

Mold.Plus

**Effortless Power,
Superior Accuracy**

New High Accuracy Vertical

High Accuracy Vertical Machining Center

Mold.Plus-800

Travel (X/Y/Z)

: 800/550/500 mm (31.49/21.65/19.68 in.)

Table Size

: 1,150 x 510 mm (45.27 x 20.07 in.)

Max. Loading Capacity

: 500 kg (1,100 lb.)

Incorporating box slideways, a high accuracy scale feedback system on all axes, a 20,000min⁻¹ Matsuura Hi-Tech Spindle offering effortless power, Matsuura's renowned Thermal Growth Compensation System & sustained positioning accuracy of 1 micron, Matsuura's **Mold.Plus-800** is the machine for all modern Mold & Die manufacturers.

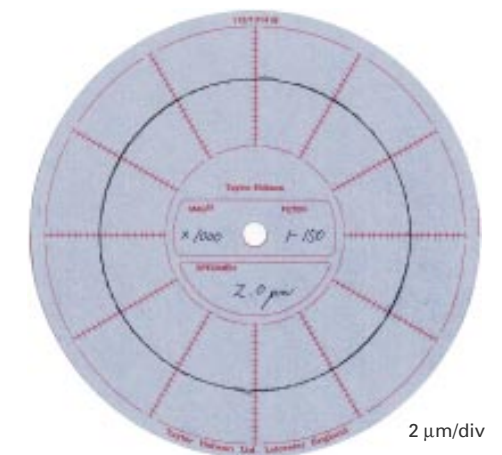


Phenomenal High Accuracy Cutting



Circularity 1 μm *Actual Result

Filter : 1-15
Material : Aluminum A5052
Spindle Speed : 5,000 min⁻¹
Feedrate : 1,000 mm/min
Tool : Endmill 2 tooth

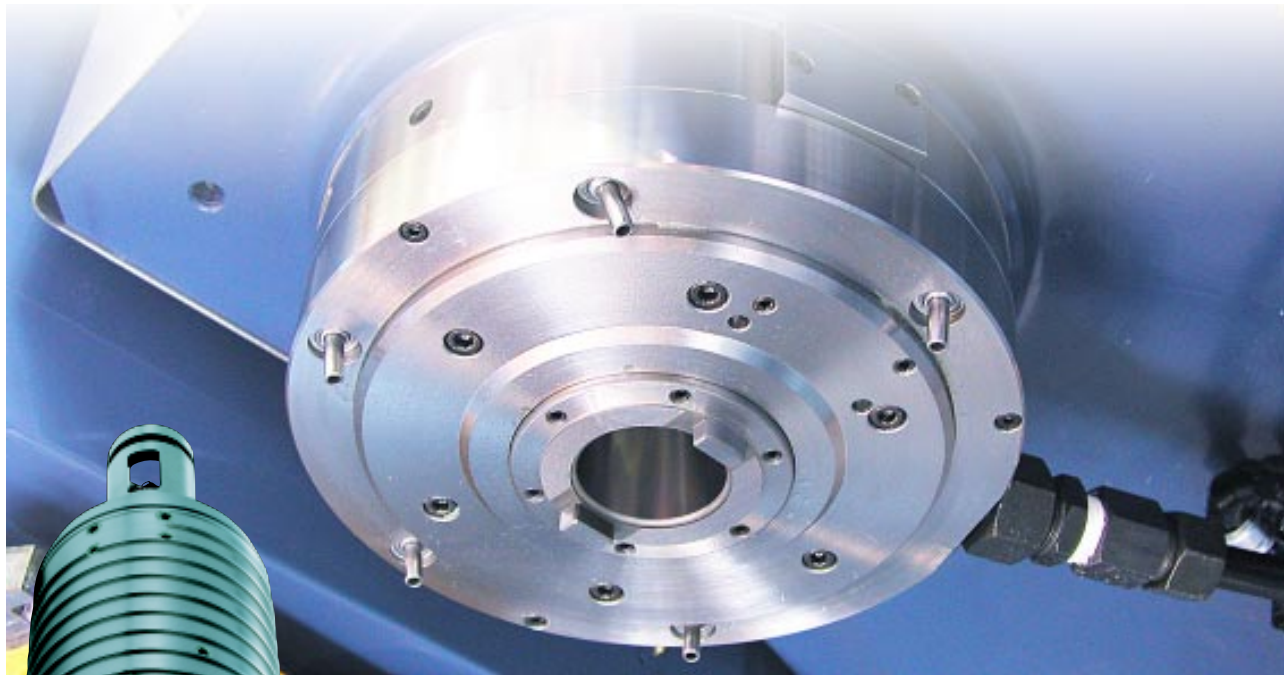


Circularity 2 μm *Actual Result

Filter : 1-150
Material : Aluminum A5052
Spindle Speed : 5,000 min⁻¹
Feedrate : 1,000 mm/min
Tool : Endmill 2 tooth

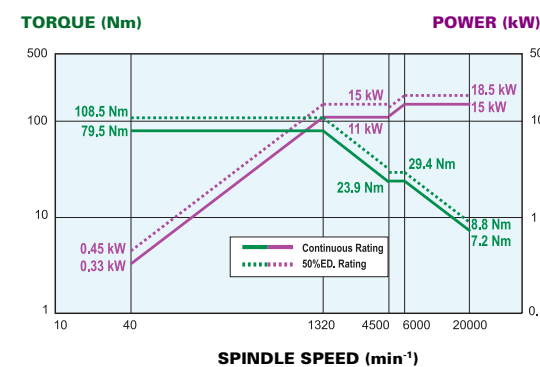
*Actual results are not guaranteed values.

High Speed 20,000 min⁻¹

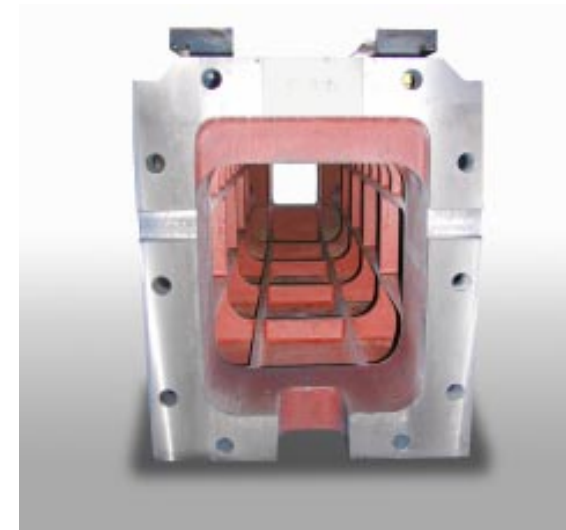


Matsuura Hi-Tech Spindle

- Utilizing Matsuura's many decades of pioneering high speed machining experience, our spindles are designed & assembled 'in house'. Matsuura's spindle engineers work in a dedicated clean room complex to assure the highest quality & reliability, the precision spindles are assembled to guarantee a runout of less than 1 μm (0.000039 in.) (actually measured value) at the nose of the spindle.
- The spindle and the motor are connected by Matsuura's unique coupling. This assembly is designed to prevent the heat from being transferred from the motor to the spindle & contributes to the high rigidity of the spindle.
- To minimize heat buildup in the spindle, cooled oil is circulated around the outer jacket of the spindle and motor as well as the motor flange, thus sustaining its high accuracy.
- The standard, double contact of the face & taper, unification of the spindle & drive key features a unique tool clamp mechanism to improve repeatability and stationary/dynamic rigidity. This results in excellent material removal rates and surface finish.



High Accuracy



- Significant ribbing of the bed & column - designed & optimized by FEM analysis.

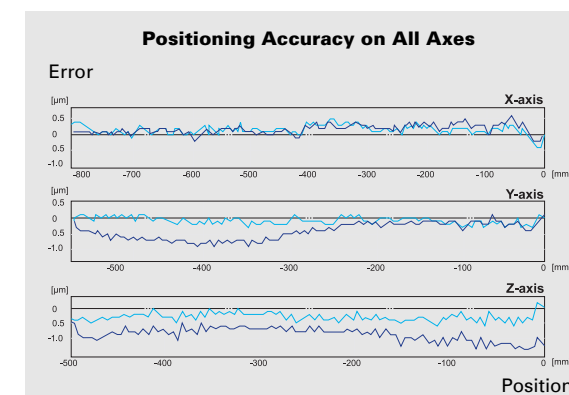


- Widely spaced, rectangular guideways on all axes are finished by traditional hand scraping to minimise wear & offer life long accuracy.

High Resolution Linear Scales

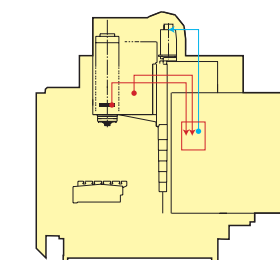


- Due to the high accuracy, 0.05 μm resolution linear scales excellent repeatability, positioning & superb machining results are achieved - every time.



Positioning Accuracy within 1 μm on all axes
*Actual Result

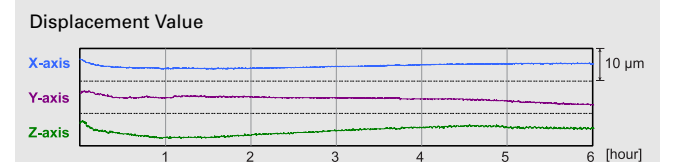
Thermal Displacement Compensation Function



(Figure of System)

- By utilizing the spindle thermal displacement compensation function, the sustained accuracy of this outstanding machine is assured over many years of operation.

Thermal Displacement Value on All Axes during continuous 6 hours running



Thermal Displacement Value within 5 μm during continuous 6 hours, 20,000 min⁻¹ running
*Actual Result

*Actual results are not guaranteed values.

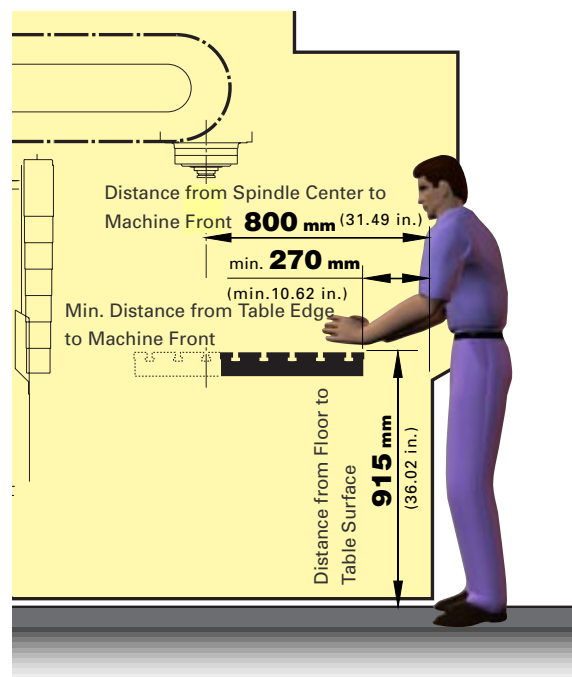
Modern, Ergonomic Design



Wide Access

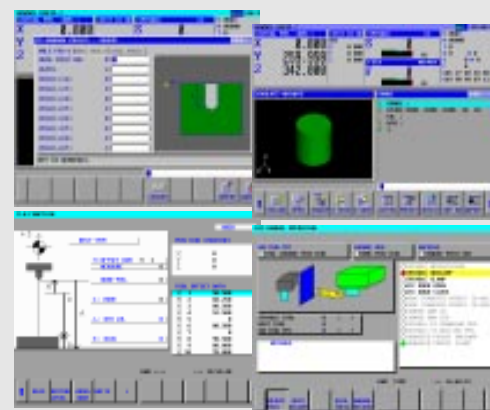
- The newly designed front access has left & right opening doors, & incorporate improvements to roof access at the front of the machine. The door opening width is 1,080 mm (42.51 in.), offering a cavernous access point for large, heavy & unwieldy billets.

Vastly Improved Operator Access



Proven Software Performance

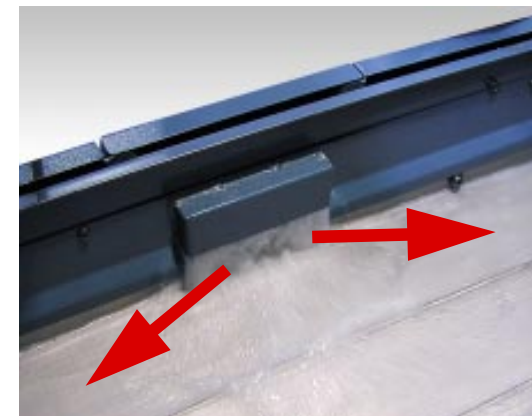
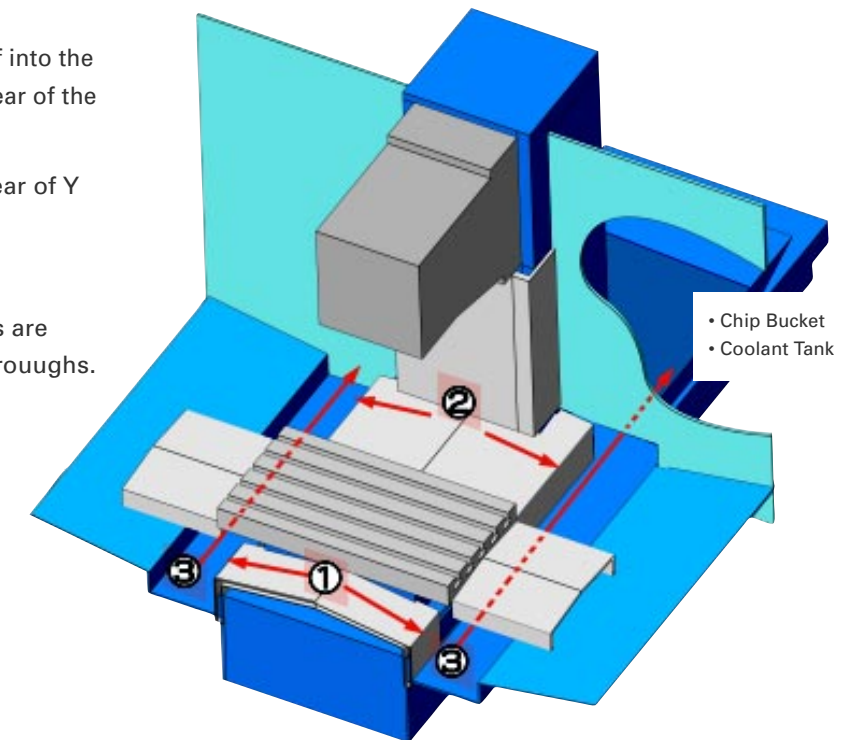
Handy Man II provides major savings by reducing set-up, programming, operating & maintenance times. Please contact Matsuura for a copy of our in-depth **Handy Man II** brochure.



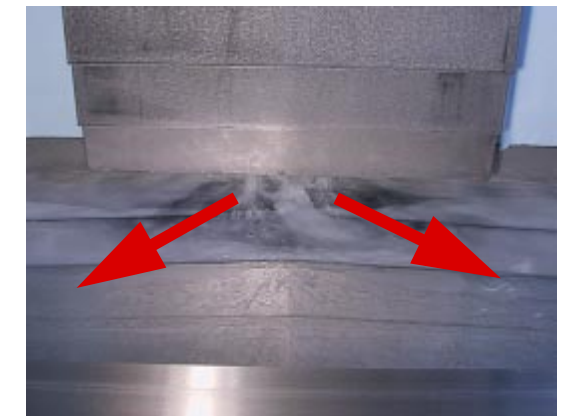
Swarf Management

Efficient Swarf Management

- Large bedway ducts ensure the unobstructed free flow of swarf into the chip collection buckets at the rear of the machine.
- Excellent chip flow - front & rear of Y axis telescopic cover.
- Deep side troughs.
- Optional spiral chip conveyors are available on left & right side troughs.



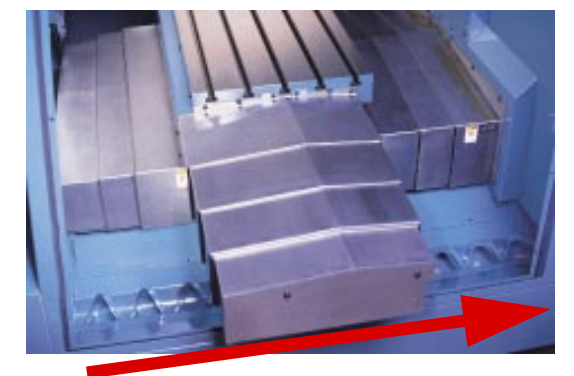
① Chip Flow (Y-axis Front)



② Chip Flow (Y-axis Front)



③ Chip Flow (Y-axis Left & Right)



Option

Spiral Chip Conveyors (Y-axis Left & Right)

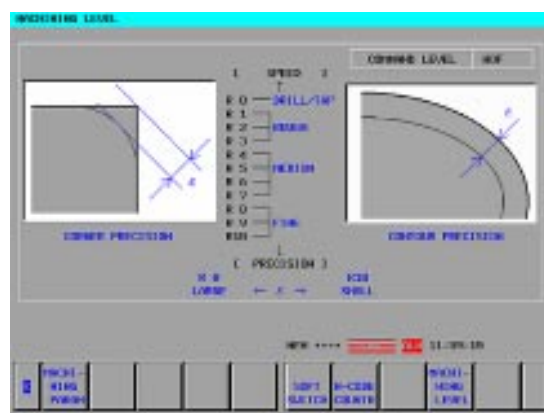
Powerful, High Performance

For General Parts or Mold & Die

IZ-1/15F

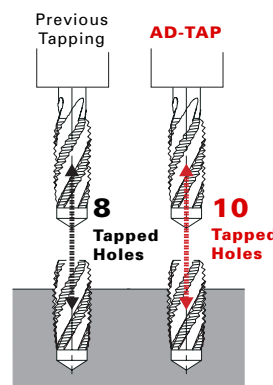
- Matsuura's original high speed control function that compensates for any geometric error between the machining program and the actual machined profile.

IPC



- 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



(Example number of tapped holes at same time)

- 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.

(Patent Pending)

For more Complex, Precision Parts

Option

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

(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.

High Speed & High Precision Package

Option

IZ-2/150NF

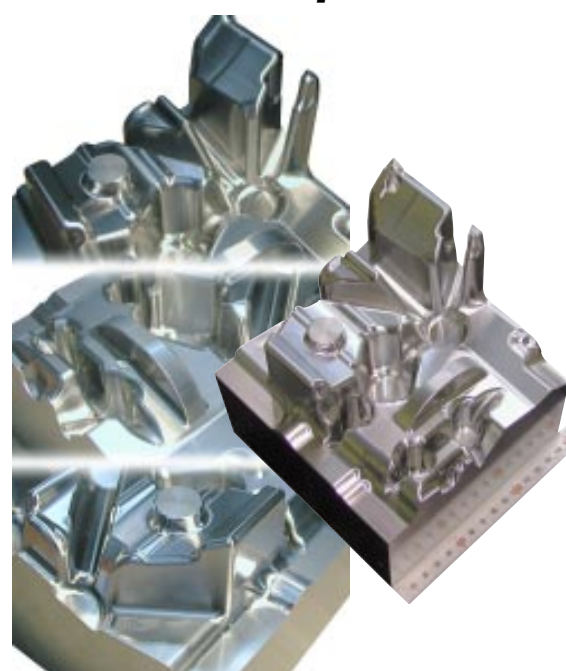
Nano Smoothing (X/Y/Z)

Look-ahead Block Expansion up to 1,000 pcs

Fast Data Server (100/10 Base-T compatible)

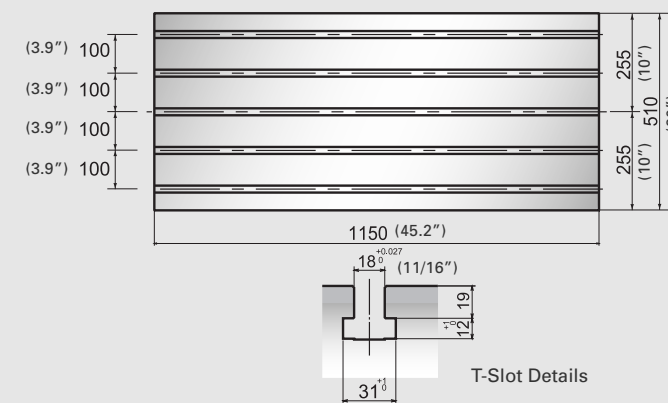
Optimal Torque Acc./Dec.

Example

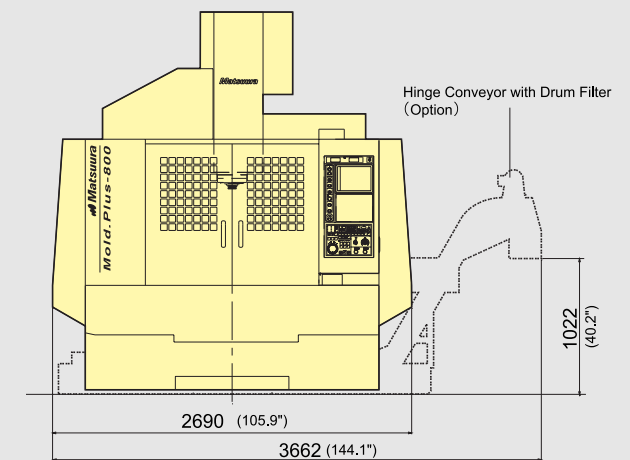


Workpiece : Mold & Die
Number of Tools : 8
Materials : CENA1 (HRC40)
Cycle Time : 16 hours

Mold.Plus-800 Table Surface



Mold.Plus-800 Floor Plan



Options

Number of Tools

- 80 tools

Operation / Maintenance

- 8 Sets of Extra M Function
- Weekly Timer
- 3 Color Status Light (red, green, yellow)
- Spindle Run Hour Meter
- Automatic Operation Run Hour Display unit
- Movable Manual Pulse Generator
- Mist Separator Unit
- Rotary Wiper (Air Supply System)
- Coolant Flow Checker

Safety Features

- Door Interlock for Total Splash Guard

Coolant /Swarf Management

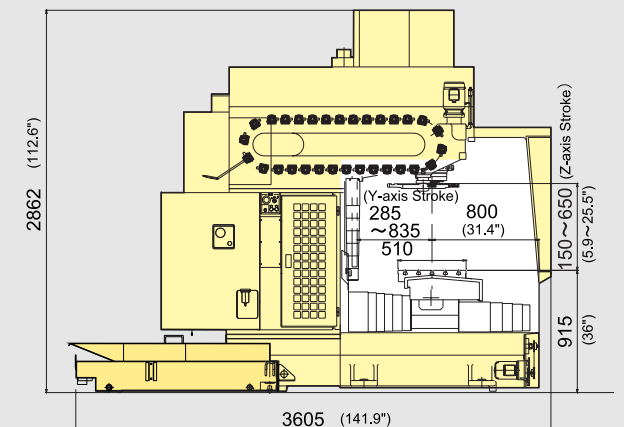
- Coolant Thru(2MPa/5MPa*/7MPa*)
:*with Coolant Temperature Controller
- External Nozzle (2MPa/5MPa)
- Coolant Temperature Controller (100L/200L)
- Chip Flush System
- Spiral Chip Conveyor (Right & Left)
- Lift-Up Chip Conveyor
(Hinge Type, Drum filter + Spiral Chip Conveyor)
- Chip Bucket
- Air Blow for Chip Swarf Removal
- Workpiece Cleaning Gun

Tool Management /Workpiece Measurement

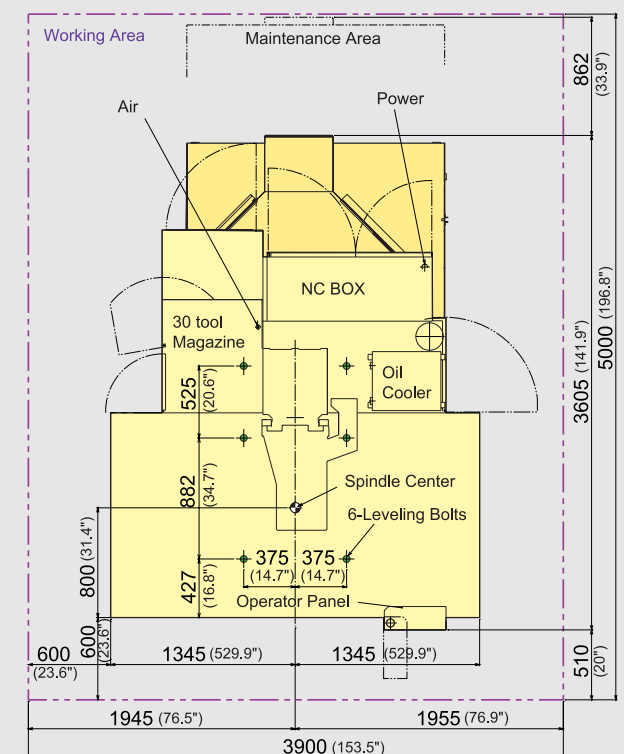
- Touch Type In-Process TLM Measurement + Broken Tool Detection + Auto Centering
- In-Process Measurement & Broken Tool Laser Detection
- Touch probe

Others

- Additional Axis (4/5th Table)



Mold.Plus-800 Outline



Standard Machine Specifications

TRAVEL	
X-axis Travel	800 mm (31.49 in.)
Y-axis Travel	550 mm (21.65 in.)
Z-axis Travel	500 mm (19.68 in.)
TABLE	
Working Surface	1,150 x 510 mm (45.27 x 20.07 in.)
Loading Capacity	500 kg (1,100 lb.)
SPINDLE	
Speed Range	40 - 20,000 min ⁻¹
Spindle Taper	7/24 taper JIS BT40
Bearing Inner Diameter	ø70 mm
Bearing Lubrication	Oil & Air
Motor Power (cont. / 50%ED)	15 / 18.5 kW (25HP)
Max. Spindle Torque	108.5 Nm/1,320 min ⁻¹
FEEDRATE	
Rapid Traverse (X/Y/Z)	25,000 mm/min
Feedrate (X/Y/Z)	1 - 25,000 mm/min
AUTOMATIC TOOL CHANGER	
Type of Tool Shank	JIS B 6339 40T
Type of Retention Knob	JIS B 6339 40P
Tool Storage Capacity	30
Max. Tool Diameter	96 mm (3.77 in.)
:When the pockets on both side are empty	175 mm (6.88 in.)
Max. Tool Length	350 mm (13.7 in.)
Max. Tool Weight	10 kg (22 lb.)
Method of Tool Selection	Memory Random
Tool Changing Time	0.9 sec :Tool weight to be less than 5kg (11 lb.) 1.8 sec :If tool weight is more than 5kg (11 lb.)
	3.2 sec
POWER SUPPLY	
Power Capacity	52 kVA
Input Power	AC200/220V±10%
Air Source	0.54 - 0.93 MPa
Volume of Compressed Air	650 NL/min
TANK CAPACITY	
Coolant Tank Capacity	400L
MACHINE SIZE	
Mass of Machine	5,000 kg
CONTROL	
Control System	Matsuura G-Tech 30i



09. Coolant Unit (Chip Rear Disposal)



20. Chip Flow (Y-axis Cover)

STANDARD ACCESSORIES	
01. Total Enclosure Guard & Top Side Cover	
02. Magazine Cover	
03. ATC Auto Door	
04. Synchronized Tapping Function	
05. AD TAP Function	
06. IPC Function	
07. Spindle Oil Cooler	
08. Air Dryer	
09. Coolant Unit (Chip Rear Disposal)	
10. Scale Feedback System	
11. Lubrication Unit	
12. Spindle Overload Protection	
13. Spindle Load Monitoring Function	
14. 9 Sorts of M-Code Counters	
15. Thermal Displacement Compensation Function	
16. Work Light	
17. Standard Mechanical Tools & Tool Box	
18. Machine Color Paint	
19. Levelling Pads & Bolts	
20. Chip Flow (Y-axis Cover & Side Trough)	
21. Coolant Nozzle Unit	
22. Handy Man II F	
23. CD-ROM for Memry Card DNC Operation	



03. ATC Auto Door



07. Spindle Oil Cooler



11. Lubrication Unit



21. Coolant Nozzle Unit



16. Work Light



22. **Handy Man II F**

Standard NC Specifications

Matsuura G-Tech 30i

CONTROLLED AXES		TOOL OFFSET	
Controlled Axes(Simultaneous 3-axes) : Positioning, Linear interpolation		Tool Offset Memory C	Offset for figure & Wear (D/H Code)
Controlled Axes(Simultaneous 2-axes) : Circular interpolation		Tool Offset Number Addition	Total 99
PROGRAMMING METHOD		COORDINATE SYSTEM	
Least Input Increment	0.0001mm (0.00001 in.)	Manual Reference Point Return	
Least Command Increment	0.0001 mm	Reference Point Return Check	G27
Max. Programmable Dimensions	±99999.999 mm (±9999.9999 in.)	Coordinate System Setting	G92
Absolute / Incremental Programming	G90/91	Automatic Coordinate System Setting	
Decimal Point Input / Computer Type Decimal Point Input		2nd Reference Point Return	G30
Inch / Metric Selection	G20/G21	Work Coordinate System Setting	G52-G59
INTERPOLATION		OPERATION SUPPORT FUNCTION	
Positioning	G00	Label Skip	
Linear Interpolation	G01	Single Block	
Circular Interpolation	G02/G03 : (CW / CCW)	Optional Stop	
Helical Interpolation	G02/G03 : (CW / CCW)	Optional Block Skip	
NANO Interpolation		Dry Run	
FEED		Machine Lock	
Cutting Feed Rate	F direct command (mm/min or in./min)	Mirror Image	
Dwell	G04	Z-Axis Command Neglect	
Handle Feed	Manual Pulse Generator : 1 set	Feed Hold	
	0.001/0.01/0.1 mm /1 scale	Cycle Start	
	(0.0001/0.001/0.01 in./1 scale)	Data Protection Key	
Manual Feed	Rapid / Jog Feedrate.	Help Function	
Automatic Acc./Dec.	Rapid Traverse : Linear acc./dec.	PROGRAMMING SUPPORT FUNCTION	
	Cutting Feed : External acc./dec.	Circular Interpolation by Radius R	
Rapid Feed Override	0, 1, 10, 25, 50, 100%	Canned Cycle	G73, G74, G76, G80-G89, G98, G99
Feed Rate Override	0 - 200%, 10% each	Sub Program Calling (Quadruple)	
Override Cancel		Exact Stop Check	G09, G61
PART PROGRAM STORAGE & EDIT		Exact Stop Mode	G61, G64
Program Memory	(512 KB) 1,280 m	Programmable Data Input	G10
Expansion of Number of Programs		Automatic Corner Deceleration	
Background Edit Function		Custom Macro	
OPERATION & DISPLAY		Dynamic Graphic Display	
Operator's Panel	Display : 10.4 in. (LCD Color) Full Key	Rigid Tap	
	Operation : Full Key, 10+2 Software Key	IZ-1/15F	(AI Contour Control)
Run Hour/Parts Number Display		AUTOMATIC SUPPORT FUNCTION	
Back Ground Graphic Function		Skip Function	G31
I / O FUNCTION & DEVICES		SAFETY / MAINTENANCE	
Reader Punch Interface (1 ch.)	RS-232C	Emergency Stop	
Internalized Ethernet	100/10 BASE-T	Stored Stroke Check 1, 2, 3	
DNC Operation, Data Input/Output	Memory Card, Compact Flash Card	Stroke Limit Check Before Move	
STM Function		Unexpected Disturbance Torque Detection	
Spindle Function (S Function)	S 5 Digits Command		
Spindle Speed Override	50 - 120% (Increment 10%)		
Tool Function	T4 Digits Command		
Miscellaneous Function	M3 Digits Command		

The specifications don't show all. Please call for details.



Matsuura

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ISO9001 ISO14001 OHSAS18001

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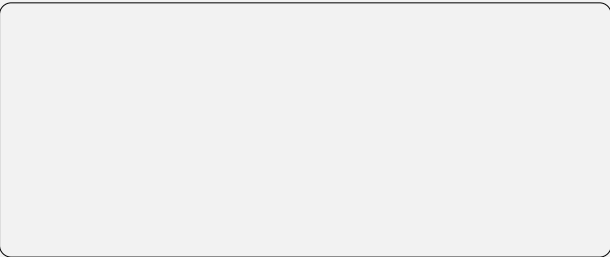
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- Product specifications and dimensions are subject to change without prior notice.
- The photos may show optional accessories.
- Products are subject to all applicable export control laws and regulations.

Superior Accuracy Vertical Machining Center

Mold.Plus-800

