

 **Matsura**

5-Axis Horizontal Machining Center

# **MAM72-100H**



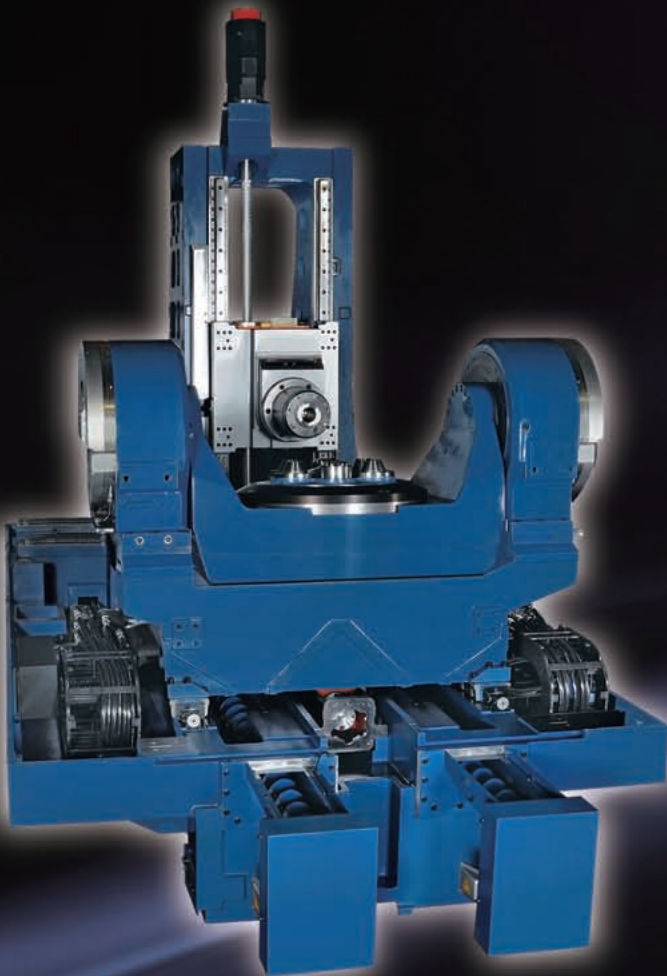
**MAXIA**  
Innovation by  Matsura

# ***MAM72-100H***

## Introducing the ***MAM72-100H*** Our Largest Capacity 5 Axis Machine Ever

**Robust, Stable &  
Highly Rigid Design**

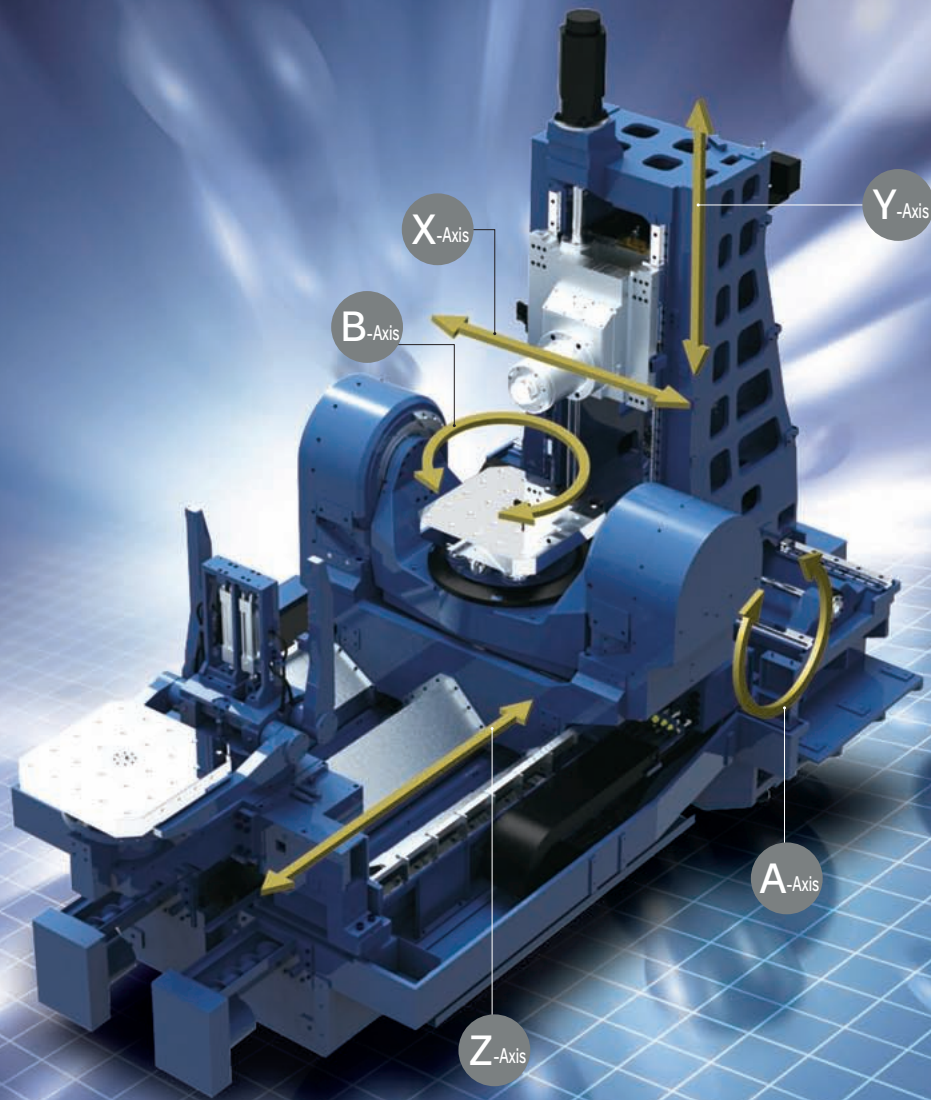
Utilizing FEM Analysis and Matsuura's prestigious engineering experience, the ***MAM72-100H*** is a highly rigid and stable machining platform – for any application cutting any material.



Achieves Reduced Setup & Cycle Times & a Faster Return on Investment 

Matsuura's Unique DD Technology 

Vast Machining Enclosure – Effective & Proven Swarf Management 

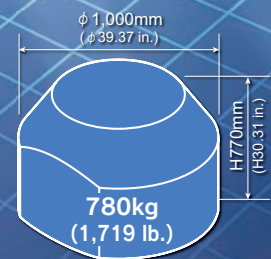


**Movement and Ranges**

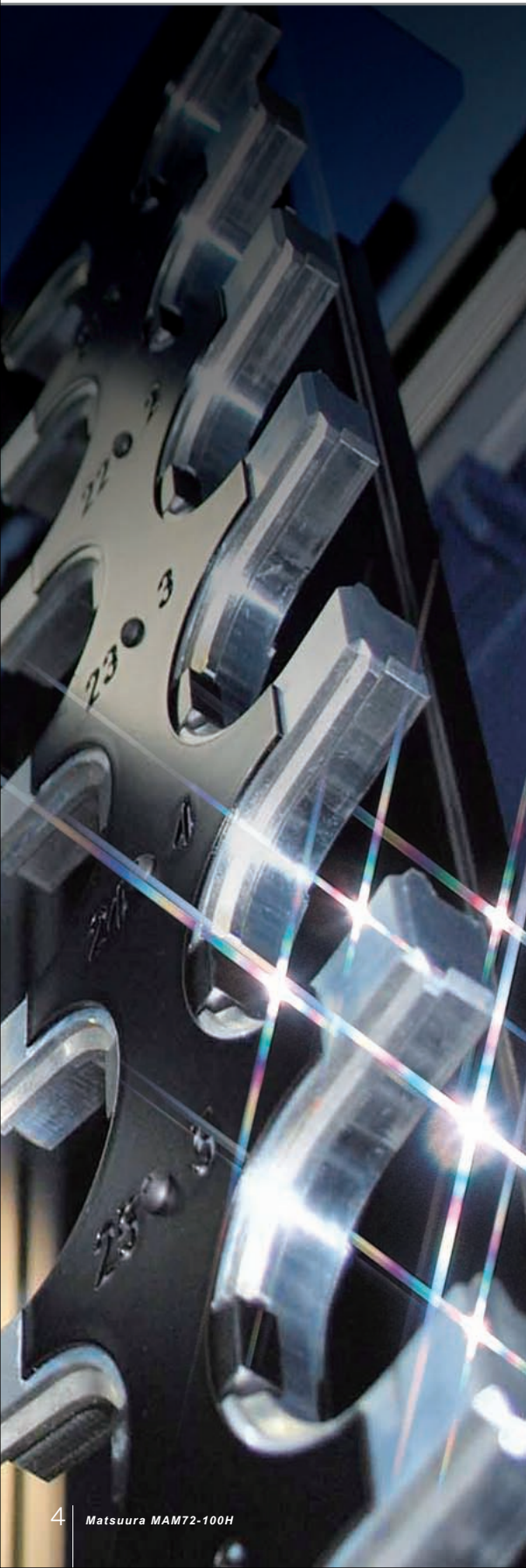
X-Axis Travel (mm (in.))	1,050 (41.33)
Y-Axis Travel (mm (in.))	920 (36.22)
Z-Axis Travel (mm (in.))	960 (37.79)
A-Axis Travel (deg)	-120 ~ +30
B-Axis Travel (deg)	360

**Max. Work Size**

Max. Work Size (mm (in.))	Ø1,000 × H770 (Ø39.37 × H30.31) (with restrictions)
Loading Capacity (kg (lb.))	780 (1,719)



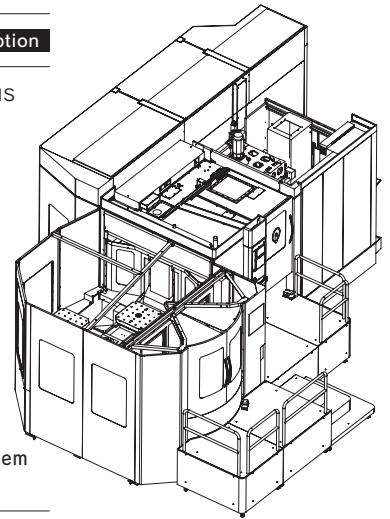
## Unmanned Operation on the **MAM72-100H** Achieves Reduced Setup & Cycle Times & a Faster



### Multi Pallet Systems

Option

- APC option line-up for continuous unmanned production.



### PC6

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

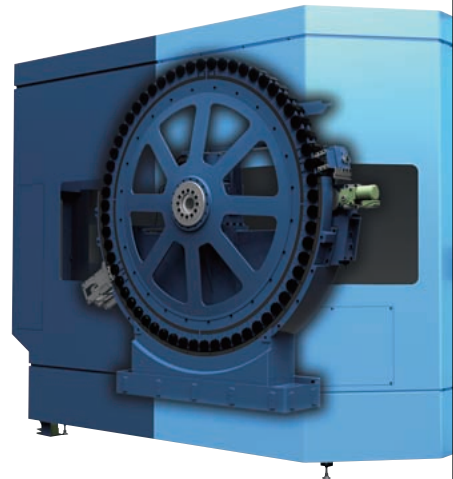
### 800 Square Pallet

Option

- Loading Capacity is 640Kg(Standard 780Kg) and Maximum Work Size is same as Standard.

### Drum Magazine

- The automatic tool changer is equipped with a Matsuura designed & proven drum-type tool magazine driven by a servomotor for short tool indexing time, low noise and low vibration.

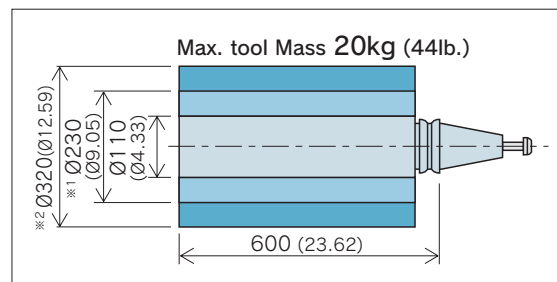


### Drum Magazine

Standard

60 tools with fixed address system

■ Max. tool size (units: mm (in.))



※ 1 No adjacent tool (Store position is limited)

※ 2 No adjacent tool (Store position is limited)

When  $\varnothing 320$  ( $\varnothing 12.59$ ) tools are set next to each other, there should be 2 empty pots in between.



# Return on Investment

The **MAM72-100H** comes equipped with a twin pallet changer PC2 & 60 tools as standard. Optional large capacity Multi Pallet Systems & Matrix Magazines dramatically increase cost effective unmanned operation & lights out production.

## Matrix Magazine

Option

- Established & proven in all environments on Matsuura products – the Matrix Magazine ATC option can hold from 150 to 360 tools - ample storage for long periods of unmanned lights out production. A chain type ATC is also available with 120 tool places.
- The magazine ceiling guard and the ATC double shutter are provided to prevent coolant from entering the Matrix Magazine. This maintains a much cleaner tool storage environment, especially reducing the amount of coolant grime build up on the tool shanks and drastically improving ATC reliability.

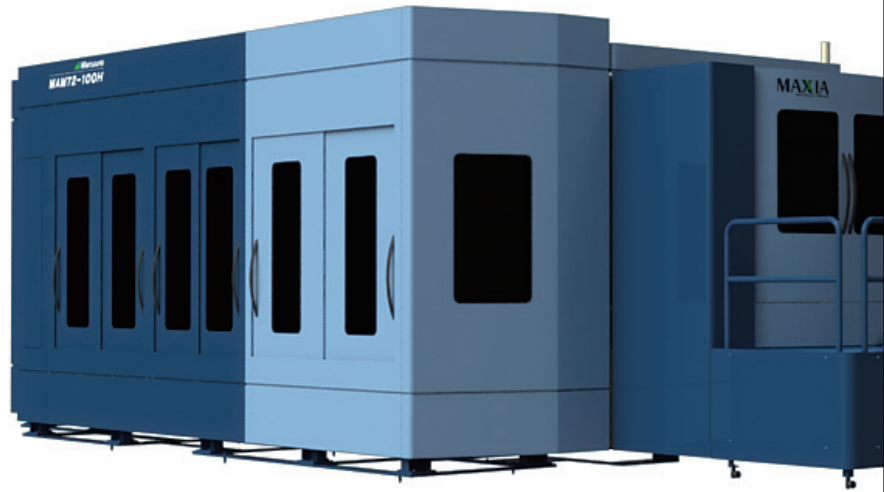
## Chain Magazine

Option

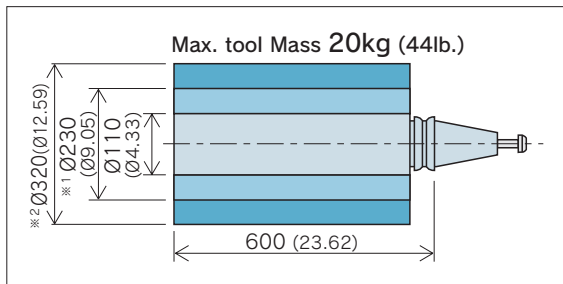
Chain Magazine	Option
120 tools	

Matrix Magazine		Option
240-tool base	360-tool base	
150 tools	270 tools	
180 tools	300 tools	
210 tools	330 tools	
240 tools	360 tools	

Matrix Magazine, 360-tool base  
Option



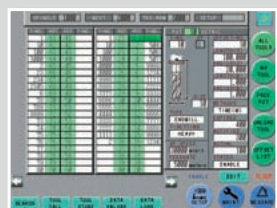
### Max. tool size (units: mm (in.))



- ※ 1 No adjacent tool (Store position is limited)
  - ※ 2 No adjacent tool (Store position is limited)
- When Ø320( Ø12.59) tools are set next to each other, there should be 2 empty pots in between.



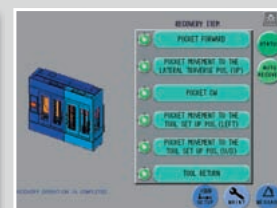
A new larger 10 inch screen has been added to the ATC – allowing effortless data control of all aspects of ATC management & functionality.



All Tools



NG Tools



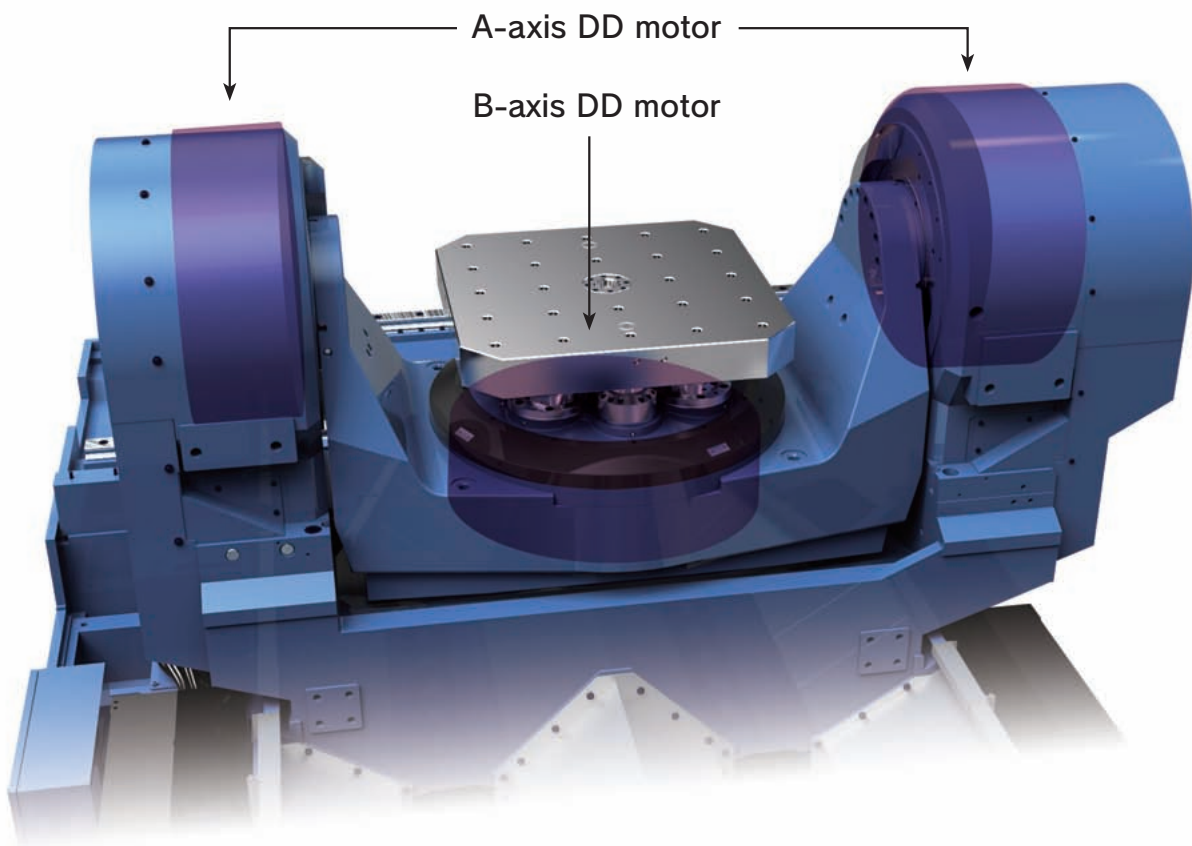
Auto Recovery

## High Speed Rotation & High Accuracy Positioning : Matsuura's Unique DD Technology



### Ultra Robust DD Motor

Designed in house by Matsuura, the DD A/B-Axis Motor achieves high positional accuracy during Milling & high speed rotation whilst Turning.



### High speed, high precision A / B Axis – powered by Direct Drives

The A-/ B-axis table configured with state of the art direct drive motors operate at a maximum feedrate of 50 min<sup>-1</sup> (A-axis: tilting axis) or 75 min<sup>-1</sup> (B-axis: rotating axis), ensuring high speed and high precision.

#### ■ Effects of DD motors

Faster acceleration	A 50min <sup>-1</sup>
Faster traverse & cutting speeds	
Zero parts wear	B 75min <sup>-1</sup>
Sustained long term accuracy	



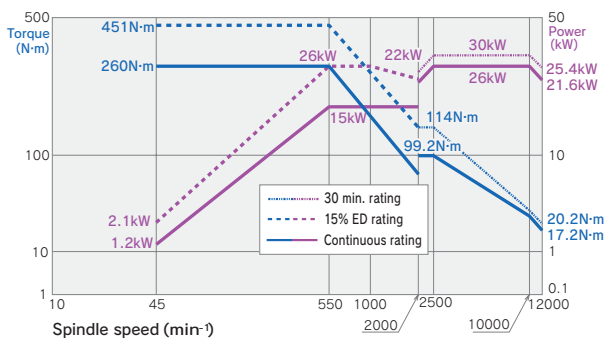
# The Matsuura Hi-Tech Spindle : Designed & Built In-House



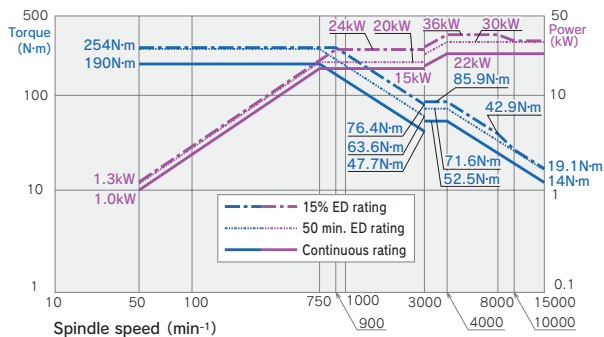
## Matsuura Hi-Tech Spindle

The Matsuura Hi-Tech Spindle delivers effortless power & unerring accuracy with any application and any material. Matsuura's pioneering heritage with high speed & high torque spindles guarantees reliability & longevity of service.

■ Spindle motor power & torque diagram [BT50 12,000min<sup>-1</sup>] **Standard**

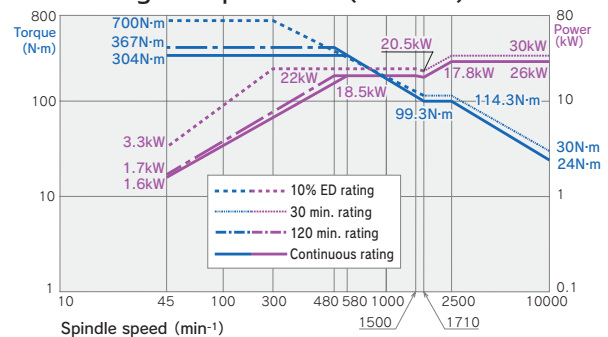


■ Spindle motor power & torque diagram [BT50 15,000min<sup>-1</sup>] **Option**



■ Spindle motor power & torque diagram [BT50 10,000min<sup>-1</sup>] **Option**

### High-torque motor (700N-m)



■ Cutting Performance [BT50 10,000min<sup>-1</sup>]

(inch)

				Spindle speed	Feed rate	Quantity	Spindle load			Spindle speed	Feed rate	Quantity	Spindle load	
 FACE MILL	A5052	Ø100mm (3.94)	W=80mm (3.15) D=5mm (0.2)	5,500 min <sup>-1</sup>	9,000mm/min (354.3)	3,600 cc/min	136%	 DRILL	A5052	Ø52mm (2.05) carbide	1,500 min <sup>-1</sup>	400mm/min (15.75)	849 cc/min	109%
	S50C	Ø160mm (6.3)	W=100mm (3.94) D=7mm (0.28)	300 min <sup>-1</sup>	800mm/min (31.5)	560 cc/min	104%		S50C	Ø52mm (2.05) carbide	1,500 min <sup>-1</sup>	220mm/min (8.66)	467 cc/min	110%
 END MILL	A5052	Ø25mm (0.98)	W=20mm (0.79) D=15mm (0.59)	10,000 min <sup>-1</sup>	8,000mm/min (315)	2,400 cc/min	132%	 TAP	A5052	M42x P4.5 HSS	120 min <sup>-1</sup>	540mm/min (21.26)	Solid tap function is used	20%
	S50C	Ø25mm (0.98)	W=3mm (0.12) D=40mm (1.58)	5,000 min <sup>-1</sup>	6,000mm/min (236.2)	720 cc/min	135%		S50C	M42x P4.5 HSS	80 min <sup>-1</sup>	360mm/min (14.17)	Solid tap function is used	54%

\* These are resulting data. In some cases, the catalogue data may not be obtained, depending on difference in the conditions.

## Assembled in a Clean Room Environment

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<sup>\*</sup> (0.000039 in.) - this is an actual measured value at the spindle nose.

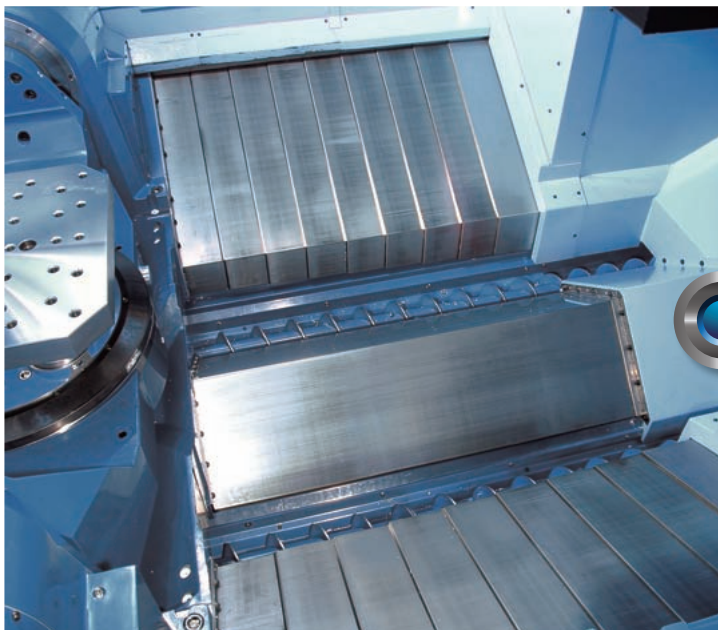
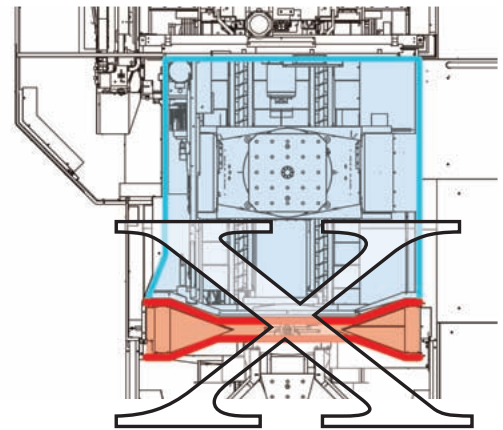
\* These are resulting figures, and not guaranteed figures.

## Vast Machining Enclosure - Effective & Proven Swarf Management



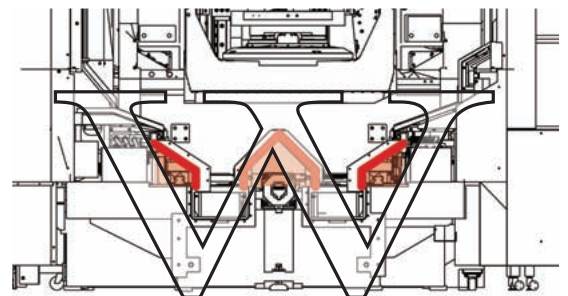
### X-Type APC Door

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.



### 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.

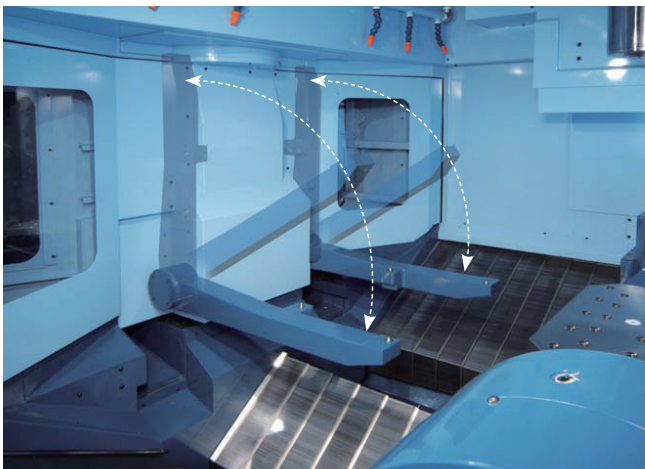




## Flip Up Arm APC

Patented

Matsuura's own & patented Flip Up Arm APC configuration shortens the machine length considerably & significantly reduces the overall machine footprint.



## Mist Separator Unit

Option

By having a mist separator in place, you can keep your shop area clean and comfortable and avoid any negative health impact on machine operators.



## Lift-Up Chip Conveyors

Option

### Scraper Type

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

### Hinge + Scraper Type

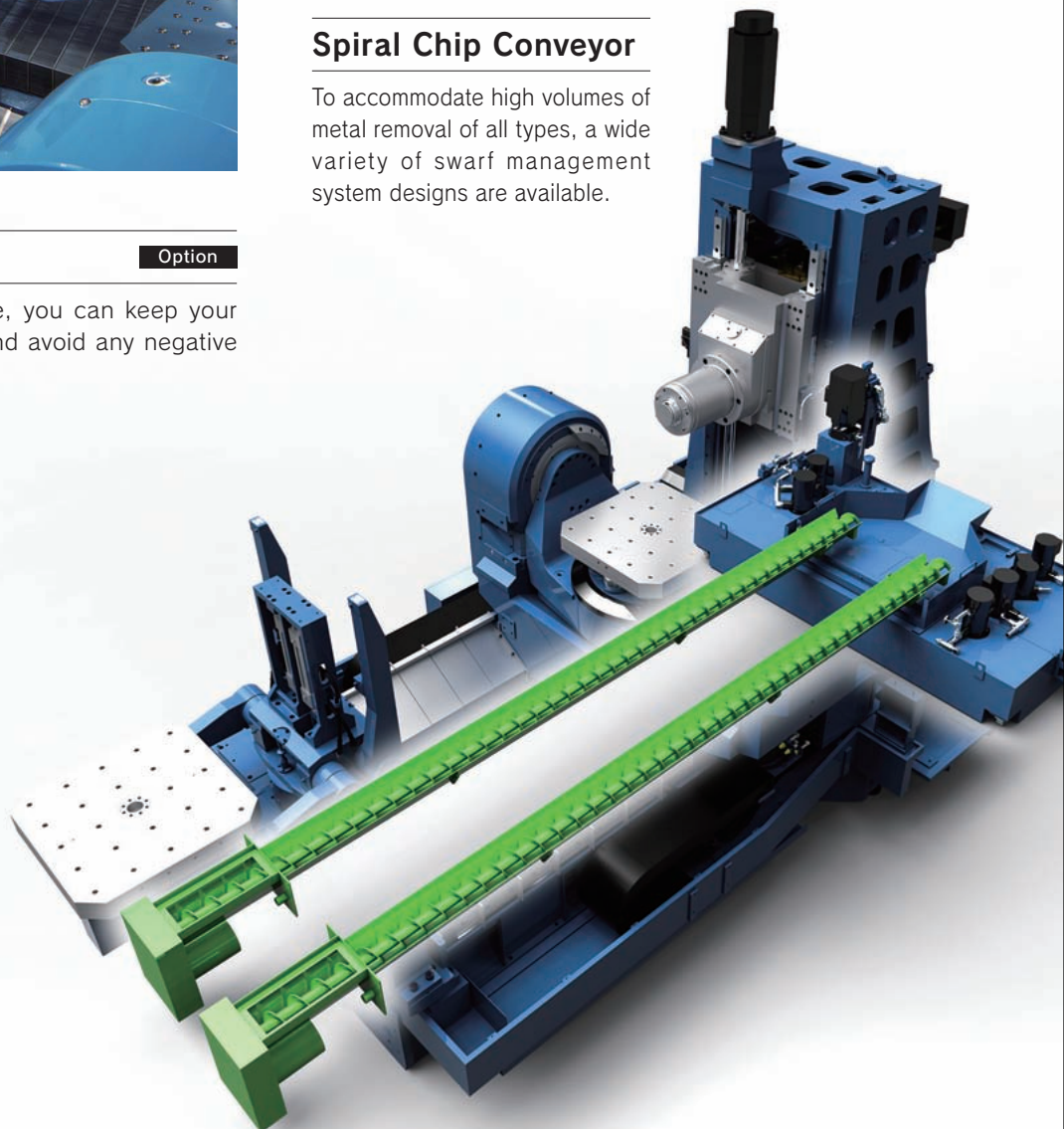
- Drum Filter
- Only Water Solution Coolant Applicable

## Thermal Meister™

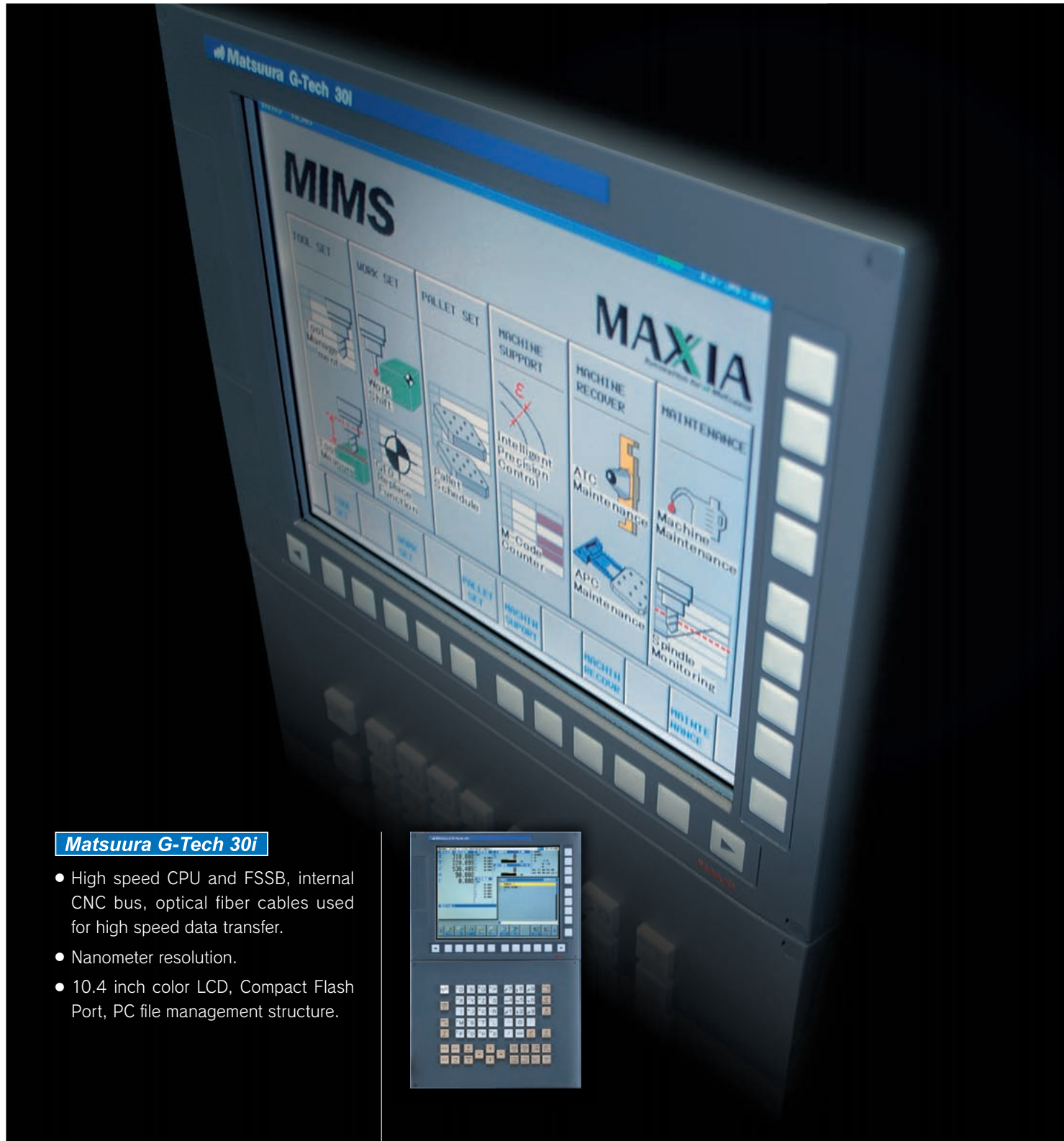
Thermal Meister™ monitors the temperature of the spindle and the X, Y and Z axes and supplies a constant feed of compensation values to the NC to maintain assured accuracy.

## Spiral Chip Conveyor

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



# The Latest High Performance NC System



## **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, Compact Flash Port, PC file management structure.

# Proven Software Performance for 5-Axis Machining

## Automatically Controlled Toolpath/ Tool Speed

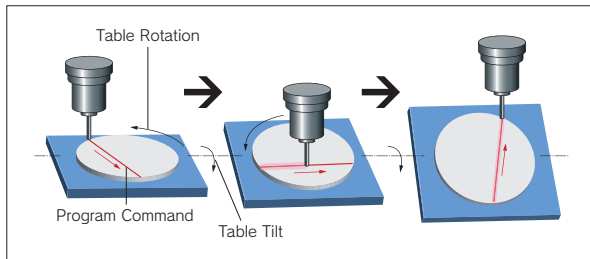
Option

TCPC

Matsuura G-Tech 30i

Tool Center Point Control (TCPC)

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



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

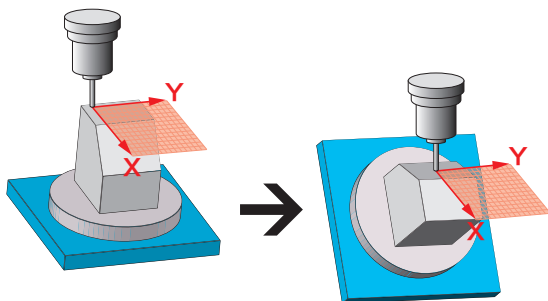
## Easy Programming (3+2-Axis)

Option

Tilted Working Plane Command(TWP)

Matsuura G-Tech 30i

Tilted working plane command which takes over necessary calculations for coordinate values including necessary axes motions. When rotary axes are moved, rather complex calculations, in the with machine axes configuration, should be made for re-calculating and establishing suitable work coordinate system for the new surface & its orientation.



## Optimized Functions for High Speed Machining

Matsuura G-Tech 30i

Machining for General Parts or Mold & Die

Standard **IZ-1/15F**

Machining for more Complex, Precision Parts

Option **IZ-1/30NF, IZ-2/150NF**

(Look Ahead Linear Acc./dec.+nano interpolation)

Executing the maximum 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.

## High-Speed Precision Machining Program Support Function

Standard

IPC / AD-TAP

Matsuura G-Tech 30i

**IPC** (Adjustment Function for High Speed /Accuracy Marching)  
For high speed cutting applications, Matsuura's proven and pioneering software is recommended. When utilizing this software, setting the required part accuracy level is quick, simple and user friendly, allowing you to prioritize precision against speed.

### AD-TAP

Matsuura's unique spindle motor control technology- AD-TAP, intelligently optimizes the torque V speed characteristics of the spindle motor, depending on the size of the tap used. This provides average reduction of 20% in tapping time. (Patented)

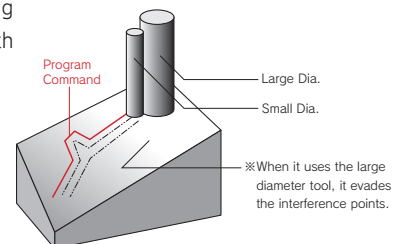
## Tool Diameter Interpolations on 5-Axis

Option

Three Dimensional Cutter Compensation

Matsuura G-Tech 30i

3-dimensional cutter compensation 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.



# Intelligent Protection System



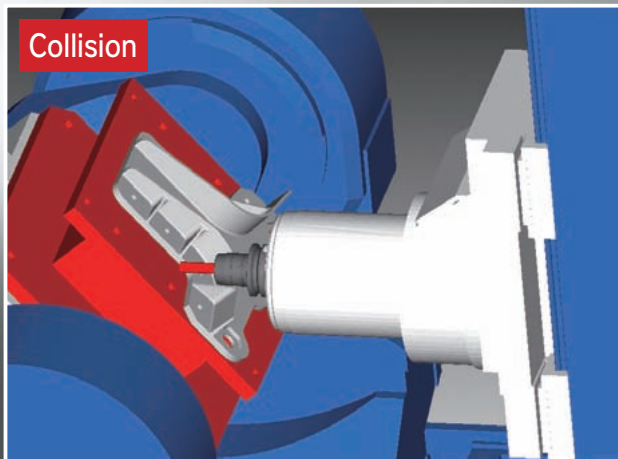
## Ultra Safe Collision Protection



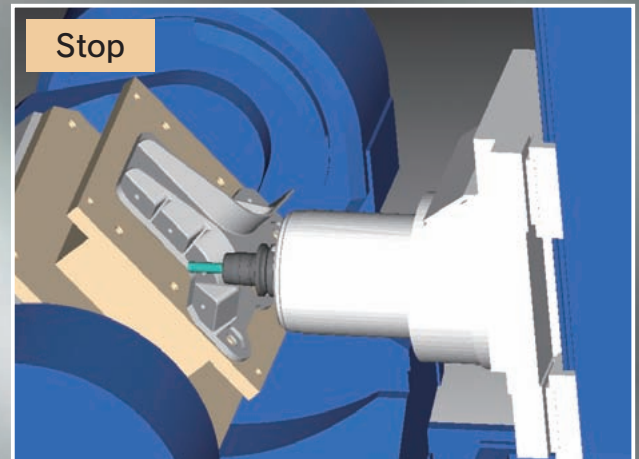
Safe



Secure



Collision



Stop

Intelligent Protection System OFF

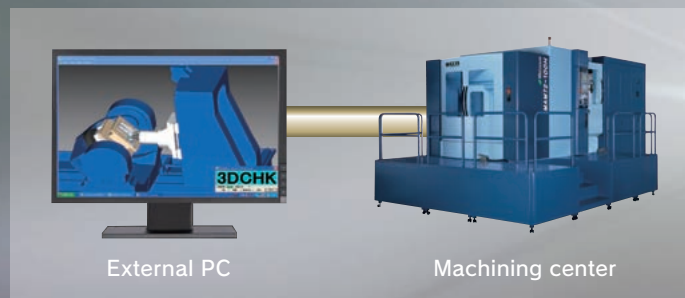
Intelligent Protection System ON

Manual / automatic operation supported  
Simultaneous 5-axis machining supported

### On-Line Link with PC

※ *Intelligent Protection System* simulates your programmed component alerting the user to any interference or collision before any actual machining.

※ Requires end user PC - consult Matsuura for full specifications.



External PC

Machining center

### Collision Avoidance during Setup

Tool length compensation data is linked with the Intelligent Protection System.

As NC data changes, PC compensation data is automatically updated.

### Collision Avoidance during Automatic Operation

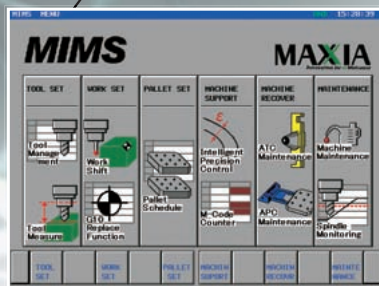
Collision check can be activated during simulation. The collision check function renders the part in real time on screen.

### Standard Accessories

Software	Machine model data
Communication cable	PC communication board

※ A high quality cable is provided to route from the NC to your PC Communication Board

## Meister's knowledge, skills, and ideas combined



**Environment**

**Eco Meister**

**Power Saving**

- Power cut-off function
- Energy-saving devices installed

**Accuracy**

**Thermal Meister**

**Stable Accuracy**

- Spindle thermal displacement compensation

**Simple**

**Operability Meister**

**Fuss-Free Simple Operation**

- Tool setup support
- Part setup support
- Restart after machining stop

**Secure**

**Reliability Meister**

**Machine Down Time Reduction**

- Preventive maintenance support functions
- Machine restoration support functions

**Reliability Meister Plus Option**

**Increased Security Provided**

- Electronic manual
- E-mailing function

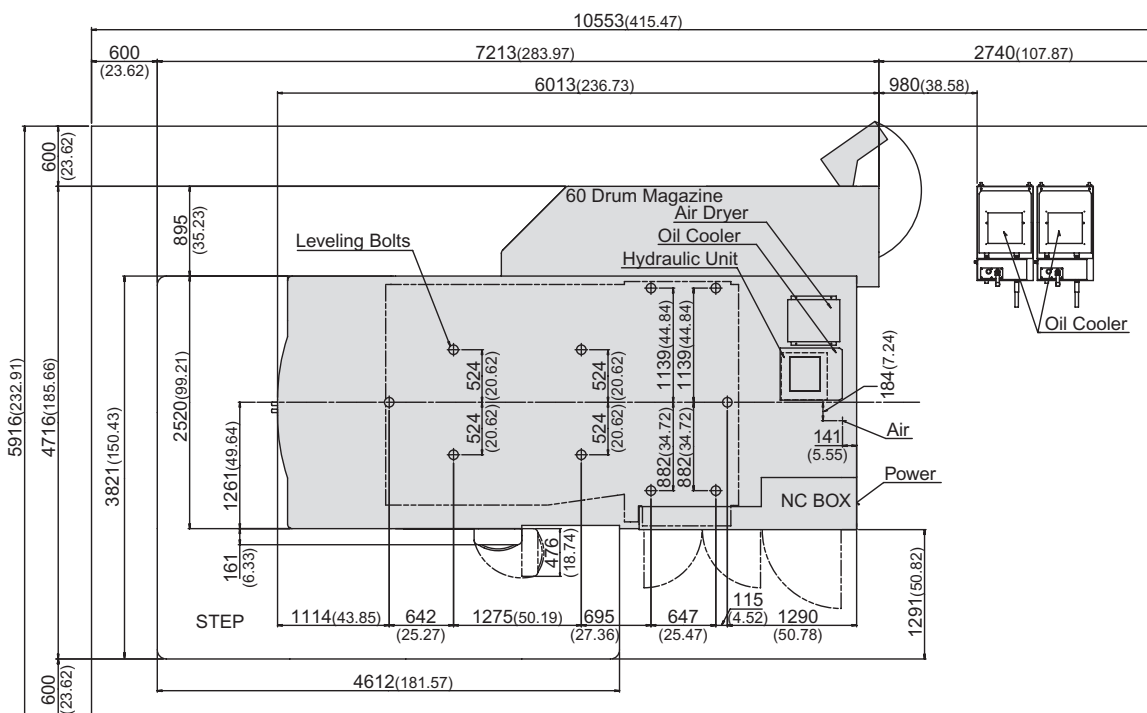
※ Reliability Meister Plus requires a PC.  
Consult Matsuura for more information.

# Standard Machine Specifications

■ Movement and Ranges		
X-Axis Travel	mm (in.)	1,050 (41.33)
Y-Axis Travel	mm (in.)	920 (36.22)
Z-Axis Travel	mm (in.)	960 (37.79)
A-Axis Travel	deg	-120 ~ +30
B-Axis Travel	deg	360
■ Pallet		
Working Surface	mm (in.)	630×630 (24.80×24.80)
Loading Capacity	kg (lb.)	780 (1,719)
Max. Work Size	mm (in.)	Ø1,000× H770 (Ø39.37×30.31) (with restrictions)
■ Spindle		
Spindle Speed Range	min <sup>-1</sup>	45 ~ 12,000
Spindle Drive Motor (Contin. / 30min)	kW	15 / 22 / 26 (Low Speed : continuous / 40% / 15%) 26 / 30 / 30 (High Speed : continuous / 30 min / 60%)
Max. Spindle Torque	N·m	451 (550min <sup>-1</sup> )
■ Feedrate		
Rapid Traverse Rate (X/Y/Z)	mm/min(ipm)	60,000/60,000/50,000 (2,362.20/2,362.20/1,968.50)
Rapid Traverse Rate (A/B)	min <sup>-1</sup>	50 / 75
Feedrate (X/Y/Z)	mm/min(ipm)	60,000/60,000/50,000 (2,362.20/2,362.20/1,968.50)
Feedrate (A/B)	min <sup>-1</sup>	50 / 75
■ Automatic Tool Changer		
Type of Tool Shank		JIS B 6339 tool shank 50T
Type of Retention knob		JIS B 6339 pullstud 50P
Max. Tool Diameter	mm (in.)	Ø110 (Ø4.33) : Adjacent tool exists Ø230 (Ø9.05) : No adjacent tool (Store position is limited) Ø320 (Ø12.59) : No adjacent tool (Store position is limited) When Ø320(Ø12.59) tools are set next to each other, there should be 2 empty pots in between.
Max. Tool Length	mm (in.)	600 (23.62)
Max. Tool Mass	kg (lb.)	20 (44)
Tool Changing Time (tool to tool)	sec.	2.0 (When tool mass is less than 10kg (22 lb.)) 3.6 (When tool mass is over 10kg (22 lb.))

■ Power Sources		
Power Capacity	kVA	122
Volume of Compressed Air	NL/min	600
■ Tank Capacity		
Coolant Tank Capacity	L	600
■ NC System		
Control System		Matsura G-Tech 30i
■ Standard Accessories		
01. Total Splash Guard	02. ATC Auto Door	
03. Synchronized Tapping	04. <b>AD-TAP</b> Function	
05. <b>IPC</b> Function	06. Spindle Oil Cooler	
07. Auto Grease Supply Unit	08. Cooler for Direct Drive motor	
09. Coolant Unit	10. ChipFlush	
11. Spiral Chip Conveyor (right and left)	12. Spindle Overload Protect	
13. Work Light	14. Standard Mechanical Tools & Tool box	
15. Machine Color Paint	16. Leveling Pads & Bolts	
17. ScaleFeedback for the A/B Axis	18. <b>MIMS</b>	
19. <b>Intelligent Protection System</b>	20. Spindle Run Hour Meter	
21. Automatic Operation Run Hour Meter	22. Movable Manual Pulse Generator	
23. PC tool for memory card program operation and editing		
24. Operator Platform		

## Floor Plan Units: mm (in.)



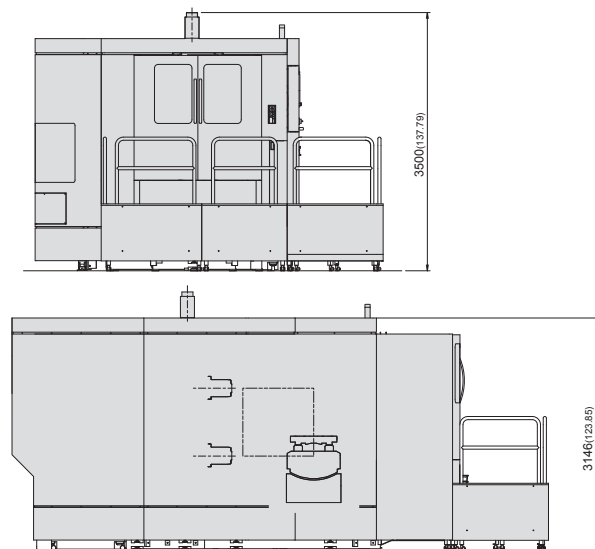
# Optional Specifications & Equipment

○: Standard ▲: Option Units: mm (in.)

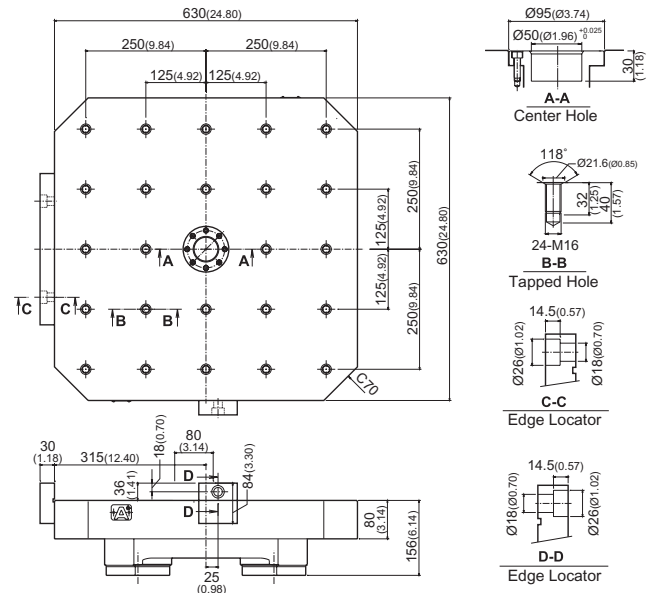
<b>Spindle</b>			
12,000 min <sup>-1</sup> (BT50 Oil Air)		○	
10,000 min <sup>-1</sup> (BT50 Oil Air)		▲	
Spindle Drive Motor	kW	26 / 30	
Max. Spindle Torque	N·m	700 (300min <sup>-1</sup> )	
15,000 min <sup>-1</sup> (BT50 Oil Air)		▲	
<b>ATC</b>			
60 tools (Drum Magazine Fixed Address)		○	
120 tools (Chain Magazine)		▲	
150 / 180 / 210 / 240 tools (Matrix Magazine 240 base)		▲	
270 / 300 / 330 / 360 tools (Matrix Magazine 360 base)		▲	
<b>High Accuracy Control</b>			
Scale Feedback X/Y-Axis		▲	
Scale Feedback Z-Axis		▲	
Scale Feedback X/Y/Z-Axis		▲	
<b>APC</b>			
PC2		○	
PC6 (Floor Pallet System)		▲	
PC17 ~ (Linear Pallet System)		▲	
<b>Pallet</b>			
Working Surface	mm (in.)	800×800 (31.5×31.5)	▲
Loading Capacity	kg (lb.)	640 (1,411)	▲
Max. Work Size	mm (in.)	Ø1,000X H770 (Ø39.37×30.31) (with restrictions)	▲
<b>Coolant</b>			
Coolant Unit		○	
Coolant Thru Spindle	Vacuum Type Coolant Thru A (7MPa)	▲	
Coolant Thru Spindle	Vacuum Type Coolant Thru A (14MPa)	▲	
Coolant Thru Spindle	Vacuum Type Coolant Thru B (7MPa)	▲	
Coolant Thru Spindle	Vacuum Type Coolant Thru B (14MPa)	▲	
Coolant Thru Spindle	Vacuum Type Coolant Thru C (7MPa)	▲	
Coolant Thru Spindle	Vacuum Type Coolant Thru C (14MPa)	▲	
Coolant Flow Checker		▲	
Mist Separator Unit (without Fire Protect Damper)		▲	
Mist Separator Unit (with Fire Protect Damper)		▲	
Coolant Temperature Controller Separate Type, 100L Tank		▲	
Coolant Temperature Controller Separate Type, 200L Tank		▲	
<b>In-Process Measurement + Tool Breakage</b>			
In-Process Measurement/Auto Centering (Optical Touch Probe)		▲	
Broken Tool Detection/Auto Tool Length Measurement (Touch Sensor)		▲	
Broken Tool Detection/Auto Tool Length Measurement (Laser Sensor)		▲	
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection (Touch Sensor)		▲	
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection (Laser Sensor)		▲	

<b>Swarf Management</b>	
Total Splash Guard	○
ATC Auto Door	○
Spiral Chip Conveyor	○
Chip Flush System	○
External Nozzle 2 MPa with Spindle Thru	▲
External Nozzle 7 MPa with Spindle Thru	▲
Lift-Up Chip Conveyor (Scraper, Hinge + Scraper)	▲
Chip Bucket	▲
Chip removing air blow	▲
Workpiece Cleaning Gun (Machine Side)	▲
Workpiece Cleaning Gun (APC Side)	▲
<b>Operation/Maintenance Support</b>	
AD-TAP Function	○
IPC Function	○
MIMS	○
<b>Intelligent Protection System</b>	
Auto Grease Supply Unit for Feed Axes	○
Work Light	○
Movable Manual Pulse Generator	○
Spindle Run Hour Meter	○
Additional Eight M Functions	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
Rotary Wiper (air driven)	▲
Rotary Wiper (electrically driven)	▲
Automatic Operation Run Hour Meter	▲
Optional Block Skip	▲
Reliability Meister Plus	▲
<b>Safety Regulation</b>	
Matsura Safety Specification	○
Auto. Fire Extinguisher	▲
<b>Option Package</b>	
Hi-Speed Hi-Precision Package	▲
5-Axis Package	▲
Hi-Speed Hi-Precision / 5-Axis Package	▲
Value Package	▲
Hi-Speed Hi-Precision / 5-Axis Package + TRUE PATH	▲

External View Units: mm (in.)



Pallet Top View Units: mm (in.)





# Matsuura

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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.

