Matsuura

Horizontal Machining Center

H.Plus-300

MAXIA

Innovation by Matsuura

Matsuura H.Plus-300

Our class leading 300mm² multi-pallet horizontal has evolved

New Matrix Tool Magazine Option

- 2 types of high capacity storage systems, configured to your demands. (330 magazine base or 530 magazine)
- Tool set-up position has been repositioned to the front of the machine, delivering greater operator efficiency and ergonomic design.

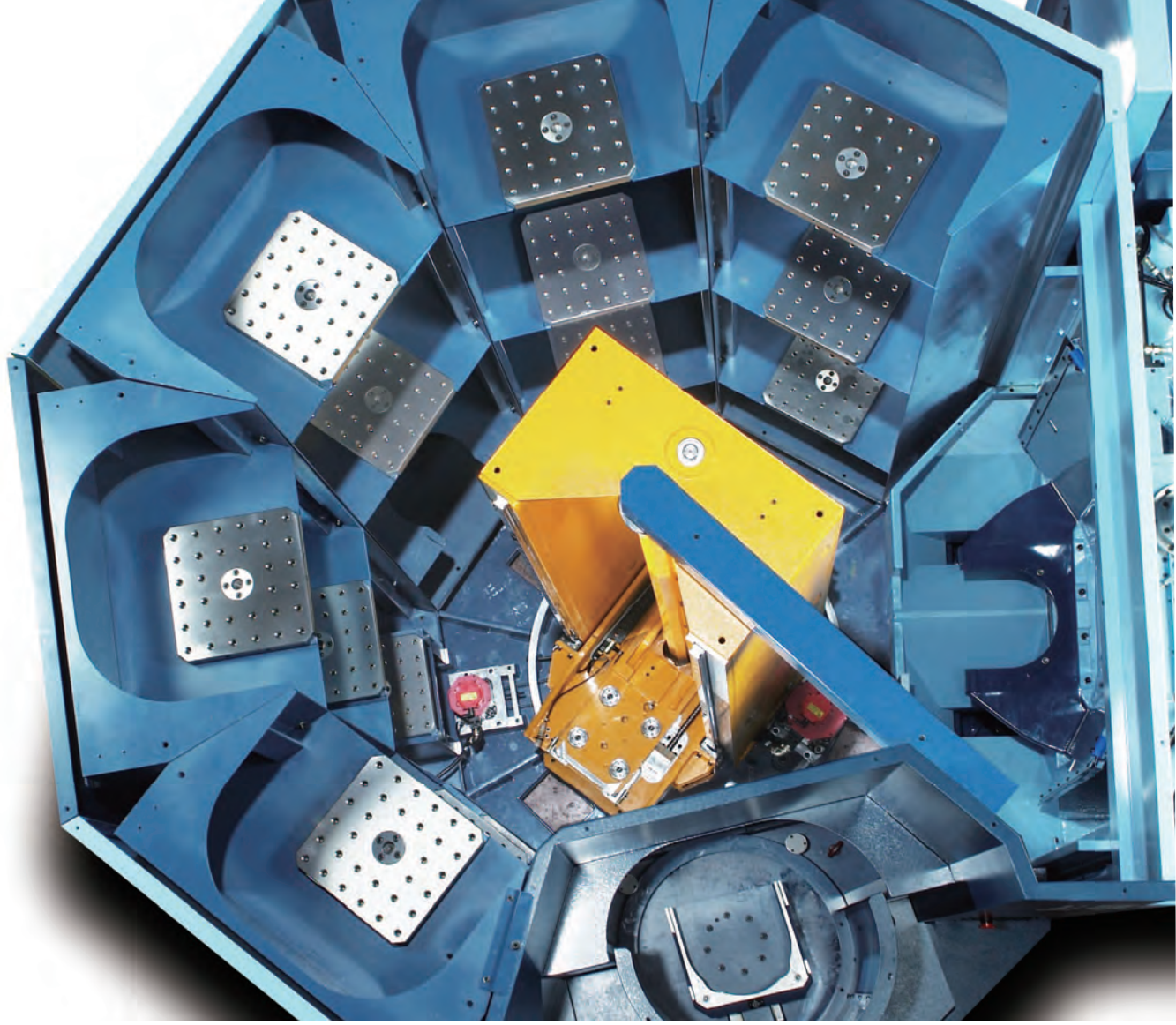
Equipped with iHMI expanded functionality and advanced operability.

- 15-inch touch screen
- Status at a glance icon graphics and display for assured, fast and safe operation commands.

Advanced design; swarf and chip evacuation

- Machining enclosure equipped with precision stainless steel telescopic covers.

MAXIA
Innovation by Matsuura



Tower Pallet System **PC15**

Unmanned Multi Pallet Excellence

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

Option

Type	Features	Production Volume	Number of Pallets
Floor Pallet System	Compact, fully integrated & expandable multi pallet system	Low to Medium Volume	**PC5**
Tower Pallet System	Vertically aligned space saving multi pallet system	Medium to High Volume	**PC15**

Floor Pallet System Option

Small footprint

PC5

Tower Pallet System Option

Small footprint and large capacity

PC15

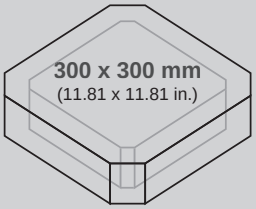
Easy pallet management and scheduling

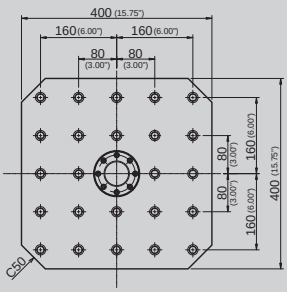
Continuous operation is made possible by setting all necessary information into the schedule table.
Order or priority of machining can be easily changed to meet production requirements.
Pallet reserve, interrupt, priority and repeat can be set for each pallet.
Pallet management screen is designed for easy operation and flexible production.

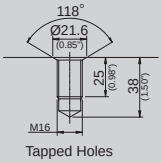
Scheduled operation	Machining pallets according to the set schedule number.
Interrupt pallet	Prioritizes highlighted pallet number in production schedule.
Reserve pallet	Reserves pallets for when unmanned run time is allowed.
Continuous operation	Continually machines specified pallets only.
End Pallet setting	Stops machining after a certain pallet number has been completed.

Special Pallet（400 x 400 mm 15.75 x 15.75 in.） Option

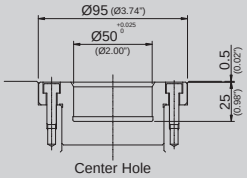
400 x 400 mm
(15.75 x 15.75 in.)







Tapped Holes



Center Hole

Tool Capacity; tailored to your current process, adaptable for your future needs

60 tools Drum Magazine Standard

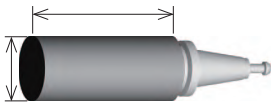
Designed & fully proven by Matsuura this new drum magazine offers vastly reduced tool change times when compared to conventional designs. Tool indexing time has been reduced by a massive 60%. With less moving parts than standard ATC's, a design imperative from the outset was the elimination of un-necessary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

Drum Type ATC – Specification

ATC time	2.44 sec.

Max. Tool Length
300 mm (11.81 in.)

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



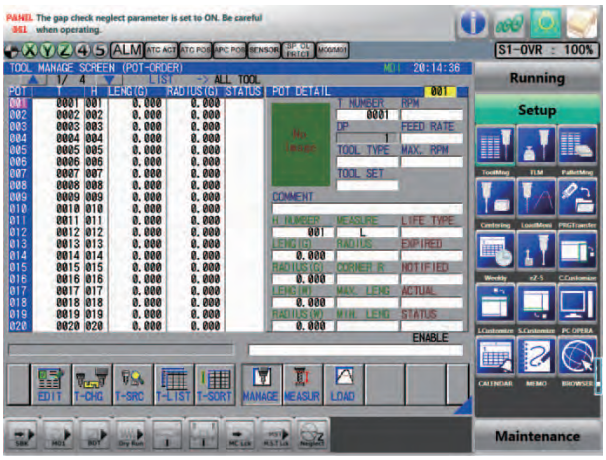
Max. Tool Weight
8 kg (17.6 lb.)

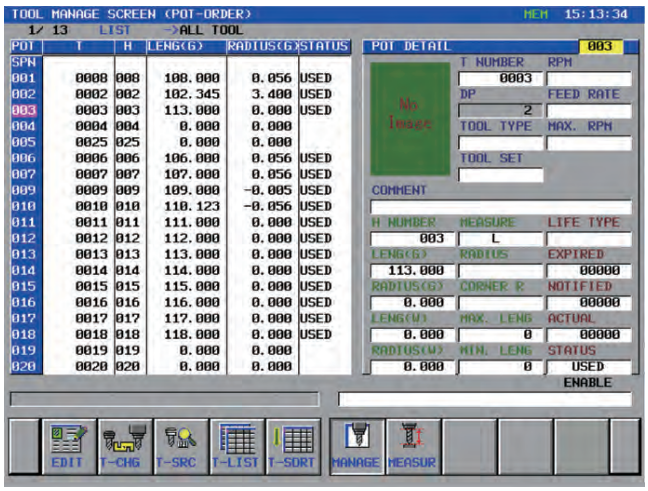
H.Plus-300 60 tool ATC, Twin Pallet Changer Standard

User friendly tool management screen

Equipped with tool life management as standard, the unmanned capability of the machine is enhanced.

- By creating tool lists you can check and search specific tool data.
- With the load / unload function you can store tool data on a temporary basis.





Tool life management

- Time and frequency of usage is updated on the tool table after tool change.
- Once the current tool life value exeeds the set value a warning is displayed.
- Spare tools can be set using the same T number. A spare tool is automatically selected once a tool's life has expired.

Tool pre-check Option

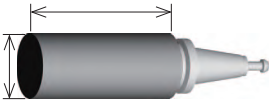
- Confirms tools are available before machining begins.
- Prevents alarms and unplanned stops during unmanned operation.

Matrix tool Magazine Option

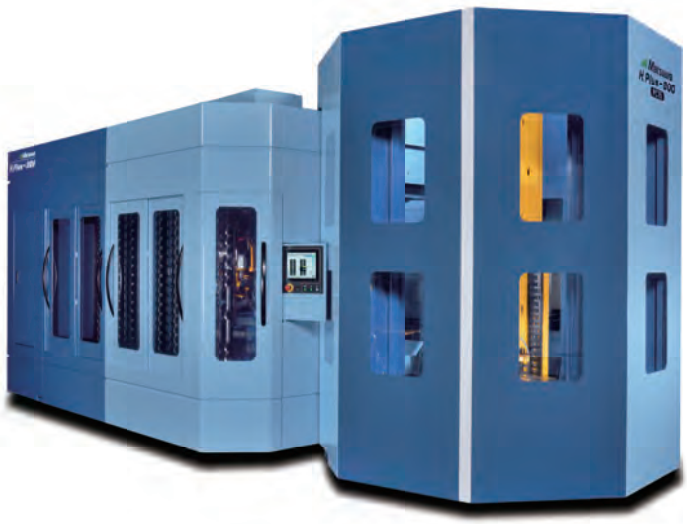
・330 tool magazine/530 tool magazine.
・With a servo drive providing higher speed, the newly developed matrix magazines have a small footprint while offering high tool storage capacity (330 tools/530 tools).

Max. Tool Length
300 mm (11.81 in.)

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



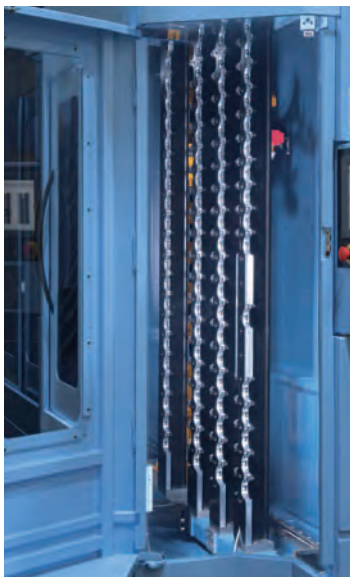
Max. Tool Weight
8 kg (17.6 lb.)



H.Plus-300 PC15 330T magazine Option

330 tool base magazine

Drive type	Horizontal/ vertical axis	Servo (rack and pinion / ball screw)
	Conveyor arm	Servo
Tool loading time	Shortest	8.7 seconds **50% less than previously**
	Longest	13.4 seconds **39% less than previously**
Large diameter tool		25 tools **An increase of 9** The maximum tool storage capacity decreases by 40 when 25 large diameter tools are accomodated.
Independent tool preparation pot		Option Even while a tool is in standby position further tools can be loaded / unloaded to / from the magazine.

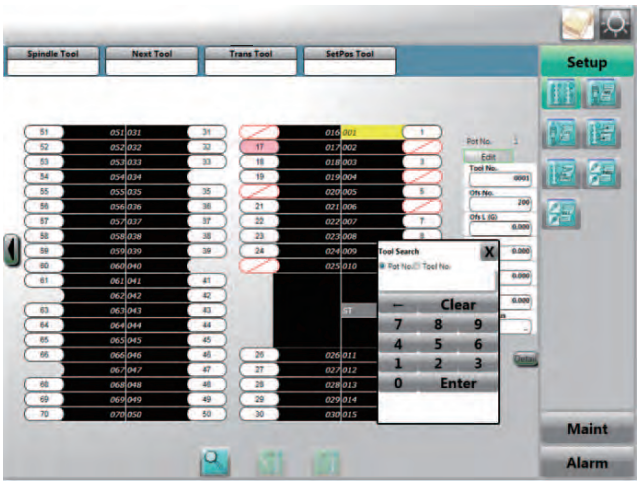


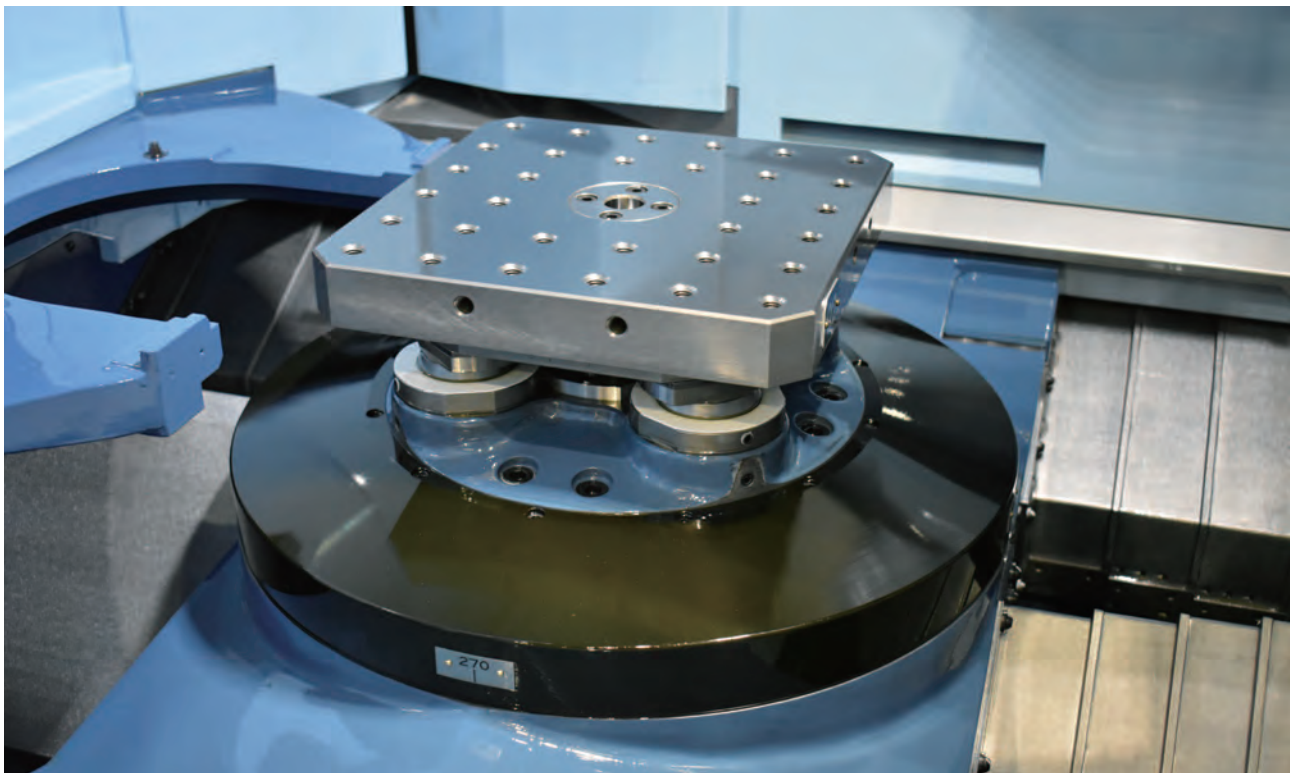
Tool setup door

Tool magazine operation panel

The screen switches according to the category, such as setup, maintenance and alarms. Setting, search and confirmation for each type of item can be performed on the screen.

・Tool/pot search.
・All tool screen display.
・Setting, editing and confirmation of data for tools in the magazine.
・Tool life warning screen.
・Tool reset/centering screen.





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

DD Motor Driven 100 min^{-1}

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

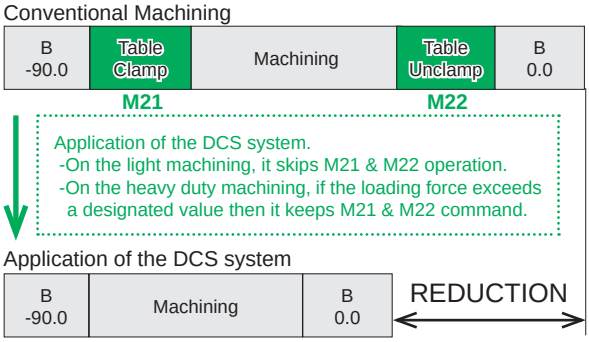
Patent 4931744

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.



Eco Friendly Spindle

with Spindle Grease Auto Supply System

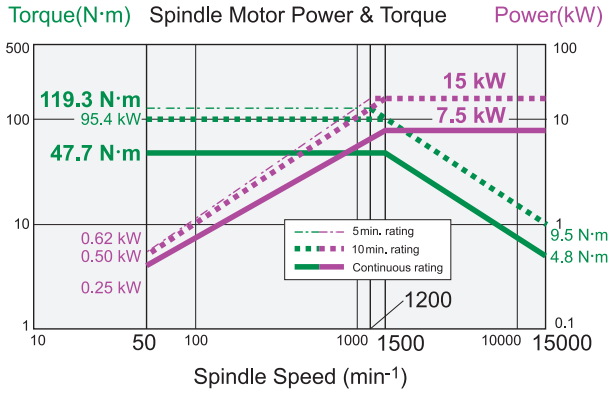
Matsuura MAXIA Spindle

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.

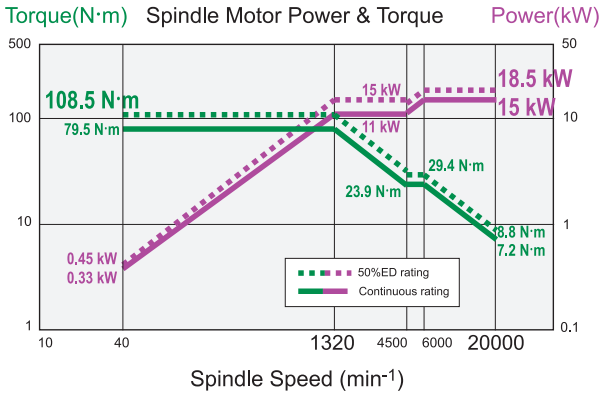
15,000 min^{-1} Standard

Motor Power : 7.5 / 15 kW (20 HP)
Motor Torque : 119.3 N·m/1,200 min^{-1}



20,000 min^{-1} Option

Motor Power : 15 / 18.5 kW (25 HP)
Motor Torque : 108.5 N·m/1,320 min^{-1}



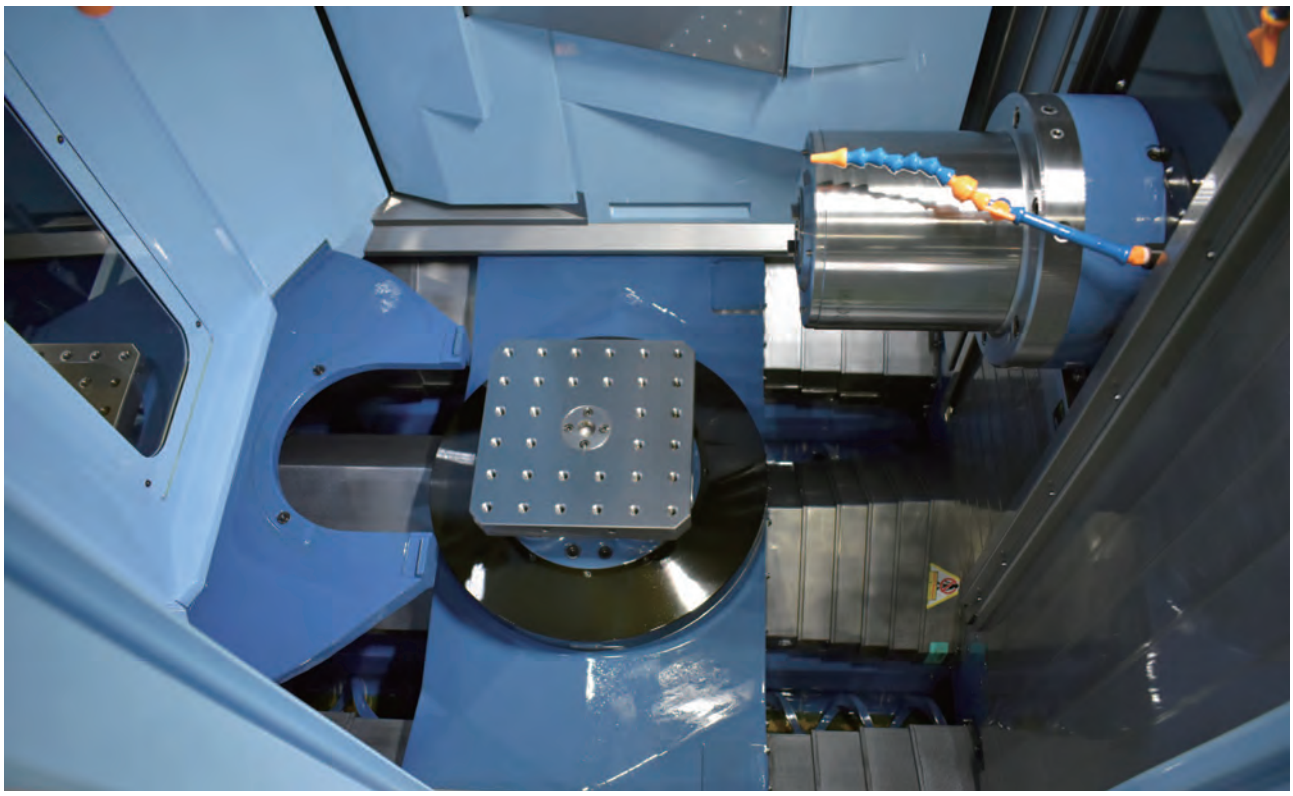
● 30,000 min^{-1} spindle is available as option

Vacuum Type Coolant Thru Spindle System

Option

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

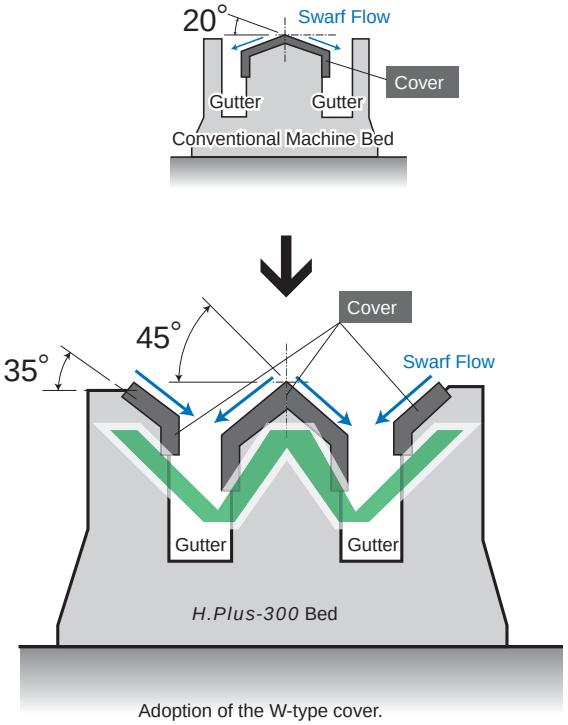
＊Vacuum Type Coolant-Thru for 30,000min^{-1} Spindle is not available.



Effective & Reliable Swarf Management

W-Type Protection Cover

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

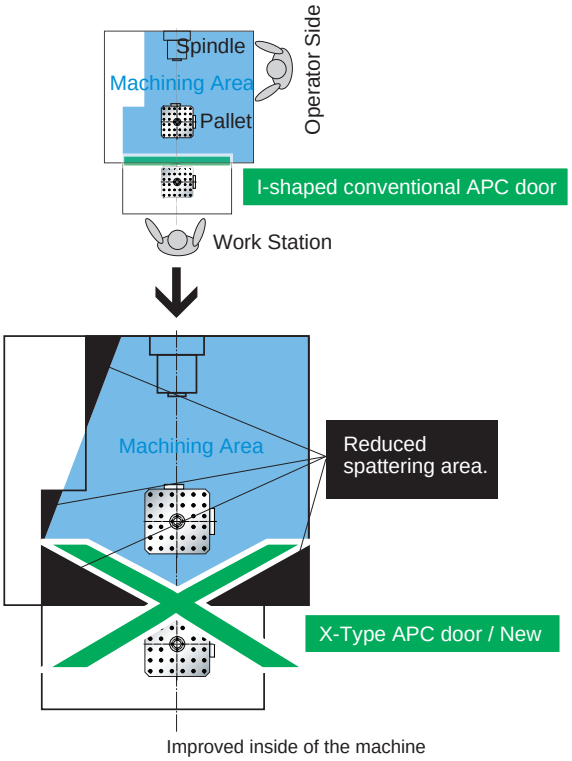


Adoption of the W-type cover.

X-Type APC Door

Patent 3173652

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

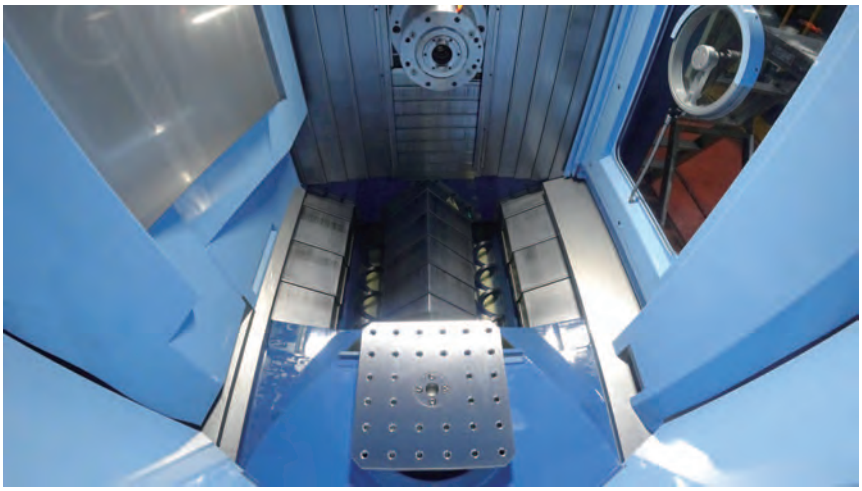


Improved inside of the machine

Reliable, accessible with designed ease of maintenance

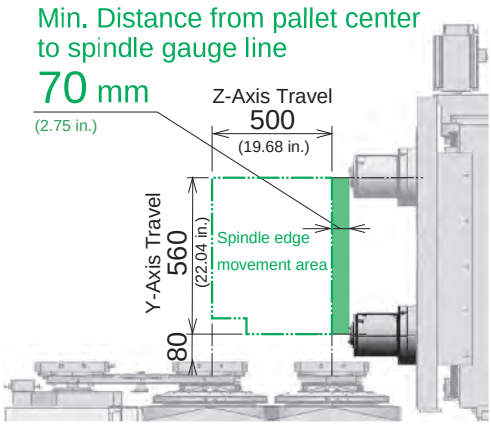
Advanced Chip Evacuation

Time honoured, knowledgeable design and the use of precision, stainless steel covers eliminates chip accumulation.



Improved Accessibility

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



H.Plus-300 Movement Ranges(Y&Z-Axis)

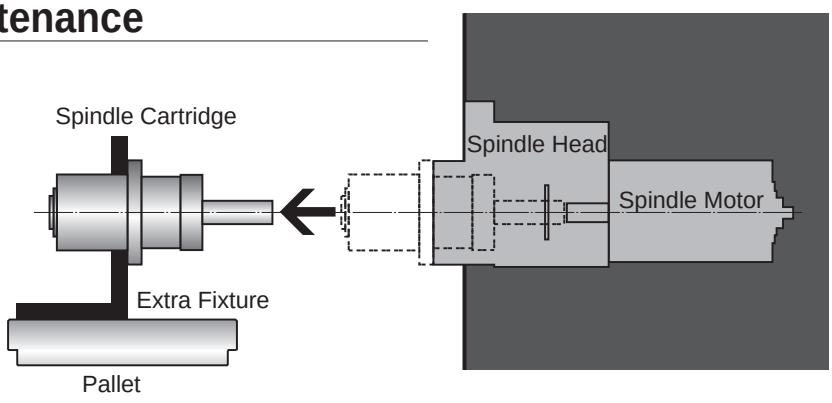
Minimum Maintenance

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

Maintenance requiring equipment is concentratedly arranged in the rear side of the machine.

Improved Spindle Maintenance

On the rare occasion that your Matsuura Hi-Tech Spindle requires removal from headstock, the operation can be efficiently & quickly expedited – with minimum fuss & machine downtime.



Drawing out the spindle cartridge from the headstock by using extra fixture

Easy Operation

MIMS

Matsuura Intelligent Meister System

Secure

Reliability Meister

Reduced machine downtime

- Preventive maintenance support function
- Machine recovery support function
- Electronic manual function
- E-mail transmission function

Simple

Operability Meister

Hassle-free, simple operation

- Tool setup support
- Workpiece setup support

Accuracy

Thermal Meister

Stable accuracy

- Spindle thermal displacement compensation
- Environmental thermal displacement compensation
- X/Y/Z thermal displacement compensation

Environment

Eco Meister

Eco mode

Power savings

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

Operation Panel

Matsuura G-Tech 31i

Matsuura G-Tech 31i
(iHMI, 15-inch touch panel type)
Usability is drastically upgraded with context-sensitive screen icons and quick screen displays.

Program management

Tool offset

Electronic manual display

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.

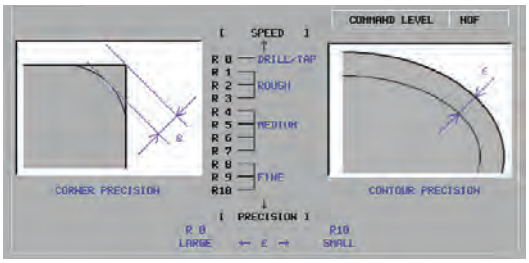
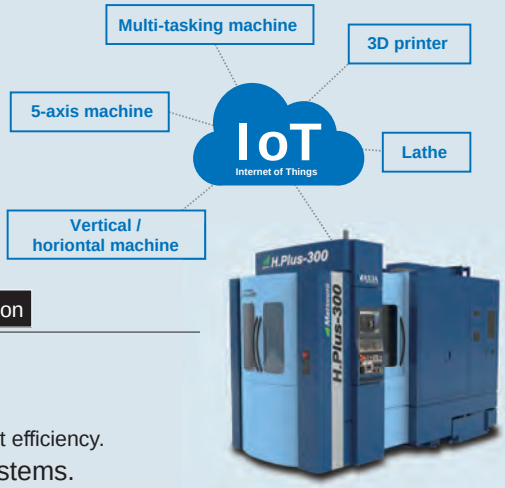


Image of IPC

Matsuura IoT

Comes equipped with work monitoring and operational support functions, providing security for long periods of unmanned running. Mechanical support functions to confirm machines operation and condition.



Operation monitoring functions Option

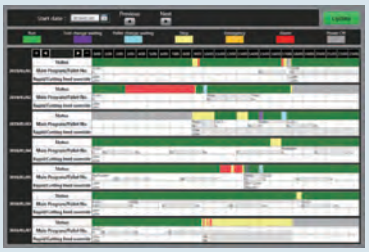
Machine availability and performance can be monitored to improve process planning.

・Performance is monitored to check OEE. *Overall equipment efficiency.

・Data can be output to process data acquisition (PDA) systems.

* Overall equipment efficiency (OEE) = availability x performance x quality

Overall operation ratio display



Operational state display

Machining performance display

MTConnect Option

MTConnect is an open communication protocol for the manufacturing industry.

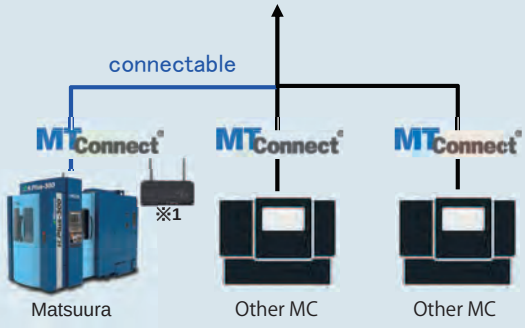
MTConnect enables low-cost visualization and oversight of all CNC machines in a factory, regardless of the machine manufacturer. Benefits include;

・Optimization of production schedule

・Identify and utilize free machine time

・Early detection of abnormalities

MTConnect compatible visualization system



*1 Support for both wireless and wired LANs

Main Specifications

■ Movement & Ranges		
X-Axis Travel	mm (in.)	500 (19.68)
Y-Axis Travel	mm (in.)	560 (22.04)
Z-Axis Travel	mm (in.)	500 (19.68)
B-Axis Travel	deg	360
■ Pallet		
Working Surface	mm (in.)	300 x 300 (11.81 x 11.81)
Loading Capacity	kg (lb.)	250 (551)
Max. Work Size	mm (in.)	ø530 x H760 (ø20.86 x H29.92)
■ Spindle : BT40		
Spindle Speed Range	min^{-1}	50 ~ 15,000
Spindle Motor Power (Contin. / 10 min.)	kW (HP)	7.5 / 15 (20)
Spindle Max. Motor Torque	N · m	120 / 1,200 min^{-1}
■ Feedrate		
Rapid Traverse (X/Y/Z)	mm/min (ipm)	60,000 (2,362.2)
Rapid Feed Acceleration	G	0.93 / 1.28 / 1.06
■ 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
Max. Tool Diameter	mm (in.)	Ø80 (Ø3.14)
Max. Tool Diameter	mm (in.)	Ø150 (Ø5.90) : with conditions
Max. Tool Length	mm (in.)	300 (11.81)
Max. Tool Weight	kg (lb.)	8 (17)
Tool Change Time	sec	2.4 : Chip to Chip

■ Automatic Pallet Changer		
Pallet Changer Type		Turn Table Methods
Pallet Change Time	sec	6.6 : Pallet to Pallet
■ Power Supply		
Input Power	kVA	42 (50 : NC Indexing / opt.)
Voltage	V	AC200 / 220±10%
Frequency	Hz	50 / 60±1
Air Source	MPa	0.54~0.93
Required Air Volume (Maximum Flow Volume)	NL/min	Max.350
■ Machine Size		
Mass of Machine	kg (lb.)	8,300 (18,300) PC2

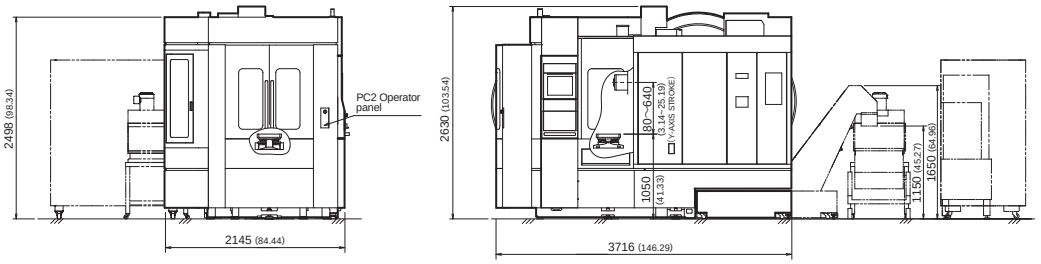
■ Standard Accessories

01. *AD-TAP* Function
02. *IPC* Function
03. Feed Axis Grease Auto Supply System
04. M-Code Counter (9 M-Code)
05.Spindle thermal displacement compensation
06. Standard Mechanical Tools and Tool Box
07. Machine Color Paint
08. Leveling Plate and Bolts (not Foundation Pad)
09. MIMS (Matsuura Intelligent Meister System)
10. Spindle Runhour Meter
11. Automatic Operation Runhour Meter

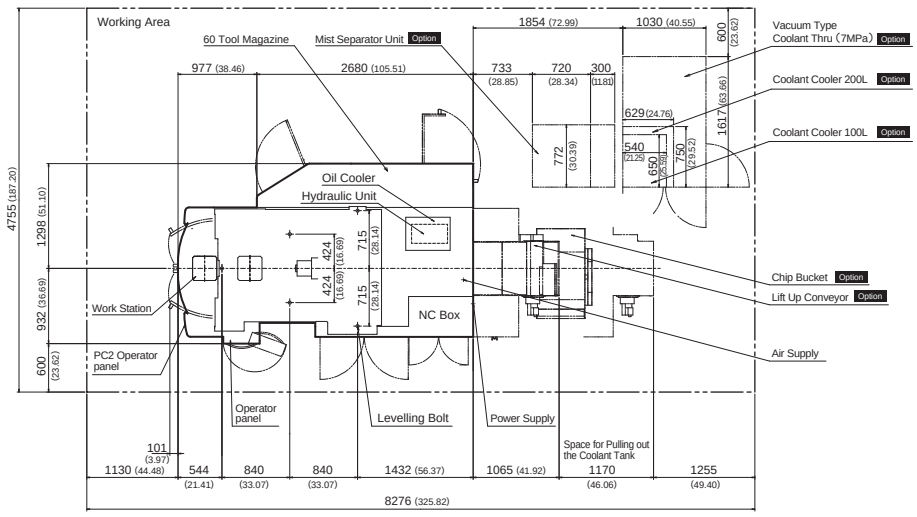
* 2 years spindle warranty

Outline

Unit : mm (in.)



Floor Plan



Equipment

○ : Standard ▲ : Option

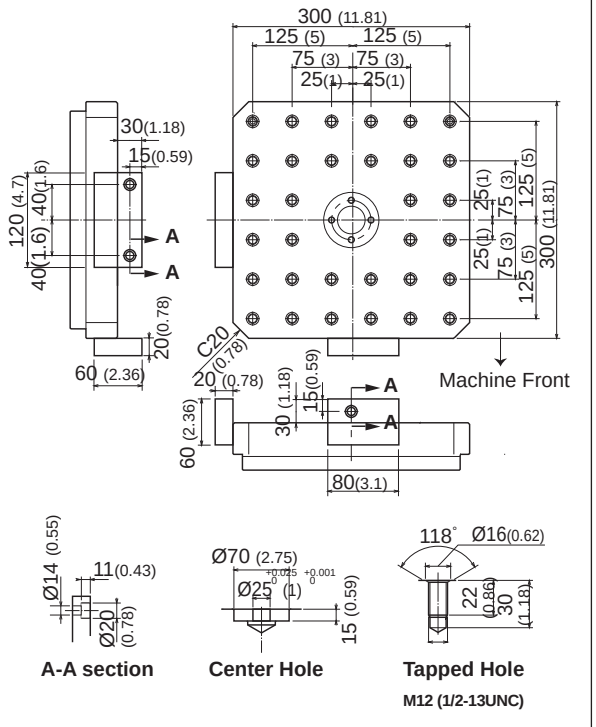
■ Spindle	
15,000 min^{-1} (Spindle Auto Grease Supply)	○
20,000 min^{-1} (Spindle Auto Grease Supply)	▲
30,000 min^{-1} (Oil-Air)	▲
■ ATC	
60 (Drum Magazine : Fixed Address)	○
130 / 170 / 210 / 250 / 290 / 330 (Matrix Magazine 330 base)	▲
370 / 410 / 450 / 490 / 530 (Matrix Magazine 530 base)	▲
■ High Accuracy Control	
Scale Feedback System X/Y/Z-Axis	▲
■ APC	
PC2	○
PC5 (Floor Pallet System)	▲
PC15 (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 (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 Manegement	
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)	▲

* Vacuum Type Coolant-Thru for 30,000min^{-1} Spindle is not available.

■ Operation / Maintenance	
AD-TAP Function	○
IPC Function	○
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 Hour 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)	▲

Pallet Surface

Unit : mm (in.)



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