mechanism aspirates the remaining coolant in the circuit.

Spindle Specifications / Spindle Motor Power & Torque Diagrams

BT40 Spindle Specification		option
Max. Rotation Speed	20,000 min ⁻¹	
Motor Power	15 / 18.5 kW(25HP)	
Motor Torque	108.5 N·m / 1,320min ⁻¹	
Bearing Lubrication	Grease	



BT50 Spindle Specification		option
Max. Rotation Speed	12,000 min ⁻¹	
Motor Power	22 / 30 kW(40HP)	
Motor Torque	396 N·m / 445min ⁻¹	
Bearing Lubrication	Oil-Air	



· Optional BT40 30,000 min⁻¹ is available. option



Ergonomic & User Friendly

Designed around the operator to maximize their productivity, efficiency & comfort, the **MAM72-63V** offers superb ergonomic functionality.

Superb Dual Access

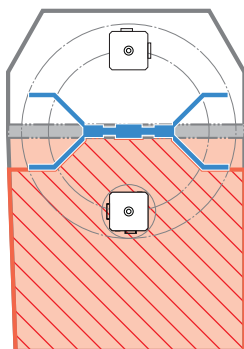
- Wide and capacious machine access at both the APC station and enclosure door.
- Tempered glass in the main enclosure window assures clearer vision for longer periods.



Reliable Swarf Management

X-Type APC Door

- Featured only on Matsuura products, our X-Type APC door design removes all opportunity for swarf to build up & become trapped, eventually causing machine downtime.
- This exclusive Matsuura X-Type Door design still maintains the **MAM72-63V**'s largest in class working envelope & workpiece accommodation.

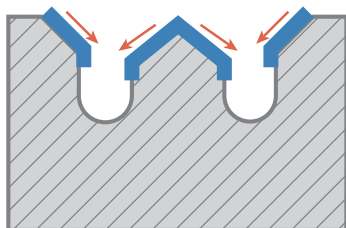


• X-type APC Door

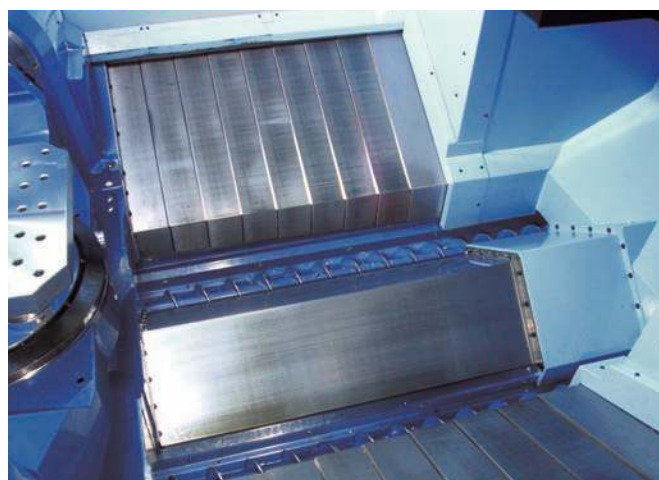


W-Type Slide Cover

- By integrating steep angled steel Z-Axis covers, swarf is efficiently directed into 2 gutters, where standard spiral chip conveyors rapidly transport waste material out of the enclosure. To accommodate high volumes of metal removal of all types, a wide variety of swarf management system designs are available.



• W-Type Slide Cover



Lift-Up Chip Conveyors option

Scraper Type

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

Hinge Type

- Drum Filter
- Only Water Solution Coolant Applicable



The Latest High Performance NC System

Matsuuura G-Tech 840Di

- Equipped with the latest high performance CPU, Windows XP Professional, graphical user interface.
- 10.4 inch color LCD, soft keys vertically arranged.
- Expanded media interfaces for data back-up Compact Flash.

For High Speed and Finer Machined Surface

Machining for General Parts or Mold & Die
Advanced Zee Lag Y standard

Machining for more Complex, Precision Parts
IZ-1 / COMP option
 (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.)

Matsuuura 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, Compact Flash Port, PC file management structure.

For High Speed and Finer Machined Surface

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

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

Human Machine Interface

standard

Handy Man II

Matsuura G-Tech 840DI

Matsuura G-Tech 30i

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

Automatically Controlled Toolpath / Tool Speed

option

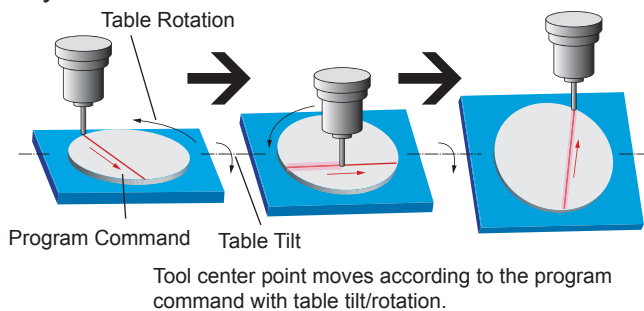
TRAORI

Matsuura G-Tech 840DI

TCPC

Matsuura G-Tech 30i

- 5-Axis Transformation (TRAORI) is the kinematic 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.



Easy Programming (3+2-Axis)

option

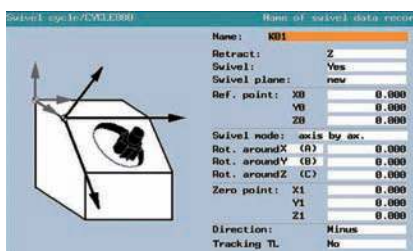
CYCLE800

Matsuura G-Tech 840DI

Tilted Working Plane Command(TWP)

Matsuura G-Tech 30i

- **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, 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.

High-Speed Precision Machining Program Support Function

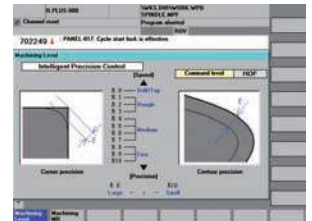
standard

IPC

Matsuura G-Tech 840DI

Matsuura G-Tech 30i

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



Tool Diameter Interpolations on 5-Axis

option

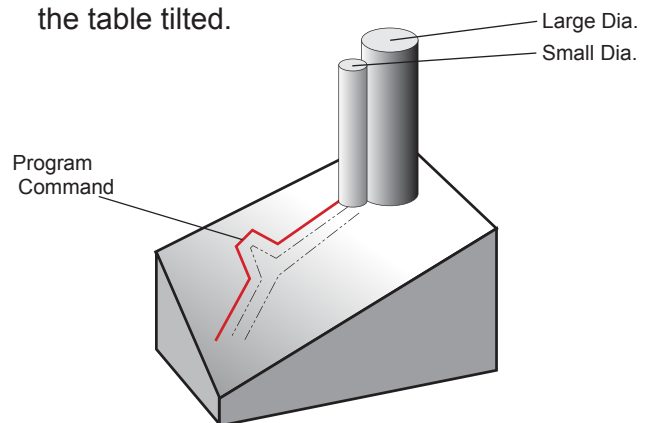
CUT3DC

Matsuura G-Tech 840DI

Three Dimensional Cutter Compensation

Matsuura G-Tech 30i

- **CUT3DC** sets the value of tool-offsets 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

High Speed High Precision 5-Axis Package

Matsuura G-Tech 840DI

Matsuura G-Tech 30i

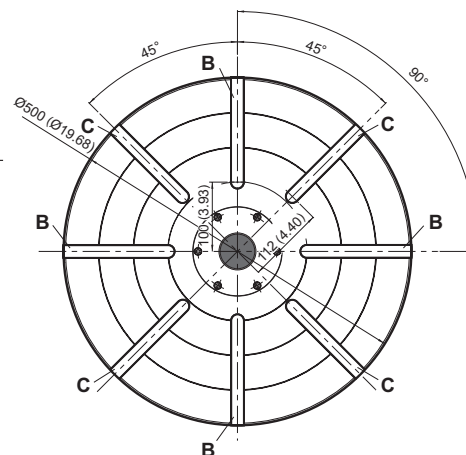
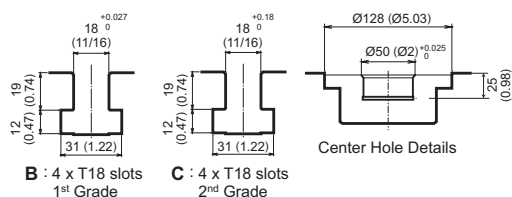
- Packages of NC Software, tailored to your production, are available. Please consult your Matsuura dealer for full details & assessment of your requirements.

Main Specifications

■ Movement & Ranges		
X-Axis Travel	mm (in.)	760 (29.92)
Y-Axis Travel	mm (in.)	845 (33.26)
Z-Axis Travel	mm (in.)	660 (25.98)
A-Axis Travel	deg	-120 ~ +120
A-Axis Travel with PC	deg	-120 ~ +30
C-Axis Travel	deg	360
■ Table / Pallet		
Working Surface	mm (in.)	Ø500 (Ø19.68)
Working Surface with PC	mm (in.)	500 × 500 (Ø19.68 × H19.68)
Loading Capacity	kg (lb.)	400 (880)
Loading Capacity with PC	kg (lb.)	350 (770)
Max. Work Size	mm (in.)	Ø720 × H450 (Ø28.34 × H17.71) Ø800 (Ø31.49) [With conditions]
Max. Work Size with PC	mm (in.)	Ø630 × H450 (Ø24.80 × H17.71) Ø800 (Ø31.49) [With conditions]
■ Spindle		
Spindle Speed Range	min ⁻¹	40 ~ 12,000 (Grease Lubrication)
Type of Spindle Taper Hole		7/24 Taper BT40
Spindle Bearing Inner Diameter	mm (in.)	Ø80 (Ø3.14)
Max. Spindle Torque	N·m / min ⁻¹	187 / 1,120
Spindle Motor (Continuous / 2 min)	kW (HP)	15 / 22 (30)
■ Feedrate		
Rapid Traverse (X / Y / Z)	mm / min (ipm)	60,000 (2,362.20)
Rapid Traverse (A / C)	min ⁻¹	25 / 50
Rapid Feed Acceleration (X / Y / Z)	G	0.75 / 0.67 / 0.98
Min. Movement Increment (X / Y / Z)	mm (in.)	0.001 (0.000039)
Min. Movement Increment (A / C)	deg	0.001
■ Automatic Tool Changer		
Type of Tool Shank		JIS B 6339 40T
Type of Retention Knob		JIS B 6339 40P
Number of Tools	tool	51 (Drum Magazine)
Max. Tool Diameter	mm (in.)	Ø96 (Ø3.77) When the pockets on both sides are empty Ø175 (Ø6.88)
Max. Tool Length	mm (in.)	350 (13.77)
Max. Tool Weight	kg (lb.)	10 (22)
Methods of Tool Selection		Fixed Address
Tool Change Arm		Double Grip Type

■ Power Supply		
Input Power	kVA	62
Voltage	V	200 / 220 ± 10%
Frequency	Hz	50 / 60 ± 1
Air Source	MPa	0.54 ~ 0.93
Required Air Volume	N ℓ / min	400
■ Tank Capacity		
Hydraulic oil tank capacity	ℓ	40
Coolant tank capacity	ℓ	600
■ Standard Accessories		
01.Total splash guard		
02.ATC Auto Door		
03.Synchronized Tapping		
04. AD-TAP Function		
05. IPC Function		
06.Spindle oil cooler		
07.Auto grease supply to feed axis		
08.Coolant unit		
09.Spiral 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 pallets and bolts (not utilized for the foundation)		
18.Scale feedback for A & C axis		
19. Handy Man II Y / F		
20.CD-ROM for Memory Card Operation only for Matsuura G-Tech 30i		
21.Thermal Meister™		
22.Matsuura Safety Specification		

Table Surface **NON-PC**



Unit : mm (in.)

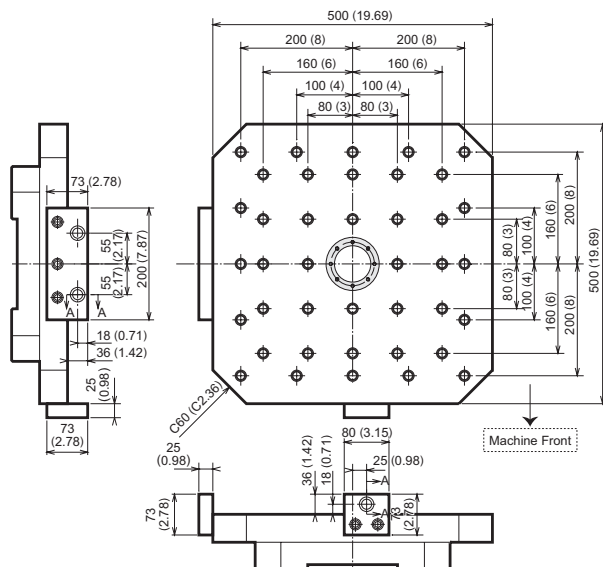
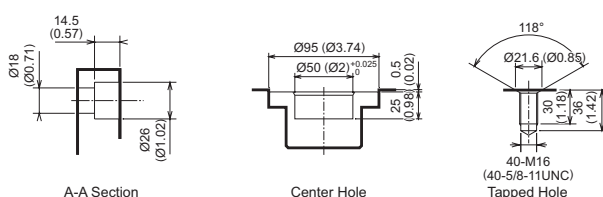
Equipment

○ : Standard ▲ : Option

■ Spindle	
12,000 min ⁻¹ (BT40 Grease)	○
12,000 min ⁻¹ (BT50 Oil-Air)	▲
20,000 min ⁻¹ (BT40 Auto Grease)	▲
30,000 min ⁻¹ (BT40 Oil-Air)	▲
■ ATC	
51 tools (BT40, Drum Magazine, Fixed Address)	○
52 tools (BT40, Drum Magazine, Memory Random)	▲
240base	
120 tools (BT40, Matrix Magazine)	▲
150 tools (BT40, Matrix Magazine)	▲
180 tools (BT40, Matrix Magazine)	▲
320base	
120 tools (BT40, Matrix Magazine)	▲
160 tools (BT40, Matrix Magazine)	▲
200 tools (BT40, Matrix Magazine)	▲
520base	
360 tools (BT40, Matrix Magazine)	▲
400 tools (BT40, Matrix Magazine)	▲
440 tools (BT40, Matrix Magazine)	▲
■ 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	○
■ APC	
NON-PC	○
PC2	▲
PC6 (Floor Pallet System)	▲
PC17 (Linear Pallet System)	▲
PC18 (Tower Pallet System)	▲
■ Coolant	
Coolant Unit	○
Vacuum Type Coolant-Thru-Spindle Type A	▲
Vacuum Type Coolant-Thru-Spindle Type B	▲
Vacuum Type Coolant-Thru-Spindle Type C (2MPa)	▲
Vacuum Type Coolant-Thru-Spindle Type C (5MPa)	▲
Vacuum Type Coolant-Thru-Spindle Type C (7MPa)	▲
Coolant Flow Checker	▲
Coolant Temperature Controller Tank 100 ℓ	▲
Coolant Temperature Controller Tank 200 ℓ	▲

■ Swarf Management	
Total Enclosure Guard	○
ATC Auto Door	○
Spiral Chip Conveyor	○
Chip Flush System	○
2MPa external nozzle with spindle thru	▲
5MPa external nozzle with spindle thru	▲
7MPa external nozzle with spindle thru	▲
Lift-Up Chip Conveyor (Hinge Type, Drum Filter)	▲
Chip Bucket	▲
Air Blow For Chip / Swarf Removal	▲
Workpiece Cleaning Gun (Machine side)	▲
Workpiece Cleaning Gun (APC side)	▲
■ Operation / Maintenance	
AD-TAP Function	○
IPC Function	○
Handy Man II Y / F	○
Auto grease supply to feed axis	○
Work Light (fluorescent)	○
Work Counter (9 sorts of M function)	○
Movable manual pulse generator	○
8 Sets of Extra M Function	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
Spindle Run Hour Meter	▲
Rotary Wiper (by air)	▲
Rotary Wiper (by electricity)	▲
Cumulative Run Hour Display Unit	▲
Optional Block Skip 1~7	▲
Program End Announcement Light (Red, Yellow, Green)	▲
■ Safety Features	
Matsura Safety Specification	○
■ In-Process Measurement / Broken Tool Detection	
In-Process Measurement / Auto Centering (Touch Probe)	▲
Broken Tool Detection / AutoTool Length (Touch Sensor)	▲
Broken Tool Detection / AutoTool Length (Laser Sensor)	▲
In-Process Measurement (Touch Probe) & Broken Tool Detection (Touch Sensor)	▲
In-Process Measurement (Touch Probe) & Broken Tool Detection (Laser Sensor)	▲

Pallet Surface with PC

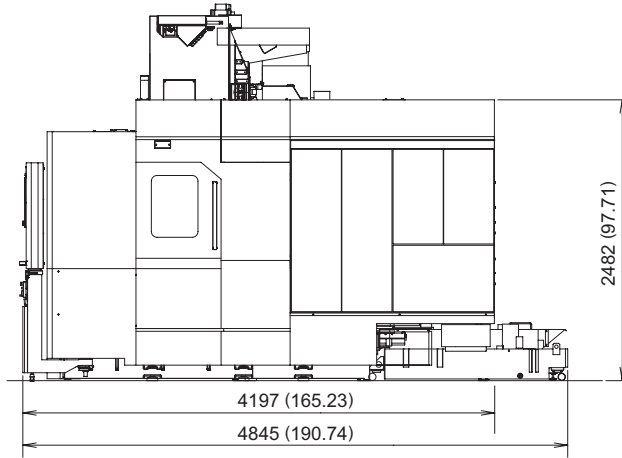
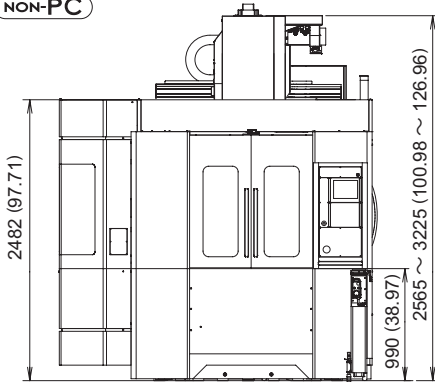


Unit : mm (in.)

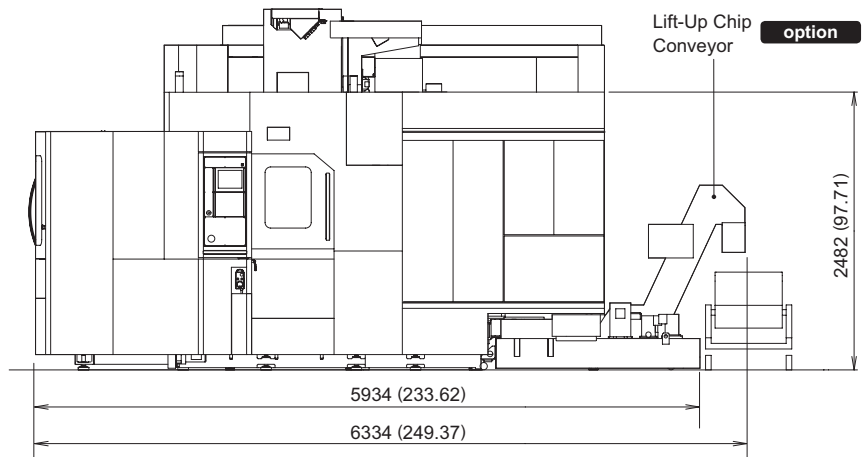
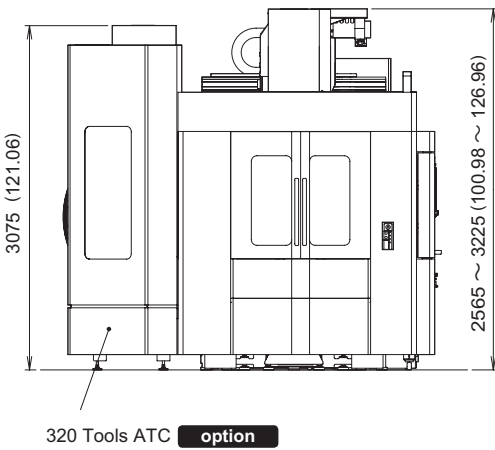
Outline

Unit : mm (in.)

NON-PC

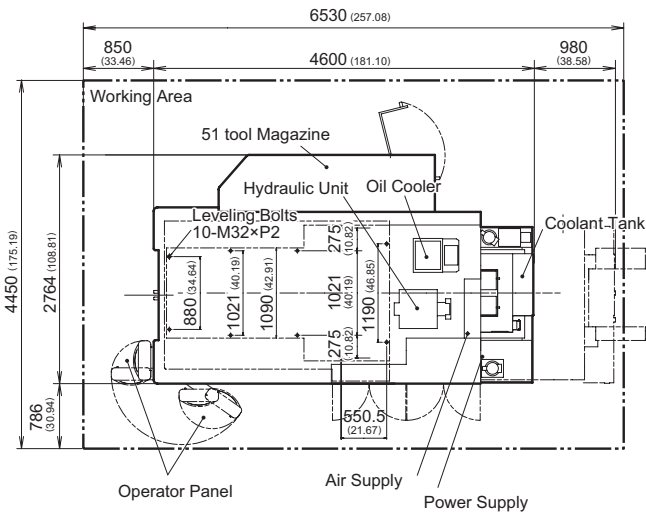


PC2

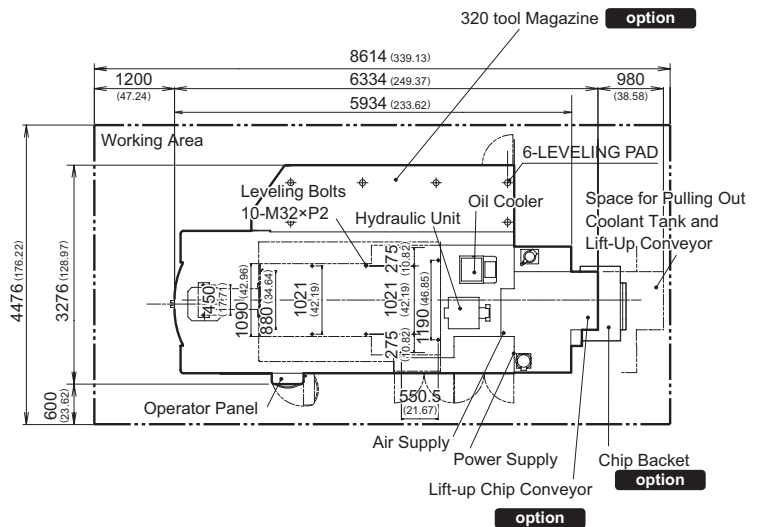


Floor Plan

NON-PC



PC2



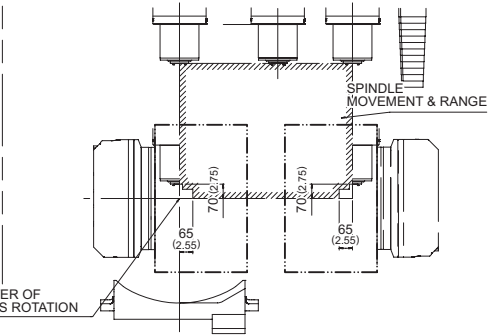
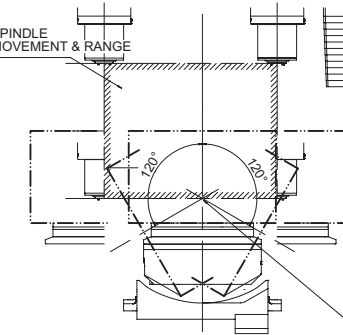
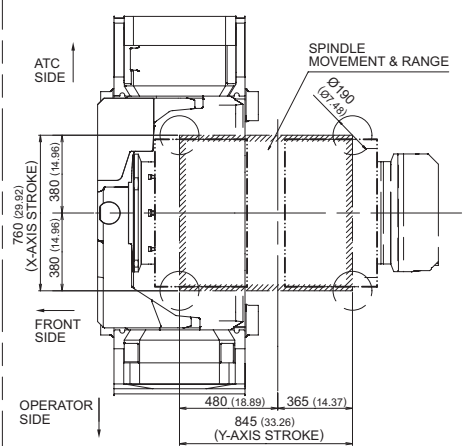
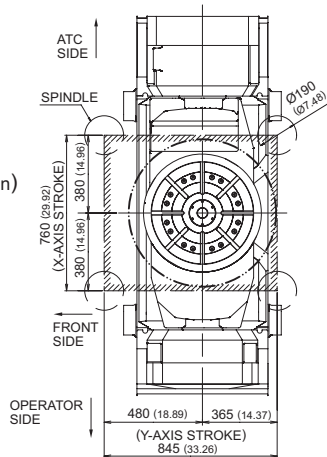
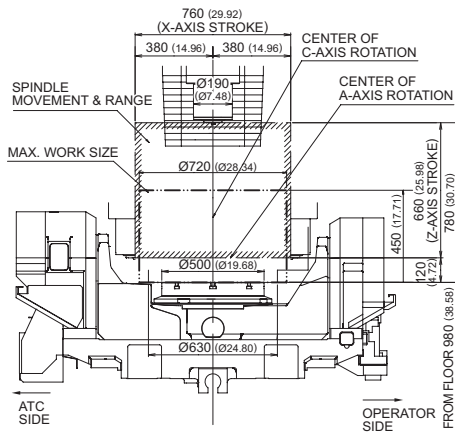
Spindle Movement Interference

Unit : mm (in.)

NON-PC

- X-Axis stroke 760 mm (29.92 in.)
- Y-Axis stroke 845 mm (33.26 in.)
- Z-Axis stroke 660 mm (25.98 in.)
- A-Axis stroke -120 ~ +120 deg.
- C-Axis stroke 360 deg.
- Max. Work size $\varnothing 720 \times H450$ mm ($\varnothing 28.34 \times H17.71$ in)
- Loading Capacity 400 kg (880 lb.)

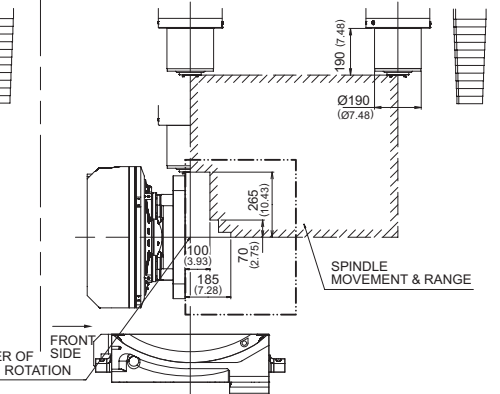
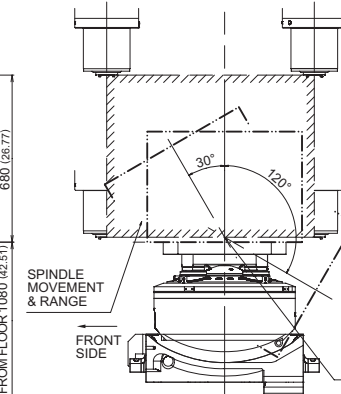
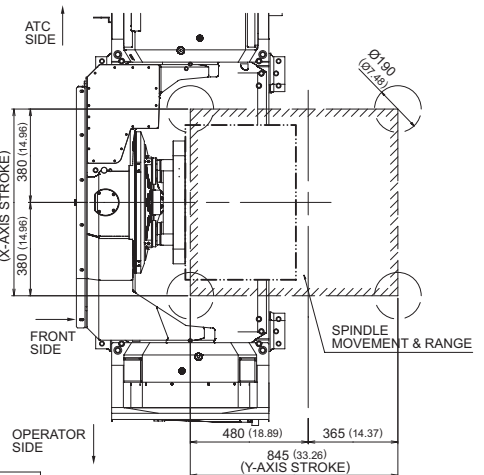
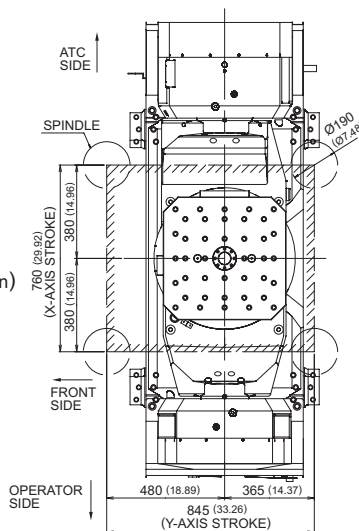
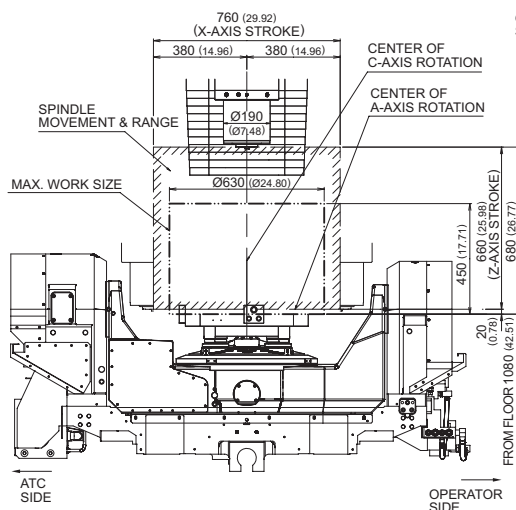
· Movable area show movement of the spindle end(Gauge line).
 · This diagram show of the Y-axis travel as a movement of the spindle, however it is a movement of the table on the actual machine.



PC2

- X-Axis stroke 760 mm (29.92 in.)
- Y-Axis stroke 845 mm (33.26 in.)
- Z-Axis stroke 660 mm (25.98 in.)
- A-Axis stroke -120 ~ +30 deg.
- C-Axis stroke 360 deg.
- Max. Work size $\varnothing 630 \times H450$ mm ($\varnothing 24.80 \times H17.71$ in)
- Loading Capacity 350 kg (770 lb.)

· Movable area show movement of the spindle end(Gauge line).
 · This diagram show of the Y-axis travel as a movement of the spindle, however it is a movement of the table on the actual machine.





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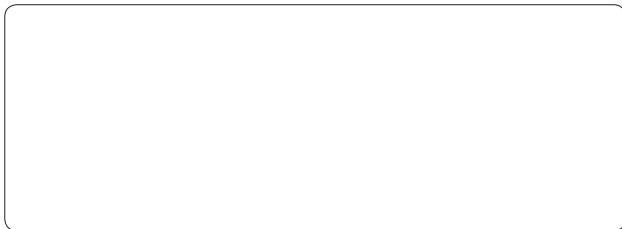
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- Product specifications and dimensions are subject to change without prior notice.
 - The photos may show optional accessories.



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

