

# *H.Plus-405*

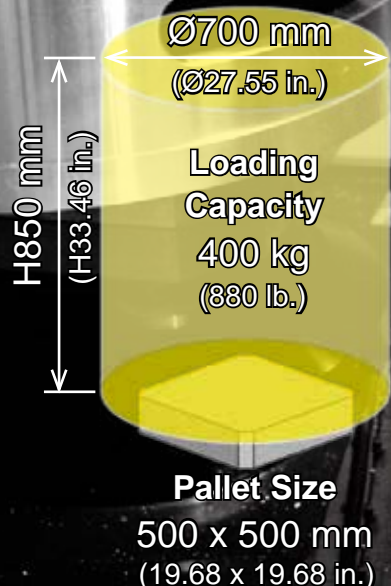


# **Matsuura** *H.Plus-405*



**Proven Innovation,  
Reliability & Versatile  
Production Performance**

## Largest Working Envelope in its Class



## Upgraded Standard Specification [compared to previous model]

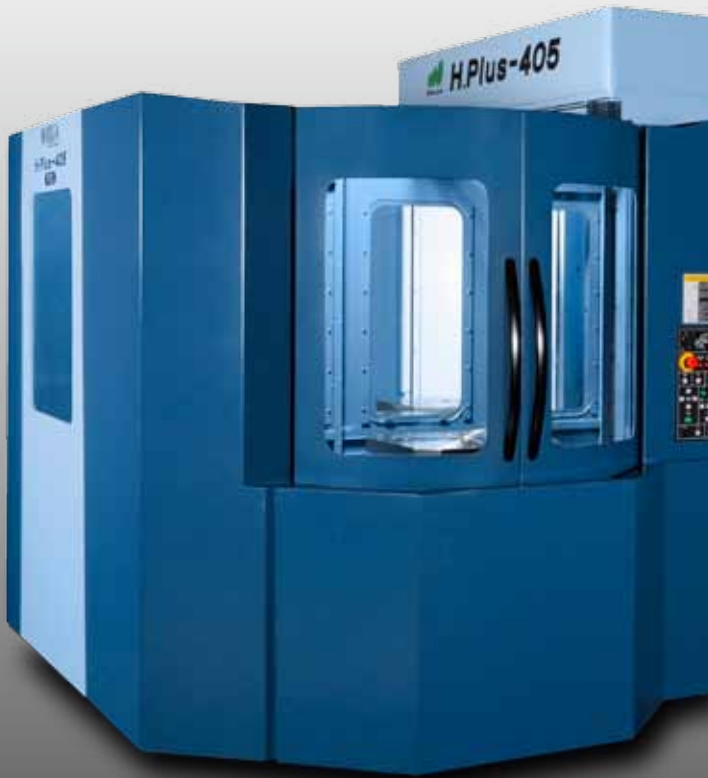
- Strokes of all axes has been increased to **660 mm** (25.98 in.) [+60 mm (2.36 in.)].
- Max. work piece envelope increased to **Ø700 x H850 mm** (Ø27.55 x H33.46 in.) [+Ø50mm, +H100 mm (Ø1.96 in., +H3.93in.)]. No competitor machine has a larger working envelope.
- Rapid traverse rate (X/Y/Z) increased to **60 m/min** (2,362 ipm) [+10 m/min (393.7 ipm)].
- Min. distance from spindle to pallet center reduced to **70 mm** (2.75 in.) [-50 mm (1.96 in.)]
- **60 tools** ATC as standard incorporating a new Matsuura developed high speed ATC tool indexing system.
- High speed indexing increased to **100 min<sup>-1</sup>** [+50 min<sup>-1</sup>], the rotary table can be supplied with a DD Motor as an option.
- Floor space reduced by **12%** to 10.0 m<sup>2</sup>.

## Superb Reliability

- THERMAL MEISTER™ (Thermal Displacement Compensation for Spindle & Feed Axis) is provided as standard.
- Feed Axis Grease Auto Supply System is provided as standard.
- Powerful Swarf Management by W-Type Slide Cover + X-Type APC Door.

## User Friendly

- Ergonomic design – based around maximum operator comfort & productivity.
- Supplied with powerful NC Options **Matsuura G-Tech 30i**



Floor Pallet System **PC6**



Tower Pallet System **PC12**

# Unmanned Multi Pallet Excellence

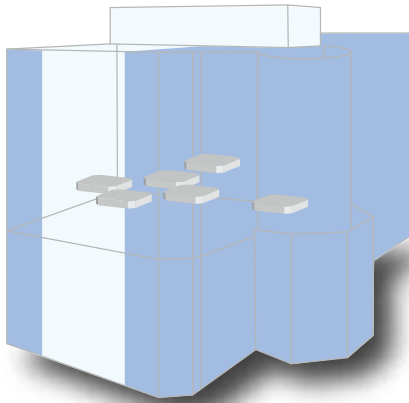
Matsuura offer 2 proven, expandable & highly productive multi pallet systems – tailored to your production process

Type	Features	Production Volume	Number of Pallets
<b>Floor Pallet System</b>	Compact, fully integrated & expandable multi pallet system	Low to Medium Volume	<b>PC6</b>
<b>Tower Pallet System</b>	Vertically aligned space saving multi pallet system	Medium to High Volume	<b>PC12</b>

## Floor Pallet System Compact Floor Area

Option

PC6

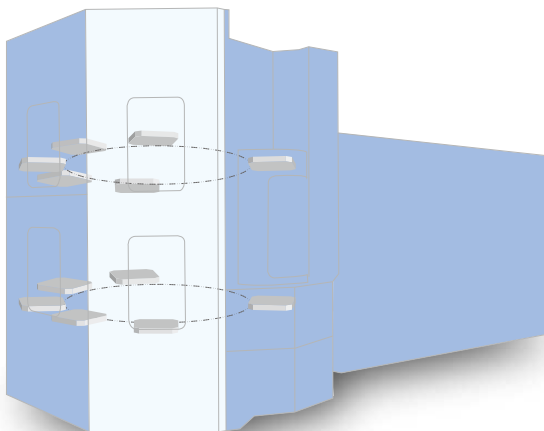


PC 6

## Tower Pallet System Vertically Aligned Space Saving Stocker

Option

PC12



PC 12





Matrix Magazine for 320 Tools

# Unrivalled Tool Storage & Management Capacity - Supporting Your Unmanned Production Process

Type	Number of Tools
High Speed Index Drum Magazine	60 (Fixed Address) <span>Standard</span>
Max. 240 tool storage Matrix Magazine	120 / 150 / 180 / 210 / 240 <span>Option</span>
Max. 320 tool storage Matrix Magazine	120 / 160 / 200 / 240 / 280 / 320 <span>Option</span>
Max. 520 tool storage Matrix Magazine	360 / 400 / 440 / 480 / 520 <span>Option</span>

## Drum Magazine High Speed Index, Low Noise

Standard

Designed & fully proven by Matsuura this new drum magazine offers vastly reduced tool change times when compared to conventional designs. Tool indexing time has been reduced by a massive 60%. With less moving parts than standard ATC's, a design imperative from the outset was the elimination of un-necessary noise & vibration.

### Drum Magazine – Specification

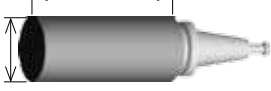
ATC time	2.7 sec.
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Max. Tool Length  
350 mm (13.77 in.)

Max. Tool Diameter  
80 mm (3.14 in.)  
150 mm (5.90 in.)  
When the pockets on both sides are empty

Max. Tool Weight  
10 kg (22 lb.)



## Matrix Magazine Space Saving, Large Capacity

Option

Offering unparalleled capacity, functionality & reliability Matsuura's Matrix ATC Systems support the growing global requirement for extended periods of unmanned CNC production



New ATC touch panel display – larger screen, ergonomic & user friendly.

All tool management & ATC functionality can be controlled from this screen.



All Tools

NG Tools

Auto Recovery



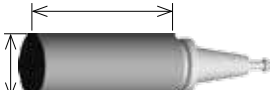
All Matsuura ATC's are well lit & user friendly.



Max. Tool Length  
350 mm (13.77 in.)

Max. Tool Diameter  
80 mm (3.14 in.)  
150 mm (5.90 in.)  
When the pockets on both sides are empty

Max. Tool Weight  
10 kg (22 lb.)





# NC Controlled Indexing Rotary Table : High Speed, Accuracy & Reliability Option

## DD Motor Driven 100 min<sup>-1</sup>

The DD (Direct Drive) motor driving the NC controlled rotary table indexes twice as fast as a conventional worm gear set up.

DD Motors also possess the added advantage of being non contact. The non contact aspect of the DD Motor also eliminates not only the abrasive wear on components associated with conventional worm gear set ups but also completely removes backlash, offering increased and sustained positional accuracy as well as high speed operation.

The functional simplicity and reliability of the DD mechanism is also maintenance free.



## DCS Dynamic Clamp System

PATENT PENDING

Matsuura are proud to announce the development of our DCS System (Dynamic Clamp System).

This automatic feature of the DD Motor mechanism will clamp the rotary table if and when a pre-determined force greater than the DD Motor can hold is brought to bear against it – as in heavy milling operations.

Once the force is lower than the pre-determined level, the clamp will automatically remove itself. This set up offers yet another substantial advantage over traditional worm gear set ups.

Owing to the automatic functionality of the DCS System, un-necessary clamping is eliminated – offering further reductions in indexing, cycle & operational times.

Conventional Machining

B -90.0	Table Clamp	Machining	Table Unclass	B 0.0
	M21		M22	

Application of the DCS system.  
 -On the light machining, it skips M21 operation.  
 -On the heavy duty machining, if the loading force exceeds a designated value then it keeps M21 command.

Application of the DCS system

B -90.0	Machining	B 0.0	REDUCTION
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# Proven, State of the Art Spindle

## Matsuura MAXIA Spindle

The heart of all Matsuura machines – the Matsuura **MAXIA** Spindle, from the original pioneers of High Speed Spindles. With integrated grease lubrication, noise output lower than 75dB and vastly reduced air consumption all Matsuura Spindles offer years of reliable service and maintenance free operation.

All Matsuura Spindles are designed and built in house at our clean room centers of excellence in Fukui Japan & Leicestershire England.

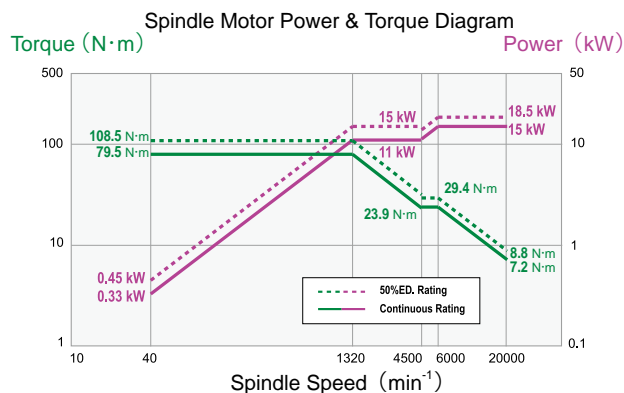
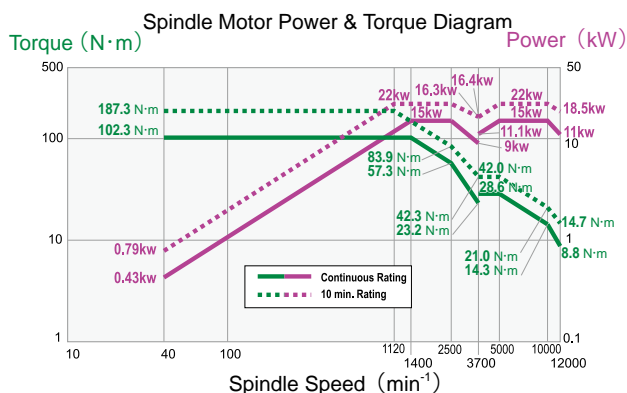
**12,000 min<sup>-1</sup>** Standard

Motor Power : 15 / 22 kW (30 HP)  
Motor Torque : 187.3 N·m/1,120 min<sup>-1</sup>

**20,000 min<sup>-1</sup>** Option

Motor Power : 15 / 18.5 kW (25 HP)  
Motor Torque : 108.5 N·m/1,320 min<sup>-1</sup>

Spindle Grease Auto Supply System

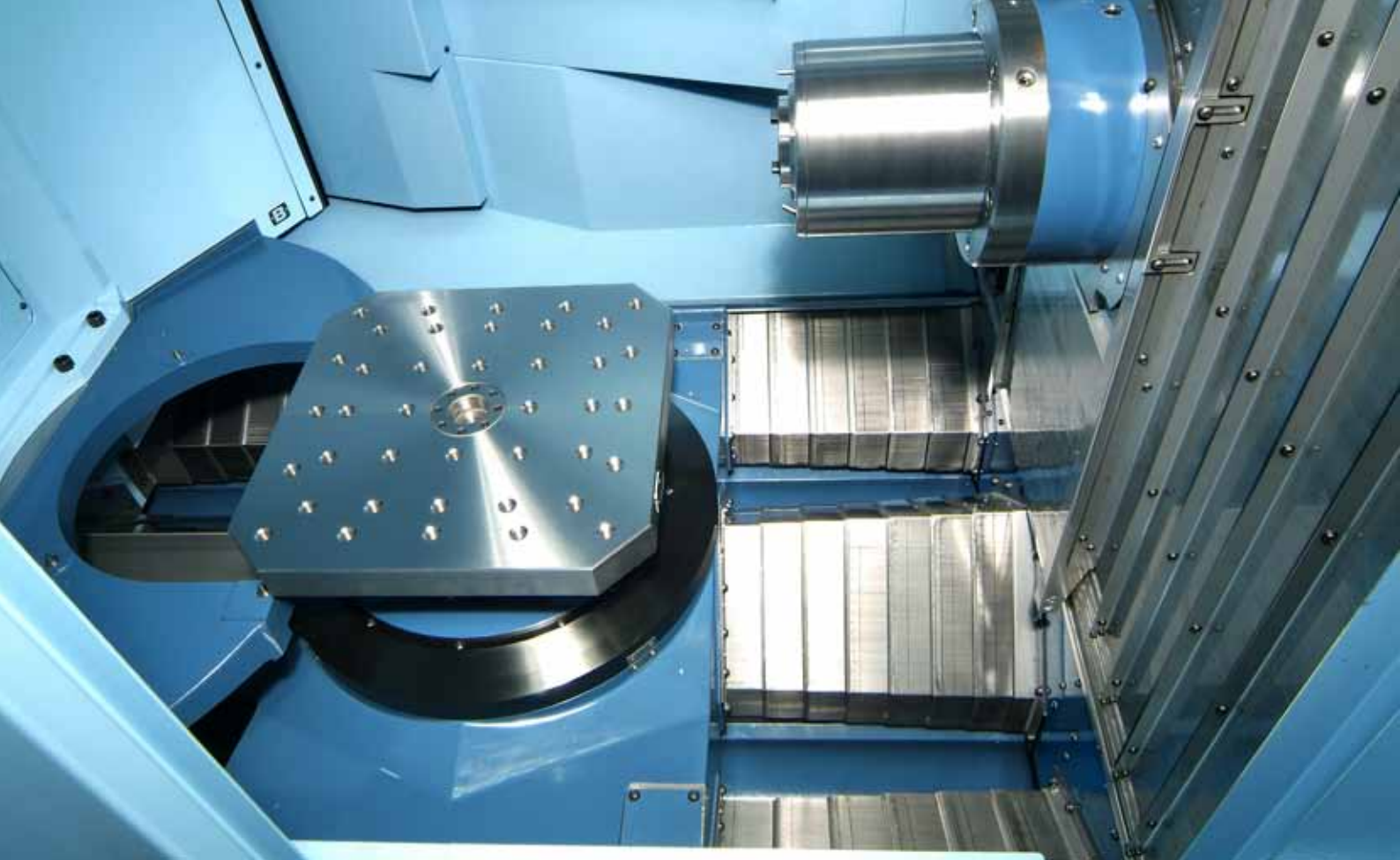


• 30,000 min<sup>-1</sup> spindle is available as option

## Vacuum Type Coolant Thru Spindle System

Option

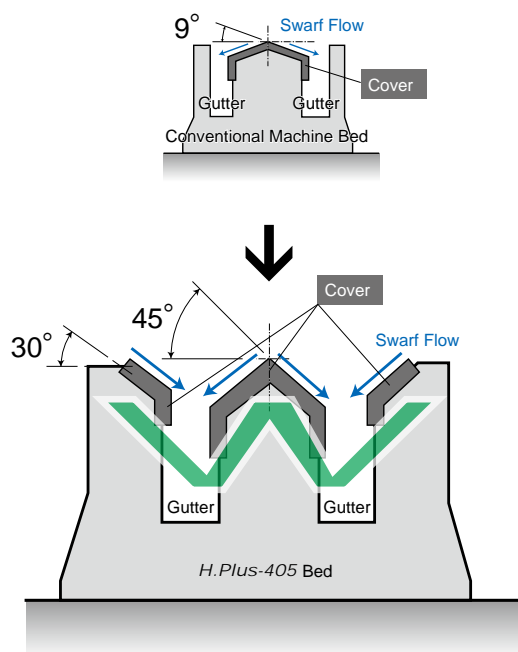
This newly proven option removes all residual coolant from the tool and spindle during tool changing operations.



# Effective & Reliable Swarf Management

## W-Type Slide Cover

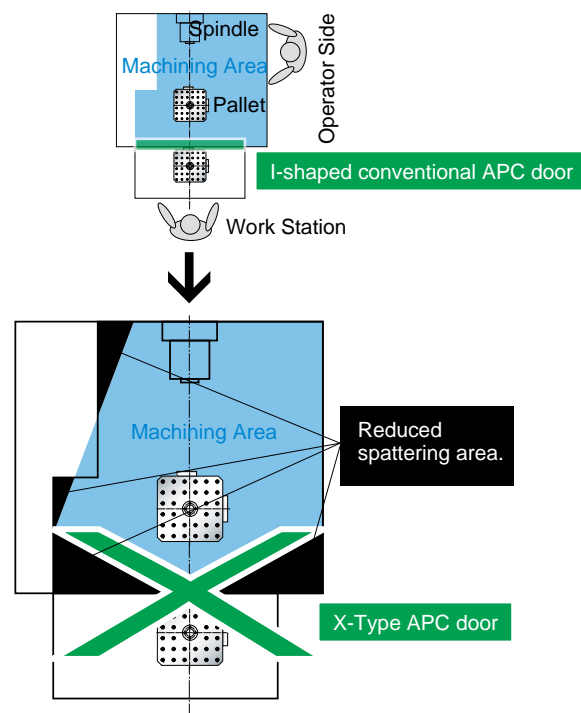
The Z-axis protective cover offers a slant of 45 deg – assuring rapid fall away of swarf & chips. The design of the enclosure ensures no swarf traps – protecting your unmanned production processes & offering peace of mind, lights out unattended operation.



## X-Type APC Door

PATENT PENDING

The new design of the X-Type APC door between the machining enclosure and the APC has proven itself to be highly effective in eliminating swarf build up around the APC door.

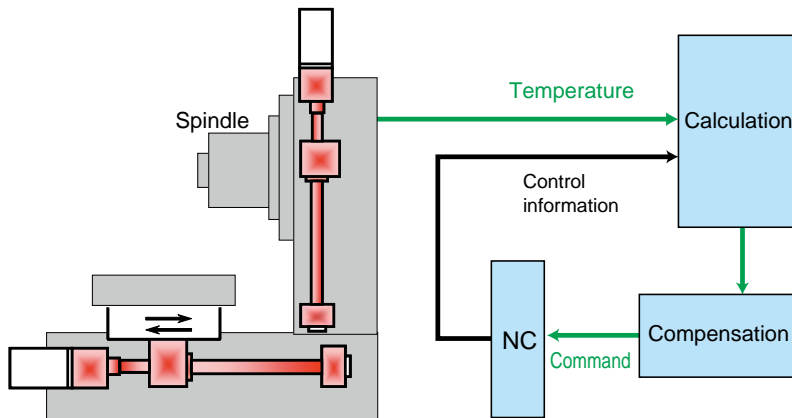


# Thermal Displacement Compensation

## THERMAL MEISTER™

Standard

PATENT PENDING

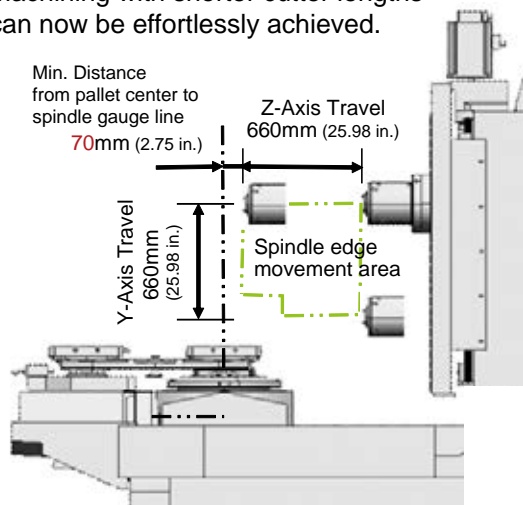


Schematic of the THERMAL MEISTER™ system

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.

## Improved Accessibility

The minimum distance from pallet center to spindle gauge line has been reduced by 50 mm (120mm → 70mm). Even though Matsuura *H.Plus* machines are renowned for their rigidity, previously unattainable levels of ultra rigid machining with shorter cutter lengths can now be effortlessly achieved.



*H.Plus-405* Movement Ranges(Y&Z-Axis)

## Minimum Maintenance

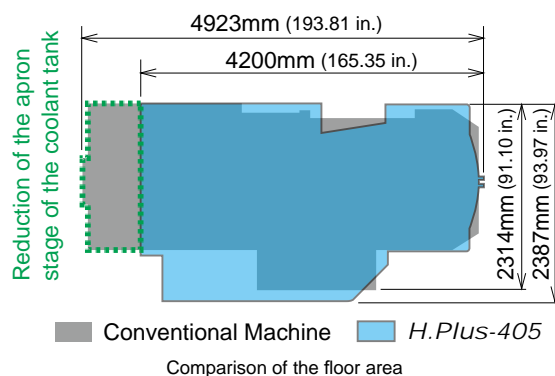
An automatic grease supply unit as standard feeds the spindle & all axes – eliminating maintenance intervention.



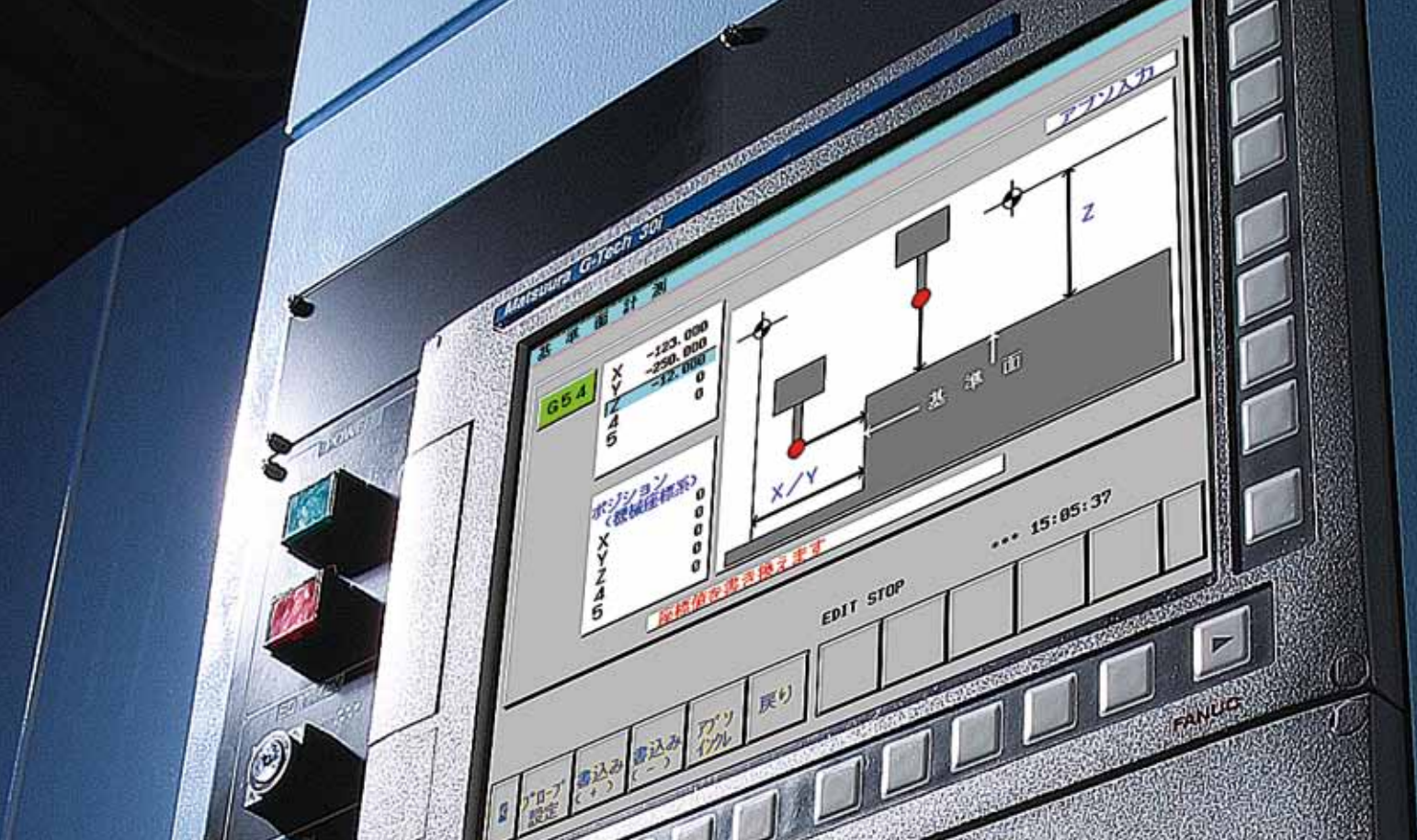
All equipment & systems requiring maintenance are conveniently located at the rear of the machine – designed for easy access.

## Reduced Machine Footprint

The newly designed *H.Plus-405* requires 12% less floorspace than the previous model.







# The Latest High Performance NC



## 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.

## For High Speed & Superb Surface Finish

Machining for General Parts or Mold & Die

**IZ-1/15F**

Standard

Machining for more Complex, Precision Parts

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

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

Option

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.



# Proven Software Performance

**IPC** High-Speed Precision Machining  
Program Support Function

Standard

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

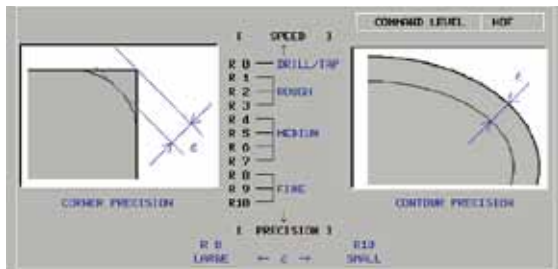


Image of IPC

**Handy Man II**

Standard

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

Please contact Matsuura for a copy of our in-depth *Handy Man II* brochure.



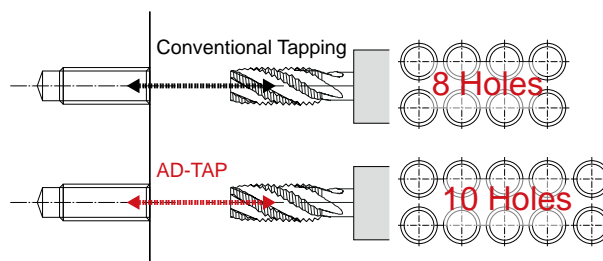
Troubleshooting screens from *Handy Man II*

**AD-TAP** High-Speed Tapping Function

Standard

PATENTED

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.



Comparison with AD-TAP and Conventional Tapping

**H.S.M. NC Package**

Option

This extensive package of High Speed software has been developed from our many decades as innovation & technology leaders in the field of High Speed Machining

## High Speed High Accuracy Package

IZ-2/150NF

1000 block look ahead

Nano smoothing

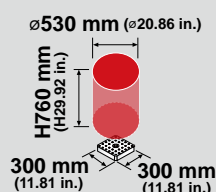
Nano smoothing 2

Optional torque acc./dec.

Fast data server

## H.Plus Series

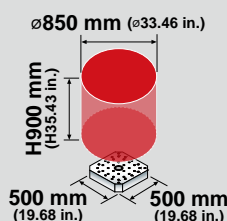
*H.Plus-300*



*H.Plus-300* can operate with an 400 x 400 mm (15.74 x 15.74 in.) pallet.

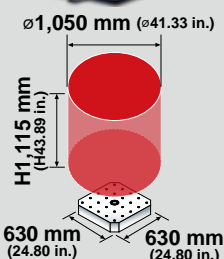
Loading Capacity : 250 kg (550 lb.)

*H.Plus-500*



Loading Capacity : 500 kg (1,100 lb.)

*H.Plus-630*



*H.Plus-630* can operate with an 800 x 800mm (31.49 x 31.49 in.) pallet.

Loading Capacity : 1,200 kg (2,640 lb.)

■ Movement & Ranges		
X-Axis Travel	mm (in.)	660 (25.98)
Y-Axis Travel	mm (in.)	660 (25.98)
Z-Axis Travel	mm (in.)	660 (25.98)
B-Axis Travel	deg	360 (1deg index)
■ Pallet		
Working Surface	mm (in.)	500 x 500 (19.68 x 19.68)
Loading Capacity	kg (lb.)	400 (880)
Max. Work Size	mm (in.)	ø700 x H850 (ø27.55 x H33.46)
■ Spindle : BT40		
Spindle Speed Range	min <sup>-1</sup>	40 ~ 12,000
Spindle Motor Power (Contin. / short)	kW (HP)	15 / 22 (30)
Spindle Max. Motor Torque	N·m/min <sup>-1</sup>	187.3 / 1,120
■ Feedrate		
Rapid Traverse (X/Y/Z)	mm/min (ipm)	60,000 (2,362.2)
Rapid Feed Acceleration	G	0.98 / 1.21 / 0.91
■ Automatic Tool Changer		
Type of Tool Shank		JIS B 6339 40T
Type of Retention Knob		JIS B 6339 40P
Number of Tools		60 (Drum Magazine : Fixed Address)
Max. Tool Diameter	mm (in.)	Ø80 (Ø3.14)
Max. Tool Diameter	mm (in.)	Ø150 (Ø5.90) : with conditions
Max. Tool Length	mm (in.)	350 (13.77)
Max. Tool Weight	kg (lb.)	10 (22)
Tool Change Time	sec	2.7

Type of pallet Change		Turn Table Methods
Pallet Change Time	sec	7.2 : Pallet to Pallet

Input Power	kVA	58
Voltage	V	AC200 / 220 ± 10%
Frequency	Hz	50 / 60 ± 1
Air Source	MPa	0.54~0.93
Required Air Volume	NL/min	Max.350

Mass of Machine	kg(lb.)	10,400 (22,900) <b>PC2</b>
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01. Total Splash Guard	10. 9 Sorts of M-code Counter
02. Synchronised Tapping Function	11. <b>THERMAL MEISTER™</b> (Thermal Displacement Compensation for spindle & Feed Axis)
03. <i>AD-TAP</i> Function	12. Work Light
04. <i>IPC</i> Function	13. Standard Mechanical Tools and Tool Box
05. Spindle Oil Cooler	14. Machine Color Paint
06. Auto Grease Supply Unit for XYZ	15. Levelling Plate and Bolts (not Foundation Pad)
07. Swarf Rear Disposal	16. <i>Handy Man II</i>
08. Chip Flow System	17. Install CD-R for Program/Edit on Memory Card
09. Spindle Overload Protection	18. Matsuura Safety Specification

### Standard Specifications)

The technical drawings illustrate the machine's dimensions from three perspectives:

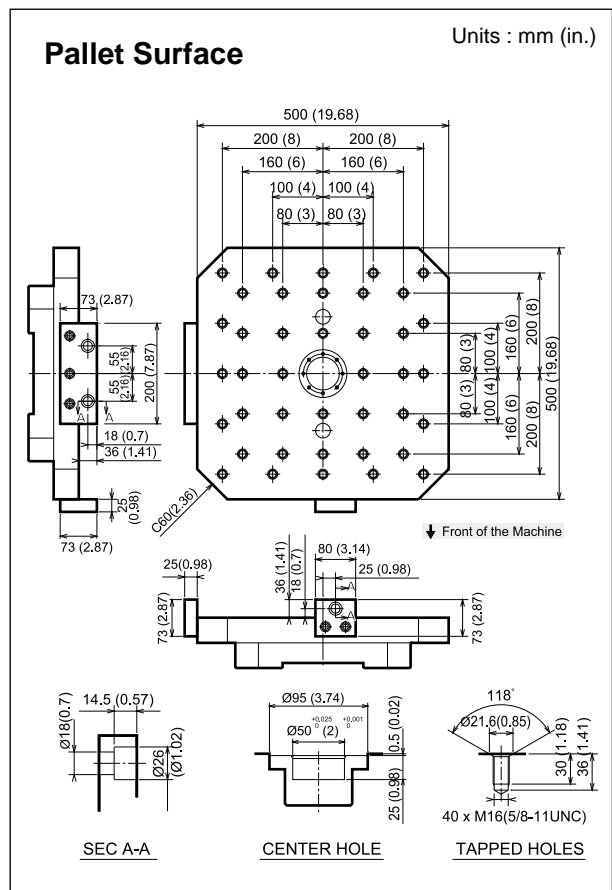
- Top View:** Shows the machine's footprint with a total width of 4140 mm (162.99 inches) and a total depth of 2387 mm (93.97 inches). The distance between the main body and the control panel is 1277 mm (50.27 inches). The control panel is 2863 mm (112.71 inches) wide. The main body has a width of 1923 mm (75.70 inches) and a depth of 464 mm (18.26 inches). The Z-axis stroke is 660 mm (25.98 inches) and the Y-axis stroke is 70 mm (2.75 inches).
- Front View:** Shows the machine's height and width. The total height is 2083 mm (81.62 inches) and the total width is 2387 mm (93.97 inches). The main body height is 2173 mm (85.50 inches) and the control panel height is 80 mm (3.14 inches).
- Side View:** Shows the machine's height and width. The total height is 2498 mm (98.34 inches) and the total width is 4140 mm (162.99 inches). The main body height is 1020 mm (40.15 inches) and the control panel height is 80 mm (3.14 inches).

## Equipment

○ : Standard ▲ : Option

■ Spindle	
12,000 min <sup>-1</sup> (Grease)	○
20,000 min <sup>-1</sup> (Auto Grease)	▲
30,000 min <sup>-1</sup> (Oil-Air)	▲
■ ATC	
60 (Drum Magazine : Fixed Address)	○
120 / 150 / 180 / 210 / 240 (Matrix Magazine 240 base)	▲
120 / 160 / 200 / 240 / 280 / 320 (Matrix Magazine 320 base)	▲
360 / 400 / 440 / 480 / 520 (Matrix Magazine 520 base)	▲
■ High Accuracy Control	
Scale Feedback System X/Y-Axis (HEIDENHAIN)	▲
Scale Feedback System Z-Axis (HEIDENHAIN)	▲
Scale Feedback System X/Y/Z-Axis (HEIDENHAIN)	▲
THERMAL MEISTER™ (Thermal Displacement Compensation for spindle & Feed Axis)	○
■ APC	
PC2	○
PC6 (Floor Pallet System)	▲
PC12 (Tower Pallet System)	▲
■ Additional Table	
Matsuura made 1 degree Index Table	○
Matsuura made NC Controlled Rotary Table (with DCS)	▲
■ Coolant	
Coolant Unit	○
Coolant Shower System	▲
Vacuum Type Coolant Thru Type A	▲
Vacuum Type Coolant Thru Type B	▲
Vacuum Type Coolant Thru Type C (2MPa)	▲
Vacuum Type Coolant Thru Type C (5MPa)	▲
Vacuum Type Coolant Thru Type C (7MPa)	▲
Coolant Flow Checker	▲
Mist Separator Unit	▲
Mist Separator Unit with Fire Protect Damper	▲
Coolant Temperature Controller (Tank 100L)	▲
Coolant Temperature Controller (Tank 200L)	▲
■ Swarf Management	
Total Enclosure Guard	○
Spiral Chip Conveyor	▲
Lift-Up Chip Conveyor with Drum Filter (Scraper Type) + Spiral Chip Conveyor *Oily coolant should be less than 10cSt.	▲
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	○
Work Light	○
8 Sets of Extra M Function	▲
Spindle Load Monitoring Function	▲
Weekly Timer	▲
Program End Announcement Light (Red, Yellow, Green)	▲
Spindle Run Hour Meter	▲
Cumulative Run Time Display Unit	▲
External Manual Pulse Generator	▲
Rotary Wiper (Air Supply System)	▲
Rotary Wiper (Electrical System)	▲
Hydraulic Power Supply System for Fixture : (from APC Upside) 19.6MPa, 4 ports.*Please consult Matsuura for more details.	▲
■ Safety Features	
Matsuura Safety Specification	○
■ In-Process Measurement / Broken Tool Detection	
In-Process Measurement / Auto Centering (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)	▲





# **Matsuura**

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**ELLIOTT MATSUURA CANADA INC.**

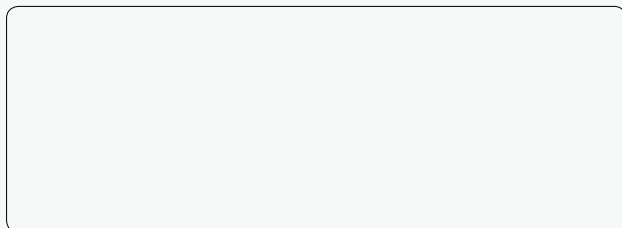
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TEL : +1-905-829-2211 FAX : +1-905-829-5600  
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  - The photos may show optional accessories.



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