

 **Matsura**

Horizontal Machining Center

# **H.Plus-405**



**MAXIA**  
Innovation by  Matsura



# **Matsuura**

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**ELLIOTT MATSUURA CANADA INC.**

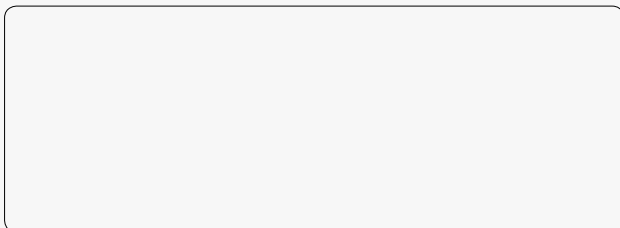
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- Product specifications and dimensions are subject to change without prior notice.
  - The photos may show optional accessories.



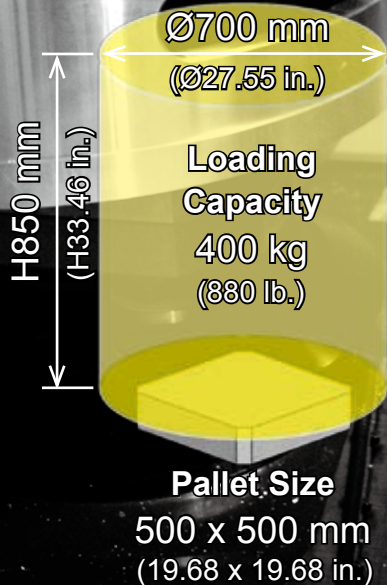
Products are subject to all applicable export control laws and regulations.

# **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.)]
- **51 tools** ATC as standard [+20 tools] 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

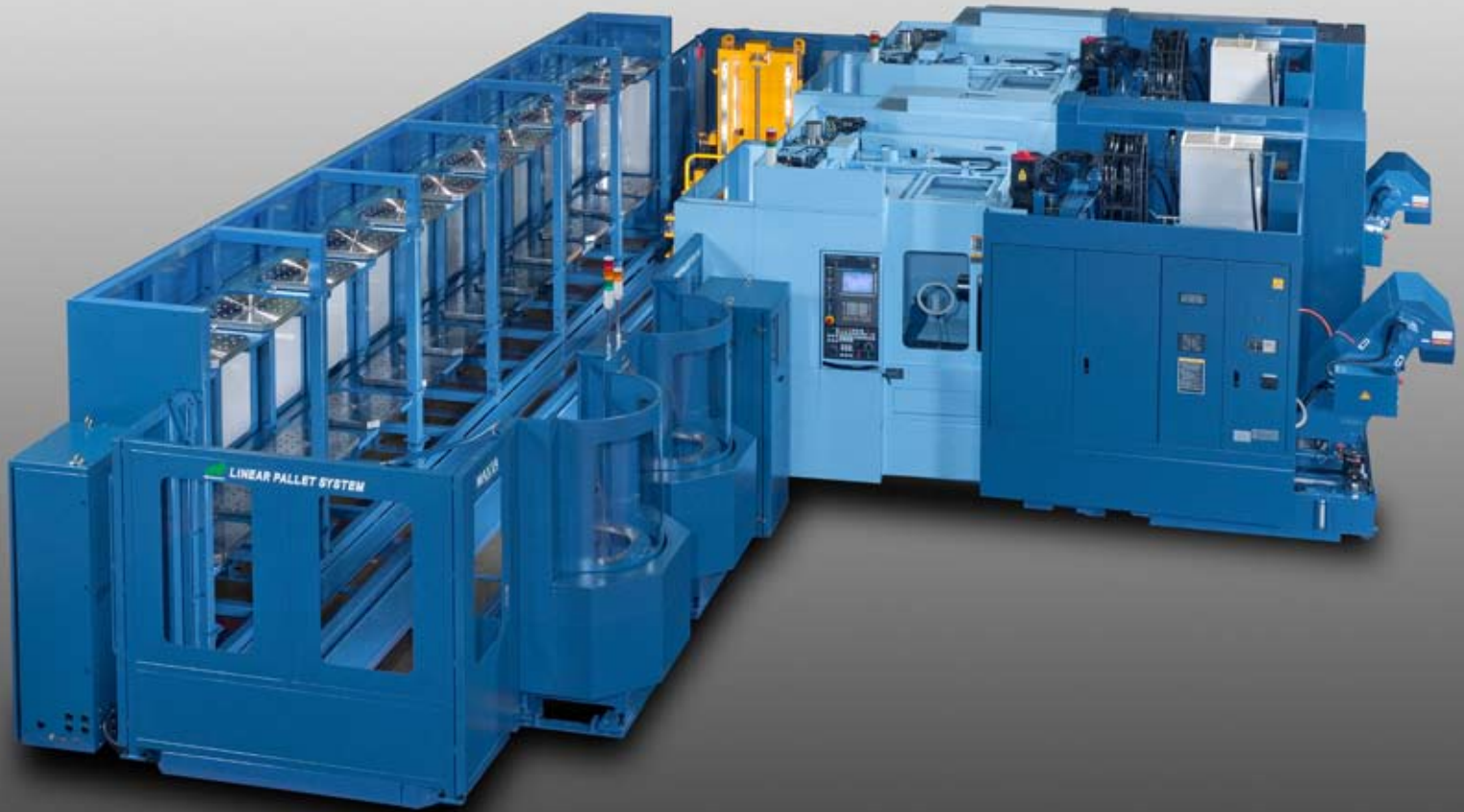
- THERMAL MEISTER™ (Thermal Displacement Compensation for Spindle & Feed Axis) is provided as standard.
- Feed Axis Grease Auto Supply System is provided as standard.
- Powerful Swarf Management by W-Type Slide Cover + X-Type APC Door.

## User Friendly

- Ergonomic design – based around maximum operator comfort & productivity.
- Supplied with powerful NC Options

**Matsuura G-Tech 30i**

**Matsuura G-Tech 840DI**



Linear Pallet System **PC26**

# Unmanned Multi Pallet Excellence

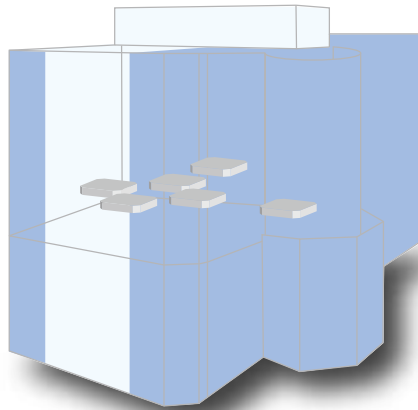
Matsuura offer 3 proven, expandable & highly productive multi pallet systems – tailored to your production process

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>
<b>Linear Pallet System</b>	Twin deck, fully expandable linear pallet system	High to Continuous High Volume	<b>PC17~</b>

## Floor Pallet System Compact Floor Area

Option

PC6

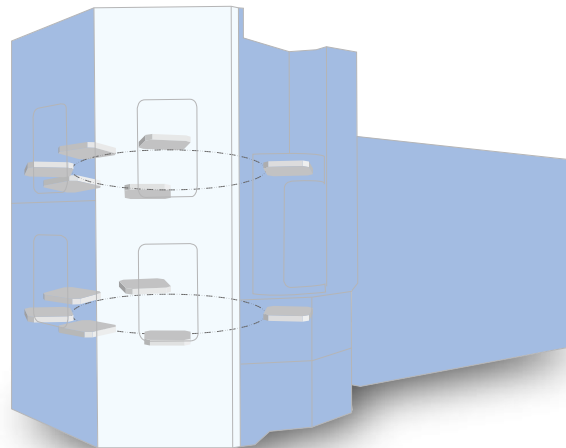


PC 6

## Tower Pallet System Vertically Aligned Space Saving Stocker

Option

PC12

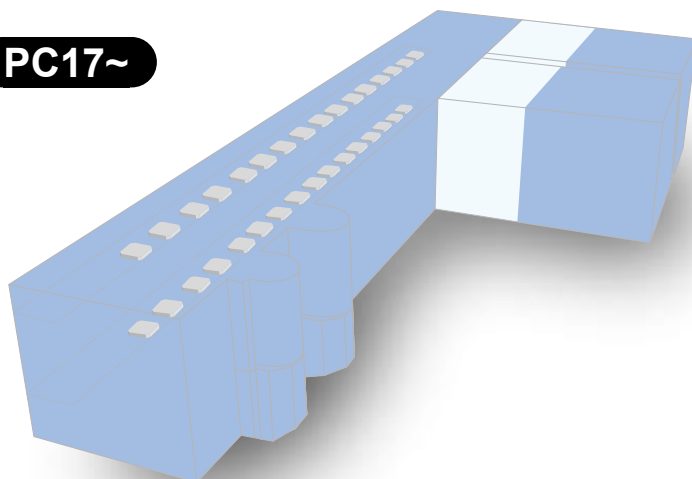


PC 12

## Linear Pallet System Effective, Proven & Continual Unmanned Production

Option

PC17~



PC 26

The pallet storage options of all Matsuura **H.Plus Series** horizontals can be upgraded after the initial purchase of your machine to support your changing production environment. Retrofits at your premises can be accommodated quickly, efficiently & cost effectively. Linear pallet systems have the added advantage of being able to fully support both 4-axis Matsuura horizontals & certain Matsuura 5-axis machines, providing they have the same pallet size.



MAM72-63V



Matrix Magazine for 320 Tools

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

Type	Number of Tools
High Speed Index Drum Magazine	51 (Fixed Address) <input type="checkbox"/> Standard
	52 (Memory Random) <input type="checkbox"/> Option
Max. 240 tool storage Matrix Magazine	120 / 150 / 180 / 210 / 240 <input type="checkbox"/> Option
Max. 320 tool storage Matrix Magazine	120 / 160 / 200 / 240 / 280 / 320 <input type="checkbox"/> Option
Max. 520 tool storage Matrix Magazine	360 / 400 / 440 / 480 / 520 <input type="checkbox"/> Option

## 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.
Neighbor tool calling time	0.4 sec.
The longest next tool calling time	3.2 sec.

Max. Tool Length  
350 mm (13.77 in.)

Max. Tool Diameter  
90 mm (3.54 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

Matsura 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 Unclamp	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

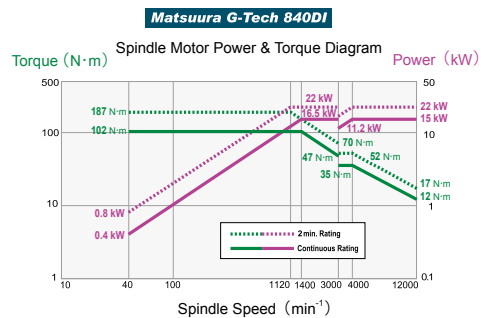
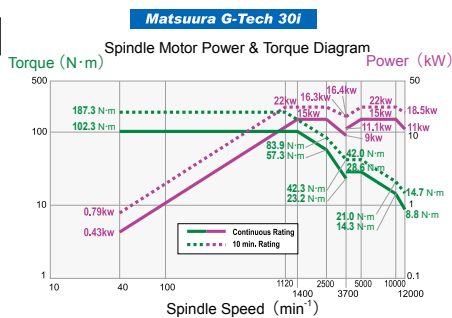
## Matsuura Hi-Tech Spindle

The heart of all Matsuura machines – the Matsuura Hi-Tech 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>

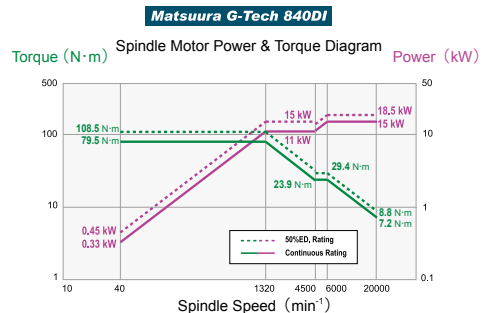
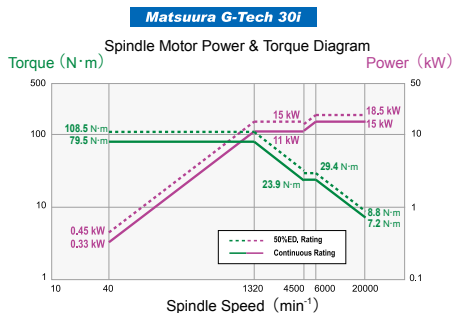


### 20,000 min<sup>-1</sup> Option

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

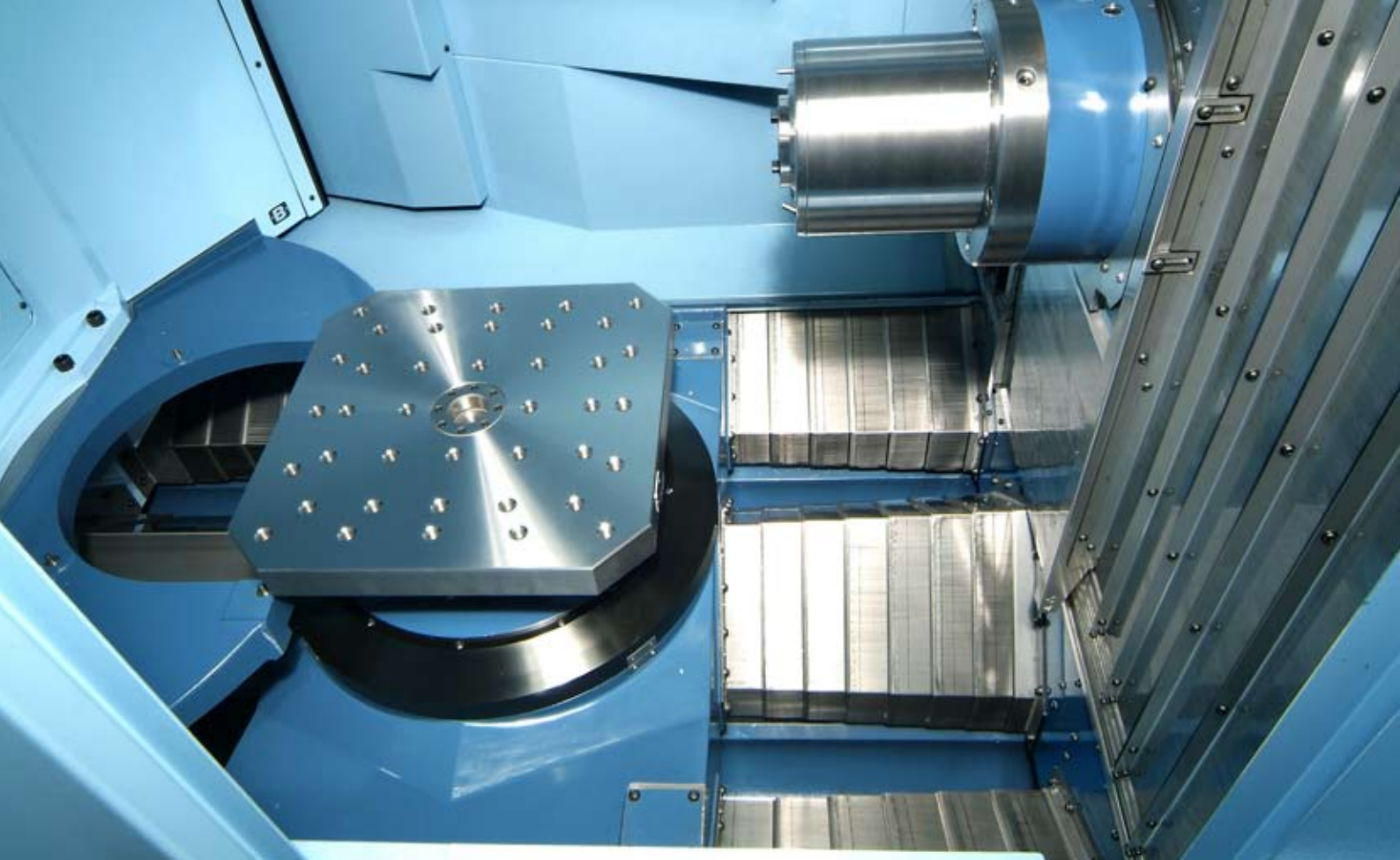
- 30,000 min<sup>-1</sup> spindle is available as option



## Vacuum Type Coolant Thru Spindle System

Option

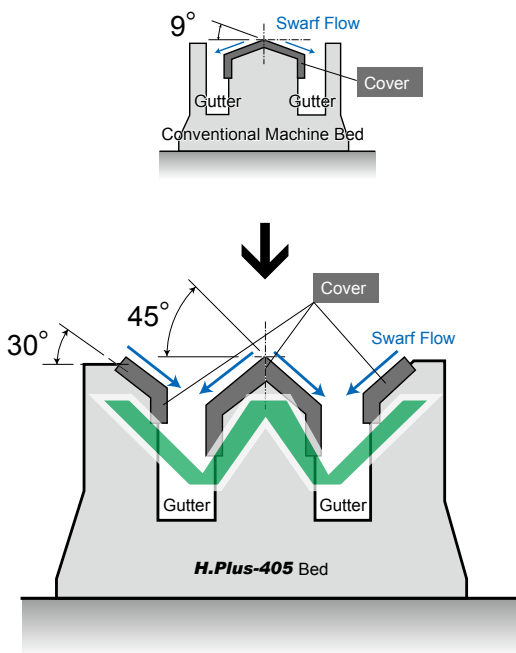
This newly proven option removes all residual coolant from the tool and spindle during tool changing operations.



# Effective & Reliable Swarf Management

## W-Type Slide Cover

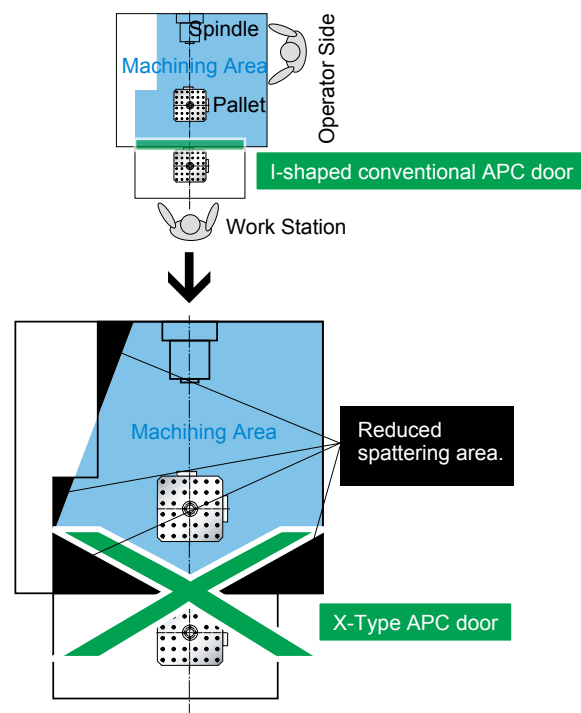
The Z-axis protective cover offers a slant of 45 deg – assuring rapid fall away of swarf & chips. The design of the enclosure ensures no swarf traps – protecting your unmanned production processes & offering peace of mind, lights out unattended operation.



## 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.

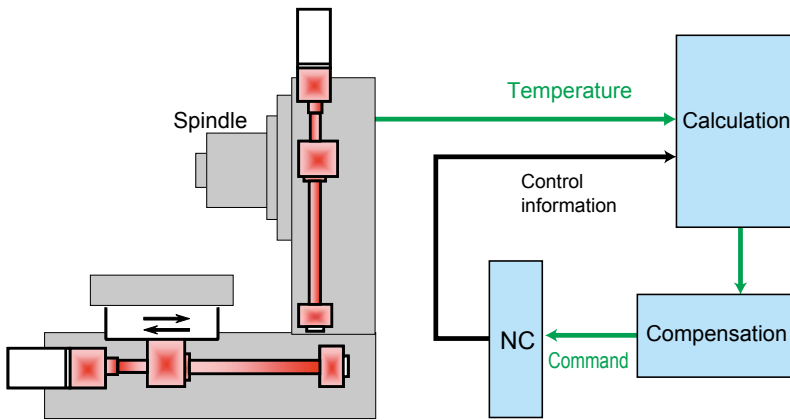


# Thermal Displacement Compensation

**THERMAL MEISTER™**

Standard

PATENT PENDING

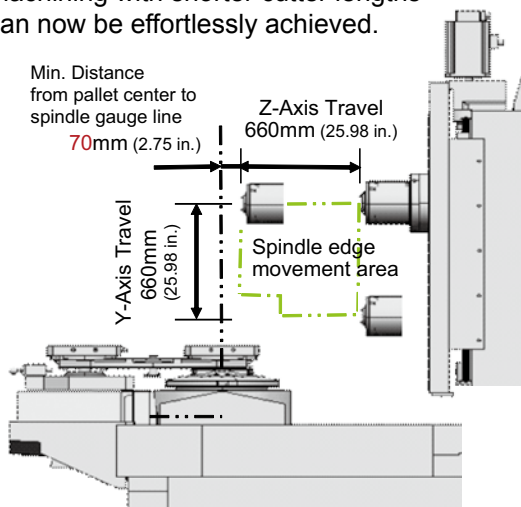


Schematic of the THERMAL MEISTER™ system

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

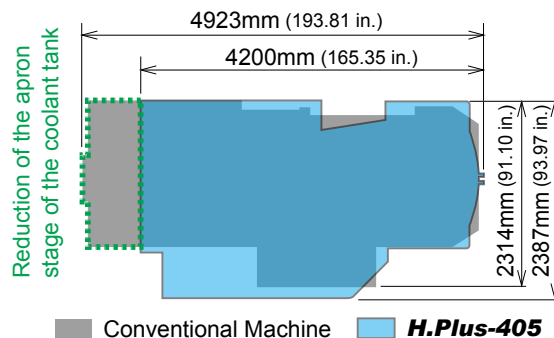
An automatic grease supply unit as standard feeds the spindle & all axes – eliminating maintenance intervention.



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.



■ Conventional Machine ■ **H.Plus-405**

Comparison of the floor area

# The Latest High Performance NC

Powerful NC Choices **Matsuura G-Tech 30i** or **Matsuura G-Tech 840DI**



## 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

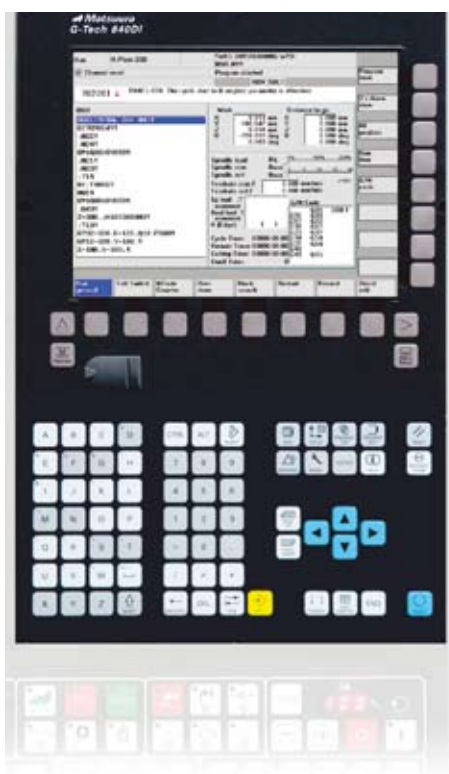
**IZ-1/30NF, IZ-2/150NF**

( 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.



## Matsuura G-Tech 840DI

Equipped with the latest high performance CPU, Windows XP Professional.

10.4 inch color LCD, Compact flash drive, soft keys vertically arranged.

### For High Speed & Superb Surface Finish

Machining for General Parts or Mold & Die

**Advanced Zee LagY**

Standard

Machining for more Complex, Precision Parts

**IZ-1/COMP**

( Max. 5,000 Block Look Ahead + Spline Interpolation )

Option

After compressing a maximum of 50 blocks and engaging the 100 Block Look Ahead function, IZ-1/COMP interpolates & "best-fits" a B-spline to the selected points.

Windows XP Professional is a Microsoft Corporation Trademark

# 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.

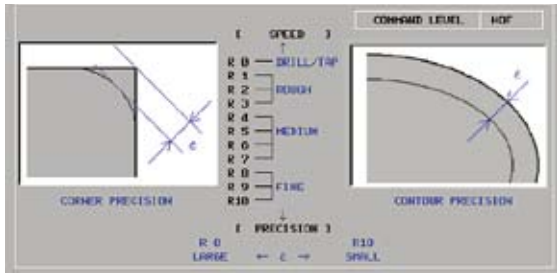
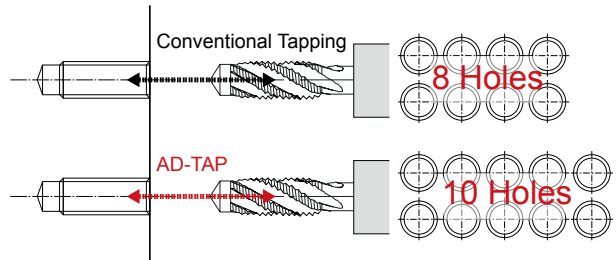


Image of IPC

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

PATENTED

Matsura'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.

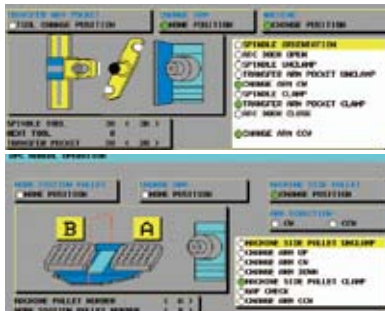


Comparison with AD-TAP and Conventional Tapping

**Handy Man II F/Y** Standard

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

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



Troubleshooting screens from **Handy Man II**

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

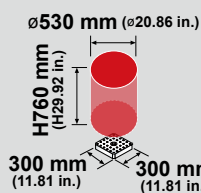
This extensive package of High Speed software has been developed from our many decades as innovation & technology leaders in the field of High Speed Machining

High Speed High Accuracy Package	Matsura G-Tech 30i
IZ-2/150NF	
1000 block look ahead	
Nano smoothing	
Nano smoothing 2	
Optional torque acc./dec.	
Fast data server	

High Speed High Accuracy Package Matsura G-Tech 840DI

## H.Plus Series

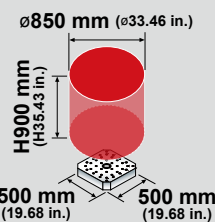
**H.Plus-300**



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

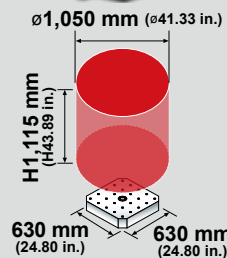
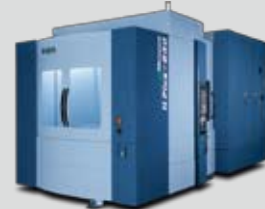
**Loading Capacity : 250 kg (550 lb.)**

**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.)**

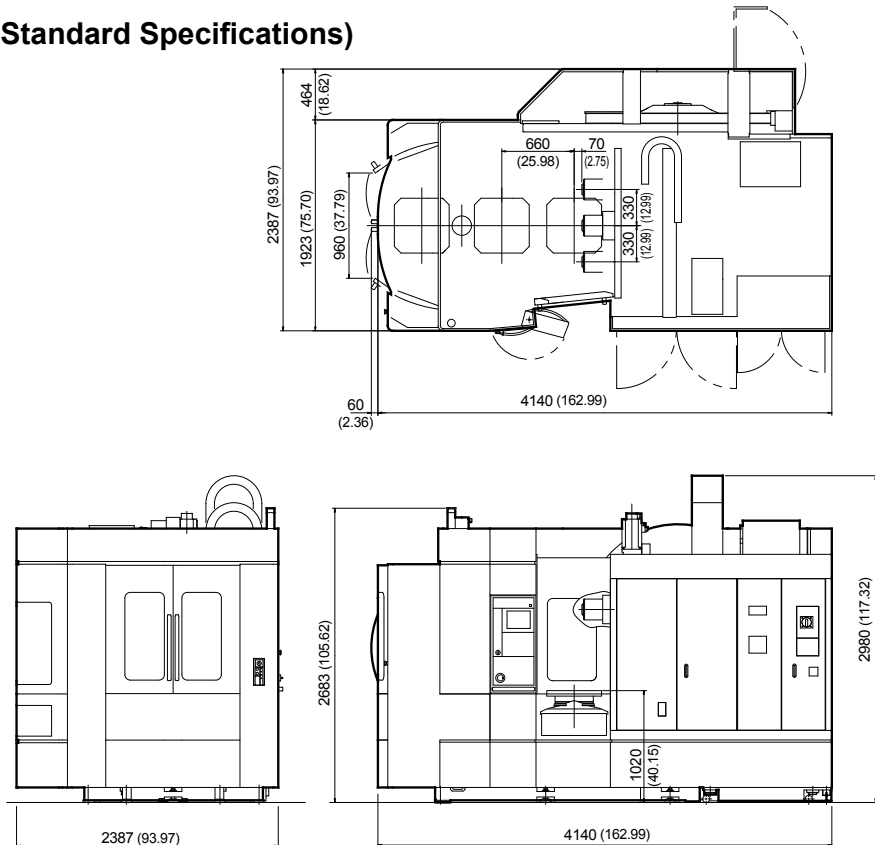
## Main Specifications

■ 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		51 (Drum Magazine : Fixed Address)
Max. Tool Diameter	mm (in.)	Ø90 (3.54)
Max. Tool Diameter	mm (in.)	Ø150 (5.90) : with conditions
Max. Tool Length	mm (in.)	350 (13.77)
Max. Tool Weight	kg (lb.)	10 (22)
Tool Change Time	sec	2.7

■ Automatic Pallet Changer		
Type of pallet Change		Turn Table Methods
Pallet Change Time	sec	7.2 : Pallet to Pallet
■ Power Supply		
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
■ Standard Accessories		
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. <b>AD-TAP</b> Function		12. Work Light
04. <b>IPC</b> 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. <b>Handy Man II FIY</b>
08. Chip Flow System		17. Install CD-R for Program/ Edit on Memory Card only for <a href="#">Matsuura G-Tech 30i</a>
09. Spindle Overload Protection		18. Matsuura Safety Specification

## Outline (Standard Specifications)

Units : mm (in.)



Machine Weight : 10.4 t

# 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	
51 (Drum Magazine : Fixed Address)	○
52 (Drum Magazine : Memory Random)	▲
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)	▲
<b>THERMAL MEISTER</b> ™ (Thermal Displacement Compensation for spindle & Feed Axis)	○
■ APC	
PC2	○
PC6 (Floor Pallet System)	▲
PC12 (Tower Pallet System)	▲
PC17~ (Linear 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	
<b>AD-TAP</b> Function	○
<b>IPC</b> Function	○
<b>Handy Man II FIY</b>	○
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)	▲

